NIST

United States
Department of
Commerce

Technology
Administration

National
Institute of
Standards and
Technology

REPORT OF THE 83RD NATIONAL CONFERENCE ON WEIGHTS AND MEASURES

as adopted by the 83rd
National Conference on
Weights and Measures 1998

NIST Special Publication 932

1998

Report of the 83rd National Conference on Weights and Measures

Sponsored 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

Portland, Oregon - July 12-16, 1998

Editors:
Gilbert M. Ugiansky, Ph.D.
Janet L. Land
NIST Office of Weights & Measures
Gaithersburg, MD 20899

U.S. Department of Commerce
William M. Daley, Secretary
Technology Administration
Gary R. Bachula, Acting Under Secretary for Technology
National Institute of Standards and Technology
Raymond G. Kammer, Director

NIST Special Publication 932

November 1998

Abstract

The 83rd Annual Meeting of the National Conference on Weights and Measures (NCWM) was held July 12 through 16, 1998, at the Hilton Hotel in Portland, Oregon. The theme of the meeting was "Working Together for Equity."

Reports by the Standing and Annual Committees of the Conference 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 OIML, Meter Manufacturers Association, Gasoline Pump Manufacturers Association, the National Association of State Departments of Agriculture Weights and Measures Division, the Industry Committee on Packaging and Labeling, National Industrial Scale Association, Associate Membership Committee, and Metrology Subcommittee.

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

Library of Congress Catalog Card Number 26-27766.

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. 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.

Nat. Inst. Stand. Technol. Spec. Publ. 932, 372 Pages (Nov. 1998)
CODEN: NSPUE2

U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON: 1998

For sale by the Superintendent of Documents, U.S. Government Printing Office,
Washington, DC 20402-9325

Contents

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

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

1998 STATE VOTING REPRESENTATIVES AND ALTERNATES

State	Representative	Alternate
Alabama	Charles Burns	None
Alaska	Aves D. Thompson	None
American Samoa	None	None
Arizona	Dennis Ehrhart	Sandy Williams
Arkansas	Mike Hile	Bill Sullivant
California	Barbara Bloch	Dennis Johannes
Colorado	David R. Wallace	None
Connecticut	Raymond Kalentkowski	None
Delaware	William Lagemann	None
District of Columbia	None	None
Florida	Max Gray	Jack Jeffries
Georgia	Jerry Flanders	Marnie Pund
Guam	None	None
Hawaii	None	None
Idaho	James Boatman	Tom Schafer
Illinois	Sid Colbrook	Rich Philmon
Indiana	Larry Stump	Curtis Simpkins
Iowa	Darryl Brown	None
Kansas	Constantine V. Cotsoradis	None
Kentucky	Larry Hatfield	Randy Wise
Louisiana	None	None
Maine	Danny Newcombe	David E. Gagnon
Maryland	Louis Straub	Richard Wotthlie
Massachusetts	Charles H. Carroll	None
Michigan	Patrick J. Mercer	Michael Pinagel
Minnesota	Mark Buccelli	Bruce Adams
Mississippi	Russell E. Robbins	None
Missouri	Roy L. Humphreys	Ron Hayes
Montana	None	None
Nebraska	Steve Malone	Don Onwiler
Nevada	None	None
New Hampshire	Michael F. Grenier	Richard P. Cote

State Voting Representatives

State	Representative	Alternate
New Jersey	Louis E. Greenleaf	None
New Mexico	Gary D. West	None
New York	Ross J. Andersen	None
North Carolina	N. David Smith	Ronald Murdock
North Dakota	None	None
Ohio	Lewis R. Jones	Jim Truex
Oklahoma	Charles Carter	Ken Fraley
Oregon	George Shefcheck	Clark Cooney
Pennsylvania	John E. Fisher	None
Puerto Rico	None	None
Rhode Island	None	None
South Carolina	Carol P. Fulmer	None
South Dakota	Renee Osterkamp	None
Tennessee	Randy F. Jennings	None
Texas	Damon Slaydon	Margaret Alvarez
Utah	Kyle R. Stephens	David O. McKay
Vermont	Bruce Martell	None
Virginia	J. Alan Rogers	G. Wes Diggs
Virgin Islands	None	None
Washington	Jerry Buendel	Larry Kanouse
West Virginia	Karl Angell	None
Wisconsin	None	None
Wyoming	Vic Gerber	None

National Conference on Weights and Measures, Inc., Organization Chart 1997-1998

Executive Committee and NTEP Board of Governors (BoG)

Chairman:	S. Malone, NE
Chairman-Elect:	A. Thompson, AK
Past Chair/BoG:	B. Bloch, CA
Treasurer:	J. A. Rogers, VA
Members:	C. Carroll, MA (1)
	B. DeSalvo, OH (2)
	M. Gray, FL (1)
	S. Millay, ME (3)
	L. Straub, MD (3)
	G. West, NM (2)
President:	R. Kammer, NIST Director
Executive Secretary:	G. Ugiansky, NIST Office of Weights and Measures
Technical Advisors:	J. Koenig, NIST
	S. Roussy, Canada
Associate Member Representative:	R. Davis, Fort James Corporation
Conference Coordinator:	A. Turner

See Working Groups, Subcommittees, and Annual Committees of the Executive Committee after the Standing Committees.

Laws & Regulations Committee

Chairman:	K. Angell, WV (2)
Members:	R. Andersen, NY (5)
	S. Morrison, San Luis Obispo Co., CA (3)
	M. Pinagel, MI (1)
	R. Williams, TN (4)
NIST Technical Advisors:	K. Butcher
	T. Coleman
Canadian Tech. Advisors:	G. Jorowski
	J. Watters
Associate Member Rep.:	C. Regan, Grocery Manufacturers of America

Petroleum Subcommittee

Chairman & Technical Advisor:	R. Jennings, TN

NIST Handbook 133 Working Group

Chairman:	B. Bloch, CA

Specifications & Tolerances Committee

Chairman:	R. Murdock, NC (1)
Members:	D. Brown, IA (2)
	M. Coyne, Brockton, MA (5)
	M. Hopper, Kern Co.,CA (3)
	G. Shefcheck, OR (4)
NIST Technical Advisors:	T. Butcher
	J. Williams
Canadian Tech. Advisor:	R. Marceau

Multiple Dimension Measuring Devices Working Group

Chair:	C. Skonberg, United Parcel Service
Technical Advisor:	N. Dupuis-Désormeaux, Canada

Administration & Public Affairs Committee

Co-Chairmen: B. Martell, VT (1)
R. Greek, San Luis Obispo Co., CA (2)
Members: C. Carter, OK (5)
N. Kranker, Dutchess Co., NY (3)
R. Philmon, IL (4)

NIST Technical Advisors: J. Mindte
T. Coleman

Associate Member Rep.: C. Guay, Procter & Gamble

NCWM Safety Liaison: C. Gardner, Suffolk Co., NY

Legislative Liaison

W. Corey, American Frozen Foods
T. Geiler, Barnstable, MA
N. D. Smith, NC

Metrology Subcommittee

Co-Chairmen: L. F. Eason, NC
R. Balaze, MI

Members:
K. Fraley, OK
S. McGuire, IL
D. Newcombe, ME
J. Rothleder, CA
J. Torres, PR

Technical Advisor: G. Harris, NIST

Nominating Committee

Chairman: B. Bloch, CA
Members: S. Colbrook, IL
C. Gardner, Suffolk Co., NY
T. Geiler, MA
J. A. Rogers, VA
N. D. Smith, NC
J. Truex, OH

Finance/Budget Review Committee

Chairman: S. Malone, NE
Members: W. Corey, Jr., American Frozen Foods (3)
C. Gardner, Suffolk Co., NY (2)
H. Lodge, Cargotec, Inc. (1)
N. D. Smith, NC (4)

Exec. Secy.: G. Ugiansky, NIST
Treasurer: J.A. Rogers, VA

Coordinator: A. Turner

Auditing Committee

Chairman: R. Williams, TN (1)
Members: D. Onwiler, NE (3)
R. Philmon, IL (1)

Coordinator: A. Turner

Credentials Committee

Chairman: J. Kane, MT (2)
Members: V. Gerber, WY (1)
H. Hochstetler, Elkhart Co., IN (3)

Coordinator: J. Mindte, NIST

Resolutions Committee

Chairman: V. Massey, Shelby Co., TN (1)
Members: M. Hile, AR (1)
L. Jones, OH (1)
J. Silvestro, Gloucester, NJ (1)

Coordinator: J. Mindte, NIST

Other Appointed Officers

Parliamentarian:	K. Simila, OR
Chaplain:	M. Hile, AR
Assistant Treasurer:	F. Clem, Columbus, OH
Sergeants-At-Arms:	C. Cooney, OR
	R. Wyckoff, OR

Other Elected Officers

Vice Chairmen:	M. Buccelli, MN
	R. McGrath, Boston, MA
	G. W. Diggs, VA
	D. Wallace, CO

Associate Membership Committee

Chairman:	R. Fuehne, Ralston Purina
Vice Chair:	Vacant
Secretary/ Treasurer:	F. Holland, Schlumberger Technologies
Members:	W. Braun, WHB Resources
	W. Corey, Jr., American Frozen Foods
	R. Davis, Fort James Corporation
	C. Guay, Procter & Gamble
	G. Prince, The Kroger Company
	D. Quinn, Fairbanks Scales
	C. Regan, Grocery Manufacturers of America
	P. Zalon, Nestle USA

Software Working Group

Chairman:	Charles Gardner, Suffolk Co., NY,
Members:	Steven Cook, CA
	Wes Diggs, VA
	Darrell Flocken, Mettler-Toledo
	Frances Holland, Schlumberger Technologies
	Dennis Krueger, NCR Corporation

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):	Kendrick Simila, OR, Secretary/Treasurer

National Type Evaluation Program
Technical Committee

Weighing Sector

Chair: N. Mills, Hobart Corporation
Technical Advisor: D. Suiter, NIST
Public Sector Members:
R. Andersen, NY
A. Buie, MD
T. Butcher, NIST
C. Carter, OK
S. Cook, CA
G. W. Diggs, VA
R. Marceau, Canada
R. Pforr, GIPSA
D. Ripley, NIST
G. Shefcheck, OR
J. Truex, OH
L. Turberville, AL
J. Vanderwielen, GIPSA
K. Yee, NIST
Private Sector Members:
J. Antkowiak, Hottinger Baldwin Measurements
W. Brasher, Southern Company Services, Inc.
L. Burrow, Sensortronics
L. Cerny, Association of American Railroads
J. Elengo, Contractor
D. Flocken, Mettler-Toledo, Inc.
W. GeMeiner, Union Pacific RR
W. Goodpaster, Cardinal/Detecto
K. Haker, BLH Electronics
D. Hawkins, Fancor, Inc.
J. Hughes, Weigh-Tronix, Inc.
D. Krueger, NCR
G. Lameris, Hobart Corporation
H. Lockery, Lockery Assoc.
T. Luna, Scales Unlimited, Inc.
V. Pandit, Allegany Technology, Inc.
D. Tonini, Scale Manufacturers Association
J. Wang, A&D Engineering, Inc.
O. Warnlof, Consultant
R. Watts, Universal Epsco, Inc.

Measuring Sector

Chair: R. Tucker, Tokheim Corporation
Technical Advisor: T. Ahrens, NIST
Public Sector Members:
R. Andersen, NY
T. Butcher, NIST
S. Cook, CA
J. Jeffries, FL
S. Malone, NE
R. Marceau, Canada
R. Murdock, NC
D. Ripley, NIST
W. West, OH
R. Wotthlie, MD
Private Sector Members:
F. M. Belue, Belue Associates
G. Bugher, Endress + Hauser
R. Cooper, Schlumberger (Neptune)
R. Fonger, Bennett Pump Co.
M. Hankel, MCH Engineering Associates, Inc.
K. Hoffer, Hoffer Flow Controls, Inc.
F. Holland, Schlumberger Technologies
R. Huff, Universal Epsco, Inc.
D. Joines, Dresser Wayne
G. Johnson, Gilbarco, Inc.
M. Keilty, Micro Motion, Inc.
D. Krueger, NCR
C. Mohr, Shell Oil Company/API
A. Noel, Schlumberger Industries
J. Skuce, Smith Meter, Inc.
D. Smith, Gasboy International, Inc.
R. Traettino, Liquid Controls Corp.
O. Warnlof, Consultant
K. White, Brooks Instrument Div.
M. Woiton, Endress & Hauser

Belt Conveyor Scales Sector

Chair:	N. Johnson, Merrick Corporation
Technical Advisor:	T. Ahrens, NIST
Public Sector Members:	A. Buie, MD T. Butcher, NIST S. Cook, CA R. Miller, CO D. Ripley, NIST L. Turberville, AL
Private Sector Members:	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 P. Sanford, Thayer Scale D. Tonini, Scale Manufacturers Association T. Vormittag, Sr, Commercial Testing & Engineering Co. O. Warnlof, Consultant

Grain Moisture Meter Sector and Near-Infrared Protein Analyzer Sector

Chair:	R.W. Wotthlie, MD
Technical Advisor:	J. W. Barber, J B Associates
Public Sector Members:	Canadian Grain Commission R. Burns, AR D. Funk, GIPSA G. D. Lee, NIST D. Onwiler, NE R. Pierce, GIPSA D. Ripley, NIST J. Rothleder, CA C. Tew, NC R. Wittenberger, MO
Private Sector Members:	J. Bair, Millers National Federation T. Conwell, CSC Scientific Company, Inc. M. Clements, The Steinlite Corp. C. Eigenmann, DICKEY-john Corp. M. Emori, Kett Electric Laboratory* M. Hall, Sartorius Instruments C. Hurburgh, Jr., Iowa State University D. Krejci, Grain Elevator & Processing Society* K. Locklin, Grain Elevator & Processing Society J. McClenethan, Growmark, Inc. 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

*(Grain Moisture Meter Sector only)

President's Address

Presented by Raymond G. Kammer, Director
National Institute of Standards and Technology

Introduction

It's really is nice to travel to the "other coast" and see this beautiful Pacific Northwest city. We can see how much this region of the country is prospering. If we take a close look at our own organization, we see that these too are good times for the weights and measures community.

Our future is bright for several reasons. There is a growing appreciation of the need for accurate weights and measures. New technologies are emerging that can strengthen our ties to each other and allow us to make a greater impact than ever before. The role of weights and measures is critical in global trade and more and more of our constituents appreciate that fact. In the next few minutes I want to elaborate on these points and explain in some detail to why I think our future is bright.

Five Challenges

First, however, allow me to share with you five challenges I have established for NIST. Our success in these challenges will translate into improved opportunities and potential for your businesses to grow.

- Ensuring world leadership by NIST's Measurement and Standards Laboratories;
- Ensuring that measurement capabilities and standards are in place to support full U.S. participation in global markets;
- Building consensus for the Advanced Technology Program;
- Expanding access to Manufacturing Extension Partnership services for more small and medium-sized companies and continuing Federal support for MEP centers after the sixth year; and
- Promoting performance excellence in healthcare and education, particularly among non-profit organizations, through the Baldrige National Quality Program.

Kilogram

Part of what we do to meet the challenge of ensuring world leadership by NIST's Measurement and Standards Laboratories is solve weights and measures problems. I think you'll find our work toward meeting one of these challenges to be of particular interest.

It's what we call the "kilogram problem." Even though it won't affect your daily work plans anytime soon, the solution to this problem will most likely affect the way you validate mass measurements a few decades from now.

The problem stems from the fact that mass measurements worldwide all trace to a physical kilogram mass standard which is carefully stored in a suburb of Paris. Earlier this month, a group of our scientists announced that they have achieved new levels of accuracy with a device that can determine mass using quantum electrical standards. What this means to you is that at some future date, your mass measurements will be based on a standard that is more accurate, more accessible and more equitable than the kilogram standard of today.

Raising Awareness

The future looks bright not only because our technologies are improving, but also due to growing appreciation for the job you do and the importance of the global marketplace. Business is becoming evermore international. A recent survey of more than 300 CEOs with whom we were involved in conjunction with the Foundation for the Malcolm Baldrige National Quality Award and Lou-Harris, confirmed this concern with globalization.

Further evidence of the growing appreciation of the traditional role of weights and measures in the progress of our country is on view to thousands of industry representatives who visit NIST annually. We recently set up and dedicated the Ferdinand Rudolph Hassler exhibit in our main auditorium lobby. Your own chairman, Steve Malone, attended the dedication ceremony last month. In the early 1800s, Hassler developed and distributed the first sets of weights and measures standards in the United States. Technological progress in weights and measures led us toward economic prosperity historically, and we can expect it to do the same in the next millenium.

As we think about the future, it is also fun to celebrate the past. In 2001, NIST will celebrate its centennial, 100 years of advances in measurement science and technology. Actually, we plan to begin celebrating a bit early, as soon as the year 2000 rolls around.

I invite you to help draw attention to this special milestone. Calling attention to the NIST centennial will, in turn, draw attention to your own roles in promoting our economy through a sound system of weights and measures. If any of the states represented here today are interested in exploring these possibilities, please let Gil Ugiansky know. Americans love history and expanding our citizens' and stakeholders' awareness of the role of weights and measures in our country's economic progress is very important.

Taking Advantage of Technology

Of course we must continue to look to the future. There are plenty of tools we can use to further our progress toward equity in the marketplace. Let's take advantage of technologies that are ripe for furthering our mission and keeping us in closer communication with each other. If you have not yet visited the redesigned NIST web page, please take a look at www.nist.gov. From here you can link to the NIST Office of Weights and Measures home page, www.nist.gov/owm, where you'll find, among other things, a listing of all State weights and measures directors.

There are also the NCWM and NTEP sites which we maintain:www.nist.gov/ncwm and www.nist.gov/ntep

I encourage every State office to establish its own presence on the web with links to NIST through the Office of Weights and Measures. I'm sure you have some valuable content to share with your customers and the general public. Some weights and measures jurisdictions are already doing this. For example:

Minnesota Department of Public Service Home Page:
http://www.dpsv.state.mn.us

Oregon Measurement Standards Home Page:
http://www.oda.state.or.us/measurement_standards/msdinfo.html

San Francisco's Consumer Advocate Home Page:
http://www.ci.sf.ca.us/ag/

Southern Weights and Measures Association (SWMA) Home Page:
http://www.swma.org

We can also provide links from our page to your pages to increase awareness of your programs. We intend to beef up our information about weights and measures activities, including some historical information, such as a history of Hassler and the foundations of our weights and measures system.

Initiative

Again looking to the future, we are trying to increase our support for activities that would directly help the weights and measures community. NIST is proposing a $6.4 million annual budget initiative to begin in fiscal year 2000. We need to work hard to ensure that policymakers understand the importance of this initiative. If we succeed—and that's still a big IF—and the initiative is adopted, we will use it for an educational facility, the instructor training program, a research program and for regular recalibrations of State primary standards.

Educational Facility

A state-of-the-art educational facility that includes training laboratories, lecture and demonstration facilities and equipment will help us ensure consistency across the many jurisdictions that enforce fair measurements. We would like to establish a curriculum to enhance the understanding of weights and measures laws, standards and methods of inspection. NIST would organize and provide educational opportunities for officials from this country and U.S. trading partners in measurements and certification procedures for weighing and measuring instruments. This would foster harmonization among the participating countries, encourage U.S. economic growth, and increase U.S. international export trade. By increasing its training capabilities, NIST can ensure that the U.S. maintains global leadership in measurement devices and technologies.

Instructor Training Program

The initiative proposes to strengthen and expand NIST's Instructor Training Program. This program leverages resources as students return to their state or country and transfer their newly acquired knowledge and expertise to their peers. Training State and local weights and measures officials in the myriad complexities of laws, standards, technical management, business and marketing issues, statistical analysis, device technology, inspection, metrology and test procedures is an important step toward achieving the professionalism, competence and uniformity that NIST and NCWM are striving for.

The goal of this initiative is to provide instructor training for 1,500 students annually.

Research Program

As you know, it's hard to move to new technologies and implement new testing programs in all relevant areas when you have limited resources and expertise. That's why we are proposing to establish a research program aimed at applying new measurement technology to current test procedures to increase accuracy, repeatability, and traceability. This program will also develop methods for the application of statistical sampling to weights and measures programs in the States.

Recalibrating Standards

Because measurement equivalency among international, national and local laboratories is critical for domestic and international trade and for health and safety requirements, the initiative would allow NIST to periodically recalibrate state primary standards of mass, length, and volume. We would check and recalibrate your primary standards every 5 to 10 years. This is an elemental part of NIST's mission to strengthen the nationwide system of weights and measures to protect consumers and provide a level playing field for business and industry.

In 1996, weights and measures regulations impacted U.S. transactions involving about $4.13 trillion. And we're estimating that figure to be $4.4 trillion for 1997. Through the leveraging effect of instructor training, enhanced State standards, research to improve measurement practices and technology, and increased use of new information technologies, this program will help to ensure equity in the marketplace.

In addition to seeking funds for this initiative, NIST will immediately begin a program of paying for accreditation of the State metrology laboratories. I know this is an issue that has concerned many of you greatly and I have taken steps to see to it that this is resolved permanently.

International Standards

Let me spend a few minutes talking about international standards. The increased emphasis on and importance of international standards in trade offers a great opportunity for State weights and measures officials to raise awareness of just how important standards are whether used at the international, national or local level. For weights and measures officials--who care a lot about standards and know their importance--this is a great opportunity to catch the wave as everyone else begins to focus on standards.

Changes in the global market

In 1996, the United States exported about $835 B worth of goods and services Global market contains many barriers to trade – Removal of technical barriers could add $20-50 B to our export market United States is signatory to WTO Agreement on Technical Barriers to Trade.

World Trade Goals for Standards

Use of international standards—one standard accepted worldwide
Agreement on conformity assessment procedures—one test of conformance to standard accepted throughout the world
Remove all technical barriers

Why does industry need standards?

Product design in one place
Parts produced in many places
Product is built in third area

Product is sold in fourth area
Product is repaired in fifth area

Types of Standards

Product specifications—prescriptive, performance
Process (manufacturing)—quality, environmental management
System—interoperability
Test Method—measures properties of product of material
Protective—health, safety, environment

Standards Summit

U.S. Standards Summit on Sept. 23 to discuss these issues
Some in this audience may want to attend

Conclusion

I'm sure you appreciate how much things are changing for the weights and measures community and how the conjunction of these changes is opening new opportunities right in our own backyards as well as in the far-flung corners of the globe. I urge you to take advantage of the new technologies, the growing awareness of our important function, and this great forum we have created. Technology and globalization of the U.S. economy are bringing changes to all of us. The NCWM is a great forum for identifying and addressing new issues and opportunities. I look forward to working with all of you.

Chairman's Address to the 83rd Annual Meeting 1998

Presented by Steven A. Malone, Director
Nebraska Weights and Measures Division

Director Kammer, honored guests, fellow members, welcome to Portland, Oregon, and the 83rd National Conference on Weights and Measures.

Director Kammer, thank you for renewing the interest of the Director's Office in the activities of the National Conference on Weights and Measures (NCWM). Your attendance here today and at our Interim Meeting in January, demonstrates your support and understanding of Legal Metrology. It is always a pleasure to have you join us.

This year has been difficult. There have been many organizational changes which have taken place to the structure of the National Conference. Caught in the midst of these changes, has been the staff of the Office of Weights and Measures (OWM). However, during all this, they have never lost sight of their mission to service the Weights and Measures community. A personal thanks to each one of you for your dedication and support.

Through these challenging times, we must keep in mind that each of us has the responsibility to strive for equity in the marketplace and to work for uniformity in the enforcement of weights and measures laws, regulations, and standards.

Today, I will speak about three challenges facing the Conference. The first challenge is change. To provide a perspective of change, let us back to 1979, when the National Conference on Weights and Measures was last held in Portland, Oregon. That was 19 years ago. At that time, the membership fee was $25 and our membership totaled 1,086. Today membership is 3,375 and membership fees are $35 for Active and Advisory members and $50 for Associate members. Income and expenses, in 1979, were approximately $65,000. Today, income from the general account is just over $213,000, and NTEP fees, produce another $152,000.

In 1979, there was no NTEP program. We had started talking about national type evaluations, but no formal program was in place. Training involved one individual from the Office of Weights and Measures who conducted training upon the request of State and local jurisdictions. There was not much of a formalized training program. Although today, we still need to improve our training delivery, we certainly have come a long way.

As you can see, the Conference has seen a lot of change over the years. However, change can be frightening. It's a fear of the unknown. We just don't know what is going to happen and how it will affect us. We have this comfort zone that we're afraid to step out of.

Change will not go away. In the future, we are barely going to have the time to realize the effects of current changes before technology or management prospective demand we change again. We must understand and learn how to deal with change effectively.

I see the development of relationships as our second challenge. The Office of Weights and Measures, and the Conference must never stop building upon our relationship. This may require us to redevelop ourselves. As you know, the Conference is taking on a larger management role, which in the past, has been the responsibility of the Office of Weights and Measures. This change is testing our relationship with one another. Our relationships with industry must continue to grow. Industry is a vital part of this Conference. They are participating members of this organization and are <u>not</u> regulated here! The Conference is a place where we can work together to discuss issues and address concerns, in an environment that is fair and honest. The Conference is a forum where industry and the regulators can work to improve regulatory standards.

Our relationships with the regional associations are the backbone of this conference. The regional associations play a vital role in this organization, and we must continue to help improve their ability to respond to national issues.

We need to develop our relationships with international organizations. We are in a world economy. Our needs at home seem much greater than the needs from abroad, however, our needs at home won't be met if we ignore international issues. We are looked upon, by other countries around the world, as leaders in the area of legal metrology. We need to embrace that leadership role.

Our relationship with State and local programs is essential for the continued development of the National Conference and these programs. Each and every weights and measures program should be in attendance today. In the future, interactive telecommunication will make it possible for everyone to participate in our meetings. We need to be ready.

Let us move on to the challenge of communication. As we work on all of the challenges we face, we must openly and honestly communicate with each other. Our motives must be geared to achieve the goals and objectives of this organization, not for personal gratification or some other self-serving intent. We need to share and openly express all of our concerns. There should not be hidden agendas!

We need to communicate the value of Weights and Measures to our members, prospective members, policy makers, legislators, and citizens. Let me give an example that demonstrates the value of Weights and Measures. It is estimated that $4.5 trillion of the U.S. economy is regulated by some form of Weights and Measures. Recently, I asked State directors to provide me with their annual budget figures. From this budget data, I calculated that each U.S. citizen pays, on the average, 50 cents for the functions conducted by their State or local Weights and Measures program. This means the country's total budget, for Weights and Measures enforcement, is approximately $150 million. What kind of pay back do we, as citizens, get for our 50 cents. Let's consider the performance results of every motor-fuel dispenser today. Then let's shift that performance by 1 cubic inch on every 5 gallons sold. This would mean a change of $125 million, annually. This 1 cubic inch change on 5 gallons is an amount close to equaling the money spent on every Weights and Measures program, annually. How could any decision maker conclude that, to do away with or cut a Weights and Measures program would be a sound decision? If they would cut or eliminate a Weights and Measures program, a definite shift in performance is bound to occur. This Conference has a duty to get these types of messages out to our colleagues and the public.

My final thought about communication relates to how we provide notification to non-Conference members of issues which may impact them. We need to find a vehicle to help publicize the notification of our meetings and the issues we will address. Doing so will improve our performance while telling the story of Weights and Measures.

How do we meet the demands of future challenges? In my opinion, by being proactive and putting our ideas into practice.

We participate. We become more active members and draw upon the strengths of our membership.

We allow ourselves the freedom to fail, which will give us the ability to take risks. If we can't take risks, we will not move ahead.

We work together. We work together for the ultimate goals of equity in the marketplace and uniformity.

The theme for this year's National Conference is "Working Together for Equity." I personally believe our working together has helped us achieve the many accomplishment of this past year. Our working together, has made this year's Conference and this year's activities a success. I want to thank the members of the Executive Committee for their diligence and hard work on our Strategic Plan, the new bylaws, and the other challenges they have addressed. I also want to thank all of the past chairmen, for their dedication, their Conference loyalty, their integrity, and their hard work on behalf of the National Conference. Thank you to the Software Working Group and the Legislative Liaison Subcommittee; to all the Standing and Annual Committee members of the Conference, the members of the NTEP Sectors, and to all those who spent countless hours developing issues, providing information, and making this Conference function.

Again, thank you, to the staff of the Office of Weights and Measures for your support of Weights and Measures and this Conference.

Thanks to each of you!

Thank you very much.

HONOR AWARDS

10 YEARS

Irving Bell
Ronald Hayes
Herman Hochstetler
Joan Mindte
Ronald Murdock
Michelle Phillips
David Quinn
David Wallace

15 YEARS

Ken Fraley
Kathleen Thuner
Richard Tucker

20 YEARS

Ross Andersen
James Eskew
N. David Smith

Special Recognition Awards

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

Executive Committee

Max Gray, State of Florida
Charles Carroll, State of Massachusetts

Laws and Regulations Committee

Michael Pinagel, State of Michigan

Specifications and Tolerances Committee

Ron Murdock, State of North Carolina

Administration and Public Affairs Committee

Bruce Martell, State of Vermont
Chris Guay, Procter & Gamble

Vice-Chairmen

Mark Buccelli, State of Minnesota
Robert McGrath, State of Massachusetts
G.W. (Wes) Diggs, State of Virginia
David Wallace, State of Colorado

Sergeants-at-Arms

Clark Cooney, State of Oregon
Russ Wyckoff, State of Oregon

Special Service Awards

Darrell Guensler, State of California
Ken Simila, State of Oregon

Associate Membership Committee

The Associate Members have contributed immeasurably to the many achievements of the Conference, most notably the development and widespread acceptance of the National Type Evaluation Program, the National Training Program, and Handbooks 44, 130, and 133. Today, we have even more involvement with our business partners in such activities as the National Type Evaluation Technical Committee Sectors, Handbook 133 Working Group, Petroleum Subcommittee, and Multiple Dimension Measuring Devices Working Group. In addition, Associate Member Representatives serve on three of the Standing Committees of the Conference and on the Budget Review Committee. A Certificate of Appreciation was presented to the Associate Membership from the NCWM. A&P Committee Chairman Bruce Martell made a special presentation to the AMC in recognition of its ongoing support of training for weights and measures personnel through the AMC Scholarship Fund.

Annual Committees

Budget Review Committee

Harvey Lodge, Cargotec, Inc.

Auditing Committee

Robert Williams, State of Tennessee
Richard Philmon, State of Illinois

Credentials Committee

Victor Gerber, State of Wyoming

Nominating Committee

Barbara Bloch, State of California
Sidney Colbrook, State of Illinois
Charles Gardner, Suffolk County, New York
Thomas Geiler, Barnstable County, Massachusetts
J. Allan Rogers, State of Virginia
N. David Smith, State of North Carolina
James Truex, State of Ohio

Resolutions Committee

Vernon Lee Massey, Shelby Co., Tennessee
Mike Hile, State of Arkansas
Lewis Jones, State of Ohio
Joseph Silvestro, Gloucester, New Jersey

President's Award

This was the thirteenth annual presentation of the President's Award. This award is given for two levels of achievement:

1) A banner presented to those directors representing States that have 100 percent membership, both State and local weights and measures officials, in the National Conference on Weights and Measures for the first time in the membership year July 1, 1997, through June 30, 1998. Those States that repeat with 100 percent membership are awarded a streamer for their banner. A streamer is presented for each year the State qualifies.

2) The second level of the President's Award is a certificate presented to any State in which all of the weights and measures officials from the State office are members of the Conference.

Awards For First Year Banner

The **State of South Carolina** received a banner for first year membership of all State weights and measures officials.

Streamer Awards for the Second Year

The State of Louisiana

Streamer Awards For The Sixth Year

The Territory of The Virgin Islands
The State of West Virginia

Streamer Awards For The Seventh Year

The Commonwealth of Puerto Rico

Streamer Awards for the Eighth Year

The State of Colorado

Streamer Awards for the Ninth Year

The State of Montana
The State of Oregon
The State of Utah
The State of Vermont
The State of Wyoming

Streamer Awards For The Tenth Year

The State of Arizona
The State of Michigan
The State of New Hampshire
The State of Virginia

Streamer Awards for the Twelfth Year

The State of Alaska
The State of Delaware
The State of Idaho
The State of New Mexico
The State of South Dakota

Streamer Awards for the Thirteenth Year

The following two States have had 100 percent membership in the National Conference on Weights and Measures for their States since the beginning of the award. These two States continue to participate 100 percent in the membership program:

The State of Arkansas
and
The State of Nebraska

President's Certificate

Nine States qualified for the President's Certificate with 100 percent of their State office staff members for the 1997-98 Conference year:

Fourth Year Award
State of Missouri

Fifth Year Award
State of Connecticut
State of Tennessee

Sixth Year Award
State of Massachusetts

Seventh Year Awards
State of Illinois
State of Indiana

Ninth Year Awards
State of Maine
State of New York
State of Wisconsin

Report of the Executive Committee and National Type Evaluation Program Board of Governors*

Steven A. Malone, Chairman
Administrator
Nebraska Weights and Measures Division

Barbara J. Bloch, Chairman of the NTEP Board of Governors
Director
California Division of Measurement Standards

100 Introduction

This is the Report of the Executive Committee and the National Type Evaluation Program (NTEP) Board of Governors for the 83rd Annual Meeting of the National Conference on Weights and Measures (NCWM). The Report is based on the Interim Report offered in NCWM Publication 16, Program and Committee Reports; the Addendum Sheets issued at the Annual Meeting; and actions taken by the membership at the special and regular Voting Sessions of the Annual Meeting.

The Report is divided into two parts: (1) management of the National Conference on Weights and Measures, Inc., (items in the 101 Series) and (2) management of NTEP (items in the 102 Series), as addressed by the Committee in its role as the NTEP Board of Governors. 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. Voting items are indicated with a "V" after the item number. An "I" denotes issues that are reported for information. Items marked with a "W" have been withdrawn. 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.

*In accordance with the NCWM, Inc., Bylaws adopted July 13, 1998, all references to the "Executive Committee" mean "Board of Directors" and all references to the "NTEP Board of Governors" mean "NTEP Committee."

Table A
Index to Reference Key Items

Table A (Continued)
Index to Reference Key Items

Table B
Appendices

Table C Voting Results					
Reference Key No.	House of State Representatives		House of Delegates		Results
	Yes	No	Yes	No	
Special Voting Session 7-13-98 Item 101-2	23	0	66	0	Passed
100 (Board of Directors Report in its Entirety) Voice Vote	All Ayes	No Nays	All Ayes	No Nays	Passed
Item 102-5	33	0	38	0	Passed
Item 102-9	35	0	37	0	Passed
(NTEP Committee Report in its Entirety)	37	1	38	0	Passed

Details of All Items

Part I - Executive Committee

101-1 I Constitution and Bylaws: Strategic Planning

This item was carried over from Item 101-4 of the Report of the 80th NCWM, 1995, Item 101-2 of the Report of the 81st NCWM, 1996, and Item 101-1 of the Report of the 82nd NCWM. See those reports for background on this item.

The Executive Committee held a special strategic planning meeting on July 11, 1998, prior to the 1998 NCWM Interim Meeting to address the future direction of NCWM, Inc., and, in particular, how to handle the administrative functions of the Conference. The NCWM had been paying temporary staff to perform the membership services activities of the Conference and to support the National Type Evaluation Program. The NCWM was told it would have to assume the meeting planning functions formerly provided by the National Institute of Standards and Technology (NIST) Office of Weights and Measures (OWM). This followed a decision by NIST management that OWM could not hire an employee to continue the meeting planning activities for the Conference after its meeting planner retired. NIST agreed, however, to contract with the meeting planner to continue providing these services for a 2-year period (from 8/97 to 8/99) to give the NCWM time to make other arrangements. Consequently, the Committee had to consider whether it would hire employees or contractors to carry out the administrative functions of the NCWM.

Former Chairmen of the Conference and representatives of the Associate Membership Committee were invited to participate in the strategic planning session along with representatives from OWM and lawyers for NIST and the NCWM. The lawyers, Michael Rubin Counsel for NIST and Simon Stapleton Counsel for NCWM, made a joint presentation on the evolving relationship between NIST and NCWM and the need to make changes in operating procedures to reflect the current relationship.

At the end of the strategic planning meeting, Conference officials met without NIST staff and made a series of decisions about the future direction of NCWM, Inc. (See Appendix A for a summary of the decisions.) Among the conclusions reached was that the NCWM should contract with an association management company or independent contractor (who could meet the requirements of the Fair Labor Standards Act) to perform the administrative functions for the Conference. Such functions would include meeting planning, membership service activities, and NTEP support. The group also decided to copyright NIST Handbook 44, Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices, and NIST Handbook 130, Uniform Laws and Regulations, beginning with the 1999 editions. **The NIST name and logo will still appear on the handbooks after NCWM obtains the copyright.** The group agreed that details for granting authority to copy and determining royalties must be developed before the NCWM invokes the copyright. Although the Executive Committee plans to copyright the handbooks to protect Conference property, it also recognizes the need to make the handbooks as accessible as possible to promote uniformity.

The Executive Committee will develop a Request for Proposal (RFP) to be used in soliciting bids from prospective contractors. A team consisting of Aves Thompson, Lou Straub, Simon Stapleton, Alan Rogers, Steve Malone, Gil Ugiansky and Joan Koenig was appointed to guide the Conference during the period of transition. OWM staff will continue to provide technical support to the NCWM and its committees and to administer the National Type Evaluation Program (NTEP).

During the Interim Meeting, the NCWM Counsel reported that NCWM, Inc., was required to submit an Annual Report to the State Corporation Commission of Virgina. It was moved, seconded, and unanimously approved that the Committee adopt the appropriate portions of the Report of the 82nd NCWM, July 1997, and file them as the 1997 Annual Report of NCWM, Inc. The Committee decided to publish the Articles of Incorporation of the Conference in this report for the information of the membership (see Appendix B).

The Committee received status reports from the Stategic Planning Work Groups on the NCWM Business Plan, the NTEP Business Plan, and the Training Delivery Plan. A copy of the third draft of the NCWM Business Plan prepared by the Work Group on the NCWM Business Plan is provided in Appendix C. A number of the recommendations of the Work Group have already been implemented, including the following:

- The NCWM was incorporated in the Commonwealth of Virginia on August 28, 1997;
- The NCWM Constitution and Bylaws are being combined into one document to be called the Bylaws of NCWM, Inc., which includes changes reflecting the incorporation of the Conference (see Item 101-2 for more information);
- Errors and Omissions, Directors and Officers, and General Liability Insurance have been purchased for the Conference;
- The Committee is working with the National Institute of Standards and Technology Office of Weights and Measures to develop a Memorandum of Understanding between NCWM and NIST that would officially document the special relationship that exists between the two organizations;
- The NCWM Treasurer is in the process of obtaining an auditor to review the financial records of the Conference (see Item 101-5, Finances, Treasurer's Report, for additional information);
- The Committee is planning to copyright NIST Handbooks 44 and 130;
- The Committee is recommending that the Board of Directors for NCWM, Inc., be composed of 11 individuals: the Conference Chairman, Chairman-Elect, Past-Chairman, Treasurer, and 7 others: 1 from each of the four regions, 1 associate member, and 2 at-large members, who may be chosen from the Active, Advisory, or Associate membership who are eligible to serve; and
- Changes are being proposed to the voting procedures in the Bylaws to enable all NCWM members to vote on all business issues relating to NCWM, Inc., as a corporation; however, the procedures for voting on technical issues will remain essentially the same, except for proposed changes to allow for the greater use of voice votes.

Due to time constraints, it was not feasible to include the regions in the initial incorporation or liability documents for the NCWM. The Executive Committee recommends that the regions consider incorporating and getting liability insurance. The Regions were asked to discuss whether they wanted to be incorporated with the NCWM and be covered by its liability insurance and to let the Executive Committee know their decision by October 1998.

In response to a recommendation by the Scale Manufacturers Association, the Executive Committee made the following change at the Interim Meeting to the previously published Goals of the NCWM (the words added are underlined):

Goals

I. Enhance the National Conference on Weights and Measures as a national and international resource for measurement standards development.

II. Provide uniform training programs for industry and government individuals involved in legal metrology.

III. Continue to develop new or alternative methods for improved delivery of weights and measures programs.

IV. Continue to expand the Conference role in national and, as a resource, in international legal metrology.

The change reflects the NCWM's intention to serve as a resource in the development of international legal metrology standards, but not to take the lead role in this area.

The Executive Committee met on Saturday, July 11, 1998, before the NCWM Annual Meeting and continued progress on strategic planning. Among the accomplishments of the meeting were the development of a Memorandum of Understanding (MOU) between the NCWM and NIST and the approval of the Training Plan (see the A&P Committee's Report for a copy of the Plan) developed by the Training Plan Work Group. The Committee received an update on the progress of the Request for Proposals distributed by the NCWM to get bids from an association management company. A total of 257 RFP packages were mailed, and 42 proposals were received. The 42 proposals were narrowed down to three; site visits to the organizations that submitted the top three proposals are planned in August 1998. The Committee intends to have a contract signed and effective by October 1, 1998. The Committee agreed that the issue of copyrighting NIST Handbooks 44 and 130 would require further study and discussion; therefore, the issue will probably not be addressed in time to copyright the 1999 editions of the Handbooks.

The MOU between NCWM, Inc., and NIST was signed by representatives of both organizations during the General Session of the Conference on Tuesday, July 14, 1998. (See Appendix M for a copy of the signed MOU.)

101-2 V Constitution and Bylaws: Revision

(This item was adopted.)

Recommendation: Adopt the Bylaws contained in **Appendix D** as the Bylaws of the National Conference on Weights and Measures, Inc.

Background: This item was carried over from Item 101-5 of the Report of the 80th NCWM, 1995, Item 101-3 of the Report of the 81st NCWM, 1996, and Item 101-2 of the Report of the 82nd NCWM, 1997. In 1997, the Committee published proposed changes to the NCWM Constitution and Bylaws that were intended to update the document and make it consistent with current practices. As its Strategic Planning efforts continued during the year, the Committee identified additional changes that were needed. In particular, changes were needed to reflect the incorporation of the Conference. The NCWM's legal counsel, working in cooperation with the Chairman of the Strategic Planning Working Group responsible for developing the Conference's business plan, developed the revised draft of the Constitution and Bylaws that was published in the Agenda for the 1998 Interim Meeting.

At the Interim Meeting, NCWM Counsel Simon Stapleton proposed combining the Constitution and Bylaws into one document to be called the "Bylaws" of NCWM, Inc. He said that this would simplify the document and be more in keeping with current association practices. The Committee agreed to combine the documents. They also decided to propose the new Bylaws document for a vote of the membership at a special general session on Monday afternoon during the 1998 NCWM Annual Meeting.

Among the additional changes that were made to the draft Bylaws at the Interim Meeting was a reduction in the term of the Associate Member Representative on the Board of Directors from 5 years to 3 years, at the request of the Associate Membership Committee (AMC). The AMC felt that it might be difficult for some of its members to make a 5-year commitment to serve on the NCWM Board. The Executive Committee also agreed to change the term "Vice Chairmen" to "Presiding Officers" and to have these individuals be appointed by the Chairman rather than be elected by the membership.

A Special Voting Session was held on Monday, July 13, 1998, during the NCWM Annual Meeting. Presentations were made by NCWM Chairman Steve Malone, NCWM Counsel Simon Stapleton and NIST Counsel Michael Rubin, and NCWM Executive Secretary Gil Ugiansky on the need for changes in the Conference and the impact of the changes. Following a question and answer session, a vote was taken on the new Bylaws for NCWM, Inc., and they were adopted without opposition.

As a result of the adoption of the new Bylaws, the term of the members of the NCWM Board of Directors (except the Associate Member Representative) was increased from 3 years to 5 years. The Nominating Committee was asked to prepare a revised slate that would provide for phasing in the longer term and take into account other changes in the Bylaws. The revised slate was included in the Executive Committee's addendum sheets.

In order to comply with the new Bylaws requirement that the NTEP Committee consist of eight Active members, Max Gray resigned from the NTEP Committee.

101-3 W Constitution and Bylaws: New Section on NCWM Policies

(This item was withdrawn.)

This item is carried over from Item 101-2B. The Committee is considering adding to the Bylaws a new section that would contain selected policies related to the management of the NCWM that have been adopted by the Conference. At the 1998 NCWM Interim Meeting, the Committee decided to withdraw this item from its agenda because the item is not well enough developed to adopt at this time. The Committee will continue to review and revise the policies that were published in the Agenda for the 1998 Interim Meeting and will resubmit this item at a later date.

101-4 I Constitution and Bylaws: Revision of Bylaws Article VI - Voting System

Source: The Southern Weights and Measures Association.

Proposal: Amend Article VI - Voting System, Section 5 - Committee Reports in the NCWM Constitution and Bylaws by adding the following language:

> *A status designation shall be indicated for each committee item published in NCWM Publication 16. The voting status shall be as follows:*
>
> *I - Information*
> *W - Withdrawn*
> *V - Voting*
> *VC - Voting Consent*
>
> *Committees may change the status designation with the exception that once an item has been designated as Information (I) or Withdrawn (W), its voting status cannot be changed to Voting or Voting Consent (VC) at that NCWM Annual Meeting.*

Justification: Although NCWM Publication 16, which contains the program and committee reports for the Annual Meeting, addresses item status designations and changes to those designations, there is nothing in the NCWM Bylaws to prevent a committee or a member of the NCWM from changing the voting status of an item. The change is needed to ensure that Information and Withdrawn items cannot be changed to Voting or Voting Consent items at the Annual Meeting, which could deprive some individuals of their right to be heard on an issue.

At the 1998 Interim Meeting, the Executive Committee decided to address this item in the new Bylaws of NCWM, Inc. [Note: After the meeting, NCWM Legal Counsel Simon Stapleton, who was preparing the Bylaws, recommended that it would be more appropriate to include the information on voting status in the policy document being developed by the Executive Committee rather than in the Bylaws (see Item 101-3 for more information).]

101-5 I Finances, Treasurer's Report

NCWM Treasurer J. Alan Rogers reported to the Executive Committee on the Conference's finances. For more information, see: 1) the separate Treasurer's Report in this publication for the Fiscal Year 1997 report and 2) the Report of the 82nd NCWM 1997 for the 1998 NCWM and NTEP budgets.

In January 1997, the NCWM Auditing Committee recommended that the Executive Committee consider obtaining an outside audit of the NCWM's finances because it had been about 10 years since the last such audit. At its September 1997 strategic planning meeting, the Committee directed the Treasurer to send a request-for-proposal to several auditing firms to get estimates of the cost of obtaining a review of the Conference's books for the previous 2 years (1996 and 1997) and for 3 years in the future (1998, 1999, 2000).

At the 1998 Interim Meeting, the Treasurer reported that he was negotiating with an auditor to review the NCWM's finances. The Committee approved the Treasurer's request to move forward with the audit of the NCWM's accounts if the auditor's proposal is within the amount specified in the 1998 budget. If it is not, the Treasurer will go back to the Committee for guidance.

The Treasurer presented a plan to initiate financial management forms for the Conference. He received approval from the Committee to develop and implement the forms. The Committee also agreed with the Treasurer's proposal that all future NCWM expenses must be pre-approved by the NCWM leadership.

The Committee adopted a revised travel policy that the Treasurer developed. Among the changes made to the policy was the establishment of a fixed per diem rate for NCWM travelers of $35 per day. Previously, the per diem rates were the same as Federal per diem rates and changed according to the destination of the traveler.

The Budget Review Committee (BRC) met February 23 and 24, 1998, to develop a draft 1999 budget for consideration by the Executive Committee. At the 1998 Annual Meeting, the Executive Committee reviewed and adopted the BRC's recommendations. A copy of the BRC's decisions on 1999 funding requests and the Executive Committee's actions and comments on the BRC's decisions is included in Appendix E along with the 1999 NCWM, Inc., budget.

The NCWM Treasurer reported at the 1998 Annual Meeting that a review of the NCWM's finances had been completed by an auditor. The auditor found no material deficiencies. The results of the auditor's review are included in Appendix E.

101-6 I Finances, Auditing Committee

At the 1998 Interim Meeting, the Auditing Committee reviewed actual income and expenses for the Conference in 1997. They reported to the Executive Committee that the books were in good order.

The Executive Committee noted that the role of the Auditing Committee will probably change as a result of the incorporation of the Conference and the plans to have regular audits of NCWM, Inc., accounts by an outside organization (see Item 101-5 for more information). The Committee will further explore the role of the Committee after reviewing the outside auditor's recommendations.

101-7 I Associate Membership Committee Report

At the Associate Membership Committee (AMC) meeting on January 12, 1998, there was considerable discussion and support for the actions taken by the Conference to incorporate. There was also support for the decisions which have been taken by the Executive Committee for operating and managing that corporation.

The only concern expressed by the AMC dealt with the length of term for the Associate Member on the proposed Board of Directors. There was concern that a 5-year term for the required Associate Member might be too long a commitment. Therefore, a recommendation was forwarded to the Executive Committee to make the required Associate Member term a 3-year term. Of note, however, is the understanding by the Associate Membership Committee that if an Associate were to be nominated and elected to fill a "member at large" position, the term for that position would be a 5-year term.

Members of the AMC unanimously voted to nominate Rich Davis to serve as the AMC representative on the Executive Committee (Board of Directors of NCWM, Inc.).

The Associate Membership met during the Annual Meeting to discuss various items of concern, including the product survey protocol, dispersement of its excess funds and nomination of next year's Committee members. The nominations included: Chairman - Gale Prince, Kroger Company; Vice Chairman - Frances Holland, Schlumberger; Secretary/Treasurer - Cary Frye, International Dairy Foods Association; Paul Zalon, Nestle USA; Dave Quinn, Fairbanks Scale; Chris Guay, Procter and Gamble; Dave Cook, Kraft Foods; Darrell Flocken, Mettler-Toledo, Inc.; John Baker, Pier 1 Imports; Chip Kloos, Colgate. Also nominated were Chris Guay as the Associate Member Representative on the Laws and Regulations Committee and Jackie Wollner, Nestle USA, as the Associate Member Representative on the Administration and Public Affairs Committee.

On Thursday, July 16, 1998, the new NCWM Chairman, Aves Thompson, announced his appointments to the AMC, which consisted of all of the nominees listed above. Richard Davis told the Conference that the AMC had decided to make its end-of-year funds available for the following: $10,000 for a public relations brochure on the NCWM and $7,500 for training scholarships, which must be used by September 30, 1999.

101-8 I Organization, Appointments, and Assignments, Status Report

The following appointments have been made by NCWM Chairman Steve Malone since his election to office (as of February 1998):

Executive Committee Replacements:
Barbara DeSalvo, OH - 2-year term
Charles Carroll, MA - 1-year term

Laws and Regulations:
Ross Andersen, NY, 5-year term

Specifications and Tolerances:
Mark Coyne, Brockton, MA, 5-year term

Administration & Public Affairs:
Charles Carter, OK, 5-year term
(replacing Chris Quasebarth, WV)

Special Committee on Legislative Liaison:
Tom Geiler, Barnstable, MA, Chairman
William Corey, American Frozen Foods
N. David Smith, NC

Finance/Budget Review:
N. David Smith, NC, 4-year term
Charles Gardner, Suffolk Co., NY 2-year term (replacing Steven Malone, NE)

Nominating:
Barbara Bloch, Chairman
Tom Geiler, Barnstable, MA
Charles Gardner, Suffolk Co., NY
N. David Smith, NC
Sidney Colbrook, IL
Jim Truex, OH
J. Alan Rogers, VA

Auditing:
Don Onwiler, NE, 3-year term

Credentials:
Jack Kane, MT, 2-year term
Herman Hochstetler, Elkhart Co., IN, 3-year term
Victor Gerber, WY, 1-year term

Resolutions:
Lewis Jones, OH, 1-year term

Parliamentarian:
Ken Simila, OR, 1-year term

Chaplain:
Mike Hile, AR, 1-year term

Assistant Treasurer:
Fred Clem, Columbus, OH, 1-year term

Sergeants-at-arms:
Clark Cooney, OR, 1-year term
Russ Wyckoff, OR, 1-year term

Vice Chairman:
Robert McGrath, Boston, MA (replacing Mark Coyne, Brockton, MA)

Associate Membership Committee:
Chairman: Bob Fuehne, Ralston Purina Co.

National Type Evaluation Technical Committee (NTETC) Weighing Sector:
William Brasher, Southern Company Services, Inc.
Steven Cook, CA
Jim Vanderwielen, USDA Grain Inspection Packers & Stockyards Administration
Randall Watts, Universel Epsco, Inc.
Deborah Ripley, NIST

NTETC Belt Conveyor Scales Sector:
Bill Ripka, Ramsey Technology, Inc.
Deborah Ripley, NIST

NTETC Measuring Sector:
Gary Bugher, Endress + Hauser
Deborah Ripley, NIST

NTETC Grain Moisture Sector:
David Krejci, Grain Elevator and Processing Society
Ole Rasmussen, Foss North America, Inc.
Deborah Ripley, NIST

NTETC Near-Infrared Protein Analyzer Sector:
Deborah Ripley, NIST

Software Working Group:
Charles Gardner, Suffolk Co., NY, Chairman
Steven Cook, CA
Wes Diggs, VA
Darrell Flocken, Mettler-Toledo
Frances Holland, Schlumberger Technologies
Dennis Krueger, NCR Corporation

Metrology Subcommittee
Danny Newcombe, ME, representing NEMAP
Ken Fraley, OK, representing SWAP

Between the Interim and the Annual Meetings, Chairman Malone made the following appointments:

To the Petroleum Subcommittee:
Larry Cunningham, Ethyl Corporation

To the Credentials Committee:
Cosmo Insalaco (filling in for Jack Kane who could not attend the Annual Meeting).

101-9 I Membership

As of June 30, 1998, the total membership of the NCWM was 3,375. The total number of members is up from the previous year by about 3 percent, following 2 years of declining numbers. The membership breakdown by category is as follows:

State	-	941 (28%)	Foreign Industry	-	39 (1%)
County	-	378 (11%)	U.S. Government	-	57 (2%)
City	-	196 (6%)	Foreign Government	-	30 (1%)
U.S. Industry	-	1,688 (50%)	State/local, not w&m	-	46 (1%)

The Committee plans to keeps this item on its agenda; however, it has asked the Administration and Public Affairs Committee to report to Executive each year on changes in membership figures and to be responsible for efforts to maintain and increase membership in the Conference in the future.

101-10 I Meetings, Annual and Interim, Future

1999 Interim Meeting
The 1999 Interim Meeting will be in Albuquerque, NM, at the Sheraton Old Town Hotel from January 31 to February 4.

1999 Annual Meeting
The meeting will be held July 25 to 29 at the Sheraton Burlington Hotel and Conference Center in Burlington, VT.

2000 Interim Meeting
The Conference Coordinator received one bid from a hotel in Maryland and plans to get bids from two additional hotels.

2000 Annual Meeting
At the 1998 Interim Meeting, the Conference Coordinator was asked to request proposals from hotels in Orlando, FL, which was the site recommended by the Southern Weights and Measures Association (SWMA). In light of the changes in the Conference, the Southern representatives on the Board of Directors requested that the SWMA revisit this issue at their regional meeting during the 1998 Annual Meeting. After its meeting, SWMA announced that it was changing its recommendation for the site of the Annual Meeting to Richmond, VA. The recommendation was approved by the Board of Directors.

2001 Interim Meeting
Cities in the Southeast are under consideration for this meeting.

2001 Annual Meeting
The Washington, DC, area was selected as the site of this meeting in honor of the NIST centennial celebration.

2002 Annual Meeting
This meeting is scheduled to be held at a site in the Central region. The Committee would appreciate recommendations from the Central Weights and Measures Association for a specific city to consider for the meeting.

2003 Annual Meeting
This meeting is scheduled to be held at a site in the Western region. The Committee would appreciate recommendations from the Western Weights and Measures Association for a specific city to consider for the meeting.

101-11 I Program, OWM and NIST

The NCWM Executive Secretary and Chief of the NIST Office of Weights and Measures (OWM), Dr. Gilbert M. Ugiansky, gave a status report on OWM and National Institute of Standards and Technology (NIST) activities. He said that OWM had hired Michael Munoz, a Computer Specialist, and had added two new staff members to its Device Technology Group: Richard Suiter, formerly with the Nebraska weights and measures program, and Thomas Ahrens, formerly with BYK-Gardner USA. Dr. Ugiansky said that OWM planned to hire a Technical Writer-Editor and another Trainer in the near future.

Dr. Ugiansky noted that Ray Kammer, whose nomination the NCWM supported, was appointed the new Director of NIST. He said that Mr. Kammer would come to the Interim Meeting and attend the luncheon for Committee members. Dr. Ugiansky announced that, in a show of support for the NCWM, Mr. Kammer had recently appointed Steve Malone, NCWM Chairman, to the NIST Visiting Committee on Advanced Technology. This Committee, which is the principal private sector advisor of the Institute, provides advice to NIST management on general policy, programs, budget, and organization.

Dr. Ugiansky also reported that he had had an opportunity to speak to Constance A. Morella, a member of the U.S. House of Representatives for Maryland's Eighth District, at a NIST function. He said that Mrs. Morella had expressed an interest in the history of the Office of Weights and Measures. At her request, Dr. Ugiansky sent Mrs. Morella a brief history of OWM and its relationship to NIST. He also sent her a copy of the latest weights and measures economic index that shows weights and measures laws and regulations impact commercial transations totalling over $4 trillion of the $7.5 trillion U.S. Gross Domestic Product (1996).

At the Annual Meeting, Dr. Ugiansky gave a status report on the NIST Office of Weights and Measures since the Interim Meeting. He announced that OWM had recently hired Jim Ross, formerly with the Oregon weights and measures program, to assist with the OWM training program and serve as a Technical Advisor to the NCWM Administration and Public Affairs Committee. Dr. Ugiansky also reported that NIST had agreed to pay for the accreditation of State metrology laboratories by a NACLA-approved accrediting organization.

101-12 I Program, International Organization of Legal Metrology

At the 1998 Interim Meeting, Dr. Sam Chappell, Chief of the NIST Standards Management Program, reported on U.S. participation in OIML standards development activities in legal metrology (see Appendix F for a copy of his report). Jim Truex, OH, described his participation in the Fourth Asia-Pacific Legal Metrology Forum (APLMF) and an APLMF OIML R76 Training Class, which were held September 29 to October 3, 1997, in Tsukuba, Japan (see Appendix F for a copy of his report).

The Executive Committee discussed possible ways to educate NCWM members about the activities of OIML and how to get copies of relevant OIML documents to members of the NCWM Standing Committees. OWM agreed to work with Dr. Chappell's office to get copies of the relevant documents for reference materials for use by the Standing Committees and National Type Evaluation Technical Committee Sectors.

The Executive Committee received an updated report from Dr. Chappell at the Annual Meeting. He mentioned that the training sessions conducted at the Fourth Asia-Pacific Legal Metrology Forum (APLMF) were very successful. Additional training is scheduled in Shanghai, China, for September 1998. Dr. Chappell said that the next meeting of the APLMF and the OIML was scheduled to be held in Seoul, South Korea, October 25-29, 1998, and that he would like a representative of the NCWM to attend the meeting. Dr. Chappell said that NIST would pay the expenses of the NCWM representative. Jim Truex will represent the Conference at both of these meetings.

101-13 I Canada's Marketplace Intervention Model

Sonia Roussy, Measurement Canada (MC), updated the Committee on the status of MC's development of a Marketplace Intervention Model for Trade Measurement. The purpose of the model is to enable MC to assess the extent to which intervention, to ensure equitable and accurate trade measurement of goods and services, is required in specific trade sectors in Canada. MC hopes the model will focus its limited resources on those areas where there is the greatest return to the Canadian taxpayer. It intends to use the model to help determine the most appropriate levels of intervention in each sector of the economy. Sectors identified using the model would then be further analyzed to determine: 1) the nature of their reliance on measurement and 2) the most appropriate form of MC intervention required to regulate measurement in the sector.

During the Interim Meeting, the Executive Committee asked Mrs. Roussy to make her presentation on the Intervention Model to the A&P Committee. After seeing the presentation, the A&P Committee invited Mrs. Roussy to give it at the 1998 Annual Meeting in July.

101-14 I Metrology Subcommittee Report

At the 1997 Annual Meeting, the Executive Committee reviewed a written report from the Metrology Subcommittee (see Appendix G). Two of the items in the Subcommittee's report addressed the need for additional resources. One concerned the need for funding to enable State metrology laboratories to have their primary standards of mass, length, and volume periodically recalibrated at NIST at no charge. The other dealt with a continuing need for funds to enable State laboratories to seek and maintain national accreditation.

The Executive Committee felt that the need for these funds could be addressed in the special funding initiative that OWM plans to develop (see Item 101-18 for more information). Consequently, the Committee agreed to ask the Metrology Subcommittee to prepare a detailed proposal that identifies the specific costs associated with having the primary State standards of mass, length, and volume periodically recalibrated at NIST.

At the 1998 Annual Meeting, the Metrology Subcommittee submitted a revised report to the Executive Committee. In their report, they mentioned that a draft of an appendix to NIST Handbook 105-1 covering "weight carts" had been developed and would be discussed at the Subcommittee's annual meeting. At the Executive Committee's Open Hearing, Sid Colbrook, IL, raised a question about whether the final proposal would go through the Conference for approval. The response from the Subcommittee was that the proposal would not go through the Conference for a vote; however, it would be circulated to all of the States for comment. The Executive Committee shares Mr. Colbrook's concern about the process of developing the 105 series of documents and would like the Subcommittee to come back with a report on how this process is handled.

101-15 I Product Studies Policy

Source: NCWM Associate Membership Committee (AMC)

Proposal: Develop a protocol for conducting national product studies coordinated by the National Institute of Standards and Technology Office of Weights and Measures (OWM) and carried out by the States.

Justification: A number of NCWM Associate Members expressed concerns about the way a 1997 Federal/State Milk Study was conducted and the way the results were handled. They believe that standard procedures should be in place to determine when such studies should be conducted.

Representatives of the AMC met with NCWM and OWM officials at the Western Weights and Measures Association Annual Meeting in September 1997 to discuss their concerns about the Milk Study. At that meeting, a first draft of a Weights and Measures National Product Evaluation Study Process for Problem Identification, Evaluation, Resolution, and Reporting was developed.

At the 1998 Interim Meeting, the Executive Committee met with AMC representatives to further discuss this issue. The Committee agreed that work should continue on the item. The AMC was asked to continue development of the procedures and present an update to the Committee at the Annual Meeting.

A meeting to discuss the Product Survey Protocol is scheduled for the afternoon of September 21 at the Sheraton Old Town Hotel in Albuquerque, NM, during the Western Weights and Measures Association Annual Meeting. A copy of the July 13, 1998, draft of the Protocol is provided in Appendix H.

101-16 I Approval of Information to be Presented at the General Session of the Annual Meeting

Source: Southern Weights and Measures Association (SWMA)

SWMA Resolution: "Resolved the Southern Weights and Measures Association feels that the General Session of the NCWM is not the appropriate forum to highlight any information that has a negative impact on any member or industry regulated by weights and measures officials unless that information has received prior approval by the NCWM Executive Committee."

The above resolution was initially adopted by the SWMA Board of Directors at the NCWM's 1997 Annual Meeting in Chicago as a result of concerns over references to the Federal/State Milk Study that were made at the Conference's General Session. The resolution was later adopted by the SWMA membership at their October 1997 meeting. A similar resolution was adopted by the Central Weights and Measures Association.

At the 1998 Interim Meeting, the Executive Committee discussed the resolutions. Members of the Committee appreciated receiving the comments of the regional groups and generally agreed with the principles expressed in them. They concluded, however, that no additional action was needed at this time because the NCWM Constitution and Bylaws adequately cover such situations and give the Executive Committee the authority to decide what will be presented at the Annual Meeting.

101-17 I Weights and Measures Enforcement and Emerging Issues

Source: Western Weights and Measures Association (WWMA)

Proposal: WWMA requests that the Executive Committee discuss adding to the NCWM Annual Meeting agenda in July 1998 a specific time period for discussion of urban weights and measures issues.

Justification: WWMA believes that the unique needs and impact of urban weights and measures programs continue to grow. WWMA members believe a forum within the NCWM framework would allow those jurisdictions to assist the entire Conference Membership. They noted that not all urban weights and measures issues are unique to the city environment. They feel that nonurban jurisdictions will gain from the dialogue and resulting solutions developed by urban interests.

In discussing this item during the 1998 Interim Meeting, members of the Executive Committee felt that the theme of urban issues should be expanded to cover weights and measures enforcement and emerging issues that were of national concern. The Committee asked that time be set aside at the Annual Meeting in July, during the time normally allocated for technical sessions, to discuss these issues. Members of WWMA were asked to work with the A&P Committee on the topics to be addressed during the session.

101-18 I Special Committee on Legislative Liaison, Status Report

Tom Geiler, Chairman of the NCWM's Special Committee on Legislative Liaison, gave a status report on the committee's activities to the Executive Committee at the Interim Meeting. Mr. Geiler said that he, David Smith, and Bill Corey had had a productive meeting with Kevin G. Curtin in the Washington, DC, firm of Byan Cave LLP in November 1997. Mr. Curtin advised them how to effectively communicate the NCWM's needs to Congress and how to identify the key individuals to contact.

Mr. Geiler asked the Executive Committee for guidance on specific needs that should be presented to Congress. After discussing various alternatives, the Committee decided to support the development of a new funding initiative at NIST. The initiative would address funding for a variety of weights and measures priorities including training, development of a national database, calibration of primary State standards, and participation in international legal metrology activities. Dr. Ugiansky will be working with the NCWM on a NIST initiative for the year 2000 budget cycle. The Executive Committee agreed that the Committee on Legislative Liaison should begin to lay the groundwork in Congress for approval of the initiative.

At the 1998 Annual Meeting, the Executive Committee received an updated report from Mr. Geiler. One of his recommendations to the Committee was that the NCWM develop an attractive and informative brochure that could be distributed to the public to inform them of the purposes and activities of the Conference. The Executive Committee agreed that such a brochure would be useful and suggested that the Associate Membership Committee might consider making some of their surplus funds available to develop a brochure.

The Executive Committee received a recommendation from the Scale Manufacturer's Association that the Legislative Liaison Committee expand beyond the Federal level to the State level. The Committee supports the expansion of the Legislative Liaison Committee's activities into State and local jurisdictions upon a jurisdiction's request.

101-19 W New NCWM Logo

(This item was withdrawn.)

At the Executive Committee's September 1997 Strategic Planning Meeting, it was suggested that the Conference might want to develop a new logo now that the Conference has incorporated. At the 1998 Interim Meeting, the Committee had planned to meet

with a representative of a design company to discuss plans to develop a new logo for the Conference; however, because of the full schedule of the Committee, work on this item was postponed. The Committee will take up consideration of a new logo in the near future.

At the 1998 NCWM Annual Meeting, the Committee decided to withdraw this item. The Committee may take this issue up at some future date after more pressing issues have been addressed.

Part II - NTEP Board of Governors

102-1 I U.S. - Canada Mutual Recognition of Type Evaluation Program Report

This item was carried over from Item 101-7 of the Report of the 79th NCWM, 1994, Item 102-2 of the Report of the 80th NCWM, 1995, Item 101-3 of the Report of the 81st NCWM, 1996, and Item 101-16 of the Report of the 82nd NCWM, 1997.

Tina Butcher, OWM, and Sonia Roussy, Measurement Canada (MC) reported on the status of this program at the 1998 Interim Meeting. They stated that the weighing program has been very successful and that it was expanded in 1997 to meet additional needs. Mrs. Roussy announced that MC's LPG testing facility was now available for use to conduct NTEP tests on Liquefied Petroleum Gas (LPG) meters. In addition, she said that MC would be interested in making its facilities available for tests of liquid-measuring devices.

It was decided that it would take a great deal of time and additional resources to establish a mutual recognition program for liquid-measuring devices. However, the NTEP Board of Governors and Canadian officials agreed to establish a pilot program in which Canada will perform NTEP testing on retail motor-fuel devices. An NTEP laboratory representative will assist Canada with the first test.

At the 1998 Annual Meeting, Dick Suiter, a representative of the NIST Office of Weights and Measures, announced that the pilot project for liquid-measuring devices was scheduled to begin in August 1998.

102-2 I OIML Certificate Project

This item was carried over from Item 102-6 of the Report of the 79th NCWM, 1994, Item 102-1 of the Report of the 80th NCWM, 1995, Item 102-1A of the Report of the 81st NCWM, 1996, and Item 102-1 of the Report of the 82nd NCWM, 1997.

At the 1997 Annual Meeting, Tina Butcher reported on plans for NTEP to begin issuing OIML Certificates for R76 Non-Automatic Weighing Instruments. She said that the Ohio and California laboratories were asked when they might be ready to begin offering R76 tests in addition to NTEP tests on a routine basis. Although both labs indicated a readiness from a technical standpoint to begin testing in the near future (OH and CA said they could be ready by September 1, 1997; OWM said it could complete the administrative preparations by Oct 1), some reservations were expressed about the additional work load and its impact on the current NTEP testing. (R76 tests are anticipated to double the length of time for the evaluation of the scale; this affects not only the scale being evaluated, but devices in line behind it in the OH and CA labs.) A particular area of concern for one lab is the development of R76-2 in an electronic form which would enable electronic entry of data from R76 tests; the lab noted that the paperwork requirements for manually completing this form were significant.

Mrs. Butcher said that OWM shared the labs' concerns about the impact of the additional workload, particularly because one NTEP lab was, at the time, accepting no new work until its backlog was eliminated and industry continued to express concern about the length of NTEP evaluations. In addition, she felt that participation of an NTEP representative in at least the U.S. National Working Group Meetings for R76 (and possible International Working Group Meetings) was essential. Mrs. Butcher made a series of recommendations to the BOG that were intended to keep the R76 project moving and minimize the impact on the program.

The BOG took the following actions on Mrs. Butcher's recommendations:

- Authorized the Chairman of the BOG to write Jim Truex, OH, and Steve Cook, CA, and request their participation in the R60 and R76 National Working Group Meetings respectively.

- Authorized the Chairman of the BOG to contact Sam Chappell of the OIML program at NIST and discuss the continued scheduling of National Working Group meetings in conjunction with other weights and measures meetings as much as possible.
- Authorized the Chairman of the BOG to ask for volunteers from industry to develop electronic data entry forms in the R76-2 format.
- Agreed to revisit this issue at the January 1998 Interim Meeting to discuss the status and impact of this project.

At the 1998 Interim Meeting, Mrs. Butcher reported that no one had volunteered to develop the software needed to electronically enter the R76-2 data. However, she said that Deborah Ripley of NIST had given her a copy of an electronic test report form for R76 data that OIML developed. Mrs. Butcher noted that, although this software does not do all of the required math, it is an electronic means of entering the data and would save the NTEP laboratories some time. She said that laboratories in other countries have developed more comprehensive software, which they would sell for about $3,000. Gil Ugiansky said that OWM would pay for a copy of the software.

Mrs. Butcher also reported that NTEP had received the first request to perform an R60 test on a load cell.

At the 1998 Annual Meeting, Dick Suiter told the Board of Governors that a letter announcing that NIST is ready to accept applications for OIML R76 Certificates had been mailed to manufacturers.

102-3 I Test Data Exchange Agreements

This item was carried over from Item 102-1B (Mutual Recognition) of the Report of the 81st NCWM, 1996, and Item 102-2 of the Report of the 82nd NCWM, 1997.

At the July 1997 Annual Meeting, the NTEP Board of Governors decided to pursue, as resources permit, an agreement between the NCWM and the Nederlands Meetinstituut (NMi) that would establish mutual recognition of tests performed on load cells in accordance with OIML Recommendation R60 as part of the process of issuing an OIML Certificate.

At the 1998 Interim Meeting, Mrs. Butcher indicated that no progress had been made on the NMi agreement; however, she said that, at NCWM's request, an international meeting had been planned for mid-April to discuss the principles of mutual recognition of type approval certificates and associated test reports. NCWM Chairman Steve Malone had requested the meeting because of concerns that the negotiations with NMi might take on the appearance of establishing exclusive agreements, which NCWM did not want.

The international meeting was held April 15 to 17, 1998, at the National Institute of Standards and Technology. Countries invited to attend included the following OIML member nations: Australia, Canada, China, France, Germany, Japan, the Netherlands, Russia, United Kingdom, and the United States. All countries attended with the exception of Russia, which provided input by correspondence. A representative of the International Bureau of Legal Metrology (BIML) also attended. Steve Malone, Barbara Bloch, Aves Thompson, and Jim Truex attended the meeting as representatives of NCWM.

Two key issues were identified during the meeting. The first issue was: *How would mutual confidence be achieved among participating countries' laboratories?* The following mechanisms for establishing mutual confidence among the participants were discussed: accreditation by a third party; peer review; exchange of information on national capability; exchange of test data; training of personnel; and intercomparisons. No conclusions were reached on which of these methods should be required; however, a work plan was devised to further explore some of these approaches. France and the United Kingdom agreed to draft criteria for the conduct of peer reviews for circulation among the participants, and Australia agreed to prepare a questionnaire to enable participants to uniformly report on their laboratory capabilities.

The second key issue identified was: *To what extent would "one-stop" testing be recognized (i.e., where one country is recognized to do another country's non-OIML tests in addition to OIML tests currently being performed)?* A consensus could not be reached at the meeting on the scope of testing recognized under the proposed agreement; however, the participants agreed to work toward the establishment of a non-legally binding agreement within the next year and a half. The first draft of a Mutual Agreement on OIML Pattern Evaluations was presented by the meeting convener and reviewed by the participants. Based on discussions at the meeting, a second draft was prepared by the Secretariat and distributed to participants for comments by May 31, 1998. Comments on the second draft were prepared by the NCWM and OWM U.S. participants and forwarded to Dr. Chappell.

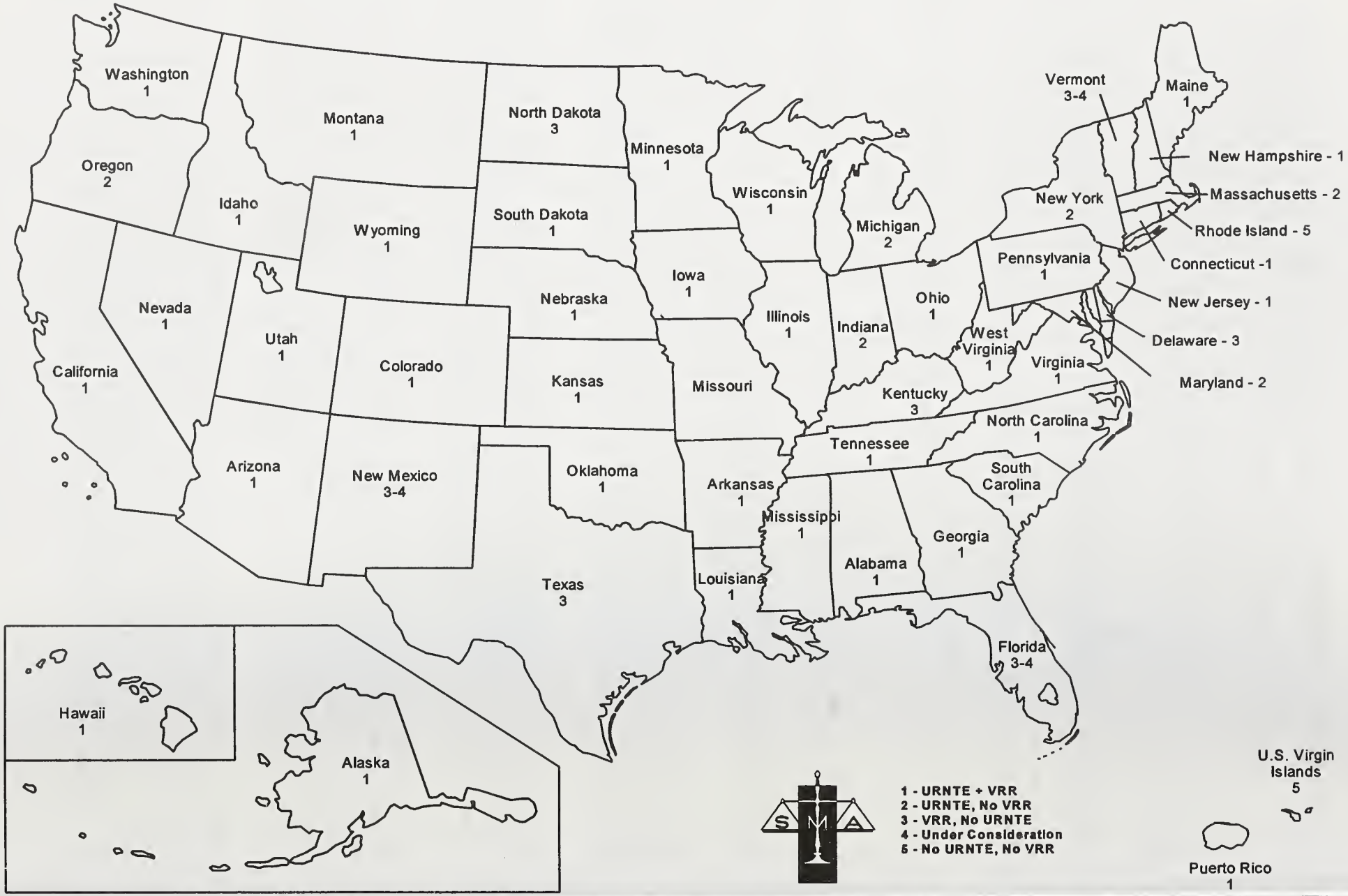
No specific date is set for the next meeting of the group; however, a target date of January 1999 was established.

102-4 I Adoption of Uniform Regulation for National Type Evaluation by the States

Daryl Tonini, Scale Manufacturers Association (SMA), updated the Board of Governors (BOG) on the status of SMA's drive to assist States to adopt the Uniform Regulation for National Type Evaluation (URNTE) and the Uniform Regulation for the Voluntary Registration of Servicepersons and Service Agencies (VRR). (See the map on the next page for the updated status of State adoption of the URNTE and VRR.)

Mr. Tonini announced that, at the regional weights and measures association meetings in 1998, SMA will again sponsor the Director's breakfasts which provide a forum for the discussion of NTEP issues. The BOG thanks SMA for its continued support.

At the 1998 Annual Meeting, Mr. Tonini provided an update on this item. He said that the State of Indiana has adopted the Uniform Regulation for National Type Evaluation; the new regulation goes into effect August 1, 1998.


Washington
1
Oregon
2
Montana
1
Idaho
1
Wyoming
1
North Dakota
3
South Dakota
1
Minnesota
1
Nebraska
1
Iowa
1
Wisconsin
1
Michigan
2
Illinois
1
Indiana
2
Ohio
1
Pennsylvania
1
New York
2
Vermont
3-4
Maine
1
New Hampshire - 1
Massachusetts - 2
Rhode Island - 5
Connecticut -1
New Jersey - 1
Delaware - 3
Maryland - 2
West
Virginia
1
Virginia
1
Kentucky
3
Tennessee
1
North Carolina
1
South
Carolina
1
Georgia
1
Florida
3-4
Alabama
1
Mississippi
1
Louisiana
1
Arkansas
1
Missouri
Oklahoma
1
Texas
3
Kansas
1
Colorado
1
New Mexico
3-4
Arizona
1
Utah
1
Nevada
1
California
1
Hawaii
1
Alaska
1
S
M
A
1 - URNTE + VRR
2 - URNTE, No VRR
3 - VRR, No URNTE
4 - Under Consideration
5 - No URNTE, No VRR
U.S. Virgin
Islands
5
Puerto Rico
1

102-5 V NTEP Policy: Separate CCs for Software

(This item was adopted.)

Recommendation:

1) Adopt the following as National Type Evaluation Program (NTEP) policy:

> **Software, regardless of its form, shall not be subject to evaluation for the purpose of receiving a separate, software Certificate of Conformance from the National Type Evaluation Program.**

2) Remove all of the "Software" categories from the index of NCWM Publication 5, NTEP Index of Device Evaluations.

3) Reclassify all existing "Software" CCs according to their applicable device categories.

Background: This item was carried over from Item 102-9 of the Report of the 80th NCWM, 1995; Item 102-5 of the Report of the 81st NCWM, 1996; and Item 102-4 of the Report of the 82nd NCWM, 1997.

In 1994, the Scale Manufacturers Association (SMA) asked the NTEP Board of Governors (BOG) to look at the issue of software as it applies to NTEP. SMA expressed concern over the NTEP policy of issuing separate CCs for software. In December 1994, a Working Group was established to address this issue.

The Working Group had its initial meeting in April 1995 and a second meeting during the 1995 Annual Meeting. At the 1996 Interim Meeting, Working Group Chairman Michael Adams of Fairbanks Scales said that the Group members supported NTEP's continuing to issue separate CCs for software. He stated that the Group believed that there was more to accomplish in areas such as revision of the type evaluation checklists to cover software, development of a definition for "metrologically significant software," and education; therefore, they recommended that the Work Group be continued through the next Interim Meeting.

The BOG agreed to continue the Working Group through the 1997 Interim Meeting so that members could complete their evaluations of NTEP checklists and make recommendations to the appropriate NTETC Sectors.

At the Annual Meeting of the Southern Weights and Measures Association (SWMA) in October 1996, the following proposal was adopted and forwarded to the NTEP BOG for consideration at the 1997 NCWM Interim Meeting:

> "Given the complexities of subjecting software associated with weighing and measuring devices to NTEP approval and the difficulties weights and measures field inspectors encounter in their field tests of such software, the Southern Weights and Measures Association requests a suspension of NTEP stand-alone software evaluation activities until the NCWM adopts an NTEP policy addressing the evaluation of software associated with weighing and measuring devices."

At the 1997 Interim Meeting, after considering the possible legal implications of halting the issuance of NTEP CCs for software and the demonstrated benefits of having software go through the NTEP process, the BOG decided to continue to permit NTEP to evaluate software. In addition, the BOG proposed the following recommendation for a vote of the NCWM membership at the 1997 Annual Meeting in July: "Continue to permit separate NTEP Certificates of Conformance to be issued for software for weighing or measuring devices."

At the Annual Meeting, the BOG decided to change the voting item on this issue to an information item because of a number of unresolved issues that were identified. The Board agreed to re-form the Software Working Group under its direction, and, in the interim, to ask the NTEP labs to evaluate any submissions of software as a part of a complete system to ensure compliance with Handbook 44 requirements. In addition, the evaluation was to include at least one field test.

After the Annual Meeting, NCWM Chairman Steve Malone appointed the following individuals to serve on a new Software Working Group (SWG): Charles Gardner, Suffolk Co., NY, Chairman; Steven Cook, CA; Wes Diggs, VA; Darrell Flocken, Mettler-Toledo; Frances Holland, Schlumberger Technologies; and Dennis Krueger, NCR Corporation. The SWG was asked

to advise the Executive Committee whether software, in any of its forms, should receive an NTEP Certificate of Conformance.

Chairman Gardner presented a status report on the SWG's activities at the 1998 Interim Meeting. He said that he had attended a meeting of Canada's software work group in early fall 1997 and had heard about Canada's problems with software. The first meeting of the SWG was held in Richmond, VA, in November 1997. Members of the SWG decided that they would concentrate on developing recommendations for the Executive Committee and would not develop checklists or implementation procedures. They also decided to have a public hearing on software at the 1998 Interim Meeting and to request comments from NCWM members in the Interim Meeting agenda.

The public hearing on software took place on January 14, 1998. A number of industry representatives and weights and measures officials provided comments. At the end of the hearing, the SWG announced that it would take additional written comments until February 14.

The SWG met in March 1998 to consider all of the comments received and to develop a recommendation for the Executive Committee. SWG members recommended that "...software, regardless of its form, shall not be subject to evaluation for the purpose of receiving a separate, software Certificate of Conformance from the National Type Evaluation Program." The SWG further recommended that the separate "Software" categories in the indexes of NCWM Publication 5, NTEP Index of Device Evaluations, be removed and that all existing "Software" Certificates be reclassified and listed according to their applicable device categories. The Executive Committee accepted the SWG's recommendations and is proposing them for adoption by the NCWM. If the recommendations are adopted, specific guidelines for implementing them will be developed by the NTEP BOG.

102-6 I NTEP Policy: Challenges to a Certificate of Conformance and Verification that Production Meets Type

One of the items on the National Type Evaluation Program (NTEP) Board of Governors' (BOG) agenda for the 81st NCWM in 1996 was 102-3, Verification that Production Meets Type, which had been carried over from the BOG's 1994 (Item 102-2) and 1995 (102-6B) reports. Although this item was eventually withdrawn because the specific proposal (involving in-plant inspections) was not acceptable to the Conference, the BOG noted that: ". . . verifying that production meets type remains an important issue before the Conference."

The issue was recently addressed by the NCWM Strategic Planning Work Group that is developing a long-term business plan for NTEP (NTEP Business Plan Work Group). Members of that group provided the ideas that are incorporated in the draft procedures contained in Appendix I. The purpose of the procedures is to: 1) address the issue of assuring that weighing and measuring devices produced for the marketplace are the same as the model or "type" of the device that was approved by NTEP and 2) resolve challenges to NTEP Certificates of Conformance. The procedures, which are intended to ultimately become part of National Conference on Weights and Measures (NCWM) Publication 14, NTEP Administrative Procedures, Technical Policy, Checklists, and Test Procedures, were published in the BOG's Interim Agenda for comment.

The BOG received a number of oral and written comments on this item prior to and at the 1998 Interim Meeting. Most of the comments generally supported some type of procedures to ensure that production meets type; however, some of the commentors expressed concerns about the specific procedures that were proposed. The NTEP Business Plan Work Group said it would meet in spring 1998 to analyze all of the comments received and begin preparing recommendations for the BOG.

At the 1998 Annual Meeting, Barbara Bloch reported that the NTEP Business Plan Work Group met May 3, 1998, at the Joint Annual Meeting of the Central and /Northeastern Weights and Measures Associations and discussed this item. She said the Group had considered an alternative proposal for verifying that production meets type (see Appendix I) because there appeared to be a lack of strong support for the proposal presented at the 1998 Interim Meeting. The new proposal would involve receiving feedback from the States at the initial verification stage in the U.S. legal metrology system; NTEP would review the reports received from the States and take action if warranted. The Group decided that it would be desirable to have industry comments on the approach to take to help ensure that production meets type. The Scale Manufacturers Association, the Gas Pump Manufacturers Association, and the Meter Manufacturers Association were asked to take the original proposal and the new proposal back to their respective organizations and develop proposals for consideration by the Work Group. They were asked to provide input by December 1, 1998. The production meets type issue will also be added to the agendas of the fall 1998 meetings of the NTETC Weighing and Measuring Sectors.

102-7 I NTEP Participating Laboratories and Evaluations Report

At the 1998 Interim Meeting, the BOG reviewed the 1997 NTEP Participating Laboratories report prepared by the NIST Office of Weights and Measures (OWM) (see Appendix J). According to the report, the number of applications for type evaluations and the number of Certificates of Conformance that became effective increased in 1997, and the number of certificates issued declined slightly. (Note: The number of certificates issued was artificially inflated in 1996 due to processing delays that occurred at the end of 1995 as a result of the Federal Government furlough and OWM's move to a new building.)

102-8 I NTETC Sector Reports

The BOG received reports from the following National Type Evaluation Technical Committee Sectors: Weighing, Belt Conveyor Scale, Measuring, Grain Moisture Meter, and Near Infrared Grain Analyzer. Copies of the reports are contained in Appendix K.

At the 1998 Annual Meeting, the BOG received a report on the March 1998 meetings of the Grain Moisture Meter and Near Infrared Grain Analyzer Sectors. Copies of the reports are contained in Appendix K.

102-9 V NTEP Policy: "One-of-a-Kind" Devices

(This item was adopted.)

Recommendation: Make the following changes to NCWM Publication 14 (items to be added are underlined and items to be deleted are ~~crossed out~~):

Add the following text to Administrative Procedures Section A. Definitions:

> **9. One-of-a-Kind Device**
>
> **A "one-of-a-kind" device is a (non-NTEP) device designed to meet unique demands for a specific installation and of a specific *design* which is not commercially available elsewhere (one such device per manufacturer).**

Modify Administrative Procedures Section J. "One-of-a-Kind" Devices as follows:

> **J. Policy on "One-of-a-Kind" Devices**
>
> **A State may accept the design of a one-of-a-kind device without an NTEP evaluation pending its own inspection and performance testing to satisfy itself that the device complies with Handbook 44 and is capable of performing within the Handbook 44 requirements for a reasonable period of time under normal conditions of use. Indicators and load cells in all "one-of-a-kind" scale installations must have an NTEP CC as evidence that the system meets the influence factor requirements of Handbook 44.**
>
> **If a device manufactured for sale by a company has been categorized and tested as a "one-of-a-kind" device and the manufacturer then decides to manufacture an additional device or devices, the device will no longer be considered a "one-of-a-kind." This also applies to a device that has been detremined to be a "one-of-a-kind" device by a weights and measures jurisdiction in one State and the manufacturer decides to manufacture and install ~~the~~ another device of that same type in another State. In this case, the manufacturer of the device must request an NTEP evaluation on the device through the normal application process, unless NTEP has already deemed that such evaluation will not be conducted. ~~Note that indicators and load cell in all "one-of-a-kind" installations must have an NTEP CC.~~**

Background: The Scale Manufacturers Association (SMA) requested that the NTEP Board of Governors revisit two things: 1) Item J. "One-of-a-Kind" Devices in the Administrative Policy and Procedures Section of NCWM Publication 14, Administrative Procedures, Technical Policy, Checklists, and Test Procedures, and 2) the January 3, 1991, letter from Henry Oppermann (who was then with the NIST Office of Weights and Measures) to State Directors. SMA believes that the Oppermann

letter allows "one of a kind" in the marketplace while Item J in Publication 14 allows "one of a kind" per manufacturer. SMA feels that clarification is required to the Directors or Publication 14 needs to be changed.

The relevant excerpts from the Oppermann letter and Publication 14 are:

> "One-of-a-Kind Devices (January 3, 1991, Oppermann letter)
>
> There are times when a scale manufacturer customizes a device to meet specific and unique needs of a customer. In these instances, the costs of an NTEP evaluation are not justified.
>
> Under the NTEP policy of one-of-a-kind device, if a company is customizing a scale design to meet unique demands for a specific installation and a scale design for the specific needs is not commercially available, then a State may accept the design of the scale without an NTEP evaluation pending its own inspection and performance testing to satisfy itself that the scale complies with Handbook 44 and is capable of performing within the Handbook 44 requirements for a reasonable period of time under normal conditions of use."
>
> "J. 'One-of-a-Kind' Devices (Publication 14)
>
> If a device manufactured for sale by a company has been categorized and tested as a "one-of-a-kind" device and the manufacturer then decides to manufacture an additional device or devices, the device will no longer be considered a "one-of-a-kind." This also applies to a device that has been determined to be a "one-of-a-kind" device by a weights and measures jurisdiction in one State and the manufacturer decides to manufacture and install the device in another State. In this case, the manufacturer of the device must request an NTEP evaluation on the device through the normal application process, unless NTEP has already deemed that such evaluation will not be conducted. Note that indicators and load cells in all "one-of-a-kind" installations must have an NTEP CC."

After the adoption of Item J in 1993, the NTEP BOG sent a memo to the States requesting that they communicate by fax with NTEP or use the NCWM computer bulletin board when they determine that a "one-of-a-kind" device is in place in their jurisdictions. This information could then be disseminated to other jurisdictions to determine if the NTEP policy on "one-of-a-kind" devices was being followed. NTEP has received some information from the States on "one-of-a-kind" devices; however, it is not known whether all States have been supplying this information.

In October 1997, SMA presented its request for a reconsideration of the NTEP policy on "one-of-a-kind" devices to the Southern Weights and Measures Association (SWMA) at its Annual Meeting. SWMA voted to support the definition of "one-of-a-kind" devices as printed in NCWM Publication 14.

At the 1998 Interim Meeting, Tina Butcher of OWM recommended some proposed changes to Publication 14 to clarify the NTEP policy on "one-of-a-kind" devices. The BOG believes that the changes will address the problems identified and has decided to propose them as a voting item.

102-10 I Additions and Revisions to the Definitions for Grain Moisture Meters in NCWM Publication 14

(This item was changed from a Voting Item to an Informational Item.)

Recommendation: Make the following changes to Publication 14 (proposed additions are underlined):

> **N. Status of Certificate of Conformance; Maintenance Fee**
> **<u>Except for Grain Moisture Meters,</u> <u>a</u> 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 <u>and Notified</u> 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 or Notified 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 that participation must result in the issuance of valid calibration constants without unresolved problems or deficiencies occurring during the OCP (Phase II) testing. Grain Moisture Meter Certificates may also be assigned an Active status if: (1) the original manufacturer no longer manufacturers or remanufacturers 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.

3. Notified Status
A Notified status is assigned to Grain Moisture Meter Certificates when unresolved problems or deficiencies occur during the OCP (Phase II). When a Certificate is assigned this status, a "Notice of Ongoing Calibration Evaluation Results" will be issued with the Certificate. The notice will describe the problems or deficiencies and the Certificate will designate the affected calibrations. Manufacturers of devices in this category must remain in the OCP (Phase II) actively working to correct the problems or deficiencies. Corrections must be made within two years of the date that the CC is assigned a Notified status. If problems or deficiencies are not corrected by that date, the Certificate will be withdrawn. Any meters manufactured after a Certificate is given a Notified status cannot be sold or placed into commercial service under a Notified certificate. Meters in service will be subject to individual State enforcement activities.

4. 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.

5. 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.

6. 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 problems or deficiencies occurring in the OCP (Phase II) are not resolved within 2 years of the date that a

Certificate is assigned a Notified status. 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.

7. 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).

A third party would be allowed to assume 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 re-manufactured. 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 re-manufactured, (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.

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.

Background: The National Type Evaluation Technical Committee Grain Moisture Meter Sector requested modifications to a portion of the Administrative Procedures of Publication 14 to address the unique treatment of Certificates of Conformance (CCs) for grain moisture meters. For example, unlike CCs for other NTEP devices, CCs for grain moisture meters automatically expire July 1. To maintain "Active" status, meters must remain in the NTEP ongoing calibration program and the CCs must be re-issued annually with valid calibration constants. The Grain Moisture Meter Status Matrix on the following page summarizes the impact of the proposed changes to the definitions in Publication 14. See Appendix L for an example of the "Notice of Ongoing Calibration Evaluation Results" that will be issued when a CC is given a "Notified" status.

At the 1998 Annual Meeting, Diane Lee of the NIST Office of Weights and Measures reported that the Grain Moisture Meter Sector, at its March 1998 meeting, had made a number of changes to its original proposal. Because of the extent of the changes and because of due process concerns, the BOG decided to change this item from a voting item to an informational item. The item will be carried over and placed on the 1999 agenda. The revised proposal will be published in the Agenda for the 1999 NCWM Interim Meeting.

S. Malone, Nebraska, Chairman

B. Bloch, California, Chairman of the NTEP Board of Governors
A. Thompson, Alaska, Chairman-Elect
J.A. Rogers, Virginia, Treasurer

C. Carroll, Massachusetts
B. DeSalvo, Ohio
M. Gray, Florida
S. Millay, Maine
L. Straub, Maryland
G. West, New Mexico

G. Ugiansky, NIST, Executive Secretary

Technical Advisors:
S. Roussy, Canada (Executive Committee only)
J. Koenig, NIST

Associate Member Representative:
R. Davis, Fort James Corporation

Executive Committee

Grain Moisture Meter Status Matrix

Situation at end of any year's OCP (Phase II) data analysis	**Manufacturer's Options**	**How CC is Affected**	**Further Actions**
Calibrations are in good standing & there is confidence in the results	pay all fees, continue in OCP, continue to manufacture	**Active Status** CC re-issued	
	pay all fees, continue in OCP, discontinue manufacture	**Active Status** CC re-issued	
	drop out of OCP, continue to manufacture	CC **Expired**	
	drop out of OCP, discontinue manufacture	CC **Expired**	New CC can be issued as **Active** if 3rd party assumes support within 1 year, otherwise the CC remains **Expired**
Unresolved Phase II calibration problems	pay all fees, continue in OCP	**Active Status** CC re-issued with problem calibrations marked "not available" ***(Corn, Hard Red Winter Wheat, & Soybean calibrations MUST be available***, and there must be confidence in the results of all calibrations listed as Active or Pending)	
		Notified Status CC issued (*no more than 2 years in succession*)	CC will be **Withdrawn** if problem not solved within 2 years
	drop out of OCP, continue to manufacture	CC is **Withdrawn**	
	drop out of OCP, discontinue manufacture	CC is **Withdrawn**	

Appendix A

Minutes of the NCWM, Inc., Planning Meeting on January 10, 1998

Purpose: To develop a consensus with regard to the direction of NCWM, Inc.

Present: NCWM, Inc., Executive Committee (Executive Secretary, Technical Advisors, and Gary West were not present), Simon Stapleton (NCWM Attorney), Jim Truex (OH), Sid Colbrook (IL), Bob Fuehne (Ralston Purina), Bill Corey (American Frozen Foods), Jackie Wollner (Nestle), Paul Zalon (Nestle), Chris Guay (Procter and Gamble), N. David Smith (NC), Tom Geiler (Barnstable, MA), Charlie Gardner (Suffolk County, NY), Frances Holland (Schlumberger)

Meeting summary: General discussion of the issues included preliminary information regarding the history of NCWM, Inc., management, and financial affairs. Questions and comments were encouraged in the following areas: direction of NCWM, Inc.; authority, duties, and responsibilities of the Board of Directors (Executive Committee); publication copyrights; employing staff directly versus contractual services; NIST technical support; Conference sponsorship; and associated issues.

Meeting participants strongly recommended that the Executive Committee take the following actions in the best interest of the future of NCWM, Inc.:

1) NCWM, Inc., take the necessary steps to ensure that NCWM, Inc., manages its own affairs.

2) With NCWM, Inc., managing its own affairs, the Executive Committee has the authority to make management decisions. Associate members explained that this was their position as long as the amended bylaws included an associate member on the NCWM, Inc., Board of Directors.

3) NCWM, Inc., should not hire employees directly that would be housed at NIST or elsewhere. Although the Fair Labor Standards Act (FLSA) prohibits this practice, opposition was based on a policy decision by the group and a preference for contractual services.

4) NCWM, Inc., should negotiate with an independent contractor for services. Participants indicated that management of contractor services was clearly the responsibility of the Executive Committee.

5) NCWM, Inc., should copyright Handbooks 44 and 130.

Appendix B

ARTICLES OF INCORPORATION OF NATIONAL CONFERENCE ON WEIGHTS AND MEASURES, INC.

The undersigned, pursuant to Chapter 10 of Title 13.1 of the Code of Virginia, state as follows:

1. Corporate Name

The name of the corporation is National Conference on Weights and Measures, Inc.

2. Corporate Type and Classes of Members

The corporation is a Virginia Nonstock Corporation and is to have the following classes of members: active, advisory, and associate.

Active Membership -active members are individuals in the employ of States, Commonwealths, Territories, or Possessions of the United States, their political subdivisions, the District of Columbia, or the Navajo Nation, who are actively engaged in the enforcement of weights and measures laws and regulations.
Active members shall be the only class of members entitled to vote.

Advisory Membership - advisory members are (1) representatives of agencies of the Federal Government, (2) representatives of State and local governments other than those involved in the enforcement of weights and measures laws and regulations (that is, other than active members designated above), (3) foreign government officials, and (4) retired persons who are interested in the objectives and activities of the Conference and who participate as individuals rather than as representatives of a particular industry or interest group.

Associate Membership - associate members are representatives of manufacturers, industry, business, and consumers; and other persons who are interested in the objectives and activities of the Conference and who do not qualify as Active or Advisory members.

Voting System

Active members shall be the only class of member entitled to vote at the annual meeting and any special meeting called by the corporation. Voting shall be by a formal recorded vote of the active members in accordance with the voting structures and procedures specified in the bylaws.

The active members shall be comprised of two separate and distinct Houses:

A. House of State Representatives

This body shall be comprised of Active members who are officially designated by their States. Each State shall authorize one official to serve as its representative in the House of Representatives. The State weights and measures director, or his or her designee (who may be a state or local government official), shall be the State representative.
The District of Columbia, the Navajo Nation, and the U.S. Commonwealths and Territories that have weights and measures programs similar to those of the States (that is those entities that have followed the uniform laws and regulations and have adopted Handbook 44) shall also designate one representative to the House of Representatives.

Method of Designation

Each representative shall be specified annually by the state to the Credentials Committee 30 days before the annual meeting. Accommodation may be made for exceptions to this deadline. An alternate should be named prior to the annual meeting in case the designated representative cannot attend.

B. House of Delegates

This body shall be comprised of Active members other than the state representative designated to the House of Representatives.

Minimum Votes

A. **House of State Representatives**

A quorum of 27 voting members is required. If 27 or more votes are cast in the House of State Representatives, a simple majority of the total votes cast is required for a motion to pass or be defeated.

B. **House of Delegates**

A quorum of 27 voting members is required. If 27 or more votes are cast in the House of Delegates, a simple majority of the total votes cast is required for a motion to pass or be defeated. Should a tie vote occur, or if the minimum votes in support or opposition are not cast, the issue is decided by the vote of the House of State Representatives.

Voting Rules

A. **Proxy Votes**

Proxy votes are not permitted

B. **Method**

All voting will be by a show of hands, standing vote, or machine (electronic). There shall be no voice voting. No abstentions are recorded.

C. **Timing**

Voting by both Houses is simultaneous.

D. **Recording**

The voting will be recorded in the minutes, whether an electronic system, show of hands, or standing vote is used.

Split Vote

When the two Houses split on a motion or the minimum number of votes supporting or opposing a motion is not obtained in the House of State Representatives, the motion is returned to the standing committee for further consideration.

The committee may drop the motion or reconsider it for submission the following year. The motion cannot be recalled for another vote at the same Annual Meeting.

Committee Reports

The method or methods for voting on committee reports shall be prescribed in the bylaws.

Corporate Procedures

The procedures for corporation officers and committees shall be prescribed in the bylaws. Procedures for changes to the corporation's structure and procedures shall be prescribed in the bylaws.

3. Corporate Officers

The directors of the corporation shall be elected at the annual meeting of the corporation by majority vote of the active members. Elected directors shall at a minimum consist of a Chairperson, a Chairperson-Elect and a Treasurer.

A. Eligibility:

(i) Any active member in good standing shall be eligible to hold any office provided that the individual meets the requirements set forth in the corporation's bylaws.
(ii) The Chairperson-Elect will be elected at the annual meeting one year prior to the term of service as Chairperson. After serving one year as Chairperson-Elect, the incumbent will succeed to the office of Chairperson.

B. Nominations

(i) The nominating committee shall be appointed in accordance with the provisions of the bylaws. The nominating committee submit one name for each elective office and present its recommendations as a slate to the members at the annual meeting.

(ii) Additional nominations for directors may be made from the floor at the annual meeting provided that prior consent of the nominee has been obtained in writing and presented to the presiding officer at the time of the nomination.

C. Elections

Directors shall be elected during the annual meeting by a formal recorded vote of the active members in attendance and eligible to vote.

4. Corporate Offices

A. The corporation's initial registered office address which is the business address of the initial registered agent is:
1279 Timberbranch Court, Charlottesville, Virginia 22902

B. The registered office is physically located in the County of Albemarle.

5. Registered Agent

A. The name of the corporation's initial registered agent is:
Simon J. Stapleton

B. The initial registered agent is a member of the Virginia State Bar

6. Corporate Objects

The object is to incorporate the existing not-for-profit association, known as "The National Conference on Weights and Measures", which receives sponsorship from the National Institute of Standards and Technology (NIST) under the authority of that portion of the Organic Act (U.S. Code, Title 15, Chapter 7, Section 272) authorizing the NIST to undertake "cooperation with the States in securing uniformity in weights and measures laws and methods of inspection."

The corporate objects are as follows:

A. **Forum.** To provide a national forum for the discussion of all questions related to weights and measures administration as carried on by officials of the Federal Government and regulatory officials of the States, Commonwealths, Territories, and Possessions of the United States, their political subdivisions, the District of Columbia, and the Navajo Nation.

B. **Mechanism**. To provide a mechanism to establish policy and coordinate activities within the corporation on matters of national and international significance pertaining to legal metrology.

C. **Consensus.** To develop a consensus on uniform laws and regulations, specifications, and tolerances for weighing and measuring devices, and on testing, enforcement, and administrative procedures.

D. **Uniformity**. To encourage and promote uniformity of requirements and methods among jurisdictions.

E. **Cooperation**. To foster cooperation among regulatory officers themselves and between them and all of the many manufacturing, industrial, business, and consumer interests affected by their official activities.

F. **Tax Exempt Status.** The National Conference on Weights and Measures is now a not-for-profit unincorporated association and the corporation will apply to the Internal Revenue Service to continue tax-exempt status under the Internal Revenue Code

7. Directors

The names and addresses of the initial directors are:

Steven A. Malone
NE Div. of Weights & Measures
Box 94757/301 Centennial Mall South
Lincoln, NE 68509-4757
Title: Chairman

Aves D.Thompson
AK Div. of Measurement Stds
12050 Industry Way Bldg. 0
Anchorage, AK 99515
Title: Chairman- Elect

8. Incorporator

J. Alan Rogers
VA Product & Industry Stds
P.O. Box 1163 Rm 402
Richmond, VA 23218
Title: Treasurer

_____
Signed: J. Alan Rogers

_____
Date

Appendix C

NCWM, Inc.

STRATEGIC PLAN

BUSINESS PLAN

THIRD DRAFT

January 1998

TABLE OF CONTENTS

FOREWORD

This report is a work in progress resulting from the efforts of the work group assigned the task of developing a business plan for the long-term operation of the National Conference on Weights and Measures.

This draft reflects work done during a September 1997 meeting of the Executive Committee and an October meeting with OWM, NIST Counsel, and the Chair, Chair-Elect, and the Treasurer of the NCWM, Inc.

Aves D. Thompson, AK, Work Group Chairman
Richard Davis, Fort James Corp.
Gary West, NM
Alan Rogers, VA
Gilbert Ugiansky, OWM, NIST

EXECUTIVE SUMMARY

The Constitution of the United States empowers Congress to ***"...fix the standard of weights and measures...."***

In an ongoing effort to ***"...fix the standard of weights and measures..."*** in the United States and to promote a uniform standard for weights and measures across the United States, the Office of Weights and Measures (OWM) was established in 1836 as a part of the Treasury Department. The National Bureau of Standards was established by Congress in 1901 with the OWM as one of the very core functions of the Bureau. In 1988, the National Bureau of Standards was renamed the National Institute of Standards and Technology, (NIST) with an expanded role in technological development.

In 1905, the Director of NIST called representatives of the weighing industry and directors of State Weights and Measures programs together. Since that first meeting, the National Conference of Weights and Measures (NCWM) has evolved from an annual forum to a year-round standards development organization. The NCWM is an organization of state and local weights and measures officials formed by NIST to promote uniformity in standards, laws and inspection methods to provide maximum public protection through an equitable marketplace. The NCWM is a national professional organization that develops consensus standards in such areas as weighing and measuring device regulation, commodity regulation, motor-fuel quality, and administration of regulatory weights and measures programs. Regulatory weights and measures activities are aimed at maintaining equity in the marketplace so that businesses can compete fairly and buyers and sellers can make informed decisions in trade. The primary function of State and local weights and measures regulators is to maintain equity in the marketplace by ensuring that trade measurements are accurate.

Because of its role as the ultimate authority in the United States on fundamental measurements and standards, NIST through OWM plays a critical role in achieving uniformity of weights and measures standards in the United States.

The Constitution of the National Conference on Weights and Measures states in Article I:

> ***"This Association shall be known as 'The National Conference on Weights and Measures' and is sponsored by the National Institute of Standards and Technology (NIST) under the authority of that portion of the Organic Act (U.S. Code, Title 15, Chapter 7, Section 272) authorizing the NIST to undertake 'cooperation with States in securing uniformity in weights and measures laws and methods of inspection.' "***

OWM, NIST provides administrative support and the secretariat to the Conference but more importantly provides the technical support to the various committees of the Conference in dealing with complex technical issues concerning measurement systems, measuring devices, packaging and production issues, methods of sale, education and training delivery systems for government and industry.

Of the more than 3,000 members of the NCWM, nearly 50 percent are representatives of industry. Through their participation in the NCWM, industry has direct involvement in the development of the issues prior to action by the NCWM.

Weights and Measures administration and enforcement in the United States falls within the jurisdiction of over 700 individual State, local, and territorial government units. State and local governments depend on the support of OWM/ NIST in the execution of their responsibilities. Support from NIST comes in the form of training for State and local weights and measures officials and technical support to the many weights and measures jurisdictions throughout the country.

The Conference operates the National Type Evaluation Program (NTEP) with six participating laboratories to evaluate new measuring device design against national performance standards. OWM/ NIST provides administrative and technical support for the National Type Evaluation Program (NTEP) of the NCWM. This program makes it possible for U.S. manufacturers of commercial weighing and measuring equipment to receive approval of new equipment from one source rather than having to go to each individual state for approval. NIST laboratories participate in some of the NTEP tests because NIST has some specialized equipment that the participating NTEP state laboratories do not have. NIST and NCWM have recently established a mutual recognition program with Canada that makes it possible for U.S. and Canadian manufacturers of certain types of weighing devices to have their devices tested once in either Canada or the United States for approval in both countries. This has resulted in the reduction of non-tariff trade barriers to promote the intentions of the North American Free Trade Agreement (NAFTA).

It is estimated that sales of products by weight or measure in the United States total over **4.13 trillion dollars annually** or 54.5 percent of the U.S. Gross Domestic Product. This is an enormous impact. To a very large extent, consumers assume that they are getting what they pay for. A strong viable weights and measures program in the United States assures the consumers'

continued confidence in our marketplace. Both buyer and seller can have a reasonable assurance that quantities declared are quantities delivered.

The purpose of this business plan is to begin to make recommendations concerning the long range business operation of the Conference.

ORGANIZATION

The NCWM is a standards development organization. Because of constantly evolving technologies (such as computer-interfaced supermarket checkout scales and in-motion systems used to weigh railroad cars) and new marketing practices such as "cash-discounts," "warehouse stores," "buyers' clubs," the NCWM continuously reviews and updates its standards. This is accomplished annually through a feedback process involving regulated businesses and the officials who enforce the standards in the field. The NCWM is organized into the following committees:

Standing Committees

Executive Committee
The role of the Executive Committee will significantly change with the incorporation of the Conference. The new Board of Directors, when approved by the Conference membership, will be the policy-making and coordinating body for the Conference with responsibility for the overall operation of the NCWM, Inc. The make-up of the Board is detailed in the proposed changes to the Constitution and Bylaws and includes both regulatory officials and associate members of the Conference. The present Executive Committee also serves as the Board of Governors for the National Type Evaluation Program. The composition of the Board of Governor's will be subject to the recommendation of the NTEP Work Group.

Specifications and Tolerances (S&T) Committee
The S&T Committee addresses specifications, tolerances, and technical requirements relating to commercial weighing and measuring devices, including interpretation and development of standards and testing equipment for weights and measures officials, and procedures for testing commercial equipment. The main product of the S&T Committee is NIST Handbook 44, "Specifications, Tolerances and Other Technical Requirements for Weighing and Measuring Devices."

Laws and Regulations (L&R) Committee

The L&R Committee is responsible for development and interpretation of uniform laws and regulations, and commodity inspection and regulation standards. Products of the L&R Committee include NIST Handbook 130, "Uniform Laws and Regulations," and NIST Handbook 133, "Checking the Net Contents of Packaged Goods." Handbook 130 includes a variety of recommendations for adoption by the States in the areas of legal metrology, including motor-fuel quality. Standards for checking the net contents of packaged items including food, drugs, cosmetics, and other common packaged items available in the office supply stores, hardware stores, discount houses, farm stores, and other non-food retail and wholesale businesses are contained in Handbook 133. The L&R Committee also addresses such current issues as the impact of the Nutrition Labeling and Education Act and product moisture loss and oversees the Petroleum Subcommittee and the Metric Working Group.

Administration and Public Affairs (A&P) Committee

The A&P Committee administers NCWM programs dealing with the education and training of weights and measures officials and industry personnel, addresses consumer affairs and safety issues, and promotes weights and measures principles among the general public. The A&P Committee develops and maintains a series of training modules on inspecting and testing of devices, package-checking, and weights and measures administration.

Other Committees

Special Purpose Committees
Special purpose committees are formed by appointment by the Conference Chairman to perform a specific function and are usually of 1- year duration. The Associate Membership Committee is an ongoing committee representing the Associate Membership of the Conference.

- **Nominating Committee**
- **Resolutions Committee**

- **Auditing Committee - The role of the auditing committee becomes more important with the incorporation. It may be desirable to make this committee a subset of the Board of Directors.**
- **Associate Membership Committee**
- **Budget Review Committee**
- **Credentials Committee**

Special Committees, Task Forces, and Study Groups
At times when it is desirable to identify and develop a particularly difficult or complex issue, the Conference Chairman may appoint a Special Committee, a Task Force, or Study Group.

The duties of the committees are described in the Bylaws of the NCWM.

MISSION

The National Conference on Weights and Measures is a measurement standards development organization comprised of individuals and associations representing government, industry and consumer interests. The Conference provides a forum to promote uniformity in Weights and Measures Laws, standards and practices to foster a fair and equitable marketplace for anyone involved in buying and selling goods or services by weight, measure, or count.

VISION

The National Conference on Weights and Measures will be the national and international leader in measurement standards development and legal metrology training. The Conference will be the focus for collection, retrieval, and dissemination of information related to weights and measures.

VALUES

The National Conference on Weights and Measures is dedicated to a fair and equitable marketplace free from trade barriers and is committed to maintaining the highest ethical standards. The National Conference on Weights and Measures stands for leadership in weights and measures issues, quality service to its members, and quality weights and measures education. The Conference is dedicated to providing a forum for all points of view and to ensuring open communications.

GOALS

Enhance the National Conference on Weights and Measures as a national and international resource for measurement standards development.

Provide uniform training programs for industry and government individuals involved in legal metrology.

Continue to develop new or alternative methods for improved delivery of weights and measures programs.

Continue to expand the Conference role in national and international legal metrology.

WORK GROUP OBJECTIVE FOR GOAL I

TO DEVELOP A LONG TERM BUSINESS PLAN FOR CONFERENCE OPERATIONS

NCWM Strategic Plan, Business Plan, Short List of Action Items

No.	Brief Description	First Draft Due	Completion Date	Assigned To:
1.	**Develop** and implement plan to arrange and conduct NCWM meetings by July 1999. Update meeting planning checklist by July 1997.	4-15-97	7-97 7-99	Gil
2.	**Plan** interim and annual meeting by city and site by January 1998.	4-15-97	1-98	Gil, Exec Comm
3.	**Examine** budget to put NCWM on a sound financial basis.	4-15-97	1-98	Alan, BRComm
4.	**Determine** continued level of participation in international standards development organizations. (OIML, APLMF, APEC)	4-15-97	1-98	Gil, Aves
5.	**Determine** continued level of participation and liaison with other standards writing organizations e.g., ASTM, API, NCSL, etc.	4-15-97	1-98	Rich
6.	**Provide** ongoing liaison to related associations; e.g., SMA, NISA, GPMA, FMI, ISWM, APL, NCSL, etc.	4-15-97	1-98	Rich
7.	**Identify** NCWM role in interaction with State Laboratory Program (Accreditation) by July 1997.	4-15-97	7-97	Gil
8.	**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	7-99	Gary
9.	**Identify** the need for OWM technical support and guidance for NCWM standing committees and work groups.	4-15-97	7-99	Gary
10.	**Identify** the role of the NCWM in providing technical support and guidance to Regional Associations and State and local jurisdictions.	4-15-97	7-97	Gary
11.	**Evaluate** the structure, terms of office, and make up of the Executive Committee and the Board of Governors. Evaluation should include all committees.	4-15-97	7-97	Aves
12.	**Seek** ways to improve and streamline the Conference voting procedures.	4-15-97	7-98	Aves

Summary of Recommendations

I. Strategy I, Conduct of Meetings

OWM staff is working to update a check list and policy guidelines for meeting planning no later than the January 1998 Interim Meeting.

II. Strategy II, Organization and Resources

Organizational Recommendations:

The Conference was incorporated in August 1997.

The Conference should continue its efforts to more clearly define the relationship between NIST, OWM and NCWM through a "1525 MOU." The Memorandum of Understanding (MOU) is a document that specifies the interaction between the NCWM and OWM. Progress has been made but work is not complete.

Liability insurance should be obtained to cover the exposure from Conference activities and particularly NTEP activities.

The Conference should carefully explore any future employee relationships taking care to clearly distinguish between employees and contractors.

Resources Recommendations:

The Conference should consider all revenue enhancement opportunities. The NCWM, Inc. should proceed deliberately, yet cautiously to copyright all possible Conference documents.

The Conference should proceed with an outside financial audit as well as an administrative audit to ensure that adequate expenditure controls are in place. After solicitation, an auditor has been selected and work will begin in February to complete the financial audit prior to July 1998.

The Budget Review Committee should continue in its present role at least until the organizational issues are resolved.

The Budget Review Committee, in conjunction with the Executive Secretary and the Treasurer, should begin to explore alternative budget cycles with the intent of improving the long range financial planning of the Conference.

The proposed budget for the upcoming year should be published as an informational item in the Annual Meeting Announcement Book.

III. Strategy III, Participation & Liaison with Other Organizations

The Conference should continue the current level of membership in standards-writing associations. A current list of memberships is being compiled to set a base line for continued participation.

Members who belong to individual standard body committees should be encouraged to circulate, to the appropriate Standing Committee Chair, any standard being written, re-approved, or changed which might have an effect on a Conference document.

The Conference should continue to support the cost of attending SMA conferences twice per year by no more than two individuals.

It is recommended that the Standing Committee Chairs attend or have one of the their committee members attend the meetings of GPMA, MMA, and ICPL.

As time and resources permit, the Conference should, over the next 1 to 3 years, expand the official liaison with industry organizations such as FMI, GMA, etc.

Strategy IV, NCWM Interaction with OWM State Laboratory Program

No recommendations at this time.

Strategy V, Standing Committees, Regional Associations, State and Local Jurisdictions
Standing Committee Support

1. The Conference should request that OWM continue the current level of technical support and guidance for NCWM standing committees and work groups. The level of support should be specifically identified in the "1525 MOU."

2. The Conference should request that OWM should continue to provide S&T and L&R technical advisors at each Regional Association annual meeting.

3. The Conference should request that OWM provide the resources for a conference coordinator to encourage continuity of meetings. This recommendation is withdrawn pending full discussion at the Interim Meeting in January 1998.

Regional, State, and Local Support

1. The Conference and OWM should continue to sponsor instructor training courses to help ensure uniformity of inspection procedures among the jurisdictions.
2. The Conference and OWM should make updated training and reference materials a high priority reflecting changes adopted by the NCWM.
3. The NCWM Chairman and the Chairman-Elect should attend the four Regional Association Annual Meetings.
4. NCWM Standing Committee chairmen and other Conference officials should attend the Regional Association Annual Meetings on behalf of the NCWM only when warranted by the agenda with approval of the NCWM Executive Committee.

Strategy I, Conduct of Meetings, Action Items 1, 2, 12

OWM staff is working on updating the meeting planning checklist along with other information pertaining to meeting and membership matters. Recommendations will be presented at the 1998 Interim Meeting.

Proposals to amend the Constitution and Bylaws address the issue of Conference voting methods. All classes of membership should be afforded the right to vote on issues concerning the business of NCWM, Inc. Voting rights on technical issues should be limited to the Active Members (regulators).

Strategy II, Organization and Resources, Action Items 3 & 11

Organization

The question of **incorporation** was addressed by Alan Rogers. He sought legal advice on the pros and cons of incorporation. After discussing the issue with the Chairman and the Chairman-Elect, it was determined prudent to engage the services of Simon Stapleton, Attorney, to help guide us through some of these difficult issues. Mr. Stapleton completed the incorporation process in early September 1997.

At a June 6, 1997, strategic planning meeting in Alexandria, VA, Simon Stapleton recommended incorporation. This form of organization provides a level of security for the officers of the Conference, as well as some protection from liability claims against the Conference or its officers. This becomes particularly important when dealing with NTEP issues. At an October meeting with the Conference Chairman, Chairman-Elect, Treasurer, the Chief of OWM, the Executive Committee Technical Advisor, and NIST Attorney, Michael Rubin, a **Memorandum of Understanding** under Paragraph 1525 of Title 15, USC, was discussed to more clearly define the relationship between NIST, OWM, and the NCWM. Some progress has been made, but there is still work to be done on this document. There was also a discussion of **liability insurance** for the Conference and its officers. The Treasurer was directed to seek quotes for the necessary level of insurance.

There was a discussion concerning Dr. Heydemann's desire to shift meeting planning and membership responsibilities from NIST employees to **contract or other employees** funded by the Conference. NIST is planning to give the Conference a grant to cover part of the costs of a full-time membership services contractor and all of the costs of a part-time contractor to perform the Conference planning activities for at least the next 2 years to allow the Conference the time to develop the resources to fund these activities. It was suggested in the discussion that this is the time for NCWM to consider hiring its own employees which may include an Executive Director. The employee decisions need thorough discussion. It is recommended that this be the subject of further discussion.

Recommendations:

1. **The Conference incorporated in August 1997.**
2. **The Conference should continue its efforts to more clearly define the relationship between NIST, OWM, and NCWM through a "1525 MOU."**
3. **Liability insurance should be obtained to cover the exposure from Conference activities and particularly NTEP activities.**
4. **The Conference should carefully explore any future employee relationships.**

There needs to be further study concerning the issue of an Executive Committee that sits as the Board of Governors (BOG) for NTEP. It may be desirable to consider two separate groups with an emphasis on the qualifications of the members of the BOG. This issue is addressed, in part, in the proposed changes to the Constitution and Bylaws. It is recommended that input be requested from the NTEP Working Group.

Resources

For the past several years, **expenses have exceeded revenue**. The Conference bank balance has been sufficient to support deficit spending. At the current rate, we will run out of money in 3 to 4 years. In order to continue a strong viable Conference, we need to increase membership, increase our revenue or reduce our expenses. One of the ways to increase revenue is to **increase membership fees**. Although the Conference membership fees are low, low fees are an incentive to some jurisdictions who do not think they could afford a higher fee. Other methods of revenue enhancement include **increasing meeting registration fees** to a level that will at least pay for the annual and interim meetings. **Publication sales** are a source of increased revenue. Extensive discussions have occurred concerning the copyrighting of NCWM, Inc., documents. The objective is to protect Conference documents so that the Conference can realize revenue from the sale of those documents. There is agreement that certain of the handbooks are clearly a product of the Conference and can be copyrighted. It is recommended that copyright be pursued deliberately yet cautiously. A thorough and critical review of all of our expenses should be initiated by the Budget Review Committee.

Expenditure management and control seems to be shifting from the Executive Secretary to the Treasurer thereby increasing the workload of the Treasurer. There seems to be adequate management and control of expenditures, however, it is desirable to conduct a financial audit of the Conference. With incorporation, outside audits may be required and are recommended as stated earlier.

The **Budget Review Committee** presently reviews the proposed budget and makes recommendations to the Executive Committee. In the event of incorporation, this responsibility may be shifted to a Board of Directors or some other such group. The oversight and review is a necessary part of the budget process.

Budgeting seems to be a process where last year's budget is compared with this year's proposal and if the numbers balance, we proceed. There is little in terms of long range budgeting. The Conference needs to consider a longer term budget, i.e. bi-annual. This will provide an opportunity to better plan activities. The budget process needs to involve the standing committees to the extent that the standing committees present budget proposals to the Executive Committee to cover their anticipated operational expenses for the upcoming budget period. Each committee will be expected to live within its budget. Contingency planning needs to be part of the budget process. The acquisition of adequate liability insurance is a major step in contingency planning.

Recommendations:

1. **The Conference should consider all of the above mentioned revenue enhancement opportunities.**
2. **The Conference should proceed with a financial audit as well as an administrative audit to ensure that adequate expenditure controls are in place. The financial audit should be completed prior to the July 1998 Annual Meeting.**
3. **The Budget Review Committee should continue in its present role at least until the organizational issues are resolved.**

4. **The Budget Review Committee in conjunction with the Executive Secretary and the Treasurer should begin to explore alternative budget cycles with the intent of improving the long range financial planning of the Conference.**

Strategy III, Participation & liaison with other standards development organizations and trade associations, Action Items 4,5,6.

International Organizations
The Executive Committee needs to review and act on the recommendations made in the 81St Annual Meeting Executive Committee Report, Appendix C, concerning participation in international organizations.

Standards Writing Organizations
There are many organizations involved in writing standards, but none of them have missions such as NCWM. Many, if not all of them, are voluntary consensus standards writing bodies. They are developing standards for the production of accurate and reproducible data. These standards are then used by all types of organizations for developing business strategies, quality control data, or compliance/enforcement data. Some of these organizations are ASTM, NCSL, API, ASQC, ANSI, and European organizations such as CEN.

In any area where the Conference references a consensus standard as the acceptable standard for gathering data in a compliance/enforcement arena, the Conference must stay informed as to potential or suggested changes to those procedures or standards. In many cases, the standards are required to be reviewed, and changed if necessary, every few years (at ASTM, it is every 5 years). Since these changes could affect the ultimate enforcement capabilities, NCWM needs to be a knowledgeable player.

The cost of being a knowledgeable player in these organizations can be the cost of membership which is normally relatively low. It can also include cost of travel and attendance at meetings but does not necessarily have to entail that degree of expense. As an example, those who have membership in ASTM can, for one membership fee, be a participating member in many different committees. The only requirement is that you must return ballots by their due dates even if it means casting a vote of abstention. This is often done on items which have little or no interest to you or your organization.

NIST personnel involved with the Conference currently have membership on the following committees:

1. Committee D02 - Petroleum Products and Lubricants (Tina)
2. Committee E28 - Mechanical Testing (Ken)
3. Committee E36 - Laboratory Accreditation (Diane)
4. Committee E41 - Laboratory Apparatus (Georgia)
5. Committee G1 - Corrosion of Metals (Gil)
6. There is also active participation in NCSL (Georgia) in laboratory design.
7. Georgia is on the mailing list of API and, therefore, gets information from them.
8. Georgia is also a member of ASQC in the Measurement Quality Division.

Recommendations
1. **The Conference should continue the current level of membership in standards writing associations.** There is no recommendation for increased activity with these organizations unless somewhere in our handbooks we reference, as an enforcement tool, a standard which is not covered by any of the above listed committees. A search should be made by OWM personnel of all the NCWM handbooks to locate any references to voluntary consensus standards such as ASTM.
2. **Members who belong to individual standard body committees should be encouraged to circulate, to the appropriate Standing Committee Chairman, any standard being written, re-approved, or changed which might have an effect on a Conference document.** The Chairman of the Standing Committee would have the responsibility for consulting with the committee members to determine what, if anything, should be communicated back to the standard writing organization. The voting time on these standards would not normally permit discussion at a Conference meeting prior to any final voting position by NIST.

Trade or other related associations
Currently, the only formal level of support being generated by the Conference is the coverage of cost for the Chairman, Chairman-Elect, and sometimes Chairman of the S&T Committee to attend SMA meetings twice per year. Since the SMA meetings are held at different times and sites than the National Conference, it is difficult for Conference members to attend their meetings. In order to avoid any conflicts of interest or the appearance of inappropriate funding, the Conference probably has no choice but to cover that expense if the Conference feels it is important for the Conference members to officially attend.

Input from several associate members has generated the following recommendations which will not increase cost to the Conference, but could potentially increase benefits with a limited amount of time commitments.

Recommendations
1. **The Conference should continue to support the cost of attending SMA conferences twice per year by no more than two individuals.** One of those individuals would be either the Conference Chairman or, in his/her absence, the Conference Chairman-Elect. The other individual would be the Chairman of the S&T Committee or, in his/her absence, the individual next in line to become the Chairman of the S&T Committee. The reason for this position is that it is important to be able to discuss both policy and technical issues of importance to the organization such as SMA. The Conference Chairman or Chairman-Elect would be able to represent positions on policy issues and the S&T Chairman or Chairman-Elect could deal with appropriate technical issues.
2. Since organizations such as GPMA, MMA, and ICPL hold meetings during the interim and annual time slot and discuss issues of importance to the Conference, **it is recommended that the Standing Committee Chairs attend or have one of their committee members attend these meetings** to provide a better in-depth understanding and liaison with these industry organizations and the Conference. The L&R Chairman should attend ICPL meetings, the S&T Chair or representative should attend GPMA meetings, and S&T should also attend the MMA meetings.
3. **The Conference should over the next three years, expand the official liaison with industry organizations.** Organizations where official representation might be beneficial would be at meetings conducted by FMI, GMA, etc. Those organizations which would benefit from this type of liaison would be best generated through the Associate Membership Committee. The Executive Committee should request that the item be discussed at the next Associate Membership Committee for input to the Executive Committee.

Strategy IV, NCWM interaction with OWM State Lab Program, Action Item 7.

Gil Ugiansky, Chief, OWM, informs the Conference that a method of funding NVLAP accreditation's has been proposed by Dr. Heydemann. The specifics have not been developed but are expected to be forthcoming.

Strategy V, Support for Conference Standing Committees, Regional Associations and State and Local Jurisdictions, Action Items 8,9,10.

Standing Committees
A. Identify current level of support
- OWM annual budget approximately $2,000,000.
- Of OWM's 15 full-time staff positions, 10 staff serve in 11 technical advisory or guidance positions to the four NCWM standing committees and two work groups:
  - Executive Committee and NTEP Board of Governors - one technical advisor, three guidance.
  - Laws & Regulations Committee - two technical advisors
  - Specifications & Tolerances Committee - two technical advisors
  - Administration & Public Affairs Committee - one technical advisor
  - Handbook 133 Work Group - one technical advisor
  - Program Evaluation Work Group - one technical advisor
  - Support/guidance activities provided by OWM staff include planning, arranging, and conducting NCWM meetings; preparing meeting agendas, minutes, reports, and materials; researching and developing committee issues, providing technical expertise to committees and work groups, arranging presentations on committee and work group agenda items; balloting committee members; coordinating the development and/or publication of handbooks and documents, and coordinating and conducting national surveys.
  - OWM Technical Advisors regularly attend Regional Association meetings held in conjunction with NTETC Sector meetings. OWM Technical Advisors attend the other Regional Association meetings on an infrequent basis.
  - Assigned OWM Technical Advisors attend meetings of their respective work groups.

B. Prioritized needs

- Availability of technical advisors during NCWM annual and interim meetings for each of the standing committees and each meeting of the work groups.
- Current support activities and new support activities as needed to respond to changes/needs in the marketplace.
- Coordination of NCWM meetings.
- Availability of technical advisors at Regional Association annual meetings.

C. Determine Costs, benefits, time commitments

- Fifteen full-time OWM staff devote 95 percent plus of their time on activities related to NCWM and NTEP. (Percent of time and associated costs expended in providing technical support and guidance to NCWM Standing Committees and work groups to be determined.)
- OWM staff guidance provided to standing committees and work groups essential in dealing with the technical aspect of issues.
- OWM serves as a central communication point for national weights and measures issues.
- Success of NCWM meetings is highly dependent of OWM staff.
- OWM Technical Advisors provide valuable assistance to Regional Association standing committees in developing the association's position on issues to be forwarded to the NCWM. A consensus among the Regional Associations on issues before the NCWM standing committees helps the standing committees in finalizing a recommendation for action by the NCWM.

Recommendations

1. **The Conference should request that OWM continue the current level of technical support and guidance for NCWM standing committees and work groups as will be specified in the "1525 MOU."**
2. **The Conference should request that OWM increase the level of participation of technical advisors at the Regional Association annual meetings.**
3. **The Conference should request that OWM provide the resources for a conference coordinator to encourage continuity of meetings. This recommendation is withdrawn, and no recommendation will be made until full discussion has occurred at the Interim Meeting in January 1998.**

Regional Associations and State and Local Jurisdictions

A. Identify current level of support.

- NCWM Chairman and Chairman-Elect attend annual meeting of each of the four Regional Associations.
- NCWM Standing Committee members attend Regional Association meetings as agendas warrant (infrequent).
- NCWM not represented in an official capacity at the State or local (city, county) jurisdiction level.
- Publications, Handbooks, pamphlets and brochures available through NCWM.
- NCWM sponsored training courses and materials.

B. Prioritized needs

- Sponsorship of training courses and materials.
- Development and maintenance of publications.
- NCWM attendance at Regional Association Annual Meetings.

C. Determine costs, benefits, time commitments

- NCWM Chairman and Chairman-Elect attendance at Regional Association meetings.
- NCWM pays expenses, except for attendance at "home" regional meeting; averaging $1,200/Individual/meeting.
- Chairman addresses the Association providing an update on the Conference. Chairman Elect may be asked to offer some remarks.
- Chairman and Chairman-elect participate in standing Committee meetings providing insight on issue discussions from other Regional Association meetings.
- Chairman and Chairman-Elect able to provide rationale and answer questions concerning issues that originated in their "home" region.
- Opportunity for Chairman-Elect to meet local officials, industry representatives and consumers that do not attend the NCWM.
- Opportunity for Chairman and Chairman-Elect to promote the NCWM by participating in training, planning and social events.
- Excluding "home" regional meeting, one week/individual/meeting time commitment required.
- NCWM Standing Committee member(s) attendance at Regional Association meetings.

- NCWM pays expenses, except for attendance at "home" regional meeting, averaging $1,200/individual/meeting.
- NCWM Committee member able to provide insight and information on carryover items.
- Excluding "home" regional meeting, one week/individual/meeting time commitment required.
- Publications, handbooks, pamphlets and brochures available through NCWM.
- A total of $35,100 in publication costs paid by NCWM (partial list including Pub.2, Pub.15, Pub.16,Pub.19, H-133 and Firewood brochure).
- Publications serve as invaluable reference sources to guide weights and measures officials and to educate consumers.
- Fifteen full-time OWM staff devote 95 percent of their time on activities related to NCWM and NTEP. (Percent of time expended on development and maintenance of NCWM publication to be determined.)
- NCWM sponsored training seminars and materials.
- A total of $15,000 in training costs paid by NCWM (price verification, small scale, media, LPG, HB 133, ACT Registry).
- Training seminars provide jurisdictions with in-house expertise in specific technical areas enabling the jurisdictions to train inspection staff to meet program needs.

Recommendations

1. **The Conference and OWM should continue to sponsor instructor training courses to help ensure uniformity of inspection procedures among the jurisdictions.**
2. **The Conference and OWM should make updated training and reference materials a high priority reflecting changes adopted by the NCWM.**
3. **The NCWM Chairman and the Chairman-Elect should attend the four Regional Association Annual Meetings.**
4. **NCWM Standing Committee Chairman and other Conference officials should attend the Regional Association Annual Meetings on behalf of the NCWM only when warranted by the agenda with approval of the NCWM Executive Committee.**

PERFORMANCE MEASURES
As of January 1998

No.	Brief Description	First Draft Due	Completion Date	Status
1.	**Develop** and implement plan to arrange and conduct NCWM meetings by July 1999. Update meeting planning checklist by July 1997.	4-15-97	1-98 7-99	In progress
2.	**Plan** interim and annual meeting by city and site by January, 98.	4-15-97	1-98	In progress
3.	**Examine** budget to put NCWM on a sound financial basis.	4-15-97	7-98	Partial Completion 7-97
4.	**Determine** continued level of participation in international standards development organizations. (OIML, APLMF, APEC)	4-15-97	1-98	In progress
5.	**Determine** continued level of participation and liaison with other standards writing organizations e.g. ASTM, API, NCSL, etc.	4-15-97	1-98	Partially Completed
6.	**Provide** ongoing liaison to related associations; e.g. SMA, NISA, GPMA, FMI, ISWM, APL, NCSL, etc.	4-15-97	1-98	Recommendation Made 1-98
7.	**Identify** NCWM role in interaction with State Laboratory Program (Accreditation) by July 1997.	4-15-97	7-97	In progress
8.	**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	7-99	In Progress
9.	**Identify** the need for OWM technical support and guidance for NCWM standing committees and work groups.	4-15-97	7-99	Recommendation Made 7-97
10.	**Identify** the role of the NCWM in providing technical support and guidance to Regional Associations and state and local jurisdictions.	4-15-97	7-97	Recommendation Made 7-97
11.	**Evaluate** the structure, terms of office and make up of the Executive Committee and the Board of Governors. Evaluation should include all committees.	4-15-97	7-97	Partial completion 7-97
12.	**Seek** ways to improve and streamline the Conference voting procedures.	4-15-97	7-98	Recommendation Made 1-98

Appendix D

Preamble to NCWM, Inc., Bylaws

Background:

The process which ultimately led to the revision of these Bylaws began at the Interim Meeting in January of 1995. At that meeting, the Conference leadership decided to develop a strategic plan for the Conference; the initial meeting was held in March of 1995. Jim Truex was Chairman, and Carroll Brickenkamp was Executive Secretary. We developed an initial draft of Vision, Values, Mission, and Goals to be published in the Conference agenda. Shortly after that meeting, there were major changes in the Office of Weights and Measures, with Carroll being replaced by Gil Ugiansky.

The following year was the year of Federal budget problems, with furloughs, etc. Charlie Gardner was Chairman, and we were fortunate just to have an Interim meeting. Charlie had appointed Tom Geiler and David Smith as a Strategic Planning Subcommittee, and they worked diligently to prepare a draft report; but due to the problems within government, we were unable to make much progress in our strategic planning efforts.

In the fall of 1996, we basically started over--revised the Vision, Values, Mission and worked on establishing Goals. Barbara Bloch was Chairman. With 2 years of changes in the makeup of the Executive Committee, everyone needed to become familiar with the process again. We met again at the Interim Meeting in January of 1997 and identified 13 major objectives under the Goals. We then established working groups to develop the objectives and time lines to implement the goals. We focused on three working groups so that those could be used as models for the other 10 objectives.

The three working groups we have focused on are: NCWM Long Term Business Plan-Aves Thompson; NTEP Long Term Business Plan - Dick Suiter, replaced by Barbara Bloch; Training Delivery Plan - Max Gray.

We found there are no shortcuts to strategic planning. We were fortunate to have assistance from Canadian staff, who are ahead of us in the process.

As a result of strategic planning efforts, the following steps have been taken:

- An attorney, Simon Stapleton, was retained in May 1997, to represent the Conference and to advise and assist us in several areas;
- The Conference has incorporated to provide a more suitable structure for future growth and to minimize personal liability of members; this process was completed in August of 1997;
- Critical liability insurance has been obtained, this includes general liability insurance, errors and omissions insurance, and directors and officers liability insurance;
- We are working with NIST in developing a Memorandum of Understanding (MOU) between NIST/OWM and the Conference that will more clearly define the roles of the two organizations as the Conference continues to grow;
- We are also developing an RFP (request for proposals) for a management company to manage the Conference. The management company will be responsible for meeting planning, membership functions such as a membership database and membership renewals, sales of publications, as well as managing Conference finances by working with the Treasurer on accounts payable and accounts receivable; and
- The Conference now pays for personnel housed at NIST. The management company will replace the current arrangement. We would like to stress here that NIST will still be a crucial part of the Conference. NIST and NCWM, Inc., are still full partners in the Conference and NIST will remain very involved with technical issues. NIST staff will continue to work with Conference committees as Technical Advisors, develop and provide an editorial review function for publications. Both the Conference and NIST want this partnership to continue.

We have also made some business decisions for NCWM, Inc., we have:

- established a line of credit to allow the Conference to make purchases;
- acquired credit card acceptance for registrations, and for ordering handbooks;
- certified the NTEP logo to provide for its continued use;
- worked with the Regionals to be able to accept dues from members for one or all Regionals along with Conference membership;
- worked on developing an Internet home page in conjunction with OWM;
- received approvals from the NIST lawyer, Mike Rubin, and a government lawyer who is an expert in copyright law, to copyright the Handbooks. Copyrights for Handbook 130 and Handbook 44 are possible if we want to move forward; and
- agreed to hire an auditor to review the financial records.

Many of these decisions are not new decisions. In 1994, in Item 101-12, the Treasurer's Report, the Executive Committee discussed that the NCWM at that time maintained a part-time cashier to accept and deposit checks. The Executive Secretary manages the Conference administration and finances, certifying to the Treasurer the correctness of bills submitted to the Conference for payment. Questions were raised about the level of fiduciary oversight necessary to protect the investment of NCWM members.

As long ago as 1994, the Committee decision was that the Executive Secretary would advertise for a financial manager and internal auditor for the NCWM to verify accounts, bills, and income; issue checks to the Treasurer; reconcile bank accounts; provide early warning and suggest opportunities for better fiscal management. This was to be a part-time position, to be bid upon and finalized by contract.

I would strongly encourage you to read the Bylaws carefully so that you will be ready to vote on them at the Annual Meeting. All I propose to do here is to point out three major highlights for your consideration:

1. We are looking at changes to the composition of the NTEP Committee (formerly the Board of Governors), recommending that they be comprised of the active members of the new Board of Directors (formerly the Executive Committee);

2. We are recommending the new Board of Directors for NCWM, Inc., be comprised of 11 individuals: the Conference Chairman, Chairman-Elect, Past-Chairman, Treasurer and seven others: four directors to be elected from the active membership, the Nominating Committee will endeavor, where practical, to nominate one director from each of the four regional Conferences; one director from the Associate Membership; and two at-large Directors, who may be elected from the Active, Advisory, or Associate membership who are eligible to serve; and

3. We are proposing changes to the voting procedures to enable all NCWM members to vote on business issues relating to the NCWM, Inc.; however, the procedures for voting on technical issues will remain essentially the same, except for proposed changes to allow for the greater use of voice votes.

The concepts we are proposing to implement are not new: in looking at the recommendations from the Task Force on Planning for the 21st Century, one of those was that "the Conference must grow from a small business to a corporation in management and philosophy."

We are now in 1998, and NCWM has grown to approximately 3,500 members, with an annual budget of nearly $300,000. I believe we now all recognize a need for a greater level of sophistication in oversight and management of Conference affairs.

Steven A. Malone
Chairman

BYLAWS

Article I - General

Section 1 - Corporate Status

This Corporation shall be known as "The National Conference on Weights and Measures, Inc.," hereinafter called the "Corporation," and is incorporated under the laws of the Commonwealth of Virginia as a Virginia Nonstock Corporation.

Section 2 - Tax Exempt Status

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

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

Section 3 - Fiscal Year

The fiscal year of the Corporation shall be October 1 through September 30 of the following year.

Section 4 - Dissolution

The Corporation shall dissolve in the event that the number of members falls below two hundred and fifty (250).
Upon the dissolution of the Corporation, assets shall be distributed for one or more exempt purposes within the meaning of section 501(c)(6) of the Internal Revenue Code, or any corresponding section of any future Federal tax code, or shall be distributed to the Federal Government, or to a State or local government, for a public purpose. Any such assets not so disposed of shall be disposed of by a Court of Competent Jurisdiction of the county in which the principal office of the Corporation is then located, exclusively for such purposes or to such organization or organizations, as said Court shall determine, which are organized and operated exclusively for such purposes.

Section 5 - Relationship to the National Institute of Standards and Technology

The Corporation is in part self-supporting and in part sponsored by the Department of Commerce, National Institute of Standards and Technology (NIST), by means of a Memorandum of Understanding (MOU) to be developed between NIST and the Corporation. NIST sponsorship is under the authority of that portion of the Organic Act (U.S. Code, Title 15, Chapter 7, Section 272) authorizing NIST to undertake "cooperation with the States in securing uniformity in weights and measures laws and methods of inspection."

As employees of the United States government, NIST staff are precluded by ethics laws, including sections 207-209 of Title 18 of the United States Code, from serving as officers, board members or employees of the Corporation.

The MOU referenced above establishes a joint project between the Corporation and NIST called "The National Conference on Weights and Measures". The MOU also names the Director of NIST the Honorary President of this Conference and designates the Chief of the NIST Office of Weights and Measures as the Executive Secretary of the Conference. Under the MOU, on behalf of NIST, the Executive Secretary provides liaison between NIST and the Corporation; administers the NIST MOU and other cooperative agreements between NIST and the Corporation; advises the Corporation on technical and policy issues and oversees the Technical Advisors assigned to work with the various committees of the Conference; develops and does editorial review of publications of mutual interest as defined in the MOU; and assists in planning the agenda for the meetings of the Conference.

Article II - Goals

Section 1 - Goals

The goals of the National Conference on Weights and Measures, Inc., are:

A. Enhance the National Conference on Weights and Measures, Inc., as a national and international resource for measurement standards development.

B. Provide uniform training programs for industry and government individuals involved in legal metrology.

C. Continue to develop new or alternative methods for improved delivery of weights and measures programs.

D. Continue to expand the role of the Conference in national, and as a resource in international, legal metrology.

Section 2 - Regional Conferences

The Corporation is a National Conference which is associated and has a close affiliation with four regional Weights and Measures Conferences (Central, Northeastern, Southern and Western). The Corporation actively seeks representation from the four regions on its Board of Directors, standing and special purpose committees. The Corporation as a corporation has no legal connection with the four regional conferences.

Article III - Membership

Section 1 - Types of Membership

Membership consists of three classes: active, advisory, and associate.

Active Membership.
Applies to individuals in the employ of States, Commonwealths, Territories, or Possessions of the United States, their political subdivisions, the Navajo Nation, or the District of Columbia who are actively engaged in the enforcement of weights and measures laws and regulations.

Advisory Membership.
Applies to (1) representatives of agencies of the Federal Government, (2) representatives of State and local governments other than those involved in the enforcement of weights and measures laws and regulations, (3) foreign government officials, and (4) retired persons who are interested in the objectives and activities of the Corporation and who participate as individuals rather than as representatives of a particular industry or interest group.

Associate Membership.
Applies to representatives of manufacturers, industry, business, and consumers, and other persons who are interested in the objectives and activities of the Corporation and who do not qualify as Active or Advisory member.

Section 2 - Form of Application

Each application for membership in this Corporation shall be in the form prescribed by the Board of Directors.

Section 3 - Submission of Application

Applications for membership shall be submitted to the Corporation along with the appropriate membership fee. The membership will not be activated until the membership fee has been paid.

Article IV - Membership Fees and Records

Section 1 - Fee

The fee for annual membership, as well as the registration fee for each meeting of the Corporation, is fixed, and is subject to revision, by a majority vote of the Board of Directors at any official meeting of the Board.

Section 2 - Membership Year

Annual membership shall be payable by July 1 of each year and covers the period July 1 to June 30 of the following year.

Section 3 - Membership Records

The Board of Directors shall designate an individual or organization to be responsible for membership, including collection of membership fees and maintenance of membership records.

Section 4 - Billing

The Corporation shall bill each member for yearly dues 2 months prior to the expiration of the current membership year.

Section 5 - Evidence of Membership

Membership certificates and cards of suitable design, bearing the seal of the Corporation, shall be issued to members. The individual or organization designated by the Board shall advise the Treasurer of the count of new members and will forward the membership monies for deposit in the Corporation account.

Section 6 - Waiver of Registration and Membership Fees

Individuals who have retired after 10 or more years of weights and measures employment in either the public or private sectors, and who have attended at least one Annual Meeting, shall not be subject to the payment of the registration and membership fees.

The spouses of retired members shall enjoy the same privileges as spouses of active members.

Article V - Use of the Insignia

The insignia of the Corporation may be used or displayed only by members of the Corporation with express written approval from the Board of Directors.

Article VI - Directors

Section 1 - Directors

The Directors of the National Conference on Weights and Measures, Inc., shall be:
A. An 11-member Board of Directors consisting of:

Chairman,
Past-Chairman,
Chairman-Elect,
Treasurer, and

Seven other Directors: 4 directors to be elected from the active membership, the Nominating Committee will endeavor, where practical, to nominate one director from each of the 4 (four) regional Conferences, (Central, Northeastern, Southern and Western: the "Active Directors"); 1 director from the associate membership (the "Associate Director"); and 2 (two) at-large Directors, (the "at-large Directors") who may be elected from the Active, Advisory, or Associate membership who are eligible to serve.

The treasurer and the active, associate and at-large directors may be consecutively re-elected, however, the consecutive reelection of a Chairman and Chairman-Elect is prohibited. Should the Chairman- Elect for any reason be unable or unwilling to be installed as Chairman, his/her successor shall be elected by the Board of Directors. In this event, the newly elected Chairman-Elect shall be installed as Chairman.

Section 2 - Directors Eligibility

A. Any active member in good standing shall be eligible to hold the office of Chairman, Chairman-Elect, Past Chairman, Treasurer, and Active Director, provided that the individual meets the other requirements set forth in the Bylaws. Further, any Associate member is eligible to hold office as the Associate Director and any Active, Advisory, or Associate member is eligible to hold office as the 2 at-large Directors.

B. The Chairman-Elect will be elected at the Annual Meeting 1 year prior to the term of service as Corporation Chairman. After serving 1 year as Chairman-Elect, the incumbent will succeed to the office of Corporation Chairman.

Section 3 - Nominations and Elections

A. **Nominating Committee**

Each year prior to the Corporation's Interim Meeting, the Chairman shall appoint a Nominating Committee. The Past Chairman will serve as Chairman of the Nominating Committee.

B. **Nominations**

1. The Nominating Committee shall submit one name for each elective office and present its recommendation as a slate in its report to the Corporation.

2. Additional nominations for officers may be made from the floor at the Annual Meeting provided that prior consent of the nominee has been obtained in writing and presented to the presiding officer at the time of the nomination.

C. **Elections**

Directors shall be elected during a designated session of the Annual Meeting by a formal recorded vote of the members in attendance and eligible to vote on Corporation motions.

See Bylaws, Article X - Voting System

D. **Terms of Office**

1. The Chairman, Chairman-Elect, Past Chairman, and Treasurer, shall serve for a term of 1 year or until their successors are respectively elected or appointed and qualified. The Treasurer may be re-elected. The seven other directors shall serve for 5-year terms; except for the Associate Director, who shall serve a 3 year term. Elections shall take place at such intervals as is necessary to retain an 11-member Board at all times. The seven other Directors may be re-elected.

2. All Directors shall take office immediately following the close of the Annual Meeting at which they were elected.

E. **Filling Vacancies**

In case of a vacancy in any of the elective offices, the Chairman (or, if the vacancy is for the Chairman's position, the immediate Past-Chairman) shall nominate a replacement, and that person shall be appointed to fill the office if a majority of the members of the Board approve the nomination.

Section 4 - Insurance and Indemnification of Directors

A. **Insurance**

The Board of Directors is authorized to purchase insurance, including but not limited to, general liability insurance, errors and omissions insurance, and directors and officers liability insurance, together with any other insurance deemed by the Board to be reasonable, in such sums and for such premiums as the Board determines are appropriate.

B. **Indemnification**

The Corporation shall indemnify and hold harmless (to the fullest extent permitted by applicable law as it presently exists or may hereafter be amended) any person who was or is made or is threatened to be made a party or is otherwise involved in any action, suit or proceeding, whether civil, criminal, administrative or investigative (a "proceeding") by reason of the fact that he, or a person for whom he is the legal representative, is or was a director, officer, employee or agent of this Corporation against all expenses, liability, and loss reasonably incurred or suffered by such person. The Corporation shall be required to indemnify and advance expenses to a person in connection with a proceeding initiated against such person only upon approval by the Board of Directors of the Corporation.

The Corporation shall prepay the expenses incurred in defending and proceeding in advance of its final disposition.

If a claim for indemnification or prepayment of expenses under this Section is not paid in full within ninety days after a written claim therefor has been received by the Corporation the claimant may file suit to recover the unpaid amount of such claim and, if successful in whole or in part, shall be entitled to be paid the expenses of prosecuting the claim. In any such action the Corporation shall have the burden of proving that the claimant was not entitled to the requested indemnification or payment of expenses under applicable law.

The rights conferred on any person by this Section shall not be exclusive of any other rights which such person may have or hereafter acquire under the statute, provision of the Articles of Incorporation, these Bylaws, agreement, vote of members or disinterested directors or otherwise.

Any repeal or modification of the foregoing provisions of this Section shall not adversely affect any right or protection of a director, officer or employee of the Corporation at the time of such repeal or modification.

Section 5 - Removal of Directors

A director may be removed for cause upon a vote for his or her removal by a majority of the Board at a properly called meeting of the Board. Removal for cause shall include, but not be limited to, failure by the Director to attend two consecutive meetings of the Corporation. For purposes of this section, two consecutive meetings shall mean annual or interim meetings of the Corporation.

Section 6 - Appointive Officials

A. The Corporation Chairman will annually appoint the following officials:

Four (4) Presiding Officers
Chaplain
Parliamentarian
Two (2) Sergeants-At-Arms

B. Assumption of Office

All appointive officials shall take office immediately following appointment and will serve through the subsequent Annual Meeting of the Corporation unless otherwise specified by the Corporation Chairman.

Article VII - Duties of the Directors and Appointive Officials

Section 1 - Chairman

The Corporation Chairman has the role of Chief Executive Officer of the Corporation and, as such, has the broad authority customarily associated with that role, including, but not limited to, the authority to make policy decisions on behalf of the Corporation and take such actions as are necessary to put these decisions into effect. The Chairman is the principal presiding officer at the meetings of the Corporation and of the Board of Directors, makes appointments to the several standing and special purpose committees, and appoints other Corporation officials to serve during his or her term of office.

All contracts or other obligations requiring Corporation funding must be signed by the Chairman or his designee.

Section 2 - Chairman-Elect

The Chairman-Elect will:

A. serve as acting Corporation Chairman in the event that the Chairman is unable to carry out the duties of that office,

B. perform other duties assigned by the Corporation Chairman,

C. serve on the Board of Directors,

D. prepare and develop a budget for review by the Board.

E. review ad hoc committees, sub-committees, task forces, and study groups to make a recommendation to the Board as to the continuance of these committees.

Section 3 - Presiding Officers

The four Corporation Presiding Officers preside over sessions of the meetings of the Corporation as assigned by the Corporation Chairman and assist the Chairman in the discharge of his or her duties.

Section 4 - Executive Secretary

The Executive Secretary has those responsibilities that are assigned to the office pursuant to Article I, Section 5.

Section 5 - Treasurer

The Treasurer receives and accounts for all monies collected and pays all Corporation bills certified as correct by the individual or organization responsible for this task, as designated by the Chairman.

The Treasurer may appoint, with approval of the Board, an assistant to assist the Treasurer in the discharge of his or her duties.

Section 6 - Chaplain

The Chaplain performs the customary duties of that office.

Section 7 - Parliamentarian

The Parliamentarian shall assist in assuring meetings of the Corporation are conducted in a proper manner. The rules contained in Robert's Rules of Order shall govern the Corporation in all cases to which they are applicable, and in which they are not inconsistent with these Bylaws.

Section 8 - Past Chairman

The most recent still-active Past Chairman will serve as Chairman of the National Type Evaluation Program (NTEP) Committee and appoint active, advisory, and associate members to the technical committees of the NTEP program. The Past Chairman will also serve as Chairman of the Nominating Committee.

Section 9 - Sergeants-At-Arms

The Sergeants-At-Arms help preserve order during the public sessions of the Corporation Annual Meeting. Their responsibilities include ensuring that only registered delegates are present and that individuals or groups appearing before the Corporation are properly identified.

Article VIII - Meetings of the Corporation

Section 1 - Annual Meeting

The Annual Business Meeting of members shall be held at the annual meeting of the Corporation. Notice of the annual meeting shall be given in accordance with the provisions of Va. Code § 13.1-842. Notice shall be no less than 10 nor more than 60 days before the date of the meeting, except that notice to act on an amendment to the Articles of Incorporation, a plan of merger, a proposed sale of assets pursuant to § 13.1-900 or the dissolution of the Corporation shall be given not less than 25 nor more than 60 days before the date of the meeting.

The agenda for this meeting shall include the election of the Board of Directors, approval of the Annual Report for filing, reports from the Chairman and the Treasurer.

The Annual Technical Meeting shall also be held at the Annual meeting of the Corporation and may include reports from various committees, task forces, study groups, and other items pertinent to the Corporation, as well as the presentation of technical papers, discussions, displays, entertainment, or other events at the discretion of the Board of Directors.

Section 2 - Interim Meetings

The Interim Meetings of the Board of Directors and those Standing Committees designated by the Chairman shall be held annually, approximately 6 months prior to the Annual Meeting in order to develop the agenda and committee recommendations to be presented to and acted on by the membership at the Annual Meeting.

Section 3 - Special Meetings

A. The Corporation Chairman is authorized to order a meeting of the Board of Directors at any time such a session is deemed by the Chairman to be in the best interests of the Corporation. Such meeting may, in the discretion of the Chairman, take place in any manner technologically possible, including, but not limited to, telephone conference calls and electronic mail. A quorum shall consist of 7 members of the Board. Voting may be cast in any manner prescribed by the Chairman.

B. Other Committees of the Corporation are authorized to hold meetings at times other than the Annual Meeting or Interim Meeting provided that:

1. such meeting or meetings have been provided for in the Corporation budget approved by the Board of Directors, or

2. such meeting or meetings are approved by the Chairman and funding is available within the approved budget, or

3. such meeting or meetings are approved by the Chairman and the Board of Directors including agreement to increase the budget to cover the cost of the meeting.

Section 4 - Rules of Order

The rules contained in Robert's Rules of Order shall govern the Corporation in all cases to which they are applicable, and in which they are not inconsistent with these Bylaws.

Article IX - Committees

Section 1 - Special Purpose Committees

The Special Purpose Committees consist of the following:

A. **Nominating Committee.** The Nominating Committee (referenced in Article VI, Section 4) shall be appointed annually by the Chairman and shall consist of the most recent active Past Chairman of the Corporation as Committee Chairman and six active members, to include at least one member representing each of the four regions. The nominating committee shall make recommendations to the Corporation for nominations for the Board of Directors. The nominating committee shall give due weight and consideration to the recommendation of the Associate Membership Committee regarding the Associate Director nomination.

B. **Resolutions Committee.** The Resolutions Committee shall be appointed by the Chairman and shall consist of three members appointed for 3-year staggered terms.

C. **Auditing Committee.** The Auditing Committee shall be appointed by the Chairman and shall consist of three members appointed for 3-year staggered terms.

D. **Associate Membership Committee.** The Associate Membership Committee shall consist of not less than five nor more than 10 members, appointed by the Corporation Chairman from the associate membership. This Committee shall represent a cross-section of interests within the associate membership. The Associate Membership Committee shall make a recommendation to the Nominating Committee for the Laws and Regulations Committee, the Administration and Public Affairs Committee, as well as a recommendation for the Associate Director nomination every three years, or in the event of a vacancy to fill the unexpired term.

E. **Credentials Committee.** The Credentials Committee shall consist of three members all of whom are appointed by the Corporation Chairman from the active membership, and shall consist of at least one member from a State jurisdiction and one member from a city or county jurisdiction, serving on a rotating basis for 3 year terms (a new member appointed each year to replace the member whose term expires). The senior member serves as Committee Chairman.

Section 2 - Standing Committees

The Board of Directors may create and disband standing committees in the best interests of the Corporation. As referenced in Article IX, Section 1, the Chairman makes appointments to the several special purpose committees. The current standing committees are:

Committee on Specifications and Tolerances;
Committee on Laws and Regulations; and
Committee on Administration and Public Affairs.

A. **Membership**

The membership of each of the standing committees consists of five members, at least one member from each of the four weights and measures regions, appointed by the Corporation Chairman from the active membership on a rotating basis for 5 year terms, or until a successor is appointed. In addition, every fifth year the Corporation Chairman shall appoint a nonvoting Associate Member Representative (AMR) to the Committee on Laws and Regulations and the Committee on Administration and Public Affairs. The AMR shall be nominated by the Associate Membership Committee and shall serve a 5-year term, or until a successor is appointed.

When it is necessary to make an appointment to any of the standing committees to fill a vacancy caused by the death, resignation, or retirement from active service by a committee member, the appointment is for the unexpired portion of the member's term.

Except as noted, each standing committee annually selects one of its active members, preferably its senior member, to serve as its chairman.

Section 3 - National Type Evaluation Program (NTEP) Committee

The NTEP Committee is comprised of eight members, from the active members of the Board of Directors, that is, the Past Chairman as Chairman of the NTEP Committee, the Chairman, the Chairman-Elect, the Treasurer, and the four Active Directors. In the event of a tie vote, the Chairman of the NTEP Committee shall have the deciding vote.

The NTEP Committee fixes the annual maintenance fee for retaining a National Type Evaluation Program Certificate of Conformance. The NTEP Committee is responsible for the operation of the NTEP program with respect to its fiscal management, providing guidance related to the activities of the program and establishing policy and procedures.

Through the Chairman of the NTEP Committee, members are appointed from the Advisory, Active, and Associate Members to the Technical Committees of the National Type Evaluation Program. The Advisory members represent the interest of manufacturers, retail sales organizations, and users of commercial devices. The Active members represent the interest of government officials and the consumer. These committees make technical, policy, and procedural recommendations to the NTEP Committee for implementation.

Section 4 - Ad Hoc Committees, Subcommittees, Task Forces, and Study Groups

Ad Hoc committees, subcommittees, task forces, and study groups are appointed by the Corporation Chairman from the active, advisory, or associate membership, in any combination, as the need arises or the Corporation requests. All committees are subject to an annual review by the Board.

Section 5 - Duties and Fields of Operation of Board of Directors and Committees

A. Board of Directors

The Board of Directors is the governing body of the Corporation and is authorized to make all decisions relating thereto, including but not limited to the following:

1. conducts the business of the National Conference on Weights and Measures, Inc., as a Corporation, which at a minimum includes (a) overseeing the preparation and approval of the annual report by the members for filing with the Virginia State Corporation Commission in compliance with Va. Code §13.1-936, and (b) payment of the annual registration fees prescribed in Va. Code §13.1-936.1.

2. reviews and approves the budget.

3. selects the place and dates, and also fixes the registration fee for each meeting of the Corporation;

4. fixes the annual membership fee; and

5. advises the responsible individual or organization, as designated by the Chairman, with respect to the programs for the meetings of the Corporation and its committees, and makes recommendations to the Corporation, the Corporation officers, and the committee chairmen.

The Board of Directors, in the interval between meetings of the Corporation:

1. authorizes Meetings of Corporation committees in accordance with the provisions of Article VIII, Section 3,

2. authorizes expenditures that are not in the budget, and

3. acts for the Corporation in all routine or emergency situations that may arise.

Special meetings of the Board may be held in the discretion of the Chairman, and may take place in any manner technologically possible, including, but not limited to, telephone conference calls and electronic mail. A quorum shall consist of 7 members of the Board. Voting may be cast in any manner prescribed by the Chairman. All questions before the Board of Directors will be decided whenever practical, by voice vote or by ballot, and will be decided on the basis of the majority of votes cast.

The Board serves as a policy and coordinating body in matters of national and international significance which may include such areas as metrication; the interaction with organizations such as the International Organization of Legal Metrology (OIML), American National Standards Institute (ANSI), International Organization for Standardization (ISO), American Society for Testing and Materials (ASTM), National Conference of Standards Laboratories (NCSL), and such internal matters as may be required, including, for example, the Retiree Organization.

The Chairman, on behalf of the Board, annually presents a report on Corporation activities.

B. **Committee on Laws and Regulations**

The Committee on Laws and Regulations annually presents a report for Corporation action.

Its scope embraces all matters within the area of weights and measures supervision including:

1. the development and interpretation of uniform laws and regulations;

2. the study and analysis of bills for legislative enactment;

3. the establishment and maintenance of published guidelines and other effective means of encouraging uniformity of interpretation and application of weights and measures laws and regulations; and

4. liaison with Federal agencies, State agencies, and other groups or organizations on issues within the purview of the Committee. This role entails explaining, advocating, and coordinating Corporation positions, recommendations, and needs before Federal Government agencies, consumer groups, the associate NCWM membership, domestic and international standards organizations, industry, trade associations, and others. The goals are to provide and solicit information, develop a spirit of cooperation, and promote uniformity with the activities and standards of the NCWM.

C. **Committee on Specifications and Tolerances**

The Committee on Specifications and Tolerances annually presents a report for Corporation action.

Its scope embraces all matters dealing with:

1. specifications, tolerances, and technical requirements of any kind relating to scales, weights, measures, and weighing and measuring devices and accessories, including interpretation of such material whenever necessary,

2. standards and testing equipment for weights and measures officials,

3. procedures for testing commercial equipment, and

4. liaison with Federal agencies, State agencies, and other groups or organizations on issues within the purview of the Committee. This role entails explaining, advocating, and coordinating Corporation positions, recommendations, and needs before Federal Government agencies, consumer groups, the associate NCWM membership, domestic and international standards organizations, industry, trade associations, and others. The goals are to provide and solicit information, develop a spirit of cooperation, and promote uniformity with the activities and standards of the NCWM.

D. **Committee on Administration and Public Affairs**

The mission of the Committee is:

To provide leadership to develop and implement uniform, quality weights and measures services in the areas of:

- effective program management,
- education, and
- public relations.

The Committee on Administration and Public Affairs annually presents a report for Corporation action.

Its scope embraces all matters dealing with:

1. development and recommendation of administrative procedures;

2. education and training of weights and measures officials;

3. promotion of weights and measures principles and techniques among users of weights and measures devices and the general public; and

4. liaison with Federal agencies, State agencies, and other groups and organizations on issues within the purview of the committee. This entails explaining, advocating, and coordinating Corporation positions, recommendations, and needs before Federal Government agencies, consumer groups, the Associate NCWM membership, domestic and international standards organizations, industry, trade associations, and others. The goals are to provide and solicit information, develop a spirit of cooperation, and promote uniformity with the activities and standards of the NCWM.

E. **Nominating Committee**

The Nominating Committee annually presents a slate of nominees for all elective offices. The names of these nominees shall appear in the report of the Nominating Committee and shall be published in the Program and Committee Reports for the annual meeting of the Corporation.

F. **Resolutions Committee**

Each year at the Annual Meeting of the Corporation, the Resolutions Committee presents for Corporation action such resolutions as it has been directed by the Corporation to prepare, and such additional resolutions as are deemed appropriate by the Committee.

G. **Auditing Committee**

The Auditing Committee may appoint an external auditor to audit the books of the Corporation and evaluate the recommendations of the auditor and recommend an action thereon to the Board.

H. **Credentials Committee**

The Credentials Committee administers the Corporation voting system, makes decisions concerning disputed rights of designated representatives, and approves or certifies representatives to the House of State Representatives.

I. **Associate Membership Committee**

The Associate Membership Committee annually reports on its activities and makes recommendations to the Board of Directors.

The Associate Membership Committee will make a recommendation to the Nominating Committee regarding the Associate Director position on the Board, as well as a recommendation for a nomination to the Laws and Regulations Committee and the Administration and Public Affairs Committee.

The Committee provides coordination and participation of associate members in all business and social affairs of the Corporation.

Article X - Voting System

In the case of business issues relating to NCWM, Inc., as a Corporation, all questions before a meeting of the Corporation are to be decided by voice vote of members of all three houses.

Members of all three houses may speak to all issues on the floor, both business and technical issues. However, the adoption of final reports of committees on technical issues, as well as other technical issues, are to be decided by a formal recorded vote of the active members in accordance with the following voting structures and procedures.

Section 1 - House of State Representatives

A. Official Designation

This body of Active members who are officially designated by their States and are present and registered at the Annual Meeting shall be known as the "House of State Representatives."

The House of State Representatives shall vote, as well as the House of Delegates, and the House of General Membership, on all business issues relating to NCWM, Inc., as a Corporation.

The House of Representatives and the House of Delegates alone will vote on all technical questions before the Corporation, including reports and recommendations of all of the Standing Committees (namely, the Specifications and Tolerances Committee, the Laws and Regulations Committee, and the Administration and Public Affairs Committee) and the NTEP committee, as well as all other technical issues relating to weights and measures; technical handbooks; and legal metrology.

B. Composition

Each State is authorized one official to serve as its representative at the Annual Meeting of the NCWM. The State weights and measures director, or his or her designee (State or local government official), is the State representative.

The District of Columbia, the Navajo Nation, and the U.S. Commonwealths and Territories that have weights and measures programs similar to those of the States (for example, have followed the uniform laws and regulations and have adopted Handbook 44) are also allowed representatives.

C. Method of Designation

Each representative is specified annually to the Credentials Committee 30 days before the NCWM Annual Meeting. Accommodation may be made for exceptions to this deadline. An alternate should be named prior to the NCWM Annual Meeting in case the designated representative cannot attend.

Section 2 - House of Delegates

Official Designation

All other Active members present and registered at the Annual Meeting (those not sitting in the House of State Representatives) are grouped as a body known as the "House of Delegates." The House of Delegates shall vote, as well as the House of Representatives and the House of General Membership, on all business issues relating to NCWM, Inc., as a Corporation.

The House of Delegates and the House of Representatives alone will vote on all technical questions before the Corporation, including reports and recommendations of all of the Standing Committees (namely, the Specifications and Tolerances Committee, the Laws and Regulations Committee, and the Administration and Public Affairs Committee) and the NTEP Committee as well as all other technical issues relating to weights and measures; technical handbooks; and legal metrology.

Section 3 - House of General Membership

Official Designation

This body shall comprise Associate and Advisory members of NCWM, Inc., who are present and registered at theAnnual Meeting. The House of General Membership shall vote, as well as the House of Representatives and the House of Delegates on all business issues relating to NCWM, Inc., as a Corporation. The House of General Membership shall not vote on technical questions before the Corporation, which includes reports and recommendations of all of the Standing Committees (see Article IX, Section 2) and all other technical issues relating to weights and measures; technical handbooks; and legal metrology.

Section 4 - Minimum Votes

A. **House of State Representatives**

A minimum of 27 votes in favor of, or 27 votes in opposition to, an issue must be cast for the vote to be considered official. If 54 or more votes are cast in the House of State Representatives, a simple majority of the total votes is required to pass (or defeat) the issue.

B. **House of Delegates**

A minimum of 27 votes in favor of, or 27 votes in opposition to, an issue must be cast for the vote to be considered official. If more than 54 total votes are cast, a simple majority rules. Should a tie vote occur, or if the minimum votes in support or opposition are not cast, the issue is decided by the vote of the House of State Representatives.

C. **House of General Membership**

A minimum of 27 votes in favor of, or 27 votes in opposition to, an issue must be cast for the vote to be considered official. If more than 54 total votes are cast, a simple majority rules. Should a tie vote occur, or if the minimum votes in support or opposition are not cast, the issue is decided by the vote of the House of State Representatives.

Section 5 - Voting Rules

A. **Quorum**

A quorum shall consist of twenty seven eligible voting members in the House of State Representatives.

B. **Proxy Votes**

Proxy votes are not permitted. Since issues and recommendations in the committees' interim reports are often modified and amended at the Corporation, the attendance of officials at the NCWM Annual Meeting and voting sessions is vital.

C. **Method**

For voting on business issues relating to NCWM, Inc., as a Corporation, all voting is by a voice vote of the members eligible to vote. For voting on the adoption of final reports of committees on technical issues, as well as for voting on all other issues, and in the event that the voice vote is too close to be determined in the opinion of the Chairman, there shall be a show of hands, standing vote, or machine (electronic) vote count. No abstentions are recorded.

D. **Timing**

Voting by all Houses is simultaneous.

E. **Recording**

The voting system which shall be used, except in the case of a voice vote, is designed to record the votes of voters, whether an electronic system, show of hands, or standing vote is used.

F. **Applicability**

These procedures (rules) apply only to the plenary (general) sessions of the NCWM.

Section 6 - Committee Reports

Alternatives that may be used in voting on the reports:

A. vote on the entire report,

B. vote on grouped items or sections, or

C. vote on individual items; according to

1. committee discretion, or

2. on request by a voting delegate, with the support of 10 others.

Section 7 - Amendments and Changes

A. **Technical Item**

1. **Changes**
Committee chairmen may offer changes to their final reports on the day of voting.

2. **Amendments**
Substantive amendments can be made at the request of weights and measures officials only, and:

a. a majority of the voting delegates of the House of State Representatives and the House of Delegates must vote favorably before a proposed amendment can be accepted for debate.
b. A two-thirds favorable vote of the House of State Representatives and the House of Delegates on the amendment is required for passage (the requirement for a minimum vote of 27 in each House also applies).

B. **Business Items**

1. **Changes**
Committee or Board members may offer editorial changes to their final repots on the day of voting.

2. **Amendments**
Substantive amendments can be made at the request of any member, and:

a. a majority of the voting delegates of each House must vote favorably before a proposed amendment can be accepted for debate.
b. a two-thirds favorable vote of each House on the amendment is required for passage (the requirement for a minimum vote of 27 in all three Houses also applies).

Section 8 - Seating

A. **Arrangement**

The seating arrangement for voting sessions is shown in the diagram following Article XI of these bylaws.

B. **Supervision**

The members of the Credentials Committee will count votes and control placement and movement of delegates.

Section 9 - Voting

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

A. **Motion Accepted If:**

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

2. a majority of the members of the House of Delegates votes Yea (a minimum of 27 Yea votes required);[1]
   And, in the case of motions relating to business items, If

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

B. **Motion Rejected If:**

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

2. a majority of the members of the House of Delegates votes Nay (a minimum of 27 Nay votes required);[1]
   And, in the case of motions relating to business items, If

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

C. **Split Vote:**

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

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

Section 10 - Procedures

The Corporation officers and committees observe in all of their procedures the principles of due process -- the protection of the rights and interests of affected parties; specifically, they: (a) give reasonable advance notice of contemplated committee studies, items to be considered for committee action, and tentative or definite recommendations for Corporation action, for the information of all parties at interest, and (b) provide that all interested parties have an opportunity to be heard by committees and by the Corporation.

Article XI - Amendments

These Bylaws may be amended, added to, or repealed at any Annual Meeting of the membership under normal Corporation procedures. Proposed changes must be included in the Agenda of the Board of Directors for the Interim Meetings, published in the recommendations of the Board of Directors in its Interim Report (contained in the Program for the Annual Meeting, NCWM Publication 16), and discussed at the open hearing of the Board of Directors at the Annual Meeting at which said changes will be voted on. Amendments to the Bylaws must be approved by a minimum of a simple majority vote in all three Houses; the House of State Representatives, the House of Delegates and the House of General Membership.

---

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

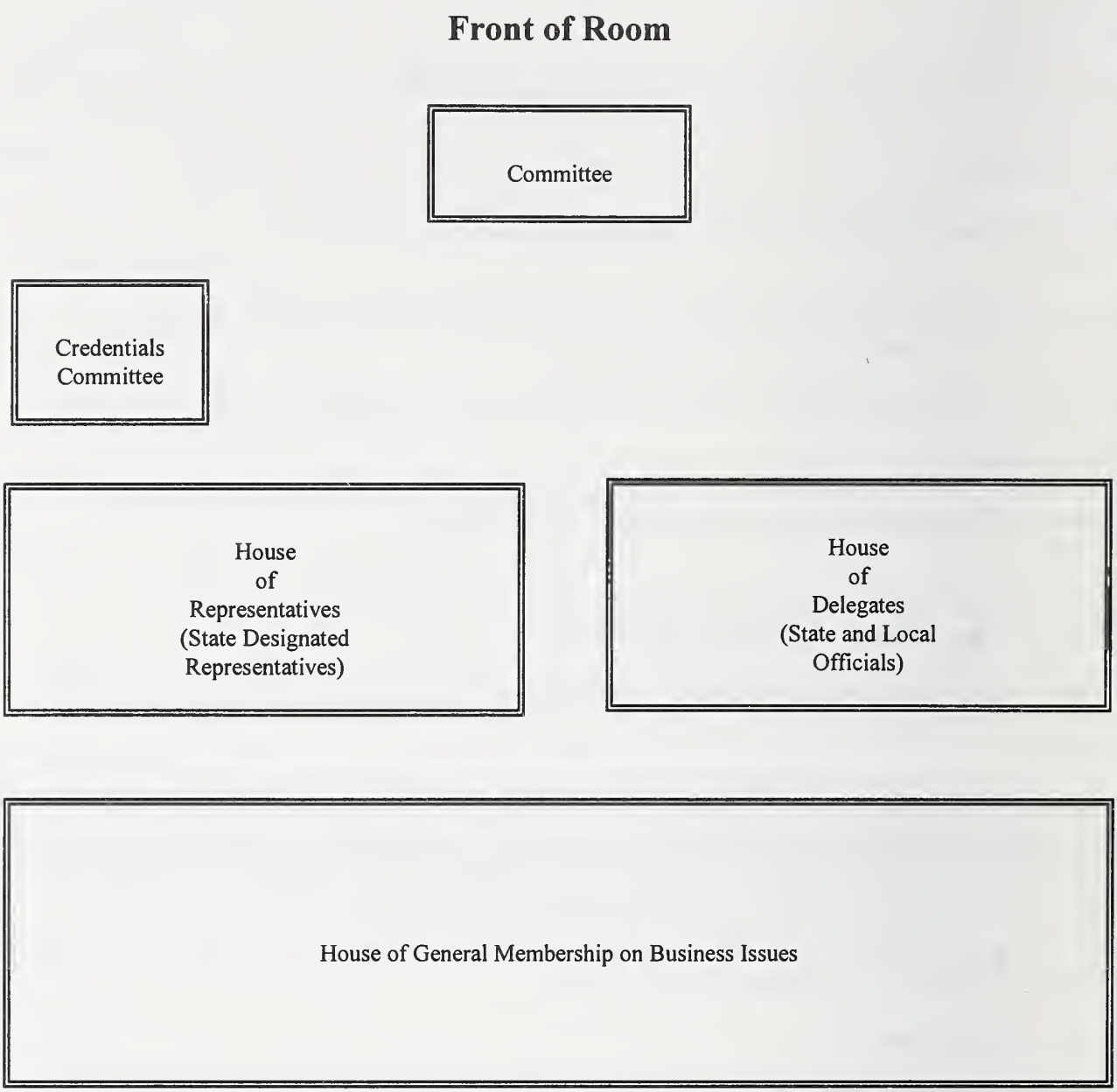


Figure 1. Seating Arrangement

Summary of Budget Review Committee Decisions on Committee Requests for Funds
Budget Review Committee Meeting - February 23, 1998 - With Executive Committee Actions Noted

Committee	Request		BRC's Response	BRC Comments	Executive Committee Action	Executive Committee Comments
Administration and Public Affairs	$4,000	Interim Meeting	Approve		Approve Budget Category: 513.4	Refer to page 69 in the Executive Committee's Report in NCWM Publication 16 for a listing of the Budget Categories.
	5,000	New Program Assessment Work Group (replaces Program Evaluation Work Group)	Approve		Approve Budget Category: 514.0	
	10,000	Internet setup	Decline	See BRC Recommendation for NTEP CC's via the Internet	Concur with BRC.	
	1,000	for Special Edition of Newsletter - mailing to various associations interested in W&M issues	Decline		Concur with BRC.	
	150,000	For Publications	Decline	Publication costs are not part of the A&P Budget. Publications appear elsewhere in the general budget. The A&P Committee should maintain the status reports of publications and their costs.	Concur with BRC.	
	162,000	Training Course Updates	Decline	The BRC is recommending a separate Training Grant Budget be established and Income and Expenses be set at $100,000	Concur with BRC.	

Summary of Budget Review Committee Decisions on Committee Requests for Funds
Budget Review Committee Meeting - February 23, 1998 - With Executive Committee Actions Noted

Committee	Request		BRC's Response	BRC Comments	Executive Committee Action	Executive Committee Comments
	1,500	Special Conference Training Session (Annual meeting Speaker)	Approve	Training needs to be as broad as possible at Annual Meeting in order to accommodate the interest of all who are in attendance. Executive Committee should approve the choice of speaker and/or trainer.	Approve Budget Category: 581	
	10,000	Consumer Brochures	Approve $5,500	The BRC gave a quick review to the "*Fuel for Thought - Getting What You Pay For At The Gas Pump"* brochure proposal. This draft should be circulated to State Directors and large jurisdictions for input prior to printing. The brochure should be sold to weights and measures officials and others to offset the printing cost.	Concur with BRC. Budget Category: 517	
Requested	$343,500					
Approved			$16,000		$16,000	Unanimously approved.

Summary of Budget Review Committee Decisions on Committee Requests for Funds
Budget Review Committee Meeting - February 23, 1998 - With Executive Committee Actions Noted

Committee	Request		BRC's Response	BRC Comments	Executive Committee Action	Executive Committee Comments
Laws & Regulations Committee	$5,000	One 3-day meeting of Handbook 133 working Group.	Decline	NCWM Chairman Malone recommends printing H-133 in 1998	Concur with BRC.	
	3,500	For Randy Jennings to attend three 1-2 day meetings to work on petroleum subcommittee issues and to fund his attendance at the 1999 Interim Meeting	Approve $2,000	Recommendations (Premium Diesel) should be adopted this year. Recommended approval for one meeting. Any other travel for Randy can be requested from the NCWM Chairman.	Concur with BRC. Budget Category: 514	
Requested	$8,500					
Approved			$2,000		$2,000	Unanimously approved.
Metrology	$4,500	For 3 representatives to meet with OWM and the NIST Calibration Program	Approve $2,500 for one meeting	The BRC recommended $2500 be allocated for one meeting for the metrology representatives	Concur with BRC. Budget Category: 514	
Requested	$4,500					
Approved			$2,500		$2,500	Unanimously approved

Summary of Budget Review Committee Decisions on Committee Requests for Funds
Budget Review Committee Meeting - February 23, 1998 - With Executive Committee Actions Noted

Committee	Request		BRC's Response	BRC Comments	Executive Committee Action	Executive Committee Comments
NTEP						
Weighing Sector	$23,600	For 17 persons from 9 labs	Approve: 9 persons- $13,500	State public members on the committees are appointed by the NCWM. The BRC recommends that the NCWM fund one person from each State	Concur with BRC. Budget Category: 730.1	
Belt Conveyor	6,000	For 5 persons	Approve: 4 persons $5,000	There are 4 public sector members on this committee. The BRC recommends sending 4 members to this meeting	Concur with BRC. Budget Category: 731.1	
Measuring Sector	14,000	for 13 persons	Approve: 7 persons $8,000	The BRC recommends one members from each of 7 labs	Concur with BRC. Budget Category: 741.1	
Mass Flow Meter	4,200	for 4 members	Approve: $4,000		Concur with BRC. Budget Category: 741.1	
Grain Moisture Meters	14,000	6 members for 2 meeting	Approve 6 persons $7,000 for one meeting.	There are two meetings scheduled for 1998. Some discussion was held on 1) how many certificates (there are 5) for so many meetings; 2) charge a registration fee for attendees to pay for meeting costs.	Concur with BRC. Budget Category: 750.1	The Executive Committee approved the funding of one meeting of the Grain Moisture Sector in 1999, but agreed that prior to the next BRC meeting, there should be a compete evaluation of the need for future meetings. A committee will be appointed by the NTEP Chairman to do the review.

Summary of Budget Review Committee Decisions on Committee Requests for Funds
Budget Review Committee Meeting - February 23, 1998 - With Executive Committee Actions Noted

Committee	Request		BRC's Response	BRC Comments	Executive Committee Action	Executive Committee Comments
NTEP Participating Laboratories (Training)	29,000	16 persons from 11 labs and 9 persons from Measuring Labs	Approve: 11 persons $15,000		Concur with BRC. Budget Category: 715.1	
US/Canada Laboratory Meeting - Weighing and Measuring Devices	$21,300	For 12 persons from 4 labs	Approve: $9,000	The BRC recommends one individual per laboratory per discipline (Measuring and Weighing) The BRC recommends 1 person from each lab (4) ($6,000) and 2 lab people for one trip - ($3,000)= $9,000	Concur with BRC. Budget Category: 722	
Multiple Dimension Measuring Devices Work Group	5,200	For 4 public members	The BRC recommends $5,000		Concur with BRC. Budget Category: 730.3	
			Recommends $25,000 for Internet	The BRC recommends development of an electronic access to the CC's via the Internet. The BRC recommends discontinuing Publication 5.	Approve Budget Category: 761.2	The NCWM and NIST/OWM agreed to allocate $25,000 each to update the NCWM database and to put NTEP certificates on the Internet in a searchable format.
				Laboratories are building revenue with the NTEP programs, if they want to send more people to these meetings, build costs into charges		
Requested	$117,300					
Approved			$66,500		$66,500	Unanimously approved.
Approved Additional			$25,000		$25,000	Unanimously approved.

Appendix E (Continued)

NCWM Budget for FY 1999

GENERAL ACCOUNT

Category Number	Account Description	FY 99 Budget
	Income	
410	General Revenues	
411	Registration Fees	**$73,000.00**
411.1	Annual Meeting $55,000.00	
411.2	Interim Meeting $18,000.00	
412	Membership Fees	**$110,000.00**
413	Interest	**$15,000.00**
416	Other Income	**$500.00**
480	Service Revenues	
481	Special Events	**$3,000.00**
482	Publications	**$5,000.00**
	Gasoline Brochure	**$5,500.00**
	NTEP Administrative Fee	**$24,000.00**
485	Promotional	**$500.00**
	TOTAL INCOME	$236,500.00
	EXPENSES	
510	General Expenses	
511	Annual Meeting	**$21,000.00**
511.1	Hotel and Meeting Space	
	Chairman's Reception $7,500.00	
	Breakfast $8,400.00	
	Luncheon $2,000.00	

Category Number	Account Description	FY 99 Budget
	Souvenirs $2,500.00	
	Chairman's Suite $ 600.00	
511.2	AV Equipment/Telecommunication	$3,000.00
511.3	Extra Personnel and Photographer	$1,000.00
511.4	Printing and Copying	$2,500.00
511.5	Awards	$2,000.00
511.6	Treasurer/Committee Expenses	$1,000.00
	Conference Outing	$7,500.00
	President's Dinner Meeting	$1,000.00
	Miscellaneous	$3,500.00
	Total Annual Meeting	**$42,000.00**
512	Interim Meeting	
512.1	Hotel and Meeting Space	$6,000.00
	Breakfast and Reception	$6,500.00
	AV Equipment/Telecommunication	$3,000.00
	Printing	$1,000.00
	Miscellaneous	$1,500.00
	Total Interim Meeting	**$18,000.00**
513	Committee Meetings	
513.1	Executive Committee	$12,000.00
513.2	L & R Committee	$5,000.00
513.3	S & T Committee	$5,000.00
	S & T Chairman to SMA Meeting	
513.4	A & P Committee	$5,000.00
513.7	Annual Committees	$3,000.00
	Other Committee Meetings	$12,000.00
	Total Committee Meetings	**$42,000.00**

Category Number	Account Description	FY 99 Budget
514	Task Forces & Special Committees	
	Program Assessment (Reports to A&P)	$5,000.00
	Petroleum Subcommittee (Reports to L&R)	$2,000.00
	Legislative Liaison (Reports to Executive)	$4,000.00
	Metrology (Reports to Executive)	$2,500.00
	Technician Training (Reports to Executive)	$5,000.00
	Total Task Forces & Special Committees	**$18,500.00**
515	Chairman/Chairman Elect	
	Chairman	$15,000.00
	Chairman-Elect	$10,000.00
	Total Chairman/Chairman Elect	**$25,000.00**
516	Administration	
516.1	Equipment/supplies/stationery	$2,500.00
516.2	Contract Management	$39,000.00
516.3	Mail/ PO Box	$300.00
516.4	Treasurer's Bond	$700.00
516.5	Interest Expense/Bank Charges	$1,200.00
516.6	NTP	$2,000.00
	Legal Services	$5,000.00
	Insurance	$1,500.00
	Auditing Services	$4,000.00
516.9	Miscellaneous	$500.00
	Total Administration	**$56,700.00**
517	Printing and Publications	
	Annual Agenda	$7,500.00

Category Number	Account Description	FY 99 Budget
	Interim Agenda	$4,000.00
	Membership	$3,000.00
	Membership Publications	$10,000.00
	Gasoline Brochure	$5,500.00
	Total Printing and Publications	**$30,000.00**
581	Special Events	**$3,000.00**
585	Promotional Items	**$500.00**
	TOTAL INCOME	$236,500.00
	TOTAL EXPENSES	$235,700.00

NCWM Budget for FY 1999

NTEP ACCOUNT

Category Number	Account Description	FY 99 Budget
600	GENERAL REVENUE	
600.1	Maintenance Fees	**$160,000.00**
660	SALES	
661	Publications	
661.1	Publication 14	**$7,500.00**
661.2	Publication 13	**$7,500.00**
	Total Sales	**$15,000.00**
665	NTEP LOGO	
665.1	Seals	**$3,000.00**
670	INTEREST INCOME	
680	MISCELLANEOUS INCOME	
	TOTAL INCOME	$178,000.00
700	ADMINISTRATIVE EXPENSES	
701	Administration (15% Maintenance Fee)	$24,000.00
702	Contract Management	$30,000.00
705	Supplies	$2,500.00
	Legal Services	$5,000.00
	Insurance	$4,000.00
	Auditing Services	$4,000.00
	Total Administrative Expenses	**$69,500.00**

Category Number	Account Description	FY 99 Budget
710	Board of Governors $10,000.00	
710.4	Appeal Hearing	
710.5	Technical Committee Meeting	
	Other Special Meetings	
	Total Board of Governors	**$10,000.00**
715	PARTICIPATING LABORATORIES	
715.1	NTEP Laboratory Training	**$15,000.00**
720	INTERNATIONAL MEETINGS	
721	OIML $10,000.00	
722	USA/Canada Work Group $ 9,000.00	
	Total International Meetings	**$19,000.00**
725	SPECIAL COMMITTEES	
725.1	Software Group	
730	TECHNICAL COMMITTEE - WEIGHING SECTOR	
730.1	Technical Committee Meeting	$13,500.00
730.3	Multiple Dimensional Devices	$5,000.00
	Total Weighing Sector	**$18,500.00**
731	TECHNICAL COMMITTEE - BELT CON-VEYOR	
731.1	Technical Committee Meeting	

Category Number	Account Description	FY 99 Budget
	Total Belt Conveyor Sector	**$5,000.00**
740	TECHNICAL COMMITTEE - MEASURING SECTOR	
741.1	Technical Committee Meeting	$8,000.00
	Sub Committee	$4,000.00
	Total Measuring Sector	**$12,000.00**
750	EXPENDITURE OF DEDICATED FUNDING	
750.1	Grain Equipment Cooperative Agreement Committee	**$7,000.00**
760	SALES	
761	Publications	
761.1	Publication 14	**$6,000.00**
761.2	Publication 5 - Development of Electronic Format	**$25,000.00**
765	NTEP LOGO	
765.1	Seals	**$1,000.00**
INCOME		**$178,000.00**
EXPENSE		**$188,000.00**

NCWM Budget for FY 1999

GRANT ACCOUNT

Category Number	Account Description	FY 99 Budget
	INCOME	$ 200,000.00
	EXPENSES	$ 200,000.00
	INCOME	$200,000.00
	EXPENSE	$200,000.00

Appendix E (Continued)
Auditors Report

Kathleen M. Hall, CPA
PO Box 483
Urbanna, VA 23175

July 5, 1998

NCWM, Inc.
Alan Rogers, Treasurer
12631 Eagle Ridge Road
Richmond, VA 23233

I have reviewed the accompanying Statement of Assets, Liabilities, and Equity – Income Tax Basis of National Conference on Weights and Measures, Inc. as of September 30, 1997, and the related Statement of Income and Expenses – Income Tax Basis for the nine months then ended, in accordance with Statements on Standards for Accounting and Review Services issued by the American Institute of Certified Public Accountants. All information included in these financial statements is the representation of the management of NCWM, Inc.

A review consists principally of inquiries of personnel and analytical procedures applied to financial data. It is substantially less in scope than an audit in accordance with generally accepted auditing standards, the objective of which is the expression of an opinion regarding the financial statements taken as a whole. Accordingly, I do not express such an opinion.

As described in Note A, these financial statements have been prepared on the basis of accounting used by the organization for preparation of the organization's income tax return, which is a comprehensive basis of accounting other than generally accepted accounting principles.

Based on my review, I am not aware of any material modifications that should be made to the accompanying financial statements in order for them to be in conformity with the income tax basis of accounting.

Kathleen M. Hall
Certified Public Accountant

National Conference on Weights and Measures, Inc.
Statement of Assets, Liabilities, and Equity
Income Tax Basis
9/30/97

ASSETS	
CASH - General Account	$ 129,351.68
CASH - Grant Account	17,982.58
CASH - Holding Account	35,827.23
CASH - NTEP Account	317,437.55
CASH - Associate Account	33,385.20
TOTAL ASSETS	**$533,984.24**
LIABILITIES	
	$ -
EQUITY	
Fund Balance at January 1, 1997	$ 526,843.84
Current Period Net Income	7,140.40
TOTAL LIABILITIES AND EQUITY	**$533,984.24**

See Notes to Financial Statements

National Conference on Weights and Measures, Inc.
Statement of Income and Expenses
Income Tax Basis
For the Nine Months Ended 9/30/97

INCOME		
Grant Income	$	80,381.00
NCWM Income:		
Annual Meeting		41,043.50
Interim Meeting		19,125.00
Fees - Government Membership		44,345.00
Fees - Associate Membership		46,795.00
Associate Dues		20,055.00
Metrology Seminars		19,690.00
Promotionals		65.00
Publications:		
NTP Training Module		30.00
NCWM Publications		591.50
HB-133		2,187.25
Handbook 14		23.00
Handbook 6		38.00
NTEP Income:		
Maintenance Fees		10,250.00
Grain Equip. Coop.		2,572.79
Publication 14		2,308.04
Publication 5		4,210.00
LOGO - Seals		1,100.00
LOGO - Other		300.00
General Income (transfer from Holding Account)		32,233.88
Interest Income		7,108.98
TOTAL INCOME		**$334,452.94**

See Notes to Financial Statements

National Conference on Weights and Measures, Inc.
Statement of Income and Expenses
Income Tax Basis
For the Nine Months Ended 9/30/97

EXPENSES		
Annual Meeting	$	82,799.82
Interim Meeting		40,230.45
Committee Meetings		16,204.45
Task Force Committees		7,274.64
Chairman/Chairman Elect		7,892.76
Metrology Seminars		19,080.11
Publications		19,369.83
Special Events		1,434.83
Printing		2,011.45
HB-133 Expenses		31,350.01
Retail Computing Training		10,100.00
Price Verification Training		5,612.60
Revision of EPO - Small Scale		3,430.00
Contributions		2,942.39
General Expenses		300.00
Administration:		
Office Supplies		3,033.97
Personnel		12,852.16
Postage		281.30
Treasurer Bond		441.00
Bank Charges/Credit Card Discounts		2,309.53
NTP/Copyright		1,180.05
Miscellaneous		(2.51)
NTEP Expenses:		
Personnel		20,074.64
Equipment (Credit Card Machine)		500.00
Laboratory Training		13,660.10
Laboratory - OIML		1,600.00
Software Workgroup		482.20
Technical Committee		4,849.51
Grain Equipment Coop		8,019.64
Publication 14 - Printing		4,053.51
Publication 5 - Printing		3,410.00
Seals		534.10
TOTAL EXPENSES		**$327,312.54**
NET INCOME		**$ 7,140.40**

See Notes to Financial Statements

NATIONAL CONFERENCE ON WEIGHTS AND MEASURES, INC.
NOTES TO FINANCIAL STATEMENTS

NOTE A – NATURE OF ACTIVITIES AND SIGNIFICANT ACCOUNTING POLICIES

Nature of Activities

The National Conference on Weights and Measures, Inc. functions as a national and international resource for measurement standards development, provides uniform training programs for industry and government individuals involved in legal metrology, and develops new or alternative methods for improved delivery of weights and measures programs.

Sources of revenue include membership fees, National Type Evaluation Program maintenance and renewal fees, publication sales, and federal grants.

Significant Accounting Policies

The Conference has prepared the financial statements using the income tax basis of accounting, which is a comprehensive basis of accounting other than generally accepted accounting principles.

Income Taxes

The Conference is a not-for-profit organization that is exempt from income tax under Section 501(c)(6) of the Internal Revenue Code.

NOTE B – FEDERAL FINANCIAL ASSISTANCE

The Conference has been awarded grants from the United States Department of Commerce through the National Institute of Standards and Technology to provide training programs for members of the Conference. The grants are considered to be exchange transactions; accordingly, revenue is recognized when earned and expenses are recognized as incurred.

Appendix F

Report on OIML
By
Samuel E. Chappell, Chief
Technical Standards Activities Program
Office of Standards Services, NIST
July 1998

32nd Meeting of the International Committee of Legal Metrology (CIML)

The 32nd CIML meeting was held in Rio de Janeiro, Brazil. Representatives of 45 of the 56 member nations participated in the meeting as well as several of the 44 corresponding member nations. (The CIML representative for Israel, Dr. G. Deitch, gave me his proxy to vote.) I participated in the meeting on behalf of the United States and was accompanied by Dr. Gilbert Ugiansky, Chief, Weights and Measures Program, NIST.

Significant decisions and reports at the meeting of particular interest to the NCWM included the following:

- A presentation on long range plans was given by Knut Birkeland, Past President of CIML who provided the following recommendations for consideration of the International Committee of Legal Metrology (CIML):
  - carry out key comparisons of tests of measuring instruments
  - address key subjects related to chemical metrology
  - develop interpretation documents for accreditation of conformity assessment activities
  - establish uniformity of reports of confirmation of measurement results
  - update model law for legal metrology
  - establish stronger co-ordination of efforts with other international organizations

  This report titled "Conditions and Potential of Legal Metrology at the Dawn of the 21st Century" (a Global Measurement System in which all users can have confidence) will be completed and presented for adoption at the 33rd meeting of CIML in 1998. In the meantime, draft reports will be distributed to CIML members for review and comment, and Birkeland will visit several OIML Nations to refine various topics addressed in the report.

- Five new OIML Recommendations were approved:
  - Instruments for Measuring the Mass of Liquids in Tanks
  - Automatic Liquid Level Gauges for Fixed Storage Tanks (Revision of OIML R85)
  - Evidential Breath Analyzers
  - Instruments for Measuring Vehicle Exhaust Emissions (Revision of OIML R99)
  - Measuring Systems for Cryogenic Liquids (Revision of OIML R81)

  The United States. was responsible for the revision of OIML R81; however, significant input was provided in the development or revision of the other approved Recommendations.

- John Birch, on behalf of the Asia Pacific Legal Metrology Forum (APLMF), requested CIML to consider preparing revisions of OIML Recommendations R46 on "Electricity Meters" and R59 on "Grain Moisture Meters." Magana of France requested that a revision of OIML Document 11 on "General Requirements for Electronic Measuring Instruments" should be undertaken to reflect improved test requirements now in the relevant IEC standards.

- I provided a report on the status of the technical work and agreed to establish a task group to look into the status of specific projects within the technical committees and make recommendations regarding priorities of the work.

- M. Kochsiek of Germany and B. Athané, Director of the International Bureau of Legal Metrology (BIML) also reported on the status of the OIML Certificate System and provided statistics on certificates issued. The work of TAG_{cert} is expected to continue its work in revising the publication that gives the framework and rules for operating the OIML Certificate System.

- B. Athané also reported on liaison with other international organizations. Athané visited officials of the World Trade Organization (WTO) responsible for the effort to reduce technical barriers to trade. After explaining the objectives of OIML, these officials informed Athané that WTO recognized and gave preference to ISO and IEC standards and, hence, no contradictions can exist between those standards and OIML Recommendations. This will necessitate a meeting between responsible officials of OIML, ISO, and IEC to renew the agreement established some 20 years ago about harmonization and duplication of efforts and to urge relevant OIML technical committees and subcommittees to establish close liaisons with corresponding committees of ISO and IEC.

Nathalie Dupuis-Désormeaux of Canada was elected to be the new Assistant Director of BIML replacing Phillip Degavre of Belgium. Chris Pulham, Communications Director at BIML, displayed a new overhead presentation developed by BIML about OIML. Copies of this presentation are available from BIML for use by CIML members.

The BIML reported that Argentina, Bosnia and Herzegovina, Estonia, and Ukraine had recently joined OIML as corresponding members. Iran has recently rejoined OIML and was represented at the meeting. A few other nations have expressed interest in becoming members. In particular, Chinese Taiwan has applied for corresponding membership. The total membership now stands at 100, with 56 full members and 44 corresponding members,

The next meeting of CIML is scheduled to be held in Seoul, Republic of Korea, in October 1998.
The Presidential Council CIML will meet on February 24 - 26, 1998, in Paris.

Other Matters

- **Cooperation between SIM and OIML**

A memorandum of cooperation was signed between the Interamerican System of Metrology (SIM) and OIML. SIM sought this memorandum as evidence of cooperation with OIML since, at its last meeting in Mexico in September 1997, SIM established a Division for Legal Metrology. The cooperation may also provide SIM more support from the Organization of American States (OAS). Steve Carpenter (Director of the NIST Office of International and Academic Affairs), who was in Rio attending a meeting of the Executive Council of SIM, participated in the signing ceremony along with the current President of SIM from Mexico. G. Faber (President of CIML), Kochsiek, and Athané participated in the signing ceremony.

- **International Seminar for Developing Countries**

An international seminar on "the role of metrology in economic and social development" is scheduled to take place in June 1997 at the Physikalisch-Technische Bundesanstalt (PTB) in Germany . It is co-sponsored by OIML, BIPM (International Bureau of Weights and Measures), and IMEKO (the International Metrology Confederation), and PTB. Developing and developed countries will be invited to participate as well as representatives of international organizations that support development such as the World Bank. Mr. Puteria of Indonesia was President of the Development Council but had recently resigned as member of CIML. CIML Vice President Kochsiek of Germany, also Vice President of the Development Council, was requested to serve as acting President of the Council until a new President could be identified and elected.

- **Workshop on "Metrology of the World"**

This Workshop took place prior to the CIML meeting and was sponsored by Brazil. Representatives from several Central and South American countries as well as some members of CIML participated. The following topics were discussed:

- Regional Harmonization of Metrology in Europe - J.F. Magana (France)
- The EC Directive on Measuring Instruments - M. Schulz
- Establishment of a European Data Base for Pattern Approval for Measuring Instruments - H. Apel (Germany)
- The OIML Certificate System - B. Athané
- Asia Pacific Legal Metrology Forum - J. Birch (Australia)
- Eastern European Cooperation in Legal Metrology (WELMEC) - S. Bennett (U.K.)
- Inter-American Metrology System (SIM) - M.N. Frota (Brazil)
- Inter-American Accreditation Cooperation (IAAC) - R.B. Figueiredo (Brazil)
- Accreditation Activities in OIML - S.E. Chappell

A tour was provided of the INMETRO laboratories for scientific, industrial, and legal metrology.

Activities of OIML Secretariats

This part of the report provides: (1) an identification of work, either Recommendations (Rs) or Documents (Ds), being developed in Technical Committees (TCs) and Technical Subcommittees (SCs) of specific interest to the NCWM and (2) a schedule of activities of secretariats, the U.S. National Working Groups (NWGs), and the International Working Groups (IWGs) of committees and subcommittees that have recently taken place or are planned for the near future. More details of these activities have been reported to the Specifications and Tolerances Committee of the NCWM by Deborah Ripley of this office.

- TC1 Terminology (Poland)

  A 3rd CD revision of the "Vocabulary of Legal Metrology" (1978 Edition) has been distributed by the Secretariat for review and comment by May 1998. A meeting to discuss the draft is scheduled by the Secretariat for November 1998 in Warsaw. This vocabulary will complement the "International Vocabulary of Basic and General Terms in Metrology" developed by BIPM, IEC, IFCC, ISO, IUPAC, IUPAP, and OIML (latest Edition 1993 published by ISO).

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

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

  A 3rd CD Recommendation on "Multi-dimensional Measuring Instruments" has been distributed by the Secretariat for comment and vote by February 1998. The United States voted "yes" with comments.

- TC8 Instruments for Measuring Quantities of Fluids (Switzerland)

  - TC8/SC5 "Water Meters" (United Kingdom)

  A meeting to discuss the revision of OIML R49 "Water Meters" was held in Vienna in November 1997. A meeting of task groups of SC5 and the TSO/TC on "Water Meters" was held at NIST in February 1998. Other meetings including task groups of OIML, ISO, and CEN are scheduled at PTB in Germany in September 1998.

  - TC8/SC7 "Gas Metering" (Belgium)

  The U.S. participated in a IWG meeting in Brussels in January 1998 to discuss a 1st CD draft OIML R "Measurement of Quantities of Gas Distributed by Pipeline" (to included natural gas and compressed natural gas). It is expected the Secretariat will distribute a new draft later in 1998 to reflect the decisions of the meeting.

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

  A 2nd CD draft revision of R60 "Load Cells" has been distributed by the Secretariat to collaborating member nations for comment and vote by March 1998. A IWG consensus was achieved and revisions have been made in the draft in response to comments received. After final review by the NWG, the draft is now expected to be sent to BIML for distribution to CIML for review and vote.

  - TC9/SC2 Automatic Weighing Instruments (United Kingdom)

  A 3rd CD draft Recommendation on "Automatic Road Weighbridges for Vehicles in Motion" is being developed and is expected to be distributed by the Secretariat for comment in 1998.

  - TC9/SC3 Weights (U.S.A.)

  Annexes for OIML R111 "Weight Classes E, F, and M" for test procedures and test report forms have been distributed by the Secretariat to collaborating member nations for comment and vote by May 1998. An IWG meeting was held at NIST in May 1998. It was decided to revise R111 as well as prepare the indicated Annexes. The Secretariat has sent out the decisions of the meeting and proposed changes to the IWG for comment and vote.

Presidential Council Meeting

A meeting of the CIML Presidential Council took place at BIML on February 24 and 25, 1998.
The following subjects were addressed:

- Review of the technical activity of the organization
  A report was presented on the activities of the technical committees and subcommittees based on the annual reports submitted by the secretariats for calender year 1997. It provided data on the following: number of active and inactive projects and committees; number of draft Recommendations that will be presented for approval at the next CIML meeting; and the number of international working group meetings held in 1997 and scheduled for this year. A report will be presented at the next CIML meeting on the status of the technical work with recommendations for improving the schedule and accomplishments of the work projects.

- I reported that I had organized a meeting in April of this year to address "mutual recognition of pattern approval certificates and associated test reports." Several selected OIML member nations and BIML had been invited to participate. This effort will support the OIML Certificate System and assist in the revision of OIML Document 13 "Guidelines for bi- and multilateral arrangements for the recognition of results for pattern evaluations and verifications."

- Accreditation
  I gave a brief report on the task group on "accreditation." A revised draft paper is being developed based on the discussion at the task group meeting held after the CIML meeting in Brazil.

- Corresponding Member nations
  The participation of corresponding (non-voting) member nations in the activities of OIML was discussed. It was decided that BIML should issue an inquiry to corresponding members regarding their interest in participating in technical committees. On the basis ofthe response, a policy could be established to permit the participation of corresponding members in the work. This policy would be monitored for a period of 2 years before becoming permanent.

- Regional Legal Metrology Bodies
  A discussion took place regarding what should be the relationship of OIML to the various regional bodies. It was concluded that no special relationship should be developed but that CIML should monitor developments. The following reports were presented: John Birch reported on the last meeting of the Asia Pacific Legal Metrology Forum (APLMF) that took place in Japan in September 1997, Seton Bennett provided a report on the Western European Cooperation in Metrology (WELMEC), and Lev Issaev reported that Russia had established a National Conference of Metrology that will include the various independent states of the former Soviet Union.
- Developing Countries
  - M. Kochsiek, Vice President of the OIML Development Council, presented a report on this subject and on related discussions with T. Quinn, Director of BIPM (International Bureau of Weights and Measures) and IMEKO (International Federation of Metrology).
  - I reported that a workshop had been organized by NIST in which the member nations of the Organization of the American States (OAS) had been invited. The workshop will take place the first two weeks in June 1998 and is entitled "Legal Metrology for the Americas."
- Long-range Plans
  An update on long range-plans was given by Knut Birkeland, Past President of CIML. See the report on this subject presented at the CIML meeting in October.

Meeting of the Joint Working Group (OIML and Mètre Convention)

The meeting of the Joint Working Group took place at the International Bureau of Legal Metrology (BIML) on February 26. The following persons participated: representing CIML - G. Faber (President, the Netherlands), S. Chappell (Vice President, United States), M. Kochsiek (Vice President, Germany), J. Birch (Australia), B. Athané (Director, BIML), and K. Birkeland (Past President, CIML); representing the Mètre Convention (the International Committee of Weights and Measures - CIPM) - J. Kovalsky (President, France), K. Iizuka (Vice President, Japan), K. Gebbie (Vice President, United States), W. Blevins (Secretary,

Australia), and T. Quinn (Director, BIPM); and representing the International Laboratory Accreditation Cooperation (ILAC) - J. Gilmore (President, Australia), B. Collins (Vice President, United States), and R. Kaarls (the Netherlands).

This working group was established in 1995 in response to a recommendation by the French government that the two organizations consider rapprochement. The objective of this working group is, therefore, to explore opportunities for cooperation in efforts of mutual interest and benefit.

Faber chaired the meeting and opened it by reviewing the activities of OIML since the last working group meeting. Kovalsky responded on behalf of the Mètre Convention and provided a comparable report. Gilmore was requested to speak on behalf of ILAC (International Laboratory Accreditation Cooperation) and provided a report on current activities.

Other topics discussed were:

- Participation of BIPM in the OIML Development Activities
  Kochsiek reported on the plans for the Symposium on "Economic and Social Development" to be held at PTB in Braunschweig, Germany in June 1998 sponsored by OIML, BIPM, IMECO (International Metrological Confederation)." He identified the program of the Seminar and identified those who would be participating on behalf of OIML and the Mètre Convention and related topics.

- "Joint Committee for Guides in Metrology"
  Athané and Quinn reported on a meeting of the Joint Committee for Guides in Metrology (JCGM) at BIML in November 1997. It was decided that the Working Group on "uncertainty" prepare a short version of the "Guide to the Expression of Uncertainty in Measurement" and the Working Group on the "Vocabulary" would begin the revision of the "International Vocabulary of Metrology." A new Working Group was proposed to prepare a guide for the application in national metrology activities of ISO/IEC Guide 25 on "Requirements for Determining the Competence of Calibration and Testing Laboratories." ISO has been requested to provide the Secretariat of JCGM. The former ISO/TAG4 "Metrology" is in the process of being reconstituted.

- Opportunities for future cooperation
  Common, independent ongoing work projects were identified and discussed in the areas of acoustics, pH, fluid flow, and hardness. No joint efforts, however, were committed in any of these areas.

Faber requested that the Directors of BIPM and CIPM explore how to make ILAC a permanent member of the Joint Working Group and the possibilities for future cooperation. It was agreed that the next meeting of the Joint Working Group would be at BIPM in February 1999 to discuss progress in and opportunities for cooperation.

Fourth Asia Pacific Legal Metrology Forum (APLMF)

Japan hosted the Fourth APLMF meeting and Workshops/Seminars at the National Research Laboratory of Metrology in Tsukuba, Japan. Representatives of fifteen member nations of the Forum participated. Not all representatives participated in all Workshop/Seminars. The United States was represented in all elements of the meeting. The U.S. delegation consisted of Chappell, Charles D. Ehrlich, and Deborah M. Ripley of the Technical Standards Activities Program, Office of Standards Services, NIST and Jim Truex of the Division of Weights and Measures, State of Ohio and also representing National Conference on Weights and Measures.

Highlights of the meeting were:

- A Workshop/Seminar on High Capacity Flow Meters. The presenters for this workshop were from Australia on flowmeters (pipe provers, calibration meters, and volumetric proving tanks) for measurement of liquid petroleum and from Canada on meters (orifice plate, turbine, and ultrasonic meters) for natural gas measurement. A tour was also provided of Ovel Corporation, a Japanese manufacturer of high capacity flow meters. Ripley and Ehrlich participated in this Workshop.

- A Workshop/Seminar on Legislation and Administration. This consisted of three parts:
  - Knut Birkeland gave an overview of "legal metrology" and its challenges. Equity in trade was covered with emphasis on the "new" challenging areas of legal metrology that concern public and worker health and safety and protection and monitoring of the environment.

- Richard Knapp of Canada gave a presentation on legislation including details on the necessary elements. The OIML Document on "Law on Metrology" was mentioned. The presentation was well received since many of the member economies of APLMF are now developing or revising laws and regulations pertaining to legal metrology. Brief summaries of national legal metrology legislation were given by several participating economies including Australia, Canada, Japan, Malaysia. Indonesia, Vietnam, China, and the Phillippines.
- Knut Birkeland also provided a presentation on "accreditation in legal metrology." Chappell presented information on the task group within OIML that is addressing that subject.

- Working Parties on Utility Meters, Prepackaged Products, and Mutual Recognition Agreements. These consisted of the following presentations:
  - Rene Magnan of Canada chaired a Working Party on "utility meters." It was concluded that the scope of the work would include gas, electricity, water, and telephone meters. Taxi meters would be addressed separately. OIML recommendations on "gas meters" would be followed. The OIML Recommendation on "water meters" is under revision, and member economies would be asked to participate in this effort. It was noted that the OIML Recommendation on "electricity meters" was in need of revision, and CIML would be requested to give this project priority.
  - John Barker of New Zealand was the Chair of the Working Party on "prepackaged products." The OIML Recommendations on "labeling" and "determining the net content in packages" were applicable. In the discussion, it was suggested that OIML should be requested to consider developing a product certification mark similar to the e-mark that manufacturers of prepackaged products could apply to facilitate trade of such products globally with respect of declaring measured content.
  - John Birch chaired a Working Party on "mutual recognition agreements." This was aimed at mutual agreements of pattern evaluation certificates and test reports. The APLMF intercomparisons among testing laboratories would support this effort as well as possible implementation of accreditation of testing laboratories. It was concluded that the implementation of such agreements might be premature until similar efforts within OIML are further developed.

- Fourth Asia-Pacific Legal Metrology Forum. Dr. Hidetaka Imai, Director General of the National Research Laboratory of metrology, chaired the meeting with John Birch of Australia as the Convenor. The following reports were presented on the following:
  - (a) all workshops and seminars, (b) the APLMF intercomparisons for nonautomatic measurements (just being completed), load cells (final plan developed and will begin in early 1998), and weights (plan being developed, results of other regional intercomparisons being reviewed, and expected to begin in mid-1998), and (c) training in particular that activity between China and Australia. A training session on both non-automatic and high capacity weighing instruments is planned for Shanghai, China in July 1998. The draft Memorandum of Understanding that will provide the framework for APLMF was discussed. Participants were requested to provide comments on that draft by February 1998.
  - activities of other regional organizations namely the Asia Pacific Metrology Program (APMP) and the Asia Pacific Laboratory Accreditation Cooperation (APLAP).
  - OIML activities by B. Athané, Director of BIML In particular, Athané responded to the request by APLMF for CIML to give priority to the development of a revision of the OIML Recommendation on "Electricity Utility Meters."
  - recommendations for establishing Working Parties to develop a Recommendations on "Moisture in Grain (Rice)" and "Blood Pressure Monitors;" however, OIML Recommendations exist for both. It was noted that the OIML Recommendation on "Blood Pressure Monitors" is undergoing revision in OIML TC18 "Medical Instruments" with Austria as Secretariat. Both the United States and Japan now participate in the work.

  The work program for 1997-98 was presented and includes 26 items. Three other economies, namely Laos, Chile, and North Korea, were approved to become members. The next meeting of APLMF was scheduled to be held in Seoul, South Korea in October 25-27, 1998 just before the CIML meeting.

- Workshop/Seminar on Implementation of OIML R76 "Non-automatic Weighing Instruments." Ripley and Truex participated in this Workshop which took place after the Fourth APLMF meeting. Australia provided the staff that conducted this workshop which had the objective addressing in detail the overall test procedure and interpretation of the information to be included in the format of the test report of OIML R76.

- Conclusion. With Australia as its Secretariat, the APLMF has gotten off to an impressive start in the effort of harmonizing legal metrology requirements for measuring instruments in the Asia Pacific region. These efforts will benefit regional and global trading of these instruments and affected products. The United States should benefit by remaining actively involved.

Mutual Recognition of Pattern Approval Certificates and Associated Test Reports

Steve Malone of Nebraska, Chairman of the NCWM, requested the Technical Standards Activities Program of NIST organize a meeting of representatives of selected OIML member nations to discuss the principles of mutual recognition of pattern (type) approval test report data and the associated certificates. The NCWM has had discussions regarding mutual agreements of accepting test data for pattern approvals over the past two years with the U.K. (NWML) and the Netherlands (NMi). Not much progress has been made, and the effort began to take on the appearance of establishing exclusive agreements which the NCWM did not want.

I organized such a meeting that was held at NIST from April 15 through 17, 1998, to discuss "Principles for Recognition of Pattern Approval Test Data" and acted as convener and Secretariat of the meeting. Representatives of OIML from Australia, Canada, China, France, Germany, Japan, the Netherlands, Russia, and the United Kingdom were invited to participate in the meeting along with representatives of the U.S.A, that is, the NCWM. B. Athané was also be invited to participate on behalf of BIML. All those invited attended except Russia, which provided input to the discussions by correspondence.

The focus of the discussions was the OIML Certificate System for OIML R60 "Load Cells" and R76 "Nonautomatic Weighing Instruments," since these are the devices and instruments for which much experience has already been obtained. However, the principles developed are expected to apply to other instrument categories. General principles and a first draft on "Mutual Agreement on OIML Pattern Evaluations," prepared and presented by the convener, were also discussed. On the basis of views expressed at the meeting, a second draft was prepared by the Secretariat and distributed to participants for comment.

Future actions include the following tasks related to establishing mutual confidence: (a) France and the United Kingdom agreed to draft criteria for conducting peer reviews of testing laboratories and (b) Australia agreed to prepare a questionnaire for reporting national capabilities for carrying out testing according to relevant OIML Recommendations. Based on the views of the participants on the second draft, this project could be brought to the attention of CIML at its next meeting in October 1998 for consideration as adoption as an OIML program.

Workshop on "Legal Metrology for the Americas"

The Technical Standards Activities Program organized a Workshop on "Legal Metrology for the Americas," sponsored by NIST/OSS, NCWM, the Organization of American States (OAS), the Sistema Interamericano de Metrologia (SIM) and the International Organization of Legal Metrology (OIML). The workshop was held at NIST from Monday, June 1, 1998 through Friday, June 12, 1998. All 34 member nations of the OAS were invited to participate and 31 nations participated. Most of the Workshop sessions were held at or near NIST's facility in Gaithersburg, Maryland with three days of visits to industrial and the NTEP laboratory site in Ohio.

The Workshop was planned to better acquaint participants with the weights and measures practices within the Americas as well as with the international legal metrology system of OIML. Presenters were weights and measures officials from both the federal and state levels, including the staff of the NIST Weights and Measures Program and members of the NCWM. Presentations were given on the national weights and measures programs in Brazil and Canada as well as a presentation on the activities of OIML. A panel discussion was conducted among representatives of manufacturers and industry including members of the Scale Manufacturers Association, the Meter Manufacturers Association, Gas Pump Manufacturers Association, and the packaging industry.

The Workshop concluded by summarizing the key elements learned and preparing resolutions that identified opportunities. A number of future actions were agreed upon with the aim of establishing compatible legal metrology systems within the Americas. In particular, a working group was organized to develop the structure and framework for the recently established Working Group for Legal Metrology in SIM and to plan and coordinate programs to address needs and opportunities for cooperation. Participants expressed satisfaction with the experience offered and results of the Workshop. A more detailed summary report is available.

Appendix F (Continued)

Report on APLMF Meeting
By
James C. Truex
W&M Inspection Manager
Division of Weights and Measures
OH Department of Agriculture

October 31, 1997

Mr. Steve Malone, NCWM Chairman
Nebraska Department of Agriculture
Division of Weights & Measures
P.O. Box 94757
Lincoln, NE 68509-4757

Dear Steve:

It was my pleasure to represent the NCWM at the Fourth Asia-Pacific Legal Metrology Forum (APLMF) meeting and the APLMF OIML R76 training course September 29 to October 3, 1997, in Tsukuba, Japan. Participating Economies at the Forum included Australia, Canada, People's Republic of China, Indonesia, Japan, Republic of Korea, Malaysia, Mongolia, New Zealand, Papau New Guinea, Philippines, Russia, Chinese Taipei, Thailand, Vietnam, and the United States. Mr. Athane, BIML Director participated as an observer. Worth noting is that North Korea, Laos and Peru have also asked to be considered for membership so it appears there is growing interest.

United States representatives at the Forum were Dr. Sam Chappell, Dr. Chuck Ehrlich, and Debbie Ripley from NIST's Standards Management Program, plus myself representing the NCWM. Debbie Ripley and I represented the United States at the OIML R76 training workshop.

I have broken my report down into three categories: Agenda Items / Decisions, Observations & Recommendations.

1) Agenda Items / Decisions

		Attachments [Not included in this Appendix.]
1)	Fourth APLMF Agenda	A
2)	APLMF Convenor Report	B
3)	Report of the Working Group on Utility Meters	C
4)	Report of the Joint Measurement Skills Training Project	D
5)	Report on the High Capacity Flow Meters Workshop	E
6)	Report on the Legislation & Administration Workshop	F
7)	Report on the APEC Roundtable on Standards & Conformance	G
8)	Report of the ACCSQ Workshop on Legal Metrology	H
9)	Report of the APLMF Working Party on Mutual Recognition	I
10)	Report of the APLMF Working Group on Goods Packaged by Measure and Issues Paper	J
11)	Rules of Procedure for APLMF Collaborations	K
12)	APLMF M.O.U. Draft	L
13)	Report on APLMF Intercomparison of Load Cell Testing	M
14)	Report on APLMF Intercomparison of Non-automatic Weighing Instrument (digital bench computing scale) Testing	N
15)	APLMF Work Plan for 1997/1998	O
16)	APLMF / OIML R76 Workshop Agenda	P

2) Observations

A. Fourth APLMF Meeting

As one can see, after reviewed the report items, the APLMF has a very aggressive and full agenda with a wide range of issues. It seemed to me that Australia has put a lot of time, resources and effort into the APLMF, especially Mr. John Birch who is also the appointed APLMF Convenor. If Australia was unable to continue in this enormous effort I wonder what would become of the APLMF.

Because of the workload and issues that require decisions between meetings, the Convenor requested that a three member executive committee be appointed to assist him. It was agreed an "Interim Executive Committee" would be established consisting of one representative each from Canada, Malaysia, and Japan.

During BIML Director Athane's remarks to the group he expressed support for the development of regional legal metrology groups, such as WELMEC and the APLMF. He urged the regional groups to report to BIML/OIML. He said OIML will help in reporting regional activities to other regions. I had not thought about the similarities to our U.S. system until Mr. Athane made these comments. I think we have found that our regional W&M associations in the U.S. have assisted the NCWM by bringing important issues to the conference, developing issues, getting information to State and local jurisdictions, etc. Perhaps regional associations on an international level may result in similar benefits. Additionally, we have heard from manufacturers that the European region's WELMEC is very strong influence. Perhaps the development of other regional groups could provide some checks and balances.

There was very little discussion about the "Mutual Recognition Arrangement" for pattern evaluations (type evaluations). However, I sensed that the consensus was that mutual recognition of test and evaluation data would be beneficial.

OIML has an Internet home page - address: http://www.oiml.org
APLMF has an Internet home page - address: http://www.aplmf.org

It was apparent to me that other countries welcome and want the NCWM to be involved in the APLMF. I got the impression that they truly respect our States, our NTEP labs, and the NCWM. I think there is a reason they are using terms and phrases like "mutual recognition," "privatization," "training modules," and "train the trainer." Our foreign colleagues do a better job of reading NCWM reports than most of us do in this country. At this meeting, like other international meeting I have attended, I was asked dozens of questions about NCWM agenda items. Many delegates asked me questions pertaining to short measure milk, the Kansas privatization experience, the U.S. State/local weights and measures system, etc.

In many cases APLMF projects are very similar to NCWM projects. For this reason alone, I think the NCWM should obtain and review APLMF reports, training materials, and other documents. Such an effort could result in a savings of time for the NCWM.

B. APLMF / OIML R76 Training

The APLMF has put an emphasis on training as a way to improve the dissemination of technical knowledge and uniformity.

As it turned out the three day OIML R76 training session in Tsukuba was a condensed dry run. The course, when completed, will be a five day train the trainer workshop tentatively planned for next year in the far east. Nonetheless, the material presented was very well organized, explanatory and useful to me. The material was primarily prepared by Ms. Kerry Marston, Training Consultant, of Australia and presented by Mr. Keith Mann, Senior Technician, of the Australia pattern approval laboratory. Both individuals should be commended for their efforts.

The rational of many of the R76 requirements were explained. Procedures were demonstrated. As students, we were given exercises to work out. We were given workbooks and a video tape which includes partial demonstrations of many of the test procedures. It was the best coordinated and most informative type approval training I have ever witnessed. I say this with some embarrassment since I have been involved , as a trainer, with some of the type evaluation training in the United States.

There is also another training session planned for next fall on the evaluation of high capacity weighing instruments.

III. Recommendations on NCWM Participation in the APLMF

I have reviewed 1997 NCWM Executive Committee Item 101-15 which contains views and recommendations from Darrell Guensler, Barbara Bloch, and Charlie Gardner pertaining to the APLMF. You will see that my recommendations are the same or similar in many respects. Even when identical I have repeated them below for your ease in reference.

A. The NIST/Office of Standards Management(OSM) should take the lead roll in U.S. APLMF participation. The NCWM should assist NIST in this endeavor and continue active participation in the Forum. We are in a position to influence the standards development of the APLMF and perhaps OIML documents through the APLMF. We should communicate with WELMEC but WELMEC is a European regional group. It makes more sense to me to participate at a higher level within the APLMF.

B. The NCWM must determine the appropriate level of involvement in APLMF and resources available as part of the Strategic Planning Project. A process to select appropriate representatives should be developed.

C. Continue to participate in the intercomparison on pattern approval testing in appropriate areas. This helps our labs understand OIML requirements, understand test procedures and identify possible deficiencies. Further, it will contribute to other countries confidence in our technicians' capabilities, laboratories and overall W&M system. This could also be our fastest avenue to the issuance of OIML Certificates by NTEP which will assist U.S. manufacturers in foreign markets. NIST participation in the intercomparison of load cells and mass standards should be encouraged.

D. Participate in appropriate training workshops such as the R76 train the trainer. The NCWM should consult with NIST in identifying appropriate participants. For example, I think one NIST/OSM representative and one NTEP representative should attend the R76 training. Those representatives should then be responsible for training other NTEP technicians as appropriate. At this time I do not have enough information about the high capacity scale testing training workshop to make a recommendation. However for this and other developing projects, NCWM S&T or L&R involvement may be considered fruitful.

E. Urge NIST to become a participant in the APLMF "Mutual Recognition Agreement" project.

Again, I appreciated the opportunity to represent the NCWM at these meetings. I thank you and the others members of the Executive Committee for your confidence in me. If the Committee needs clarification, additional material or has additional questions I am available by phone, fax, email and/ or at the Interim Meeting.

Sincerely,

OHIO DEPARTMENT OF AGRICULTURE

James C. Truex
W&M Inspection Manager
Division of Weights and Measures

Copy: Sam Chappell, Chief, NIST/OSS
Lewis Jones, Chief, Ohio Division of Weights & Measures

Appendix G

Report of the Metrology Subcommittee for the 1998 NCWM Annual Meeting
July 12, 1998

Subcommittee Membership
The Metrology Subcommittee recommends the following membership be accepted:
Ronald Balaze (at large) chair
Ken Fraley (SWAP) vice chair
L.F. Eason (SEMAP)
Joe Rothleder (WRAP)
Steve McGuire (MidMAP)
Jose Torres (CaMAP)
Dan Newcombe (NEMAP)

No private sector membership.

Michigan moving to MidMAP has left the committee with two MidMAP representatives. The subcommittee recommends Ron Balaze as an at large member at least until his term as chair expires or until MidMAP selects a single representative. Chairman Malone approved this recommendation with the condition that there be one member per region in the future. Ken Fraley the committee representative from SWAP is to be vice chairman for the coming year.

Funding of Accreditation:
The Metrology Subcommittee supports the NCWM resolution for NIST to provide funding for NVLAP accreditation of state laboratories. The SLP is at a critical point in its ability to provide calibration services for the countries industry. It faces a situation similar to the one in the 1950's where new standards and equipment were needed by the states to be able to provide accurate and reliable measurements. At that time the NCWM put forth a resolution requesting the NBS to fund a project which would provide each State and Territory with the equipment and standards needed to provide industry with reliable measurements. This resolution of the 40th NCWM in 1955 stated:

"**State Standards**

Whereas, the Congress of the United States is authorized by the Constitution of the United States to "fix the standards of weight and measure" ; and

Whereas, the Congress, by joint resolutions of June 14, 1836, and July 7, 1866, and the Act of July 7, 1838, did provide the States with the first basic standards and instruments and thus initiated the effort for nationwide uniformity in weights and measures; and

Whereas, these original standards have been made obsolete by the demands of business, industry, and science for greater accuracy and precision ; and

Whereas, there currently is no source for standards of the precision required; and

Whereas, the development of specifications for and the manufacture of such precision standards and instruments is so highly specialized and technical that development and procurement on an individual State-by-State basis would be prohibitively expensive ; and

Whereas, the only direct road to Nationwide uniformity is through the Federal government ; and

Whereas, it is reasonable to interpret that the Constitutional authority of the Federal government for establishment of standards encompasses the making available of the physical standards themselves, and

Whereas, the National Bureau of Standards is uniquely equipped to undertake the development of specifications, the placing of orders, the acceptance testing, the certification, and the disbursement of such basic standards and instruments;

Therefore, be it

Resolved, That this 40th National Conference on Weights and Measures, in assembly this twentieth day of May, 1955, does record it unanimous request to the Congress of the United States that the Congress make available the necessary funds and direct the National Bureau of Standards to establish a project that will result in the providing to each State and Territory of basic standards of mass, volume, and length and suitable instruments and accessories as in its best judgement are required to establish the necessary foundation for precision and accuracy in the determination of weight and measure in business and industry of America."

That project was completed in the 1960's as the State Laboratory Program. Based on the results of the State Laboratory Workload Survey, there is no doubting the need for or the ability of the SLP to provide the measurement services required by the high tech industries of the United States. The question now is the how to pay for the accreditation process which is required to have the SLP's measurements accepted by industry. The 1955 proposal shows that provision of uniform measurements to all industries has always been the intent of the State Laboratory Program. It traces the historical justification and responsibility for the program back to the Constitution. It also points out the necessity of Federal implementation and oversight of the program. As was the case in 1955, technology and requirements have changed. Now accreditation is a necessary component that must be added to the program. Seven states indicated on the NCWM laboratory workload survey that they will seek NVLAP accreditation within the next year. This number could increase significantly with assurance of NIST funding. The Metrology Subcommittee believes the NCWM should continue to seek support for NIST funding of NVLAP accreditation of SLP laboratories at all meetings with NIST personnel and by whatever other means are appropriate.

Eason and Balaze received copies of a letter from Steve Malone thanking Raymond Kammer for agreeing to pay the State's costs for obtaining and maintaining accreditation of their metrology laboratories by a nationally recognized accreditation organization. The Metrology Subcommittee appreciates the support of the NCWM and NIST and is looking forward to implementation of the plan. We are interested in knowing the time frame for implementation, the scope of accreditation, and what organization will be doing the accreditation.

Funding of Primary Standards Recalibration

Based on documents as late as the 1962 edition of *NBS Handbook 82*, it was intended that the SLP laboratories have their primary standards of mass, length, and volume recalibrated periodically at no charge. Page 89 of this publication states:

> "**Calibration of Standards.** The National Bureau of Standards calibrates the primary reference standards of the States without charge. After the initial calibration of State primary standards, these should be returned to the National Bureau of Standards for recalibration at regular intervals of about 10 years; the law of the State usually specifies this interval, and the provisions of the law should, of course, be observed."

Many SLP Laboratories have had primary standards recalibrated at very high costs. Others have not been able to acquire the necessary funding. Our understanding is that the legal mechanism still exists for the funding of the recalibration of State primary standards, but that there has been no funding provided.

Restoration of this funding would increase National measurement uniformity and should be sought. If this funding is to be restored to the State Laboratory Program, it would need to be coordinated on a real need basis by the Office of Weights and Measures. A schedule could be developed so that a certain number of labs (between 5 and 10) are scheduled to have standards recalibrated each year. Provision should also be made for extraordinary cases of damage to standards and problems found by round robin measurements.

On behalf of the Executive Committee, Chairman Malone sent a letter to L.F. Eason and Ron Balaze requesting details for calibration cycles and potential costs for periodic recalibration of State standards. Eason and Balaze contacted NIST regarding this project; NIST has responded by recommending intervals in the form of a Good Measurement Practice (GMP) 11 that will be published in Handbook 145. In addition, NIST fees are published in NIST SP 250. Information from GMP 11 and SP 250 were used to provide input to the OWM proposed budget initiative.

Work with Program Evaluation Task Force

The Metrology Subcommittee is volunteering to work with the Program Evaluation Task Force in anyway the Chairman feels that the committee could be of service. One project could be the development of minimum W&M program criteria similar to the metrology program criteria found in Handbook 143. Much of this material was in the original NBS Handbook 1 and could be updated and modernized.

Vehicle Scale Test Carts

NCWM Publication 3, Section 3.2.14 states:

"Field standard test weights (weight carts) are being used to test vehicle scales. These weight carts are powered by liquid fuel which is consumed during the conduct of the test. It is impossible to maintain these devices within the tolerance limits (1/10 000) as required by Handbook 105-1 or within 1/3 of the smallest tolerance applicable as required by Handbook 44 and are therefore inappropriate as Standard Weights."

The Metrology Subcommittee has sought input from metrologists in many jurisdictions and finds that such weight carts are in fact routinely used around the country and as such feels the need to document specifications, tolerances, calibration requirements, user requirements, and controls for their use. Input has also been solicited from the S&T committee regarding this issue for incorporating concerns into the draft document. Special issues for "control" of these motorized devices will be included in documented guidelines as an appendix to Handbook 105-1.

Weight carts are in many ways similar to railroad test cars, the AAR Specifications for Railway Track Scale Test Weight Cars will be reviewed as well to ensure that critical factors for all weight carts are included and to ensure uniformity to the extent possible.

The Metrology Subcommittee will ensure input is solicited from all interested parties during the development of the appendix, will continue to work with the S&T committee on this issue and will recommend appropriate changes to NCWM Publication 3, through established mechanisms, when the publication is complete.

A draft of the appendix will be available at the NCWM for comments and discussion. A copy has been provided to the S&T technical advisor.

Support for Southern Weights and Measures Proposals
The Southern Weights and Measures Association has proposed changes for the calibration intervals found in the Voluntary Registration Regulation (item 234-1) and the Scales Code of Handbook 44 (item 320-6). These changes are meant to deal specifically with calibration intervals for mass standards used in railroad hopper scale buildings. The issue was brought to the metrologist subcommittee at the 1997 NCWM meeting in Chicago by the railroad industry representatives. Ken Fraley worked with Bill Brasher on proposals which were presented at the Southern Weights and Measures Association meeting in Hot Springs. These proposals were passed by the L&R Committee and S&T Committee of the SWMA and forwarded to their respective national committees.

In Handbook 130, the Voluntary Registration Regulation currently states that the standards should be submitted "...at least annually to the Director, for examination and certification...". The proposal will change this to allow the Director to determine the appropriate calibration interval for field standards. The proposed change to H-44 will allow calibration intervals for standards, where they are used in special situations, remain stable and receive minimal wear and tear, to be extended for up to 10 years. This proposal is included in the S&T report as item 320-6 and is supported by the Metrology Subcommittee.

The metrologist subcommittee realizes that H-44 may not be the most appropriate place to address calibration intervals. A draft of "NIST Handbook 105-8 " specifically defining "Calibration Intervals" will be discussed at this meeting and should be ready for circulation by the end of August. However, until this new handbook is published, we feel that the proposed changes are needed to appropriately address this situation.

The Metrology Subcommittee will ensure input is solicited from all interested parties during the development of H105-8. We will continue to work with the S&T committee on this issue and will recommend, through established mechanisms, the appropriate changes to NIST Handbook 44 and NIST Handbook 130 as needed when the publication is complete.

Metrology Laboratory Workload Survey (Update)
The metrology workload survey has been presented to all the regional metrology groups, the NCWM and the NCSL. It is still in the process of being finalized and published. The data is being used to illustrate the work done by the Metrology Labs. We would like this survey to become a routine part of the laboratory recognition submittal so that we can continue to document the workload of the SLP and identify trends in order to proactively support the W&M programs. The Metrology Subcommittee recommends that the NCWM request the OWM develop an electronic mechanism for collecting and summarizing this data and that it be available electronically through the Internet.

Funding Requests
The Metrology Subcommittee appreciates the provision of funding for a member to travel to the Interim Meeting. There were not any issues requiring a committee member to attend the interim meeting, but we would appreciate the continuation of funding for future attendance if necessary.

We also appreciate continued consideration of the issues presented to the Executive Committee during the 1997 Annual NCWM meeting and identified in item 101-14 of the committee's 1998 Interim Meeting Agenda. The specific budget request submitted

during the annual meeting is attached as Attachment 1 at the end of this report. We appreciate the funding of a meeting with the NIST mass management and hope to schedule this immediately before the pivot lab training in November.

Pivot Laboratory Training

The pivot laboratory training will be provided by NIST in anticipation of a national level mass round robin using the international model of key comparisons for establishing measurement equivalence. It is anticipated that this project will provide published data that will enable State laboratories to be a part of the international measurement equivalence system for trade and will assist in formalizing proficiency testing that is critical for laboratory accreditation.

Railroad Issues

The AREMA (American Railway Engineering and Maintenance of Way Association (AREMA) Scale Committee) survey is being done and they have responses from about half of the States. States should be encouraged to respond as soon as possible if they have not already done so. This is a follow up to recommendations made at the 1997 NCWM meeting regarding railroad cooperation with State regulatory officials. Since this was brough up as an NCWM issue for the control of cars used to calibrate railroad scales, the NCWM should ensure responses for this effort. Georgia Harris suggested to the AREMA committee that the NCWM Metrology Subcommittee might be able to help ensure all information is collected from the States. SOP 27 has been updated based on input from interested parties. A report was prepared by Measurement Canada regarding the uncertainties of a railroad test car calibration. The intercomparison has been on hold.

Attachment 1

NATIONAL CONFERENCE ON WEIGHTS AND MEASURES

Proposed Funding for Special Needs During Next Year's (1998) Budget
Metrology Subcommittee - Submitted by L.F. Eason

Amendment Title: Funding for Annual NCWM and NIST Management meeting

Committee Priority: 1

Description:
Fund travel expenses for an annual NCWM Metrology Subcommittee and NIST management meeting for the Chair of the Metrology Subcommittee and up to two other State metrologists. 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 May 20, 1997, Ken Fraley and L.F. Eason met with NIST management from the Manufacturing Engineering Laboratory and Office of Measurement Services (Calibration Program. It was evident that very little is understood about our programs by NIST agencies outside of OWM. Also, we were unaware of many changes at NIST that impact our laboratories and W&M programs.

The proposed meeting will reinforce and expand the dialog initiated at this meeting. It will serve to review the needs of the States and the NCWM in support of accurate and traceable 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 W&M 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. Therefore, each of our customers is by extension a customer of NIST and each company we regulate is by extension regulated of NIST.

Resource Narrative:
Maximum of $1,500 per person each year for travel and per diem for three representatives to attend a two to three day meeting. Maximum total expense $4,500.00.

Proposed Source of Funding: General revenues

Appendix H

Weights and Measures National Product Evaluation Study
Draft -7/13/98

1.0 PURPOSE and SCOPE

Local Weights and Measures (W&M) officials may be asked to participate in a product study. This study could be utilized for the purpose of gathering data for informational purposes such as a program or product evaluation in accordance with National Conference on Weights and Measures practices. This protocol defines the formal structures for W&M study identification, evaluation, and reporting.

2.0 REFERENCES

National Conference on Weights and Measures (NCWM)
Executive Committee-1998 Pub 16, Agenda Item 101-15
Associate Membership Committee
NIST Handbook 44, Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices
NIST Handbook 130, Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality
NIST Handbook 133, Checking the Net Contents of Packaged Goods

3.0 DEFINITIONS

Local: State, county, townships or city under local jurisdiction.

Jurisdictional Resources: Any agency either at the local, State, or national (e.g., FDA, USDA, FTC) level which has the authority to exercise regulatory actions.

National Institute of Standards and Technology (NIST): NIST's mission is to promote uniformity among the States in weights and measures standards, laws, and practices to facilitate trade and protect U.S. companies and citizens. NIST has no regulatory authority.

Responsible Local Weights & Measures Director: Weights & Measures Director of the Jurisdiction.

W&M Strategic Operations Team (TEAM): An NCWM subcommittee including the NCWM Chairperson, the responsible Local Wts & Measures Director, and an industry representative, at a minimum. The Industry representative shall not be associated with the company involved, or in a related industry to the company involved.

4.0 PROTOCOL

4.1 Roles and Responsibilities

4.1.1 NCWM (National Conference on Weights and Measures): Ensures uniformity in weights and measures through the National Conference.

4.1.2 Local Weights and Measures:
- Maintain stable/fair marketplace
- Ensure compliance
- Provide trained personnel to conduct testing
- Maintain cognizance over issue resolution of non-compliance identified in their State

4.1.3 NIST-OWM (Office of Weights and Measures):
- Sponsor NCWM
  - Provide Technical Advisors

- Issue NIST Handbooks 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices"; 130, "Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality"; and 133, "Checking the Net Contents of Packaged Goods," and NCWM Publications
- Manage NTEP (National Type Evaluation Program)

- Oversight for ensuring traceability of State Laboratory's measurements
- Assist States with identification of, and contact point, for national packers
- Provide technical advice, protocols, and other information to Weights & Measures officials and industry to help them determine reasonable moisture allowances when moisture loss issues arise

4.2 Product Study: Identification, Evaluation, and Reporting Process through NCWM (See figure 1)

4.2.1 Minimum steps required by the responsible local prior to escalation to OWM/NCWM or other agency include:

- Review inspection and test reports to ensure the jurisdiction conducted the tests in full accord with NIST Handbook 133
- Review related industry correspondence to determine non-compliance issue communication, awareness, and related corrective actions. Communications should include involved company and other Weights & Measures jurisdictions, as appropriate
- Confirm that jurisdictions have, or plan to, conduct additional test at distribution centers or packing plant (HB 133 Pointt of Pack Inspection)
- Confirm that the State has exhausted all resources towards issue resolution

4.2.2 Situations which may result in a Product Study may be identified to the TEAM by various sources such as the State or local agencies, FDA, FTC, USDA, NIST, Trade Associations, Companies, Industry, or any Weights and Measures official. The agency or individual requesting the study should make their recommendation for any action to the TEAM.

4.2.3 TEAM shall evaluate recommendations and, in the event of a problem, determine whether formal notification to the non-compliant company(ies), should be made. Correspondence shall be signed by the NCWM Chairperson with copies to other TEAM members.

4.2.4 TEAM may determine whether a study is appropriate.

4.2.4.1 If a study is deemed unnecessary, the issue shall be routed back to originating local jurisdiction for follow-up.

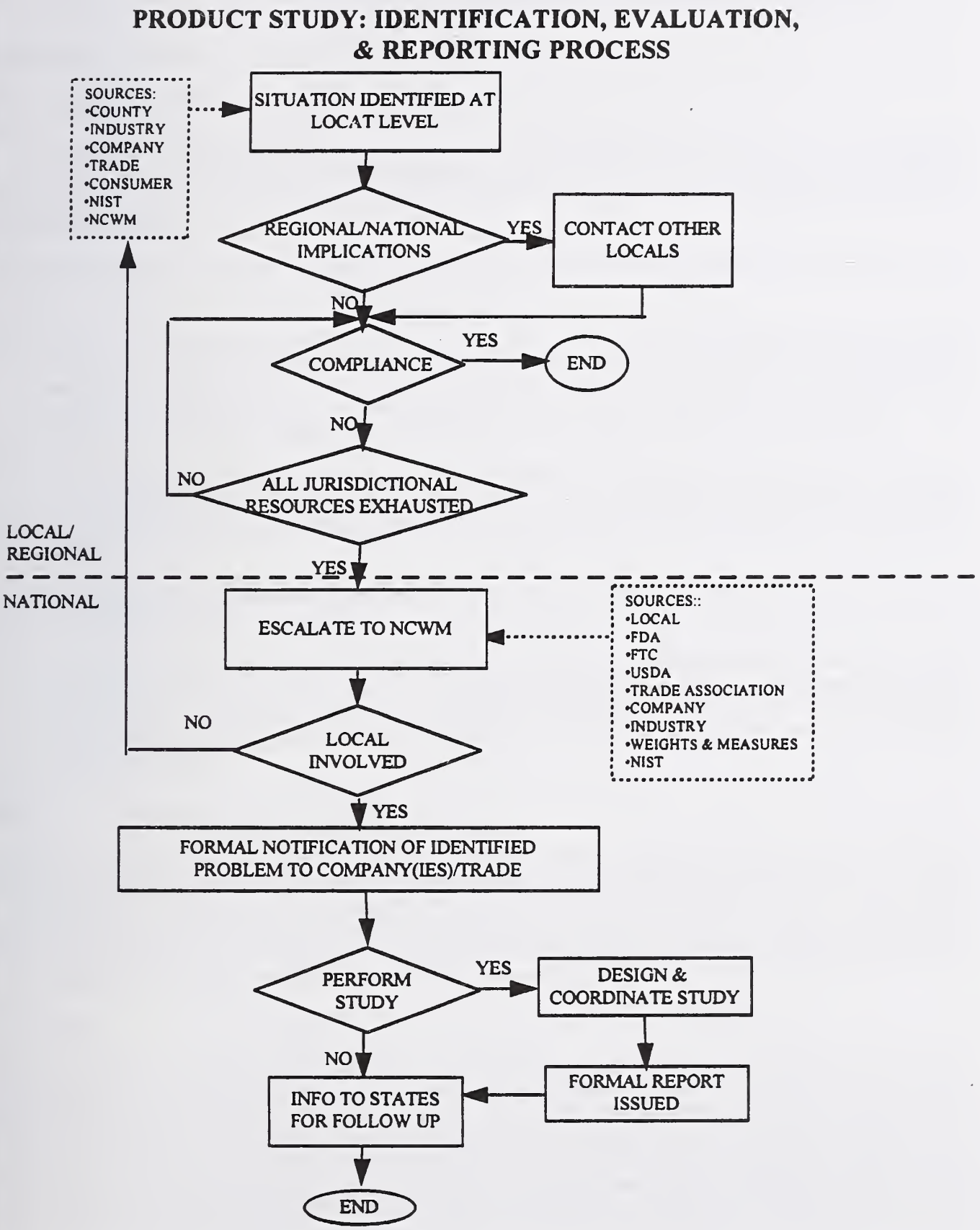
4.2.4.2 If a study is deemed to be appropriate, TEAM shall determine whether a limited or national study shall be conducted.

4.2.5 TEAM shall coordinate with NIST (training, data evaluation) the performance of the study, including the design (participants, sample size, etc.). Guidelines for executing and evaluating a study are as follows:

- Identify the Purpose
- Identify who will be asked to participate
- Identify the product/products
- Identify preferred locations
- Identify the Time Frame
- Define the methodology including minimum sample size
- Provide Training as required
- Collect the data from the study
- Evaluate the data from the study
- Issue formal report

4.2.6 TEAM shall formally publish the results of any and all studies performed. The report shall be provided to the company(ies).

Figure 1


PRODUCT STUDY: IDENTIFICATION, EVALUATION, & REPORTING PROCESS
SOURCES:
•COUNTY
•INDUSTRY
•COMPANY
•TRADE
•CONSUMER
•NIST
•NCWM
SITUATION IDENTIFIED AT LOCAT LEVEL
REGIONAL/NATIONAL IMPLICATIONS
YES
CONTACT OTHER LOCALS
NO
COMPLIANCE
YES
END
NO
NO
ALL JURISDICTIONAL RESOURCES EXHAUSTED
LOCAL/ REGIONAL
YES
NATIONAL
ESCALATE TO NCWM
SOURCES::
•LOCAL
•FDA
•FTC
•USDA
•TRADE ASSOCIATION
•COMPANY
•INDUSTRY
•WEIGHTS & MEASURES
•NIST
NO
LOCAL INVOLVED
YES
FORMAL NOTIFICATION OF IDENTIFIED PROBLEM TO COMPANY(IES)/TRADE
PERFORM STUDY
YES
DESIGN & COORDINATE STUDY
NO
FORMAL REPORT ISSUED
INFO TO STATES FOR FOLLOW UP
END

Appendix I

Proposed Changes to NCWM Publication 14 to Address the Issue of Production Meeting Type and Challenges to a Certificate of Conformance

Proposed additions to Publication 14's administrative procedures:

Part I. Production Meeting Type

1. Amend the NTEP application to include a conditional statement that in the event the device would fail to meet its performance requirements, the manufacturer agrees to submit additional production models for future testing. This agreement must also stipulate that the manufacturer shall pay for the cost of such production device testing. The number of devices required to be submitted is something that will need to be determined.

2. All applicants agree to provide proof that production devices will meet type. Demonstrating that production devices will meet type may be satisfied by meeting one of the following requirements:

   a. Submit one production device selected at random at least once every 3 years. Cost of such testing would be paid for by the manufacturer. If the device fails, additional devices will be selected at random, adequate in number to verify that production meets type. Production will meet type if 70 percent of the devices tested meet the NTEP check list requirements. No preparation of the devices beyond normal customer installation will be allowed. The cost for all testing shall be paid for by the manufacturer. If the manufacturer fails to submit devices, the original certificate shall be withdrawn.

   b. The manufacturer develops and maintains a quality control program to ensure that production meets type. Records are to be maintained and shall be made available to the NTEP Board of Governors (BOG) for review and analysis at any time requested. Those manufacturers participating in a quality control program must maintain ISO 9000 quality assurance standards.

   c. The manufacturer develops other provisions which verify production can meet type. These provisions shall be approved by the BOG prior to their implementation.

      In addition, it is essential that during the warranty period, the device meets type. Devices beyond the warranty period should not be included in any statistical data gathered to evaluate that production devices meet type. A standard shall be set to assure that only devices that truly represent the manufacturer's production model are evaluated. Devices outside the warranty limit, whether being tested for the first time or the tenth time, may not be truly representative of a device produced by the manufacturer.

Part II. Challenges to a Certificate

A challenge to an existing certificate may be brought by any Weights and Measures jurisdiction or by any member of the NCWM. 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 Board of Governors (possibly through NIST). The BOG 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.

Investigation:

If the device in question is of a type that can be evaluated in a laboratory the investigating laboratory will obtain two of the devices picked at random by an NTEP representative (may be a local weights and measures official) from either the warehouse stock or directly from the production line of the manufacturer. The two devices will be transported to the investigating laboratory for evaluation. (See section on field evaluation.) Both devices will be evaluated in accordance with the applicable checklist and test procedure from Publication 14. If both devices fail, it is statistically valid to say that production is not meeting type. If both devices pass, it will be assumed that production is meeting type. If only one of the devices passes, further testing may be required. The next level of testing would be a random sample of five devices selected and tested in the same manner as the initial two. If more than one of this group of five fails, it will be considered evidence that production does not meet type. If only one of five fails, more sampling

and testing could be allowed with the next sample level of 10. If any of this group fails, it will be considered evidence that production does not meet type.

Corrective Action:

If the results of an investigation indicate that production does not meet type for a particular model, the manufacturer will be given the opportunity to, within 90 days, demonstrate that corrective measures have been taken to correct all units of a model already produced as well as all subsequent production. The corrective action will be verified through the testing of two additional units selected at random by an NTEP representative and submitted to the NTEP laboratory for evaluation.

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, initially only the device which was brought into question will 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 sections

Appendix I (Continued)

NTEP Long Term Business Plan--Alternative Proposal

DRAFT

Initial Verification Process, NTEP Laboratory Process, and Subsequent Verification Process

Note: this alternative proposal is intended for evaluation as to reasonableness, and would be intended to be integrated with the appropriate Sections of the Item 102-6 proposal "production meets type." This proposal contains three parts: one to address the initial verification process, one to address the NTEP laboratory process, and one to address the subsequent verification process.

Part I. Initial Verification Process

This is an excerpt from the Scale Manufacturers Association (SMA) Metrology Control Plan:

The life cycle of a device begins when a product is first conceived by a manufacturer and is designed to its specifications as they are controlled by legal metrology requirements. Once this product has reached a certain level of development, a prototype or pre-production sample is submitted to an approved legal metrology laboratory for evaluation. [Editorial note: the participating laboratories frequently recommend that applicants verify compliance with applicable Publication 14 requirements before submitting the type to NTEP.] There it is evaluated according to the metrological requirements for that specific device. Once the device is determined to meet these requirements, it receives a certificate attesting to conformance with the applicable legal metrology requirements.

Typically, the manufacturer then proceeds with production of the device. Sales are made into the marketplace and as these devices are placed into commercial service, they are subjected to an initial verification test by an official having statutory authority.

[This part is taken out of context.] The initial verification process will continue to see the serial production devices over a period of years under conditions attributable to the conformance-evaluated device. Assuming the data is collected with reasonable uniformity and is archived properly, production quality issues should become apparent in a timely manner for corrective action to be taken. It should be recognized that, over a period of time, the production process is subject to many variables at the level of component supply and the manufacturing process. Consequently, production devices need to be looked at for as long as they are in production.

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 type of devices and applications where the installation can have a major affect on the performance of the device-e.g., vehicle, hopper, railroad, and belt-conveyor scales; loading-rack and vehicle-tank meters. The initial verification should be limited to the weighing/measuring element level.)*

That a reporting form (to be developed) containing the above information 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 of several States to evaluate effectiveness.)

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 [CC]).

Part II. 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 manufacturer is required to submit a second device for evaluation. That, if the second device should fail in metrologically significant areas (as determined above), the manufacturer is required to submit evidence that a quality control plan is in place that provides a reasonable assurance that devices are capable of meeting the criteria for a CC and test data that indicates the "type" has passed all metrologically significant areas.

That following successful evaluation of a quality control plan and submitted data, two additional production devices are submitted for approval. If the devices successfully complete the evaluation process, a CC is issued, with a report to NTEP requesting follow up action in the future.

This follow up would be in two parts. First, that the device would be flagged for initial verification and the manufacturer would be required to provide site information to NTEP to contact the jurisdictions performing the first (three?) inspections and request results on specific performance, features, or parameters (problems encountered during type evaluation). And, second, that within 1 year, the manufacturer may be required to submit (at the manufacturer's expense) an additional production device for reevaluation.

If the two additional production devices should fail (in the areas determined above), future evaluation of the model type would be at the discretion of NTEP.

Part III. Subsequent Verification Process

This is an excerpt from the SMA Metrology Control Plan (but taken out of context).

Following the initial installation, the product is subjected to a variety of changes and interruptions (in a random order) and to periodic re-verifications of metrological performance. These changes may involve such things as connecting additional hardware (and/or software) to enhance the process, the user applying the device for an operation which was not intended when the equipment was originally placed in service, servicing the device with replacement parts which do not meet original specifications, and operator changes with subsequent retraining of new personnel.

Under the life cycle scenario, it is apparent that once a device moves out of its warranty period, it becomes subject to a spectrum of events which are increasingly out of the hands of the manufacturer. Therefore, subsequent verification will generally not be effective in identifying product non-conformance to type.

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. Only reports of failures in the specified areas would be reported to NTEP. As with production meets type, specific evaluation criteria would need to be established to determine if a reevaluation is necessary.

Appendix J - NTEP Participating Laboratories Report - July 1, 1998

Activity (All Labs):	1995	1996	1997	1/1/98 - 6/30/98		
				Total	TEs	Updates
Number of Type Evaluations Performed[1]	395	502	518	239	186	53
U.S. Mutual Recognition Requests Assigned	40	67	91	44	42	2
Certificates Effective[2]	21	109	132	110	63	47
Certificates Issued	188	322[6]	279	138	96	42
Average Time (wks) to Perform Activities for Successful[3] Type Evaluations						
	TEs: (CCs Issued 1995)	TEs: (CCs Issued 1996)	TEs: (CCs Issued 1997)		TEs: (CCs Issued 1/1/98 - 6/30/98)	Updates: (CCs Issued 1/1/98 - 6/30/98)
"Date Assigned" to "Equipment Received"	7	7	5		8	
"Equipment Received" to "Type Evaluation Complete"	7	5	4		5	
"Type Evaluation Complete" to "CC Effective"	1	3	1		2	
"CC Effective" to "Draft Certificate To NIST"	11	10	6		12	
"Draft Certificate To NIST" to "Certificate Issued"	10	9	9		18	11
"Date Assigned" to "Certificate Issued"[4]	25	26	24	All Labs	37	31

Activity	CA	MD	NY	OH	NIST	OTHER	TOTAL
Number of Applications Received							
1995	52.5[5]	33.5	23	57	117.5	23.5	307
1996	79	31	30	71	152.5	27.5	391[6]
1997	61.5	36	26	98.5	142	23	387
1998 (01/01/98 - 06/30/98)	28.5	9	21.5	41	73.5	11.5	185
Number of Type Evaluations Performed							
1995	64.5	68	44.5	75.5	142.5	22	395
1996	87	91	39	98	152	35	502
1997	90	75	47	126.5	149.5	30	518
1998 (01/01/98 - 06/30/98)	42	24	32	53	69	19	239
Number of Certificates Effective							
1995	2	5	3	--	8	3	21
1996	14	11	4	25	69	12	109
1997	22	4	2	22	75.5	6.5	132
1998 (01/01/98 - 06/30/98)	10	5	2	27.5	56.5	9	110
Number of Certificates Issued							
1996	37	7.5	8.5	36	89.5	9.5	188
1996	61	19	18	73	132	19	322[6]
1997	42	23	20	67	102	25	279
1998 (01/01/98 - 06/30/98)	28.5	5	3	42.5	45.5	13.5	138

[1] Beginning in 1994, if a device fails a type evaluation, it is entered as a new type evaluation. Previous to 1994, multiple failures of the same device were still considered as a single type evaluation.
[2] "Effective" means the type evaluation is complete, but the certificate has not yet been issued.
[3] "Successful" means the type evaluation did not fail at any stage.
[4] Individual stages of type evaluation will not equal total for complete process due to intermediate rounding.
[5] ".5" indicates that work was divided between laboratories.
[6] Number may be inflated due to government furlough in December 1995.

Appendix K - National Type Evaluation Technical Committee (NTETC) Sector Meeting Summaries

NTETC Weighing Sector
Meeting Summary for November 5-7, 1997, Meeting
Gaithersburg, MD

Agenda Overview

Carry-Over Items

1) Modification of Design
   a) Replacement of Concrete Decks with New Steel Decks
   b) Adding a dump option
2) Model Designation for Weight Classifiers

New Items

1) Metrologically Equivalent Load Cells
2) Expression of v_{min} as a percentage of Load Cell Capacity
3) Use of "→0/T←" Key on Scales
4) Multiple Weighing Elements Interfaced with a Single Indicator
5) Weight Accumulators
6) Testing to CLC on NTEP Tests of Combination Railroad (RR) Track/Vehicle Scales
7) Tracking of Manually-Entered, Non-Weighed Multi-Item Unit Prices
8) Price Look-Up (PLU) with an "Open" Tare
9) Procedures for Verifying Accuracy of Weight Unit Conversions
10) Printing and Display of Items by Count
11) Permanence Criteria for Labels for Packages
12) Weight Displays Visible to the Operator
13) Criteria for Modular Scales
14) Clarification of Scales to be Selected for Test When the Range of Capacities is "Narrow"
15) Vehicle Scales Used for Livestock Applications
16) Use of Upper Case Abbreviations on Weighing Devices and Printed Tickets
17) Manual Weight Entries and Communication Loss in Vehicle Scale Systems
18) Marking of Weighing Elements and Indicators that are "Not Permanently Attached"
19) Inclusion of Non-Handbook 44 Features in an "NTEP" Mode
20) Identification of Manual Weight Entries
21) Marking Requirements for Components of an ECR System
22) Percentage Tare
23) Definitions of Initial Zero Setting Mechanism (IZSM) and Automatic Zero Setting Mechanism (AZSM)
24) Separate Testing for Junction Boxes
25) Software Evaluation Policy
26) Production Meets Type
27) Upgrade of Pre-NTEP Certificates
28) Grain Test Scales
29) Update on US/Canada Mutual Recognition Program and Testing to OIML Requirements

Meeting Summary

Changes in Membership:

Dick Suiter, technical advisor, reported on changes in membership since last meeting:

Steve Cook replaces Darrell Guensler,
Jim Vanderweilen replaces Paul Petersen, and
Bill Brasher appointed as a new member.

Carry-Over Items:

1) Modification of Design

a) Replacement of Concrete Decks with New Steel Decks

Background & Discussion:
a) Last year the sector agreed to modify Part 6. Platform Material, pp. 1-12, NCWM Publication 14, 4th edition, May 1996, as follows:

> **6. Platform Material**
> In the case of a weighbridge design where the deck is integrated into the weighbridge so as to be structurally significant, both concrete and steel decks must be tested separately in order to cover both options on an NTEP Certificate of Conformance; full NTEP tests are required on both options unless NTEP decides otherwise. A composite scale consisting of a minimum of two decks, (i.e., two spans), one span deck being of steel construction and the other of concrete may be submitted and tested to include both types of decks. Concrete-deck and steel-deck scales should be marked with unique model designations to indicate the difference in platform material.

The sector also agreed that examples should be added to Publication 14. Representatives from the Scale Manufacturers Association's (SMA) technical committee agreed to develop example diagrams. The Sector was provided examples to be added to Publication 14. (Attachment; Carry-over Item 1a)

The Sector agreed that the top four examples are not interchangeable and would require testing. In the bottom two examples, the dump options simply sit on top of the scale; the Sector agreed that these are interchangeable and would not require additional testing. Comments were made that this appears to address only electronic scales; however the Sector agreed that the concept would apply to both electronic and mechanical scales.

Conclusion: The Sector reviewed diagrams of six different designs of weighing elements which were submitted by Fairbanks Scales. The Sector agreed to add the diagrams to the Technical Policy for Scales Section of NCWM Publication 14 to provide guidance to NTEP in determining the amount of testing required to cover both concrete and steel deck options on a vehicle scale CC.

The Sector agreed that this policy will apply to electronic and mechanical scales.
The Sector agreed that the decks in the first four designs are an integral part of the weighing element; in order to cover both concrete-and steel deck options on scales of these designs, testing would need to be performed on both types of decks. The decks in the latter two designs simply sit on top of the weighing element and are not an integral part of the design; both steel and concrete deck options can be included on the CC based on testing with either a steel or concrete deck version.

The Sector noted that the diagrams are not intended to be all encompassing and that other designs of scales may exist; NTEP will assess such designs on a case-by-case basis to determine the amount and type of testing required to cover both concrete-and steel deck options.

b) Adding a dump option

Background & Discussion:
b) At the last Sector meeting the issue of adding a dump option was not resolved. The SMA Technical Committee was asked to provide input. The sector has been asked to reconsider this item. (Attachment; Carry-over Item 1b)

Discussion: Comments were made that this is a design consideration, not a performance consideration. Field officials have expressed concern that the addition of this option may, over time, cause performance problems with the repeated lifting and lowering of the deck. The Sector generally agreed that, if it is a new device and new technology, it might require testing; however since the option does require field verification already, there is no reason to require an additional permanence test.

Conclusion: The Sector agreed that a dump-type option can be added to a scale with an existing NTEP CC without the need to perform additional testing. The original load receiving element (deck) has been replaced with the dumping mechanism. The original structural weighbridge is still in place and keeps the weighing elements (levers or load cells) in place.

In a related discussion, the Sector expressed the opinion that, if a dump-type option is added to a device without an NTEP CC (such as a device installed in a state prior to the adoption of NTEP), this would not be a modification of type and should not necessitate NTEP testing on the scale, in order to be in compliance with Handbook 44.

2) Model Designation for Weight Classifiers

Background: At the last meeting of the Weighing Sector it was suggested that the Scale Manufacturers Association's (SMA) Technical Committee could review this item and submit a proposal to be considered by the Sector. The Sector was asked to consider that proposal. (Attachment; Carry-over Item 2)

Discussion: A member asked whether or not this would be a sealable feature. Tina Butcher explained Special marking "for Postal Use Only..." would not be required if the option selected is continually displayed. The Sector recognized how difficult it is for a field official to determine whether or not a scale is actually in a weight classifier mode.

Conclusion: The Sector supports the options presented by Mettler Toledo and the SMA Technical Committee; Dick Suiter and Tina Butcher will develop language for consideration by the Sector for proposal to the S&T Committee to recognize weight classifying "options" presented in H44. A letter ballot will be sent to the Sector with the proposed language; if accepted, the language will be forwarded to the regional S&T Committees for consideration.

New Items:

1) Metrologically Equivalent Load Cells

Source: NIST Office of Weights and Measures

Background: NCWM Publication 14 currently includes criteria for the substitution of load cells in scales under Section D. of the NTEP Technical Policy for Scales. This criteria allows "metrologically equivalent" load cells from the same or different manufacturer to be substituted into a scale covered under an NTEP Certificate of Conformance (CC) without invalidating the CC for that scale. This section specifies that the substitution is permitted provided that the load cells to be substituted:

1. Have been evaluated separately and have a CC
2. Have as many or more verification scale divisions for the same (single or multiple load cell) application as the load cells originally used in the scale;
3. Have a minimum verification scale division that is suitable for the application;
4. Are of the same basic type as the cells being replaced; and
5. Can be placed in the scale without any modification to the basic design of the load cell mounting assembly.

Recommendation: The existing criteria does not specify whether or not the cells being substituted must be of the same capacity as the original cells. The Sector was asked to clarify this point so that appropriate text can be added to Publication 14. If the cells do not have to be of the same capacity, the Sector may wish to consider whether or not a limit should be placed on the permitted difference in capacity between the original and substituted cells. For multiple cell applications, it is possible that other characteristics such as output versus load may dictate that the capacity be the same unless *all* cells are replaced.

NTEP has also been asked if the load cell in a scale tested as a complete device could be replaced in subsequent production devices with one having a larger v_{min}, while still meeting requirements for "d".

A third point that needs to be addressed by the Sector is how to determine what constitutes a metrologically significant modification to the design of a load cell. NTEP has periodically received questions concerning various changes which have been made to load cells to enable mounting of the cells in a final installation. For example, is mechanical modification of the cell by drilling a mounting hole in the body of the cell considered a metrologically significant change? When would additional testing be required?

What is considered metrologically equivalent or metrologically significant? A definition of metrologically significant added to Handbook 44 would clarify some of the questions.

Discussion: A sector member asked whether or not hydraulic load cells which are covered by a separate NTEP CC can be substituted for strain gauge cells in a full electronic scale as long as all of the cells are replaced. During discussion of the of this issue, the Sector determined that there are two issues to be addressed. One has to do with a scale that has been tested in totality. The other issue

pertains to the substitution of NTEP approved load cells in a scale. A suggestion was made to break into separate scenarios and assess each separately as outlined below.

Scenario 1: If a scale is tested as a complete scale and it uses NTEP load cells, can a load cell of a different capacity be substituted (assuming other 5 criteria are met) without additional testing?

Discussion: The Sector recognized that when dealing with load cells with their own CC it is not as critical as to whether or not the entire scale has been subjected to environmental testing. The key is maximum permissible error, independent of capacity. There is not a need to evaluate the entire scale for factors specific to load cells such as the shape of the curve, or the effect of temperature on zero. As long as the cell has been evaluated separately; has an appropriate v_{min}; is the same accuracy class; and is the same basic type being replaced, etc. then substitution may be appropriate. One member suggested that if the Sector thought it was acceptable to substitute a cell(s) of higher capacity it might also consider a cell of slightly smaller capacity (e.g., 10 % to 15 %) as long as all the other requirements are met.

Conclusion Scenario 1: Add the following to the substitution of load cell criteria:

6. ***Have a capacity that is greater than or not less than 85 % of the capacity of the original cell.***

Scenario 2: Large capacity scale which uses load cells which have been tested separately, indicator which has been tested separately, and the evaluation is performed on the weighing element in conjunction with these components.

Discussion: A member commented that the same criteria as scenario 1 would apply. The Sector agreed that changing a load cell does not automatically invalidate the CC; however, care must be taken to be sure that the scale meets all requirements relating to v_{min}, n_{max}, etc.

Conclusion Scenario 2: The same criteria as established in Scenario 1 applies.

Scenario 3: If a scale is tested as a complete scale and it uses NTEP load cells, can a load cell of a smaller v_{min} be substituted (assuming other 5 criteria are met) without additional testing?

Discussion: The Sector was asked to consider an indicator and load cell submitted for evaluation, where a cell with a small v_{min} was selected to compensate for poor A/D conversion in the indicator. The Sector was also asked to consider that, if a cell with a larger v_{min} were allowed to be substituted in this situation, there would likely be problems with zero drift.

Conclusion Scenario 3: For scales tested as a complete unit, the v_{min} is less than or equal to that which was tested.

Scenario 4: A large capacity scale which uses load cells which have been tested separately, an indicator which has been tested separately, and the evaluation is performed on the weighing element in conjunction with these components.

Conclusion Scenario 4: Point number three in the substitution criteria would apply. There is no restriction on the size of the v_{min} of the cell selected for substitution as long as the formula is met and it is suitable for the application.

Scenario 5: Companies sometimes make physical changes to load cells in the process of mounting them in complete scales. For example, drilling holes to accommodate mounting of the cells in the scale. What guidelines should be followed in determining when these changes are significant?

Discussion: The Sector was informed that physical changes to the load cell may not be readily apparent, but may affect linearity and hysterisis of the cell. The degree of performance change cannot be predicted. The Sector agreed that it is the responsibility of the load cell manufacturer to notify NTEP when physical changes are made to a cell after a CC has been issued.

Conclusion Scenario 5: It is the manufacturer's responsibility to notify NTEP when changes are made which are metrologically significant. NTEP will continue to assess these changes on a case-by-case basis, and requiring additional testing as determined appropriate. NTEP will rely heavily on the expertise of the manufacturer in making this assessment.

Scenario 6: Can NTEP strain gauge load cells be replaced with NTEP hydraulic load cells?

Discussion: The Sector received comments from a manufacturer of hydraulic load cells who gave examples of replacements of all strain gauge load cells in a vehicle or livestock scale with hydraulic load cells. The Sector agreed that the situation presented by the manufacturer would only be appropriate if the original mountings remained unchanged, otherwise, the criteria presently specified in Section D, part 5, would apply and additional testing would be required.

Conclusion Scenario 6: The Sector agreed that, provided that all other substitution criteria are met, it is appropriate to substitution hydraulic load cells with strain gauge load cells. However, it was noted by a hydraulic load cell manufacturer that such substitution would not be possible without modification to the load cell mounting design. The Sector noted that, should changes be required to the mounting assembly, additional testing would be required as is required for such substitutions of strain gauge load cells.

Definition for "Metrologically Significant": The Sector discussed the possibility of developing a definition for "metrologically significant"; however the Sector does not feel that it is possible to come up with a definition that would encompass all of the possible factors that would be considered metrologically significant.

2) Expression of v_{min} as a percentage of Load Cell Capacity

Background: Some manufacturers have been marking v_{min} values as a percentage of load cell capacity rather than specifying a specific value for v_{min}. The Sector was asked to consider an alternative method for expressing v_{min} values along with the current method.

Discussion: John Elengo informed the Sector of the changes being considered to OIML R60 at present. Among the changes being considered is a proposal to designate a factor "Y" which expresses v_{min} in terms of load cell capacity. The proposal includes a formula "$Y = e_{max} / v_{min}$" in which the ratio is in effect a percentage. He recommended that if Sector is going to introduce the ultimate possibility that the v_{min} can be expressed as a percentage, then consideration should be given to using the factor of "Y".

Conclusion: The Sector decided to carry this item over to enable further study and possible additional action to harmonize with changes being considered to R60. In the meantime, manufacturers are not precluded from expressing capacity in terms of a percentage.

3) Use of "→0/T←" Key on Scales

Source: NTEP Weighing Labs/Canada

Background: Canada was asked to evaluate a device under the mutual recognition program which was equipped with a →0/T← key. When asked for an assessment of the device function, the NTEP Weighing Labs noted that Handbook 44 does not permit the use of a combined →0/T← key to identify a key which functions as a zero key; a clear indication that tare has been taken must be provided. However, it was noted that this device functioned somewhat differently. On this scale, the →0/T← key functions as a zero key for the first seven scale divisions (7d); for loads greater than seven divisions, the →0/T← functions as a tare key.

There was concern on the part of the laboratories that this device would not be suitable for use in most direct sale applications since it is not uncommon to find, in many direct sale applications such as a supermarkets, tare values which are below 7d. However, the laboratories felt that this scale might be accepted if the following steps were taken:

- The →0/T← key marking is acceptable provided that the scale were clearly marked adjacent to the key with a statement similar to "Zero up to 7d; tare over 7d".

- The scale must be marked with the statement "Not for use in direct sale to the public"

Recommendation: The labs believe this position meets the intent of Handbook 44, but would like for the Sector to confirm that the position is appropriate. In addition, the Sector believes that a Handbook 44 change might be warranted. A weighing lab representative will be drafting language for the Sector to consider as a possible proposal to the S&T Committee. The Sector was asked to review the following draft language for submission to the S&T Committee.

The Sector was asked to consider the following proposed language:

> **S.2.1.6. Zero - Tare " 0/T" Key** - For scales not intended to be used in direct sales applications, a combined zero & tare function key may be used, provided the device is clearly marked as to how the key functions, such as "The O/T key functions as a semi automatic zero setting mechanism up to 7 scale divisions and as a tare mechanism for loads of 7 scale divisions or greater". The device must also be marked on or adjacent to the weight display "Not for Direct Sales".

Discussion: A question was raised as to the US objection to the use of the combined key? Tina Butcher, NIST, explained that H44 requires a clear indication that tare has been taken. When a combined key is used the device cannot determine whether the intent is to take tare or to rezero the scale. Thus, the scale cannot indicate that tare has been taken. Comments were made that the use of a combined key could help simplify the operation of the device. The Sector agreed there was not a technical problem with the concept. The Sector supports the proposed language however, it was agreed that the sample marking statement included in the proposed language should be eliminated since the use of specific numbers may be confusing.

Conclusion: The Sector agreed that the proposed S.2.1.6. should be modified by deleting the example. The revised proposal is to be submitted to the S&T Committee and will read as follows:

> **S.2.1.6. Combined Zero-Tare ("0/T") Key. - For scales not intended to be used in direct sale applications, a combined zero and tare function key may be used, provided that the device is clearly marked as to how the key functions. The device must also be clearly marked on or adjacent to the weight display "Not for Direct Sales."**

4) Multiple Weighing Elements Interfaced with a Single Indicator

Source: NTEP Weighing Labs

Background: NTEP has been getting an increasing number of questions about applications in which multiple weighing element scales are interfaced with single indicators. In particular questions have been raised about whether or not individual scales covered by individual NTEP CC's can be combined to create a multiple-weighing element system that is covered by an NTEP CC.

The NTEP labs believe that, provided that the components are compatible and the indicator has been evaluated for multiple weighing element applications, such a system would be covered by an NTEP CC.

The labs agreed that multiple weighing elements which are *physically* connected together must be treated as a single scale and the dimensions of the resulting scale must be covered by the existing CC, otherwise additional testing must be performed in order to cover the device on an NTEP CC.

Recommendation: The labs recommend reviewing criteria established in 1990 by the S&T Committee and including any criteria which are not already referenced in Publication 14. It may also be appropriate to add criteria to the technical policy section outlining multiple weighing element combination scales as shown in Attachment; Item 4.

Discussion: The Sector agreed that v_{min} requirements could be a problem with additional load cells being added. Multiple load receiving elements coupled together electronically could create a system with the number of load cells making it difficult to meet the formula of $[v_{min} \leq d/\sqrt{n}]$ where "n" represents the number of load cells in the system. A lab representative requested clarification as to whether two weighing elements placed side by side to make system for weighing wide vehicles would require additional NTEP testing. Diagrams of various configurations were reviewed by the Sector for possible inclusion in Publication 14 (Diagrams Item 4 attached).

Conclusion: Strike the text in parentheses in the recommendation. The Sector agreed that the diagrams reviewed during the meeting can be incorporated into NCWM Publication; included with the diagrams will be information indicating what is needed to have the entire system considered to be an NTEP system. In examples 3 and 4 reviewed by the Sector, it was agreed that the NTEP CC for the indicator must have the option for multiple weighing element applications listed on the CC and testing must have been performed to include this option. For examples 1 and 2, it is not necessary to have an indicator with a specific option for multiple weighing element applications listed on the CC. The SMA Technical Committee is asked to review procedures for testing side-by-side scales and provide any suggestions to the Sector.

5) Weight Accumulators

Source: NTEP Weighing Labs

Background: Publication 14 does not adequately address the new features that labs are seeing on scales with weight accumulation features.

Recommendation: The Sector was asked to review language (see attachment item 5) submitted by the NTEP labs for addition to Publication 14 under the section on scales with weight accumulation features.

Conclusion: The Sector agreed to add the proposed procedure and criteria in the attachments to Publication 14.

6) Testing to CLC on NTEP Tests of Combination Railroad (RR) Track/Vehicle Scales

Source: NTEP Weighing Labs

Background: RR Track scale testing performed by GIPSA presently includes testing with loads placed to the right and left of each section. Questions have been raised about whether or not a midsection test must also be performed on combination RR Track/Vehicle scales to verify the CLC rating of the scale.

A question was also raised concerning the required markings for a combination RR Track/Vehicle scale. RR Track scales are required to be marked with a section capacity, and Vehicle scales are required to be marked with a CLC. However, Handbook 44 does not clearly specify what markings are required for a combination RR Track/Vehicle scale nor does it specify how the formula [nominal capacity ≤ CLC x (N - 0.5)] where "N" = the number of sections in the scale is to be applied to such scales. For example a RR Track scale may have a section capacity of 300 000 lb or more. For weighing vehicles the CLC required could be much lower; however if the manufacture must meet the [nominal capacity≤ CLC x (N - 0.5)] formula, the resulting CLC will be much larger than is necessary for vehicle weighing applications. In addition a larger CLC value will require the manufacturer to provide a much larger amount of known test weights for an NTEP evaluation.

At the State Laboratory Metrology Subcommittee Meeting held during the 82nd Annual Meeting of the NCWM, a recommended procedure for performing strain load tests was presented. The recommendation was forwarded to the Weighing Sector to be considered for inclusion in Publication 14. (Attachment; Item 6)

Recommendation: The NTEP labs believe that a midsection test is still necessary for RR Track/Vehicle Scales to verify the declared CLC since one objective of the NTEP test is to verify the CLC declaration and the CLC test is performed with the weights applied over the mid-section. The labs agreed that the requirement to provide 90 percent of the CLC in known test weights for the NTEP test still applies. The labs would like confirmation from the Sector on this point and would like to see this clarified in Publication 14.

The Sector was also asked to consider recommending the addition of a footnote to Handbook 44, Section 2.20, Scales, Paragraph S.6.1. to read:

For combination RR Track/Vehicle scales the capacity for rail weighing need not meet this formula."

Discussion: The Sector reviewed the current marking requirements and testing procedures for RR scales and vehicle scales. The discussion also included examples of what is being currently marketed.

Conclusion: The Sector agreed that NTEP should continue to apply both the RR Track Scale and the Vehicle Scale test procedures to NTEP tests of combination RR Track/Vehicle Scales; this requires that a CLC test must be performed. The Sector acknowledged that the tests can be performed as a single test. In order to add the vehicle scale option to a RR scale CC, additional mid-section testing must be performed. The Sector agreed to ask the SMA technical Committee to: (1) review the issue of how a CLC should be developed for a combination vehicle/RR scale; and (2) determine what minimum amount of test weight and minimum strain load procedures should be required for RR scales. The Sector agreed to incorporate the strain load test procedures developed by the Metrology Subcommittee to the extent possible into the existing strain load procedures in Publication 14.

7) Tracking of Manually-Entered, Non-Weighed Multi-Item Unit Prices

Source: NTEP Weighing Labs

Background: During an NTEP evaluation of an electronic cash register (ECR), there was some confusion over the intended application of Section 9.1 of the ECR/Scales checklist. There was a question about whether or not manually-entered, non-weighed, multi-item unit priced items must be tracked throughout an order. The checklist clearly states that, for prices entered via price lookup numbers (PLU's), the system must keep track of the total count of split-priced items in the order; however, it is not clear if the manually-entered items must be tracked. Given the way that the checklist was worded, it did not seem to be the Sector's original intent to require the manually-entered items to be tracked throughout an order.

Recommendation: The labs agreed to forward the following proposed changes to Publication 14 to the Weighing Sector for consideration. (Attachment)

Discussion: The problem was not clear to some Sector members. Tina Butcher explained a scenario where items were being manually entered into an ECR. At a place of business using less complex devices without PAU's associated with all sales, if more than one commodity such as cans of soda and cans of corn were both offered at 3/$1.00, the device would not have any way of distinguishing between the commodities when the price information is entered manually. For example, if two cans of soda and one can of corn were bought to the register mixed with a number of other commodities and entered as 2@3/$1.00 and 1@3/$1.00, the price of the sodas could ring up as $.67, and the corn could ring up as $.34. If the two cans of soda and the can of corn were all entered at different times as 1@3/$1.00 they each could ring up as $.34. The system would not be required to keep track of the manually entered commodities throughout the order. Dennis Kruerger expressed concern that this was not a device issue and should be referred to the NCWM L&R Committee for consideration.

Conclusion: Accept the proposed changes to Publication 14 as shown in the attachment. Dennis Krueger will develop a proposal for eventual submittal to the L&R Committee to address the concerns about the pricing practices that exist with multiple item prices. Dick Suiter will forward a letter ballot to the Sector to accept the proposal; if the Sector agrees, the proposal will be forwarded to the regional S&T Committees for consideration. *(Editor's note: After the Sector meeting Dennis Krueger reviewed the recommendation further and decided that, since it applied only to ECR's, he was withdrawing his concern and would not prepare a proposal for ballot.)*

8) Price Look-Up (PLU) with an "Open" Tare

Source: NTEP Weighing Labs

Background: Questions were posed to OWM by a manufacturer concerning the proper application of the criteria for tares associated with PLUs. The particular area questioned was that of Section 3 of the ECR/Scales checklist which includes a statement indicating that, for tares stored with PLUs, the customer must not be able to choose different size containers. The labs agreed with OWM's position that, as long as the system includes provision for entering the correct tare (e.g., programming several PLUs with different tares for the same commodity, enabling the user to select from a menu of tares, etc.), the system should not prohibit associating tares with PLUs for items with variations in tare material.

Recommendation: The Sector was asked to consider proposed changes to Section 3 of the ECR checklist as outlined in Attachment; Item 8.

Discussion: The Sector considered the proposed changes to section 3 and agreed with the position of OWM and the labs.

Conclusion: The Sector agreed to accept the proposed changes to Section 3 of the ECR checklist as outlined in the attachment.

9) Procedures for Verifying Accuracy of Weight Unit Conversions

Source: NTEP Weighing Labs

Background: (See also discussion on procedures for verifying percentage tare features in Agenda Item 22) The labs noted that examples would be beneficial to specify a possible method for verifying the accuracy of weight unit conversions (e.g., lb to kg). The Canadian laboratory manual has a detailed section on how to verify accurate conversion along with examples of compliance and non-compliance.

Recommendation: The Weighing Sector was asked to review the applicable section of the Canadian laboratory manual for addition to Publication 14.(Attachment; Item 9)

Discussion: The Sector reviewed the section of the Canadian laboratory manual for verifying accurate unit conversions. A member questioned whether or not the Canadian procedure agreed with SI unit conversions.

Conclusion: The Sector agreed that the conversion values should be based on recognized international standards for SI units. The Sector agreed that, after verifying that the procedures are consistent with these practices, the proposed test procedures and examples can be incorporated into Publication 14 in the appropriate places.

10) Printing and Display of Items by Count

Source: NTEP Weighing Labs

Background: The labs do not feel that it is appropriate to be able to enter items by count while a load is on a scale. The requirement in Scales Code paragraph S.1.8.4. for a printed receipt was added to address scales with PLU capability to ensure that the customer is given adequate information about the transaction. When PLUs or speed keys are used, there is not sufficient time for a customer to assimilate the information. Therefore, "low end" (limited feature) scales with speed keys and accumulation capability, but no PLU capability would still be required to provide a printed receipt.

Recommendation: Language may need to be added to Publication 14 to confirm this position.

Discussion: The Sector discussed applications of scales being used to generate labels for items sold by count. For example, prepackaged bakery items sold by count.

Conclusion: The Sector agreed that computing scales without multiple sales accumulation capability should be treated differently than described in Section 26.2. which addresses Non-weighed items on Computing Scales With Multiple Sales Accumulation Capability. The Sector agreed that changes should not be made to Section 26.2. The Sector also agreed to create a new section which applies to scales without accumulating capabilities that would require the scale to either (1) blank the display; or (2) operate only under no load condition prior to printing labels for items sold by count.

11) Permanence Criteria for Labels for Packages

Source: NTEP Weighing Labs

Background: Questions were raised concerning whether or not permanence criteria should be applied to labels generated by scales for packages. The labs agreed that the labels should be reasonably durable, but that the marketplace will generally take care of non-permanent labels which cannot be read by consumers. For example, if labels fall off or become obliterated during normal consumer handling, this will result in the need to reweigh and label the items; stores will likely switch to a more permanent label to avoid the labor of repackaging.

Recommendation: The labs agreed that the criteria for permanence of package labels should not be as stringent as that for marking requirements; however, a statement should be included in Publication 14 to state that labels must be compatible for use in the environment in which the device is going to be used. The laboratories do not feel that any special tests should be performed to demonstrate the relative permanence of the labels (particularly since the device owner may purchase labels of varying type and quality from any source); however, Publication 14 should note that the labs will observe the durability of the labels used during evaluation for smearing or other obvious problems during normal handling. The Sector was asked to approve the addition of a statement to Publication 14 relating to the permanence of labels printed by the device being evaluated.

Conclusion: The Sector agreed that the permanence criteria for ID badges and markings do not apply to labels generated by scales. The Sector agreed that no special tests shall be conducted for the permanence of labels. If the labels become illegible in normal handling during the evaluation period, this must be corrected during the evaluation. In addition, the applicant should be notified of the requirements to meet the Fair Packaging and Labeling Act (FPLA). The Sector noted that the NTEP test is intended to demonstrate that the device can meet H44 and suitability of equipment requirements and this must be demonstrated during the evaluation; it is the manufacturer's responsibility to ensure that the device continues to meet the requirements in field applications.

12) Weight Displays Visible to the Operator

Source: NTEP Weighing Labs

Background/Recommendation: Questions have been raised in field applications about whether or not a weight display visible to the operator is required for ECR/scale systems; this has also been questioned by manufacturers of systems who want to ensure installations which comply with the NTEP CCs issued for these systems. The labs believe that a weight display visible to the operator is required for ECR systems. H44 General Code requirements G-S.5.1., G-UR.1.1., and G-UR.1.2. already address this point. If the manufacturer feels that more explicit requirements are needed; a change to the Handbook should be proposed by the manufacturer.

Discussion: The Sector reviewed the discussion from the Southern Weights and Measures Association. Some members felt that Handbook 44 currently addresses this problem adequately.

Conclusion: The Sector feels that the weight information must be visible to all parties during a transaction. Though not unanimous in this position, there was general consensus that this interpretation is supported by existing Handbook requirements including, G-UR.1.1., G-S.5.1., and G-UR.3.3. Consequently, the Sector agreed that there is not a need to forward an item to the S&T Committee at this time; if jurisdictions are having difficulty applying this requirement, it is up to them to submit a specific item to the S&T Committee for consideration.

13) Criteria for Modular Scales

Source: NTEP Weighing Labs

Background: A number of questions concerning the modular scale criteria in Publication 14 have been posed. There are some inconsistencies in the criteria that need to be resolved such as the differences between the first part 6 "c." and the second part 6 "c."

Further questions have been raised as to what deck design combinations qualify as "modular." The issue was discussed at the June 1990 Weighing Sector Meeting and some drawings were presented. The modular criteria to be added to Publication 14 was sent out and approved by letter ballot; however, there appeared to be no decision relative to deck designs.

Recommendation: The labs developed proposed changes to the modular criteria to resolve the discrepancies and to redefine the limits of length and width that can be covered on a CC based on testing. The labs recommended that the following changes be considered by the Sector:

- Test of a 2-module scale, can cover lengths up to 150 %
- Test of a 3- module or higher modular scale can cover lengths up to 200 %
- If the CLC of the scale is controlled, then the capacity of the scale may be increased to the limit allowed by the n_{max} and v_{min} values of the load cells and the relationship between CLC, the number of sections in the scale, and the nominal scale capacity.

- Example drawings should be included in Publication 14. (Attachment; Item 13)

Discussion: The Sector reviewed the example drawings. Some members felt that all of the examples were appropriate modular designs. One member expressed a concern that modular technology has changed significantly.

Conclusion: The Sector agreed to include the diagrams presented in the June 21, 1990 letter from Terry James to Henry Oppermann in Publication 14 as examples of modular designs. The Sector also agreed to ask the SMA Technical Committee to examine the existing modular criteria, especially in light of new technology, and recommend any changes which might be needed to the criteria.

14) Clarification of Scales to be Selected for Test When the Range of Capacities is "Narrow"

Source: NIST/OWM

Background: Interpretation of the criteria for scales under 30 000 lb has been difficult when trying to determine when a range of capacities is "narrow." The guidelines note an example of 50 lb,
100 lb, and 200 lb as being narrow enough to require submission of one mid-range device; however, the only other example given is that of an extremely wide range of 10 lb to 10 000 lb. This leaves room for a significant amount of variation in interpretation. Ratios such as that given for load cells (4:1 from extremes and 10:1 overall) would be very helpful in ensuring consistency in applying this criteria.

Recommendation: The Sector was asked to give additional guidance and establish guidelines (such as ratios) for identifying the capacity(ies) of scale to be submitted for test.

Discussion: The Sector discussed whether or not there was a similar policy in OIML. Debbie Ripley, NIST Office of Standards Management, indicated that a recent recommendation included ratios of 5:1 and 10:1 for R60 Load Cells (similar to the Publication 14 policy); but also included family criteria. Darrell Flocken, Mettler Toledo, thought there was information in the WELMEC document relative to capacity ratios.

Decision: The Sector agreed that the 4:1 and 10:1 ratios can be used to define what constitutes a "narrow range." Darrell Flocken agreed to forward the WELMEC document to the technical advisor. The technical advisor will make recommendations to the Sector for additional changes to the Publication 14 criteria to harmonize with the WELMEC document.

15) Vehicle Scales Used for Livestock Applications

Source: NTEP Weighing Labs

Background: At its last meeting, the Sector agreed that vehicle scales used for livestock applications must be evaluated as dual application devices. The amount of additional testing was not specified.

Recommendation: The labs believe that the primary area of difference between vehicle and livestock applications is that of the shift test. Because of the differences in load distribution (i.e.,the load is well-distributed over the deck in livestock applications, whereas, the load is concentrated in specific areas in vehicle scale applications) the labs do not believe that it is appropriate to cover livestock applications based upon vehicle scales tests without additional testing. Consequently, the labs recommend specifying the following in the technical policy section of the checklist:

> If a scale is tested according to the livestock scale criteria, including the placement of weights over both section and mid-section, then both vehicle and livestock applications can be included on the CC. (This assumes that the amount of weight is equal to at least 90 percent of the CLC.) If a vehicle scale is to be used for livestock applications, then additional testing as specified in the permanence tests for livestock scales must be performed. The Sector was asked to approve the addition of this section to Publication 14.

Discussion: The Sector discussed the differences in loading patterns on livestock scales and vehicle scales. Livestock scale generally have the load well distributed over the platform whereas, vehicle scale have the load concentrated in specific areas. Livestock scales also receive additional dead load when racks and gates are installed as part of the weighing element.

Conclusion: The Sector agreed to add the following policy to the Technical Policy Section of the Scales Checklist in Publication 14:

> ***If a vehicle or axle load scale is tested according to the livestock scale criteria, including weights placed over both section and mid-section, then both vehicle and livestock applications can be included on the CC. (This assumes that the amount of weight is equal to at least 90 percent of the CLC.) If a vehicle scale is to be used for livestock applications, then additional testing as specified in Section 63. Performance and Permanence Tests for Livestock Scales must be performed. The Sector agreed that this would be a one-time test (i.e., no permanence test); however, NTEP reserves the right to conduct a permanence test if the initial test results warrant the additional testing.***

16) Use of Upper Case Abbreviations on Weighing Devices and Printed Tickets

Source: NTEP Weighing Labs

Background: Uppercase abbreviations for symbols such as "lb" and "kg" are sometimes more legible and understandable than are the lower case abbreviations. Publication 14 is clear on the use of upper/lower case in some areas, but is not specific in others. In fact, *printing* of uppercase is permitted if lower case units cannot be printed.

Recommendation: The labs believe that, as long as the indications are clear, legible, and understandable, either case should be permitted, and they noted that, in some cases, upper case are easier to understand. The Sector was asked to approve the addition of this policy to Publication 14.

Conclusion: The Sector agreed that the use of either upper or lower case values are permitted to identify units of measure on printed indications, displayed indications, or markings on devices. The Sector noted that the use of lower case is preferred to harmonize with SI standards to the extent possible; however, provided that the indications are clear, legible, and easily understandable, either case is permitted.

17) Manual Weight Entries and Communication Loss in Vehicle Scale Systems

Source: NTEP Weighing Labs

Background: Labs are encountering devices in which the manufacturer sets up a "hot" key which can be used to selectively disable communication to the scale. While communication with the scale is interrupted (i.e., the system is no longer interfaced with the scale), the device can be used to make manual weight entries; thus, effectively circumventing the manual weight entry requirement. (Manual gross weight entries are not permitted for vehicle scale applications.)

Recommendation: The labs suggest that language be added to Publication 14 to specify that (at least for devices or systems with manual weight entry capability) means to selectively interrupt communication with the scale are not permitted. The Sector was asked to approve the addition of language to Publication 14 to address the problem.

Conclusion: The Sector agreed that the use of a "hot key" or other means to selectively interrupt communication with the scale is not permitted. The Sector agreed that OWM should add additional text into Publication 14 to reflect this.

18) Marking of Weighing Elements and Indicators that are "Not Permanently Attached"

Source: NTEP Weighing Labs

Background: Handbook 44 does not clearly define what is meant by the term "not permanently attached."

Recommendation: The labs discussed the following as a possible starting point for helping the labs define what is meant by the term "not permanently attached."

> If a connection is a plug-in design, then it is considered not permanently attached. If a connection is hard-wired, then it is considered permanently attached. Components must be marked according to Table S.6.3. Note that criteria already exists to address "dumb" indicators with no intelligence; these indicators are required to include n_{max}, capacity, division size; however, they are not required to be marked with make, model, and serial number. The Weighing Sector was asked to consider the addition of appropriate language to Publication 14.

Discussion: The Sector was unable to reach a consensus as to what is "permanently attached." One suggestion was to change the headings of H44 S.6.3. for Indicators and Weighing and Load Receiving Element respectively to something similar to the heading for Load Cells. There was a proposal to submit a recommendation to the S&T Committee for that change.
(Editor's Note: In the initial summary of decisions this item was incorrectly reported. A proposal was submitted to the S&T Committee who felt that this had not been fully addressed and suggested that the Sector review it further.)

Conclusion: This item is to be carried over. The labs and the SMA Technical Committee are asked to develop possible solutions to be considered at the next Sector meeting.

19) Inclusion of Non-Handbook 44 Features in an "NTEP" Mode

Source: NTEP Weighing Labs

Background: Some labs have been encountering non-H44 features in a mode designated as "NTEP mode." The labs are concerned that if a device has non-H44 options in a mode designated as "NTEP mode," this may facilitate devices being set up inappropriately and not in compliance with Handbook 44.

Discussion: The Sector concluded that this is already addressed under sealable parameters. NIST Handbook 44 Scales Code Paragraph S.1.11.(b) requires provision for a seal that must be broken, or other approved means of providing security before any change can be made that detrimentally affects the metrological integrity of the device.

Conclusion: The NTEP Laboratories will revisit this issue and determine whether or not a change needs to be made to address this issue.

20) Identification of Manual Weight Entries

Source: NTEP Weighing Labs

Background: The language in Publication 14 which specifies permissible (i.e., Specific terms which are permissible) means of identifying manual weight entries is not consistent with Handbook 44 paragraph S.1.12.

Recommendation: Revise the terms specified in Section 17.3 for manual weight entries to be consistent with Handbook 44 paragraph S.1.12.

Conclusion: This item was included as an information item; no action was required by the Sector. Corrections have already been made in the current edition of Publication 14.

21) Marking Requirements for Components of an ECR System

Source: NTEP Weighing Labs

Background: There was some confusion about the application of marking criteria to some of the computer-based ECR systems that are being evaluated by the labs.

Recommendation: The labs suggest that the marking criteria be clarified in Publication 14. The labs agreed that the following text should be included in Publication 14 to expand upon and clarify existing language:

> Example: Point-of-sale system consisting of a file server, CPU, keyboard, printer, display, and cash drawer should be treated as a "modular" ECR system and marked according to the example in NCWM Publication 14. The file server should be marked in the same manner as described for the control unit in Publication 14; however, labs made a distinction that file servers which are simply storing information (vs. performing calculations or some metrologically significant function) do not need to be evaluated. The labs generally agree that most components should have the manufacturers make and model marked on it anyway. The visibility of the information can be addressed through the use of duplicate identification badges if needed. "Dumb" indicators with no intelligence (such as some remote displays on point-of-sale systems) are not required to include n_{max}, capacity, and division size; however, these indications are required to be marked with the make and model number. In some systems the remote display does not have intelligence, but it serves as the primary indication for the system. Those would require complete markings of make, model, serial number, n_{max}, capacity, and division size.

Conclusion: The Sector agreed to add the language recommended to Publication 14 with some editorial clarification by the NTEP laboratories. The Sector also agreed that diagrams should be developed and added by the laboratories to illustrate the examples.

22) Percentage Tare

Source: NTEP Weighing Labs

Background: Publication 14 does not include specific guidelines or criteria for addressing percentage tare. Canada has specific test procedures for laboratory verification of this feature.

Recommendation: The labs commented that test procedures which include specific tests to be performed and examples of results which comply and results which do not comply are extremely helpful. The Canadian laboratory manual includes this type of format for most of the evaluation criteria. The labs recommend that the Sector consider adding the Canadian procedure as shown in Attachment, Item 22 for evaluating the percentage tare feature to Publication 14, with one exception: there is a difference between the rounding requirements in the US and CD for tare.

Conclusion: The Sector agreed to add the Canadian procedure as written; however, U.S. requirements for rounding will be added in place of the Canadian policy. This will be added to both the Scales Checklist and the Electronic Cash Registers Interfaced with Scales Checklist.

23) Definitions of Initial Zero Setting Mechanism (IZSM) and Automatic Zero Setting Mechanism (AZSM)

Source: NIST/OWM NTEP Weighing Labs

Background: This item was on the Weighing Lab agenda, but time did not permit discussion. The general point of the issue was that a better definition is needed of IZSM and how the labs differentiate between IZSM and AZSM. Soon examples of initial zero setting mechanisms are those which function by interrupting power to all or a portion of the scale. Operation of the on/off switch may interrupt power to only a portion of the scale, while disconnecting the device from the power source will interrupt power to the entire device. Operating the on/off switch may be an alternative semiautomatic zero setting mechanism. Complete power interruption by disconnecting the scale from the power source may activate an initial zero setting mechanism to cancel an initial dead load in accordance with Handbook 44 Section 2.20 Scales Paragraph S.2.1.5. Initial Zero-Setting Mechanism. The following new definition could be forwarded to the NCWM, S&T Committee for consideration if the Sector feels it is warranted.

> **initial zero-setting mechanism.** Automatic means provided to set the indication to zero by partial interruption of power (operation of an on/off switch), or to cancel a dead load by complete interruption of power by disconnection from the power source.

Discussion: The sector reviewed the present definition in NIST Handbook 44 and concluded it is satisfactory until labs can identify areas that need clarification.

Conclusion: The Sector agreed that no changes are needed to the definitions section of H44. The NTEP laboratories will review the EPO for scales and identify areas which can be clarified to ensure uniform application of the criteria.

24) Separate Testing for Junction Boxes

Background & Recommendations: In February 1995, a letter ballot was distributed to the Weighing Sector members requesting a decision on two issues: (1) whether or not testing should be required on an electronic load cell utilized in a hydraulic junction box, or summing column; and (2) whether or not influence factor testing of junction boxes with electronic components should be required. A clear position was not reached on the latter question. At the October 31 to November 1, 1995 meeting of the Weighing Sector, the subject was discussed with the conclusion that testing all junction boxes for influence factors is not appropriate. The Sector agreed that junction boxes could be categorized into categories of "passive" and "active". An "active" box would be one with temperature sensitive components. The decision indicated that "active" boxes should be tested and designated as either an indicator or a platform rather than as a separate component. The resulting CC would also be for either an indicator or a weighing element; not for a separate junction box.

Recently one of the NTEP labs was asked to conduct influence factor testing of a device with the junction box and the weighing element both together in the chamber and with the weighing element in the chamber and the junction box outside. The manufacturer asked that the certificate list the option of setting the device up with the junction box remote to the weighing element. When the testing was completed, the device passed when the weighing element and junction box were tested together but failed when they were separated. The Sector is asked to determine whether or not certificates for devices utilizing junction boxes should have a notation as to the location of the junction box and if such installations should be limited to that configuration.

Discussion: The Sector reviewed the information and discussed the distinction between active and passive junction boxes. At the October 31 to November 1, 1995 Sector Meeting it was decided that testing of all junction boxes was not appropriate. The NTEP labs should make the determination on a case by case basis. Junction boxes can generally be divided into the categories of active and passive. *Active* junction boxes have components that may be adjustable such as load cell summing cards or a

significant component such as an A/D converter and may also be environmentally sensitive. *Passive* junction boxes may have temperature sensitive components such as fixed resistors but not, significant components requiring separate testing.

Conclusion: The Sector agreed that no separate testing of junction boxes normally attached to the weighing element is required. However, if the manufacturer asks for the option of a remote junction box for scales less than 2000-lb, then testing must be performed with the junction box both inside and outside of the chamber; the CC should reflect any limitations relative to the location of the junction box based on the results of that testing.

25) Software Evaluation Policy

Source: NIST/OWM

Background/Update: The Sector was provided with an update of the action taken by the NTEP Board of Governors (BOG) at the July 1997 meeting. Dick Suiter, NIST outlined the policy adopted by the BOG at that time and advised Sector members of the re-formation of an NCWM Software Working Group to study the issue of whether or not NTEP should continue issuing CCs to stand-alone software. The present policy is that, pending completion of the Software Working Group's efforts, NTEP will continue issuing NTEP CCs to stand-alone software; additionally, such evaluations will include a full system evaluation with the actual equipment that will be used in the final application. Sector Members are encouraged to submit any comments on this issue to the Work Group as soon as possible so that their comments can be considered during the Work Group's deliberations.

26) Production Meets Type

Source: NIST/OWM

Background/Update: The Sector was updated on proposals from the NTEP planning group regarding production meets type. Meeting participants were given copies of a draft section of the NTEP Business plan which addresses the issue of production meets type. Interested parties are encouraged to forward their comments to Barbara Bloch, BOG Chairman, by January 1, 1998, for consideration by the BOG at its January 1998 Interim Meeting.

27) Upgrade of Pre-NTEP Certificates

Source: NIST/OWM/NTEP

Background: NTEP has been asked by several manufacturers to upgrade some provisional certificates for a pre-NTEP vehicle scale family to include a CLC equal to the section capacity on the original certificate. Based on the discussions at the 1989 NTEP Weighing Sector meeting, the present policy of NTEP is to limit the rated CLC to 80 percent of the existing section capacity. One manufacturer presented three arguments in support of their position. (1) The report of the 73rd NCWM S&T Committee Report, Item 320-5A&B, page 242, third paragraph from the bottom, states "On a scale manufactured prior to 1-1-89 the section capacity will have the same meaning as CLC." (2) In the same report page 244, third paragraph from the top, states "On scales manufactured prior to 1-1-89 section capacity markings may be used in place of CLC." (3) The SMA position on which CLC was adopted stated that CLC and section capacity would be the same unless the manufacture stated differently.

NTEP has taken the position that points 2 & 3, only apply to marking requirements. On new production devices with a provisional certificate, the manufacture may continue to mark the section capacity and is not required to mark a CLC. For point 3, NTEP believes the manufacturer may declare the CLC and the section capacity as equal, however verification is based on NTEP testing of sections and mid-spans with known test loads to at least 90 percent of the rated CLC.

Recommendation: The Weighing Sector was asked for clarification of this issue. Three options are offered for consideration by the Sector: (1) The manufacturer could supply engineering data sufficient to support the claim that the CLC is in fact at least equal to the previously stated section capacity. (2) The manufacturer could supply data showing that more current models which were in fact evaluated for the CLC stated by the manufacturer are of similar design and material. and for (3) NTEP could require additional testing of the devices in question to verify the CLC rating, following current Publication 14 procedures.

Discussion: The Sector discussed the source of the 80 percent rule which came from the 1989 Sector meeting. The SMA at that time said that there was no rationale for limiting CLC to 80 percent of section capacity. A proposal to allow manufactures to upgrade certificates stating a CLC rating up to 100 percent of section capacity was voted on with a result of 15 in favor, 3 opposed, and 3 abstaining.

Conclusion: The Sector recognized that there are some existing pre-NTEP CCs that must be upgraded according to existing pre-NTEP policy. The Sector agreed, though not unanimously, that existing pre-NTEP CCs can be upgraded according to the following policy for upgrading the original Section Capacity declaration to a concentrated load capacity (CLC) value. The manufacturer can declare from 80-100 percent of the original Section Capacity without additional testing. NTEP will complete the process of upgrading existing pre-NTEP CCs. NTEP will distribute a notice to all Certificate holders notifying them of the Sector's decision; manufacturers who want to upgrade Certificates which were upgraded in past years must follow the normal NTEP application process.

28) Grain Test Scales

Source: GIPSA
Background: Bill Bates provided information on their concern regarding grain test scales that will meet GIPSA requirements. GIPSA requirements may be more stringent than NIST Handbook 44. Particularly in the size of the minimum division for determining foreign material (FM) in grain. Bill is concerned that some manufacturers do not think there is a sufficient market to warrant producing devices that will meet both Handbook 44 and GIPSA requirements.

Decision: Bill Bates will ask Paul Hadyka to head up a work group to review the differences between the GIPSA and the Paul Hadyka (GIPSA), Jerry Wang (A&D), Darrell Flocken (Mettler-Toledo), Will Wotthlie, and Jeff Dombach (JLD Systems) will review the issue and bring back any proposal for changes to H44 to the Sector.

U.S./Canada Issues

29) Update on U.S./Canada Mutual Recognition Program and testing to OIML Requirements

U.S./Canada Mutual Recognition Program:
Tina Butcher provided the Sector with an update of the additional areas added to the US/CD Mutual Recognition Program for Scales in April 1997. Capacities and types of Scales accepted under this program are:

- ***-scales up to 1,000 kg or 2,000 lb***
- ***-mechanical scales up to 10,000 kg or 20,000 lb***
- ***-(complex & non-complex) electronic indicators***

Testing to OIML R60:
In April 1997, NTEP began accepting applications for testing of load cells to OIML R60 requirements. Although inquiries have been received, no cells have been submitted to date.

In January 1997, the NTEP BOG instructed OWM to proceed, as resources permit, with the establishment of an agreement with NMi to mutually recognize load cell test data. No work has been done on this project to date.

Testing to OIML R76:
At the July 1997 Annual Meeting, the BOG was asked to consider the following to keep the project moving and minimize impact on the program:

1) ***ask for volunteers from industry to develop electronic data entry forms in the R76-2 format (alternatively, the BOG might consider contracting for someone to develop these forms);***

2) ***announce acceptance of R-76 tests by October 1 or upon completion of electronic forms, whichever comes first;***

3) ***authorize participation of an OH of CA lab representative in R76 National Working Group Meetings (the BOG would be consulted if participation in an International Working Group Meeting is deemed necessary); and***

4) ***revisit this issue at the January 1998 Interim Meeting to discuss the status of this project.***

NTETC Weighing Sector
November 5-7, 1997, Meeting
Gaithersburg, MD
Attendance List

Nigel Mills, Chairman	Hobart Corporation
Dick Suiter, Technical Advisor	National Institute of Standards and Technology (NIST) - Office of Weights and Measures (OWM)
Thomas Ahrens	NIST - OWM
Thomas Bartel	NIST - Force Group
Bill Bates	USDA, Grain Inspection, Packers, & Stockyards Administration
Bill Brasher	Southern Company Services
Tina Butcher	NIST - OWM
Charles Carter	Oklahoma Weights & Measures
Gary Castro	California Division of Measurement Standards
Kevin Chesnutwood	NIST - Force Group
Steve Cook	California Division of Measurement Standards
Wes Diggs	Virginia Weights and Measures
Jeff Dombach	JLD Systems
John Elengo	Consultant
Mark Erickson	Rice Lake Weighing Systems
Bill Fishman	N.Y. Weights and Measures
Darrell Flocken	Mettler-Toledo, Inc.
Karen Glover	Pennsylvania Scale
Bill Goodpaster	Cardinal Scale
John Hughes	Weigh-Tronix, Inc.
Dave Hawkins	Thurman Scale
Dennis A. Krueger	NCR Corporation
Gary Lameris	Hobart Corporation
Tom Luna	Scales Unlimited, Inc.
Steve Patoray	Cardinal Scale
Jim Price	Maryland Weights and Measures
Dave Quinn	Fairbanks Scales
Debbie Ripley	NIST - Technical Standards Activities Program
Jeff Robidoux	HBM
Lynn Sebring	NIST - OWM
George Shefcheck	Oregon Measurement Standards
Ed Szesnat	N.Y. Weights and Measures
Larry Turberville	Alabama Weights and Measures
Tom Vormitagg	Commercial Testing & Engineering Company
Jerry Wang	A&D Weighing
Bill West	Ohio Weights and Measures
Juana Williams	NIST - OWM
Will Wotthlie	Maryland Weights and Measures

NTETC Belt-Conveyor Scale Sector
Agenda for Meeting
November 4-5, 1997, Gaithersburg, Maryland

Agenda Overview

1) Examination Procedure Outline (EPO)
2) Recorded Representation of Zero Adjustment
3) Rate of Flow Indicators and Recorders Specifications
4) Audit Trail Criteria
5) Design of Zero Setting Mechanism
6) Sensitivity at Zero Load
7) Official Test Definition
8) Simulated Test Definition
9) Variation of the Value of Zero during Automatic Zero-Setting
10) Material Test Procedure
11) Strain Load Testing Reference Scales
12) Installation Requirements
13) Loading Requirements
14) Maintenance Requirements
15) Alignment of Scale Idlers
16) Tolerance for Belt Tracking at the Head Pulley, Tail Pulley and at the Belt Take-Up Near the Head Pulley (UR. 3.2.)
17) Computer Software
18) Production Meets Type

Agenda Conclusions

1) Examination Procedure Outline (EPO)

The Sector revisited the issue of developing an EPO that could be "nationally-recognized" for belt-conveyor scale systems.

Conclusion:

- The Sector agreed that developing an EPO would benefit the type evaluation process in the following ways:
  - Belt-conveyor scale manufacturers will know which tests their system will be subjected to in the field.
  - Field inspectors can use the EPO to verify that a system in the field meets Handbook 44, thereby helping to ensure that production meets type.
- A draft EPO has been prepared by Norman Johnson (Merrick Industries). The Sector agreed to work toward having a final draft of the EPO to present to the NCWM Administration and Public Affairs (A&P) Committee by July 1998. To reach this goal the Sector will meet the following deadlines:
  - Comments about the draft EPO must be received by Norman Johnson (Merrick Industries) by February 1, 1998.
  - Norman Johnson will incorporate the comments into the draft EPO by May 1, 1998.
  - Thomas Ahrens (NIST) will send the final draft out for ballot by May 15, 1998.
  - The Sector will return the ballot with comments to Thomas Ahrens by June 1, 1998.
  - If the ballot receives a simple majority approval, the EPO will be forwarded to the NCWM A&P Committee by July 1, 1998.

2) Recorded Representation of Zero Adjustment

Tom Vormittag (Commercial Testing and Engineering Company) presented five months worth of data collected from a belt-conveyor scale system. The results represent the accumulated weighments of almost two million tons of coal. Zero reference numbers for the system were included in the data to illustrate the effect of the environment and systematic influences on the value of relative zero. Unlike many conveyor systems, the system that was monitored is equipped with a belt scraper and most of the flat surfaces of the live scale structure are designed to prevent dust buildup. In addition, weekly material tests are performed using an on-site weigh-bin. During the presentation, Tom identified periods when the range of the zero-setting mechanism exceeded the tolerance allowed by Handbook 44. Tom provided specific reasons that he believes the system exceeded the required

tolerances. These reasons included, but were not limited to: dust buildup on the live areas of the belt-conveyor scale system; material freezing to the belt; incorrect belt tracking; and mechanical problems with the head, trail or gravity take-up pulleys. Tom felt that by presenting this data he could convince the Sector to submit a proposal to the NCWM requiring the value of zero to be recorded periodically whenever auto-zero tracking is engaged.

Conclusion:

- ➜ The Sector concluded that, based upon the recorded results of one belt-conveyor scale system installation, the Sector cannot presently recommend a requirement that would effect all belt-conveyor scale systems used for commercial transactions.
- ➜ The Sector agreed to leave this issue unresolved until a decision was made for item number 5.
- ➜ Since no decision was made on item 5, no proposal will be sent to the Specifications and Tolerances Committee at this time.

3) Rate of Flow Indicators and Recorders Specifications

The Sector discussed the origin of requiring belt conveyor scales to operate between 35 percent and 98 percent of the rated capacity of the scale. The Sector discussed a proposal to allow belt conveyors to operate without activating alarm unless the rate of flow exceeds the rated capacity of the scale.

Conclusion:

- ➜ The Sector agreed that it is still important that belt-conveyor scale systems activate an alarm if the flow of material over the scale exceeds 98 percent of the rated capacity of the scale for the following reasons:
  - ➜ Since chart recorders only record up to 100 percent of the capacity of the scale, it is still important that safeguards exist to ensure that belt-conveyor scale systems never operate above the capacity of the scale.
  - ➜ If a system is allowed to operate above 98 percent of the rated capacity of the system, there is a risk of plugging chutes or creating a condition where material is allowed to spill over the edge of the belt.
- ➜ The Sector concluded that the existing requirement is still justifiable; however, the justification for the requirement has changed.

4) Audit Trail Criteria

Conclusion:

- ➜ The Sector proposes that the Specifications and Tolerance (S&T) Committee modify paragraph S.2.2. as follows:

  S.2.2. Adjustable Components. - An adjustable component that can affect the performance of the device (except as prescribed in S.3.1.) shall be held securely in adjustment ~~and shall not be capable of adjustment without breaking a security means~~.
- ➜ The Sector recommends that the S&T Committee add a new specification S.5. along with a table specifying requirements for the different audit trail categories. The proposed language for S.5 reads as follows:

  S.5. Provision for Sealing. - A device shall be designed using the format set forth in Table S.5. with provision(s) for applying a security seal that must be broken, or for using other approved means of providing security (e.g., data change audit trail available at the time of inspection), before any change that detrimentally affects the metrological integrity of the device can be made to any electronic mechanism. [Non-retroactive as of January 1, 1998]
- ➜ The Sector determined that the audit trail criteria for belt-conveyor scale systems should be based on the audit trail criteria specified in the scales code (Note: The audit trail criteria for liquid-measuring devices was inadvertently printed in the meeting agenda); however, the Sector agreed that Category 2 of Table S.1.11 for scales is inappropriate for belt-conveyor scale systems.
- ➜ The Sector agreed that Category 2 of the scales code should be eliminated from the table before a proposed table is sent to the Specifications and Tolerances Committee. The proposed table is printed below.

Table S.5. Categories of Device and Methods of Sealing

Categories of Device	Method of Sealing
Category 1: No remote configuration capability	Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.

Category 2: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password)	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.)**

[Nonretroactive and enforceable as of January 1, 1998.]
(Table added 1998)

5) Design of Zero Setting Mechanism

The Sector spent only a short time on this issue since discussion of this issue started with Agenda item 2. There appeared to be two opposing thoughts about how wide the limits should be for the zero setting mechanisms on belt-conveyor scale systems. A majority of the group seemed to feel that the tolerance should remain at ±2 percent of the rated capacity of the scale, since this tolerance has worked for a very long time with no problem. A second opinion was that, based upon the potential for accidental or fraudulent short-weighing of a commodity, the tolerances should be widened and additional requirements be added to ensure that good measurement practices are achieved. The debate seemed to lead into what constitutes "good housekeeping". Several members of the Sector felt very strongly that scales should be kept as clean as is physically possible, while others felt that frequently cleaning the scale will create a bias in the weight values over time. One possible solution that was suggested to settle this item and Agenda Item 2 above was to require the value of zero to be printed any time that the range of zero exceeds ±2 percent of the rated capacity of the scale.

Conclusion:

- ➜ The Sector was unable to reach a consensus on this issue.

6) Sensitivity at Zero Load

After discussing this issue briefly, the Sector realized that without analyzing some specific examples it would be impossible to determine whether or not the proposed changes were appropriate. Norman Johnson (Merrick Industries Inc.), Chairman of the Sector, worked out some examples; these examples are included in Appendix A of this summary.

Conclusion:

- ➜ Based upon the examples that Norman Johnson worked out, the Sector concluded that no changes are needed in Handbook 44.

7) Official Test Definition

The Sector discussed the policies that various states have regarding the licensing of service persons. Several Sector members were concerned that if this paragraph is modified as suggested state inspectors would be very restricted as to when they could test a belt-conveyor scale system. An alternative proposal was made to modify N.1.1. to read as follows:

N.1.1. Official Test.- An official test of a belt-conveyor scale system shall be a materials test witnessed by the official with statutory authority or a designated representative.

Conclusion:

- ➜ The Sector was unable to reach a consensus on this item.

8) Simulated Test Definition

Conclusion:

- ➜ The Sector was opposed to including the word "certified" in the definition.
- ➜ The Sector agreed to revisit this issue later in the agenda; however, the Sector was unable to reach a consensus on proposed language.

9) Variation of the Value of Zero during Automatic Zero-Setting

Conclusion:

➜ The Sector agreed that no changes should be recommended for paragraph N.3.1. since this issue is closely related to Agenda Item 6, and no changes were recommended in Agenda Item 6.

10) Material Test Definition

Conclusion:

➜ The Sector agreed to send a proposal to the Specifications and Tolerances Committee to modify N.3.2. as follows: N.3.2. Material Tests.- ... Means for weighing the material test load will depend on the capacity of the belt-conveyor scale and the availability of a suitable scale for the test. ~~Where practicable, the substitution method of weighing should be used.~~ To assure that the test load is accurately weighed and determined, the following precautions shall be observed:

➜ The Sector agreed that no changes are needed in N.3.2. sections (e) and (f).

11) Strain Load Testing Reference Scales

Conclusion:

➜ The Sector agreed to forward the following modified paragraph to the Specifications and Tolerances Committee:

N.3.2.1. Accuracy of Material. - The quantity of material ~~comprising the~~ used to conduct a material test shall be determined statically or dynamically ~~or on an uncoupled-in-motion railway track scale to an accuracy of at least 0.1 percent~~ on a reference scale. ~~The scale used to weigh material shall be tested immediately prior to running the material test.~~ The reference scale shall be section tested or double draft tested (for double draft railroad track scale), as appropriate. Where practicable, substitution or strain-load testing shall be performed in the range of the tare weights (where applicable) and in the range of the gross weights of material used for official belt-conveyor scale system tests to an accuracy of 0.1 percent or better within 24 hours prior to weighing the reference material. The reference scale shall be retested after completion of weighing the reference material to assure that the reference scale remained in tolerance throughout the test. Scales typically used for this purpose ~~include~~ are Class II, Class III or III L scales, ~~or a scale with the tolerances as described in Table T.1.1. of Handbook 44 Section 2.20.~~, including a vehicle scale, a hopper scale, a static railroad track scale, or an uncoupled-in-motion railroad track scale.

12) Installation Requirements

UR2.1. Protection from Environmental Factors

The Sector addressed a proposal to require the flat areas of a belt-conveyor scale system to be protected from dust and other environmental influences. The Sector recognized that there are a lot of flat areas on a belt conveyor scale. The general feeling was that requiring the load- receiving element to be protected is sufficient. The Sector also discussed the proposed tolerances for the range of zero between official tests. The Sector generally felt that the proposed tolerances were unachievable by most installations and would increase the cost of the material significantly.

Conclusion:

➜ The Sector does not support the proposed changes to UR.2.1.

UR.2.2. Conveyor Installation

Conclusion:

➜ Since the intent of this recommendation is to require the entire conveyor structure to be covered, the Sector felt that this requirement is unreasonable. The Sector felt that, in general, the operation of the scale is not adversely affected by environmental effects on the conveyor upstream from the scale. Consequently, the Sector does not support the proposed changes to paragraph UR.2.2.

UR.2.2. Conveyor Installation, subparagraphs (a) & (b)

Conclusion:

➜ The Sector does not believe that it is appropriate to include design requirements in Handbook 44. Consequently, the Sector does not support the proposed changes to paragraph UR2.2. (a) and (b).

UR.2.2.1. For Scales not Installed by the Manufacturer

Conclusion:

➜ The Sector agreed to send a proposal to the Specifications and Tolerances Committee to modify UR.2.2.1 by removing the word short as follows:

UR.2.2.1. For Scales not Installed by the Manufacturer.- Unless the scale is installed in a ~~short~~ 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:

UR.2.2.1. For Scales not Installed by the Manufacturer, subparagraph (b)

Conclusion:

➜ The Sector agreed that the word "infeed" is unnecessary.

➜ The Sector agreed to send a proposal to the Specifications and Tolerances Committee to modify UR.2.2.1. (b) as follows:

UR.2.2.1. For Scales not Installed by the Manufacturer.-

...

(b) The scales 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 the 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 constrained at any time in order to force belt alignment. (Amended 1998)

UR.2.2.1. For Scales not Installed by the Manufacturer, subparagraph (c)

Conclusion:

➜ The Sector agreed to send a proposal to the Specifications and Tolerance Committee to modify UR.2.2.1. (c) as follows:

(c) If there is a concave curve in the conveyor ~~between the scale and the loading point~~, before or after the scale, the scale shall be installed so that the belt is in contact with *all* the idlers rollers at all times for at least 6 m (20 ft.) or 5 idler spaces, whichever is greater, before and after the scale.[2] A concave curve ~~beyond the scale~~ shall start no closer than 12 m (40 ft) from the scale *to the tangent point of the curve*. (Amended 1998)

[2] Installing the belt scale 5 idler spaces from the tail pulley or the infeed skirting will be in the area of least belt tension on the conveyor and should produce the best accuracy. The performance of a belt-conveyor scale may be adversely affected by a concave curve in the conveyor that is located between the loading point and the scale. Therefore, whenever possible, a belt-conveyor scale should not be installed with a concave curve in the conveyor between the loading point and the scale. A concave curve beyond the scale shall start no closer than 12 m (40 ft) from the scale. (Amended 1995, 1998)

UR.2.2.1. For Scales not Installed by the Manufacturer, subparagraph (g)

Conclusion:

➜ The Sector agreed to send a proposal to the Specifications and Tolerances Committee to change the 4 idler requirement in UR.2.2.1. to 5 idlers as follows to match current industry standards:

UR.2.2.1. For Scales not Installed by the Manufacturer.-

...

(g) The scale area and ~~4~~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.

➜ The Sector agreed to not forward the proposal about scale quality idlers to the S&T Committee.

UR.2.2.1. For Scales not Installed by the Manufacturer, subparagraph (h)

Conclusion:

➜ The Sector agreed to send a proposal to the Specifications and Tolerances Committee to modify UR.2.2.1.(h) as follows:

UR.2.2.1. For Scales not Installed by the Manufacturer.-

...

(h) Conveyor belting shall be no heavier than its required for normal use. Under ~~any load~~ no load or loaded, 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.).

UR.2.2.1. For Scales not Installed by the Manufacturer, subparagraph (i)

Conclusion:

➜ The Sector did not support the proposal to the Specifications and Tolerances Committee to modify UR.2.2.1. (i); the sector agreed that these proposed changes would be more appropriately addressed in the EPO

UR.2.2.1. For Scales not Installed by the Manufacturer, subparagraph (j)

Conclusion:

➜ The Sector agreed to send a proposal to the Specifications and Tolerances Committee to modify UR.2.2.1. (j) as follows:

UR.2.2.1. For Scales not Installed by the Manufacturer.-

...

(j) The belt shall not extend beyond the edge of the idler rollers in any area of the conveyor. ~~the weighing area.~~ (Amended 1998)

UR.2.2.1. For Scales not Installed by the Manufacturer, subparagraph (k)

Conclusion:

➜ The Sector does not support the proposed changes.

UR.2.2.1. For Scales not Installed by the Manufacturer, subparagraph (l)

Conclusion:

➜ Based upon the discussion of the proposed changes to UR.2.2.1.(c), the Sector does not support the proposed changes.

13) Loading Requirements

The Sector discussed the benefits of requiring the material flow across the scale to remain above 7 percent of the rated capacity whenever the system is measuring material. Several members of the Sector were concerned that this requirement would essentially outlaw surging material, which would be nearly impossible for industry to adhere to. Concerns were expressed that the Sector is attempting to apply arbitrary numbers to Handbook 44. An alternative proposal was suggested to require the flow to remain above 1,000 divisions.

Conclusion:

➜ The Sector was unable to reach a consensus on this issue.

14) Maintenance Requirements

Conclusion:

➜ The Sector agreed that the suggested changes in this item specify how a scale user must maintain belt-conveyor scale systems. The Sector agreed that it is inappropriate for the group to encourage requirements that mandate specific "good housekeeping" practices. Consequently, the Sector does not support the proposed changes to UR.3.2. (a) and (b).

15) Alignment of Scale Idlers

The Sector discussed replacing the requirement to use "wire line" with a requirement to use lightweight string of similar strength to perform scale alignments. There seemed to be just cause to change the paragraph. The Sector determined that this requirement is essentially a design requirement, and therefore believes it is inappropriate to be included in Handbook 44. After discussing the benefits of changing the paragraph, a suggestion was made to move this requirement to the EPO when it is published.

Conclusion:

- ➜ The Sector believes that UR.3.2. (c) specifies design requirements which restrict the freedom of scale manufacturers from designing a scale which can meet the required tolerances without meeting the alignment requirements of UR.3.2. (c); Consequently, the Sector agreed to send a proposal to the Specifications and Tolerances Committee to remove UR.3.2. (c) from Handbook 44.
- ➜ The Sector suggested that this paragraph might be more appropriate located in the EPO.
- ➜ It is noted that, if this paragraph removed from Handbook 44 the user would be required to align the scale according the manufacturer's specifications.

16) Tolerance for Belt Tracking at the Head Pulley, Tail Pulley and at the Belt Take-Up Near the Head Pulley (UR. 3.2.)

The Sector agreed that it is very important that proper belt tracking be maintained. There were many opinions about how much of a tolerance should be allowed with respect to how much the belt is allowed to travel from side to side and how much the gravity take up pulley is allowed to travel up and down. Several members of the Sector felt that as long as the belt did not shift beyond the edge of the wing rollers there was no problem. This issue was also discussed earlier in Agenda Item 12 which discussed UR.2.2.1.(j).

Conclusion:

- ➜ The Sector was unable to reach a consensus.

17) Computer Software

The Sector was given a letter that Richard Suiter (NIST) sent to the NTEP laboratories that explains the interim policy that NTEP laboratories will follow until the NCWM Software Working Group (SWG) determines an appropriate method to guarantee software used for commercial use is reliable. Richard Suiter explained the plans of the SWG.

Conclusion:

- ➜ The Sector will review the letter and send comments to Charles Gardner (Suffolk County, NY), Chairman of the Software Working Group.

18) Production Meets Type

The Sector received a draft letter from the NTEP Board of Governors explaining a proposed procedure for ensuring that production meets type. The procedure included plans for developing a new NTEP program to check existing devices that hold a Certificate of Conformance to make sure production devices meet the same standards as the devices that were originally evaluated.

Conclusion:

- ➜ Sector members will review the letter and send their comments to the NTEP Board of Governors.

NTETC Belt-Conveyor Scales Sector
November 4-5, 1997
Gaithersburg, Maryland
List of Attendees

Name	Organization	Address	Phone	E-Mail
Thomas M. Ahrens	NIST	820 W Diamond Ave Rm 227, Gaithersburg, MD 20899	301-975-4013	tahrens@nist.gov
William D. Brasher	Southern Company Services	PO Box 2625 Mail Bin: 14N 8163, Birmingham, AL 35202	205-257-7653	william.d.brasher@scsnct.com
Tina G. Butcher	NIST	Bldg 820 Rm 223, Gaithersburg, MD 20899	301-975-2196	tina.butcher@nist.gov
Max C. Casanova	Ramsey Technology Inc	501-90th Avenue NW, Minneapolis, MN 55433-8006	612-783-2659	
Gary Castro	CA Measurement Standards	8500 Fruitridge Road, Sacramento, CA 95826	916-229-3018	GCastro@smtp1.cdfa.ca.gov
Louis T. Cerny	Consultant	310 Summit Hall Rd, Gaithersburg, MD 20877	301-947-0208	
Steven E. Cook	CA Measurement Standards	8500 Fruitridge Rd, Sacramento, CA 95826	916-229-3050	SCook@smtp1.cdfa.ca.gov
William Fishman	NY Bureau of Wghts & Meas	Building 7A State Campus, Albany, NY 12235	518-457-3452	Agmweigh@emi.com
John C. Hughes	Weigh-Tronix Inc	1000 Armstrong Drive, Fairmont, MN 56031	507-238-8294	hughj@weigh-tronix.com
Norman Johnson	Merrick Industries Inc	10 Arthur Drive, Lynn Haven, FL 32444	904-265-3611	
Johnnie W. Nix	Southern Company Services	2550 Goodsprings Rd, Parrish, AL 35501	205-257-7910	
James T. Price, III	MD Dept of Agriculture	50 Harry S Truman Parkway, Annapolis, MD 21401	410-841-5790	priccjt@mda.state.md.us
Debbie Ripley	NIST	Bldg 820 Rm 121, Gaithersburg, MD 20899	301-975-4859	deborah.ripley@nist.gov
Richard C. Suiter	NIST	820 W. Diamond Suite 223, Gaithersburg, MD 20899-0001	301-975-4406	richard.suiter@nist.gov
Edward J. Szesnat, Jr.	NY Bureau of Wghts & Meas	State Campus Bldg 7A, Albany, NY 12235	518-457-3452	Agmweigh@emi.com
Larry M. Turberville	AL Dept of Agr & Industry	PO Box 346, Cherokee, AL 35616	205-360-2609	
Thomas Vormittag	Commercial Testing & Eng Co	PO Box 474, Kayenta, AZ 86033	520-677-5006	
Otto K. Warnlof	Consultant	9705 Inaugural Way, Gaithersburg, MD 20879	301-926-8155	owarnlof@nist.gov
Juana Williams	NIST	Bldg 820 Rm 223, Gaithersburg, MD 20899	301-975-3989	juana.williams@nist.gov
Will Wotthlie	MD Dept of Agriculture	50 Harry S Truman Parkway, Annapolis, MD 21401	410-841-5790	wotthlrw@mda.state.md.us

Appendix A.-Comparison of Scale Divisions to Percentage of Rated Scale Capacity

Relationship of Scale Capacity to Scale Divisions

Example 1:

Belt Load	=	200 lb/ft
Belt Speed	=	200 ft/min
Scale Capacity (TPH*)	=	(Belt Load/Belt Speed)/(2000 lb)
∴ Scale Capacity	=	1200 TPH

*TPH stands for ton/hour

Handbook 44, Belt-Conveyor Scale Systems Code, N.2., specifies that the minimum weighment must be at least :

1000 scale divisions
AND 3 belt revolutions
AND 10 minutes of operations or a normal weighment

During any 10-minute period of operation 200 tons of material can pass over the scale; however, let us assume that the normal weighment is only 100 tons and can be delivered in 3 belt revolutions (Note: the belt is less than 300 ft long). Therefore, the master weight totalizer must have at least one decimal place to meet 1000 divisions.
Therefore, let us assume the following:

1 scale division = 0.1 ton = 200 lb
= 0.0083 percent of the scale capacity (0.1 ton/1200 TPH)

Let us now assume that the weighbridge is 12-feet long (Example: 4 idlers at 3-ft spacing or 3 idlers at 4-ft spacing). Section 7 of the Belt-Conveyor Scales checklist in NCWM Publication 14 explains how to find the sensitivity of a belt-conveyor scale. Publication 14 explains that the amount of weight that must be added to the weighbridge to determine the sensitivity of the scale under no load is determined by applying the following equation: Weight = 2 x WC/CM, where WC is the weight required to reach the static scale capacity of the weighbridge and CM is the counts in dynamic weighing scale divisions required for the minimum totalized load. The weight required in this example is found as follows:

WC = Belt Load / Length of Weighbridge = (200 lb/ft) / (12 ft)

(2 x WC)/CM
= [2 x (200 lb/ft) x (12 ft)] / 1000
= 4.8 lb

Paragraph S.3.2. of the Belt-Conveyor Scales Systems code in Handbook 44 requires that the totalizer advance not less than one nor more than three scale divisions.

Based upon the following equation the belt must run at full capacity for 5 minutes for 100 tons of material to pass over the scale:
100 tons / [Scale Capacity (ton/hour) / 60 (min/hour)] = 100 tons / [1200 TPH / 60 (min/hour)] = 5 minutes

With 4.8 lb on the weighbridge the totalizer advances:

$$\frac{(4.8lbx200ft/minx5min)}{(12ft)} = 400lb = 2divisions$$

Example 2:

Belt Load	=	200 lb/ft
Belt Speed	=	400 ft/min
Scale Capacity (TPH)	=	(Belt Load/Belt Speed)/(2000 lb)
∴ Scale Capacity	=	2400 TPH

All of the values from Example 1, except for belt speed, are reused in this example to draw a comparison between the number of scale divisions and the percentage of scale capacity. The speed of the belt is doubled, which effectively doubles the capacity of the scale. Again, we will assume that a normal weighment is 100 tons and can be delivered in 3 belt revolutions (Note: now

the belt is now less than 166-feet long). As in the first example, the master totalizer must have at least one decimal place to meet 1000 divisions.

Therefore,

1 scale division = 0.1 ton = 200 lb
= 0.00416 percent of the scale capacity (0.1 ton / 2400 TPH)

Using the method explained in Example 1, the weight required to test the sensitivity of the scale at zero load is:

(2 x WC)/CM
(2 x 200 lb/ft x 12 ft)/1000
= 4.8 lb

Again, the totalizer must advance not less than one nor more than three scale divisions.

Based upon the following equation the belt must run at full capacity for 5 minutes for 100 tons of material to pass over the scale: 100 tons / (Scale Capacity (ton/hour) / 60 (min/hour)) = 100 tons / (2400 TPH / 60 (min/hour)) = 2.5 minutes

With 4.8 lb on the weighbridge the totalizer advances:

$$\frac{(4.8lb \times 400ft/min \times 2.5min)}{(12ft)} = 400lb = 2divisions$$

These examples indicated that it is much easier to determine the sensitivity of the scale in terms of scale divisions. While two divisions of material pass over the scale in both examples, 0.0166 percent of the scale's capacity passes over the scale in the first example and 0.00832 percent of the scale's capacity passes over the scale in the second example. It would be very difficult to determine when a specified percentage of the scale's capacity passes over a belt-conveyor scale.

National Type Evaluation Technical Committee
Measuring Sector Meeting
September 5-6, 1997, Snowmass, Colorado

Meeting Summary

1. Updates to NCWM Publication 14

Each of the following issues were adopted at the July 1997 Annual Meeting of the National Conference on Weights and Measures (NCWM). The Measuring Sector was made aware of each of these changes and given an opportunity to comment.

Conclusion:

a) S.1.6.4.1. Unit Price; Exclusions for Fleet Sales, Other Price Contract Sales and Truck Refueling Dispensers

➜ This topic was included in the Measuring Sector agenda as an informational item.

➜ The NCWM added language to Handbook 44 which allows liquid products to be dispensed for fleet sales, other contract sales, or truck refueling sales, without all of the unit prices available to the customer prior to delivery of the product, for all grades, brands, blends, or mixtures.

Conclusion:

b) S.1.6.7. Recorded Representation, Point-of-Sale Systems and Appendix D, Definition of Point-of-Sale System

➜ The NCWM adopted language which requires that a printed receipt, which lists the total volume of the delivery, unit price, total computed price, and product identity, be available for all transactions conducted with point-of-sale systems or devices activated by debit cards, credit cards, and/or cash, *unless the transaction is a fleet sale or other price contract sale.*

➜ These changes will be reflected in the 1998 edition of Publication 14.

Conclusion:

c) T.3. Repeatability

➜ This topic was included in the Measuring Sector agenda as an informational item.

➜ The Sector was informed that the repeatability tolerances for LPG and NH_3 devices were changed by the NCWM. While these changes will not be reflected in Publication 14, they will affect the criteria that NTEP laboratories use to evaluate these devices, and NTEP laboratories will begin applying the modified criteria immediately.

Conclusion:

d) T.4. Automatic Temperature-Compensating Systems

➜ This topic was included in the Measuring Sector agenda as an informational item.

➜ The Sector was informed that the tolerances for LPG and NH_3 automatic temperature compensated systems have been widened. These changes will not be reflected in Publication 14. They will, however, affect the criteria that NTEP laboratories use to evaluate these device,, and NTEP laboratories will begin applying the modified criteria immediately.

Conclusion:

e) A.1. Application-Liquids and S.1.3.1. Units of Measurement; Volume Units of Measure

➜ The Sector agreed that if a mass flow meter is to be covered for use in both mass and volume units, testing the device while indicating in each modes is required.

➜ To cover volume indication units on a Certificate of Conformance (CC), that currently covers only mass indication units, additional tests must be performed on each product listed on the CC for which volume units are requested.

➜ The Sector did not reach a consensus on the specific test criteria which should be applied to devices that indicate in volume units of measurement.

Conclusion:

f) S.2.6.(b) Automatic Density Correction; Volume Measuring Devices

➜ This topic was included in the Measuring Sector agenda as an informational item.

➜ The Sector was informed that, in the future mass flow meters which are used to measure natural gas as a motor vehicle engine fuel will be equipped to adjust the volume indication with changes in density as a result of changes in temperature, *pressure*, and variations in composition.

Conclusion:

g) Changes to Section 3.37 to Correspond to Liquid-Measuring Devices Code

➜ This topic was included in the Measuring Sector agenda as an informational item.

➜ The Sector determined that guidelines need to be developed which specify which units of measurement must be displayed on the totalizer of a mass flow meter based retail motor fuel dispenser.

2. Status of Cryogenic Liquid-Measuring Devices Checklist

Conclusion:

➜ The California NTEP laboratory is developing a checklist for cryogenic liquid-measuring devices; A draft copy of this checklist is being sent out with this abbreviated summary.

➜ Sector members should send comments to Thomas Ahrens (NIST), Technical Advisor, by October 20, 1997.

➜ Following incorporation of the comments, a letter ballot will be sent to the Committee by November 17, for response by December 8, 1997.

3. Expanded Checklist Procedures for Testing with Small Volume Prover Standards

Conclusion:

➜ Pat Hardock (Canada) provided a copy of the Canadian test procedure, for testing with Small Volume Provers, to the technical advisor of the Sector. This test procedure will be reproduced and distributed to the participating laboratories and to private sector members who request a copy.

➜ NIST Handbook 105-7, Specifications and Tolerances for Dynamic Small Volume Provers, is now available for distribution. The NIST Office of Weights and Measures will provide a copy of this publication to members of the Measuring Sector upon request.

➜ A Small Volume Prover Test Procedure Work Group, consisting of the measuring laboratories (CA, MD, NC), Mike Keilty (Micro Motion), Jeff Kelly (Hoffer Flow Controls), Johnny Parrish (Brooks Instrument), and John Skuce (Smith Meter) will review the procedures and return comments to Thomas Ahrens (NIST) and Pat Hardock (Canada) by December 1, 1997.

4. Status of Letter on Recognition of Unattended Devices

Conclusion:

➜ The Sector reviewed a draft letter addressed to the state directors and manufacturers concerning the recognition of unattended cash-activated retail motor-fuel dispensers.

➜ The Sector agreed to send the letter as written.

➜ GPMA will review the Liquid-Measuring Devices checklist, for devices which are at certain times of the day attended and at other times in the day unattended, with respect to the paper/receipt requirements.

➜ GPMA will bring any specific suggestions for changes to the next Measuring Sector meeting.

5. Status on the CNG EPO and Update of the Checklist

Conclusion:

➜ Juana Williams (NIST) will forward an electronic copy of the latest (June 1996) compressed natural gas (CNG) examination procedure outline (EPO) to Dan Reiswig (California) and Mike Keilty (Micro Motion) by September 19, 1997.

➜ California will forward comments to Mike Keilty by October 19, 1997.

➜ Mike Keilty (Micro Motion) will incorporate proposed modifications to the June 1996 draft CNG EPO and distribute the modified draft to the Measuring Sector and the attendees of the special NGVC meeting by November 19, 1997.

➜ Comments on the modified draft will be due by December 19, 1997.

- ➜ The Technical Advisor will distribute a letter ballot by February 15, 1998, to the Sector on the CNG EPO.
- ➜ Sector members will be asked to respond by March 15, 1998.

6. Definition of System Controller as Used in Audit Trail Criteria

Conclusion:

- ➜ After extensive discussion on this issue, the Sector was unable to reach a clear consensus on a definition of system controller.
- ➜ Mike Keilty (Micro Motion) proposed a revised definition for the term system controller to the Sector; however, the Sector did not complete its discussions of this issue nor reach a resolution on the definition.

7. Status on the Family of Products List for Mass Flow Meters (MASS FLOW METER)

Conclusion:

- ➜ The mass flow meter manufacturers are presently working on a proposal for the Sector to consider, to address product families or ranges of products.
- ➜ The Sector agreed that the family of liquids table for positive displacement meters will be applied to mass flow meters, until an alternative is agreed upon by the Sector.
- ➜ A note indicating that LPG and NH_3 will be considered in the same subgroup for mass flow meter applications will be added to the Family of Products table.

8. Initial and Permanence Tests for Mass Flow Meters

Conclusion:

- ➜ Meters tested in a laboratory environment will be tested 5 times at each of 4 different flow rates, using varsol, water, etc., for both the initial and the permanence tests, to establish "baseline" data for the meter's performance. A Certificate of Conformance may be issued for the product(s) tested in the laboratory; however, additional products will not be included until testing is completed with these products.
- ➜ After a "baseline" is set for a meter using the process outlined above, products can be included on the Certificate of Conformance by performing 3 tests at each of 4 different flow rates in the field, for both initial and permanence tests.
- ➜ If a meter is tested in the field without first determining a "baseline", the meter must be tested 5 times at each of 4 different flow rates; this criteria applies for both the initial and permanence test.

9. Repeatability for Mass Flow Meters - Standard Deviation

Conclusion:

- ➜ The Sector agreed that the requirements for standard deviation analysis of mass flow meters should be deleted from Publication 14 (page 10-89).
- ➜ The Sector recognized that NTEP will follow the criteria in paragraph T.3., Repeatability, in section 3.37 of Handbook 44.

10. Permissible Mass Flow Meter Family Sizes

Conclusion:

- ➜ The Sector noted that the following criteria, as supported by the NTEP Measuring Laboratories, are already in Publication 14, and the Sector agreed that these criteria are still appropriate:
  - ➜ Maximum flow rate achieved in the installation should be at least 60 percent of the meter's rated maximum flow rate, otherwise the site is inappropriate for type evaluation (*); and
  - ➜ The maximum flow rate achieved in an installation is considered to be 80 percent of the maximum flow rate that will be listed on the Certificate of Conformance.
  - * NOTE: The Sector decided to eliminate the 60 percent requirement as a result of discussions in conjunction with agenda item 12 for details. (See agenda Item 12 for details)

11. New Product Applications for Mass Flow Meters

Conclusion:

- ➜ Add the following text to Publication 14
  - ➜ A manufacturer may add a new product to a family of devices if,
    (1) the tolerance of the product application tested is equal or stricter than the products already covered on the certificate,
    (2) the full range of the meter is covered by testing, and
    (3) testing is complete on the new product.

12. Permissible Ranges for Mass Flow Family Meter Flow Rates

Conclusion:

- ➜ The Sector agreed to modify and replace, as appropriate, Section D on Page 10-16 of Publication 14 to include the following:
  If a brand new size is selected, then the installation must achieve at least 80 percent of the maximum flow rate marked on the meter. If that same size of meter has already been selected and tested on some product (e.g., water), then another test of that size of meter would have to either meet 80 percent of the maximum flow rate marked on the meter or 80 percent of the maximum flow rate for the installation.
- ➜ Installations will no longer have to meet the minimum 60 percent of marked maximum flow rate criteria, as currently listed on page 10-16 of Publication 14.
- ➜ These policies will apply to ***all*** meter technologies (i.e. turbine, positive displacement, etc.).

13. Recognizing Liquified Petroleum Gas (LPG) and Anhydrous Ammonia (NH_3) as a Single Product Subgroup for Mass Flow Meter Testing

Conclusion:

- ➜ The Sector agreed that, if a mass flow meter is tested with either LPG or NH_3, the resulting Certificate of Conformance can cover both NH_3 and LPG.
- ➜ Notation will be added to Publication 14 to recognize LPG and NH_3 as a single subgroup for mass flow meters ***only*** on the family of products table.

14. Eliminate the Requirement for All Data Points to Fall Within the Maximum Permissible Error Limits

Conclusion:

- ➜ The Measuring Sector agreed that the statement "All data points must fall within the maximum permissible error limits" should be removed from page 10-89 of Publication 14 subsection M., Permanence Tests for Mass Flow Meters, of the Field Evaluation and Permanence Tests for Meters section of the Checklist.
- ➜ In lieu of the removed statement, the Measuring Sector agreed to add the flowing statement to the Technical Policy section of the LMD Checklist:
  The number and types of tests to be run on devices covered under this checklist are specified in the Checklist and Test Procedures section and the Field Evaluation and Permanence Tests for Metering Systems section of this checklist. However, if the NTEP laboratory feels that there is a performance or other Handbook 44 related problem, and provides reasons to support this belief, the laboratory is given the latitude to require additional testing.
- ➜ The Sector agreed that discretionary language in paragraphs A, Permanence Test Of New-Design Meters In Retail Motor Fuel Dispensers, and K, Permanence Test For LPG Vapor Meters, of the Field Evaluation and Permanence Tests for Meters section of the LMD Checklist should be removed, since the new language adequately addresses the concerns.

15. Measuring Sector Priorities

Rich Tucker (Tokheim Corporation), Sector Chairman, updated the Sector on the work that has been done, thus far, to develop a list of priorities. Since the Sector's last meeting, two draft lists were circulated to Sector members for comments. There were a greater number of responses to the first draft than to the second draft.

Conclusion:

- ➜ Rich Tucker (Tokheim) and Mike Keilty (Micro Motion) will review the list and try to further revise it.
- ➜ The revised list will be distributed to Sector members, for review, by December 1, 1997.
- ➜ Sector members are to provide comments back to Rich Tucker (Tokheim) by February 1, 1998.

16. Measuring Sector Bylaws

Conclusion:

- ➜ Rich Tucker (Tokheim), Sector Chairman, reviewed the status of the draft Measuring Sector Charter and distributed copies for the Sector to review. Sector members will provide comments to Rich by November 6, 1997.

17. Production Meets Type

Conclusion:

- ➜ Steve Malone (Nebraska), NCWM Chairman, updated the Sector members on work that is being done to address the issue of Production Meets Type. He reviewed excerpts from draft material submitted by Barbara Bloch (California), Chairman of the NTEP Business Plan Work Group. Chairman Malone noted that the NTEP Business Plan Work Group and the NTEP Board of Governors are looking for feedback from manufacturers. Aves Thompson (Alaska), NCWM Chairman-Elect, noted that the suggestions should be as specific as possible to assist the group in making decisions on how to move forward.
- ➜ Rich Tucker (Tokheim), Sector Chairman, will distribute a copy of the draft letter from Barbara Bloch (California) and the excerpts of the draft material to the members of the Sector, for their review, by September 19, 1997. Sector members are asked to make their comments before the January 1998 NCWM Interim Meeting.

18. Tolerances for Devices Dispensing Small Volumes of Product

Conclusion:

- ➜ The Sector agreed that, until the NCWM adopts other tolerances, the slow flow tolerances should be applied to devices in which the test drafts are less than one gallon.
- ➜ The Sector also recommends that a proposal be submitted to the S&T Committee to ask that they consider adopting specific tolerances for meters which make very small deliveries (e.g., deliveries less than 1 gallon). The Sector encourages the S&T Committee to consider the OIML and the Canadian tolerances as a basis for the tolerances for these devices.

19. NTEP Test Criteria for Testing Turbine Meters with Multiple Orientations and Flow Directions

Conclusion:

- ➜ It was noted that this is an informational issue, since Publication 14 has already been revised to include the language that was inadvertently omitted from earlier editions of Publication 14. In 1989, the Measuring Sector agreed to test turbine meters in all of the orientations listed on the Certificate of Conformance.
- ➜ The Sector agreed that, as with any other test criteria in Publication 14, this test criteria may be revisited provided a laboratory or manufacturer provides data to support any proposed changes.

20. Reduce the Number of Tests of Turbine Meters

Conclusion:

- ➜ The test criteria for number and type of tests for turbine meter testing will be the same as that adopted in Agenda Item 8 for mass flow meters:
  - ➜ Meters tested in a laboratory environment will be tested 5 times at each of 4 different flow rates, using varsol, water, etc., for both the initial and the permanence tests, to establish "baseline" data for the meter's performance. A Certificate of Conformance may be issued for the product(s) tested in the laboratory; however, additional products will not be included until testing is completed with these products.
  - ➜ After a "baseline" is set for a meter using the process outlined above, products can be included on the Certificate of Conformance by performing 3 tests at each of 4 different flow rates in the field, for both initial and permanence tests.
  - ➜ If a meter is tested in the field without first determining a "baseline", the meter must be tested 5 times at each of 4 different flow rates; this criteria applies for both the initial and permanence test.

- ➜ Publication 14 will be revised to specify that only one turbine meter, for each product and size selected for testing, must be tested, rather than the two previously required.
- ➜ Testing will continue to be performed for each direction of orientation.

21. NTEP Evaluation of Console Controllers

The Sector discussed the statement made by Tina Butcher (NIST) in her presentation on software at the 1997 NCWM Annual Meeting that: "NTEP generally evaluates equipment up to the first point at which the final quantity is indicated." Questions were raised about why service station consoles and cash registers are evaluated under NTEP since the first point of the final quantity in those systems is at the retail motor-fuel dispenser.

It was noted that the guideline was presented as a general guideline and the presentation also included statements indicating that software evaluated also includes software which functions as part of a weighing or measuring system as well as software which performs some metrologically significant function. Service station consoles and cash registers fall into this category.

Publication 14 presently includes the following text in the Administrative Procedures section, Page A-7, Part C:

> "In general, type evaluations will be conducted on : - all equipment that affects the measurement process or the validity of the transaction (e.g., electronic cash registers interfaced with scales and service station consoles interfaced with retail motor fuel dispensers); - all equipment to the point of the first indicated or recorded representation of the final quantity on which the transaction is based.
>
> That is, the minimum amount of equipment that must undergo type evaluation are all parts of a device or system that perform the measurement and process the measurement signals up to the first indicated or recorded value of the final quantity on which a transaction is based."

Conclusion:

- ➜ The Sector reached no conclusions on this issue and agreed that this issue could be revisited after the NCWM Executive Committee and Software Working Group present their recommendations for the type evaluation of software.

22. Review of Publication 14, Chapters 9 and 10, for Agreement with Handbook 44

Conclusion:

- ➜ Sector members are asked to review the checklist and forward any comments or corrections to the technical advisor, as problems are identified. It was noted that Sector members are encouraged to submit these corrections as they find them. It is not necessary to submit multiple items all at once.
- ➜ The Sector agrees that the 1998 edition of Publication 14 should have two tables of changes: one table for changes made as a result of Sector decisions and one table for changes made as a result of editorial changes. At some future date, the NIST Office of Weights and Measures (OWM) may also consider adding dates in the specific checklist sections, where changes are made. The Measuring Sector will revisit this issue after the members review the current general organization and layout of the checklist and provide feedback the OWM.
- ➜ Gordon Johnson (Gilbarco) agreed to provide an example of how Publication 14 might be reformatted to include references to Handbook 44 requirements.

23. Clarification of the NTEP Criteria for Updating Electronics

Mike Belue (Belue Associates) proposed that all metering systems, that have been evaluated previously with the same meter, but different electronics, which are undergoing testing to evaluate the performance of the new electronic equipment, should be treated impartially, regardless of the type of meter installed in the system or the application. Currently, retail motor fuel dispensers undergo a 20-30 day permanence test, without regard to throughput. Mike Belue proposed that this testing scheme be applied to all metering applications (i.e. vehicle tank, LPG, mass flow, cryogenic, etc.).

Conclusion:

- ➜ After discussing this issue, the Sector concluded that this policy is already being applied by several of the laboratories and should be applied by all of the laboratories.

NTETC Measuring Sector
September 5-6, 1997
Snowmass, Colorado
List of Attendees

Name	Company	Address	Phone	E-mail Address
Tom Ahrens	NIST/OWM	820 W Diamond Ave Rm 223, Gaithersburg, MD 20899	301-975-4013	tahrens@nist.gov
Ross J. Andersen	NY Bureau of Weights & Meas	1 Winners Circle, Albany, NY 12235	518-457-3146	nysagmk@emi.com
	Belue Associates	1319 Knight Drive, Murfreesboro, TN 37128	615-867-1010	
Tina G. Butcher	NIST/OWM	820 W Diamond Ave Rm 223, Gaithersburg, MD 20899	301-975-2196	tina.butcher@nist.gov
Jerry W. Butler	NC Dept of Agriculture	PO Box 27647 Dept SD, Raleigh, NC 27611	919-733-3313	
Steven E. Cook	CA Measurement Standards	8500 Fruitridge Rd, Sacramento, CA 95826	916-229-3050	SCook@smtp1.cdfa.ca.gov
Rodney Cooper	Schlumberger Industries	1310 Emerald, Greenwood, SC 29646	864-942-2226	rcooper@greenwood.wm.slb.com
Ronald Flores	CA Measurement Standards	8500 Fruitridge Rd, Sacramento, CA 95826	916-229-3023	rflores@cora.ca.gov
Pat Hardock	Legal Metrology Branch	Stds Bldg Holland Ave Tunney's Past, Ottawa K1A 0C9,	613-952-0669	hardock.pat@ic.gc.ca
Kenneth R. Hoffer	Hoffer Flow Controls Inc	107 Kitty Hawk Lane PO Box 21, Elizabeth City, NC 27909	919-331-1997	
Gordon W. Johnson	Gilbarco Inc	7300 West Friendly Avenue, Greensboro, NC 27420	910-547-5375	Gordon_Johnson@Gilbarco.Com
Debbie A. Joines	Wayne Div-Dresser Industries	124 College Ave PO Box 1859, Salisbury, MD 21802-1859	410-546-6699	daj@wayne.com
Michael J. Keilty	Micro Motion Inc	7070 Winchester Circle, Boulder, CO 80301	303-530-8231	mikek@micromotion.com
Jeffrey A. Kelly	Hoffer Flow Controls Inc	PO Box 2145 107 Kitty Hawk Lane, Elizabeth City, NC 27909	919-331-1997	jkelly@hofferflow.com
Steven A. Malone	NE Div of Wghts & Meas	Box 94757/301 Centennial Mall South, Lincoln, NE 68509-4757	402-471-4292	stevenam@agr.state.ne.us
Renald Marceau	Measurement Canada	11 Holland Avenue, 5th Floor, Suite 513, Ottawa, ON, Canada, K1A0C9	613-952-2629	marceau.renald@ic.gc.ca
Ronald D. Murdock	NC Dept of Agriculture	PO Box 27647 Dept SD 2 W Edenton St, Raleigh, NC 27602	919-733-3313	ron_murdock@ncdamail.agr.state.nc.us
Andre K. Noel	Schlumberger Industries	1310 Emerald Road, Greenwood, SC 29646	864-942-2247	noel@greenwood.wm.slb.com
Johnny Parrish	Brooks Instrument	Hwy 301 North PO Box 450, Statesboro, GA 30458	912-489-0303	johnpar@frmail.frco.com
Dan Reiswig	CA Measurement Standards	8500 Fruitridge Rd, Sacramento, CA 95826	916-229-3052	dreiswig@smtp1.cdfa.ca.gov
Debbie Ripley	NIST/OIML	Bldg 820 Rm 164, Gaithersburg, MD 20899	301-975-4859	deborah.ripley@nist.gov
John C. Skuce	Smith Meter Inc	PO Box 10428, Erie, PA 16514-0428	814-898-5405	
Jim Timmer	Additech, Inc.	4605 Post Oak Place, Suite 110, Houston, TX 75023	713-626-5130	jjtimmer@additech.com
Robert M. Traettino	Liquid Controls LLC	105 Albrecht Drive, Lake Bluff, IL 60044-9951	847-295-1056	btraetti@lcmeter.com
Richard L. Tucker	Tokheim Corporation	PO Box 360, Ft Wayne, IN 46801	219-470-4610	
Randy Watts	Universal Epsco, Inc.	P.O. Box 93544 1494 Ellsworth Industrial Drive, Atlanta, GA 30318	404-351-2740	rcwatts@well.com
William West	OH Dept of Agriculture	8995 E Main St Bldg #5, Reynoldsburg, OH 43068-3399	614-728-6290	west@odant.agri.state.oh.us
Juana Williams	NIST/OWM	Bldg 820 Rm 223, Gaithersburg, MD 20899	301-975-3989	Juana.Williams@nist.gov
Will Wotthlie	MD Weights and Measures	50 Harry S. Truman Parkway, Annapolis, MD 21401	410-841-5790	wotthlrw@mda.state.md.us

NTETC Grain Moisture Meter Sector
September 10-12, 1997, Chicago (Rosemont), IL
Meeting Summary

Agenda Overview

Agenda Items

1. Report on NCWM Annual Meeting and Grain Moisture Meter Questionnaire
2. Review of NTEP Processes: Phase I and II Critical Dates
3. Update on Type Evaluation and Phase II Testing
3.a Proposed Change to Publication 14 - Modify Definitions
4. Proposed Change to Publication 14 - Sample Temperature Sensitivity
5. Proposed Addition to Publication 14 - Standardization of Instruments
6. Proposed Change to Publication 14 - Sealing Requirements
6.a Proposed Change to Handbook 44 - Table S.2.5. - Categories of Device and Methods of Sealing
7. Discussion and Consideration of Subcommittee Report on Long Range Planning Issues
8. Test Weight per Bushel Indications
9. Time and place for next meeting
10. Proposed Change to Handbook 44 - Table S.1.2. *Grain Types Considered for Type Evaluation* and the table titled *Calibration and Minimum Acceptable Abbreviations* in Publication 14, Part 6, Appendix C.

---

1. Report on NCWM Annual Meeting and Grain Moisture Meter Questionnaire

The NCWM Annual Meeting was held July 20-24, 1997, in Chicago, IL. Diane Lee, NIST/OWM, reported that Conference agenda item **356-1**, the Sector's recommendation to modify GMM Code paragraph **S.2.5. Provision for Sealing** and **Table S.2.5. Categories of Device and Methods of Sealing**, was adopted by the Conference with minor editorial revisions. [Note: for additional discussion on this issue refer to *NCWM Publication 16, April 1997*; and to *"Addendum Sheets to the Interim Report of the Committee on Specifications and Tolerances"* for the 82nd Annual Meeting].

Ms. Lee also reported on responses to a questionnaire distributed to State Weights and Measures Directors. The questionnaire sought information on (1) grain moisture meter programs in the States; and (2) State implementation of the January 1, 1998, Handbook 44 nonretroactive requirements for grain moisture meters. The questionnaire was distributed as a result of a panel discussion held at the Central Weights and Measures Association meeting in April 1997. Seventy-six percent of the 53 jurisdictions responded to the questionnaire. [NOTE: See *Attachment 1* "NCWM June 1997 Grain Moisture Meter Questionnaire Results."]

2. Review of NTEP Processes: Phase I and II Critical Dates

[See *Attachments 2 and 3* for the NTEP Grain Moisture Meter Phase I and Phase II Process Flowcharts and Time Lines approved by the Sector.]

Diane Lee, NIST, outlined the process for submitting an application for device type evaluation and reviewed the procedures and critical dates associated with obtaining and maintaining a Certificate of Conformance (CC) under the NTEP grain moisture meter program. Now that the program has been operating for two full years, it has become apparent that some of the deadlines the Sector originally approved for Initial Type Evaluation (Phase I) and On-going Calibration Review (Phase II) events have been difficult, if not impossible, to meet. Slippage of critical dates has created problems for both the NTEP Laboratory and Manufacturers.

Discussion: In reviewing dates associated with Phase I, the Sector considered whether a CC number should be issued prior to the determination of the final calibration coefficients (and any associated bias settings) which would appear on the CC when it was finally published. Specifically addressed was the question: Should a CC number be assigned (and given to the manufacturer) before the NTEP Laboratory has performed bias checks on the "other 12" grains (i.e., other than corn, hard red winter wheat, and soybeans)? It was pointed out that once a CC number is issued, a manufacturer can sell devices with calibrations which might later prove to be invalid after bias checks have been completed. Several Weights and Measures representatives expressed the opinion that the CC number should not be made available until all calibration details are known. At least one manufacturer objected on the basis that delaying the issuance of the CC from May 1 (the latest Phase I testing completion date which allows a CC to be issued for the coming season) to June 10 (the latest date for the manufacturer to review the Draft CC and submit requested information) effectively cuts one year out of sales. Others expressed the belief that this concern could be addressed if the manufacturer did not wait until the deadline date for submitting a device for type approval. Grain Industry representatives were

concerned that early issuance of the CC number might result in the purchase and use of meters which would not have updated calibrations installed until the meter is field inspected, which could be as late as the following season.

Conclusions: By a vote of 13 to 6, the Sector decided that the CC number should not be issued until all calibration details are known (at the latest June 10, if the device is to receive a valid CC for the current harvest year.)

Discussion: Reviewing Phase II dates, manufacturers agreed that they would be able to provide the NTEP Laboratory with re-predicted moisture values in standard data format based on up to three years of NTEP Laboratory data by May 15 if the NTEP data are available to them by March 1 and if data can be sent via e-mail. Grain Industry representatives asked if NTEP meters and the GIPSA Official Meter would update calibrations on the same schedule. Rich Pierce, GIPSA, replied that GIPSA has not announced a schedule for updating calibrations on the new (not announced as of this meeting) Official Meter. In the past, calibration changes for the Official Meter have been made on a staggered schedule with wheat and other small grain calibration changes typically becoming effective around May 1, and with corn, soybeans, and other late season crop calibration changes typically becoming effective around August 1. Changes were timed this way for two reasons: (1) to minimize the economic impact (stocks are lowest just before harvest) and (2) because small grain data are available first. Grain Industry representatives stressed the importance of keeping NTEP calibration changes synchronized with GIPSA calibration changes. They pointed out that re-issuing CC's on July 1 will miss the wheat harvest in most of the country. Noting that data on wheat would be in manufacturer's hands by December 15, one Sector member suggested that it should be possible to determine the details of any revised wheat calibrations as early as April 15 or May 1. If the NTEP Laboratory has reviewed and accepted the new wheat calibrations, manufacturers could notify State W&M Officials that these calibrations have been approved for use and will appear on the CC when it is re-issued in July. Grain Organizations could assist in publicizing such changes. The possibility that the Official Meter and its corresponding type NTEP meter might end up not using the same calibration was also brought up. Manufacturers expressed the belief that this was highly unlikely, because the market would expect the NTEP meter to provide the same results as the Official Meter. The manufacturer's meter selected as the new Official Meter would make certain that its NTEP version agreed with the Official Meter (at least over the range for which the Official Meter was calibrated). The easiest way to accomplish this would be for the manufacturer to make arrangements with GIPSA to obtain the Official Calibrations.

Conclusions: Tables listing the Phase I and Phase II deadline dates agreed to by the Sector are shown below. See *Attachments* for detailed process flow charts covering steps involved in the initial NTEP evaluation (Phase I testing) and the On-going Calibration Program (Phase II testing).

Initial Evaluation (Phase I)		
Activity	**Deadline Date**	**Responsible Party**
Submit Phase I application	Dec 1	Manufacturer
Device information and letter to manufacturer and NTEP Laboratory	Dec 15	NIST
Deliver meters and calibration data as indicated on the application (for bias checks)	Feb 1	Manufacturer
Provide manufacturer with testing schedule	Feb 1	NTEP Laboratory
Phase I conducted	Dec 1 - April 30	NTEP Laboratory
Phase I complete	May 1	NTEP Laboratory
Bias checks complete	May 21	NTEP Laboratory
Draft CC and review form to manufacturer	June 1	NTEP Laboratory
Draft CC reviewed	June 10	Manufacturer
Initial CC issued	July 1	NIST

Ongoing Calibration Program (Phase II)		
Activity	**Deadline Dates**	**Responsible Party**
Submit Application for Phase II	May 1	Manufacturer
Device information and letter to manufacturer and NTEP Laboratory	May 15	NIST
Phase II starts	July 1	NTEP Laboratory
Phase II testing and data to manufacturer	July 1 - March 1	NTEP Laboratory
Repredicted values in std data format	May 15	Manufacturer
Draft CC and review form to manufacturer	June 15	NTEP Laboratory
Draft CC reviewed	June 20	Manufacturer
Revised CC issued	July 1	NIST

3. Update on Type Evaluation and Phase II Testing

Rich Pierce of GIPSA, the NTEP Participating Laboratory for Grain Moisture Meters, reported that Phase I testing had been completed for the Steinlite SL95, bringing the number of instrument models included in the Phase II calibration program to seven. At the time of his report there was only one active control number related to Phase I testing.

Dr. Pierce cited two examples of anomalous results which had been observed on some of the NTEP devices in the on-going calibration program (Phase II testing). These were characterized by:

- Unusual bias differences between subsequent years, or
- Severe slope differences at higher moistures between subsequent years.

Dr. Pierce pointed out that the present rules for reviewing calibrations are based on examining the bias at each 2 percent moisture interval using data collected over the years. The problem with this approach is that the "average" bias for multiple years of data can be within tolerance while the biases for individual years can all be out of tolerance. In the first example, the bias differences between individual years were partially canceled when data for the two years were pooled. Dr. Pierce also noted that the rules do not address slope. He suggested that additional rules or tolerances be established to cover instances of unusual bias differences between individual years and to address sudden severe changes in slope. In the absence of such rules, the Sector was asked to consider on what basis action might be taken and what action would be appropriate for the devices in question.

On the question of basis for action, the Sector Technical Advisor suggested that Paragraph **G-S.3. Permanence** of the General Code of H44 might be applicable. This paragraph is reproduced below.

> **G-S.3. Permanence** - All equipment shall be of such materials, design, and construction as to make it probable that, under normal service conditions:
>
> (a) accuracy will be maintained
> (b) operating parts will continue to function as intended, and
> (c) adjustments will remain reasonably permanent.
>
> Undue stresses, deflections, or distortions of parts shall not occur to the extent that accuracy or permanence is detrimentally affected.

He was of the belief that successive year slope differences or bias shifts, far exceeding any which might be expected due to crop or sample differences, should be criteria for rejection. Such differences indicate that either:

- the manufacturer's re-predictions have been miscalculated (either the algorithm is incorrect or significant data entry errors have been made), and, as a result, there has been no validation of the original calibration changes,
- the calibration is not robust,
- the manufacturer gave the NTEP Laboratory incorrect calibration coefficients
- something is wrong with the device itself, or
- the manufacturer's standardization procedures are incapable of providing the required degree of standardization.

Regardless of the cause, he was of the opinion that if a manufacturer was unable to determine and substantiate the cause for anomalous results, it followed that the manufacturer could give no assurance that accuracy would be maintained or that adjustments were permanent (or appropriate).

A number of questions arose in the discussion of how to handle cases where serious questions or problems arose as a result of Phase II testing:

1. Should a CC be re-issued with a restricted moisture range?
   Some were of the opinion that a CC could be re-issued with a restricted moisture range if (1) the problem is clearly limited to a single grain and does not appear to be indicative of a larger or systemic problem; and, (2) the moisture range is not less than the moisture range specified for Phase I; some believed that because limitations on use are specified on the CC, it would be possible to have an "active" certificate with no approved calibrations; while others were of the opinion that any calibration problem of unusual magnitude, for which the manufacturer is not able to identify and correct the root cause, is reason to suspect the manufacturer's ability to maintain accuracy in other calibrations. It was thought that re-issuing a CC with no calibrations or with severely limited moisture ranges put the reputation of the NTEP Program at risk. Although a vote was not taken, there seemed to be agreement that a CC should not be re-issued unless it included calibrations which met Phase I requirements for each of the three grains tested in Phase I (corn, soybeans, and hard red winter wheat.)

2. Should a new category of "pending" CC be defined to indicate that there was a problem which the manufacturer was attempting to resolve?
   This was the subject of much additional discussion. Sector members wanted to find some way to motivate the manufacturer to remain in the Phase II program as long as the manufacturer was working in good faith to resolve the problem. One member suggested that the CC should simply be allowed to expire until acceptable calibrations could be developed and validated. Others felt there was a need to differentiate between CC's which expired because of unresolved problems and CC's which expired only because the manufacturer withdraws from Phase II. The Sector agreed that conditions for re-issuing a CC and the maximum length of time a manufacturer should be allowed to remain in Phase II before the CC is withdrawn should be clearly spelled out in the definitions in Section 1, Part **N. Status of Certificate of Conformance; Maintenance Fee** of Publication 14. The proposed wording of the definitions and conditions will be the subject of a letter ballot [See agenda item 3.a.]

3. Should the manufacturer be allowed to continue selling the device?
   The Sector was divided on this point. Some believed that a CC should expire when acceptable calibrations cannot be developed and validated. Without a valid CC, devices can no longer be sold for commercial use in States which enforce NTEP rules for moisture meters. Others favored allowing sales to continue, even if a CC were re-issued with severely restricted moisture ranges.

4. Should devices in place continue to be used after CC's expire?
   The Sector had previously decided that devices no longer supported by a manufacturer could continue to be used commercially, provided they passed field inspection. The Sector agreed that devices already in service could continue to be used if they passed field inspection provided that the CC was not withdrawn as the result of a specific determination by NTEP.

5. If this anomaly is limited to a single grain (other than the basic 3) can the CC be re-issued as "Active" with the calibration for the grain in question shown as "not available"?
   The Sector agreed that under the conditions cited in this question, the troublesome grain calibration could be dropped and an "Active" CC could be issued with that change.

6. How much time should be allowed for the manufacturer to resolve problems before the CC is withdrawn?
   There was general agreement that a reasonable length of time should be allowed for the manufacturer to determine the root cause of the problems and correct the deficiency. The time agreed upon was 2 consecutive years (i.e., unable to re-issue CC's for two successive seasons). The Sector agreed that the manufacturer must remain in the Phase II on-going calibration review program and must exhibit a good faith effort to resolve the problem in order for the CC to remain in "expired" status. If the CC is not re-issued within that period, or if the manufacturer withdraws from Phase II before a CC is re-issued, the CC shall be withdrawn.

7. What notification should be given to W&M Officials?
   Diane Lee, NIST, provided the Sector with a rough Draft ***Notice of Ongoing Calibration Evaluation Results*** form which would be issued with Certificates of Conformance (CC) of devices which had unresolved problems occuring in the Ongoing Calibration Program Phase II Testing. Sector members were asked to submit written comments to her by October 1, 1997. A letter ballot on the final draft will be sent to voting members by October 20 to be returned by October 27, 1997. [See also Agenda Item 3.a.]

The Sector Technical Advisor and the NTEP Laboratory Representative were asked to suggest for consideration at the next Sector meeting, additional rules and tolerances to use in evaluating calibration performance from year to year in Phase II testing.

On the subject of Phase II data interchange, Rich Pierce, GIPSA, reported that the NTEP Laboratory had experienced problems transforming some manufacturer supplied data into the form required by the Laboratory's statistical analysis program. These problems seemed to be isolated to cases where data fields were space delimited. Dr. Pierce requested manufacturers to submit future data in comma delimited form. Several manufacturers mentioned that they were unable to import NTEP Laboratory data into their spreadsheets and had to manually enter the data in order to re-predict moisture values. Dr. Pierce was surprised to learn of this fact and urged manufacturers to notify him personally if they have any data handling problems in the future. It was pointed out that these problems would have to be resolved if program time deadlines were to be met.

3.a Proposed Change to Publication 14 - Modify Definitions

Unlike Certificates of Conformance (CC's) for other NTEP devices, CC's for Grain Moisture Meters automatically expire July 1. To maintain "active" status, meters must remain in the NTEP on-going calibration program and the CC's must be re-issued annually with valid calibration constants. The unique treatment of CC's for Grain Moisture Meters requires modification of a portion of the Administrative Procedures of Publication 14. Diane Lee, NIST, presented a rough draft of proposed definitions for the Sector to review.

Conclusions: The Sector reached general agreement on the substance of the definitions; however, because a final draft of the wording was not available at the meeting, a letter ballot will be sent out for approval of the proposed changes to Publication 14 and of the form titled: ***Notice of Ongoing Calibration Evaluation Results***. [See also Agenda Item 3.] The results of the letter ballot are as follows: (a total of 15 Sector members responded to the ballot; two of the responses were comments only)

Voting Item	Votes		
	Affirmative	Negative	Abstain
Add and modify definitions in Publication 14 Section N.	9	3	1
Agree with structure of the Notice of Ongoing calibration Results	10	2	1

The following are the proposed changes to Publication 14. [See *Attachments 4 and 5* of the "Notice of Ongoing Calibration Results," and a grain moisture meter status matrix for further guidance with the proposed changes to Publication 14].

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 and notified 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 or notified 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 that participation must result in the issuance of valid calibration constants without unresolved problems or deficiencies occurring during the OCP (Phase II) testing. Grain Moisture Meter Certificates may also be assigned an Active status if: (1) the original manufacturer no longer manufacturers or remanufacturers 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.

3. Notified Status
A Notified status is assigned to Grain Moisture Meter Certificates when unresolved problems or deficiencies occur during the OCP (Phase II). When a Certificate is assigned this status, a "Notice of Ongoing Calibration Evaluation Results" will be issued with the Certificate. The notice will describe the problems or deficiencies and the Certificate will designate the affected calibrations. Manufacturers of devices in this category must remain in the OCP (Phase II) actively working to correct the problems or deficiencies. Corrections must be made within two years of the date that the CC is assigned a notified status. If problems or deficiencies are not corrected by that date, the Certificate will be withdrawn. Any meters manufactured after a Certificate is given a Notified Status cannot be sold or placed into commercial service under a notified certificate. Meters in service will be subject to individual State enforcement activities.

4. 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.

5. 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.

6. 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 problems or deficiencies occurring in the OCP (Phase II) are not resolved within 2 years of the date that a Certificate is assigned a "Notified" status. 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.

7. 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).

A third party would be allowed to assume 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 manufacturer or re-manufactured. 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 re-manufactured, (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.

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.

4. Proposed Change to Publication 14 - Sample Temperature Sensitivity

Background: The sample temperature sensitivity test verifies that accurate results will be provided when the sample and instrument are at different temperatures. In some instruments, temperature compensation is accomplished by including, in the calibration set, data obtained on samples at various temperatures. For these instruments, calibration updates may affect the temperature compensation and thus may affect performance over temperature. Temperature studies have not been included in Phase II of the NTEP moisture program and no temperature testing has been performed by the NTEP Laboratory on the "other 12" NTEP grains [i.e., grains other than corn, soybeans, and hard red winter wheat]. For some meters, calibrations for these "other 12" NTEP grains and oil seeds had been in use for many years prior to the existence of the NTEP program for moisture meters. It was reasoned, in the early years of the program, that it would be far less disruptive to the market to accept them for use without formal verification of temperature performance than to have manufacturers abandon them because the cost of testing exceeded any revenue a manufacturer could expect to gain by continuing their support. This issue was re-visited at the Sector's March 1997 meeting in an attempt to find a means for verifying the temperature performance of these "other 12" grains/oil seeds. The Sector was unable to agree on a proposal which would have required manufacturers to submit temperature performance data. Manufacturers objected on the grounds that the data used to determine coefficients for temperature correction and to validate performance over a range of sample temperatures had been recorded many years ago on now-obsolete media (e.g. tape cassettes for HP 9815 Computers) and was no longer retrievable. They further stated that the cost of Temperature Sensitivity Testing (even in a "abbreviated" form) all of the "other 12" grains was prohibitive and might result in a decision to drop those grains from their CC's. The difficulty in obtaining samples for some of the less widely grown grains was also mentioned. Several W&M members thought that some minimal amount of testing should be performed by the NTEP Laboratory on any grain, believing that without NTEP Laboratory testing, the whole NTEP process would be compromised. It was suggested that manufacturers be allowed to request NTEP temperature performance testing of the other 12 grains on an individual grain by grain basis. This approach would be market driven, allowing manufacturers to decide if there was a marketing advantage in being able to show that a particular grain calibration had been temperature verified. To provide a method for selectively verifying temperature performance on a grain by grain basis, and to supply potential purchasers and W&M officials with information regarding the integrity of calibrations for each of "the other 12 grains," the Sector unanimously agreed that the CC shall indicate those grains for which temperature performance has not been verified by the NTEP process. [Note: the "Temperature Performance Not Verified" designation will first appear on CC's issued July 1, 1998.]

Conclusions: Noting that failure to verify temperature performance on the basic three grains (corn, soybeans, and hard red winter wheat) has a potentially greater economic impact than failure to verify the "other 12," the Sector approved the addition of a note to the end of the Sample Temperature Sensitivity Test to address the requirement for verifying temperature performance when calibrations for *any* of the NTEP grains are changed. The Sector also approved the addition of Appendix D which specifies an abbreviated procedure for conducting the verification tests on the "other 12" grains.

II. Sample Temperature Sensitivity:

Additional testing is required to verify that accurate results are provided when the sample and instrument are at different temperatures. This will be referred to as the sample temperature sensitivity test. The purpose of this test is to verify that the instrument provides accurate results when the difference in temperature between the sample and the instrument is at the manufacturer specified difference (a minimum Δ of 10 °C is required). The sample temperature sensitivity test will be

conducted using corn, HRW wheat, and soybean samples. Tests will be conducted with the instrument at room temperature and the sample temperature varying from room temperature $+\Delta T_H$ to room temperature $-\Delta T_C$ (where ΔT_H is the manufacturer specified difference for grain above room temperature, and ΔT_C is the manufacturer specified difference for grain below room temperature. In no case will ΔT_H be allowed to exceed 32 °C, but the two differences need not be equal.)

-
-
-
-

Note: When changes are made in corn, soybeans, or hard red winter wheat calibrations, the Sample Temperature Sensitivity Test will have to be repeated unless spectral or other such 'raw' data are available from an earlier Sample Temperature Sensitivity Test performed by the NTEP Laboratory on the same device type. When such 'raw' data are available, the manufacturer will be required to predict performance at each temperature using the new calibration. If no 'raw' data are available and the manufacturer can show that the temperature compensation factor (or factors) are unchanged and are independent of other calibration parameters, the Sample Temperature Sensitivity Test will not have to be repeated. For performance limits, test instructions, and testing requirements applicable to the "other 12" NTEP grains [i.e., grains other than corn, soybeans, and hard red winter wheat], see Appendix D.

Appendix D - Sample Temperature Sensitivity
(for grains/oil seeds other than corn, soybeans, & hard red winter wheat)

This Appendix specifies the procedure for conducting the sample temperature sensitivity test on NTEP grains/oilseeds other than corn, soybeans, and hard red winter wheat. Tests will be conducted with the instrument at room temperature and sample temperature varying from room temperature $+\Delta T_H$ to room temperature $-\Delta T_C$. (where ΔT_H is the manufacturer specified difference above room temperature for the grains in Section II, and ΔT_C is the manufacturer specified difference for below room temperature for those grains.)

A device submitted for this test must be capable of transmitting, via its communications interface, "raw" data as well as date, grain type, predicted moisture result, and calibration version identification and recording in Standard Data Format on 3.5" diskette all the information listed in Appendix C. If the device itself does not include the necessary keyboard or disk drive, the manufacturer must supply a personal computer and the necessary software to build a file as described in Appendix C.

Note: Two (2) samples are to be selected from each of three 2 percent moisture intervals for each grain type for which the test is to be performed. Two analyses will be made for each grain sample at each of the three test temperatures. The overall bias for the 12 observations (2 samples x 3 moisture intervals x 2 replicates) run at the temperature extremes must agree with the room temperature results within the tolerances listed in the accompanying table.

Test Procedure:

1. Analyze the room temperature samples on the test instrument (Room 1).

2. Condition samples to the cold temperature and run them on the instrument under test (Cold).

Note: Each sample is to be checked for temperature before it is analyzed. Samples must be within 0.5 °C of the desired test temperature at time of analysis, and samples are to be reconditioned to the test temperature after each analysis. The sample cell on the instrument under test is to be given a minimum of 10 minutes to equilibrate to room conditions between sample analyses.

3. Bring the samples to room temperature, and run the samples on the instrument under test (Room 2).

4. Condition the samples to the hot temperature and run them on the instrument under test (Hot), observing the precautions in the note following step 2.

5. Repeat step 3 to obtain another set of room temperature results (Room 3).

COLD BIAS = Cold - ((Room 1 + Room 2) / 2)

HOT BIAS = Hot - ((Room 2 + Room 3) / 2)

Note: When changes are made in any of the "other 12" calibrations, the Sample Temperature Sensitivity Test will have to be repeated unless spectral or other such 'raw' data are available from an earlier Sample Temperature Sensitivity Test performed on the same device type by the NTEP Laboratory. When such 'raw' data are available, the manufacturer will be required to predict performance at each temperature using the new calibration.

Moisture Ranges and Tolerances for Sample Temperature Sensitivity
(for the "other 12" NTEP grains)

Grain Type	Moisture Range for Test	Tolerance Limit (Bias at Temperature Extremes)
Durum Wheat	10-16%	0.35
Soft White Wheat	10-16%	0.35
Hard Red Spring Wheat	10-16%	0.35
Soft Red Winter Wheat	10-16%	0.35
Hard White Wheat	10-16%	0.35
Sunflower seed (Oil)	6-12%	0.45
Grain Sorghum	10-16%	0.45
Two-rowed Barley	10-16%	0.35
Six-rowed Barley	10-16%	0.35
Oats	10-16%	0.45
Long Grain Rough Rice	10-16%	0.45
Medium Grain Rough Rice	10-16%	0.45

5. Proposed Addition to Publication 14 - Standardization of Instruments

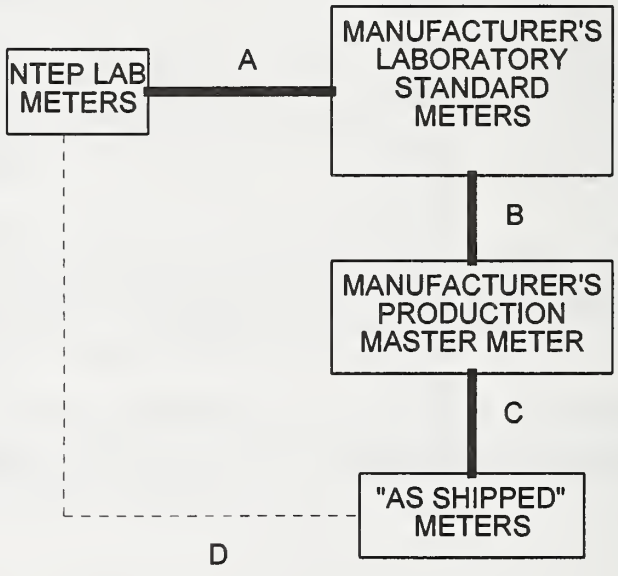
Discussion: Earlier data compiled by Dr. Hurburgh suggested that instruments in the field (or in State Moisture Laboratories) may not be closely aligned with instruments of like type in the NTEP Laboratory. The NTEP Laboratory has also seen unexplained differences between moisture results (using the same calibration and correcting for air oven differences) obtained on the same set of samples at 12-month intervals [*see also, Agenda Item 3*]. In such cases, Phase II data collected on the NTEP Laboratory instruments may not be useful in maintaining calibrations and may not be representative of what can be expected with devices in the field. Manufacturers typically maintain a "standard" instrument (or instruments) against which production units are tested and adjusted to be within the manufacturer's acceptable tolerance limits. At the present time, there are no requirements for the NTEP Laboratory instruments to be periodically compared with manufacturer's standard(s) or adjusted to agree with the manufacturer's "standard(s)." Thus, any change in performance over time, in either the NTEP Laboratory units or the manufacturer's "standard" units, can result in a corresponding loss of accuracy (compared to air oven) in production units. The Sector has agreed that the NTEP units should be standardized against manufacturers' master units annually (typically between March 1 and May 30). The Sector has also agreed that the specific alignment details (e.g. what instrument parameters to measure, what adjustments to make, etc.) would vary with the technology involved and the manner in which that technology had been implemented, and that manufacturers should also be required to demonstrate that their methods for standardizing production units provide assurance that units "as shipped" will agree with the NTEP units within acceptable tolerances. Manufacturers were divided on the question of whether Publication 14 should require that they maintain a log of any adjustments, repairs, etc. performed on their NTEP Laboratory units. The Technical Advisor pointed out that it was in the Manufacturer's best interest to keep such a log. A log could be extremely helpful in resolving problems or discrepancies which might be detected in Phase II testing. Although a majority of Manufacturers agreed, there was not a clear consensus. The keeping of such a log will be left to the discretion of individual manufacturers.

Conclusions: The Sector approved the following addition to Publication 14 to address the issue of standardizing instruments:

V. Standardization of Instruments

Continuing participation in the on-going data collection and calibration review program (Phase II) is mandatory for all grain moisture meters. Annually, prior to Phase II data collection, device manufacturers are required to make a side-by-side comparison(1) between their reference standard instruments and instruments of like type in the NTEP Participating Laboratory. The specific details of the comparison tests will vary with the technology involved, but manufacturers will be required to provide details of their test procedures to the NTEP Participating Laboratory and will be required to show that the mean moisture difference between Manufacturer's Laboratory Standard Meters and the corresponding NTEP Laboratory Meters (path A in figure below) does not exceed ± 0.2 x the Handbook 44 acceptance tolerance. Manufacturers must demonstrate that their methods for standardizing units in production result in "as shipped" units which agree with the corresponding NTEP Laboratory units (path D in figure below) within ± 0.3 x the Handbook 44 acceptance tolerance. Manufacturers must also demonstrate that once units are standardized, moisture results between units of like type will not exceed these tolerances when a grain calibration change is made.

(1) an exchange of samples may be used in lieu of side-by-side testing if mutually agreeable to the NTEP Laboratory and the Manufacturer.



6. Proposed Change to Publication 14 - Sealing Requirements

Discussion and Conclusions: The Sector approved the following changes to portions of Section 2, Chapter 6 of Publication 14 to reflect changes to the Grain Moisture Meter Code of Handbook 44 adopted by NCWM at the 82nd Annual Meeting and to further clarify audit trail requirements. [Editor's note: Because of the extensive nature of changes required to paragraph 4 and its sub-paragraphs, except for additions to Table S.2.5. recommended by the Sector at this meeting, changes and deletions have not been indicated. Consider that the entire section involved has been deleted and replaced by the following.]

Code Reference: S.2.5. Provision for Sealing

4.1 Provision shall be made for applying a security seal in a manner that requires the security seal to be broken, or for using other approved means of providing security (e.g., audit trail available at the time of inspection as defined in Table S.2.5.) before any change that affects the metrological integrity of the device can be made to any mechanism.

4.1.1 The manufacturer has provided information on how the device should be sealed. **Yes ☐ No ☐ NA ☐**

For Category 1 Devices:

4.1.2	All calibration and metrological adjustments can be sealed, or other means of providing security such as event counters are provided.	Yes ☐ No ☐ NA ☐

If equipped with event counters:

4.1.3	There are two event counters, one for calibration parameters and one for configuration parameters.	Yes ☐ No ☐ NA ☐
4.1.4	The event counters are nonresettable by the operator and have a capacity of at least 000 to 999 events each.	Yes ☐ No ☐ NA ☐
4.1.5	The event counters increment appropriately.	Yes ☐ No ☐ NA ☐
4.1.6	The counters are capable of retaining their count for at least 30 days while the device is without power.	Yes ☐ No ☐ NA ☐
4.1.7	Non-sealable parameters cannot be accessed in the mode which allows sealable parameters to be adjusted.	Yes ☐ No ☐ NA ☐
4.1.8	The device is designed to attach a printer which can print the contents of the counters or the device has the capability of displaying the counter contents.	Yes ☐ No ☐ NA ☐
4.1.9	Accessing event counter information for review is separate from the mode used to enter or modify sealable parameters.	Yes ☐ No ☐ NA ☐
4.1.10	Event counters can be accessed without requiring the removal of any parts other than the normal requirements to inspect the integrity of a physical seal or to use a key (for a panel lock) to gain access to the means to view counter information or cause it to be printed.	Yes ☐ No ☐ NA ☐

For Category 2 Devices:

4.1.11	The hardware enabling access for remote communication is at the device and can be sealed using a physical seal or two event counters.	Yes ☐ No ☐ NA ☐
4.1.12	The device clearly indicates when it is in the remote configuration mode.	Yes ☐ No ☐ NA ☐
4.1.13	When enabled for remote configuration, the device is not capable of operating in the measure mode.	Yes ☐ No ☐ NA ☐

If equipped with event counters:

4.1.14	There are two event counters, one for calibration parameters and one for configuration parameters.	Yes ☐ No ☐ NA ☐
4.1.15	The event counters are nonresettable by the operator and have a capacity of at least 000 to 999 events each.	Yes ☐ No ☐ NA ☐
4.1.16	The event counters increment appropriately.	Yes ☐ No ☐ NA ☐

4.1.17	The counters are capable of retaining their count for at least 30 days while the device is without power.	Yes ☐ No ☐ NA ☐
4.1.18	Non-sealable parameters cannot be accessed in the mode which allows sealable parameters to be adjusted.	Yes ☐ No ☐ NA ☐
4.1.19	The device is designed to attach a printer which can print the contents of the counters or the device has the capability of displaying the counter contents.	Yes ☐ No ☐ NA ☐
4.1.20	Accessing event counter information for review is separate from the mode used to enter or modify sealable parameters.	Yes ☐ No ☐ NA ☐
4.1.21	Event counters can be accessed without requiring the removal of any parts other than the normal requirements to inspect the integrity of a physical seal or to use a key (for a panel lock) to gain access to the means to view counter information or cause it to be printed.	Yes ☐ No ☐ NA ☐

For Category 3, 3a, and 3b Devices:

4.1.22	An event logger which includes and event counter, the parameter ID, the date and time of change, and the new value of the parameter changed has been provided (for multiple constant calibrations, the calibration version number may be used rather than the calibration constants).	Yes ☐ No ☐ NA ☐
4.1.23	The event counter is nonresettable by the operator and has a capacity of at least 000 to 999.	Yes ☐ No ☐ NA ☐
4.1.24	The event counter increments appropriately.	Yes ☐ No ☐ NA ☐
4.1.25	The event logger automatically retains the identification of the parameter changed, the date and time of the change, and the new value of the parameter (for calibration changes consisting of multiple calibration constants, typically 10 or more, the calibration version number is to be used rather than the calibration constants.)	Yes ☐ No ☐ NA ☐
4.1.26	The system is designed to attach a printer which can print the contents of the audit trail.	Yes ☐ No ☐ NA ☐
4.1.27	The audit trail information is capable of being retained in memory for at least 30 days while the device is without power.	Yes ☐ No ☐ NA ☐
4.1.28	The event logger has the capacity to retain records equal to twenty-five times the number of sealable parameters in the device, but not more than 1000 records are required.	Yes ☐ No ☐ NA ☐
4.1.29	The event logger drops the oldest event when the memory capacity is full and a new entry is saved.	Yes ☐ No ☐ NA ☐
4.1.30	Non-sealable parameters cannot be accessed in the mode which allows sealable parameters to be adjusted.	Yes ☐ No ☐ NA ☐
4.1.31	Event logger information is printed in order from the most recent event to the oldest event.	Yes ☐ No ☐ NA ☐

4.1.32 If logger information is printed on more than one line per event, information is printed in readily understandable blocks. Yes ☐ No ☐ NA ☐

4.1.33 The printed audit trail is readily interpretable by a Weights and Measures inspector. Yes ☐ No ☐ NA ☐

4.1.34 Accessing audit trail information for review is separate from the mode used to enter or modify sealable parameters. Yes ☐ No ☐ NA ☐

4.1.35 Audit trail information can be accessed without requiring the removal of any parts other than the normal requirements to inspect the integrity of a physical seal or to use a key (for a panel lock) to gain access to the means to cause the audit trail to be printed. Yes ☐ No ☐ NA ☐

For Category 3 devices:

4.1.36 If a measurement is in process when the device is accessed remotely for the purpose of modifying sealable parameters, the measurement is either:

- terminated before results can be displayed or printed, or Yes ☐ No ☐ NA ☐
- completed before entering the configuration mode Yes ☐ No ☐ NA ☐

4.1.37 When accessed remotely for the purpose of modifying sealable parameters, the device clearly indicates that it is in the configuration mode and is not capable of operating in the measure mode. Yes ☐ No ☐ NA ☐

Describe the method used to seal the device or access the audit trail information:

_____

_____

_____

_____

_____

_____

[Editor's note: The following changes apply to the *Categories of Device* Section of *Appendix B - Philosophy for Sealing* in Chapter 6 of Publication 14. For improved legibility, added text in Table S.2.5., except for the additions recommended by the Sector at this meeting, has not been underlined. The entire table is an "addition" to S.2.5.]

Categories of Device

Grain measuring devices must either be physically sealed or must incorporate an approved form of audit trail. A device that allows virtually unrestricted access (unlimited access or by means of a password), whether by the operator or by a remote device, to configuration parameters or calibration parameters must have an event logger as its minimum form of the audit trail. A device incorporating hardware (e.g. a manually operated switch or push button) to enable remote communication for the purpose of modifying configuration or calibration parameters must either be physically sealed or must incorporate two event counters, one for calibration parameters and one for configuration parameters. Device categories and their required methods of sealing are defined in Table S.2.5. of the Grain Moisture Meters Code.

An event logger contains detailed information on the parameters that have been changed and documents the new parameter values. An event logger requires a significant amount of memory; however, it is anticipated that any device to which unrestricted access is given, will be part of sophisticated measurement process that will have considerable memory available.

Grain Moisture Meters Code:

~~S.2.3~~ S.2.5. Provision for Sealing

~~(a)~~ Provision shall be made for applying a security seal in a manner that requires the security seal to be broken, or for using other approved means of providing security, (e.g., audit trail available at the time of inspection as defined in ~~part (b)~~ Table S.2.5.), before any change that affects the metrological integrity of the device can be made to any mechanism.

~~(b) If the operator is able to make changes that affect the metrological integrity of the device, (e.g., slope, bias, etc.) in normal operation, the device shall use an audit trail. The minimum form of the audit trail shall be an event logger and shall include:~~

- ~~An event counter (000 to 999)~~
- ~~the parameter ID;~~
- ~~the date and time of the change, and~~
- ~~the new value of the parameter (for calibration changes consisting of multiple constants, the calibration version number is to be used rather than the calibration constants.)~~

~~The device is not required to display this information, but a printed copy of the information must be available through another on-site device. The event logger shall have a capacity to retain records equal to twenty-five (25) times the number of sealable parameters in the device, but not more than 1000 records are required.~~

~~*Note: Does not require 1000 changes to be stored for each parameter.*~~

[Note: Zero-setting and test point adjustments are considered to affect metrological characteristics and must be sealed.]

Table S.2.5. Categories of Device and Methods of Sealing	
Categories of Device	*Method of Sealing*
Category 1: No remote configuration capability	*Seal by physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999). If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.*
Category 2: Remote configuration capability, but access is controlled by physical hardware *Device shall clearly indicate that it is in the remote configuration mode and shall not be capable of operating in the measure mode while enabled for remote configuration.*	*The hardware enabling access for remote communication must be at the device and sealed using a physical seal or two event counters; one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999). If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.*
Category 3: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password) *When accessed remotely for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measure mode.*	*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 (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants). A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to twenty-five (25) times the number of sealable parameters in the device, but not more than 1000 records are required.* ***(Note: Does not require 1000 changes to be stored for each parameter.)***
Category 3a: No remote capability, but operator is able to make changes that affect the metrological integrity of the device (e.g., slope, bias, etc.) in normal operation	*Same as Category 3*
Category 3b: No remote capability, but access to metrological parameters is controlled through a software switch (e.g., password)	*Same as Category 3*

6.a Proposed Change to Handbook 44 - Table S.2.5. - Categories of Device and Methods of Sealing

Discussion: When the Sector reviewed the proposed Sealing Requirement changes to the Publication 14, it was noted that there was no requirement for a Category 3 device to indicate that it was in the configuration mode when it was being accessed for remotely modifying sealable parameters. The Sector agreed that the requirements for a Category 3 device should be no less stringent than for a Category 2 device which is required to clearly indicate that it is in the remote configuration mode and is not be capable of operating in the measure mode while enabled for remote configuration.

Conclusions: The Sector unanimously voted in favor of adding the following wording to the description of Category 3 devices in Table S.2.5. of Handbook 44:

> *When accessed remotely for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measure mode.*

7. Discussion and Consideration of Subcommittee Report on Long Range Planning Issues

Background: At the Sector's March 10-12, 1997, meeting in Atlanta, questions relating to long-term continuation and acceptance of the Grain Moisture Meter (GMM) program were discussed. In the course of updating the expected time lines of Phase I and

II testing, the Sector recognized the unique metrological situation created by requiring participation in an ongoing data collection program with yearly passage of a calibration test to maintain an active Certificate of Conformance (CC). Typically, in other metrological devices, the CC, once issued, remains valid unless there is a Code-mandated upgrade, which is fairly rare and subject to the nearly 2-year process of NCWM. Continuing accuracy is then monitored by field inspection.

Moisture meters are unique in that there is neither an absolute nor a totally stable reference basis. The ongoing Phase II (calibration maintenance) program was created to track changes in grains over time, with a common sample set to verify uniformity across device types. As presently written, Publication 14 requires a meter to participate in the data collection program and pass the annual calibration check tolerances to retain a CC. Key questions raised were:

- What happens if a manufacturer drops out of the Phase II program for one of several reasons (out of business, introduced a new model, financial stress, etc.)?
- How do we deal with the uneven application of the NTEP program across states and with states that have no grain moisture programs? Meters with lapsed CC's, or meters that never had a CC, will be salable in several states with large grain production. In some states, meters are not subject to field inspection.
- If meters pass field inspection (in states that have field inspection, by whatever method this is done), how can the program declare them unusable because of CC lapse?
- As with other metrological devices, field inspection is the point of user contact with NTEP. Do we need more effort to design standard field inspection procedures that in and of themselves would contribute significantly to national uniformity, regardless of Type Approval status or enforcement?
- What is "national uniformity" in a practical sense? Traders maintain that agreement with the GIPSA official meter as operated in their service point is the key factor.
- After a period of time, say five years, do we need to test calibrations annually?
- What are the options for funding the calibration program when the present CRADA (joint funding from NIST, GIPSA, and manufacturers) arrangement runs out (1999)?
- Different technologies (e.g., near-infrared vs. capacitance) may read individual samples very differently from each other even if both pass the tolerances relative to the oven.

A subcommittee was formed to develop a report on long-term GMM program issues, with options and alternatives, for consideration at the September 1997 sector meeting.

Conclusions: Although some of these issues were resolved by the Sector at this meeting [see Agenda Items 3 and 3a], further consideration of the subcommittee's report was tabled due to time constraints. It will be taken up at the Sector's March 1998 meeting.

8. Test Weight per Bushel Indications

Background: The Grain Moisture Meter Code in H44 contains the following field test requirement for Test Weight per Bushel Indications:

> **T.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 FGIS. (Amended 1992)

Some time ago, when the Sector was discussing this requirement, the reasonableness of the tolerance, was questioned, especially as it applied to the test weight of corn. It was pointed out that the tolerance was taken from FGIS (now GIPSA) procedures using three samples of dockage-free dry hard red winter wheat and comparing the average of five replicate measurements (with the highest and lowest results discarded before averaging) on each sample using the "standard" quart container to a like average obtained with the container under test. The Sector agreed that the test was not realistic for assessing the performance of the various types of devices in commercial use and that a different tolerance should be considered for each grain type. The Sector considered dropping this section from the Moisture Meter Code, reasoning that it would be more appropriate to include it in a separate chapter of H44 devoted specifically to the requirements for test weight per bushel devices. Several members of the Weights and Measures Community objected, however, stating that deletion of this section, prior to the development of a separate code chapter, would leave them without inspection and enforcement authority over test weight devices.

There are now at least two NTEP Grain Moisture Meters which have the capability to automatically provide an indication and recorded representation of test weight per bushel. Because of the unrealistic tolerances in the existing Code, however, the test weight indications of these devices are typically not allowed to be used for commercial transactions.

The Sector had previously agreed that Test Weight per Bushel devices (Grain Bulk Density Apparatus) should be addressed in Code separate from the Grain Moisture Meter Code (even for those grain moisture meters which were capable of providing a bulk density measurement). To find out the range of devices which the new code might have to address, Weights and Measures representatives were asked to survey their jurisdictions. This survey revealed that a wide variety of test weight devices are in use in the field. For free-standing devices, container sizes range from pint to two quarts and weighing devices range from hand held beam balance to electronic scales. Enforcement differs from state to state. Some do not permit the use of hand held devices, while others do. Some check test only with wheat, others check test with the grains most widely traded in their respective jurisdictions. Some do not allow moisture meters with test weight capability to display test weight. Others allow test weight to be displayed, but require that a notice be posted to the effect that the test weight indication is an approximation and is not approved for determining discounts. All jurisdictions reporting used the standard GIPSA apparatus as a reference, but none of those reporting indicated that volume checks were being performed on the quart container. Most jurisdictions reported that they received more complaints on the accuracy of test weight on wheat than on any other grain. One jurisdiction reported that test weight on oats was also a major source of accuracy complaints.

Discussion: There was general agreement that the GIPSA procedure would be the reference method for test weight. The Sector agreed that initially, a separate tolerance will be considered for each grain type. It was suggested that the tolerance for field inspection should be set at three times the tolerance of the laboratory standard method. Rich Pierce, GIPSA, pointed out that tolerance data on the reference method would most likely be available only for wheat. In further discussions on the tolerance issue, one Sector member pointed out that there are three sources of uncertainty in a test weight measurement: (1) the device; (2) the condition of the sample; and, (3) the operator. Of these three, the operator is the major source of uncertainty. At this point, one member suggested that the Sector reconsider its decision to develop separate code for test weight devices, and instead consider revising paragraph T.3. of Grain Moisture Meter Code 5.56(a) to show realistic test weight tolerances for individual grains. It was suggested that data collected on NTEP Grain Moisture Meters with automatic test weight capability, which effectively remove the operator as a source of uncertainty, could be used to evaluate the reasonableness of suggested field tolerances. Figuring out how to deal with the multiplicity of test weight devices in the field could be postponed until later. Grain Industry representatives endorsed this approach, believing that this would enable their constituents to take advantage of automated test weight technology at an earlier date than would be possible if separate code were to be developed. One member objected on the grounds that this approach would inhibit the development of new technology, believing that manufacturers may want to develop stand alone technology. Another member pointed out that the present situation (no reasonable tolerances in the Code) inhibited the use of existing technology, and there was nothing in the Sector's proposed change of course which would prevent the development of stand alone devices. In fact, by developing reasonable tolerances, the Sector would be providing guidance to manufacturers of stand alone devices.

Conclusions: The Sector agreed that priority should be given to drafting changes to T.3. of the Grain Moisture Code to specify field test methods and reasonable acceptance/maintenance tolerances for individual grains. The Sector Technical Advisor was asked to draft proposed wording changes for consideration at the Sector's March 1998 meeting. Manufacturers were urged to review the test weight performance of their devices so tolerance proposals could be discussed.

9. Time and place for next meeting

A 2-day or 2-1/2 day meeting (1-1/2 or 2 days for the Grain Moisture Meter Sector and 1/2 day for the NIR Protein Sector) is planned for March 17-19, 1998, in Las Vegas, NV. A meeting notice will be sent out when hotel details are known.

10. Proposed Change to Handbook 44 - Table S.1.2. Grain Types Considered for Type Evaluation and Calibration and Minimum Acceptable Abbreviations

Discussion and Conclusions: GIPSA has combined the wheat classes "Eastern White Wheat" and "Western White Wheat" into a single new class named "Soft White Wheat." The Sector unanimously recommended changing Table S.1.2. of Grain Moisture Meter Code 5.56(a) reflect this action. The changes are shown below:

Table S.1.2. Grain Types Considered for Type Evaluation and Calibration and Minimum Acceptable Abbreviations

Grain Type	*Minimum Acceptable Abbreviation*	*Grain Type*	*Minimum Acceptable Abbreviation*
Corn	*CORN*	*Soybeans*	*SOYB*
Durum Wheat	*DURW*	*Two-rowed Barley*	*TRB*
~~*Eastern White Wheat*~~	~~*EWW*~~	*Six-rowed Barley*	*SRB*
~~*Western White Wheat*~~	~~*WWW*~~	*Oats*	*OATS*
Soft White Wheat	*SWW*		
Hard Red Spring Wheat	*HRSW*		
Hard Red Winter Wheat	*HRWW*		
Soft Red Winter Wheat	*SRWW*		
Hard White Wheat	*HDWW*		
Sunflower seed (Oil)	*SUNF*	*Long Grain Rough Rice*	*LGRR*
		Medium Grain Rough Rice	*MGRR*
Grain Sorghum	*SORG or MILO*	*Small oil seeds (under consideration)*	

NTETC Near-Infrared Grain Analyzer Sector
September 12, 1997, Chicago (Rosemont), IL
Meeting Summary

Agenda Overview

Agenda Items

1. Time and Place for Next Meeting
2. Report on NCWM Annual Meeting
3. Update on National Type Evaluation Testing Schedule
4. Proposed Change to Publication 14 - Sealing Requirements
5. Proposed Change to Publication 14 - Sample Tempering Procedure for Sample Temperature Sensitivity Test

---

1. Time and place for next meeting

A 2-day or 2-1/2 day meeting (1-1/2 or 2 days for the Grain Moisture Meter Sector and 1/2 day for the NIR Protein Sector) is planned for March 17-19, 1998, in Las Vegas, NV. A meeting notice will be sent out when hotel details are known.

2. Report on NCWM Annual Meeting

The NCWM Annual Meeting was held July 20-24, 1997, in Chicago, IL. Diane Lee, NIST/OWM, reported that Conference agenda item **357-1**, the Sector's recommendation to modify NIR Code paragraph **S.2.6. Provision for Sealing**, was adopted by the Conference and will appear in the next issue of H44. [Note: for additional discussion on this issue refer to *NCWM Publication 16, April 1997.*]

3. Update on National Type Evaluation Testing Schedule

Dr. Richard Pierce, Grain Inspection, Packers and Stockyards Administration/Inspection Systems Engineering (GIPSA), reported that the GIPSA Laboratory in Kansas City had made little or no progress on the work necessary to obtain authorization as the NTEP participating laboratory for near-infrared grain analyzers. With limited resources, priority was being given to tasks related to maintaining the NTEP Grain Moisture Meter Program. Dr. Pierce indicated it was unlikely that they would be able to work on authorization between the present and the Sector's March 1998 meeting, and if additional resources were not in place by March 1998, there was the possibility that authorization would be delayed another year.

In the discussion following Dr. Pierce's report it was noted that the NIR Code has been in "Tentative" status since 1994. Some wondered what it would take to remove the "Tentative" designation. Diane Lee, NIST, explained that Tentative code allows the States to gain experience using the code without having to enforce it. Problems uncovered in field testing can be corrected before the code is made enforceable. The Specifications and Tolerances (S&T) Committee examines the results States have obtained using the Tentative code before recommending that it be put before the National Conference for adoption as formal code. She urged States having experience with the Tentative code to submit their results to the S&T Committee. Questions were raised regarding the fact that the existing Tentative code has effective dates of January 1, 2000, and still contains retroactive dates of January 1, 2005. Although no vote was taken on the issue, most members felt that the retroactive dates would have to be removed before the Conference would agree to activating the code. The Sector had previously agreed that effective dates could be changed if necessary.

Weights and Measures representatives reported that NIR Analyzers were beginning to appear in their jurisdictions, but much of the commercial usage was for corn and soybeans which the present tentative code did not address. Grain Industry representatives noted that the industry is increasingly contracting directly with the producer to obtain 'enhanced value' grains. There is a growing demand for measurement of protein, and frequently oil, in an increasing number of grain types.

With regard to including these additional grains in the type evaluation of NIR analyzers, Dr. Pierce pointed out that each new grain requires another 100 specially selected samples and additional analytical tests. This would have the effect increasing the cost of type evaluation and of further delaying certification of the laboratory. It was also noted that GIPSA was examining the possibility of adding programs for corn and barley, but at the present time there was no formal Federal program for protein in barley or for oil and protein in corn. This raised several questions:

1. In the absence of a Federal program:
    a. what should be used as reference samples for field inspection?

b. could independent laboratories (e.g., AOAC laboratories) be used? If so, how?
c. what moisture basis should be used?

2. Is there a way to eliminate or simplify type approval testing? (e.g., separate hardware approval from calibration approval.)

In light of the fact that: (1) an increasing number of NIR analyzers are being used commercially for grains not presently covered by the code; and (2) the NTEP Laboratory is not presently authorized as the participating laboratory for near-infrared grain analyzers, it was decided that the Sector should give priority to modifying the tentative code to cover additional grains. Deciding how these additional grains should be handled in type approval will be postponed for an indefinite time.

4. Proposed Change to Publication 14 - Sealing Requirements

Discussion and Conclusion: The Sector unanimously approved the following changes to portions of Section 2, Chapter 6 of Publication 14 to reflect changes to the Near Infra-red Grain Analyzers Code of Handbook 44 adopted by NCWM at the 82nd Annual Meeting and to further clarify audit trail requirements. [Editor's note: Because of the extensive nature of changes required to paragraph 3.9 and its sub-paragraphs, changes and deletions have not been indicated. Consider that the entire section involved has been deleted and replaced by the following.]

Code Reference : S.2.6. Provision for Sealing

3.9 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 (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants).

A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to twenty-five (25) times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)

3.9.1	The manufacturer has provided information on how the device should be sealed.	**Yes ☐ No ☐ NA ☐**
3.9.2	An event logger which includes and event counter, the parameter ID, the date and time of change, and the new value of the parameter changed has been provided (for multiple constant calibrations, the calibration version number may be used rather than the calibration constants).	**Yes ☐ No ☐ NA ☐**
3.9.3	The event counter is nonresettable by the operator and has a capacity of at least 000 to 999.	**Yes ☐ No ☐ NA ☐**
3.9.4	The event counter increments appropriately.	**Yes ☐ No ☐ NA ☐**
3.9.5	The event logger automatically retains the identification of the parameter changed, the date and time of the change, and the new value of the parameter (for calibration changes consisting of multiple calibration constants, typically 10 or more, the calibration version number is to be used rather than the calibration constants.)	**Yes ☐ No ☐ NA ☐**
3.9.6	The system is designed to attach a printer which can print the contents of the audit trail.	**Yes ☐ No ☐ NA ☐**
3.9.7	The audit trail information is capable of being retained in memory for at least 30 days while the device is without power.	**Yes ☐ No ☐ NA ☐**

3.9.8	The event logger has the capacity to retain records equal to twenty-five times the number of sealable parameters in the device, but not more than 1000 records are required.	Yes ☐ No ☐ NA ☐
3.9.9	The event logger drops the oldest event when the memory capacity is full and a new entry is saved.	Yes ☐ No ☐ NA ☐
3.9.10	Non-sealable parameters cannot be accessed in the mode which allows sealable parameters to be adjusted.	Yes ☐ No ☐ NA ☐
3.9.11	Event logger information is printed in order from the most recent event to the oldest event.	Yes ☐ No ☐ NA ☐
3.9.12	If logger information is printed on more than one line per event, information is printed in readily understandable blocks.	Yes ☐ No ☐ NA ☐
3.9.13	The printed audit trail is readily interpretable by a Weights and Measures inspector.	Yes ☐ No ☐ NA ☐
3.9.14	Accessing audit trail information for review is separate from the mode used to enter or modify sealable parameters.	Yes ☐ No ☐ NA ☐
3.9.15	Audit trail information can be accessed without requiring the removal of any parts other than the normal requirements to inspect the integrity of a physical seal or to use a key (for a panel lock) to gain access to the means to cause the audit trail to be printed.	Yes ☐ No ☐ NA ☐
3.9.16	If a measurement is in process when the device is accessed remotely for the purpose of modifying sealable parameters, the measurement is either:	
	• terminated before results can be displayed or printed, or	Yes ☐ No ☐ NA ☐
	• completed before entering the configuration mode	Yes ☐ No ☐ NA ☐

Describe the method used to seal the device or access the audit trail information:

_____

_____

_____

_____

_____

_____

5. Proposed Change to Publication 14 - Sample Tempering Procedure for Sample Temperature Sensitivity Test

Background: For the Sample Temperature Sensitivity Test, the NTEP Laboratory applicant has verified that they will be unable to obtain complete sets of high moisture samples for classes of wheat less frequently traded and those classses grown in more arid regions and had requested that the Sector approve the use of tempered samples if necessary. The Sector subsequently approved the addition of the following sentence to the Sample Temperature Sensitivity Test of Publication 14: "When high moisture samples are not available for any protein range in any class, testing may be conducted using tempered (artificially moistened) samples." In response to the Sector's request for the NTEP Laboratory to document the tempering procedure which would be used, tests were run at GIPSA to determine the minimum acceptable procedure for tempering samples. Unfortunately, the results of this test

were inconclusive because of spoilage of some of the samples. As of this meeting, limited resources have prevented GIPSA from re-running the test.[Note: The Sector does NOT approve the use of tempered samples for field testing. Tempered samples will be used ONLY for the Sample Temperature Sensitivity Test.]

Conclusions: Addition of minimum acceptable tempering procedures to Publication 14 will be delayed until test data are available for review.

Attendance List
Grain Moisture Meter & Near-Infrared Grain Analyzer Sector Meetings
September 10-12, 1997, Chicago (Rosemont), IL

Name	Affiliation	September		
		10	11	12
Jack Barber	JB Associates	x	x	x
Connie Brown	DICKEY-john Corp.	x	x	x
Randy Burns	Arkansas Bureau of Standards	x	x	x
Marty Clements	Steinlite Corporation	x	x	x
Tim Conwell	CSC Scientific	x	x	
Bob Davis	Illinois Department of Agriculture	x	x	x
Cassie Eigenmann	DICKEY-john Corp.	x	x	x
David Hopkin	Sinar Technology	x	x	
David Krejci	GEAPS	x	x	x
G. Diane Lee	NIST/Office of Weights and Measures	x	x	x
Angelo Losurdo	Seedburo Equipment Co.	x	x	x
Don Muller	Bran+Luebbe	x	x	x
Ray Oberg	Zeltex, Inc	x	x	x
Tom O'Connor	National Grain & Feed Association	x	x	x
Richard Pierce	USDA-GIPSA-TSD	x	x	x
Ole Rasmussen	Foss North America	x	x	x
Joe Rothleder	California Dept. of Food & Agriculture	x	x	x
Tom Runyon	Seedburo Equipment Co.	x	x	x
Cheryl Tew	North Carolina Dept. Of Agriculture	x	x	x
Cliff Watson	Consultant	x	x	x
Robert Wittenberger	Missouri Dept. of Agriculture, Div. Weights & Meas.	x	x	x
Richard (Will) Wotthlie	State of Maryland	x	x	x

National Type Evaluation Technical Committee
Grain Moisture Meter Sector
March 16-18, 1998, Las Vegas, NV
Meeting Summary

Agenda Overview

Agenda Items

1. Report on NCWM Interim Meeting
2. Review of Committee Letter Ballot 83-01
3. Update on Type Evaluation and Phase II Testing
4. Guidelines for Assigning "Notified" Status
5. Effective Dates for NTEP and GIPSA Calibration Changes
6. Discussion and Consideration of Subcommittee Report on Long Term Planning Issues
7. Proposed Change to Handbook 44 to Cover Meters Capable of Measuring Test Weight per Bushel
8. Proposed Change to Publication 14, Application for NTEP Testing
9. Time and Place for Next Meeting

---

1. Report on NCWM Interim Meeting

The National Conference on Weights and Measures (NCWM) Interim Meeting was held January 11-15, 1998 in San Antonio, TX. [Note: Item numbers and headings shown below correspond to the item numbers and headings of the Interim Meeting Agenda, NCWM Publication 15, dated December 1997. Additional discussion of these issues can be found in that publication.]

Diane Lee, NIST/OWM, reported that the Specifications and Tolerances (S&T) Committee agreed to add the following items as voting items to the Agenda for the Conference's Annual Meeting in July 1998:

a. Item 356-1 Table S.2.5. Categories of Device and Methods of Sealing; Category 3
b. Item 356-2 Table S.1.2. Grain Types Considered for Type Evaluation and Calibration and Minimum Acceptable Abbreviations
c. Item 356-3 Calibration Transfer

She also reported that Item 102-10, Additions and Revisions to the Definitions for Grain Moisture Meters in NCWM Publication 14, had been accepted by the Board of Governors for consideration as a voting item at the Annual Meeting. [*Note: See Sector Agenda Item 2, below, for subsequent modifications adopted by the Sector at their March meeting.*]

Tina Butcher, NIST/OWM, briefly reviewed recent changes in the NCWM. The NCWM was incorporated in August 1997 to protect them from liability in various NCWM activities. NCWM, Inc. will be 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 will be combined into one publication to be called the "Bylaws" of NCWM, Inc. The membership will vote on the proposed Bylaws during a special voting session during the NCWM annual meeting in July, 1998. When the new Bylaws are approved, the Executive Committee will become the "Board of Directors" of the corporation. Additional details of the reorganization can be found in the February 1998 issue of *W&M today,* the Newsletter of the National Conference on Weights and Measures, Inc.

2. Review of Committee Letter Ballot 83-01, Additions and Revisions to the Definitions for Grain Moisture Meters in NCWM Publication 14

Background: Agenda item 3.a. of the Sector's September 1997 meeting proposed (1) changes to NCWM Publication 14 and (2) distribution of a "Notice of Ongoing Calibration Results." These items were generally approved at that meeting, but copies of the final wording of the changes and the final structure of the Notice were not available for approval. Letter Ballot 83-01, was issued October 20, 1997, after final wording had been developed. The two items were approved by a 9 to 3 vote. Before the recommendation was forwarded to the NTEP Board of Governors (BOG) at the NCWM Interim Meeting, minor revisions were made to the wording of several definitions to address comments received with the responses to Committee Ballot 83-01. The proposal was accepted by the BOG for consideration as a voting item at the Annual Meeting and assigned Conference Agenda Item Number 103-10, but the BOG asked the Sector to reaffirm their recommendations considering the changes which had been made subsequent to Ballot 83-01.

Discussion: [Note: Portions of the following discussion took place when Sector Agenda Item 4 was considered. They have been included here because they directly affected the final version of the proposed *Additions and Revisions to the Definitions.*] Several Sector members questioned the conditions under which a third party would be allowed to assume the responsibility for maintaining calibrations for a device. One member felt that it was inappropriate to require a manufacturer to certify that the device would no longer be manufactured before a third party could assume the responsibility for maintaining calibrations. There was also concern that the new definitions seemed to imply that a third party could not enter into a contractual agreement to provide calibration services for the manufacturer of a device. The Sector was reminded that the intent of the new definitions was multifaceted:

1) to recognize that a Certificate of Conformance (CC) for a Grain Moisture Meter (GMM) must be renewed annually;
2) to stipulate that a GMM must remain in the Ongoing Calibration Program, OCP (Phase II), to maintain an Active Certificate of Conformance (CC);
3) to clarify that the annual fee for participating in the OCP (Phase II) is in addition to the CC maintenance fee charged by the NCWM;
4) to provide a time period for a device manufacturer to correct problems discovered during OCP testing before action is taken to withdraw a CC;
5) to provide the means for notifying Weights and Measures Officials when grain calibrations for a device type could not be certified as "approved" or "pending"; and
6) to spell out the conditions under which a third party could assume the responsibility for maintaining calibrations (and thus an "Active" CC) for a device no longer manufactured, without having to submit the device for Phase I testing.

The transfer of calibration responsibility to a third party, without requiring Phase I testing, was limited to the condition that devices previously manufactured met type and had an "Active" CC when the original manufacturer stopped making the device. The primary reason for having the original manufacturer certify that the device will no longer be manufactured was to make it clear which entity had the overall responsibility for assuring that devices in the field would continue to meet type. The paragraph spelling out these requirements was intended to cover the case where a third party, having no contractual agreement or business relationship with the original manufacturer, wanted to provide calibrations (most likely for a fee) to the installed base of meters of that type. It was not intended to limit a manufacturer's ability to contract with outside organizations for calibration services. Nor was it intended to prohibit a U.S. distributor from assuming the calibration maintenance and quality assurance responsibilities for a device manufactured by another company outside the U.S. The NIST representative noted that a Certificate of Conformance (CC) has already been issued to a U.S. distributor who has assumed the responsibility for calibration maintenance responsibility and quality assurance for a device manufactured by a company in England. It was suggested that making the paragraph in question a "note" rather than including it as part of the definition for "Expired Status" would eliminate much of the confusion which had been voiced by several members.

During the discussion of Agenda Item 4 on guidelines for assigning a "Notified" status, the Sector discussed at length what should appear on a CC for a device which had one or more grain calibrations with unresolved problems at the time for CC renewal. There was concern that allowing the manufacturer to drop grains with unresolved problems didn't give state W&M officials any guidance on how to handle devices which passed field test for these grains. If the problem was "real" but not easily detected with the samples used for field testing, several members felt that the State would be exposed to liability for any damages incurred by the user of a device which the field inspector had approved for use on that grain. Others felt that the introduction of "notified" status over-complicated the administration of the program. They believed that the CC should simply be "Withdrawn" until the manufacturer was able to resolve the problem. The NIST representative noted that a "Withdrawn" CC would simply be removed from the data base. If the CC were withdrawn, there would be no simple way to keep track of the device or to allow the manufacturer to continue in the OCP.

At an earlier meeting the Sector had agreed that unless a device had satisfactory calibrations for all of the three major grains (corn, hard red winter wheat, soybeans) it should not be allowed to be used for any grain. This brought up the question as to whether a device which had been assigned "Notified" status for problems with a corn calibration should be disallowed for use on edible beans or popcorn which are just as important as the "major" grains to some operations. Corn, hard red winter wheat, and soybeans had been selected for use in Phase I type approval testing because they were representative of the characteristics of the grains which the device might be required to test in the field. It was reasoned that a device which could not pass the Phase I tests for all three "major" grains was not suitable for general commercial use. The Sector decided that this restriction did not necessarily have to apply to OCP (Phase II) tests.

Several opinions were voiced as to how much information should be put on a CC to indicating why calibrations had been removed [or classified as "No Longer Approved"]. W&M members generally favored making as much information available as possible

so they would have information to pass on to users. It was pointed out that the data collected and the data summary are proprietary information. The Sector was in general agreement, however, that the limitations on using a device must be made obvious on the CC.

Conclusion: The Sector concluded that any grain calibration with unresolved slope or bias problems, as defined in Agenda Item 3, would be listed on a CC as "No Longer Approved"; that "Notified Status" should be eliminated; and that the "Notice of Ongoing Calibration Results" would no longer exist. [*See also Agenda Item 4.*] They further agreed that wording similar to the following should appear on a CC which has one or more calibrations listed as "No Longer Approved":

> "This Certificate was issued to update calibrations for grains x, y, and z and to delete calibrations for grains a, b, and c based upon testing performed in the OCP and the tolerances specified in Section IV of the Checklist for Grain Moisture Meters in NCWM Publication 14."

Finally, by a vote of 19 to 0, the Sector agreed that the language proposed to the BOG for Conference Agenda Item 102-10 should be changed to read as follows:

Note: The "underline text" is the original changes to the definition that will remain as part of the proposed definitions. The "~~underlined and strikeout text~~" are the portions to be removed as a result of changes from the March 1998 meeting. The "*underlined and italic text*" is the portion added to the definitions as a result of changes from the March 1998 meeting.

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 ~~and Notified~~ 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 that participation must result in the issuance of valid calibration constants without unresolved problems or deficiencies occurring during the OCP (Phase II) testing~~. Grain Moisture Meter Certificates may also be assigned an Active status if: (1) the original manufacturer no longer manufacturers 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. Notified Status**~~

~~A "Notified" status is assigned to Grain Moisture Meter Certificates when problems or deficiencies occur during the OCP (Phase II). When a Certificate is assigned this status, a "Notice of Ongoing Calibration Evaluation Results" will be issued with the Certificate. The notice will describe the problems or deficiencies, and the Certificate will designate the affected calibrations. Manufacturers of devices in this category must remain in the OCP (Phase II) actively working to correct the problems or deficiencies. Corrections must be made within two years of the date that the CC is assigned a notified status. If problems or deficiencies are not corrected by that date, the Certificate will be withdrawn. Any meters manufactured after a Certificate is given a Notified status cannot be sold or placed into commercial service under a Notified certificate. Meters in service will be subject to individual State enforcement activities.~~

~~4.~~ **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.

~~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.

~~6.~~ **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 ~~problems or deficiencies occurring in the OCP (Phase II) are not resolved within two years of the date that a Certificate is assigned a Notified status~~ 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.

~~7.~~ **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.

3. Update on Type Evaluation and Phase II Testing
Rich Pierce of the Grain Inspection, Processors and Stockyards Administration (GIPSA, the NTEP Participating Laboratory for Grain Moisture Meters) reported that all data on the 1997 crop, including moisture predictions (using current calibrations) for crop years 1996 and 1995, where available, had been sent to manufacturers by the end of February. Dr. Pierce asked manufacturers to let him know immediately if the data is in a form which they find difficult to work with. With three years of crop data included in the reports and the necessity to re-predict all three years when a calibration change is made, data handling is not a trivial job. He would like to get any data handling problems cleared up before the next round of data is collected.

As of March 16, only one application for Type Evaluation was open. The model involved had been submitted for evaluation by the Laboratory as one of "like type" to a device already approved. The Laboratory is conducting preliminary tests to determine if the meter can be considered of a "like type." If not, it will be evaluated as a new type, and there could be as many as seven meter models in the OCP (Phase II) for 1998 crop year.

Discussion: In connection with the Dr. Pierce's report, the Sector reviewed the existing rules for evaluating moisture meter performance in the OCP (Phase II). Publication 14 states, "The latest three years of data will be used to make decisions regarding the need to make a calibration update." It was pointed out that after the 1998 harvest, four crop years of NTEP data will be available for several NTEP meters. Under existing guidelines, 1995 crop year data would not be used in evaluating performance at the end of the 1998 crop year. Dr. Pierce listed several facts for the Sector to consider in deciding if 1995 crop data should be disregarded:

- A special effort was made in 1995 to collect data on corn having 30-40 percent moisture content. Dropping 1995 data from consideration will significantly reduce the number of high moisture samples in the evaluation set.

- Some manufacturers may want to drop 1995 crop data. To resolve instrument standardization concerns, the NTEP Laboratory is already disregarding 1995 crop data on corn and soybeans for one manufacturer.

- As we begin the 1998 crop year, there are instruments in the program with one, two, and three years of NTEP data. Identical data sets are not being used to standardize NTEP instruments.

One member expressed the opinion that whatever the Sector decides to do about the number of years of data has to be the same for all meters in the program. Another objected on the grounds that it would not be appropriate to include data known to be faulty, e.g., data collected on a meter later found to be defective or inappropriately standardized. The NTEP Laboratory representative pointed out that this was exactly the case which led to discarding one year's data for one meter in the program.

It was noted that calibration approval for any 2% moisture interval is based on data collected in the OCP (Phase II). Manufacturers have the option to provide data to extend the moisture range beyond that for which data is collected in the OCP (Phase II). Dr. Pierce suggested that manufacturers could re-submit the 1995 high moisture data as "manufacturer supplied data." Unfortunately, Publication 14 states, "Calibration status for any range can be no better than 'pending approval' when based solely on manufacturer data." As a consequence, under existing rules, if manufacturers re-submit the NTEP 1995 data as "manufacturer supplied data" to extend the range beyond which current data are available, that range will automatically be classified as "pending approval." Manufacturers pointed out that there is a perception among users that "pending approval" is not as good as "approved." Changing a range from "approved" to "pending approval" from one year to the next gives the appearance that the meters are not as good this year as last. Some expressed the opinion that in the absence of data indicating that a calibration does not meet accuracy requirements in any 2 percent interval, it should NOT be downgraded from "approved" to "pending." Others were of the opinion that even if a calibration change has been made, manufacturers should be allowed to use an entire year of "expired" OCP (Phase II) data without having to classify it as "manufacturer supplied." The Sector did not act on these two suggestions.

Grain Industry representatives asked how changing a high moisture range from "approved" to "pending approval" for the NTEP version of the Official meter would affect calibrations used on that model in the Official system. GIPSA representatives explained that the calibrations used in Official meters most likely would be exactly the same as the NTEP calibrations for that model. If there are differences, they would not be of the sort that would affect moisture results. They may, for example, impose more restrictive temperature limits on meters used in the Official system and may limit the use of the Official meter to corn moistures below 30 percent. In summary, the Federal system is a restrictive subset of the Commercial system, dropping the high moisture data and changing the status of the 2% ranges formerly covered by that data will have no effect on the Official system.
One manufacturer asked if manufacturers could submit samples to GIPSA for use in the OCP (Phase II). Answering for GIPSA, Dave Funk indicated that they are open to accepting samples, but this would have to be considered on a case by case basis. He pointed out that GIPSA does not have an infinite capability to run samples. Also, they would want to be certain that samples are sound and did not all come from the same limited geographical area. On the subject of samples, he mentioned that each year GIPSA sends letters to all State Departments of Agriculture requesting help in obtaining samples. Response to these requests has been somewhat limited. Dave indicated that while GIPSA's interest in corn moisture may never exceed 30%, they would entertain the possibility of conducting special projects in the high moisture range from time to time, but it was not realistic to expect that they could obtain [and process] an adequate high moisture sample set every year.

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 lab representative did not want the NTEP lab 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 five 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 four or five year old data.

Conclusion: When put to a vote, the Sector decided by 14 to 0 to retain the existing Publication 14, Section IV requirement to use the latest 3 years of data [where available].

4. Guidelines for Assigning "Notified" Status

[Note: During the discussions on this item, the Sector modified the recommendations it had originally made to the BOG as *Additions and Revisions to the Definitions* in Publication 14 (NCWM Agenda item 102-10). That portion of the discussion is reported under Sector Agenda Item 2.]

Discussion: Two examples of anomalous results were observed on some of the NTEP devices in the on-going calibration program (Phase II testing) at the end of the 1997 crop year. These were characterized by:

- Unusual bias differences between subsequent years, or
- Severe slope differences at higher moistures between subsequent years.

Present rules for reviewing calibrations are based on examining the bias at each 2 percent moisture interval using data collected over the years. The problem with this approach is that the "average" bias for multiple years of data can be within tolerance while the biases for individual years can all be out of tolerance. In the first example, the bias differences between individual years were partially canceled when data for the two years were pooled. The present rules also fail to address situations in which significant slope differences are observed between subsequent years. The Sector reviewed additional rules and tolerances which had been proposed to cover instances of unusual bias differences between individual years and to address sudden severe changes in slope.

The tolerances in "a.," below, are equal to the H-44 maintenance tolerance for the largest moisture interval in the NTEP-specified 6 percent base moisture interval, i.e., 0.05x18% = 0.90 for corn; 0.05x16% = 0.80 for rice, oats, sunflowers and sorghum; and 0.70 (the minimum maintenance tolerance) for wheat, soybeans, and barley. Although the average biases are based on data obtained on all samples of a grain type in a given year, no consideration was given to the fact that H44 tolerances start spreading out at moistures above the NTEP-specified 6% base interval. Even then, it was stressed that these are extremely wide tolerances. A model [device type] is not likely to fail at these tolerance levels unless it has serious problems in either: 1) standardization, or 2) suitability for use on a specific grain type. These problems are not likely to be detected in Phase I testing. They first become apparent when 2 or more years of data are examined.

Conclusion: The Sector agreed to add the following criteria immediately after the fourth paragraph in Section IV of Publication 14 of the Grain Moisture Meter Check List.

Whenever a calibration update is made, the Manufacturer shall re-predict moisture values using the three most recent years of available raw data collected by the Type Evaluation Laboratory.

New calibrations will be approved based upon the re-predicted moisture values. Approval tolerances will be one-half of the Handbook 44 acceptance tolerance, and will be applied in 2 percent intervals over the range of available data. Additionally, for the three years of available data:

a. The difference between the average bias to air oven for all samples in a given year and the average bias to air oven for any other year shall not exceed: 0.90 for corn; 0.80 for rice, oats, sunflowers and sorghum; and 0.70 for wheat, soybeans, and barley.

b. The range of year-to-year differences in bias to air oven shall not exceed the H-44 tolerances for three or more consecutive 2 percent moisture intervals. Only moisture intervals consisting of five or more samples per year will be considered for this comparison.

Failure to meet the requirements in either item a. or b., above, will cause a "No Longer Approved for Use" status to be assigned to the affected grain type(s) on the NTEP Certificate of Conformance (CC) for that instrument. Calibration coefficients will not be listed for any calibration failing these requirements.

5. Effective Dates for NTEP and GIPSA Calibration Changes

Discussion: Grain Industry representatives have repeatedly stressed the importance of keeping NTEP calibration changes synchronized with GIPSA calibration changes (at least for the GIPSA Official Meter and its NTEP equivalent type). In the past, calibration changes for the Official Meter have been made on a staggered schedule typically between May 1 and August 1, with dates chosen to coincide with the time at which stocks would be at their lowest level to minimize economic impact. GIPSA recently announced that the number of dates for changing calibrations would be reduced to two: May 1 for the NTEP grains wheat, barley, sorghum, rice, and oats; and August 1 for corn, soybeans, and sunflowers. These dates represent a compromise between making calibrations available prior to harvest but not so early that grain stocks will not be near their lowest levels. The present timeline for NTEP Phase II activities lists July 1 as the date for re-issuing annual Certificates of Conformance (CC's). At the Sector's last meeting grain Industry representatives pointed out that re-issuing CC's on July 1 would miss the wheat harvest in most of the country.

To address these issues, it was proposed that the CC for the Official Meter be re-issued by May 1 for all NTEP grain calibrations with effective dates shown for each calibration to indicate when a new calibration would be put into use in the Official system. Issuing the Official Meter's CC at an earlier date would also allow manufacturers of other meters to take into account changes in the Official system when considering the possibility of making changes in their own calibrations. Meter manufacturers would also be allowed to apply for earlier re-issue of their CC's. As for expiration dates of CC's issued prior to the normal July 1 issue date, the Sector was in agreement that all CC's should expire on June 30 of the year following the year in which they were issued.

In response to a W&M representative's question regarding what actions manufacturers take to ensure that all meters in the field are being updated with the latest information, manufacturers reported that one or more of the following methods are typically used to notify users of calibration changes:

- Publication in state Grain and Feed Association newsletters
- News releases to trade publications
- Direct mail to users of record
- Posting on manufacturer's web site on the Internet

A NIST representative was troubled by the implication that the manufacturer was responsible for ensuring that the latest calibrations had been installed in devices in the field, pointing out that the device owner has the responsibility of keeping equipment up-to-date. The "User Requirements" section of the Grain Moisture Meter Code states: "Grain moisture determinations shall be made using only the most recently published calibration." One W&M representative suggested that it was a shared responsibility between manufacturer and user. Another suggested that it might be helpful if the device's Instruction Manual contain a bold notice stating that the user is responsible for ensuring that the most recent calibration is installed in the meter.

One W&M representative wondered how to handle meter inspections performed in July, asking which calibration should be used, the one effective August 1 or the existing one. Opinions were divided on the best way to handle this situation. In one state, old calibrations would be allowed to be used until the effective date of the new calibration, after which the device would be re-inspected to verify that the new calibration had been installed. Others felt that this method of enforcement was not realistic, because it could result in requiring two or more trips per year to the majority of meters in their jurisdictions. They favored having the user install the new calibration at time of inspection. A manufacturing representative pointed out that the only purpose of specifying "effective dates" on a CC was to match the dates on which the new calibrations would be used in the Official system. He suggested that W&M inspectors tell the user that the new calibration must be installed on the effective date if they wanted their meter to be in closer agreement with the official meter. It was recognized that the use of effective dates wasn't a new concept. Prior to the NTEP program, manufacturers had revised calibrations at various dates, sometimes without much warning, and often after a significant number of meters had already been inspected for the current season. States with inspection programs had already figured out how to deal with this situation. The Sector decided that the details of enforcement should be left to each state to decide based on their individual needs.

Conclusion: The Sector decided that it would not be necessary to revise the table of Deadline Dates published in *National Type Evaluation Program for Grain Moisture Meters - Phase I and Phase II Process Time-lines and Deadline Dates*. The Sector also agreed to the following guidelines.

- Re-issue the NTEP CC for the Official Meter no later than May 1 for all NTEP grain calibrations (Advance notice of any pending wheat, barley, sorghum, rice or oats changes could be given [to manufacturers] prior to May 1).

- Retain July 1 as the ***deadline date*** for re-issuing an NTEP CC. This would allow other NTEP meter manufacturers to decide individually whether to meet the earlier schedule (May 1). All CC's will have the same expiration date regardless of when the CC is issued.

- Add information to CC's to show an "Effective Date" for each calibration.

- The "Effective Date" for the calibration is the last date by which the calibration *must* be installed. If someone wants to install it earlier, they may do so. A definition of "Effective Date" will be included on the CC.

6. Discussion and Consideration of Subcommittee Report on Long Term Planning Issues

Background: At the Sector's March 10-12, 1997, meeting in Atlanta, questions relating to long-term continuation and acceptance of the Grain Moisture Meter (GMM) program were discussed. The Sector recognized the unique metrological situation created by requiring participation in an ongoing data collection program with yearly passage of a calibration test to maintain an active Certificate of Conformance (CC). Typically, in other metrological devices, the CC, once issued, remains valid unless there is a Code-mandated upgrade, which is fairly rare and subject to the nearly 2-year process of NCWM. Continuing accuracy is then monitored by field inspection.

Moisture meters are unique in that there is neither an absolute nor a totally stable reference basis. The ongoing Phase II (calibration maintenance) program was created to track changes in grains over time, with a common sample set to verify uniformity across device types. As presently written, Publication 14 requires a meter to participate in the data collection program and pass the annual calibration check tolerances to retain a CC. Key questions raised at that time were:

- What happens if a manufacturer drops out of the Phase II program for one of several reasons (out of business, introduced a new model, financial stress, etc.)?
- How do we deal with the uneven application of the NTEP program across states and with states that have no grain moisture programs? Meters with lapsed CC's, or meters that never had a CC, will be salable in several states with large grain production. In some states, meters are not subject to field inspection.
- If meters pass field inspection (in states that have field inspection, by whatever method this is done), how can the program declare them unusable because of CC lapse?
- As with other metrological devices, field inspection is the point of user contact with NTEP. Do we need more effort to design standard field inspection procedures that in and of themselves would contribute significantly to national uniformity, regardless of Type Approval status or enforcement?
- What is "national uniformity" in a practical sense? Traders maintain that agreement with the GIPSA official meter as operated in their service point is the key factor.
- After a period of time, say five years, do we need to test calibrations annually?
- What are the options for funding the calibration program when the present CRADA (joint funding from NIST, GIPSA, and manufacturers) arrangement runs out (1999)?
- Different technologies (e.g., near-infrared vs. capacitance) may read individual samples very differently from each other even if both pass the tolerances relative to the oven.

At the March 1997 Sector meeting a subcommittee was appointed to report on the long-term strategic planning questions in four topic areas. Following are the groupings and the recommendations of each.

1. What is the long-term funding strategy for the calibration program and is there a need to check calibrations annually after the initial 5-year startup?
    - Re-negotiate an extension to the current system of multi-year shared costs through meter manufacturers, NIST, and USDA-GIPSA. This would have the practical effect of using 1/3 private funds and 2/3 public funds to pay for the program.

      Chair's Note: This was not a unanimous view in that manufacturers paying the entire cost (rather than 1/3) was supported by one member of this issue group. Actually, funding for the NTEP lab is just one portion of the larger question of how to fund various grain measurement standardization issues (moisture, protein, foreign material, etc.)

2. What does the program do if states do not enforce the code uniformly or not at all? What should happen if a CC lapses? Is passage of field tests enough for these units to continue in use or to be sold? Can a third party restore lapsed CC's by picking up the support of calibrations?

- Develop an outline of suggested enforcement guidelines for states to follow. A device manufactured following the expiration of the CC may not be placed in service for commercial use. The continued use of devices in service prior to CC expiration should be allowed as long as they meet state inspection tolerances. A third party may pick up support of a device providing that they demonstrate the ability to respond to recommended calibration changes. There is a need for an ongoing data gathering effort that would document the usefulness and success of the program.

3. What are options for standardized field inspection procedures? Who should design them? How does the program get more states involved, even if resources are limited?
    - A model program should be developed which is in some way traceable to the oven and to the official system. This model will suggest appropriate laboratory equipment and procedures. It will also suggest field inspection procedures.

    - A cost benefit study for the model program should also be done as an informational tool in gaining support for GMM programs. This study should use statistics from states that do have programs. It should include actual costs of programs related to the number of annual inspections, bushels of grain produced, and average price discount on deliveries and shipments due to moisture.

    - The GMM Sector could take the lead in identifying the strategy for developing the model program and its cost assessment.

4. What constitutes national uniformity? How to accommodate sample differences caused by multiple technologies even if all are within tolerance of the NTEP lab?
    - Operate the official meter(s) in all parts of the NTEP laboratory work and identify its performance along with meter(s) under evaluation. Publish estimates of the expected variation 1) across the NTEP meters as a group, 2) relative to the official meter, and 3) relative to the reference. Consider adding a second level of tolerances relative to the official meter, based on multiple years' data from the NTEP lab.

    - Design of field inspection procedures should consider how the official meter, operated in the official system, could be used to verify performance.

Several of these questions were answered at the September 1997 meeting, but the issues of funding, standardized field inspection, annual testing of calibrations, and dealing with different technologies remained unresolved.

Discussion/Conclusion: Time constraints at the September 1997 meeting had prevented the Sector from addressing some of the more crucial long term issues. To insure that critical issues would be covered in this meeting, Sector members who wished to comment were each allowed up to five uninterrupted minutes in which to present their concerns. After all concerns had been aired, the discussion was opened to address the concerns raised.

A common concern of all parties was the uncertain future of the availability funding to continue the NTEP laboratory On-going Calibration Program, OCP (Phase II) beyond 1999, and the possible effect loss of funding might have on the existing GMM program and other work of the Sector. Grain Industry representatives favored deferring work on test weight and delaying the proposed expansion of the tentative code for NIR Grain Analyzers to allow the Sector to focus its efforts on the Grain Moisture Meter (GMM) program. They also questioned if adding additional commodities and constituents to the tentative NIR Grain Analyzer Code was premature and ahead of the needs of the marketplace. Another Sector member expressed concern that certification of GIPSA as the NTEP laboratory for NIR Grain Analyzers had been delayed indefinitely by lack of funding at GIPSA, asking if another lab should be considered or if NIR protein analyzers should not be type evaluated. He also mentioned that value added grains, especially those with enhanced protein or oil content, are being talked about with increasing frequency. He suggested that the Sector should consider whether or not to become involved. [*Editor's note: W&M representatives were unanimously in favor of expanding the tentative NIR Code. See NIR Grain Analyzer Sector Meeting Summary for more information on this subject.*]

One member expressed concern over the lack of universal acceptance (and enforcement) of the GMM Code by State W&M Agencies. States represented on the Sector have made a serious effort to apply the Code and actively support NTEP principles, but other states don't have the resources to do this. He suggested that the Sector needed to focus on how to help States improve uniformity and participate in the NTEP process.

Diane Lee, NIST, responded that the Office of Weights and Measures has recognized the need to work more closely with the States on GMM matters. A draft outline of a GMM Program Handbook was presented for the Sector's consideration (See Attachment). The Program Handbook would assist States wanting to implement a GMM Testing Program. It would outline how a grain moisture laboratory should operate; and would specify required facilities, equipment, testing methods, sample storage and handling procedures, and required reports. She also suggested that the Sector form a working group to develop an Examination Procedures Outline (EPO) for GMM's to serve as a guide for field enforcement.

In reference to concerns about funding availability, she announced that NIST and GIPSA have agreed on a proposal for funding the OCP beyond 1999 on a more permanent basis. The initial agreement would cover a five year period. After that, it would be renewed automatically, subject to an annual review to determine if changes should be made. Details of program costs were explained by Rich Pierce, GIPSA. NIST and GIPSA would each contribute one-third the cost of the program subject to an annual maximum of $18,000 each. The balance of 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 (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. There are now six models in the NTEP "pool". If the "pool" remains at six models, each manufacturer would be assessed $6,429 annually for participation in the OCP. This fee rises to $8,550 with nine meter models in the pool and drops to $3,375 if only three models are in the pool. These figures are based on a program cost of $13,500 per model, excluding GIPSA's Official meter. David Funk, GIPSA, indicated that it was reasonable to consider that these costs would remain constant over the next five years. Future increases in the efficiency of data collection were expected to balance out any cost increases which might come about due to inflation. [Note: See Attachment for a detailed analysis of the effect of the number of participating models on shared program costs.]

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 have incurred in obtaining NTEP approval and keeping up with changes in NTEP requirements. One manufacturer expressed the opinion that $6,429 was a reasonable price for the data which they received by participating in the program.

NIST and GIPSA will draw up individual co-operative research agreements (based on the one-third, one-third, one-third cost structure discussed above) to present to each manufacturer for approval.
At this Sector meeting, no manufacturer indicated that it would be dropping out of the program at the end of the current agreement.

To deal with the matter of Field Enforcement and Inspection Procedures (part 3 of the Sub-Committee report), the Sector agreed that a working group should be formed to draft an EPO for GMM's. One Sector member suggested that the working group should consider identifying alternate methods (with appropriate tolerances), such as meter-to-meter testing, for inspecting large numbers of meters where resources are limited. The NIST representative pointed out that EPO's relate directly to H44 requirements. An EPO for GMM's is intended to provide guidance to States on how to implement H44 which call for using grain samples with moisture content values assigned by the reference method (air oven drying) used by GIPSA. The Sector left this issue in the hands of the working group. [Note: The following individuals indicated a willingness to serve on the EPO working group which will be chaired by Diane Lee (NIST): Randy Burns (Arkansas Department of Agriculture), Cheryl Tew (North Carolina Department of Agriculture), Bob Wittenberger (Missouri Department of Agriculture), Rich Pierce (GIPSA), Sid Colbrook (Illinois Department of Agriculture), Will Wotthlie (Maryland Department of Agriculture), and Jack Barber (JB Associates). In addition, Don Onwiler (Nebraska Department of Agriculture) indicated that John Fecht (Nebraska Public Service Commission) would serve in his place. Diane Lee expected that the group would be able to conduct its business by e-mail and fax. No separate meetings were anticipated.]

On the issue of National Uniformity (part 4 of the Sub-Committee report), Dave Funk, GIPSA, asked manufacturers if they would find it useful to see performance data which showed the error (official meter vs air-oven) in each two percent moisture interval for the average of all samples collected over a three year period. This information could be provided on updated [Official] calibrations in time to guide manufacturers who might contemplate making matching calibration changes for their devices. One member said it would be more useful to have statistics showing how individual models varied with respect to the Official Meter on a sample-by-sample basis. Mr. Funk replied that GIPSA was not open to releasing this data on a sample-by-sample basis, explaining that these data are covered by Cooperative Research Agreements with manufacturers and are thus proprietary data belonging to the manufacturer. Several suggestions were made on how States might become more involved in the program, ranging from providing manufacturers with data collected on instruments loaned to the States to making field inspection data available to manufacturers. It was proposed that the matter of State involvement be addressed at a future meeting.

7. Proposed Change to Handbook 44 to Cover Meters Capable of Measuring Test Weight per Bushel

Background: The Grain Moisture Meter Code in H44 contains the following field test requirement for Test Weight per Bushel Indications:

> **T.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 FGIS. (Amended 1992)

The 0.15 lb/bu tolerance was taken from an FGIS (now GIPSA) maintenance procedure which compared results obtained using a "standard" quart test kettle to results obtained on the kettle under test. Three samples of dockage-free dry hard red winter wheat were used for the test.
Five replicate measurements were made on each sample. The results were averaged after discarding the highest and lowest result. The Sector agreed that the test was not realistic for field testing the various types of devices in commercial use and that a different tolerance should be considered for each grain type.

There are now at least two NTEP Grain Moisture Meters which have the capability to automatically provide an indication and recorded representation of test weight per bushel. Because of the unrealistic tolerances in the existing Code, however, the test weight indications of these devices are typically not allowed to be used for commercial transactions.

At its September 1997 meeting, the Sector agreed that priority should be given to drafting changes to the Grain Moisture Code to specify field test methods and reasonable acceptance/maintenance tolerances for individual grains.

Discussion: The Sector review a draft of proposed changes to the Code. Discussion centered on three issues: 1) height of test weight indications; 2) acceptance and maintenance tolerances; and 3) field testing procedures.

Height of test weight indications:
Manufacturers questioned the need to require a minimum height of 10 mm for test weight indications, noting that the information displayed in connection with moisture measurements already occupied most of the available area on their displays. It would be prohibitively expensive to incorporate larger displays into their devices. It was also noted that the General Code does not specify height, requiring only that the information be clear, definite, and easily read.

Acceptance and maintenance tolerances:
The OCP (Phase II) data supplied by manufacturers was used to develop the proposed tolerances for field inspection. The tolerances are based on three times the standard deviation of the test weight errors over ***all*** samples of a grain type in a single year plus an allowance for instrument to instrument variation. The final tolerances were adjusted by a factor of one over the square root of three to account for the averaging of three drops field testing. When asked if the proposed tolerances would be acceptable to the Grain Industry, industry representatives stated that this would depend on what their customers felt was required for consistency with the manual (test kettle) method. They asked if the tolerances would be appropriate for GIPSA. Dave Funk (GIPSA) explained that consistency from point to point is important for the Official System, and, although the proposed tolerances seemed reasonable for GMM's with test weight capability, it was unlikely that GIPSA would be using them for Official test weight determinations. A W&M representative related that, in his experience, improper use of the test kettle method [improper strike-off, improper loading of grain into kettle, use of kettles of less than one-quart size, etc.] was not an unusual occurrence in the field and could result in errors greater than the proposed tolerances. The Sector was reminded that tolerances must be small enough that they don't cause problems to either buyer or seller, but not so small as to make the cost of devices unreasonable. The need for different Acceptance and Maintenance tolerances was questioned. A single tolerance was preferred.

Field testing procedures:
The necessity for testing with more than one grain type was questioned. Because different grain types may load into a meter's test cell differently, tests should be made with more that one grain type, preferably with the grain types for which the device is to be used. The Sector recognized that moisture may also affect the way grain loads into a meter's test cell, but acknowledged that using the lowest moisture sample [of the samples required for moisture testing] would provide more reproducible results for field testing. It was reasoned that the device's ability to measure test weight over a range of moistures could be established during type approval testing.

Conclusion: The Sector agreed that the height of the test weight indication should not be specified in S.1.1.(b). [Note: The minimum height for the digits used to display moisture content will remain at 10 mm to comply with OIML requirements.] The

draft was modified to make the Maintenance tolerance equal to the Acceptance tolerance. The Sector also agreed that the minimum testing for test weight should include tests using all grain types for which the meter is to be used (not to exceed three); and that test weight information need be collected only on the lowest moisture sample used for moisture testing. Action to forward the draft to the S&T Committee was deferred pending receipt of additional feedback from the grain trade on the acceptability of the proposed tolerances and feedback from W&M members on a sampling of field test results applying those tolerances. The draft, incorporating the changes agreed to at this Sector meeting is shown below:

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 only to moisture meters incorporating an optional automatic test weight per bushel measuring feature.

.
.
.

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)

.
.
.

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.

.
.
.

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)

.
.
.

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:

(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)

---

[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.

[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.]

T. Tolerances[2]

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.

~~**T.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	
Corn	1.1 pounds per bushel	
Sorghum, soybeans, and all wheat classes	0.6 pounds per bushel	
Barley, oats, rice, sunflower, and all other small cereal grains and oil seeds	0.9 pounds per bushel	

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)

8. Proposed Change to Publication 14, Application for NTEP Testing

Discussion: GIPSA has combined the wheat classes "Eastern White Wheat" and "Western White Wheat" into a single new class named "Soft White Wheat." At its last meeting, the Sector unanimously recommended changing Table S.1.2. of Grain Moisture Meter Code 5.56(a) reflect this action. *[Note: The NCWM will vote on this recommendation, Item 356-2, at the annual meeting.]*

Corresponding changes are also required to the table of grain types in the *Application for NTEP Testing* on page 6-7 of Publication 14.

Conclusion: Remove references to "Eastern White Wheat" and "Western White Wheat" in the Table on page 6-7 of Publication 14 and replace them with "Soft White Wheat". The moisture range remains "10-16%". Also, change Note (1) to read:

(1) A Certificate of Conformance will be granted to cover the full range of ~~16~~ 15 NTEP grains upon successful testing of the meter with corn, soybeans, and hard red winter wheat (shaded boxes above).

9. Time and Place for Next Meeting

With seven moisture meter models successfully type evaluated and with the OCP (Phase II) into its fourth season, the necessity of continuing to meet twice a year was questioned. It was suggested that some matters could be settled by written ballot. Another possibility mentioned was having a longer meeting only once a year (or every other year). Most agreed that in terms of conference activities, the ideal time of the year for a Sector meeting was sometime after the annual NCWM meeting in July but before the November 1 deadline for items to be included in the Interim Meeting Agenda, NCWM Publication 15. Unfortunately, this is a very busy time period for those involved in any way with harvest or the major post-harvest agricultural shows.

The decision as to whether there would be sufficient items to warrant having a Fall meeting was deferred until July 1. This decision will depend somewhat on the progress made by the EPO working group, on whether the proposed changes to H44 are ready to hand off to the S&T Committee by that time, and if any Sector issues arise in any of the Regional Meetings. If a Fall meeting is necessary, it will be held during the week of September 21 or September 28. If a Fall meeting is not required, the next most likely time will be March 1999.

Three cities were selected as possible choices for the next meeting: St. Louis, Kansas City, and Chicago. The final choice will be depend on availability and least over-all expense to the NCWM. If a Fall meeting is necessary, fax (or e-mail) notification will be sent to voting members as soon details are known. A normal meeting notice will be mailed shortly thereafter to all members and interested parties.

National Type Evaluation Technical Committee
Near Infrared Grain Analyzer Sector
March 18, 1998, Las Vegas, NV
Meeting Summary

Agenda Overview

Agenda Items

1. Removal of Retroactive Dates from NIR Analyzer Tentative Code
2. Changing the NIR Grain Analyzer Tentative Code to Cover Additional Grains and Oil Seeds
3. Update on Certification of GIPSA as the NTEP Participating Laboratory
4. Date and Location for Next Meeting *(this item was covered in joint session with the Grain Moisture Meter Sector)*

---

1. Removal of Retroactive Dates from NIR Analyzer Code

Discussion: At the previous Sector meeting, questions were raised regarding the fact that the existing Tentative Code has effective dates of January 1, 2000 and still contains retroactive dates of January 1, 2005. Although no vote was taken on the issue at that time, most members felt that the retroactive dates would have to be removed before the Conference would agree to activating the code. The Sector had previously agreed that effective dates could be changed if necessary.

Weights and Measures (W&M) representatives reported that they were seeing an increasing number of NIR Analyzers in their jurisdictions. Iowa W&M inspected 40 NIR devices last year as grain moisture meters and expects to see an additional 30 devices this year. As many as 400 NIR devices may be installed in Iowa by 1999. In the past year, Missouri had requests to inspect 5 NIR devices. More requests are anticipated this year. An estimated 200 to 400 NIR devices are in use in Nebraska. Arkansas has 30 known NIR analyzers in commercial use. Although some of the devices in these states have been inspected under the Grain Moisture Meter Code, the main use of these devices is the determination of the percent content of one or more constituents, such as protein or oil, in a number of different commodities not covered by the NIR Analyzer Code.

The Sector was reminded that the NIR Analyzer Code is still "tentative." Tentative code has only trial or experimental status and is not intended to be enforced. The requirements are designed for study prior to the development and adoption of a final Code. Except for a study conducted in Nebraska, the Sector has not received feedback from the W&M community on the practical experience of field inspections using the tentative code. With an increasing number of instruments coming into the field and an increasing need for requirements to regulate NIR Analyzers, this is an ideal time for States to actively study the code to determine if it needs to be modified before the Sector can recommend that it be upgraded to permanent code.

Diane Lee, NIST, offered to send a letter to State W&M Officials to find out if they would be willing to participate in a study of the Code. A copy of the letter soliciting industry volunteers to participate in Nebraska's study would be included as an example of how to initiate a study program. It was suggested that an Examination Procedure Outline (EPO) would also be helpful for the study.

W&M representatives expressed a need for additional training in the use of the various models of NIR Analyzers they were likely to encounter in field testing. Especially important was the need to be able to verify calibrations. Many of the devices in the field pre-date the Tentative Code and don't have some of the features which the Code requires (such as the ability to print the calibration identifier on the results ticket). Based on Nebraska's study, there will be some users who have no idea how to display calibration information on these older instruments.

Some Sector members questioned proceeding with the Code in light of the fact that it seemed unlikely that an NTEP Lab would be certified for NIR Analyzers in the foreseeable future. Tina Butcher, NIST, explained that it was not necessary to have a type evaluation program before code could be enforced, citing examples of devices for which no NTEP program exists but which are currently being regulated by code [wire and cordage measuring devices, fabric measuring devices, etc.].

The Sector was in general agreement that they should focus on moving the Code from "tentative" to "permanent" whether or not the NTEP program moves forward. Most members agreed that unless retroactive dates were removed, the Conference would never accept the Code as permanent. The non-retroactive date of January 1, 2000, was thought to be premature in light of the fact

that a thorough study of the tentative code is not likely to be completed until late 1999. Members were reluctant to suggest a date too far in the future fearing that it was important to have enforceable code as soon as possible.

Conclusion: The Sector unanimously agreed that retroactive dates should be removed and that the nonretroactive date of January 1, 2000, should be changed to January 1, 2002.

2. Changing the NIR Grain Analyzer Tentative Code to Cover Additional Grains and Oil Seeds

Background: At the previous Sector meeting, Weights and Measures representatives reported that NIR Analyzers were beginning to appear in their jurisdictions, but much of the commercial usage was for corn and soybeans which the present Tentative Code did not address. Grain Industry representatives noted that the industry is increasingly contracting directly with the producer to obtain 'enhanced value' grains. There is a growing demand for measurement of protein, and frequently oil, in an increasing number of grain types.

In light of the fact that: (1) an increasing number of NIR analyzers are being used commercially for grains not presently covered by the code; and (2) the certification date for the NTEP Lab has been delayed indefinitely, the Sector decided that priority should be given to modifying the Tentative Code to cover additional grains. Deciding how these additional grains should be handled in type approval was postponed indefinitely.

Discussion: The Sector reviewed changes to the NIR Grain Analyzer Tentative Code which had been proposed to cover additional grains and oil seeds. Sunflower seed (oil type) was dropped from immediate consideration due to calibration difficulty. With the exception of starch in corn, it was determined that the Grain Inspection Packers and Stockyards Administration (GIPSA) would be able to assign standard reference values to samples provided by the States for the Tentative Code study [see Discussion on Sector Agenda Item 1].

David Funk, GIPSA, proposed acceptance tolerances for the added grains [see Table T.2.], noting that they are roughly two times the standard deviation of the errors GIPSA has observed in their tests. A three times multiplier was not used because reference samples will be pre-screened to eliminate any which differ from the reference method by more than one-half the acceptance tolerance when tested on an official GIPSA NIR grain analyzer [see paragraph N.1.2.].

Conclusion: The Sector agreed to modify the NIR Grain Analyzer Tentative Code as shown below to include tests for corn (protein, oil, starch), barley (protein), and soybeans (protein, oil).

S. Specifications

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).

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, etc. or PROT, etc.). *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. Meters shall be capable of indicating the grain type using a minimum of four characters. Minimum acceptable abbreviations are listed in Table S.1.2.*

Table S.1.1.(e) Constant Moisture Basis for Constituent Display and Recording		
Grain Type or Class	Constituent(s)	Moisture Basis
Durum Wheat, Hard Red Spring Wheat, Hard Red Winter Wheat, Hard White Wheat, Soft Red Winter Wheat, Soft White Wheat	protein	12 percent
Soybeans	protein oil	13 percent
Two-rowed Barley Six-rowed Barley	protein	0 percent (dry basis)
Corn	protein oil starch	0 percent (dry basis)

Table S.1.2. Grain Types Considered for Type Evaluation and Calibration and Minimum Acceptable Abbreviations	
Grain Type	Minimum Acceptable Abbreviation
Durum Wheat	DURW
Hard Red Spring Wheat	HRSW
Hard Red Winter Wheat	HRWW
Hard White Wheat	HDWW
Soft Red Winter Wheat	SRWW
Soft White Wheat	SWW
Soybeans	SOYB
Two-rowed Barley	TRB
Six-rowed Barley	SRB
Corn	CORN

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.

T. Tolerances

T.1. To Underregistration and to Overregistration. - The tolerances hereinafter prescribed shall be applied to errors of under registration and errors of overregistration.

T.2. Tolerance Values. - Acceptance and maintenance tolerances shall be equal. Tolerances for individual samples and the average for five samples are shown below:

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	protein	0.60	0.40	0.40
Soybeans	protein	0.80	0.60	0.60
	oil	0.70	0.50	0.50
Two-rowed Barley Six-rowed Barley	protein	0.70	0.50	0.50
Corn	protein	0.80	0.60	0.60
	oil	0.70	0.50	0.50
	starch	1.00	0.80	0.80

5. Update on Certification of GIPSA as the NTEP Participating Laboratory

Discussion/Conclusion: Dr. Richard Pierce, GIPSA, reported that the situation was little changed since the Sector's September 1997 meeting at which he announced that the GIPSA Laboratory in Kansas City had made little or no progress on the work necessary to obtain certification as the NTEP participating laboratory for near infrared grain analyzers. With limited resources, priority was being given to tasks related to maintaining the NTEP Grain Moisture Meter Program. There was a feeling at GIPSA that there was little interest on the part of major wheat producing states in seeing something done. There may be more interest in corn-oil than in wheat-protein. Dave Funk, GIPSA, expressed the belief that it may be premature to develop a program for maintaining NIR analyzer calibrations. The rapid evolution of calibration techniques, such as artificial neural networks which can lead to more stable calibrations, may materially change the way a maintenance program should be set up. At the present time GIPSA considers the matter of NTEP lab certification "on hold."

6. Time and Place for Next Meeting

With seven moisture meter models successfully type evaluated and the OCP (Phase II) is into its fourth season, the necessity of continuing to meet twice a year was questioned. It was suggested that some matters could be settled by written ballot. Another possibility mentioned was having a longer meeting only once a year (or every other year). Most agreed that in terms of conference activities, the ideal time of the year for a Sector meeting was sometime after the annual NCWM meeting in July but before the November 1 deadline for items to be included in the Interim Meeting Agenda, NCWM Publication 15. Unfortunately, this is a very busy time period for those involved in any way with harvest or the major post-harvest agricultural shows.

The decision as to whether there would be sufficient items to warrant having a Fall meeting was deferred until July 1. This decision will depend somewhat on the progress made by the EPO working group, on whether the proposed changes to H44 are ready to hand off to the S&T Committee by that time, and if any Sector issues arise in any of the Regional Meetings. If a Fall meeting is necessary,

it will be held during the week of September 21 or September 28. If a Fall meeting is not required, the next most likely time will be March 1999.

Three cities were selected as possible choices for the next meeting: St. Louis, Kansas City, and Chicago. The final choice will be depend on availability and least over-all expense to the NCWM. If a Fall meeting is necesssary, fax (or e-mail) notification will be sent to voting members as soon details are known. A normal meeting notice will be mailed shortly thereafter to all members and interested parties.

Appendix L

Example

NOTICE OF ONGOING CALIBRATION EVALUATION RESULTS
Issued: July 1, 1997
Certificate of Conformance No. XX-XXXA2

For:
Grain Moisture Meter
Type: Dielectric or Near Infrared
Make/Model: XXXX

Submitted By:
Company Name
Company Address
Contact Person

Condition of Notification:
Initial Evaluation (Phase I testing) of the *[Company, Make and Model of Device]* resulted in the issuance of an initial CC Number *XX-XXX*.

The *[Company, Make and Model of Device]* has participated in the phase II program for [XX years] and has entered the phase II testing for the [XXXX crop year].

[Provide explanation of the unresolved problems in the phase II program.]

Current Status:
Certificate of Conformance [XX-XXXA2] for the *[Company, Make and Model of Device]* has been issued a Notified status. Evaluation of the device in the Phase II program for the XXXX crop year resulted in the unresolved problems specified above.

A Notified status is assigned to Grain Moisture Meter Certificates when unresolved problems or deficiencies occur during the On-going Calibration Program (OCP) (Phase II). When a Certificate is assigned this status, a "Notice of Ongoing Calibration Evaluation Results" will be issued with the Certificate. The notice will describe the problems or deficiencies and the Certificate will designate the affected calibrations. Manufacturers of devices in this category must remain in the OCP (Phase II) actively working to correct the problems or deficiencies. Corrections must be made within 2 years of the date that the CC is assigned a Notified status. If problems or deficiencies are not corrected by that date, the Certificate will be withdrawn. Any meters manufactured after a Certificate is given a Notified status cannot be sold or placed into commercial service under a Notified certificate. Meters in service will be subject to individual State enforcement activities.

Other Status Types:
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 that participation must result in the issuance of valid calibration constants without unresolved problems or deficiencies occurring during the OCP (Phase II) testing. Grain Moisture Meter Certificates may also be assigned an Active status if: (1) the original manufacturer no longer manufacturers or remanufacturers 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.

NOTICE OF ONGOING CALIBRATION EVALUATION RESULTS
Issued: July 1, 1997
Certificate of Conformance No. XX-XXXA2

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).

A third party would be allowed to assume 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 manufacturer or re-manufactured. 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 re-manufactured, (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.

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.

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 problems or deficiencies occurring in the OCP (Phase II) are not resolved within 2 years of the date that a Certificate is assigned a Notified status. 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.

Historical Status of the *[Company, Make and model of Device]*

Phase II Testing Crop year	Testing concerns? Y/N	Most Recent CC #	Updated CC # Issued	Updated CC Valid Dates	Updated CC Status
[Company, Make and Model of Device] - Initial CC XX-XXX (Valid XXXX - XXXX)					Active
1995	N	XX-XXX	XX-XXXA1	1996 - 1997	Active
1995	Y	XX-XXXA1	XX-XXXA2	1997 - 1998	Notified
1997	TIP	XX-XXXA2	TIP	TIP	TIP

TIP=Testing in Progress

Appendix M

Memorandum of Understanding
Between
The National Conference on Weights and Measures, Inc.
And
The National Institute of Standards and Technology

This Memorandum of Understanding reaffirms the cooperation between the National Conference on Weights and Measures, Inc. (NCWM, Inc.) and the National Institute of Standards and Technology (NIST) "in securing uniformity in weights and measures laws and methods of inspection" in accordance with the National Institute of Standards and Technology Act. Starting in 1905, the Parties and their legal predecessors have jointly conducted annual meetings, which have come to be known as the National Conference on Weights and Measures (the "Conference"). The Parties agree to preserve this historical relationship through their continued joint sponsorship of the Conference. The NIST Office of Weights and Measures and NCWM, Inc., agree to continue to commit their resources to support the objectives of the Conference. Traditionally, the Director of NIST has served as the Honorary President of the National Conference on Weights and Measures, and the Chief of the NIST Office of Weights and Measures has served as the Executive Secretary of the Conference.

By this agreement the Parties reaffirm their long-term cooperation through the National Conference on Weights and Measures and in related activities. The Parties agree to enter into addendums to this Agreement on NTEP, management of the Conference, training, annual budget plans, and other matters of mutual interest, which will be reviewed annually.

Signed by the Parties this 14th day of July 1998.

Director, National Institute of Standards and Technology
Raymond G. Kammer

Chairman, National Conference on Weights and Measures
Steven A. Malone

Chief, NIST, Office of Weights and Measures
Gilbert M. Ugiansky

Chairman, NCWM, National Type Evaluation Program
Barbara J. Bloch

Counsel, National Institute of Standards and Technology
Michael R. Rubin

Chairman-Elect, National Conference on Weights and Measures
Aves D. Thompson

Report of the Laws and Regulations Committee

Karl H. Angell, Jr.
Director
West Virginia Weights and Measures

Reference
Key Number

200 Introduction

This is the Report of the Laws and Regulations Committee (Committee) for the 83rd Annual Meeting of the National Conference on Weights and Measures (NCWM.) It is based on the Interim Report offered in the Conference "Program and Committee Reports" (NCWM Publication 16), 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. 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, 1998 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), and 4 (1994). Revisions proposed by the Committee are shown in **bold face print** by ~~crossing-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 Index to Reference Key Items

Table B
Appendices

Table C
Voting Results

Reference Key No.	House of State Representatives		House of Delegates		Results
	Yes	No	Yes	No	
200 (Consent Calendar)	39	0	69	0	Passed
250-2	35	3	33	23	Passed
237-1	32	4	45	9	Passed
200 (Report in its Entirety)	40	0	68	0	Passed

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

210 NIST Handbook 130 - General

210-1 I Ensuring the Uniform Laws and Regulations are Identical to Federal Requirements

The Committee Chairman wrote to the Food and Drug Administration and requested that they issue final regulations on food labeling to implement the 1992 metric amendments to the Federal Fair Packaging and Labeling Act before the 1999 Interim Meetings. As of the 1998 Annual Meeting, the FDA had not responded.

221 Uniform Weights and Measures Law

221-1 W Retail Price Posting

Source: Central Weights and Measures Association (CWMA)

Discussion: The Uniform Weights and Measures Law (WML)does not require retailers to display the selling price of products for consumers to use in value comparison. As a result, jurisdictions do not have a standard to guide them if they choose to amend their laws to require price information for consumers. When prices are not required to be posted, consumers have difficulty making value comparisons. The CWMA would like to see a requirement to guide jurisdictions who want to adopt retail price posting laws included in the WML. CWMA submitted the following proposal..

Proposal: Amend 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 shall be clearly and conspicuously posted or displayed by the retailer prior to the sale of the commodity.**

Action: The Committee withdrew the issue as a result of comments received from the Food Marketing Institute (FMI). The FMI was 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, it may impose a costly burden on retailers but provide limited benefits for consumers. The Committee believes the intent of the proposal is only to have retailers post the price at which an item is offered for sale. If this is correct, the requirement could be met with either a shelf tag, sign, or by individually pricing each item.

The Committee requested that the CWMA work with representatives of the National Retail Federation, the Food Marketing Institute, and the International Mass Retail Association to develop this item. The Committee suggested that an informal work group be formed in the CWMA to further 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 develop recommendations on how retailers can provide better information on package labels and signs regarding discounts offered to frequent shopper club card holders.

231 Packaging and Labeling Regulation

231-1 W Requiring a Declaration of Responsibility to Include a U.S. Based Representative

Source: Western Weights and Measures Association (WWMA)

Discussion: Many imported products do not conform to the requirements of the Uniform Packaging and Labeling Regulation (PLR) and the Federal Fair Packaging and Labeling Act (FPLA). Typically, packages that are manufactured in the United States are brought into compliance by contacting the U.S. based responsible party stated on the package. The move to a global economy reduces the consumer and industry protections provided by FPLA when the responsible party for the non-compliant package is located outside of the United States. Factors that contribute to this are as follows: increased investigation time, cost, distance, and language barriers. These factors limit the ability of weights and measures officials to obtain corrective action or prosecute foreign firms. The Committee is also aware that packages with labeling violations that originate from both domestic and foreign firms have existed for years.

The WWMA solicited support for an amendment to the FPLA to require the name and address of a U.S. based responsible party on all packaged products. The National Association of Consumer Agency Administrators (NACAA) submitted comments supporting the WWMA proposal. The NACAA is concerned about a variety of violations including, but not limited to, short fill, mislabeled product, defective materials, and unsafe products, all of which can only be resolved through direct contact with a responsible party. The Industry Committee on Packaging and Labeling recommended that the Committee contact Federal Agencies (e.g., Customs, Federal Trade Commission, and the Food and Drug Administration) to request information about existing laws that deal with traceability (i.e., relation to the source of production and accountability for the product) before taking action on this issue.

Action: The Committee withdrew this item because it is impractical to seek adoption of national legislation to require a U.S. resident agent for all imported goods. Another reason is that most of the packages in the examples that the Committee has seen violate other Federal and State laws. The Committee encourages officials to hold retailers, distributors, and importers responsible for importing or selling mislabeled or otherwise noncomplying packages. The Committee believes this approach will provide an effective tool to correct most of the problems raised in the information submitted with the proposal. If retailers are held responsible for selling mislabeled packages, they will work with their suppliers to ensure that imported products comply with labeling laws.

231-2 I Use of Commas and Decimal Points in Net Quantity Declarations

Source: Laws and Regulations Committee

Background: The Federal Trade Commission (FTC) contacted the Committee for clarification about when to use commas and decimal points in net quantity declarations. FTC reported that some countries require that a comma be used instead of a point in decimal quantity indications (e.g., 1,87 instead of 1.87) on packaged goods. The same countries may require that the decimal point be used instead of a comma on declarations of one thousand or more (e.g., 1.000 instead of 1,000.) This issue is related to a cultural difference and not to the use of the metric system. The issue primarily affects exported goods, so it may impact U.S. firms that use a single label for domestic and export markets.

Action: The Committee learned from Mexican and Canadian officials that they will accept the use of either commas or decimals in net quantity declarations on imported products. The Committee believes that the U.S. should also accept the use of either commas or decimals in net quantity declarations if other countries permit the practice. The Committee believes this is necessary to accommodate global trade by reducing technical trade barriers. However, the Committee believes the U.S. position in decimal declarations should be to prefer the use of the point over the comma because it is the custom and practice of this and other countries as well. The Committee is carrying this issue forward as an informational item to develop a consensus position on this issue with the Federal agencies that are responsible for packaging and labeling. The Committee will solicit the assistance of Samuel Chappell, U.S. Representative to the Organization of International Legal Metrology (OIML) in requesting that the organization encourage all countries to adopt similar policies on this issue.

232 Method of Sale of Commodities Regulation

232-1 VC 2.4. Fireplace and Stove Wood

(This item was adopted as part of the consent calender)

Source: Central, Southern, and Western Weights and Measures Associations

Discussion: The Central Weights and Measures Association submitted a proposal to amend §2.4 to establish volume as the method of sale for flavoring chips which is the method packers generally use. The majority of comments the Committee has received on this issue supports adopting this method of sale for this product.

Committee Recommendation: Adopt the following amendments to the method of sale of commodities regulation.

Amend Section 2.4. Fireplace and Stove Wood to include flavoring chips:

> **2.4. Fireplace and Stove Wood. — For the purpose of this regulation, this section shall apply to the sale of all natural and processed wood, for use as fuel or flavoring.**

Amend Section 2.4.1. Definitions, by adding a definition for flavoring chips:

> **2.4.1. Definitions. --**
>
> **2.4.1.4. Flavoring Chips. — Any kindling, logs, boards, timbers, or other natural or processed, split or un-split wood that is, advertised, offered for sale or sold for flavoring smoked or barbequed foods.**

Amend Section 2.4.3. Quantity, by adding a new Section d. Flavoring Chips to require packages to be labeled by volume:

> **d. Flavoring Chips. — Flavoring chips shall be sold by volume.**

232-2 I Frozen and Canned Clams

Source: Western Weights and Measures Association

Discussion: This proposal requested that the NCWM petition the FDA to develop a standard of identity for whole and chopped frozen clams and canned chopped clams in liquid. A standard of identity would limit the amount of free liquid by weight in packages of clams, thereby facilitating value comparison and aiding enforcement efforts. Historically, the FDA has said that clams packed in water should be labeled by drained weight. These commodities are sold by net weight which includes the solids and free liquid in the package. The free liquid may be water or clam juice or a mixture of both. The amount of free liquid in both of these products varies among brands and the actual amount of solids is not declared on package labels. California officials found that the amount of free liquid in frozen chopped clams varies from as little as 10 percent to as much as 65 percent by weight.

Action: The Committee is carrying this issue forward as an informational item for further study. This action is based on comments received at the Interim Meeting from the Food Marketing Institute, several clam packing companies, and the National Fisheries Institute (NFI) which is the national trade association for the seafood industry. The Committee will work with the NFI and the Food Marketing Institute to develop recommendations on this issue for future consideration.

234 Voluntary Registration of Service Persons and Service Agencies

234-1 VC Section 9. Examination and Calibration or Certification of Standards - Eliminate References to Annual Testing Requirements

(This item was adopted as part of the consent calender)

Source: Southern Weights and Measures Association

Discussion: Calibration intervals for Class F field standards are usually specified by the metrology laboratory in each State. Typically, service agencies are required to submit their weights for annual recertification which is consistent with Section 9 of this regulation. In some situations, such as a grain elevator, test weights are kept in a protected environment so that annual recertification may be unnecessary. Because these weights are protected from weather and damage through handling, it is expected that they maintain accuracy much longer. The proposal recommended that Section 9 in this regulation be amended to eliminate the requirement for annual testing and place responsibility for specifying recertification intervals at the discretion of the Director. It was also recommended that when States develop recertification requirements, they require that weights used in fixed locations be recalibrated if they are removed prior to the expiration of their calibration certificate.

Committee Recommendation: Amend Section 9 by eliminating the annual testing requirement and insert a provision that the Director specify a test interval. The Committee is also clarifying that a laboratory's measurements must be traceable to NIST.

Section 9. Examination and Calibration or Certification of Standards and Testing Equipment.

All standards that are used for servicing and testing weights and measures devices for which competence is registered, shall be submitted to the director for examination and certification at intervals determined by the director. A Registered Serviceperson or Agency shall not use in servicing commercial weighing or measuring devices any standards or testing equipment that have not been certified by the Director. Equipment calibrated by another State weights and measures laboratory that can show **evidence of measurement** traceability to the National Institute of Standards and Technology will also be recognized as equipment **that is** suitable for use by Registered Servicepersons or Service Agencies in this State.

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

237-1 V Premium Diesel Fuel

(This item was adopted)

Source: Southern Weights and Measures Association (SWMA)

Background: The SWMA requested that the NCWM adopt a definition of "regular" diesel fuel (e.g., a cetane rating below 45) and "premium" diesel fuels (e.g., a cetane rating of 45 or more) so that these fuels can be accurately and clearly identified. One reason for this request was that refiners have requested State Motor Fuel programs to register "premium" diesel fuels that have been formulated to provide cleaner emissions or higher performance. A "Premium" Diesel Work Group (Work Group) was established by the Petroleum Subcommittee to develop a standard. This group includes representatives of State petroleum programs, fuel producers and the fuel additive industry. The Work Group completed its initial work and submitted the following recommendations to Committee.

Report and Recommendation

Background: As it developed its recommendation, the Work Group monitored the work of the American Society for Testing and Materials (ASTM) Committee D02 on Petroleum Products and Lubricants and the Engine Manufacturers Association to develop standards for "Premium" Diesel fuel. The Work group also sought input on its recommendation at several ASTM Committee D02 meetings. The Work Group has also invited a diverse group of interested parties to participate in its work. Invitations were extended to the Engine Manufacturer's Association (EMA), the American Trucking Association (ATA), and the Federal Trade Commission (FTC). The EMA and ATA declined to participate. The FTC decided it would be inappropriate for its staff to participate because the agency has regulatory authority over diesel fuel.

Development: The Work Group held an initial meeting early in 1997. Action teams were formed to review the available research data on the various properties considered to be the potential parameters that could be selected to define "Premium" diesel fuel. Numerous meetings of both the Work Group and the action teams were held throughout the year. The Work Group's guiding principle was to determine which properties would provide consumers with the most beneficial information. This approach allowed the Work Group to identify and evaluate six different performance properties.

The six properties evaluated were:

Energy Content	**Cetane Number**	**Fuel Injector Cleanliness**
Low Temperature Operability	**Lubricity**	**Thermal Stability**

To evaluate these properties, it was first determined if a recognized test method was available and considered how the property related to the ASTM D 975 diesel fuel specification. Then, functionality was determined through a literature search and available data as evidence that improving the fuel property may deliver a consumer benefit that exceeds ASTM D 975 diesel fuel. Next, to evaluate practicality, the Work Group determined whether State regulators could enforce each property. For this stage, ensuring that each criteria could be verified with either an ASTM or other recognized test procedure was critical. Finally, the Work Group assessed if fuel marketers could deliver product that meets the criteria under current distribution practices. The Work Group finally agreed that only five of the six properties considered should be recommended for defining "premium" diesel fuel at this time.

Those properties and a brief summary of each follows:

Energy Content: Diesel fuels with a higher energy content can provide higher power and increased fuel economy to the consumer. The proposed requirement to meet this criteria is a minimum 38.65 MJ / L, gross (138,700 Btu / gallon, gross) as measured by ASTM Standard Test Method D 240.

Cetane Number: Higher cetane diesel fuels have been shown to reduce white smoke, noise, and engine misfire. They provide easier cold starting and reduce some regulated emissions in many engines. The proposed requirement is 47.0, minimum, Cetane Number measured by ASTM Standard Test Method D 613.

Low Temperature Operability: Under low ambient temperature conditions, paraffinic compounds of diesel may precipitate as wax. This restricts fuel flow through filters which may result in engine stall. For a normal winter, providing a fuel that is capable of operating at lower ambient air temperatures than the ASTM guidelines require may benefit consumers in winter operations. To meet this criteria, the proposed requirement is a cold flow performance measurement of a maximum of 2 °C above the ASTM D 975 tenth percentile minimum ambient air temperature charts and maps by either cloud point as determined by ASTM Standard Test Method D 2500 or Low Temperature Flow Test (LTFT) as determined by ASTM Standard Test Method D 4539.

Thermal Stability: Diesel fuel is increasingly used as a coolant for high pressure fuel injection systems. This can thermally stress the fuel. In some cases, this stress can cause the fuel to degrade and form insoluble materials which restricts fuel flow through filters and injection systems. The proposed requirement to meet this criteria is a minimum 80 percent reflectance measurement using a green filter in the Octel America's Test Method No. F21-61 (180 minute, 150 °C.) This test method

is currently being prepared for presentation to ASTM for the review process necessary to be adopted as an ASTM Standard Test Method.

Fuel Injector Cleanliness: Diesel fuels that maintain fuel injector cleanliness can minimize fuel injector system deposits. These deposits may interfere with injector spray patterns and degrade fuel economy in some engines. The proposed requirement to meet this criteria is a CRC rating of 10.0 or less and a flow loss of 6.0 percent or less using the Engine Manufacturer's Association recommended Cummins L-10 Injector Depositing Test. When a detergent additive is used to meet this requirement, conformation of the ability of the fuel to meet this criterion would be based on its effectiveness in a test reference fuel (Caterpillar 1-K) in the L-10 test. Fuels that rely on the inherent cleanliness of the commercial fuel marketed would be subject to passing the L-10 test. A regulatory official would require the fuel producer or supplier to provide sample and test results once annually. The time and frequency of sampling and testing would be determined by the regulatory official.

Note that ASTM does not currently have a standard test method that confirms fuel injector cleanliness for diesel fuels. The Cummins L-10 test is the accepted industry standard. The necessary steps for developing the L-10 test into an ASTM Standard Test Method are now in the initial stages of development. Additionally, the L-10 test is quite expensive to run and requires a fuel sample of about 1192 L (315 gallons.) To make this more practical for the regulator to enforce, the recommendation allows for some options in confirming the fuel's compliance with the rule.

A brief summary of the options allowed by the proposed rule are as follows:

• For fuels using a detergent additive to meet the requirement, upon the request of the regulatory official, the marketer must provide test data indicating the additive being used has passed the L-10 test requirements when used with the CAT -1K reference fuel. The regulatory official shall also have the option to audit the amount of additive being used to ensure proper treatment of the base fuels in according to the additive manufacturers' recommended treatment rates. The audit would compare the gallons of premium diesel sold to the amount of additive purchased. In addition, upon the regulatory official's request a "Certificate of Analysis" of the physical properties of additive must be supplied to verify that the correct additive is being used. The intent of accessibility to a Certificate of Analysis is only to obtain general physical characteristics of the additive. This option does not require the marketer to reveal proprietary information regarding the additive supplied.

• If the regulatory officials choose to independently confirm the effectiveness of the additive, they can collect a sample of the additive and ship it to a laboratory that performs the L-10 test. The additive sample would be used with the CAT-1K reference fuel and tested for conformance to the regulation. In this situation, the regulatory authority would be responsible for the cost of transporting and testing.

• For fuels that rely on the inherent cleanliness of the commercial fuel marketed to pass the L-10 requirements or fuels that require a lower additive level than the amount required by the reference fuel, the regulatory official may request that the fuel be tested annually for conformation to the regulation. The time of fuel sampling and testing would be randomly determined by the enforcement official who can witness the sampling of the fuel and the sealing of the containers with security seals. If requested, the regulatory official shall be given confirmation that the seals were intact upon receipt at the testing laboratory. Test results would be provided to the regulatory official. The fuel supplier would be responsible for all costs for testing, sampling, and transporting. The enforcement official would pay for any additional tests conducted at the request of the official's request during the same one year period.

The Work Group realizes that enforcing the detergency requirement is not ideal for the regulator, i.e., a rapid, inexpensive ASTM test method easily run in any laboratory. However, it is important for the regulatory official to understand that fuel injector cleanliness is one of the more desired parameters for diesel fuel and one which many consumers require. As a result, it is one of the more frequently used enhancements on which marketers currently base premium diesel. The recommended premium diesel regulation will provide the regulatory official with optional methods to enforce of fuel injector cleanliness declarations. The regulation provides marketers with the ability to continue to use this parameter as a basis for the use of the term premium.

Another diesel fuel property that was considered but, at this time, not recommended for inclusion in the definition of premium diesel fuel is **lubricity**. Diesel fuels with inadequate lubricity in all probability will cause accelerated wear in fuel lubricated

rotary fuel injection pumps. Fuels with sufficient lubricity have been shown to protect fuel injection pumps. There are Currently, two ASTM Standard Test Methods to determine lubricity values of the fuel are available.

The test methods currently have large reproducibility and repeatability limits making enforcement questionable. Additionally, these methods have not been proven to be reliable in predicting the lubricity of fuels containing lubricity additives in all cases. Therefore, although the Work Group recognizes the performance value of adequate lubricity in diesel fuels, it deferred consideration of the lubricity property pending completion of development of more reliable test methods.

Committee Recommendation: The Committee recommends adopting the following amendments to the Uniform Engine Fuels, Petroleum Products, and Automotive Lubricants Regulation with the effective date to be January 1, 2000 to allow industry that is affected time to develop compliance programs or submit additional recommendations to further enhance the effectiveness of this regulation. This will also allow States ample time by which to adopt these amendments into regulation so that the labeling information is available to purchasers across the nation.

Amend Section 2.2. Diesel Fuel by adding a new Subsection 2.2.1:

2.2.1. Premium Diesel Fuel - Effective January 1, 2000, all products identified on retail dispensers, bills of lading, invoices, shipping papers, or other documentation such as premium, super, supreme, plus, or premier must conform to at least two of the following requirements:

(a) Energy Content - A minimum energy content of 38.65 MJ / L, gross (138,700 BTU/ gallon, gross) as measured by ASTM Standard Test Method D 240.

(b) Cetane Number - A minimum cetane number of 47.0 as determined by ASTM Standard Test Method D 613.

(c) Low Temperature Operability - A cold flow performance measurement which meets the ASTM D 975 tenth percentile minimum ambient air temperature charts and maps by either ASTM Standard Test Method D 2500 (Cloud Point) or ASTM Standard Test Method D 4539 (Low Temperature Flow Test, LTFT). Low temperature operability is only applicable October 1 - March 31 of each year.

(d) Thermal Stability - A minimum reflectance measurement of 80 percent using a green filter in the Octel America's Test Method No. F21-61 (180 minutes, 150 °C).

(e) Fuel Injector Cleanliness - A CRC rating of 10.0 or less and a flow loss of 6.0 percent or less as determined by the Cummins L-10 Injector Depositing Test.

1. When a fuel uses a detergent additive to meet the requirement, upon the request of the Director, the marketer shall provide test data indicating the additive being used has passed the Cummins L-10 Injector Depositing Test requirements when combined with Caterpillar 1-K (CAT 1-K) reference fuel. The Director may also request records or otherwise audit the amount of additive being used to ensure proper treatment of fuels according to the additive manufacturers' recommended treat rates.

1.1. Upon the request of the Director, the fuel marketer shall provide an official "Certificate of Analysis" of the physical properties of the additive.

1.2. Upon the request of the Director, the fuel supplier shall provide a sample of detergent additive in an amount sufficient to be tested with CAT 1-K reference fuel in a Cummins L-10 Injector Depositing Test. The regulatory agency requesting the sample shall be responsible for all costs of testing.

2. When a fuel marketer relies on the inherent cleanliness of the diesel fuel to pass the Cummins L-10 Injector Depositing Test or if the fuel requires a lower detergent

additive level than the amount required when the additive is used with the CAT 1-K reference fuel, the fuel marketer shall provide, upon the request of the Director, annual test results from an independent laboratory that confirms the fuel meets the requirements of 2.2.1. (e). The time of fuel sampling and testing shall be at the discretion of the Director. The Director may witness the sampling of the fuel and the sealing of the sample container(s) with security seals. The Director may request confirmation from the testing laboratory that the seals were intact upon receipt by the laboratory. The final test results shall be provided to the Director. All costs for sampling, transporting, and testing shall be the responsibility of the fuel supplier. If the annual test is in compliance, any additional testing at the request of the Director shall be paid for by the regulatory agency.

Amend Section 3.3. Diesel Fuel by adding a new Subsection 3.3.3.

3.3.3. Labeling Properties of Premium Diesel - All retail dispensers identified as premium diesel must display either:

1. a label that includes all qualifying parameters as specified in 2.2.1. Premium Diesel Fuel affixed to each retail dispenser. The label shall include a series of check blocks clearly associated with each parameter. The boxes for the parameters qualifying the fuel as premium diesel must be checked with all other boxes shall remain unchecked (a marketer may check as many blocks as apply) or,

2. a label that includes only the parameters selected by a marketer to meet the premium diesel requirements as specified in 2.2.1. Premium Diesel Fuel. In either case, the label must display the following words:

- **"Premium Diesel Fuel" in a type at least 12 millimeters (½ inch) in height by 1.4 millimeters (1/16 inch) stroke (width of type.)**

When applicable, as determined by the label option and qualifying parameters chosen by the marketer, the label must also display the following information and letter type size:

- **The words "Energy Content," "Cetane Number," "Low Temperature Operability," "Thermal Stability," and "Fuel Injector Cleanliness" in a type at least 6 millimeters (1/4 inch) in height by 0.75 millimeter (1/32 inch) stroke (width of type.)**

- **A declaration of the minimum Energy Content (minimum 38.65 MJ/ L gross [138,700 BTU/gallon]), if energy content is chosen as a qualifying parameter, in type at least 3 millimeters (1/8 inch) in height by 0.4 millimeter (1/64 inch) stroke (width of type.)**

- **The minimum cetane number guaranteed (at least 47.0) if cetane number is chosen as a qualifying parameter, in a type at least 3 millimeters (1/8 inch) in height by 0.4 millimeter (1/64 inch) stroke (width of type.)**

- **The date range of low temperature operability enhancement, (e.g., October-March,) along with the qualifying test method (ASTM D 4539 or ASTM D 2500), if low temperature operability is chosen as a qualifying parameter, in a type at least 3 millimeters (1/8 inch) in height by 0.4 millimeter (1/64 inch) stroke (width of type).**

For example:

Premium Diesel Fuel	
High Energy Content	☐
Cetane Number, 47.0 min.	■
Low Temperature Operability, (Oct.-Mar, LTFT)	■
Thermal Stability	■
Fuel Injector Cleanliness	☐

For example:

Premium Diesel Fuel

Cetane Number, 47.0 min.

Thermal Stability

Low Temperature Operability, (Oct.-Mar, LTFT)

- **The label must be conspicuously displayed on the upper-half of the product dispenser front panel in a position that is clear and conspicuous from the drivers' position.**

Amend Section 3.3. Diesel Fuel by adding a new Subsection 3.3.4.

3.3.4. Delivery Documentation - before or at the time of delivery of premium diesel fuel, the retailer or the wholesale purchaser-consumer shall be provided, on an invoice, bill of lading, shipping paper, or other documentation, a declaration of all performance properties that qualifies the fuel as premium diesel fuel as required in 2.2.1.

Amend Section 7. Test Methods and Reproducibility Limits by adding a new subsection for Premium Diesel.

7.1.1. Premium Diesel - The following test methods shall be used to determine compliance with the applicable premium diesel parameters:

a. Energy Content - ASTM D 240
b. Cetane Number - ASTM D 613
c. Low Temperature Operability - ASTM D 4539 or ASTM D 2500 (according to marketing claim)
d. Thermal Stability - Octel America F21-61 (180 minutes, 150 °C)
e. Fuel Injector Cleanliness - Cummins L-10 Injector Depositing Test

Amend Section 1. Definitions by adding the following terms (numbers will be assigned when the definition section is renumbered in alphabetical order.)

1.4x. Wholesale Purchaser Consumer -- means any person who is an ultimate consumer of gasoline, fuel methanol, fuel ethanol, diesel fuel, biodiesel, fuel oil, kerosene, aviation turbine fuels, natural gas, compressed natural gas, or liquefied petroleum gas who purchases or obtains the product from a supplier and receives delivery of that product into a storage tank.

1.xx. Energy Content. -- means the gross energy content or the heating value of diesel fuel as defined by its heat of combustion - the heat released when a known quantity of fuel is burned completely under specific conditions as determined by ASTM Standard Test Method D 240.

1.xx. Low Temperature Operability. -- means a condition which allows the uninterrupted operation of a diesel engine through the continuous flow of fuel throughout its fuel delivery system at low temperatures. Fuels with adequate low temperature operability characteristics have the ability to avoid wax precipitation and clogging in fuel filters.

1.xx. Thermal Stability. -- means the ability of a fuel to resist the thermal stress which is experienced by the fuel when exposed to high temperatures in a fuel delivery system. Such stress can lead to formation of insoluble gums or organic particulates. Insolubles can clog fuel filters and contribute to injector deposits.

1.xx. Fuel Injector Cleanliness. -- means a characteristic of the fuel which allows engine operation without fuel contribution to excessive injector deposits.

238 Interpretations and Guidelines

238-1 VC Guidelines for Verifying the Basis Weight of Communication and Other Paper

(This item was adopted as part of the consent calender)

Source: Western Weights and Measures Association (WWMA)

Discussion: In response to complaints from paper converters (firms which convert bulk paper into smaller sizes and forms), officials in the WWMA verified the identity and net quantity statements on a wide variety of paper. Officials found that some converters, in an effort to gain a competitive advantage, misrepresented the basis weight of paper. In 1994, the NCWM adopted a method of sale for packaged paper that requires converters to declare a basis weight that corresponds to the basis weight declared by the original paper manufacturer. When it adopted the method of sale, the NCWM recommended that officials work with industry to develop a test method to use in verifying the declared basis weight for all types of paper (see item 232-6, page 217 in the Report of the 79th NCWM, 1994). Officials from California worked with representatives of the paper industry to develop a gravimetric test procedure. Unlike other test procedures the NCWM has considered, this procedure is not to be used to verify the net quantity of contents of packaged paper which is labeled with dimensions (e.g., length and width) and count. Rather, the procedure is for use in verifying that the basis weight included in a statement of identity is not misleading. The Committee stresses that the procedure is for surveillance use only. It is not intended to be the final basis on which enforcement action can be taken. Instead, the test procedure is only used to identify potentially violative lots. Two alternative actions can be taken if the test results indicate that a lot is potentially violative. The first action is to review the documentation supplied to the converter by the original manufacturer to determine if any misrepresentation has occurred. The second action is to collect samples of the paper and test them according to the latest version of American Society of Testing and Materials Standard Method D 646 for "Grammage of Paper and Paperboard."

The Committee is presenting the test guideline in Appendix A as a voting item. Because the procedure is not used for net quantity determinations, the Committee decided not to include it in NIST Handbook 133. Instead, the Committee recommends that the test procedure be considered as a guideline and that it be added to the Interpretations and Guidelines

Section of NIST Handbook 130. Robert Atkins of Los Angeles County Weights and Measures at 562-940-8941 can assis in using this guideline.

Committee Recommendation: Amend the Interpretations and Guidelines Section by adding a new section 2.6.13 Guidelines for Verifying the Basis Weight of Communications and Other Paper as presented in Appendix A.

250 NIST Handbook 133

250-1 VC Revisions to Test Procedures

(This item was adopted as part of the consent calender)

Background: This was Item 240-2 in the Report of the 78th NCWM, 1993 (page 236) and Item 250-1 in the Report of the 79th NCWM, 1994 (page 222). In the NCWM's petition to the Food and Drug Administration (FDA) on November 9, 1992 States requested an exemption from pre-emption under Section 403 A(b) of the Federal Food, Drug, and Cosmetic Act to permit them to continue testing packaged foods using NIST Handbook 133, "Checking the Net Contents of Packaged Goods." Extensive revisions were made to the handbook at the 79th NCWM Annual Meeting, and these were published in Novembei 1994 in a 4th supplement to the handbook. Currently, the 3rd Edition of the handbook as amended in the 4th supplement are effective and being used in most jurisdictions. On March 4, 1997, the FDA published a proposal to adopt NIST Handbook 133 with the comment period closing on December 2,1997. However, the Committee does not believe that FDA will publish a final regulation in the foreseeable future. Therefore, the Committee is convinced that publication of a 4th Edition of NIST Handbook 133 should be its priority issue for 1998.

4th Edition of NIST Handbook 133 "Checking the Net Contents of Packaged Goods"

Action: At the Interim Meeting, Steve Malone, NCWM Chairman challenged the Committee to move forward with publication of a 4th Edition of NIST Handbook 133 because the current handbook format (e.g., the number of supplements) is confusing and difficult to use. The Committee agrees with the NCWM Chairman that drafting and publishing a 4th Edition of NIST Handbook 133 should be the Committee's top priority for 1998. The Committee will work closely with NIST to develop a draft of the 4th Edition incorporating the requirements of the 3rd Edition, Supplements 1, 2, 3, and 4, and requirements adopted at the 83rd Annual Meeting in July.

The Committee reviewed the test methods in the 16th Edition of the "Official Methods of Analysis of the Association of Official Analytical Chemists International (AOAC)" and identified two instances where either the test method or equipment specified in the procedure in the 3rd Edition of Handbook 133 is <u>not</u> identical to the equipment and procedure specified in the corresponding AOAC protocol used by FDA. These differences are identified and described below. The Committee recommends that NCWM adopt the following amendments based on the AOAC test procedures for inclusion in the 4th Edition of Handbook 133.

Committee Recommendation:

1. Amend the test procedures and equipment for fresh oysters and frozen shrimp to ensure that the test procedures are identical to the AOAC protocol used by FDA.

Section 4.16. Fresh Oysters by Volume

Section 4.16.1 Equipment in 3rd Edition of Handbook 133 specifies that a Number 8 mesh 8 or 12-inch sieve be used to drain the oysters. Amend this procedure to refer to the draining equipment specified in AOAC Official Test Method 953.11 Drained Liquid from Shucked Oysters.

> **Strainer for Determining the Amount of Drained Liquid From Shucked Oysters. Use as a strainer a flat bottom metal pan or tray constructed to the following specifications:**

- **Sides: 5 cm (2 inch)**

- **Area: 1900 cm^2 (300 square inches) or more for each 3.78 L (1 gallon) of oysters.**

- **Perforations:**

  - **Diameter: 6 mm (1/4 inch).**

  - **Spacing: 3.2 cm (1-1/4 inches) apart in a square pattern, or perforations of equivalent area and distribution.**

2. Section 3.13. Drained Weight for Frozen Foods -- Procedures for Frozen Shrimp and Crabmeat

Amend the test procedures in Section 3.13. Drained Weight for Frozen Foods -- Procedures for Frozen Shrimp and Crabmeat to ensure that they are identical to the procedures specified in AOAC Official Method 967.13 as shown below. When determining the drained weight of frozen shrimp and crabmeat, AOAC specifies the use of the test equipment and test procedure in AOAC Official Method 967.13 Drained Weight of Frozen Shrimp and Crabmeat. In this procedure, the product is immersed in water in a mesh basket or open container to thaw. The AOAC procedure calls for direct immersion of the product in the water (e.g., it is not placed in a plastic bag). Direct immersion does not result in the product absorbing moisture because the freezing process causes the tissue to lose its ability to hold water. The water temperature is maintained between a range of 23 to 29 °C (75 to 85 °F) by maintaining a constant flow of warm water into the container holding the product (e.g., a bucket is placed in a sink to catch the overflow, and warm water is continuously fed into the bottom of the bucket through a hose). After thawing, the product is drained on a sieve for 2 minutes and then weighed.

Test Procedure Frozen Shrimp and Crabmeat

a. Test Equipment Description and Specifications.

• Balance [with a minimum scale division = the maximum allowable variation for the labeled package quantity divided by 6 (MAV/6)].

• Partial Immersion Thermometer with 1 °C (2 °F) graduations and a - 35 to +50 °C (- 30 to +120 °F) accurate within ±1 °C (2 °F).

• Water source with a short hose and a 4-to 12-L (1-to 4-gal) per minute flow rate.

• Sink or other receptacle [i.e., 15 L (4 gal) bucket].

• Use a wire mesh basket or other container that is large enough to hold the contents of 1 package [e.g., a 5 lb (2.26 kg)box of shrimp] and has openings small enough to retain all pieces of the product (e.g, an expanded metal test tube basket lined with standard 16 mesh screen.)

• Number 8 mesh, 20 cm (8-in) or 30 cm (12-in) sieve.

• Stopwatch - Accurate to ±2 seconds in a 2-hour period.

b. Test Method

1. Place the unwrapped frozen shrimp or crabmeat in the wire mesh basket and immerse in a 15 Liter (4 gal) or larger container of fresh water at a temperature between 23 to 29 °C (75 to 85 °F). Submerge the basket so that the top of the basket extends above the water level.

2. Maintain a continuous flow of water into the bottom of the container to keep the temperature within the specified range.

3. As soon as the product thaws, determined by loss of rigidity, transfer all material to a sieve [20 cm (8-in) for packages less than 453 g (1 lb) or 30 cm (12-in) for packages weighing more than 453 g (1 lb)] and distribute it evenly over the sieve.

4. Without shifting the product, incline the sieve 30 degrees from the horizontal position to facilitate drainage, and drain for 2 minutes.

5. At the end of the drain time immediately transfer the product to a tared pan for weighing to determine net weight.

250-2 V Tare Procedures

(This item was adopted)

Source: Southern Weights and Measures Association and the Committee

Discussion: At the 79th NCWM in 1994, the NCWM adopted Item 250-1 Revisions to NIST Handbook 133 to incorporate the recommendations of the NIST Handbook 133 Working Group. One of the recommendations adopted was to require use of the "Alternative Tare Procedures" as the tare determination procedure for all products. When the 4th Supplement to NIST Handbook 133 was published in 1994 the core procedure was amended to incorporate the "Alternative Tare Procedures" from the 3rd Edition of Handbook 133. This change required that all official tests use "used dry tare" but does not prohibit the use of unused dry tare and tare lists to be used in audit tests. When gravimetric procedures are used, the inspector must use the first two (or three for glass and aerosol containers) packages of the randomly selected sample to determine an average tare weight unless the procedure requires additional samples because of excessive variation in the tare materials.

The change to require "used dry tare" has caused concern among retailers and several jurisdictions because of the impact on testing random weight packages of meat and poultry at retail stores. The industry concern is that the "used dry tare" procedure may increase destructive testing. This is a problem for retailers and officials because store personnel have to re-package product from packages opened for tare. Increased handling may result in product contamination. The officials concern is over the increased time required to conduct inspections and the fact that a few jurisdictions have to pay for opened packages. The Committee understands that some jurisdictions avoid these concerns by using "unused dry tare" to audit the inspection lot and then change to "used-dry tare" procedures if they anticipate taking action on the lot. The benefit of adopting the "used-dry tare" requirement is that it established a single national standard for tare determinations. Another reason is that it is the only type of tare that is available wherever and whenever packaged goods are tested. The "used-dry tare" procedure also increases inspection uniformity and accuracy. It also ensures that all products are inspected using a tare procedures that is consistent with the Food and Drug Administration's proposed rule on net contents verification. The Food Marketing Institute submitted comments supporting the Southern Region's proposal.

Action: The Committee recommends that Section 4. Tare Procedures be amended to include an exemption to the tare procedures. The exemption permits officials to use "dry-unused tare" for products that are inspected at the location where they are packaged and sold. The Committee also recommends adoption of the other amendments that clarify the tare procedures as presented below.

Committee Recommendations:

1. Amend the 4th Supplement of NIST Handbook 133 by inserting the following footnote on page 3-8 under Section 4. Tare Procedures.

Note: "Unused dry tare" samples may be used when testing meat, poultry, or any other product that is not subject to FDA requirements. These inspections are conducted at locations where the point-of-pack and point-of-sale are identical (e.g., supermarket meat case.)

Tare procedures for unused tare materials: randomly select two (2) unused dry tare samples and determine the weight of each sample. If there is no variation between the two (2) samples, proceed with test using the average of the two (2) samples. If you find a variation in the two (2) tare weights, select three (3) additional tare samples and compute the average weight of all five (5) samples."

2. Amend (i) in 4.Tare Procedures in § 3(4) on page 3-8 in the 4th Supplement of NIST Handbook 133 to include the guidance presented in bold-underlined type below. The new wording clarifies that the initial tare sample size is also the total tare sample size. This means no additional packages must be opened as tare samples when the sample size is less than 12 or the range of the tare weights is zero. This guidance corrects an oversight that was brought to attention following adoption of the new tare procedures in 1994.

> i. Determine (and record in box 12) the total number of packages to be opened for the determination of an average tare (See Note below), from either Table 2-3. Category A - Total Number of Package (n_t) to be opened for tare determination (pages B-3 and B-4) or, when testing meat and poultry products in plants subject to USDA requirements, Table 2-4. Category B -Total Number of Package (n_t) to be opened for tare determination (page B-4).
>
> **Note: the initial tare sample size is considered to be the total tare sample size when the sample size is less than 12 or the range of the tare weights is zero (0).**

3. Amend (f) in 4.Tare Procedures in § 3(4) on page 3-8 in the 4th Supplement of NIST Handbook 133 to include the guidance presented in bold-underlined type below. The new wording clarifies that when random weight packages are being tested, the range of package errors are used in place of the range of net weights. This guidance corrects an oversight that was brought to attention following adoption of the new tare procedures in 1994.

> f. Determine and record the "range of net weights" for the initial tare sample (R_t) in box 9 on the report form. **When determining the "range of net weights" (R_t) for random weight packages, the range is calculated using the "range of package errors," instead of the "range of net weights".** [The range for standard packages is the difference between the largest net weight value and the smallest **or, for random weight packages, it is the range of package errors, between the largest to the smallest, in the initial tare sample**. See Appendix G in the Third Edition for detailed instructions on determining the range.]

250-3 I Moisture Loss for Meat and Poultry Products

Background: See Item 240-7 on page 239 in the Report of the 78th NCWM for background on this issue. Several years ago, the Committee decided to develop a gray area for ice-packed poultry because this commodity continued to be the subject of numerous complaints. The Committee plans to develop gray areas on the following products.

1. Ice-packed bulk poultry.
2. Raw meat products (chopped beef, ground beef, hamburger, and beef patties.)
3. Cured pork products (hams, shoulders, and loins.)
4. Cured beef products (corned beef, corned beef brisket, and tongues.)
5. Ham patties, chopped ham, pressed ham, and similar products.
6. Dry salami and other meat or poultry products that lose moisture to the atmosphere.

U.S. District Court Ruling Invalidates "Water-Added" Rules for Poultry

On July 23, 1997, a U.S. District Court ruled as "arbitrary and capricious" the United States Department of Agriculture's (USDA) added water regulations that allows poultry to pick up as much as 8 percent water. This ruling will force USDA to issue new regulations to reduce the water retention disparity between meat and poultry. The Federal Judge said the Secretary of Agriculture could not adequately justify allowing poultry products (but not meat) to retain process water. However, the court rejected arguments that the moisture pick-up rules permitted economic adulteration. This decision will permit USDA to collect reliable data and establish new standards on water absorption. USDA is expected to issue a proposed regulation which will permit moisture retention in both meat and poultry products up to a specified limit. The proposed rule will require packers to place on the label a full disclosure statement indicating how much moisture products have absorbed. The current rules have been in effect since the 1960's. The Committee will provide further information to the NCWM membership as it becomes available.

Action: The Committee has placed this issue on hold pending the publication of proposed regulations on moisture pick-up in meat and poultry products by the United States Department of Agriculture (USDA).

250-4 I Maximum Allowable Variations 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 it is used in the calculation of acres per bag of seed and in the calibration of seeding machines. The Committee worked with members of the seed industry, trade associations, and other interested parties to develop a proposal for NCWM consideration. 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 insure the accuracy of electronic seed counters, and on developing uniform operational procedures for their use. Other issues studied were 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. The letter described their proposed test method for conducting counts on samples of 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 on 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 MAV's be permitted depending on the sample size.

Discussion: Due to this disparity between the recommended allowances determined by the two studies (Iowa State and AOSA), the Committee is keeping this issue as an information item. It recommends further review of the study methodologies and test results submitted by the interested parties. The Committee also encourages the ASTA and AOSA to resolve the differences in their recommendations and resubmit a mutually agreeable proposal for future consideration. Study disparities aside, 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, farmers would still find it useful and easily accessible. This approach reduces the need for weights and measures officials to devote resources to verify this declaration which the seed control officials could control as part of their other regulatory duties. The Committee believes this is an effective way to resolve this issue because seed control officials have the testing equipment and can often verify count declarations in a laboratory as part of the seed certification process.

Update: At the 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 that appropriate MAV for count. The Committee learned that both organizations have agreed to support a proposal for a 4 percent MAV on declared count for soybean and corn at the 1999 Interim Meeting. ASTA also urged the NCWM to adopt the AOSA sampling

procedures for seed and indicated that they want to work with the Committee to develop a gray area for different seed similar to those the NCWM has adopted for dry pet food and flour.

250-6 VC Assistance in Testing Operations

(This item was adopted as part of the consent calender)

Source: Western Weights and Measures Association (WWMA)

Background: When conducting inspections at point-of-pack locations and large warehouses, officials often find it necessary to ask the firm for assistance in moving pallets and selecting samples. If the storage, display, or location of any lot of packages requires special equipment or an abnormal amount of labor to inspect, the WWMA proposed that NIST Handbook 133 be amended to require firms to provide equipment or labor as requested by the official.

Committee Recommendation: Add the following requirement to NIST Handbook 133.

> **Assistance in Testing Operations. - If the storage, display, or location of any lot of packages requires special equipment or an abnormal amount of labor for inspection, such equipment, and/or labor shall be supplied by the owner or operator of the business as required by the weights and measures official.**

250-7 VC Test Procedure for Count

(This item was adopted as part of the consent calender)

Source: Northeastern Weights and Measures Association

Discussion: A jurisdiction found a problem in Chapter 5. Methods of Test for Packages Labeled by Count when they were verifying count on packages with 83 or fewer items. The procedure in Step 7 on the Worksheet on page A-9 is used to determine if the minimum division on the balance being used is fine enough to adequately distinguish individual piece weights adequately. For example, according to the formula in Step 7 the value calculated must be equal to or greater than the minimum division on the balance. The present formula (MAV/6 x {Weight of the Counted Items/Count in Package}) is not appropriate for packages with labeled count of 17 or fewer items because the MAV is zero which would give a result of zero. The NWMA also believes that the formula would pose a problem for packages with a labeled count of a many as 83 items. The NWMA recommends if each unit weighs at least 2 divisions, the balance should be considered acceptable for use. They proposed the following formula to calculate scale suitability requirements for packages with a labeled count of 83 or fewer items.

Committee Recommendation: Amend Chapter 5. Methods of Test for Packages Labeled by Count to include the following criteria:

• For packages with a labeled count of 83 or fewer items, use the formula:

0.5 x Weight of the Counted Items/Count in Package

• For packages with a labeled count greater than 83 items, use the existing formula:

MAV/6 x Weight of the Counted Items/Count in Sample

250-8 VC Test Procedure for Packages of Firewood

(This item was adopted as part of the consent calender)

Source: Western Weights and Measures Association

Discussion: The State of California cooperated with that State's firewood industry to develop standardized test procedures for use to verify bulk deliveries and packages of firewood. The procedures for packaged firewood were submitted by the Western Association for possible adoption by the NCWM. The procedures developed by California have been extensively tried and tested, and the Committee believes they are appropriate for inclusion in NIST Handbook 133.

Committee Recommendation: Adopt the procedure presented in Appendix B and include it in NIST Handbook 133.

250-9 I Bark Mulch Test Procedure

Source: Northeastern, Western, Central, and Southern Weights and Measures Associations

Discussion: A mulch manufacturer and a State jurisdiction tested a variety of mulch products to determine if the current design of test measures results in excessive product compaction. A report on the testing is available from the Committee's Technical Advisor. The primary concern listed in the report is that using specified test measures, typically 56.6 L (2 cubic feet) or 84.9 L(3 cubic feet), results in product compaction during tests to determine the net quantity of contents. The reported range of compaction found on a variety of products was from 4.2 to 11.1 percent. One solution to reduce the impact of compaction suggested by the report is to use a test measure with 28.3 L (1 cubic foot) compartments or build test measures that lay on their sides. North Carolina has experimented with a horizontal test measure which consists of a single container divided into three 1-cubic foot compartments. The compartment dividers and one end of the box are removable so that the mulch can be easily poured from the container. The State reported that compaction was reduced with the horizontal box. North Carolina also reported that they found that the severity of compaction in the vertical test measure was generally less than that found in the study that Ohio conducted.

Action: At the Interim Meeting mulch manufacturers and the National Bark and Soil Producers Association (NBSPA) made several presentations regarding the test procedure for mulch. The Committee heard conflicting information about the amount of compression that occurs with different types of mulch and about the effects on accuracy that different styles of test measures have. After much deliberation, the Committee decided against recommending any change in the test measure specifications. The Committee reviewed the NCWM's 1989 position (see Item 240-2 4.12 Mulch Test Procedure on page 122 of the Report of the 74th NCWM) when a similar recommendation to convert to a 28.3 L(1 cubic foot) box was considered. At that time, the NCWM rejected the proposal because the test data indicated that the cost of the additional inspection time outweighed the benefits obtained through the change. At the 1998 Interim Meeting, the NBSPA opposed the proposed change because it would violate the principle that the test measure replicate the package established in NIST Handbook 133 when the section was first adopted. The NBSPA also said the changes complicate the test procedure, and increased setup and inspection time (e.g., more leveling, more reading interpretation, more pouring/sifting more repetition.) Another concern was that a change in the test measure requirements would force States and industry to construct new measures and retrain personnel.

The Committee agrees with the NBSPA (see Item 250-10 below) that it is the Maximum Allowable Variation (MAV) requirement that forces manufacturers over-pack to avoid producing any bag that exceeds the 5 percent limit. The Committee believes that adoption of Item 250-10 will resolve the concern with the MAV requirement so this issue is being carried over as an information item.

Committee Comments on 4.12. Mulch Test Procedure

The Committee received many comments on the test procedure and measures and believes some of the information could eliminate some of the problems involved in testing mulch. Some of the comments related to test measure dynamics, mulch compaction and layering, box design criteria, and readability of the test results.

Test Measures

For several reasons, the design of the test measure affects the accuracy and repeatability of test results. Some of the factors include the effects of compaction, friction, readability, and the dynamics of the measure itself. For example, one factor is the amount of the mulch's surface area that is in contact with the box will change test results due to friction and the different settling and flowability characteristics of the products. Another factor is the readability of the test measure. The Committee agreed that the closest reading that can be taken on most mulch test boxes is 1.2 cm (one-half inch). The Committee recommends that all jurisdictions use the measure dimensions specified in the handbook and that the level gage be graduated in 1.2 cm (one-half inch) increments. If the measure has a clear front, the level gage should be placed at the back of the measure so that the inspector reads the indications over the top of the mulch. Ensuring that the mulch is level is another concern. The Committee recommends that inspectors be trained to exercise care in leveling the surface of the mulch prior

to reading and that the reading be taken from a position that minimizes errors caused by parallax. The Committee also recommends that when lines are etched or marked in boxes, the lines be extended to all four sides of the measures except for those with clear fronts where lines could be included on only three sides. The Committee believes this will improve accuracy in reading the mulch level. The Committee also recommends that a line indicating the MAV level also be marked to reduce the possibility of reading errors when the level of the mulch is at or near the MAV.

The Committee also learned that situations exists where inspectors round indications up or down when the level of the mulch is not level with a marked line. To increase uniformity in testing when these situations occur, the Committee recommends that inspectors round the value up to the higher increment. This will ensure that reading errors always benefit the packer and will reduce some of the concern over the readability of the measures.

Hand Sifting of Mulch

The Committee would also like to clarify when mulch should be sifted by hand so the effects of layering, which reduces volume, can be minimized. In 4.12.2. Procedure, the following note appears:

> *Note: Some types of mulch are susceptible to clumping and compaction. Steps should be taken to ensure that the material is loose and free flowing when poured into the test measure. Gently rolling the bag before opening may reduce the compaction of material; using your hands to sift the material as it pours into the measure may also reduce clumping.*

The Committee recommends that to reduce compaction, all bags should be "gently " rolled and shaken before being opened The Committee stresses that hand sifting should be used only when the mulch does not pour freely from the bag or it falls out in clumps (e.g., when moisture content is high and the product sticks together.) Sifting by hand can cause some products to fall into the measure and compress more than if they are simply poured from the bag.

250-10 VC Bark Mulch, Soils, and Organic Products - Maximum Allowable Variations

(This item was adopted as part of the consent calender)

Source: Northeastern Weights and Measures Association (NWMA)

Discussion: The National Bark and Soil Producers Association (NBSPA) has requested an increase in the number of Maximum Allowable Variations (MAV) permitted for bark and organic products such as potting soil, compost, and peat. The NWMA also requested that the NCWM adopt a 5 percent MAV for soils sold by volume.

Background: In 1996, a study of the net contents of packaged mulch was conducted by a number of State jurisdictions. The study found that about 80 percent of the lots failed to meet the requirements of NIST Handbook 133. Although most of the lots failed to meet the average requirement, a large proportion of the lots failed to meet the individual package requirement. In response to the survey results, the NCWM, NIST, and NBSPA conducted training programs (including instruction in good packaging practices and the NIST Handbook 133 test procedures) for over 100 plant managers and Weights and Measures Officials. In 1997, several States conducted another study which revealed that the level of non-compliance was 20 percent.

Following the first study, the NCWM, NIST, and NBSPA examined data on the packaging capability of mulch manufacturers and inspection reports to determine if the MAVs for mulch and soils were appropriate. The studies revealed that packages of mulch and soil exhibit poor measurement repeatability because of inherent product characteristics. These include irregular particle sizes and shapes, moisture content, compressibility, and other factors. Small and uniform particles (e.g., sugar or flour) have high flowability and measurement repeatability. Particles which are large and irregular in size(e.g., soils and mulches) have poor flowability and measurement repeatability. According to the NBSPA, mulch and soil products also exhibit pore space randomization so that settling, shaking, and random order of particles affects the volume. Product stickiness, stringy particles, organic gums, pliability, and compressibility are other factors which affect measurement accuracy and repeatability.

Based on the information the Committee received, it is apparent that although operators can control average fill, they cannot control bag-to-bag variations to eliminate all MAVs even when good manufacturing practices are used. This is due to the material factors listed above. The Committee is also aware that some inspectors ignore occasional MAVs in sample lots when the average requirement is met even though this practice contradicts Handbook 133 requirements. To address this issue, the NBSPA recommended that Handbook 133 be amended to provide for (1) a 5 percent MAV for organic products such as

potting soil, compost, and peat sold by volume, and (2) one MAV be permitted for every 12 packages in a sample. As mentioned in 250-9, the Committee believes adopting these NBSPA recommendations will address the concerns over measurement accuracy and MAVs that most affect industry.

Committee Recommendation: Amend § 2.13.3. Mulch by (1) changing the title to include soils, and (2) add a new sentence to allow one MAV for each 12 packages in a Category A inspection sample. Amend §4.12 by (1) changing the title to include soils and (2) add a definition for soils.

2.13.3. Mulch and Soils Sold by Volume

A MAV of 5 percent of the declared quantity shall be applied to mulch and soil sold by volume. Mulch and soil with a net quantity in terms of volume shall be permitted to have one package exceed the 5 percent MAV for every 12 packages in a sample (e.g., 1 MAV is allowed in a sample of 12 packages; 2 MAVs are allowed in a sample of 24 packages; 4 MAVs are allowed in a sample of 48 packages.) However, the average fill of a randomly selected sample shall meet the average requirement of the Category A Sampling Plan.

4.12. Mulch and Soils Sold by Volume

Mulch is defined in the Uniform Regulation for the Method of Sale of Commodities as "Any product or material except peat or peat moss that is advertised, offered for sale, or sold for primary use as a horticultural, above-ground dressing for decoration, moisture control, weed control, erosion control, temperature control, or other similar purposes."

Soil is defined as any product or material, except peat or peat moss that is advertised or offered for sale, or sold for primary use as a horticultural growing media, soil amendment, and/or soil replacement.

250-11 VC Test Procedure for Measuring Mulch and Soils Sold by Volume

(This item was adopted as part of the consent calender)

Source: Northeastern Weights and Measures Association

Discussion: The National Bark and Soil Producers Association (NBSPA) submitted a test procedure to determine the net quantity of contents in packages of soil sold by volume. Soil, excluding peat or peat moss,as defined in Item 250-10 above, is any product or material, that is advertised, offered for sale, or sold for primary use as a horticultural growing media, soil amendment, and/or soil replacement.

Committee Recommendation: The Committee recommends that §4.12.1 Equipment and §4.12.2 Procedure be amended as presented below.

4.12.1 Equipment

a. Package Volumes Equal To or Greater Than 28.3 L (1 cubic ft., 25.7 dry quarts)

Construct a test measure using materials that will not bulge (for example, use 1.2 cm [½-inch] marine plywood) when filled with ~~mulch~~ material. Interior dimensions should be 22.8 cm (9 inches) by 40.6 cm (16 inches) by 121.9 cm (48 inches) high with 2 opposite inside walls of the measure marked or scribed at 1.2 cm (½-inch) intervals. Other interior dimensions are acceptable as long as the test measure approximates the configuration of the package under test (e.g., 30.4 cm (12-inch) by 30.4 cm (12-inch) cross section). Test measure height may also be reduced from 121.9 cm (48 inches,) but this will restrict the maximum size of the package that can be tested. A plexiglass sidewall which may need to be reinforced is useful for determining the level of fill. Each 1.2 cm (½ -inch) depth of the test measure is equivalent to 1179.8 mL (72 cubic inches) of volume in the 22.8 cm (9 inch) by 40.6 cm (16-inch) or 30.4 cm (12-inch) by 30.4 cm (12-inch) configurations.

b. Package Volumes Less Than 28.3 L (1 cubic ft., 25.7 dry quarts)

Construct a test measure using materials (for example, 1.2 cm [½-inch] plywood) that will not bulge when filled with material. Interior dimensions should be 20.3 cm (8 inches) by 20.3 cm (8 inches) by 73.66 cm (29 inches) high, with 2 opposite inside walls of the measure marked or scribed at 1.2 cm (½-inch) intervals. Other interior dimensions are acceptable as long as the test measure approximates the configuration of the package under test and do not exceed a base configuration of 20.3 cm (8 inches) by 20.3 cm (8 inches). Test measure height may also be reduced from 73.66 (29 inches), but this will restrict the maximum size of package that can be tested. A lexan or plexiglass sidewall is useful for determining the level of fill, but may need to be reinforced. Each 1.2 cm (½ inch) of depth of the test measure is equivalent to 524.3 mL (32 cubic inches) of volume in the 20.3 cm (8 inches) by 20.3 cm (8 inches) configuration.

4.12.2. Procedure and Maximum Allowable Variations (MAV). - Determine inspection lot, fill out report form heading, and select the random sample. No tare sample is needed. A MAV of 5 percent of the declared quantity shall be applied to mulch and soil sold by volume. Mulch and soil with a net quantity in terms of volume shall be permitted to have one package exceed the 5 percent MAV for every 12 packages in a sample (e.g., 1 MAV is allowed in a sample of 12 packages, 2 MAVs are allowed in a sample of 24 packages, and 4 MAVs are allowed in a sample of 48 packages.) However the average fill of a randomly selected sample shall meet the average requirement of the Category A Sampling Plan.

250-12 I Test Procedure and Labeling Requirements for Natural Sponges and Chamois

Source: Southern Weights and Measures Association

Background: A firm which processes and sells chamois leather and natural sea sponges has submitted information indicating that many of the these products do not bear accurate size declarations and that the area declared on some chamois products may be misrepresented. The information was collected from retail store surveys conducted in several States. The firm requested that weights and measures officials inspect these products and enforce existing labeling requirements so that consumers can make value comparisons. One concern is the need for a recognized test procedure for chamois. Most chamois are irregular in size and shape which makes area determinations difficult. Handbook 133 has no procedure to determine the area of leather products. A 1997 procedure published by the Sponge and Chamois Institute, is available to use until the NCWM can adopt its own standard. The industry test procedure is based on the measurement standards contained in a Federal Specification (KK-C-300b) that the Department of Defense has used for more than 50 years to measure leather products. The Specification includes two procedures to determine area. One is a gravimetric procedure, and the other involves the use of a template made of graph paper to determine the area.

Action: At the Interim Meeting, representatives of the Sponge and Chamois Institute, Inc. and the firm who submitted the information made presentations on the current measurement and labeling practices of their industry. A representative of the Federal Trade Commission (FTC) who attended the meeting, indicated that FTC would work with NCWM to develop guidelines on labeling these products. The Committee will work with the Sponge and Chamois Institute and the FTC to provide guidelines on the appropriate labeling requirements for these products and develop a test procedure for use in verifying area declarations.

250-13 W Moisture Loss for Pasta and Rice

Action: The Committee withdrew this item regarding the development of moisture allowances for pasta and rice products pending action by the Food and Drug Administration on a final regulation regarding net quantity of contents.

250-14 W Liquefied Petroleum Gas (LPG) Packaged in Cylinders

Source: Southern Weights and Measures Association

Discussion: Several States expressed concern that information on the changes in filling practices and net contents declarations brought about by the introduction of a new overfill protection device for cylinders may not be adequately relayed to sellers and consumers. The Committee will consider how to best communicate the information to consumers and solicit the support of the National Propane Gas Association.

Background: At the 1997 Interim Meeting, the National Propane Gas Association (NPGA) presentted concerns about the national implementation of new regulations and standards for small cylinders (i.e., those with a water capacity of between 1.8 kg (4-lbs) and 18.14 kg (40-lbs) used to deliver packaged LPG to consumers. The new safety regulations require that more than 60 million small LPG cylinders currently used be modified to include a new Overfill Prevention Device (OPD) by 2002. These new OPDs will prevent cylinders from being filled to more than 80 percent of water capacity. The purpose of the requirement is to ensure that cylinders have room for product expansion as the temperature increases. In most areas of the U.S. the OPDs will restrict packers to filling a 9 kg (20-lbs) cylinder with no more than 8.1 kg (18-lbs) of LPG for home use. These cylinders include those used for barbecue grills, heating units, and some recreational vehicles. However, ambient temperatures are moderate in some areas, so packers can put more than 8.1 kg (18-lbs) of LPG in the cylinder. In areas with higher temperatures, no more than 8.1 kg (18-lbs) can be dispensed into cylinders. The actual amount of LPG any container will hold varies. Sellers must educate consumers about the net quantity of contents of the cylinders they sell. The Committee does not believe any changes are needed to NIST Handbook 130 or to Handbook 133.

Action: Bill Butterbaugh of the National Propane Association (NPA) reported to the Committee that NPA continues to educate members of the industry about the OPDs. Mr. Butterbaugh indicated that NPA decided that one step to educate sellers and consumers about the change is to end the customary practice of calling the cylinders "20 pounders"and instead refer to them as "grill cylinders." It was the consensus of the Committee that these cylinders should be treated and tested as any other consumer package. The net contents must be accurate regardless of the addition of the OPD. Also, inspectors should recognize that the stamped or stenciled tare weight on the cylinders may be inaccurate and need to be updated. The NPA reported that it will continue to educate its members and others in the industry and will cooperate with the NCWM to resolve labeling and net quantity of contents issues as they arise.

250-15 W NIST Voluntary Product Standard PS 1-95 "Construction and Industrial Plywood"

Source: Laws and Regulations Committee

Discussion: The Committee received a request from the U.S. Department of Commerce sponsored Standing Committee for Voluntary Product Standard (VPS) PS I-95 to amend NIST Handbook 133 to recognize the accuracy provisions and tolerances of the VPS for plywood. Responding to a consumer complaint about the thickness of plywood sheeting, one jurisdiction conducted a survey in several retail outlets and found that the labeled 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 pertains to construction and industrial plywood and includes requirements for dimensions and tolerances, moisture content and grade marking. The manufacturers involved 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 also notified that the thickness and dimension tolerances specified in the VPS are not consistent with the maximum allowable variations specified in NIST Handbook 133 and that a VPS does not pre-empt State or local requirements.

Action: At the Interim Meeting, representatives of the plywood and hardwood industries presented information on the current measurement and labeling practices of their industry. The Industry representatives requested that the Committee defer action on this item until the various lumber industry trade associations can develop a consensus proposal for NCWM consideration The Committee agreed to withdraw this issue and provide technical assistance to the industry as they develop a proposal.

260 Other Items

260-1 V Committee Policies on Agenda Issues

(This item was adopted)

Source: Laws and Regulations Committee

Discussion: The Committee recommends changes to the NCWM's policy about placing issues on the Interim and Annual Meeting Agendas. One of the main questions was whether issues have to be approved by one or two regional associations prior to being placed on the Interim Meeting Agenda. The current policies are stated in Publication 3, Interpretations and Guidelines under Policy 1.1.1., Committee Agenda Items, Submission and Management. However, the policy, which is not specific concerning the role of the regional associations in developing issues, has not been followed. Currently, the policy only "encourages" use of the regional associations (1.c.) to advance issues to the national level. It is also vague in describing requirements for the acceptance of "priority" agenda items.. The Committee, is also concerned with the requirement that the "unanimous" consent of the NCWM (6.b.) be obtained before a "priority" issue can be considered at an Annual Meeting is too restrictive. The Committee gathered comments on this proposal during a joint-public hearing with the Specifications and Tolerances Committee. Several members indicated that the present system works fine and that no changes were needed. Others expressed concern that requiring issues to go through one or two regional associations would be a burden to individuals, jurisdictions, or companies that could not afford to attend the meetings. Another concern was that the Committee would create policies that will hinder the standards development process instead of improve it. However, an informal poll of attendees indicated that a majority favored the proposed revisions to the current policy.

Action: A joint working session with both Committees was held to resolve the differences between the proposals the two Committees presented in the Interim Meeting Agenda. The Committees agreed that all issues coming before the Conference must be approved by at least one regional association whenever possible. The Committees also reaffirmed November 1 as the deadline to submit an issue to be included on an the Interim Meeting Agenda. The Committee proposes that any issue approved by at least one regional association and received by the Executive Secretary by the deadline will be automatically placed on a Committee's Interim Meeting Agenda. The Committees also agreed there should be a process by which it can place an issue on the Interim Meeting Agenda when it is impossible or impractical to have it considered by a regional association. The Committees developed criteria for "screening" issues (e.g., "priority" issues) received by the deadline that have not been approved by a regional association. If the issue does not meet the criteria presented below, it will not be included on the Committee's Interim Meeting Agenda. The issue may be returned to the submitter with a recommendation that it be presented at a regional association meeting, presented on a Committee's agenda as a discussion item (see below for an explanation of this classification), or be rejected. If these criteria are met it was agreed that a majority vote by the Committee would be sufficient to include such issues on the Interim Agenda. The Committees will also use this criteria to evaluate issues received after the deadline that have not been approved by a regional association. When this situation has arisen in the past, the person who submits the proposal sometimes considers it to be an "emergency" issue. For issues received after the deadline, only those the Committee finds to be issues of national "priority" will be added to a Committee's agenda. If the issue does not meet the criteria presented below, it will not be included on an agenda.

(1). Issues must have significant legal impact on weights and measures laws and/or regulations involving the following:

(a) court cases/attorney general opinions; or (b) pre-emption by Federal statute or regulation; or (c) conflict with international standards; or (d) be related to urgent issues or regulations which could affect health and safety.

(2). Committees will also contact parties who are potentially affected by a proposed change (trade associations, industry, and consumer groups,) for input on an issue and consider their views in evaluating issues.

Classifications for Agenda Items

Both Committees discussed the need to establish a process for disseminating information on issues which may have merit, but insufficiently developed for Committee action. Past practice for handling these issues has been to either "carry" them forward as informational issues or withdraw them. Committee members felt that carrying undeveloped information items drains Committee resources. The Committee also believes that withdrawn items are often prematurely discarded despite

the valuable work that has gone into developing them. The Committees were also interested in providing a mechanism to let people know about issues that are developing in different localities or in the regional associations. The Committees agreed to recommend a new "Developing" designation to provide flexibility to notify the originator, that the issue, is not adequately developed for action at the national level. The Committees believe "Developing" issues should be submitted by the regional associations with a recommendation that they be presented as "D" issues on the national agenda. The Committees will present ("D") issues in list form at the end of their reports and include a point of contact so that the interested parties can obtain additional information. No comments will be taken on a "Developing" issue, unless the Committee agreed to receive the new information in advance of the hearing. In these cases, the Chairman will announce in advance that an issue will be discussed in the session. The use of this (D) designator is seen as an issue management tool, as well as a way to keep the membership informed of new issues.

Communications Between the National and Regional Committees

The Committees also recognized that often a communication gap exists between the national and regional committees. This can result in misinterpretations of a national Committee's positions and incomplete or late regional agendas or reports. This lack of communication has resulted in a Conference member or regional association missing the deadline for agenda consideration at the NCWM Interim Meeting. This problem could be reduced if a regional's NCWM Committee member also served on the appropriate regional committee. An additional recommendation is that regional reports include discussions (both pro and con) on each issues, indicate votes for and against a proposal, and include a recommendation of the action the national Committee should take. For example, it would help the national committees to know if a regional voted to carry an item forward as a "developing" issue, agreed that it should be withdrawn, or agreed that it should be a voting item at the next annual meeting.

Committee Recommendations:

1. Replace Policy 1.1.1. Committee Agenda Items in NCWM Publication 3 - Policy, Interpretations and Guidelines, with the revised policies presented in Appendix C.

2. Recommend that all NCWM standing committees use the action term, "Developing," to identify issues presented for additional study at the regional level to inform the membership of emerging issues.

3. Recommend that the regional associations place NCWM standing committee members on their respective committees as voting or ex-officio members to improve communications between the associations and the national committees.

K. Angell, Jr., West Virginia, Chairman

R. Andersen, New York

S. Morrison, San Luis Obispo County, California

M. Pinagel, Michigan

R. Williams, Tennessee

Associate Membership Committee Representative: Paul Zalon, Nestle USA

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

Petroleum Subcommittee: Randy Jennings, Tennessee, Chairman

Canadian Technical Advisors: B. Lyng, J. Watters

NIST Technical Advisor: T. Coleman

Committee on Laws and Regulations

Appendix A

Guideline for Verifying the Basis Weight of Communication and Other Paper

2.6.13. Guideline for Verifying the Basis Weight of Communication and Other Paper

2.6.13.1. Equipment

• Linear measure recommended in Section 2.6.13.1. Equipment.

• Scale with a minimum division of 0.5 g (0.001 lb) or less.

• Scientific calculator with a sample standard deviation function.

2.6.13.2. Scope and Recommended Enforcement Approach. - Paper is manufactured in various basis weights for use in different applications (e.g., copy paper can have a basis weight of 18 or 20 lbs.) Basis weight is part of the product identity and not a declaration of net contents. This procedure is used to verify the basis weight declared on package labels. If the tested packages in a sample do not have an average basis weight equal to or greater than the labeled basis weight, the inspection lot may be violative. A potentially violative lot should be placed "off-sale" until the owner provides documentation to confirm that the labeled basis weight corresponds to the basis weight declared by the original manufacturer. If documentation is not provided, the inspection lot should remain "off-sale" until the basis weight declaration is corrected.

2.6.13.3. Basis Weight. - The basis weight of paper is the designated fixed weight (measured in grams or pounds per specified area) of <u>one</u> ream in basic sheet size from which the paper was made. This permits the confirmation of basis weight by linear measurement and gravimetric testing. This procedure is designed to test the various types, size, count, and basis weights of packaged paper currently in the marketplace. Table 1 lists the basic size for common types of paper. A "ream" equals 500 sheets of basic size, a ream of tissue paper is only 480 sheets. Each of the standard categories of paper products shown in Table 1 has a different standard basic size for an individual sheet of paper; therefore, each has a different area. If the paper product of concern does not appear in Table 1, refer to Section 2.6.14.2. Although there are basic sizes, paper is packaged and marketed in various sizes and counts. The net weight of packaged paper can be determined from the label information using the General Formula for Sheet Paper. For roll paper ,use one (1) for the sheet count.

General Formula for Sheet Paper

$$\frac{PA \times BW}{BSS} \times \frac{SC}{500} = TNW$$

Where:

PA = area of one sheet of paper

BW = labeled basis weight

<u>BSS</u> = area of basic sheet size from Table 1.

SC = package sheet count

TNW = target net weight of paper

2.6.14. Test Procedure. - The following gravimetric, measuring, and counting procedures shall be used to determine if packages are accurately labeled. Procedures are also provided for verifying net quantity of content declarations for count and dimensions (e.g., length and width.)

2.6.14.1. Sample Selection. - Select a sample from an inspection lot using Table 2-1 Sampling Plans of Category A (page B-2.) Determine an average tare weight in accordance with 4. Tare Procedures in Section 3 Core Method for Checking the Net Contents of Packaged Goods in the 4th Supplement.

2.6.14.2. Determine Net Weight of Nonbasic Size Paper.-Verify the basis weight declared on a package using the following gravimetric procedure:

a. Record the following information from the package label on a worksheet. (See Figure 1 for a sample label.)

1. Type of Paper (TP)
2. Length (L)
3. Width (W)
4. Package Sheet Count (PSC)
5. Basis Weight (BW)
6. Basic Size Sheet (BSS)

Example

White Copy Paper
75 g/m² (20 lb) Bond

Size: 216 mm x 279 mm (8½ in x 11 in)

Basis Size: 43.1 cm x 55.8 cm (17 in x 22 in)

Count: 500 sheets

Figure 1. Sample Label

b. Compute the Target Net Weight (TNW) for the sample packages using the General Formula for Sheet Paper.

Basis Weight Worksheet (see Figure 1)

Type of Paper (TP):	*Copy Paper*
Length (L):	*11 in*
Width (W):	*8½ in*
Area of Sheet (LxW):	*93.5* in²
Package Sheet Count (PSC):	*500*
Basis Weight (BW):	*20 lb*
Basic Size Sheet (BSS):	*17 in x 22 in*
Area for BSS from Table 1:	*374 in²*

Use the General Formula to compute Target Net Weight (TNW):

$$\frac{93.5 \times 20}{374} \times \frac{500}{500} = 5 \text{ lb}$$

Target Net Weight (TNW) = 5 lb

c. Determine the average net weight of the sample packages. (Do not use sample error limit calculations.) If the average net weight is not equal to or more than the Target Net Weight, go to Section 2.6.14.3. to determine if the labeled basis weight (BW) is correct. If the average net weight is equal to or more than the labeled basis weight, the sample passes.

2.6.14.3. Determine Basis Weight. - This procedure is used to identify potentially violative packages. If the Average Basis Weight (ABW) for the sample determined by this procedure is not equal to or greater than the labeled basis weight, other steps must be taken. Moisture affects the weight of paper, but the moisture content of paper can only be determined in a measurement laboratory according to American Society of Testing and Materials D 646 - 95, "Standard Test Method for Grammage of Paper and Paperboard (Weight Per Area Unit.")

a. Verify basis weight according to the following steps:

i. Identify the paper type from Column 1 in Table 1, and record the area for the paper type from Column 2

ii. Select a sample of paper from each of the tare sample packages. Use a sample of exact count to eliminate the possibility that the packages are short count.

- For packages with sheet count of 500 or more, use 100 sheets.

- For packages with 100 sheets or less, verify the sheet count and use all of the sheets, or

- For packages with more than 100 but less than 500 sheets, use 100 sheets.

iii. Use a basis weight work sheet and determine the number of basic size sheets the paper sample represents with the following formula:

$$\frac{AREA}{A} \times EC = ENBSS$$

Where:

A = area of basic sheet size from Table 1

AREA = area (l x w) of one sheet of paper

EC = exact sheet count of sample

ENBSS = equivalent number of basic size sheets

iv. Determine the actual basis weight:

$$\frac{NW \times RC}{ENBSS} = BW$$

Where:

ABW = basis weight

ENBSS = equivalent number of basic size sheets from step iii.

NW = net weight of sample

RC = Ream Count (500; for tissue paper use 480)

Table 1. Common Types of Paper

Paper Type	Area Square Units
Bond, Ledger, Thin, and Writing	2412 cm (374 in)
Manuscript Cover	3599 cm (558 in)
Blotting	2941 cm (456 in)
Cover	3354 cm (520 in)
Blanks	3974 cm (616 in)
Printing Bristols	4135 cm (641 in)
Wrapping, Tissue, Waxed, Newsprint and Tag Stock	5574 cm (864 in)
Book, Offset, and Text	6129 cm (950 in)
Index Bristol	5019 cm (778 in)

v. Repeat this step for each paper sample and average the basis weights from each package to obtain an Average Basis Weight (ABW.) If the ABW is less than the labeled basis weight, or if the difference between the basis weight of the sample packages is more than 1 scale division, take a sample of paper from each of the remaining packages (e.g., the rest of the sample of 12, 24, or 48 packages) and follow step a.

vi. Weigh each sub-sample. If the basis weight from step iv differs from the labeled basis weight, re-calculate the target net weight by using the general formula for sheet paper. Use the BW computed for the sample packages in steps iii and iv.

vii. Use the target net weight computed in viii and re-weigh the inspection samples using Section 3. Core Method for Checking the Net Contents of Packaged Goods. If inspection sample weights differ from the target net weight computed using the basis weight determined in viii, the label sheet count is probably inaccurate.

b. Confirm the label sheet count. Count the number of sheets in each package or use the gravimetric procedure in Section 2.6.13. of Handbook 133 to determine conformance.

c. Verify dimensions (length x width) on paper from each package of the sample. If actual measurements do not meet label claims, follow steps 4 through 12 of Section 2.6.13.2. of Handbook 133 to determine conformance.

2.6.14.3.1. Other Types of Paper

1. Roll Paper.- When testing rolled paper, cut a length equal to 9,350 divided by the width (e.g.,inches {9350/8.5 in = 813.043 inches) from the roll. Make sure the ends of

this length of paper are square. Proceed to section 2.6.14.3 step a. Disregard the exact sheet count in step iii.

2. Continuous Track Feed Printer Paper:

i. Count out a sample of 100 sheets from each tare sample package of the inspection lot.

ii. Weigh each 100 sheet sample and record the weights.

iii. Calculate an average weight.

iv. Remove printer tractor feed strips.

v. Re-weigh sample and record the weights.

vi. Calculate an average weight.

vii. Calculate percentage (%) difference in average weights.

viii. Subtract the average weight in step ii. from the average weight in step vi.

ix. Divide the difference by average weight in step i.

x. After the track segments have been removed, use the samples to verify the basis weight for the packages of the inspection lot using the formulas in 2.6.14.2. If the basis weight differs from the label basis weight, go to step c.viii.

xi. Increase the re-calculated weight of the General Formula by the percentage (%) in step viii.

xii. Go to step C(ix).

Appendix B

5.9. Test Procedure for Packaged Firewood With a Volume of 113 L (4 Cubic Feet) or Less.

5.9. Volumetric Test Procedure for Packaged Firewood With a Labeled Net Content of Four Cubic Feet or Less.

NOTE: Lot compliance shall be determined using the sampling plan in Table 2-1 except that the maximum allowable variations for individual packages labeled by volume shall not be applied to packaged firewood.

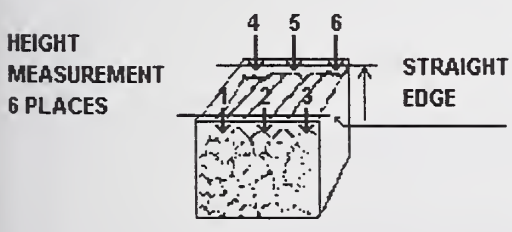
A calibrated linear measure shall be used. All measurements shall be taken in increments no greater than 0.5 cm (1/8 inch) and rounded up, except as noted in 5.9.1.(a). Unless otherwise indicated, all measurements are to be taken without rearranging the wood or removing it from the package. If the layers of wood are cross hatched or not ranked in discrete sections in the package, the wood shall be removed from the package and measured according to 5.9.1.1.

S

5.9.1. Boxed Firewood.

(a) Average height determination of wood within the box: Open the box and measure the internal height of the box (h). Take three measurements (d) along each end of the stack. Measure from the bottom of a straight edge placed across the top of the box to the highest point on the two outermost top pieces of wood and the center-most top piece of wood. Round measurements down to the nearest 0.5 cm (1/8 inch). However, if pieces are obviously missing from the top layer of wood, take additional height measurements shall be taken at the highest point of the uppermost pieces of wood located at the midpoints between the three measurements on each end of the stack. (See Figure 1.) Calculate the average height of the stack by averaging these measurements and subtracting from the internal height of the box.

Figure 1

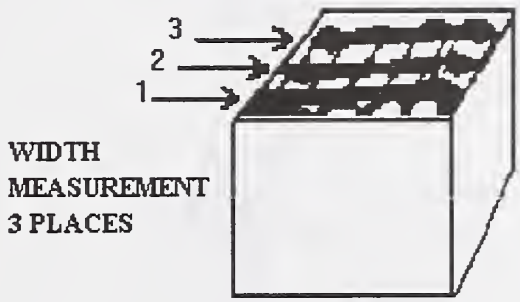


Calculate the average height of stack (AHS).

$$AHS = h - [(d^1 + d^2 + d^3 + d^4 + d^5 + d^6) \div 6]$$

(b) Average width of the wood within the box: Determine the width of the stack of wood at three places along the top of the stack. Take measurements on both ends and in the middle of the box. Measure the inside distance from one side of the box to the other perpendicular to the long axis of the wood. (See Figure 2.)

Figure 2

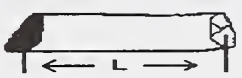


Calculate the average width.

$$Average\ Width = (W^1 + W^2 + W^3) \div 3$$

(c) Average length of the pieces of wood: Remove the wood from the box and select the five pieces with the greatest girth. Measure the length of the five pieces from center-to-center, as shown in Figure 3.

Figure 3



Calculate the average length of the five pieces.

Average Length = $(L^1 + L^2 + L^3 + L^4 + L^5) \div 5$

(d) Calculate the volume of the wood within the box. Use dimensions in inches for height (H), width (W), and length (L). Divide the result by 1728 (number of cubic inches in a cubic foot.)

$$\frac{Vol}{(cu\ ft)} = Avg\ H \times Avg\ W \times Avg\ L \div 1728$$

(e) For boxes of wood which are packed with the wood ranked in two discrete sections, which are perpendicular to each other, calculate the volume of wood in the box as follows: (1) Determining the average height, width, and length as in (a), (b), and (c) above for each discrete section (2) Totaling the calculated volumes of the two sections. Take the width measurement for V_2 from the inside edge of the box adjacent to V_2 to the plane separating V_1 and V_2. (See Figure 4.)

Figure 4

Total Volume = $V_1 + V_2$

5.9.1.1. Cross Hatched Firewood

a. Stacking - Measure firewood when ranked, well stowed, and stacked in a geometrical shape that facilitates volume calculations (i.e., rectangular).

b. Measuring - Take measurements in 0.5 cm (1/8 inch) increments and round up. The number of measurements for each dimension is the minimum that should be taken.

1. Measurement of the Rectangular Stack

i. Determine Average Height of a Stack: Starting at one end of the stack, measure the height of the stack on both sides at 4 proportionately equal intervals. Calculate the average height.

ii. Determine Average Length of a Stack: Starting at the base of the stack, measure the length of the stack in 4 proportionately equal intervals. Calculate the average length.

iii. Determine Average Width of a Stack: Randomly select the five pieces with the greatest girth. Measure the length of the pieces, from center-to-center as shown in Figure 3. Calculate the average piece length which represents the width of the stack.

2. Calculate Volume:

volume = avg width x avg length x avg height.

- For measurements in centimeters, divide the total volume by 1000 to determine the number of liters.
- For measurements in inches, divide the volume in cubic inches by 1728 (number of cubic inches in a cubic foot) to determine volume in cubic feet.

5.9.2. Bundles and Bags of Firewood.

(a) Average area of ends: secure a strap around each end of the bundle or bag of wood to prevent movement during testing and to provide a definite perimeter. Set one end of the bundle or bag on tracing paper that is large enough to cover the end completely. Draw a line around the perimeter of the bundle or bag on the tracing paper. Transfer the tracing paper to a template graduated in square inches. Count the number of square inches that are enclosed within the perimeter line. Estimate portions of square inches not completely within the perimeter line to the nearest one quarter square inch. Repeat this process on the opposite end of the bundle or bag.

NOTE: Use two or more straps that are long enough to encircle the bundle or bag to secure the wood.

Calculate the Average Area.

Average Area = (Area #1 + Area #2) ÷ 2

(b) Average length of the pieces of wood: Select the five pieces with the greatest girth. Measure the length of the pieces as shown in Figure 3 for boxed wood. Calculate the average length of the pieces of wood.

Average Length = $(L^1 + L^2 + L^3 + L^4 + L^5) \div 5$

(c) Volume: Multiply the average area times the average length and divide the answer by 1000 for centimeter to liter measurements or use 1728, the number of cubic inches in a cubic foot, to calculate the volume of the wood in cubic feet.

Vol of Wood = Avg Area x Avg Length ÷ 1728

APPENDIX C
POLICY, INTERPRETATIONS, AND GUIDELINES
SECTION 1 -NCWM Management
SUBSECTION 1 -Organization and Committees

1.1.1. Submission of Committee Agenda Issues

Preamble

The Constitution of the NCWM requires that its officers and Committees observe the principles of due process; the protection of the rights and interests of affected parties. Specifically, it requires that they: (a) give reasonable advance notice of contemplated studies, issues to be considered for action, and tentative or definite recommendations for conference vote, and (b) provide that all interested parties have an opportunity to be heard.

1. Submission Process

Anyone introducing an issue to the Conference should use the regional weights and measures associations to initially consider its merits. Using the regional associations ensures discussion and evaluation of issues at the grass-roots level. All member States within that regional association can assist in developing of well-documented proposals. The regional groups include the Central, Northeastern, Southern and Western Weights and Measures Associations.

Procedures

The Standing Committees will consider issues according to the following procedures:

a. All issues to be considered by a Committee for action at the upcoming Interim Meeting shall be submitted in writing to the Executive Secretary by November 1. Any issue approved by at least one regional association and received by the Executive Secretary by the November 1 deadline will be automatically placed on a Committee's Interim Meeting Agenda. Issues that have <u>not</u> been approved by a regional association, but which are received by the Executive Secretary by November 1, will be evaluated by the appropriate Committee using the criteria in Section 2. Exceptions to Policy.

Any proposal received by the Executive Secretary after the November 1 deadline, but prior to the Interim Meeting, will be evaluated by the appropriate Committee according to Section 2. Only issues that the Committee determines to be a national "priority" will be included on its agenda.

b. Proposals shall contain:

(1) a concise statement of the issue or problem outlining the purpose and national need for its consideration. When possible, an electronic copy of the background material and proposed amendment(s) should be submitted in an IBM compatible word processing document format (e.g., Microsoft Word) on a high density 8.9 cm (3.5 inch) disk,

(2) background material including test data, analysis of test data, or other appropriately researched and documented material from which the Committee will be able to make a judgment for either a firm recommendation or consideration of the need for further study,

(3) proposed solutions to problems stated in specific language in amendment form to Conference documents, and

(4) practical, realistic, and specific recommendations for both regulations and test methods to provide for proper enforcement if a proposal involves a new area of weights and measures activity. When proposals are to modify or add requirements to existing publications, such as Handbook 130 or Handbook 44 or Handbook 133, the proposal should:

(i) Identify the pertinent portion, section, and paragraph of the existing publication that would be changed (e.g., Uniform Method of Sale of Commodities Regulation, Section 8.2, paragraph (b); or Scales Code, Section S.2.1.-2.(a)).

(ii) Provide evidence of consistency with other NCWM publications such as with other uniform laws and regulations.

(iii) Provide evidence of consistency with Federal laws and regulations such as with USDA or FTC regulations.

(iv) Relay the positions of businesses, industries, or trade associations affected by the proposal including supporting and opposing points of view.

<u>Note:</u> Although NCWM Form 15 is not required (see attached) it may be useful in submitting new proposals to the NCWM.

2. Exceptions to Policy for Submission of Issues to a Committee Agenda; Submission of "Priority" Issues.

The Committees will use the following criteria to evaluate issues that have <u>not</u> been approved by a regional association, but which a Committee receives by the November 1, deadline. If a issue is received after the November 1 deadline, it will not be included on an agenda unless the Committee determines that it is a national "priority."

Evaluation Criteria

(1) Issues must have significant legal impact on weights and measures laws and/or regulations involving:

(a) court cases/attorney general opinions; or

(b) pre-emption by Federal statute or regulation; or

(c) conflict with international standards; or

(d) be related to laws or regulations of an urgent nature which could affect health and safety.

(2) Committees may contact parties that are potentially affected by a issue (trade associations, industry, and consumer groups.) for comments. The Committee may consider these comments and any other information in determing if an issue should be included on an agenda.

(3) When a Committee determines that it should consider an issue as a "Priority" (see the criteria in (1)), the issue will be handled in the following manner:

(a) A "Priority" issue received prior to the Interim meeting may be added to the Interim Meeting agenda by majority vote of the committee.

(b) A "Priority" issue received after the Interim Meeting may be added to a Committee's Annual Meeting agenda as: (i) a discussion issue by majority vote of the Committee, or (ii) as a voting item by majority vote of the Committee and the Board of Directors.

3. Committee Agenda

a. Each Committee will review issues that have been submitted and selected by majority vote to be included on its agenda. A Committee will only include those issues that have been (1) approved by at least one of the regional associations; or (2) forwarded by other committees or subcommittees, NTETC Sectors, task forces, or work groups, or those issues that meet the criteria in Section 2, "Exceptions to Policy."

b. Each Committee shall publish an agenda which identifies the issues to be discussed during the Interim Meetings. This agenda shall be distributed to members approximately 30 days prior to the meetings. The agenda will be provided upon request to all other interested parties. [See NCWM Publication 15, Policy 1.4.6.]

4. Interim Meeting

a. Each Committee shall hold public hearings at the Interim Meeting for the purpose of discussing and taking comments on all issues on its agenda.

b. Upon request, Committees will provide the opportunity for presentations by Government officials, industry representatives, consumer groups, or other interested parties during the Interim Meeting. Requests to make presentations must be received by the Committee Chairman at least two weeks prior to the start of the meetings.

5. Interim Meeting Report

a. Issues under consideration by a Committee, and upon which it offers comments or recommendations for Conference action during the Annual Meetings, shall be included in the Committee's Interim Reports published in the Annual Meeting "Program and Committee Reports," also called the "Announcement Book." [See NCWM Publication 16, Policy 1.4.6.]

b. The Annual Meeting "Program and Committee Reports" shall be prepared and distributed to Conference members approximately three months prior to the Annual Meeting.

6. Comments on Interim Reports

a. All weights and measures officials, industry representatives, and all others are encouraged to submit written comments on issues in the Committees' Interim Reports.

b. All comments on the Interim Meeting Reports shall be submitted to the appropriate committee with a copy to the Executive Secretary no later than one month preceding the opening of the Annual Meeting.

7. Annual Meeting

a. Each Committee shall hold a public hearing at the Annual Meeting to discuss issues on its agenda.

b. Those who want to speak on an issue during the public hearings should request time from the Committee Chairman. Time limitations on presentations, or the discussion of a question or amendments may be imposed by the Committee Chairman. (See also Policy 1.2.3. General Conduct of the Meeting.)

8. Final Committee Reports and Conference Action

a. Following the public hearings, each Committee shall prepare its final report for action by the voting membership of the Conference later in the week. Prior to the session during which it will be acted on copies of each final report shall be provided for study.

b. The Chairman of each Committee shall present the final report of the Committee to the Conference body. A vote shall be taken on issues, proposals, or sections in the report as circumstances require. The Conference body will vote on the entire final report as presented in accordance with established Conference voting procedures. Parliamentary procedure according to Roberts Rules of Order shall be adhered to in the presentation of and action on Standing Committee reports.

NCWM Form 15

Proposal to NCWM Standing Committee

Committee: _____

Date:	Regional Association :
Name, Address, Telephone of Contact Person	Regional Actions: (votes for and against)
Please Attach Additional Pages and Information as Needed	
Proposal: (proposed solutions to problems stated in specific language in amendment form to handbooks and recommendations for both regulations and test methods to provide for proper enforcement if a proposal involves a new area of weights and measures activity.)	
Problem/Justification: (include a concise statement of the issue or problem outlining the purpose and national need for its consideration.)	
Other Contacts: (provide position statements, comments, etc from and names and addresses of individuals, firms, manufacturers, and/or trade associations included in developing the proposal)	
Other Reasons For:	
Other Reasons Against:	
Additional Considerations: (provide cost estimates and state the anticipated benefits for all parties or indicate how the proposal may affect other requirements, programs etc.)	
Attachments: (list the accompanying documents, data, studies etc.)	Suggested Action: (what action the committee should take on the issue?) Recommend NCWM ☐ Adoption ☐ Withdrawal ☐ Submit as a Regional Developing Issue ☐ Other

Report of the Committee on Specifications and Tolerances

Ronald D. Murdock, Chairman
Measurement Section Standards Division
North Carolina

Introduction

This is the final report of the Committee on Specifications and Tolerances for the 83rd Annual Meeting of the National Conference on Weights and Measures (NCWM). The report is based on the Interim Report offered in the Conference "Program and Committee Reports" (NCWM Publication 16), 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**" after the item number. Items marked with an "**I**" after the reference key number are information items. The Committee withdrew items marked with a "**W**". Items marked with a "**W**" generally will be referred back to the regional weights and measures associations because they either need additional development, analysis, and input, or did not have sufficient support of the Committee to bring them before the NCWM.

The attached report contains many recommendations to revise or amend National Institute of Standards and Technology (NIST) Handbook 44, 1999 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.

Table A
Agenda Items

Table A
Agenda Items (Continued)

Table A
Agenda Items (Continued)

Appendices

Table C
Voting Results

Reference Key No.	House of State Representatives		House of Delegates		Results
	Yes	No	Yes	No	
300 (Consent Calendar)	40	0	70	0	Passed
320-1	40	0	67	1	Passed
320-3	27	9	40	19	Passed
360-1	29	9	42	24	Passed
Report in its Entirety	40	0	69	0	Passed

General Code

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

(This item was changed from being withdrawn to an information status at the Annual Meeting.)

Source: Carryover Item 310-1

Discussion: The Committee considered several proposals to add a new paragraph to G-S.1. to require remanufacturers to label devices. Additional background information on this item can be found in the 1997 final report of the S&T Committee.

In its 1997 final report, the S&T Committee asked that the Gasoline Pump Manufacturers' Association (GPMA) continue to complete revisions to GPMA's original proposal on appropriate language which describes labeling requirements for non-original manufacturer equipment. GPMA's original proposal was to add a new paragraph to the Liquid-Measuring Device Code Section to read as follows:

> *S.4.5. Additional Labeling for Retail Motor Fuel Dispensers. Any retail motor fuel dispenser other than new, when resold for placement into service, must be marked (name, address, phone number) to identify the source.*
> *[Nonretroactive as of January 1, 199X]*

In the fall of 1997, GPMA and representatives of the service industry made additional modifications to the proposed paragraph and submitted to them Western, Central, Northeastern, and Southern Weights and Measures Associations (WWMA, CWMA, NEWMA, SWMA). The revised paragraph reads as follows:

> *S.4.5. Additional Labeling for Retail Motor Fuel Dispensers. This requirement applies to any retail motor fuel dispenser other than new, when removed and resold for placement into service in a different location. Such devices shall be permanently marked to identify the source (if other than the original equipment manufacturer) with the name and complete address. These markings are in addition to G-S.1. marking requirements.*
> *[Nonretroactive as of January 1, 1999]*

The Scale Manufacturers Association (SMA) proposed that definitions for "Remanufactured Device," "Reconditioned Device," and "Repaired Device" be added to the Scales Code to aid the Conference's discussions on clarifying the issues.

> Remanufactured Device. A device which has been returned to a like new operating condition by the original equipment manufacturer or manufacturer's agent.
>
> Reconditioned Device. A device which has been returned to operating condition by other than the original manufacturer or manufacturer's agent by use of the original equipment manufacturer's approved components.
>
> Repaired Device. A device which has been returned to operating condition after having undergone metrologically significant repair.

The Committee encouraged the associate membership to continue work to reach a consensus on appropriate language which describes labeling requirements for non-original manufacturer equipment and to determine when equipment should receive this status.

The WWMA believes the modified GPMA proposal gives weights and measures field officials a tool which they may use to determine when a liquid measuring device should be marked in addition to the original equipment manufacturer (OEM). Additionally, the WWMA felt the proposal provides a mechanism for industry to decide if the device no longer represents

the OEM's original design. The WWMA also recommends that the terms and definitions as proposed by the SMA be withdrawn at the 1998 Interim Meeting, because a consensus could not be reached on how to apply the terms proposed by SMA.

The CWMA questions whether or not the modified GPMA proposal resolves any real weights and measures issues. Additionally, the CWMA did not feel the "source" and the determination of "the source" was clear. Consequently, the CWMA recommends adding text to require that devices shall be permanently marked to identify the source "or the agency placing the device in service." The CWMA also noted that most states in the Central region require the company placing a device in service to notify weights and measures officials. The CWMA reached a clear consensus not to support the modified GPMA proposal.

The NEWMA supports the latter proposal by GPMA as written and recommends it as a separate item from the SMA proposed terminology. Discussions of the SMA terms and definitions focused on a restraint of trade issue which may be created for the service industry. The NEWMA felt the SMA language is unnecessary and recommends withdrawl from the NCWM S&T Committee agenda.

The SWMA felt the paragraph revised by GPMA should be addressed independently from the proposed SMA text. The SWMA does not support the GPMA proposal because it does not meet the original intent of the remanufacturer issue that was presented to the NCWM. The SWMA believes the SMA definitions have merit and encourages SMA to continue to clarify the terminology as it applies to weighing devices.

Comments from and discussions by from members of industry, weights and measures officials, and the Committee indicate difficulty finding language which is amenable to all parties involved and which does not create concerns over nonuniformity in the enforcement of the proposed requirement is difficult. To determine compliance with the proposed requirement, it is necessary to have precise legal definitions of the terminology; however, the Committee continues to hear from representatives of the retail motor-fuel dispenser service industry that the latest proposed definitions are restrictive to trade and biased. One comment, in response to anyone comparing this proposal and other industries which trade in replacement parts, is that conformance with type is a legal requirement not an option for most jurisdictions. Most manufacturers who participated in the discussion felt the marking requirement needs to be code specific. SMA felt that, although the definitions it provided are a start, they may be best addressed in NCWM Publication 14, National Type Evaluation Program Administrative Procedures, Technical Policy, Checklists, and Test Procedures, or as part of the work being done to identify when production meets type.

The Committee appreciates the work and effort demonstrated to develop language that addresses the issue of determining responsibility for maintaining the metrological integrity of weighing and measuring devices. The Committee believes issues such as: where a device is to be marked; the inability of field officials to determine when a device requires the additional labeling; and how to enforce the requirement or determine when the proposed labeling requirement is not met continue to be unresolved. The Committee believes that industry should develop and agree upon the definitions of terms such as "remanufactured," "reconditioned," and "refurbished" before this issue can move toward adoption. Additionally, the Committee did not receive any input from representatives of other industry sectors. Because of these unresolved issues, the Committee was unable to reach a consensus on this issue and decided to withdraw this item at the January 1998 NCWM Interim Meeting.

At the July 1998 NCWM Annual Meeting, the Committee heard requests from SMA, GPMA, and the Meter Manufacturers Association to reconsider the status of this item. These industry Associations indicated that there continues to be a need to address the labeling of devices when they are serviced by other than the original equipment manufacturer (OEM). The Associations also agreed to work together to develop some appropriate language by the January 1999 NCWM Interim Meeting, and they noted that, if there is no language by January 1999 this issue should be withdrawn. Consequently, the Committee has changed the status of this item to informational

310-2 W G-S.X. Marking Requirements; Temperature Compensation

(This item was withdrawn.)

Source: Northeastern Weights and Measures Association (NEWMA)

Discussion: The Committee considered a proposal to add a new paragraph G-S.X. Marking Requirements; Temperature Compensation as follows:

> G-S.X Temperature Compensation. If a device is equipped with an automatic temperature compensator, the primary indicating elements, recording elements, and recorded representation shall be clearly and conspicuously marked to show that the volume delivered has been adjusted to the volume in accordance with the ASTM Published Standard Reference Temperature.

Retail motor-fuel dispensers equipped with automatic temperature compensation were found in operation in a Northeastern jurisdiction. It was determined that these dispensers were intended by the manufacturer for installation in Canada. Initially, both the service representative, who completed the installation, and the field official, inspecting the devices, were unaware of the temperature compensation feature. During a 6-month reinspection, the weights and measures official discovered this feature when the dispensers underregistered 25 cubic inches on a five-gallon test draft.

The NEWMA notes that there are no requirements in the Liquid-Measuring Devices Code to require retail motor-fuel device to be marked to indicate that it is operating in the temperature compensated mode. Additionally, it was noted that some weights and measures jurisdictions, such as Pennsylvania, permit a temperature compensation feature on vehicle tank meters; however, there are no provisions to address this feature in the Vehicle-Tank Meters Code. The NEWMA believes that all applications which involve temperature compensation should be held to the same marking requirements as are Liquefied Petroleum Gas (LPG) and Anhydrous Ammonia Liquid-Measuring Devices. The NEWMA also asks that Canada consider adopting a similar requirement.

The NIST Office of Weights and Measures (OWM) periodically receives inquiries on the practice of using a temperature compensation feature on retail motor-fuel dispensers. Handbook 44 does not address this feature in many specific device code sections; therefore, with the exception of wholesale liquid-measuring devices and LPG measuring devices, there are limited performance and tolerance requirements established for devices equipped with the temperature compensation feature. OWM recognizes that the use of this feature is subject to the approval of the presiding weights and measures authority that has jurisdiction over the device. OWM believes that if a device is permitted to operate with a temperature compensator, then it shall be operable at all times and its operation of this feature shall be indicated. OWM also has some concern that, until the practice of temperature compensating deliveries through retail motor-fuel dispensers becomes widespread, customers will be confused about on how to make value comparisons on purchases made through compensated and uncompensated devices.

Comments received on this issue led the Committee to believe that this was an isolated incident because the dispensers were intended for Canada and the issue was resolved through the original equipment manufacturer working with the authorities in that jurisdiction. The Committee heard comments that confusion exists because tolerances and test procedures for similar metering technology differ depending on minor variations in how the device is used. The Committee recognizes that use of an automatic temperature compensation feature on retail motor-fuel dispensers and vehicle tank meters may be accepted in a limited number of jurisdictions; however, this practice is not addressed by Handbook 44.

The Committee does not support any proposal to require marking of a retail-motor fuel device to identify the automatic temperature compensation feature until tolerances, test procedures and requirements, and requirements for associated equipment similar specified for other devices (e.g., wholesale meters) equipped with this feature are developed and proposed. Therefore, the Committee has withdrawn this item from the agenda.

310-3 V G-UR.3.3. Position of Equipment

(This item was adopted.)

(This item was originally numbered and titled Item 320-1 S.1.1. Zero Indication under the Scales Code Section. At the January 1998 Interim Meeting, the Committee modified this item to propose changes to the General Code rather than to the Scales Code. Consequently, the item has been renumbered to 310-3.)

Source: Southern Weights and Measures Association (SWMA)

Recommendation: Modify G-UR.3.3. as follows:

G-UR.3.3. Position of Equipment. - A device or system ~~equipped with a primary indicating element and~~ used in direct sales, except a prescription scale, shall be so positioned that its indications may be accurately read and the weighing or measuring operation may be observed from some reasonable "customer" and "operator" position. The permissible distance between the equipment and a reasonable customer position shall be determined in each case upon the basis of the individual circumstances, particularly the size and character of the indicating element. (Amended 1974 and 1998)

Discussion: The State of Florida has encountered point-of-sale systems which are designed so that the operator's view of the zero indication is obstructed. The SWMA believes that technology exists which is capable of alerting an operator when a device fails to return to zero between weighments. NIST Handbook 44 paragraph S.1.1.(c) Zero Indication recognizes that the technology is available to indicate when a device has not returned to zero between weighing operations. Handbook 44 paragraph UR.4.1. Balance Condition requires the scale operator to maintain the equipment in zero load balance under no-load condition; however, inspection data indicate that this frequently fails to occur.

The Committee originally considered a proposal from the SWMA to add new paragraph S.1.1.(d) Zero Indication to the Scales Code which would read as follows:

S.1.1. Zero Indication.

(d) Digital scales shall be equipped with automatic means to inhibit weighing operations when the scale is in an out-of-balance condition, or shall be equipped with visible or audible indication other than the weight indications themselves which provide sufficient warning that the device is not in a zero balance condition.

The SWMA felt that the proposal to require a device to indicate an out-of-balance condition would be less burdensome for device operators. SMA supports the requirement as written; however, SMA believes that a requirement should be developed for both the operator and the customer to see the display. SMA recommends that after this language is established, then the applicable General Code requirements can be clarified. The SWMA's proposal for a new paragraph S.1.1. raised some question about determining when a warning is sufficient and whether or not scales must return to zero between every weighment.

The Committee agrees that it is equally important for the zero indication to be visible to both the customer and operator; however, the Committee believes that this issue is more adequately addressed by adding language to paragraph G-UR.3.3. Position of Equipment in Handbook 44 to require that the operator also be able to view the zero indication. Consequently, the Committee recommends that paragraph G-UR.3.3. be modified as outlined in the recommendation above.

The Committee heard comments that the proposed changes to G-UR.3.3. may be interpreted to require the "primary" indicating element to be located in a position that both the customer and operator can observe. It was noted that this interpretation does not reflect the original intent of paragraph G-UR.3.3. There are device installations where the design of the equipment or site prevents parties from observing the primary indications; in such cases, device operators use auxiliary indications, such as scoreboards, when one party is unable to view the primary indications. Therefore, G-UR.3.3 does permit the customer's indication to be other than the primary indicating element.

The Committee felt that the proposal needed further modification to cover the more complex systems in use and to avoid any confusion that the requirement applies solely to the primary indicating element.

Scales Code

320-1 V S.1.1. Zero Indication

(This item was adopted.)

(This item was originally numbered Item 320-1 under the Scales Code Section. At the January 1998 Interim Meeting, the Committee modified this item to propose changes to the General Code rather than to the Scales Code. Consequently, the item has been renumbered to 310-3. See item 310-3 for details.)

320-2 W S.1.2.1. Weight Units

(This item was withdrawn.)

Source: Scale Manufacturers Association (SMA)

Discussion: The Committee considered a proposal to remove paragraph S.1.2.1. Weight Units from the Scales Code.

> ~~*S.1.2.1. Weight Units. - Except for postal scales, a digital-indicating scale shall indicate weight values using only a single unit of measure. Weight values shall be presented in a decimal format with the value of the scale division expressed as 1, 2, or 5, or a decimal multiple or submultiple of 1, 2, or 5. [Nonretroactive and enforceable as of January 1, 1989]*~~
> ~~(Added 1987)~~

The Scale Manufacturers Association (SMA) recommended that paragraph S.1.2.1. Weight Units be removed from NIST Handbook 44. SMA indicated that when S.1.2.1. was adopted, there were technological limitations to a scale displaying pounds and ounces; however, these limitations no longer exist. SMA noted that it believes concerns from weights and measures officials are over devices which are capable of displaying fractional ounces; however, the intent of the proposal is to recognize only displays which indicate in decimal ounces, for example 3 lb 4.5 oz. SMA believed the use of multiple units of weight is the preferred method of sale in the U.S. Gulf Coast fish industry and in prepack applications in plants under USDA control. The USDA operations require a National Type Evaluation Program Certificate of Conformance; however, other than postal scales, devices which indicate in multiple units of measure are not permitted by Handbook 44 and therefore, not covered by Certificates of Conformance.

In considering the proposal to permit multiple weight values, the WWMA heard comments indicating: (1) there may confusion over the display; (2) the practice does not facilitate value comparison; and (3) the minimum division multiples and subdivision may be in increments of 3, 4, 6, 7, 8, and 9 which deviates from the requirements in OIML R76. The WWMA acknowledges there are packaging and labeling regulations which permit quantity statements in the largest whole units with any remainder in the next smallest whole unit. However, it does not believe that this is an appropriate application for direct sales operations which use computing scale indications. Based on concerns expressed over this proposal, the WWMA believes this item needs to be developed further and should be given informational status.

The CWMA had lengthy discussions concerning the confusion which would be caused by transactions conducted on computing scales equipped with multiple weight units and the consumer's ability to make price comparisons. The Central decided overwhelmingly not to support this proposal.

The NEWMA and the SWMA believe that having both scales which indicate in single weight unit format and indicate in pound and ounce units of measurement will create confusion in the marketplace. The NEWMA and SWMA believe consumers are accustomed to the current format and, therefore, does not support removal of paragraph S.1.2.1. from Handbook 44. The NEWMA recommends removing the item from the S&T agenda.

At the July 1998 NCWM Annual Meeting, the Committee heard from the SMA that it does not believe there is sufficient support from the regional associations for removing paragraph S.1.2.1. Weight Units from Handbook 44. The Committee agrees with the SMA conclusion that there is a genuine lack of support for this issue. Several weights and measures officials continue to express concern over the confusion which may be created by using these devices in direct sales operations. Therefore, the Committee has withdrawn this item from its agenda.

Background: Additional background information on this issue can be found in the 1987 Report of the 72nd NCWM Specifications and Tolerances (S&T) Committee.

320-3 V S.2.1.6. Combined Zero Tare ("0/T") Key

(This item was adopted.)

Source: National Type Evaluation Technical Committee Weighing Sector

Recommendation: Add a new paragraph S.2.1.6. Combined Zero-Tare ("0/T") Key to the Scales Code to read as follows:

> **S.2.1.6. Combined Zero-Tare ("0/T") Key. - For scales not intended to be used in direct sales applications, a combined zero and tare function key may be used, provided that the device is clearly marked as to how the key functions. The device must also be clearly marked on or adjacent to the weight display with the statement "Not for Direct Sales."**

Discussion: Measurement Canada was asked to evaluate a device under the US/CD Mutual Recognition Program for Weighing Devices which was equipped with a "→0/T←" or "zero/tare" key. The National Type Evaluation Program (NTEP) Participating Weighing Laboratories were asked to assess the function of the combined "zero/tare" key on this scale. The laboratories noted that, because NIST Handbook 44 requires that a device provide a clear indication that tare has been taken, the use of a combined "zero/tare" key is not permitted. The scale which was submitted functioned differently than other devices which have been evaluated under NTEP. The zero tare key on this scale functioned as a zero key for the first seven scale divisions (7 d); for loads greater than seven divisions the key then functioned as a tare key.

Because it is common to find tares taken in direct sales operations that are less than seven divisions (7d), the laboratories indicated concerns over the use of this device in direct sales applications. The laboratories consider these devices acceptable in applications where there would be a clear understanding of the "zero/tare" key function provided: (1) there are clear and definite markings on the scale adjacent to the zero tare key with a statement describing its operation (e.g., for the scale in the example given "Zero up to 7d; tare over 7d" or similar wording); and (2) the scale must be clearly and definitely be marked with the statement "Not for Use in Direct Sales to the Public."

The Weighing Sector reviewed the laboratories' proposal and supported their position; however, it was noted during the discussion that a change to Handbook 44 would be required to recognize these provisions. Consequently, the Weighing Sector submitted the recommendation outlined above.

It was noted that other countries permit the "0/T" key feature when the device is used in nondirect sales applications. This generated questions on whether there is international agreement on a definition of "nondirect sales." Concern was expressed over whether or not devices which receive a Certificate of Conformance and possess the "0/T" feature will be distinguishable in NCWM Publication 5, NTEP Index on Device Evaluations.

The Committee has concerns that devices equipped with a "0/T" key may be placed in direct sales applications. Additionally, the Committee noted that jurisdictions vary in the type of operations which are considered "direct sales". For instance, only some jurisdictions consider produce grading and meat room packaging scales as direct sales applications. The Committee felt that the classification of an operation should be left to the jurisdiction. The Committee recommends that devices equipped with a "0/T" key be clearly and permanently marked with: (1) a description of how the key functions; and (2) the statement "Not for Direct Sales" adjacent to the display on both the customer's and operator's side of the device.

320-4 W Table S.6.3.a. Marking Requirements

(This item was withdrawn.)

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

Discussion: The Committee considered a proposal to modify the third and fourth column headings in Table S.6.3.a. Marking Requirements to require indicating elements, weighing and load-receiving elements not permanently attached to hold NTEP Certificate of Conformance.

> ~~Indicating element not permanently attached to weighing and load-receiving elemen~~t Indicators with Certificates of Conformance

~~Weighing and load-receiving element not permanently attached to indicating element~~ Weighing and load-receiving element with Certificate of Conformance

The NTETC Weighing Sector discussed how to define when a weighing system component is "not permanently attached," as the term applies in Table S.6.3.a. A definition would aid the laboratories in their assessment of whether weighing equipment complies with the marking requirements in Table S.6.3.a.

The Sector believes that the type evaluation laboratories have the best opportunity to obtain sufficient information to distinguish which components the manufacturer intends to be permanently attached to other elements in the weighing system. Whereas, it may be difficult for a field official to determine the appropriate application for a component since there are so many interchangeable components available to device operators. The Sector discussed what is meant by the term "permanently attached," but was unable to reach a consensus.

The Sector believes that metrologically significant separate components, such as indicating, weighing, and load-receiving elements, which affect the metrological characteristics of weighing systems, must be evaluated for performance requirements and influence factors to assure its conformance with type and the suitability of the equipment interface. The Sector also believes that a weighing systems' performance is dependent on each component in the interface. Because there is a proliferation of compatible components the Sector recommends that metrologically significant weighing components hold Certificates of Conformance.

The S&T Committee acknowledges that in non-NTEP states, the affect of the proposed change to Table S.6.3.a. would result in an exception from the marking requirements for some metrologically significant components. Because of the lack of a consensus on how to define "permanently attached" and the possible conflicts over enforcing Handbook 44 marking requirements in non-NTEP jurisdictions, the Committee recommends this proposal be withdrawn.

320-5 VC N.1.2.1 Scales Marked I, II, III, or IIII, N.1.2.2. All Other Scales and Table T.1.1.

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

Source: Central Weights and Measures Association (CWMA)

Recommendation: Amend paragraphs N.1.2.1. and N.1.2.2., and add a footnote to Table T.1.1. to exempt portable wheel load weighers from the requirement for decreasing load tests as follows:

N.1.2.1. Scales Marked I, II, III, or IIII. - On scales so marked and with n equal to or greater than 1000, except for portable wheel load weighers, the decreasing-load test shall be conducted with test loads equal to the maximum test load at each tolerance value, for example, on a Class III scale, at test loads equal to 4000d, 2000d, and 500d; for scales with n less than 1000, the test load shall be equal to one-half of the maximum load applied in the increasing-load test. (See Table 6)

N.1.2.2. All Other Scales. - On all other scales, except for portable wheel load weighers, the decreasing-load test shall be conducted with a test load equal to one-half of the maximum load applied in the increasing-load test.

Table T.1.1. Tolerances for Unmarked Scales

Type of Device	Subcategory	Min. Tol.	Accept. Tol.	Maint. Tol.	Decreasing Load Multiplier[1]	Other Applicable Requirements
Vehicle, axle-load, livestock, railway track (weighing statically), crane, and hopper (other than grain hopper)		Class III L, T.N.3.1 (Table 6) and T.N.3.2.			1.0	T.N.2., T.N.3., T.N.4.1., T.N.4.2., T.N.4.3., T.N.4.4., T.N.5., T.N.7.2.
Grain test scales	n ≤ 10 000 n > 10 000	Class III, T.N.3.1. (Table 6) and T.N.3.2. Class II, T.N.3.1. (Table 6) and T.N.3.2.			1.0	
Railway track scales weighing in motion		T.N.3.6. except that for T.N.3.6.2. (a), no single error shall exceed four times the maintenance tolerance.			1.0	
Monorail Scales, In-Motion		T.N.3.8.			1.0	
Customer-Operated Bulk-Weighing Systems for Recycled Materials		± 5% of applied material test load. Average error on 10 or more test loads ≤ 2.5%.			1.0	
Wheel-load weighers and portable axle-load scales	Tested individually or in pairs[2]	0.5d or 50 lb, whichever is greater	1% of test load	2% of test load	1.5[3]	
Prescription scales		0.1 grain (6 mg)	0.1% of test load	0.1% of test load	1.5	
Jewelers' scales	Graduated	0.5d	0.05% of test load	0.05% of test load	1.5	
	Ungraduated	Sensitivity or smallest weight, whichever is less				
Dairy-product-test scale	Loads < 18 g 18 g load	0.2 grain 0.2 grain	0.2 grain 0.3 grain	0.2 grain 0.5 grain	1.5	
Postal and parcel post scales Designed/used to weigh loads < 2 lb	Loads < 2 lb	15 grain, 1 g, 1/32 oz, 0.03 oz, or 0.002 lb	15 grain, 1 g, 1/32 oz, 0.03 oz, or 0.002 lb	15 grain, 1 g, 1/32 oz, 0.03 oz, or 0.002 lb	1.5	
	Loads ≥ 2 lb	Table 5	Table 5	Table 5		
Other postal and parcel post scales		Table 5	Table 5	Table 5	1.5	
All other scales	n > 5 000	0.5d or 0.05% of scale capacity, whichever is less	0.05% of test load	0.1% of test load	1.5	T.N.2.5., T.N.4.1., T.N.4.2., T.N.4.3., T.N.5., T.N.7.2.
	n ≤ 5 000	Class III, T.N.3.1., Table 6 and T.N.3.2.			1.0	T.N.2., T.N.3., T.N.4.1., T.N.4.2., T.N.4.3., T.N.5., T.N.7.2.

[1] The decreasing load test applies only to automatic indicating scales.

[2] If marked and tested as a pair, the tolerance shall be applied to the sum of the indications.

[3] The decreasing load test does not apply to portable wheel load weighers.

(Added 1990; Amended 1992 and 1998)

Discussion: The CWMA believes decreasing load tests do not apply to portable wheel load weighers because the device is not used in the same manner as that of the test procedure. The CWMA notes that there are only two weights and measures laboratories in the United States which have the capability to test portable wheel load weighers with known test weights. Additionally, the CWMA indicates that a majority of laboratories use proving rings as standards which may not be calibrated to perform decreasing load tests.

The SWMA had similar discussions about the proposal as written. The CWMA and SWMA support the proposal to remove the requirement for decreasing load tests on portable wheel load weighers from paragraphs N.1.2.1., N.1.2.2., and Table T.1.1. One jurisdiction which performs decreasing load tests indicated that these devices are capable of meeting requirements under decreasing load test conditions.

The Committee felt that portable wheel load weighers are not used in a manner which requires their verification through decreasing load tests. The Committee also discussed concerns that the proving ring-type standards used to test portable wheel load weighers may not necessarily be verified with decreasing load tests. Therefore, the Committee recommends that portable wheel load weighers be exempt from the requirement for decreasing load tests.

The Committee recognizes that the exemption given to wheel load weighers in paragraphs N.1.2.1. and N.1.2.2. may also be appropriate for portable axle load scales and is willing to readdress this issue if it receives sufficient feedback.

320-6 I N.2.1. Verification Interval

Source: Southern Weights and Measures Association (SWMA)

Recommendation: The Committee is considering a proposal to add a new paragraph N.2.1. Verification Interval to the Scales Code as follows:

N.2.1. Verification Interval. - Where approved test weights remain in one location, are only moved during testing of the scale, and are protected from physical abuse or exposure to corrosive elements, the calibration interval could be extended beyond the normal one-year or two-year period. The time period for resealing or recertification of these weights may, at the discretion of the official with statutory authority, be extended for a period not to exceed ten (10) years. However, should the test weights be removed from the location for any reason, except when authorized by the official with statutory authority, all test weights shall be recertified prior to placing them in service.

Discussion: The SWMA notes that calibration intervals for field standards have not been formally addressed by the National Conference on Weights and Measures (NCWM). Traditionally the state metrology laboratory is the authority that establishes the cycle for recalibration of field standards. Several weights and measures jurisdictions have incorporated requirements for the frequency of recalibration of field standards as part of their laws and regulations. The SWMA notes that most jurisdictions have established a one-year calibration interval for Class F field standards. There may be some variance in that interval based on an historical analysis of data on the "as found" condition of the standards.

The SWMA recognizes that field standards which are used solely to calibrate hopper scales are kept in the same location and moved only during the test of the scale. Such standards are normally protected from physical damage and environmental factors because of their storage indoors; therefore, it is feasible that their calibration integrity can be maintained for a longer period than other mass standards. The SWMA also considered the logistics of moving large standards from the head-house of bulk weighing systems and hopper scales when the process necessitates the use of cranes and possibly altering the building structure. This practice includes inherent safety risks and increases the cost of the calibration process.

The SWMA conducted a survey of four states and found that all permit a maximum calibration interval of three years for in-place standards, such as those maintained in the head house. Based on this information, the SWMA recommends that the calibration interval for in-place standards be extended to a maximum of 10 years when the standards are not moved and are protected from the environment. The SWMA proposed that a new paragraph N.2.1. be added to the Scales Code to establish requirements which address a verification interval for these standards as follows:

N.2.1. Verification Interval. - Where approved test weights remain in one location, are only moved during the test, and are protected from physical abuse or exposure to corrosive elements, the calibration interval could be extended

beyond the normal one or two year period. The time period for resealing or recertification of these weights may be extended to ten (10) years. However, should the test weights be removed from the weighing system for any reason, all test weights shall be recertified prior to placing them in service.

The Laws and Regulations Committee is considering a similar proposal (Item 234-1) to extend the calibration interval for standards at the discretion of the Director. This proposal would result in modifications to Section 9. Examination and Calibration or Certification of Standards and Testing Equipment under the Uniform Regulation for the Voluntary Registration of Servicepersons and Service Agencies for Commercial Weighing and Measuring Devices in NIST Handbook 130.

Comments received by the Committee indicated that 10 years may be too long an interval and that corrosion of standards has been observed after 4 years of field use. The Committee heard a recommendation that the mass standard's stability should be documented prior to extending established certification intervals. A member of the Metrology Subcommittee indicated that work has begun to develop a Handbook 105-Series to address the specifications and tolerances for reference standards; however, it is anticipated the project will take at least 2 years for completion.

Based on comments heard during its agenda review and open hearing at the July 1998 NCWM Annual Meeting, the Committee recommends several modifications to the SWMA's proposal for a new paragraph N.2.1. Verification Interval as outlined in the recommendation above. The modifications clarify the maximum permissible calibration interval, the test weight location, and the responsibilities of the official with statutory authority.

The Committee acknowledged that the proposal was prompted by the need to address the extensive, burdensome, and often unwarranted procedures required to verify hopper scale standards. The Scale Manufacturers Association (SMA) indicated that it could support this requirement only if it applies solely to hopper scale standards. The Committee expressed concern that NIST Handbook 44 does not contain verification intervals for other standards and that the proposal may later conflict with requirements that are being developed by the Metrology Subcommittee. Consequently, the Committee decided to maintain the item as an information item to allow time for additional development of the issue. In the meantime, the Committee believes the required verification intervals should be determined by the metrologist or official with authority in each jurisdiction.

320-7 W Amend N.1.3.4. Vehicle Scales, Axle-Load Scales, and Livestock Scales With More Than Two Sections

(This item was withdrawn.)

Source: Central Weights and Measures Association (CWMA)

Discussion: The Committee considered a proposal to amend N.1.3.4. Vehicle Scales, Axle-Load Scales, and Livestock Scales With More Than Two Sections as follows:

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)

The CWMA believes that the performance of vehicle, axle-load, and livestock scales with more than two sections may be adequately verified by a single shift test with one test load rather than two different test loads. This proposal is consistent with the minimum amount of shift tests performed on other scales. Similar results which demonstrate the scales performance can be achieved by conducting an increasing load test for accuracy and linearity over a range of weights and a single shift test with the maximum amount of available test weights. This proposal would not prevent additional testing if conditions warranted further tests. The CWMA notes that, in instances where a section was not tested during the increasing load test, reducing the minimum number of shift tests may allow a linearity problem caused by a faulty load cell to go undetected; however, the CWMA feels that an increasing load test on one section provides reasonable assurance of the performance of the entire scale. Additionally, the CWMA indicates that a single shift test performed at the lower

permissible test load also saves time and is likely to detect the same errors that occur at higher capacities, while it also reduces down time for the device.

The Committee reviewed California data which indicate that shift tests performed at two different test loads do not result in similar findings. The results of the California survey on 100 scales demonstrate that, if tests were performed as recommended in the proposal, 67 percent of the noncompliant devices would not have been detected. Consequently, the Committee is withdrawing this item. The Committee is willing to revisit this issue if the CWMA can provide data to support modification of the shift test procedure.

320-8 W T.N.3.4. Crane and Hopper (Other than Grain Hopper) Scales

(This item was withdrawn.)

Source: Harris Waste Management Group (HWMG)

Discussion: The Committee considered a proposal to modify paragraph T.N.3.4. Crane and Hopper (Other than Grain Hopper) Scales to include municipal solid waste hopper scales to read as follows:

> T.N.3.4. Crane and Hopper (Other than Grain Hopper) and Municipal Solid Waste Hopper Scales. - The maintenance and acceptance tolerances shall be as specified in T.N.3.1. and T.N.3.2. for Class III L, except that the tolerance for crane and construction materials hopper scales shall not be less than 1d or 0.1 percent of the scale capacity, whichever is less.
> (Amended 1986 and 1998)

Harris Waste Management Group (HWMG) has developed a device which is a combination weighing system and waste compactor. The system weighing element is a rectangular container which is loaded with waste through a chute above the container. The system is loaded and waste material is pre-compacted up to the maximum volumetric capacity of the container prior to weighment. HWMG believes that accuracy at the lower capacity is not as significant because it does not demonstrate the systems actual use. HWMG has noted that the number of systems in commercial use in the United States is projected to be less than 100.

The WWMA could not reach a clear consensus on whether the design of the weighing system should be classified along with crane and hopper scales. The WWMA also considered whether a possible modification of the definition of hopper scale was needed. Harris Waste Management Group indicated that there was difficulty in meeting acceptance tolerances at the 0-500d test load. The WWMA reviewed data provided by the manufacturer and discussed whether a separate tolerance or an exemption from the tolerances at lower capacities might be appropriate. An interlock mechanism to prevent weighing operations from 0-500d was suggested; however, HWMG indicated that such a feature would interfere with the weighments of many of its customers. The WWMA expressed concern that the system may have difficulty maintaining maintenance tolerance. The WWMA also noted that tolerances should not be modified to accommodate the performance of a specific version of a device type. The WWMA withdrew this item from their agenda.

The CWMA considered the proposal and the vote was unanimous not to support the proposal.

The NEWMA believes that the device does not meet the definition of a hopper scale and recommends the proposal be withdrawn.

The SWMA feels that a resolution to the discussions on where to classify this weighing system may be to designate the device as a Class IIII. The SWMA believes this may be appropriate because the system is not used to conduct direct sales transactions and does not involve the general public. Pending further test data on several modifications to the system and in response to a request from HWMG the SWMA gave this item informational status.

The Committee notes that all four regional associations oppose the proposed exemption for municipal solid waste scales and that the regions were unable to reach a consensus on where to classify this type of scale design. While the devices may appear to fit the definition of a hopper scale, the device is not being used in the same manner as a hopper scale and, therefore, test procedures and requirements designed for hopper scales may not be appropriate for this device. The Committee agrees

with the comments that the proposal appears to be an attempt to modify a requirement to meet a specific device design. Consequently, the Committee has withdrawn this item from its agenda.

320-9 I Device Configuration for Normal Rounding or Weight Classifying Operations

Source: Northeastern Weights and Measures Association (NEWMA)/Scale Manufacturers Association (SMA)

Discussion: During the 1998 NCWM Interim Meeting, the Committee considered a proposal to add a new paragraph S.1.8.3.1. as indicated below. The proposal was developed in response to the National Type Evaluation Technical Committee Weighing Sector's recommendation to allow device manufacturers or operators to configure scales in either the normal rounding or weight classifier mode.

S.1.8.3.1. Computing scales which will function as either a normal round off scale or as a weight classifier shall have a clear indication (enunciator) of the mode, adjacent to the weight display on both the operator's and customer's side whenever the scale is operating as a weight classifier.
[Nonretroactive as of January 1, 1999]

The National Type Evaluation Program (NTEP) Laboratories were approached about the evaluation of devices which have the capability of configuration in a normal rounding or weight classifier rounding mode by the manufacturer or operator. The NTEP Laboratories questioned whether or not each version of the device should be covered on a separate Certificate of Conformance to avoid the possibility of a device being mislabeled or used in an incorrect application, which might go undetected at the field level.

The Scale Manufacturers Association (SMA) acknowledges that on one occasion the inappropriate mode was found to be used on such a device. SMA recommends that a given model of device be limited to a single mode of rounding and the mode of rounding be designated through a separate model number corresponding to a Certificate of Conformance. Additionally, devices which operate in a weight classifier mode must also show a continuous indication that they are in the weight classifier mode.

The CWMA had limited discussion on this proposal due to a lack of proposed language.

The NEWMA in principle agreed with the concept of permitting a scale to be configured in either the normal or weight classifier rounding mode. The NEWMA would like to see SMA develop some specific language before taking a position on this issue; therefore, the NEWMA gave this item informational status.

The National Type Evaluation Technical Committee Weighing Sector proposed that the Weighing Sector Technical Advisor develop and present language that is consistent with SMA's proposals to the S&T Committee for consideration as noted above.

The Committee heard from the Chairman of the Weighing Sector that the proposal does not meet the full intent of the Sector and that there are still concerns that these devices may be used incorrectly. Based on these comments, the Committee recommends that the agenda item be given informational status so that it can be more fully developed.

320-10 I Stored Vehicle Tare Weights

Source: Southern Weights and Measures Association (SWMA)

Discussion: The Committee is considering a proposal to develop requirements in NIST Handbook 44 for frequency of verification intervals, tolerances, procedures (Examination Procedure Outline) and guidelines for weighing systems which use stored tare weights.

The SWMA believes this proposal has merit and recommends it be given informational status. The SWMA asks that other regions with feedback on this issue forward that information to Maryland. Maryland did a preliminary study on the

accuracy of stored tare weights. The study involved 23 states with 11 responding. Based upon data collected to date, Maryland recommends the following examination procedure outline for verifying the proper use of stored tare weights:

- **The scale should have been approved by the presiding weights and measures authority within the last six months.**
- **Weigh ten vehicles individually.**
- **Compare vehicle weights to stored tare weights for agreement to plus or minus 600 lb.**
- **If two or more vehicles exceed the tolerance, reject and conduct a follow-up inspection.**
- **If one or more vehicles exceed the tolerance by 1800 lb (3 times the tolerance), reject and conduct a follow-up inspection.**
- **Require each location to reweigh vehicles; if conditions warrant for compliance.**

Maryland reports the following results from the preliminary survey:

Location	Location Visited	Weights Verified	Range of Errors (lb)	Vehicle Weight Load Ranges (lb)	Scale Tolerance Range (lb) (based on vehicle load)
A	26		-180 to +570	21 000 to 33 000	60 to 80
J		113	-740 to +400	20 000 to 30 000	40 to 80
C		48	-1300 to +660	6700 to 31 900	20 to 80
E		140	-8900 to +2340	3000 to 46 000	
E		8	-340 to +300	20 200 to 35 800	40 to 80
E		39	-1020 to +680	6000 to 35 000	20 to 80
G		39	-1020 to +680	28 000 to 34 000	60 to 80
A		113	-4680 to +1060	6000 to 35 000	20 to 80
J		48	-320 to +260	23 000 37 000	
J		57	-660 to +2680	9300 to 43 700	20 to 100
K		84	-480 to +1200	12 000 to 42 300	40 to 100

Maryland determined that the range of errors found during the survey was -8900 lb to +2680 lb. The impact of the errors calculated for a load of sand or gravel at a cost of $5.50 per ton with an error of 750 lb equates to a monetary value for each weighment of $2.06. If that error is multiplied by 4 trips per day over 240 work days the total dollar figure amounts to $1,977.60 annually. Maryland notes that the practice of using stored tares is prevalent in other types of businesses, such as landfills and asphalt plants, where prices may reach $70.00 per ton; in such cases, the same 750-lb error equates to $26.25 per transaction; at four trips per day, the monetary value equals $25,200.00 annually.

Maryland is interested in information from other jurisdictions on the accuracy of stored tare values.

One jurisdiction which does not permit the use of stored tare values indicated that the Maryland data demonstrates that stored tare values do not work. One representative of the scale industry reported that some operations which use the stored tare feature require the values to be automatically voided on a biweekly basis.

Based on comments and information received to this point, the Committee has given this item informational status to enable additional study and analysis by Maryland. The Committee encourages jurisdictions which permit the use of stored tare functions during vehicle weighing operation to forward information on procedures and policies (verification intervals, tolerance, test procedures) to Maryland.

Background: In 1992 and 1993, the NCWM discussed a proposal to adopt user requirements for installations which use stored tare weights. The Committee recognized that several states permitted the use of stored vehicle tare weights to expedite the weighing process. Additionally, the Committee looked at data which indicated that the frequency for verification of stored tare weights ranged from daily to irregular intervals, and the errors ranged from -4020 lb to +4220 lb. The Committee heard comments that the practice of using stored tare weights be left to the discretion of each jurisdiction. The States were asked to provide data on policies, specific applications, frequency of company updates, and auditing practices of stored tare weights. The Committee considered establishing guidelines on the frequency to update tare values; however, the Conference was unable to reach a consensus. The Committee agreed at that time to revisit this issue if it received sufficient input from the regional associations.

Belt-Conveyor Scale Systems Code

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

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

(Item 321-1 was separated into two parts 321-1A and 321-1B during the 1998 Interim Meeting to facilitate review of the issues involved.)

Source: Western Weights and Measures Association (WWMA)

Recommendation: Modify paragraphs N.3.2. and N.3.2.1. as follows to clarify when it is appropriate to use the substitution method of testing belt-conveyor scale systems.

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. ~~Where practicable, the substitution method of weighing should be used.~~ To assure that the test load is accurately weighed and determined, the following precautions shall be observed:

(a) The containers, whether railroad cars, trucks, or boxes, must not leak, and shall not be overloaded to the point that material will be lost.

(b) The actual empty or tare weight of the containers shall be determined at the time of the test. Stenciled tare weight of railway cars or trucks shall not be used. Gross and tare weights shall be determined on the same scale.

(c) When a preweighed test load is passed over the scale, the belt loading hopper shall be examined before and after the test to assure that the hopper is empty and that only the material of the test load has passed over the scale.

(d) When a railway track scale is used to weigh the test load, not more than 48 hours should elapse between the test on the belt-conveyor scale and the determination of the weight of the test load. When other scales are used, the elapsed time should be not more than 8 hours.

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

(f) On initial verification, at least three individual tests shall be conducted. On subsequent verifications, at least two individual tests shall be conducted. The performance of the equipment is not to be determined by averaging the results of the individual tests. The results of all of these tests shall be within the tolerance limits.
(Amended 1986, 1989, and 1998)

N.3.2.1. Accuracy of Material. - The quantity of material comprising the material test shall be weighed statically or on an uncoupled-in-motion railway track scale to an accuracy of at least 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 testing should be used. Scales typically used for this purpose include Class II, III, and III L scales, or a scale with tolerances as described in Table T.1.1. of Handbook 44 Section 2.20.
(Added 1989)(Amended 1991, 1993 and 1998)

Discussion: The WWMA and NEWMA agreed that language, which describes the use of the substitution method of weighing when conducting material tests on belt-conveyor scale systems, should be deleted from paragraph N.3.2. Material Tests. The WWMA felt similar language should be added to paragraph N.3.2.1. to clarify that use of the substitution method of testing is appropriate when testing the reference scale for accuracy as noted above.

The SWMA also believes that the sentence "Where practicable, the substitution method of weighing should be used" in paragraph N.3.2. is confusing. The reader may question whether the term "substitution method" refers to the method of testing the reference scale or the method of weighing the material after it has crossed over the belt scale. In lieu of deleting the reference, the SWMA suggests an alternate solution would be to define the term "substitution test."

The Committee believes the WWMA and NEWMA proposal to delete any reference to the substitution method of testing from paragraph N.3.2. Material Tests has merit. Additionally, the Committee agrees with the WWMA that similar language should be added to paragraph N.3.2.1. to clarify that use of the substitution method of testing is appropriate when testing the reference scale for accuracy.

The Committee heard a second proposal to modify paragraph N.3.2.1. Accuracy of Material from The National Type Evaluation Technical Committee Belt-Conveyor Scales Sector. A consensus could not be reached on the Sector's proposal; however, the Committee felt the recommendation may also have some merit because there are instances where the accuracy of the reference scale may be in question. Therefore, the Committee decided to address the proposal as a separate item (321-1B) to allow for further development of the Sector's concerns.

321-1B I N.3.2.1. Accuracy of Material

(Item 321-1 was separated into two parts 321-1A and 321-1B during the 1998 Interim Meeting to facilitate review of the issues involved.)

Source: National Type Evaluation Technical Committee (NTETC) - Belt Conveyor Scales Sector

Discussion: In addition to the proposal outlined in 321-1A, the Committee considered a proposal to modify N.3.2.1. as follows:

N.3.2.1. Accuracy of Material. - The quantity of material ~~comprising the~~ used to conduct a material test shall be ~~weighed~~ determined statically or dynamically ~~on an uncoupled-in-motion railway track scale to an accuracy of at least 0.1 percent~~ on a reference scale. ~~The scale used to weigh material shall be tested immediately prior to running the material test.~~ The reference scale shall be section tested or double draft tested (for double draft railroad track scale), as appropriate. Where practicable, substitution or strain-load testing shall be performed in the range of the tare weights (where applicable) and in the range of the gross weights of material used for official belt-conveyor scale system tests to an accuracy of 0.1 percent or better within 24 hours prior to weighing the reference material. The reference scale shall be retested after completion of weighing the reference material to assure that the reference scale remained in tolerance throughout the test. Scales typically used for this purpose ~~include~~ are Class II, III, and III L scales, ~~or a scale with tolerances as described in Table T.1.1. of Handbook 44 Section 2.20~~ ,including a vehicle scale, a hopper scale, a static railroad track scale, or an uncoupled-in-motion railroad track scale.
(Added 1989)(Amended 1991, 1993 and 1998)

Comments to the NTETC Belt-Conveyor Scales Sector indicate that when the reference scale is tested in an "as used" condition or to capacity, many test results appear to be within tolerance until a strain load test is performed. It was also noted that the term "immediately" is interpreted differently by each jurisdiction and should be replaced with more explicit text. Based on those comments, the Sector recommends modifications to paragraph N.3.2.1. as noted above. Other concerns were heard from a representative of the railroad industry that the proposed requirement to retest the reference scale may necessitate an increase in the train crew and locomotive time and exacerbate delays within the rail system. The Sector

also discussed the difficulties in performing a substitution test on hopper scales and felt the reference to substitution tests should be removed from paragraph N.3.2.

Comments to the Committee at the 1998 Interim Meeting indicate that the NTETC Belt-Conveyor Scales Sector's proposal to modify paragraph N.3.2.1. has generated some concerns over (1) the 24-hour period being insufficient to verify reference materials; (2) the undue burden created by a retest of the reference scale; (3) the validity of the applicable tolerances (0.1 percent accuracy); and (4) the use of an uncoupled in-motion-scale as the reference scale. It was suggested that the decision to retest the reference scale is best handled on a case-by-case basis and performed in instances where field site conditions warrant the procedure.

It was noted that verification of the accuracy of a belt-conveyor scale with a material test introduces an additional level of uncertainty; therefore, a retest of the reference scale minimizes possible errors that may be introduced into the process. It was also pointed out that there is significant importance in the selection of an adequate reference scale. Additionally, there was concern over the traffic and other uses of the reference scale during the verification of the reference material and the possibility that these variables may introduce additional uncertainty into the process.

Based on these comments, the Committee believes the Sector's should develop the proposal further; therefore, it is making this an informational item to allow for additional work.

321-2 VC UR.2.2.1. For Scales not Installed by the Manufacturer (b)

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

Source: National Type Evaluation Technical Committee (NTETC) Belt-Conveyor Scales Sector

Recommendation: Amend paragraph UR.2.2.1.(b) as follows:

(b) 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.

Discussion: The NTETC Belt-Conveyor Scales Sector discussed the practice of tying off training idlers to alter belt tension and thereby achieve correct belt alignment. It was noted that proper maintenance of belt alignment requires adjustments to tail or head pulleys, bin rollers, and system idlers in addition to rebolting rather than tying off the belt. To prevent the practice of manipulating idlers to change belt alignment, the Sector recommends paragraph UR.2.2.1(b) to be amended to include a requirement to prohibit restraint of training idlers to accomplish proper belt alignment.

The Committee received no unfavorable comments on this proposal; therefore, it recommends this item as written for a vote.

321-3 VC UR.2.2.1. For Scales not Installed by the Manufacturer (c)

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

Source: Carryover Item 321-1A

Recommendation: Modify paragraph UR.2.2.1.(c) and the accompanying footnote as follows:

UR.2.2.1. For Scales not Installed by the Manufacturer. - Unless the scale is installed in a ~~short~~ 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:

(c) If there is a concave curve in the conveyor ~~between the scale and the loading point~~, before or after the scale, the scale shall be installed so that the belt is in contact with all the idlers rollers at all times for at least 6 m (20 ft) or 5 idler spaces, whichever is greater, before and after the scale.[2] A concave curve

~~beyond the scale~~ **shall start no closer than 12 m (40 ft) from the scale** to the tangent point of the concave curve.
(Amended 1998)

[2] Installing the belt scale 5 idler spaces from the tail pulley or the infeed skirting will be in the area of least belt tension on the conveyor and should produce the best accuracy. **The performance of a belt-conveyor scale may be adversely affected by a concave curve in the conveyor that is located between the loading point and the scale. Therefore, whenever possible, a belt-conveyor scale should not be installed with a concave curve in the conveyor between the loading point and the scale.** ~~**A concave curve beyond the scale shall start no closer than 12 m (40 ft) from the scale.**~~
(Amended 1995 and 1998)

Discussion: The WWMA heard a presentation from a representative of the National Coal Weighing and Sampling Association (NCW&SA) in which the significance of the length of a concave curve, short conveyor, and the tangent point were explained. Based on the clarification it received in those specific areas, the WWMA supports the NCW&SA proposal and recommends modifications be made to footnote 2 and a new definition for "short conveyor" be considered to read as follows:

[2] The performance of a belt-conveyor scale may be adversely affected by a concave curve in the conveyor that is located between the loading point and the scale. Therefore, whenever possible, a belt-conveyor scale should not be installed with a concave curve in the conveyor between the loading point and the scale. ~~A concave curve beyond the scale shall start no closer than 12 m (40 ft) from the scale~~.
(Amended 1995 and 1998)

short conveyor. A conveyor that is less than 12 m (40 ft) long measured from the head and tail pulleys.[2.21]

The CWMA maintains its support for this proposal. There were questions on why this requirement applies only to devices which are not installed by the manufacturer, since in most instances scales are installed by a service agency or construction company other than the original equipment manufacturer.

The NEWMA supported the original proposal and also supported the modifications to footnote 2 and the addition of a new definition for "short conveyor" as recommended by the WWMA.

The SWMA received multiple proposals to modify paragraph UR.2.2.1.(c). The SWMA understands that these proposals will be heard by the Belt-Conveyor Scales Sector, whose members have technical expertise in this area; therefore, the SWMA will await the Sectors' findings. Consequently, the SWMA has made this an informational item.

The NTETC Belt-Conveyor Scales Sector agreed that, unless the scale is installed in a conveyor that is designed and furnished by the scale manufacturer or built to the scale manufacturer's specifications, the system shall comply with the minimum requirements in paragraph UR.2.2.1. The Sector also noted that the assignment of arbitrary standards of length to define, "short conveyor," did not meet the intent of the paragraph; therefore, it recommends removing the term "short conveyor" from UR.2.2.1. The Belt-Conveyor Scales Sector supports the proposal to modify UR.2.2.1.(c); however, the Sector also recommends the WWMA's proposed modification of footnote 2 as noted above.

The S&T Committee considered the WWMA's proposed modifications to footnote 2 and the new definition of "short conveyor." The Committee believes there is some ambiguity with terms such as "short conveyor;" however, there is greater concern over how a field inspector would determine whether or not specific components in the system are in compliance. Consequently, the Committee felt the Sector's proposal to modify footnote 2 and the NCW&SA proposed modifications of paragraph UR.2.2.1.(c) meet the original intent of the requirement and clarify how it is to be applied.

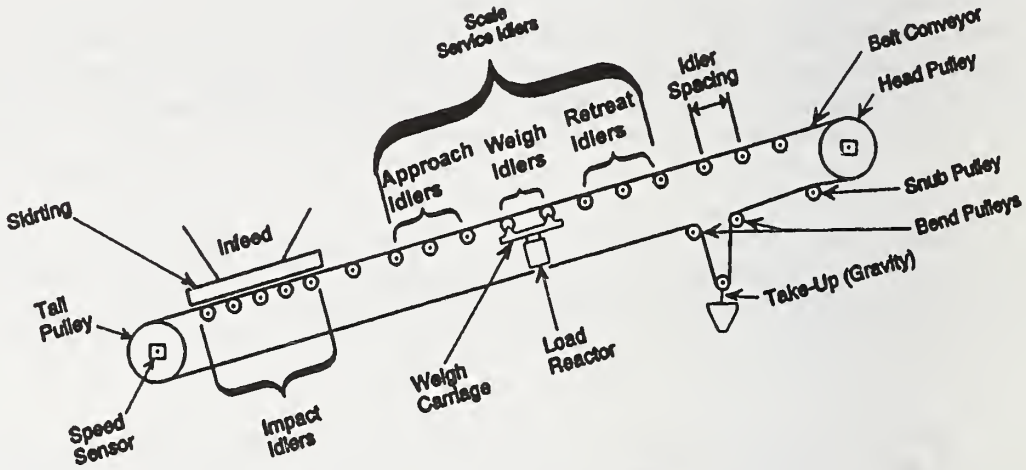
Additional comments to the Committee indicate that more detailed information on the belt-conveyor scale components would provide a better understanding of the equipment affected by the proposed modifications. Therefore, the following diagram (See page S&T-21) is provided to illustrate a belt-conveyor scale assembly.

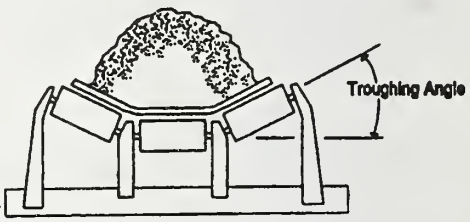
During the 1998 NCWM Annual Meeting, the Committee further modified paragraph UR.2.2.1. to reflect the original intent of the Belt-Conveyor Scales Sector to remove the term "short" from paragraph UR.2.2.1. because of its ambiguity.

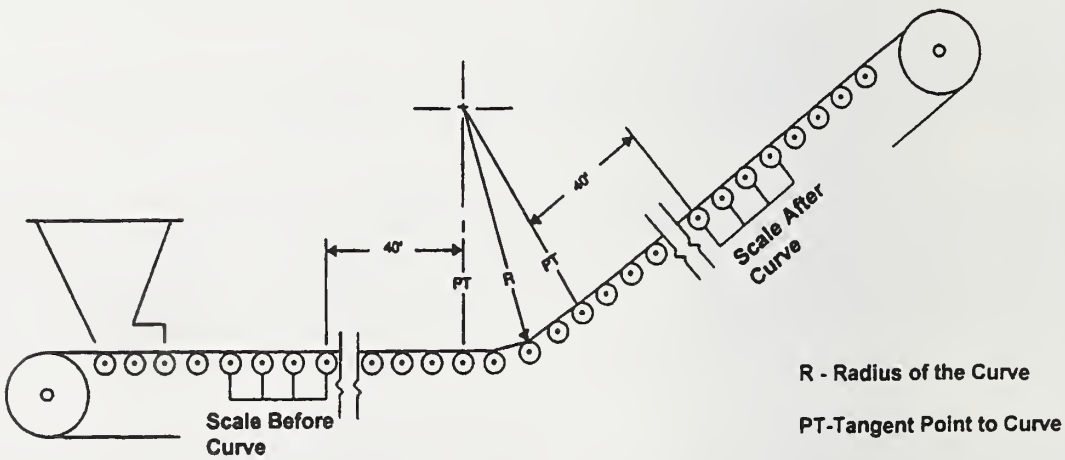
Background: During its 1996 meeting, the Belt-Conveyor Scales Sector supported the NCW&SA proposal to modify paragraph UR.2.2.1.(c). The NCW&SA believed it is important to give equal consideration to a concave curve in the conveyor belt before and after the scale and that all rollers should be in contact with the belt in order for the installation to meet the accuracy and repeatability requirements in Handbook 44.

During the 1997 Annual Meeting, the Committee heard comments that the proposal is unclear in reference to the position of the start of the concave curve. The Committee agrees with earlier comments that there is some ambiguity about the term, "short conveyor;" therefore, the Committee gave this item informational status until the text could be clarified.

BELT CONVEYOR AND WEIGH BRIDGE ASSEMBLY







A belt-conveyor scale system with a single feed point and scales installed before and after the concave curve. The scales are installed 40 feet from the tangent point of the concave curve.

Diagram used with permission of the National Coal Weighing & Sampling Association

321-4 VC UR.2.2.1. For Scales not Installed by the Manufacturer (g)

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

Source: Carryover Item 321-1B

Recommendation: Amend paragraph UR.2.2.1.(g) as follows:

UR.2.2.1. For Scales not Installed by the Manufacturer. - Unless the scale is installed in a short 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:

(g) The scale area and ~~4~~ 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.

Discussion: The Committee originally considered a proposal from the Central Weights and Measures Association (CWMA) to amend paragraph UR.2.2.1. as follows:

(g) The scale area and 4 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. The scale area and 4 idlers on both ends of the scale shall be scale quality type idlers.

The CWMA supported the NCW&SA's original proposal as outlined above; however, the CWMA also believes that how to define "scale quality idlers" remains an issue.

The WWMA expressed concern over the inability to trace idler standards to a certification organization. Scale idlers are not components which are type evaluated under NTEP and there are no guidelines in place for the field official. The WWMA questions whether the installation of idlers designated as "scale quality idlers" will be an indication that a system complies with NIST Handbook 44. The WWMA also expressed concern over whether or not the NCW&SA's proposal may limit idlers to specific design standards, thus limiting the development of future technology. Consequently, the WWMA withdrew this item from its agenda.

The NEWMA questions whether developing criteria for "scale quality idlers" will affect the outcome of material test. Additionally, the NEWMA notes that there are no standards for determining scale quality idlers during the type evaluation process and NTEP has not established that idler quality has bearing on a system's performance. The NEWMA is reluctant to recommend that requirements for idlers be adopted into Handbook 44 when it would be extremely difficult for the field official to determine compliance with such requirements.

The SWMA received multiple proposals to modify paragraph UR.2.2.1.(g). The SWMA believes that these proposals will be heard by the Belt-Conveyor Scales Sector, whose members have technical expertise in this area; therefore, the SWMA will await the Sectors findings. Consequently, the SWMA has made this an informational item.

At the 1997 meeting of the National Type Evaluation Technical Committee Belt-Conveyor Scales Sector, the Sector reviewed a letter from the Conveyor Equipment Manufacturers Association (CEMA) suggesting scale idlers be tagged to indicate their quality. It was noted that CEMA Standard 502 addresses idlers and rollers for use with "noncertified" scales. The Sector acknowledges that there are factors beyond scale idlers, such as bearings and lubrication, which affect a systems performance. The Sector had concern over how quality issues will be verified in the field and whether the establishment of quality standards may prove too restrictive. The NTEP Laboratories present felt idler type during type evaluation is significant enough to list on Certificates of Conformance under the test conditions. The Sector agreed that it is difficult to establish quality standards for idlers. The Sector felt there was a lack of standards for "scale quality idlers." The Sector discussed that it appears to be an industry-wide practice to use five distinguishable idlers on both ends of the scale; therefore, the Sector recommends that the number of distinguishable idlers should be increased from four to five.

During the 1998 NCWM Interim Meeting, no consensus was reached on the exact number of original equipment manufacturers (OEM) that perform the installation of idlers. The Committee heard comments that most other industry standards recognize that five *not* four idlers are now the minimum requirement to distinguish the scale from the conveyor. The Committee also felt that until there is a means to determine when idlers are of "scale quality" then only the quantitative properties should be addressed at this time.

Additional information on this issue can be found in 1997 NCWM S&T Committee's final report.

321-5 VC UR.2.2.1. For Scales not Installed by the Manufacturer (h)

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

Source: National Type Evaluation Technical Committee (NTETC) Belt-Conveyor Scales Sector

Recommendation: Modify paragraph UR.2.2.1.(h) to read as follows:

(h) Conveyor belting shall be no heavier than is required for normal use. ~~Under any load,~~ 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)

Discussion: The NTETC Belt-Conveyor Scales Sector has concerns over the adverse affect on system accuracy as a result of inconsistencies in replacement components or modifications in the system design. The Sector acknowledges variations in specifications or component types, or installations can alter a system's performance (for example vee, flat, or troughing). It was also noted that belt materials, belt repairs through splicing, and idler type, affect belt contact with idlers, thus affecting a system's performance. However, the Sector believes that, provided the device meets performance requirements, there should be no design restrictions. The Sector believes paragraph UR.2.2.1.(h) adequately addresses conveyor belt materials and splicing, but needs further clarification on how the belt contacts the idlers. Therefore, the Sector recommends that UR.2.2.1.(h) be modified to clarify the conditions under which the conveyor belt contacts the idlers.

The Committee did not receive any unfavorable comments on this proposal and the Committee recommends this item as written for a vote.

321-6 VC UR.2.2.1. For Scales not Installed by the Manufacturer (j)

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

Source: National Type Evaluation Technical Committee (NTETC) Belt-Conveyor Scales Sector

Recommendation: Amend paragraph UR.2.2.1.(j) as follows:

(j) The belt shall not extend beyond the edge of the idler roller in any area of the ~~weighing area~~ conveyor. (Amended 1998)

Discussion: The NTETC Belt-Conveyor Scales Sector believes that over time the accuracy of a system is affected when the belt is incorrectly positioned in the troughs or the belt extends beyond the edge of the conveyor. Under these conditions, belts begin to fray to the extent that tension is affected, and there is a reduction in system linearity and accuracy. Consequently, the Sector recommends that UR.2.2.1.(j) be amended to recognize the importance of maintaining the belt in all areas of the system.

The Committee was questioned on why this code section contains requirements that apply differently to parties other than the device manufacturer or their authorized agents. It was noted that this requirement appears to be relevant to any system

and therefore should apply uniformly regardless of the installer. The Committee believes the proposed modification of paragraph UR.2.2.1.(j) would encompass all design variations that might occur in these systems.

321-7 I UR.3.2. Maintenance (c)

Source: National Type Evaluation Technical Committee (NTETC) Belt-Conveyor Scales Sector

Discussion: The Committee considered the following proposal to remove paragraph UR.3.2. (c) Maintenance from the Belt-Conveyor Scale Systems Code. The Committee gave the item informational status to allow the Sector to further develop the proposal.

~~(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 in performed in the scale area or in accordance with manufacturer's recommendation. A material test is required after any realignment.~~
~~(Amended 1986)~~

The NTETC Belt-Conveyor Scales Sector believes that optimum system performance requires good maintenance practices. Both installation and maintenance should be performed according to the manufacturer's instructions. Therefore, these procedures may vary and depend on the specific system design, operation, and technology. The Sector believes there are general and user code sections which adequately address these practices and the requirements outlined in paragraph UR3.2.(c). Consequently, the Sector recommends that UR.3.2.(c) be removed from NIST Handbook 44.

The S&T Committee acknowledges that scale alignment procedures will vary based on the manufacturer's recommendation and user requirements should be available to address maintenance in this area. The Committee understands that the wire line determination requirement in paragraph (c) is difficult to determine by field officials and other methods to verify scale alignment may be used. Therefore, the Committee believes the paragraph has merit but agrees with the Sector that it may be too restrictive to the technology that is available. The Committee recommends this item be given informational status to provide ample time for the Sector to develop less restrictive language that provides some appropriate guidelines for determining proper scale alignment.

321-8 VC S.2.2. Adjustable Components, S.5. Provision for Sealing and Table S.5. Categories of Device and Methods of Sealing

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

(This is a new item added by the Specifications and Tolerances Committee during the Interim Meeting Agenda Review Session. This item was inadvertently omitted from the Committee's Interim Agenda as published in NCWM Publication 15.)

Source: National Type Evaluation Technical Committee (NTETC) Belt-Conveyor Scales Sector

Recommendation: Modify paragraph S.2.2. Adjustable Components and add a new paragraph S.5. and accompanying table as follows:

S.2.2. Adjustable Components. - An adjustable component that can affect the performance of the device (except as prescribed in S.3.1.) shall be held securely in adjustment ~~and shall not be capable of adjustment without breaking a security means~~.
(Amended 1998)

S.5. Provision for Sealing. - A device shall be designed using the format set forth in Table S.5. with provision(s) for applying a security seal that must be broken, or for using other approved means of providing security (e.g., data change audit trail available at the time of inspection), before any change that affects the metrological integrity of the device can be made to any electronic mechanism.
[Nonretroactive as of January 1, 1999]
(Added 1998)

Table S.5. Categories of Device and Methods of Sealing	
Categories of Devices	*Method of Sealing*
Category 1: No remote configuration capability.	*Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.*
Category 3: Remote configuration capability.	*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.)*

(Table Added 1998)
[Nonretroactiv as of January 1, 1998]

The NTETC Belt-Conveyor Scales Sector felt that there was a need to develop some definitive language to adequately address features which are required to be sealed. The Sector believed the provisions in the Scales Code for sealing adjustable components were applicable to belt-conveyor scales systems; however, the Sector agreed that Category 2 criteria were inappropriate.

The Committee agrees that there should be provisions which adequately address the sealing requirements for belt-conveyor scale technology. The Committee recommends the Sector's proposal with a modification to the device category numeration to be consistent with the classification given other devices of the same level of complexity.

The Committee recognized that there is some confusion over what constitutes a change that "detrimentally" affects the metrological integrity of the system. Therefore, the term "detrimentally" was removed from the original proposal submitted by the Sector.

Automatic Bulk Weighing Systems Code

322-1 I N.2.1. Verification Interval

Source: Southern Weights and Measures Association (SWMA)

Recommendation: The Committee is considering a proposal to add a new paragraph N.2.1. Verification Interval to the Automatic Bulk Weighing Systems Code as follows:

N.2.1. Verification Interval. - Where approved test weights remain in one location, are only moved during testing of the scale, and are protected from physical abuse or exposure to corrosive elements, the calibration interval could be extended beyond the normal one-year or two-year period. The time period for resealing or recertification of these weights may, at the discretion of the official with statutory authority, be extended for a period not to exceed ten (10) years. However, should the test weights be removed from the location for any reason, except when authorized by the official with statutory authority, all test weights shall be recertified prior to placing them in service.

Discussion: The Committee considered the original proposal from the SWMA for new paragraph N.2.1. which establishes a verification interval for these standards and reads as follows:

N.2.1. Verification Interval. - Where approved test weights remain in one location, are only moved during the test, and are protected from physical abuse or exposure to corrosive elements, the calibration interval could be extended beyond the normal one or two year period. The time period for resealing or recertification of these weights may be extended to ten (10) years. However, should the test weights be removed from the weighing system for any reason, all test weights shall be recertified prior to placing them in service.

The SWMA notes that calibration intervals for field standards have not been formally addressed by the National Conference on Weights and Measures (NCWM). Traditionally the state metrology laboratory is the authority that establishes the cycle for recalibration of field standards. Several weights and measures jurisdictions have incorporated requirements for the frequency of recalibration of field standards as part of their laws and regulations. The SWMA notes that most jurisdictions have established a one-year calibration interval for Class F field standards. There may be some variance in that interval based on an historical analysis of data on the "as found" condition of the standards.

The SWMA recognizes that field standards which are used solely to calibrate hopper scales are kept in the same location and moved only during the test of the scale. Such standards are normally protected from physical damage and environmental factors because of their storage indoors; therefore, it is feasible that their calibration integrity can be maintained for a longer period than other mass standards. The SWMA also considered the logistics of moving large standards from the head-house of bulk weighing systems and hopper scales when the process necessitates the use of cranes and possibly altering the building structure. This practice includes inherent safety risks and increases the cost of the calibration process.

The SWMA conducted a survey of four states and found that all permit a maximum calibration interval of three years for in-place standards such as those maintained in the head-house. Based on this information the SWMA recommends the calibration interval for in-place standards may be extended to a maximum of ten years when the standards are not moved and are protected from their environment.

The Laws and Regulations Committee is considering a similar proposal (Item 234-1) to extend the calibration interval for standards at the discretion of the Director. This proposal would result in modifications to Section 9. Examination and Calibration or Certification of Standards and Testing Equipment under the Uniform Regulation for the Voluntary Registration of Servicepersons and Service Agencies for Commercial Weighing and Measuring Devices in NIST Handbook 130.

Comments received by the Committee indicated that 10 years may be too long an interval and that corrosion of standards has been observed after 4 years of field use. The Committee heard a recommendation that the mass standard's stability should be documented prior to extending established certification intervals. A member of the Metrology Subcommittee indicated that work has begun to develop a Handbook 105-Series to address the specifications and tolerances for reference standards; however, it is anticipated the project will take at least 2 years for completion.

Based on comments heard during its agenda review and open hearing at the July 1998 NCWM Annual Meeting, the Committee recommends modifications to the SWMA's proposal for new paragraph N.2.1. Verification Interval as outlined in the recommendation above. The modifications clarify the maximum permissible calibration interval, the test weight location, and the responsibilities of the official with statutory authority.

The Committee acknowledged that the proposal was prompted by the need to address the extensive, burdensome and often unwarranted procedures required to verify hopper scale standards. The Scale Manufacturers Association (SMA) indicated that it could support this requirement only if it were to apply solely to hopper scale standards. The Committee expressed concern that NIST Handbook 44 does not contain verification intervals for other standards and the proposal may later conflict with requirements that are being developed by the Metrology Subcommittee. Consequently, the Committee decided to maintain the item as an information item to allow time for additional development of the issue. In the meantime, the Committee believes that verification intervals should be handled by the metrologist or official with authority in each jurisdiction.

Automatic Weighing Systems - Tentative Code

324-1 VC A.4. Type Evaluation

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

Source: NCWM Specifications and Tolerances Committee

Recommendation: Modify the preface to the Tentative Code to read as follows:

This tentative code has only a trial or experimental status and is not intended to be enforced by weights and measures officials. The requirements are designed for study prior to the development and adoption of a final Code for Automatic Weighing Systems. The tentative code is intended to be used by the National Type Evaluation Program for type evaluation of automatic weighing systems. If upgraded to become a permanent code, all requirements, except those for tolerances, will be nonretroactive as of the effective date of the permanent code; tolerance requirements will apply retroactively as of the effective date of the permanent code. (Tentative Code Added 1995)

Add a new paragraph A.4. Type Evaluation to read as follows:

A.4. Type Evaluation. - The National Type Evaluation Program will accept for type evaluation only those devices that comply with all requirements of this code.

Discussion: The Automatic Weighing Systems Code Section is a tentative code with a trial status which is not intended to be enforced; however, its requirements are intended to apply immediately to devices which are submitted to the National Type Evaluation Program for type evaluation. During the drafting of the tentative code, a paragraph indicating that these requirements apply to devices under type evaluation was inadvertently omitted. The proposed paragraph would correct this oversight.

The NEWMA and SWMA support the proposal as written. The CWMA felt it was more appropriate to modify the wording in the preface to the Automatic Weighing Systems - Tentative Code.

The Committee felt that both proposals had merit and would provide clarity on how the tentative code section is to be applied.

Liquid-Measuring Devices Code

330-1 W S.3.2.(a) Exceptions; Diversion Prohibited and UR.2.4. Diversion of Liquid Flow

(This item was withdrawn.)

Source: Central Weights and Measures Association (CWMA)

Discussion: The Committee considered a proposal to modify paragraphs S.3.2.(a) Exceptions and UR.2.4. Diversion of Liquid Flow as follows to clarify the permissible deterrents to prevent diversion of product from vehicle fueling installations.

S.3.2. Exceptions. - The provisions of S.3.1. Diversion Prohibited shall not apply to:

(a) truck refueling devices when diversion of flow to other than the receiving vehicle cannot readily be accomplished and is readily apparent. ~~Allowable deterrents include, but are not limited to, physical barriers to adjacent driveways, visible valves, or lighting systems that indicate which outlets are in operation, and explanatory signs;~~

UR.2.4. Diversion of Liquid Flow. - A motor-fuel device equipped with two delivery outlets used exclusively in the fueling of trucks shall be so installed that any diversion of flow to other than the receiving vehicle cannot be readily accomplished and is readily apparent. Allowable deterrents include, but are not limited to,: ~~physical barriers to adjacent driveways, visible valves, or lighting systems that indicate which outlets are in operation, and explanatory signs~~.

(a) physical barriers that prevent use from an adjacent driveway,

(b) visible valves, or

(c) lighting systems that indicate which outlets are in operation, and which include signs to explain the purpose and use of the lights to the operator.

Explanatory signs must accompany (b), (c), or other allowable deterrents.
(Amended 1991 and 1998)

Discussion: The CWMA proposed several editorial changes to paragraphs S.3.2. and UR.2.4. to clarify that signs are not the sole permissible deterrent to diversion of product and to eliminate the confusion over what deterrents are acceptable in vehicle refueling operations.

Comments indicated that the CWMA was concerned that the current wording of paragraph S.3.2.(a) may imply that a sign is sufficient to indicate product diversion in a measuring system. The Committee noted that the intent of the requirement is to prevent fraudulent use of the device not to interfere with commercial use of the device. The requirement also recognizes that the configuration of some vehicle fuel storage tanks necessitates the design of systems with multiple delivery points. The Committee notes that the NCWM intended the signage to contain wording to explain how the operation of a particular deterrent makes it apparent that product is being diverted. The Committee believes the conditions required when diversion of product occurs during truck refueling are adequately addressed in Handbook 44 and does not believe that the language in paragraphs S.3.2. and UR.2.4. warrant any change at this time.

330-2 I T.2.1.X Tolerances for Devices Delivering Less than One Gallon

Source: National Type Evaluation Technical Committee Measuring Sector

Discussion: The Committee reviewed a proposal to add new paragraph T.2.1.X. Tolerances for Devices Delivering Less than One Gallon for retail liquid-measuring devices which deliver small quantities of product to read as follows:

T.2.1.X. Tolerances for Devices Delivering Less than One Gallon. - Maintenance tolerances and acceptance tolerances shall be as shown in Table 2. Tolerances for Slow-Flow Meters.

The National Type Evaluation Program (NTEP) received a request for type evaluation of a retail device which dispenses small volumes of product. A review of the applicable tolerances in NIST Handbook 44 for retail devices resulted in tolerances which are larger than the volume of product these devices are designed to dispense. The established tolerances were so large that the test procedure and uncertainty of the standard used the entire allowable tolerance. The manufacturer submitting the device agreed that, in the interim until the NCWM adopted specific tolerances, the tolerances in Table 2 were acceptable criteria for the performance of the device under evaluation.

During the 1997 Annual Meeting of the National Type Evaluation Technical Committee Measuring Sector, the Sector reviewed the 1991 NCWM S&T Committee discussions (Item 330-7 NIST Special Publication 816) on tolerances for devices which dispense small test drafts. The S&T Committee examined OIML Second Preliminary Draft, "Measuring Assemblies for Liquids Other than Water" and Measurement Canada's tolerances for lubricating oil meters. The S&T Committee recommended establishing separate smaller tolerances for lubricating oil meters due to the difficulties associated with handling large volumes of the product. Based on the 1991 discussions, NTEP developed a tolerance matrix (see Appendix A), which makes a comparison of the acceptance tolerances used by OIML, Canada and NIST Handbook 44 for Slow Flow Meters. The Sector agreed with the recommendation of the S&T Committee and believes that the tolerances already established in Table 2 are appropriate for devices which dispense test drafts smaller than 100 ml or 0.2 pint. The Sector recommends that a reference to the application of Table 2 tolerances to retail devices which deliver less than one gallon be added to Handbook 44.

The S&T Committee has some concerns over an inference that the proposed paragraph as written is applicable to retail motor-fuel dispensers, since they are capable of delivering less than one gallon of product. The Committee recommends that some additional text may be necessary to clarify the correct application for this requirement. Additionally, the Committee is interested in data which demonstrates whether or not these tolerances are appropriate for this technology. The Committee has given this item informational status because it believes the text should be modified to clarify which devices must be held to these tolerances.

330-3 VC Table S.2.2. Categories of Device and Methods of Sealing; Category 2

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

(This item was adopted at the 1998 NCWM Annual Meeting to address Category 2 devices. The requirement has generated numerous questions about how to apply the January 1, 2005 enforcement date. There appear to be several interpretations about whether or not Category 2 devices currently in use are permitted after 2005. The item will appear again on the S&T Committee's 1999 Interim Meeting Agenda to enable the NCWM to clarify the intended application of the requirement.)

(This item was added during the Interim Meeting as a result of discussions on Item 337-1 and to ensure consistency in the code requirements which apply to devices competing in the same applications.)

Source: NCWM Specifications and Tolerances Committee

Recommendation: Modify Table S.2.2. Categories of Device and Method of Sealing to read as follows:

Table S.2.2. Categories of Device and Methods of Sealing	
Categories of Device	***Method of Sealing***
Category 1: No remote configuration capability	***Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.***
Category 2: Remote configuration capability, but access is controlled by physical hardware. ***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.*** ***Category 2 applies to such 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.***	***[The hardware enabling access for remote communication must be on-site. The hardware must be sealed using a physical seal ~~and~~ 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.]* [*Nonretroactive as of January 1, 1996]***
Category 3: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password). ***Category 3 will be modified in 2005 to apply to all devices with remote configuration capability.***	***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.)***

[Nonretroactive and enforceable as of January 1, 1995.]
(Table added 1993) (Amended 1995 and 1998)

Discussion: The Committee believes that devices which are capable of remote communication have a level of technology which is equipped with sufficient memory to incorporate event loggers. Additionally, the Committee believes that different device technologies, such as retail motor-fuel dispensers and mass flow meter retail motor-fuel dispensers used in comparable applications should be held to similar requirements.

The Committee discussed proposed changes to the mass flow meter code to Category 2 device sealing requirements and additional changes which would include all devices with remote communication capability under a single category, Category 3. The Committee believes these modifications are also appropriate for liquid-measuring devices because of the similarities found in the device applications. The Committee agreed that the changes to the method of sealing Category 2 devices would be appropriate only for an interim period; after that period devices with remote configuration capability must meet Category 3 sealing requirements.

Additional background information on this item can be found in the discussions on Item 337-1.

Liquefied Petroleum Gas and Anhydrous Ammonia Liquid-Measuring Devices Code

332-1 VC N.4.1. Normal Tests

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

Source: Carryover Item 332-1

Recommendation: Amend N.4.1. Normal Tests to read as follows:

> **N.4.1. Normal Tests. - The "normal" test of a device shall be made at the maximum discharge flow rate ~~that may be anticipated~~ developed under the condition of installation. Any additional tests conducted at flow rates down to and including one-half the sum of the maximum discharge flow rate and the rated minimum discharge flow rate shall be considered normal tests.**

Discussion: In 1997, the Committee considered a proposal by the CWMA to modify N.4.1. to clarify the intent of the paragraph. The CWMA noted that the current language in paragraph N.4.1. generates confusion over which device flow rate is necessary to perform a "special" test, thus causing a lack of uniformity in the performance of test procedures. The changes to paragraph N.4.1. make the test procedure more consistent with similar Handbook 44 test procedures, such as paragraph N.4.1. Normal Tests in the Liquid-Measuring Devices Code.

The comments received by the Committee indicated limited private and public sector support for this proposal. This proposal also generated 1) questions about the flow rates which appear to be affected by the size of the discharge hoses when there are two or more delivery outlets; 2) additional comments concerning confusion over the wording and inconsistencies with other code requirements; 3) cautions over installation-dependent factors which may cause devices to operate below the manufacturer's intended minimum flow rate; and 4) whether or not there should be some clarification or a definition for the terms "Slow Flow" and "Special Test" in the Liquefied Petroleum Gas and other code sections.

It was noted that the paragraph should contain language to describe where the minimum flow rate starts and the Committee noted that consistent language is needed to clarify that the device is operating at its maximum discharge *rate* during the normal test. Based on the comments received and the questions raised, the Committee believed that the proposal needs further study to determine if it can be demonstrated that there are widespread inconsistencies in how this requirement is being applied. Consequently, in 1997 the Committee kept this item on its agenda to allow for further study.

The WWMA believes the modifications to paragraph N.4.1. as presented to the NCWM in 1997 were consistent with the definition of a normal test as specified in NCWM Publication 14 for Liquid-Measuring Devices, Vehicle-Tank Meters and Cryogenic Liquid Measuring Devices. The WWMA feels that the modified language clarifies when it is appropriate to perform a normal test and supports the proposal as written.

The NEWMA supports the proposal; however, it believes that additional language should be included to state, "Not to exceed manufacturer's maximum discharge rate" which is essential to avoid rates of discharge that exceed the manufacturers recommendations.

The SWMA felt the proposal does not adequately address the question about the appropriate flow rate to consider for test and what conditions warrant a special test; therefore, it withdrew this item from its agenda.

The Committee considered the difficulties encountered by field officials when installation conditions and hose size affect the manufacturer's marked rate of flow. The Committee recognizes that the proposed criteria for determining flow ranges on normal tests are also applicable to vehicle-tank meters. The Committee believes that, although this proposal does not define a special test, it does define at what flow rate a normal test should occur. Consequently, the Committee supports the proposal as written.

The following examples, excerpted from NCWM Publication 14, National Type Evaluation Program Administrative Procedures, Technical Policy, Checklists, and Test Procedures, Liquid-Measuring Devices Technical Policy, illustrate how to determine the "breakpoint" between normal and special test tolerance application:

	Metric	Inch-Pound
Minimum Flow Rate Marked on the Device	20 L/min	20 gpm
Maximum Flow Rate Marked on the Device	15 L/min	100 gpm
Maximum Flow Rate Achieved in the Installation	8 L/min	60 gpm
Breakpoint =	(80 + 20)/2 = 5 L/min	(60 + 20)/2 = 40 gpm

Mass Flow Meters Code

337-1 VC Table S.3.5. Categories of Device and Methods of Sealing; Category 2

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

(This item was adopted at the 1998 NCWM Annual Meeting to address Category 2 devices. The requirement has generated numerous questions about how to apply the January 1, 2005, enforcement date. There appear to be several interpretations about whether or not Category 2 devices currently in use are permitted after 2005. The item will appear again on the S&T Committee's 1999 Interim Meeting Agenda to enable the NCWM to clarify the intended application of the requirement.)

Source: CWMA Weights and Measures Association

Recommendation: Amend Table S.3.5. Categories of Device and Method of Sealing; Category 2 as follows.

Table S.3.5. Categories of Device and Methods of Sealing	
Categories of Device	*Method of Sealing*
Category 1: No remote configuration capability	*Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.*
Category 2: Remote configuration capability, but access is controlled by physical hardware. *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.* *Category 2 currently applies to such devices manufactured prior to January 1, 2005. Devices with remote configuration capability manufactured or in use 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.*	*[The hardware enabling access for remote communication must be on-site. The hardware must be sealed using a physical seal ~~and~~ 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.]* [*Nonretroactive as of January 1, 1996]*
Category 3: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password). *Category 3 will be modified in 2005 to apply to all devices with remote configuration capability.*	*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.)*

[Nonretroactive and enforceable as of January 1, 1995.]
(Table added 1993) (Amended 1995 and 1998)

Discussion: In 1997 the S&T Committee returned this issue to the National Type Evaluation Technical Committee Measuring Sector for resolution. In response to a request from the Measuring Sector to develop a definition of system controller as it relates to remote configuration, Micro Motion, Incorporated developed a definition for remote configuration device which reads as follows:

> remote configuration device - A tool used to adjust or change the sealable parameters of a weighing or measuring device that is not necessary for the operation or is not a permanent part of the weighing or measuring device but may be used to view the sealable parameters or event counters.

Micro Motion's definition does not define system controller; however, Micro Motion believes that the device used to view audit trail information on the Micro Motion mass flow meter transmitter is best described as an auxiliary device.

Initially, the CWMA supported Micro Motion's proposed definition for remote configuration device; however, concerns were expressed over whether or not the remote devices would be present during field inspections. Comments were made that the remote device would have to be present at the location at all times to view parameters or print information. The CWMA also

later indicated it was not appropriate to define a term which does not appear in the text of a code section. Based on discussions at its Interim Meeting, the CWMA recommended that the following statement be added to the Category 2 Method of Sealing in Table S.3.5.:

Auxiliary equipment may be used to view the event counters when they are located at the individual measuring device.

The NEWMA supported the CWMA's proposal to address the use of auxiliary equipment to view audit trail information. The NEWMA recognizes the unique situation of the manufacturer which employs hand held devices to view audit trail information through the mass flow meter transmitter. Additionally, it understands that mass flow meters are typically installed in one to two dispensers. The NEWMA believes that these installations require service personnel to be present when tests are performed and, therefore, does not feel there is overwhelming data to support prohibiting the modification to the method of sealing these devices. The NEWMA asks that the modification to the Method of Sealing for Category 2 devices in Table S.3.5. be given informational status.

The SWMA heard the CWMA's proposal to modify Table S.3.5.; however, it did not reach a consensus on the proposed changes because of numerous questions on the impact of this proposal. The SWMA recommends the proposal be reviewed by other regional associations; consequently, it gave the item informational status. Additionally, the SWMA recommends the NCWM consider a change to the requirement from physical seal and event counter to physical seal *or* event counter.

The S&T Committee considered the original charge to define "system controller" and the Micro Motion proposal to include auxiliary devices as a means of viewing audit trail information. The Committee agreed that Table S.3.5. should be modified to permit sealing access to the hardware enabling remote communication to Category 2 devices through either a physical seal *or* event counters. The Committee believes this would be an adequate means of sealing adjustable components and also meet the original intent for access to audit trail information. However, the Committee agreed that this would be appropriate only for an interim period; after that period devices with remote configuration capability must meet Category 3 sealing requirements.

The Committee also discussed the issue of whether or not current descriptions of device categories and methods of sealing requirements adequately address the technology which is currently available or about to enter the marketplace. The Committee feels that technology is moving toward unlimited access to sealable features through remote communication. Comments from Canada indicate when devices with access to remote communication through handheld equipment were approved there were instances where the equipment was not always available during inspection. The Committee was cautioned that the proposal also impacts mass flow meter technology used in other liquid applications. It appears that there will continue to be versions of devices which will have no remote communication capability that are equipped with either physical seals or event counters for security. The Committee believes that the best approach is to have requirements which better reflect today's technology. Consequently, the Committee is proposing the changes as outlined in the recommendation above.

Background: Additional background information on this issue can be found in 1997 S&T Agenda Item 330-3.

337-2 VC UR.3.8. Return of Product to Storage - Compressed Natural Gas Dispensers

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

Source: Carryover Item 337-1

Recommendation: Add a new paragraph UR.3.8. Return of Product to Storage to the Mass Flow Meter Code as follows:

UR.3.8. Return of Product to Storage, Retail Compressed Natural Gas Dispensers.- Provisions at the site shall be made for returning product to storage or disposing of the product in a safe and timely manner during or following testing operations. Such provisions may include return lines, or cylinders adequate in size and number to permit this procedure.

Discussion: In 1995, the Committee considered the following proposal at the recommendation of the Laws and Regulations Committee.

> UR.3.X. Return of Product to Storage, Retail Compressed Natural Gas Dispensers.- Provisions shall be made for returning product to storage during testing operations.

The CWMA recommended modification of the proposal to indicate disposal of product rather than return product to storage to read as follows:

> UR.3.X. Disposal of Product - Retail Compressed Natural Gas Dispensers - Provisions shall be made for returning product to storage, or venting to the atmosphere in a safe and timely manner following testing operations.

The Committee maintained this item as informational from 1995 to 1997 with the understanding that the Natural Gas Vehicle Coalition (NGVC) would come back to the S&T Committee with a definitive proposal by July 1997. The Committee expressed its intention to move the item to voting status on its 1998 agenda based upon its continued concerns over the safe disposal of product after testing and the need to enable testing to facilitate use and implementation of these alternative fueling devices.

The WWMA expressed concern that this item has remained on the agenda for three years and encouraged a response from the NGVC before the NCWM Interim Meeting; therefore, the WWMA gave this item informational status.

The CWMA noted that the user should be aware of and comply with fire and safety codes. An alternative to the proposal would be to require all locations to provide three test cylinders for the test of retail motor-fuel CNG dispensers and the jurisdiction would provide the reference scale. Each cylinder would be required to meet size and CNG cylinder safety standards. The disposal operation would be performed by the users at their leisure. The CWMA believes this would be the most cost efficient means of complying with the proposed requirement.

The NEWMA agreed with the intent of the original proposal and asked to review the NGVC recommendation in addition to the draft examination procedure outline (EPO) scheduled to be ready for review by the 1998 Interim Meeting.

The SWMA supports passage and implementation of the original proposal and believes the NGVC has had ample time to provide the NCWM with an alternative means to address return of product to storage.

During its work session at the 1998 Annual Meeting, the Committee considered the proposals from 1995, the CWMA, and Canada's recommendation to avoid any language which might appear to conflict with safety practices. The Committee was briefed on the status of the CNG-EPO, which includes language that addresses product disposal. The Committee was informed that the NGVC would not be providing definitive language on how to dispose of product; therefore, in lieu of delaying the EPO, the procedure would contain language indicating that safe methods for product disposal should be developed at the jurisdictional level. The Committee continues in its belief that the process of venting to dispose of product after testing has inherent safety risks and questions the environmental soundness of this practice. The Committee believes the wording recommended by Canada more adequately addresses many of the concerns over safe disposal of product while allowing some discretion to the official with statutory authority.

The Committee acknowledged that cylinders other than those designated for testing purposes, may be used during the test procedure, provided they meet safety and other standards for storage of compressed natural gas.

Additional background information on this issue can be found in the S&T Committees 1995-1997 final reports.

Carbon Dioxide Liquid-Measuring Devices - Tentative Code

338-1 VC A.4. Type Evaluation

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

Source: NCWM Specifications and Tolerances Committee

Recommendation: Modify the text in the preface to the Tentative Code to read as follows:

This tentative code has only a trial or experimental status and is not intended to be enforced by weights and measures officials. The requirements are designed for study prior to the development and adoption of a final Code for Carbon Dioxide Liquid-Measuring Device. The tentative code is intended to be used by the National Type Evaluation Program for type evaluation of carbon dioxide liquid-measuring devices. If upgraded to become a permanent code, all requirements, except those for tolerances, will be nonretroactive as of the effective date of the permanent code; tolerance requirements will apply retroactively as of the effective date of the permanent code.
(Tentative Code Added 1996)(Amended 1998)

Add a new paragraph A.4. Type Evaluation to read as follows:

A.4. Type Evaluation. - The National Type Evaluation Program will accept for type evaluation only those devices that comply with all requirements of this code.
(Added 1998)

Discussion: The Carbon Dioxide Liquid-Measuring Devices Code Section is a tentative code with a trial status and it is not intended to be enforced; however, its requirements are intended to apply immediately to devices which are submitted to the National Type Evaluation Program for type evaluation. During the drafting of the code, a paragraph indicating that these requirements apply to devices under type evaluation was inadvertently omitted. The proposed changes to A.4. would correct this oversight.

The NEWMA and SWMA support this item as written. The CWMA felt that it was more appropriate to modify the wording in the preface to the Carbon Dioxide Liquid-Measuring Device - Tentative Code.

The Committee felt that both proposals had merit and would provide clarity on how the tentative code section is to be applied.

Berry Baskets and Boxes Code

346-1 W Changes to Recognize Use of Nonrigid Containers

(This item was withdrawn.)

Source: Central Weights and Measures Association (CWMA)

Discussion: The Committee considered a proposal to amend Section 4.46 Berry Baskets and Boxes to include nonrigid containers as follows:

A.1. - This code applies to baskets and boxes for berries and small fruits in capacities of 1 dry quart and less. This code also applies to nonrigid (paper, and plastic) containers used for the sale of fruits and vegetables with a capacity of ½ bushel and less.

S.1. Units. - ~~The capacity of a berry basket or box shall be ½ dry pint, 1 pint, or 1 dry quart.~~

S.1.1. The capacity of a berry basket or box shall be ½ dry pint, 1 pint, or 1 dry quart.

S.1.2. The capacity of nonrigid containers shall be ¼ peck, ½ peck, 1 peck or ½ bushel.

S.3. Capacity Point. The capacity of a berry basket, ~~or~~ box, or nonrigid container shall be determined by its top edges.

N.1. Method of Test. - ~~A berry basket or box may be tested either volumetrically, using rape seed as the testing medium, or geometrically through accurate inside dimension measurement and calculation.~~

N.1.1. A berry basket or box may be tested either volumetrically, using rape seed as the testing medium, or geometrically through accurate inside dimension measurement and calculation.

N.1.2. A nonrigid container may be tested geometrically through accurate inside dimension measurements and calculations.

Table 1.
Maintenance and Acceptance Tolerances
in Excess and in Deficiency

Nominal Capacity	Tolerance	
	In excess cubic inches	In deficiency cubic inches
½ pint	1.0	0.5
1 pint	2.0	1.0
1 quart	3.0	1.5
¼ peck	5.0	2.5
½ peck	10.0	5.0
1 peck	16.0	8.0
½ bushel	30.0	15.0

In 1997, the NCWM considered a proposal from the CWMA to recognize non-rigid containers in the Berry Basket and Boxes Code. The NCWM believed it was more appropriate that non-rigid containers be addressed under the packaging requirements in NIST Handbook 130 and 133; consequently, it withdrew the item from the agenda. The CWMA asked that this proposal be reconsidered due to the widespread nature of the problem with short volume bags in the CWMA region states.

The NCWM acknowledged there are difficulties associated with sales by dry measure.

The Committee recognizes that the issue of short measure nonrigid containers has been previously addressed by the NCWM and handled as a labeling issue by the Laws and Regulations (L&R) Committee. The Committee has received confirmation from the L&R Committee's Technical Advisor that they will revisit this issue. Consequently, the S&T Committee has withdrawn this item from the agenda.

Additional background information on this item can be found in the 1997 NCWM Report on the Specifications and Tolerances Committee.

Grain Moisture Meters Code - Section 5.56.(a)

356-1 VC Table S.2.5. Categories of Device and Methods of Sealing; Category 3

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

Source: National Type Evaluation Technical Committee (NTETC) Grain Moisture Meter and Near-Infrared Protein Analyzer Sectors

Recommendation: Modify the requirements for Category 3 devices in Table S.2.5. of the Grain Moisture Meters Code as follows:

Table S.2.5. Categories of Device and Methods of Sealing	
Categories of Device	***Method of Sealing***
Category 1: No remote configuration capability	***Seal by physical seal or two event counters: one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999). If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.***
Category 2: Remote configuration capability, but access is controlled by physical hardware ***Device shall clearly indicate that it is in the remote configuration mode and shall not be capable of operating in the measure mode while enabled for remote configuration.***	***The hardware enabling access for remote communication must be at the device and sealed using a physical seal or two event counters; one for calibration parameters (000 to 999) and one for configuration parameters (000 to 999.) If equipped with event counters, the device must be capable of displaying, or printing through the device or through another on-site device, the contents of the counters.***
Category 3: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password) ***When accessed remotely for the purpose of modifying sealable parameters, the device shall clearly indicate that it is in the configuration mode and shall not be capable of operating in the measuring mode.***	***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 (for calibration changes consisting of multiple constants, the calibration version number may be used rather than the calibration constants). A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to twenty-five (25) times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)***
Category 3a: No remote capability, but operator is able to make changes that affect the metrological integrity of the device (e.g., slope, bias, etc.) in normal operation	***Same as Category 3***
Category 3b: No remote capability, but access to metrological parameters is controlled through a software switch (e.g., password)	***Same as Category 3***

[Table Nonretroactive as of January 1, 1999.]

Discussion: During its 1997 review of the proposed sealing requirement changes to NCWM Publication 14, the NTETC Grain Moisture Meter 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 modify sealable parameters. The Sector agreed that the requirements for a Category 3 device should be no less stringent than those 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 recommends similar requirements be added to Table S.2.5. for Category 3 devices.

The Committee heard no unfavorable comments on this item, and supports this proposal as written.

356-2 VC Table S.1.2. Grain Types Considered for Type Evaluation and Calibration and Minimum Acceptable Abbreviations

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

Source: National Type Evaluation Technical Committee Grain Moisture Meter and Near-Infrared Protein Analyzer Sectors

Recommendation: Change the reference to Eastern White Wheat and Western White Wheat to Soft White Wheat in Table S.1.2. as follows to reflect current terminology.

Table S.1.2. Grain Types Considered for Type Evaluation and Calibration and Minimum Acceptable Abbreviations

Grain Type	*Minimum Acceptable Abbreviation*	*Grain Type*	*Minimum Acceptable Abbreviation*
Corn	*CORN*	*Soybeans*	*SOYB*
Durum Wheat	*DURW*	*Two-rowed Barley*	*TRB*
~~*Eastern White Wheat*~~	~~*EWW*~~	*Six-rowed Barley*	*SRB*
~~*Western White Wheat*~~	~~*WWW*~~	*Oats*	*OATS*
Soft White Wheat	*SWW*		
Hard Red Spring Wheat	*HRSW*		
Hard Red Winter Wheat	*HRWW*		
Soft Red Winter Wheat	*SRWW*		
Hard White Wheat	*HDWW*		
Sunflower seed (Oil)	*SUNF*	*Long Grain Rough Rice*	*LGRR*
		Medium Grain Rough Rice	*MGRR*
Grain Sorghum	*SORG or MILO*	*Small oil seeds (under consideration)*	

Discussion: The Grain Inspection and Packers and Stockyard Administration (GIPSA) has combined the wheat classes for Eastern White Wheat and Western White Wheat into a single new class designated as Soft White Wheat. The recommended changes to Table S.1.2. will reflect the change in wheat classes and align GIPSA and Handbook 44 requirements in Table S.1.2. for grain moisture meters.

The Committee heard no unfavorable comments on this item, and it supports this proposal as written.

356-3 VC S.2.4.3. Calibration Transfer

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

Source: Grain Moisture Meter and Near-Infrared Protein Analyzer Sectors

Recommendation: Amend S.2.4.3. Calibration Transfer to read as follows:

S.2.4.3. Calibration Transfer. - The instrument hardware/software design and calibration procedures shall permit calibration development and the ~~mathematical~~ transfer of calibrations between instruments of like models without requiring user slope or bias adjustments..

Note: Only the manufacturer or the manufacturer's designated service agency may make ~~calibration transfer~~ standardization adjustments on moisture meters. ~~and, except for instrument failure and repair, only at a prescribed~~

~~period of time during the year~~. This does not preclude the possibility of the operator installing ~~the~~ manufacturer-specified calibration constants ~~or standardization parameters~~ under the instructions of the manufacturer or its designated service agency. Standardization adjustments (not to be confused with grain calibrations) are those physical adjustments or software parameters which make meters of like type respond identically to the grain(s) being measured.
[Nonretroactive and effective as of January 1, 1999]

Discussion: The requirements for calibration transfer between moisture meters of like model are specified in the Grain Moisture Meters Code of Handbook 44. The Code provision which allows the operator to install manufacturer-specified calibration constants or standardization parameters (under the instructions of the manufacturer or his designated service agency) originally had two objectives: 1) to allow the user to install a new calibration without having to return the instrument to the manufacturer or a service agency; and 2) to allow the user to install new standardization parameters (calibration transfer adjustments) if required by the field replacement of certain components (provided that the manufacturer has the means to determine the appropriate standardization parameters without having the instrument in the shop).

Most near-infrared (NIR) instruments are "multi-constituent" devices capable of measuring multiple constituents such as moisture, protein, etc. For commercial use, they must meet the requirements of both the Grain Moisture Meters (GMM) Code and the Near Infrared Grain Analyzer Code. Early in the development of the NIR Grain Analyzer Code, the NIR Sector recognized that provisions would have to be made for frequent user adjustments of bias in NIR protein calibrations (user determined slope adjustments are not permitted). To provide the necessary security, the NIR Code stipulates that user bias adjustments can be made only on the basis of tests run on a current set of Standard Reference Samples (SRS) traceable to GIPSA Master Instruments. The user is also required to keep a log (Calibration Adjustment Data Sheet) which field inspectors can verify against the device's event logger. The GMM Code currently has the same wording related to calibration transfer as the NIR Code. The GMM Code, however, contains no user requirement regarding bias adjustments because most GMM Sector members believed that user-determined bias adjustments would not be required for moisture calibrations. It should also be noted that earlier provisions in the GMM Code prohibited user bias adjustments.

Later versions of the GMM Code did not specifically require the same bias values for a given grain moisture calibration in all instruments of like type; therefore, some manufacturers of multi-constituent devices used a bias term for each grain calibration to standardize readings among individual instruments. In these instances, the same calibration constants and the same slope value for a specific grain are used in all instruments; however, bias values differ from instrument to instrument. This has led to several problems:

- Bias terms for these instruments do not appear on the device Certificate of Conformance, so field enforcement personnel are unable to determine if the moisture bias term used in an individual grain calibration is correct.
- Instrument standardization must be repeated each time a calibration is changed. Without traceable standards to determine new bias values, there can be no traceability of the device to the NTEP standard units unless this standardization is performed "side-by-side" with the manufacturer's master instruments.
- When the only difference between calibrations for two successive years is a bias change (which is different in every device of like type), weights and measures officials cannot differentiate between a legitimate bias change and one made arbitrarily by the user.

In either instance, because moisture bias is a user accessible parameter in currently approved multi-constituent devices, the possibility for fraud exists (even when the device is held to within maintenance tolerance limits).

The Sector agreed that, although informative, audit trails did not fully satisfy it's members concerns. The Sector supports the proposed changes to paragraph S.2.4.3. and believes the changes will provide adequate security on user-controlled adjustments and clarify the difference between standardization adjustments (or parameters) and grain calibration coefficients. The Sector proposes a nonretroactive and effective date of January 1, 1999 for these changes.

The Committee heard no unfavorable comments on this item and supports this proposal as written.

Other Items

360-1 V Committee Policy and Procedures

(This item was adopted.)

Source: Carryover Item 360-3

Recommendation: The Committee recommends modifications to NCWM Policy, Interpretations, and Guidelines, 1.1.1. Committee Agenda Items, Submission and Management to address the submission of new items to the S&T Committee agenda as outlined in L&R Committee Agenda, Appendix C.

Discussion: The S&T Committee continued its work to develop a policy to expedite acceptance and processing of items on its agenda. The Committee's intent was to further define the procedure that is already outlined in NIST Handbook 44 Introduction 3. Handbook Amendments. The Handbook 44 outline provides the following process: (1) submit the proposal in writing by November; (2) concisely state the purpose of the proposal and the need for national consideration; (3) include adequate background material with the proposal and possible solutions to the problem; and 4) weights and measures officials are encouraged to utilize their regional associations. The Committee believes that the due process mechanism already in place may be expedited if more detailed guidelines are available to NCWM members. The Committee acknowledges that the Laws and Regulations Committee is working on similar policy and procedures, and made plans to work with that Committee on uniform guidelines. The Committee delayed the finalization of its draft guidelines until the joint effort between the two committees could proceed.

The CWMA acknowledges the mechanism in place in Handbook 44 and notes that emergency items and proposals by parties other than weights and measures officials are not addressed. The CWMA believes changes to the current mechanism would create more bureaucracy. It also questions whether issues proposed at a regional interim meeting would be recognized. The CWMA indicates that the outline in Handbook 44 is a good system and should be adhered to. Items which are not properly prepared and documented when they reach the NCWM should be sent back for further development.

The NEWMA supports the efforts to create a policy and procedural guideline for placing an item on the NCWM S&T agenda. Initially, the NEWMA agreed that an item should receive support from two regional associations prior to its placement on the NCWM agenda.

The SWMA heard numerous concerns over the possible requirements for an item to receive support from two regional associations. It was noted that the process should be uniform for anyone who submits agenda items, and improperly developed issues should be returned or held within the region until they were adequately developed. Because of concerns expressed at the SWMA over the process becoming cumbersome and lengthy, in addition to the possible overloading of the SWMA's agenda, this proposal was withdrawn from the SWMA's agenda.

At the 1998 Interim Meeting, joint sessions were held between the L&R and S&T Committees. The Committees recognize that NCWM Policy, Interpretations, and Guidelines 1.1.1., Committee Agenda Items, Submission and Management, already addresses many of the concerns surrounding submission of an agenda item.

Concern was expressed that items may not be developed to the point that NCWM members can make informed decisions. Additionally, there was emphasis on adhering to a policy of not accepting items that do not meet established criteria for consideration. It was recommended that the Internet may be an ideal site to post or to register a proposal because it would provide an excellent mechanism for sharing information.

The following issues were discussed at length: 1) what constitutes regional support of an item; 2) creating a new status category, "Developing," for issues which have merit but need further development and possible national exposure; 3) maintaining continuity on issues by keeping the same individual as the standing committee and regional association committee member; and 4) what criteria must an item meet to require urgent or immediate action by the NCWM (for example, this might include pending legal proceedings, preemption, or other trade barriers). The S&T and L&R Committees agreed that the concept of a brochure to explain the process should be further developed and a procedure should be in place to indicate each committee's justification for returning a proposal along with an explanation of what criteria may need to be met for a fully developed issue. Both Committees agreed that proposals may be added to the agenda if they are supported

by at least one regional weights and measures association, National Type Evaluation Technical Committee Sector or NCWM Work Group or Task Force. The Committees believe that the proposed modifications to NCWM Policy 1.1.1. will address the issues in question and the new preamble affirms the Committees commitment toward due process of items which are brought before the NCWM for a vote.

Background: The following information is excerpted from the 1997 NCWM S&T Committee final report to provide background information on this issue.

The Committee believes that the policy and procedures will help to expedite processing items placed on the NCWM S&T agenda. The Committee anticipates a final draft of a tri-fold brochure, and submission form by September 1997 and is working to include information on how to introduce an agenda item to the S&T Committee on the NCWM Fax-on-Demand Line. The Committee encourages feedback on the informational materials and procedures which it has developed.

Discussions at the 1997 Interim Meeting, by Committee members indicated a pressing need to establish some guidelines on how the Committee should accept and process items submitted for its agenda. The Committee has heard comments which indicate that many proposals on the S&T agenda may not be fully explored to ascertain if there is a national need for considering changes to the technical requirements in NIST Handbook 44. Additionally, items may have been presented to the Committee prior to an item undergoing all of the developmental procedures that are outlined in Handbook 44 Introduction 3. Handbook Amendments. Based on these comments and the number of proposals it receives annually, the Committee worked to develop a policy and procedures using the procedures in Handbook 44 as a template. The Committee believes that these new guidelines will help to ensure that members of the NCWM are receiving the maximum benefits of the mechanism in place for addressing weights and measures issues and enacting changes to Handbook 44.

360-2 I International Organization of Legal Metrology (OIML) Report

The following information was provided by Deborah M. Ripley, Standards Management Program, NIST at the July 1998 NCWM Annual Meeting. This report contains a list of International Working Group Meetings (IWG), National Working Group Meetings (NWG), work in process, Asian-Pacific Legal Metrology Forum (APLMF) activities, and other international activities that are of interest to NCWM members and are generally within the purview of the S&T Committee.

INTERNATIONAL WORKING GROUP MEETINGS

WATER METERS

OIML TC 8/SC 5 Water Meters (responsibility United Kingdom)
International Working Group Meeting
November 19-21, 1997 - Vienna, Austria
February 19-20, 1998 - Gaithersburg, Maryland

Background: The draft revision of R 49 Water Meters (Intended for the Metering of Cold Water) and the existing R 49 had both been withdrawn on the recommendation of the tenth International Conference of Legal Metrology (CIML) held in Vancouver, Canada in the Fall of 1996. This was done in order to avoid any potential conflicts with ongoing discussions about a new system of designating water meters, which will influence the next draft of International Organization for Standardization (ISO) 4064.

An International Working Group meeting was held November 19-21, 1997 in Vienna, Austria at the headquarters of Bundesannt für und Vermessungswesen Gruppe Eichwesen. The Working Group decided to hold another International Working Group meeting February 19-20, 1998 at NIST in conjunction with the ISO TC 30/SC 7/WG 7 water meter meeting. An International Working Group meeting is scheduled for September 21-22, 1998 in Braunschweig, Germany.

Status: Extensive revision of R49, "Water Meters (Intended for the Metering of Cold Water)," is being carried out in Working Group 2 (WG2), chaired by Jim Williamson, National Engineering Laboratory, Scotland. Several contentious issues have delayed the work, but overall, the new version of R49 is an improvement over the earlier version. WG2 will meet in September, and plans to have a draft ready for review by the full Committee in time for its November meeting. This work is progressing in parallel with similar work in ISO and European Committee for Standardization for Electrotechnical

Standardization (CENELEC). For more information, contact Chuck Ehrlich by mail at NIST, Bldg. 820, Room 164, Gaithersburg, MD 20899; by telephone at 301-975-4834; by fax at 301-926-1559; or by E-mail at *charles.ehrlich@nist.gov*.

GAS METERING

OIML TC 8/SC 7 Gas Metering (responsibility Belgium)
International Working Group Meeting
January 26-28, 1998 - Brussels, Belgium

Background: Last year, the Belgian Metrology Service hosted a meeting of OIML TC 8/SC 7, on January 26-28, 1998 at the Ministry of Economy in Brussels. One result of that meeting was the incorporation of CNG measuring assemblies into the 5th version; in contrast to the 3rd and 4th versions which were developed by only the Secretariat. The document that was mailed to the Participating Member Countries was the 5th version. It was noted that the text in italic in the 5th version were for CNG measuring assemblies only.

Summary: The chairman of the Brussels meeting was Mr. R. Eggermont, Belgian Metrology Service. Twenty-two delegates representing 11 Participating (P)-member countries (Belgium, Brazil, China, France, Germany, Netherlands, Norway, Poland, Slovak Republic, United Kingdom, and United States of America) and the Belgian Federation of Gas Distributors (FIGAZ) participated in the meeting.

This meeting was attended by several industry representatives from other countries. This was a shift from other OIML meetings in which only the U. S. delegation comprised industry representation. Mr. Voorhof, the International Committee on Legal Metrology (CIML) member for Belgium, indicated that they have watched the United States and the close working relationship with their manufacturers. It was felt that this relationship worked quite well and that OIML should get more industry representatives involved in the drafting of the recommendations from the beginning.

A 5th working draft on Measuring Systems for Gaseous Fuel had been prepared by the Secretariat. This working draft was sent out in November 1997. The main objective of the meeting was to discuss the draft and various comments in order to provide the Secretariat with sufficient information to prepare a 1st Committee Draft (1st CD) on Measuring Systems for Gaseous Fuel (this title was modified according to a decision of the Working Group to read **"gaseous fuel"** instead of **"fuel gas").**

The International Working Group confirmed the scope of the future OIML Recommendation which should apply to measuring systems for gaseous fuel and compressed gas (CNG systems for which the requirements will be presented in a separate chapter). The value proposed for the lower limit of the designed flow rate Q_{max} was 100 m^3/h; however, the group reached no consensus. Germany proposed a value of 500 m^3/h and the United States requested the consideration of lower values for CNG systems. The Working Group agreed that the text of the Recommendation's scope should be revised by the Secretariat in order to clarify the main objectives of the Recommendation and the two following approaches:

(1) Maximum permissible errors (mpe's) shall be defined and specified for complete systems (global approach) and shall be mandatory; or

(2) Additional values shall be specified for the mpe's of the various modules constituting the systems and shall be mandatory for pattern approvals of modules (modular approach).

The group agreed to allow the Member States to choose between these two approaches. This will have editorial consequences in many sections of the text which will be edited by the Secretariat.

Because this was a preparatory meeting for the 1st CD of the new Recommendation, many issues were clarified and expanded. However, more work needs to be done on the document. With the assistance of the U. S. National Working Group, the United States can have a significant influence on this recommendation.

Status: There is no further information from the Secretariat (Belgium). The 1st CD is due to be distributed by the Secretariat by September 1998. The next meeting of TC 8/SC 7 is scheduled to be held on February 8-11, 1999 in Brussels. One day will be devoted to a visit of gas metering sections installed in Belgium and France.

WEIGHTS

OIML TC 9/SC 3 Weights (responsibility United States)
International Working Group Meeting
May 19 – 22, 1998 - Gaithersburg, Maryland

(Note: For more specific details regarding individual items, refer to the report "OIML TC 9 / SC 3, IWG Meeting, Decisions of May 19-22, 1998.")

Background: OIML TC 9 / SC 3 is responsible for the development and maintenance of international recommendations and documents concerning weights. The Secretariat is held by the United States.

The efforts of the subcommittee SC 3 over the past two years have been focused on developing test methods and a model test report for OIML R 111, Weights of Classes E_1, E_2, F_1, F_2, M_1, M_2, and M_3. A task force group ,composed of Norway, Sweden, Denmark, and Finland was created in 1996. In January 1997, this Task Force presented the results of its work in an advanced draft (8th Draft) under the titles: "R 111-2, Part 1, Testing Procedures for Weights" and "R 111-2, Part 2, Pattern Evaluation Report."

In Spring 1997, the Secretariat circulated the 8th Draft to the IWG members for a ballot vote and comments. Based on the comments, the Secretariat prepared and distributed a First Committee Draft (1st CD). Because of duplications and other inconsistencies between the R 111-2 draft and the existing R 111, the Secretariat recommended that the existing R 111 (with appropriate revisions) and newer parts of "Testing Procedures for Weights" and "Pattern Evaluation Report" be consolidated in a new issue of R 111. Furthermore, given that R 33 Conventional Value of the Result of Weighing in Air, R 47 Standard Weights for Testing of High Capacity Weighing Machines, and R 52 Hexagonal Weights (Ordinary Accuracy Class from 100 g to 50 g) are at least in part either inconsistent with R 111 or redundant, the Secretariat proposed to retire R 33, R 47, and R 52 and to include their contents – to the extent that they are still valid – in the consolidated R 111.

Judging these issues to be critical for the successful completion of the R 111 project, the Secretariat decided to call an International Working Group Meeting to discuss unresolved issues of the 1st CD as well as the consolidation and revision proposals for the entire R 111.

Summary: The May 1998 meeting was chaired by Deborah McGann Ripley, Technical Advisor, Office of Standards Management, NIST. Twenty-one participants represented a total of nine countries (in alphabetical order): Brazil, China, Finland, France, Germany, Japan, Slovenia, Sweden, United States. Because only 9 of the 23 P-members were present, all decisions made at the IWG meeting were given an advisory status and require a ballot vote by the entire 23 voting members.

The agenda was subdivided into five major parts:

1. Open and new issues in OIML R 111-2, Part 1, Testing Procedures, 1st CD
2. Open issues in OIML R 111-2, Part 2, Pattern Evaluation Report, 1st CD
3. Proposed revisions to OIML R 111
4. Proposed consolidation of all parts of OIML R 111 into one document
5. Secretariat's review and proposal regarding OIML R 33, R 47, and R 52

A summary of the five major decisions, which were part of the agenda, can be found in Appendix B.

NATIONAL WORKING GROUP MEETINGS - 1998

DIMENSIONAL MEASURING INSTRUMENTS:

Summary of OIML TC 7/SC 5 "Dimensional Measuring Instruments" (responsibility Australia)
National Working Group Meeting
January 1998 - San Antonio, Texas

Background: In November 1994, Australia issued the first Committee Draft (1st CD) for Multi-dimensional Measuring Instruments and a U.S. National Working Group convened on February 23-24, 1995 to discuss the draft document Multi-Dimensional Measuring Instruments for Parcels". Comments developed at that meeting were sent to Australia. An

International Working Group meeting convened on September 11, 1995 at the Bureau International de Métrologie Légale (BIML) in Paris, France to discuss the 1st CD and any comments received by the Secretariat. Minutes of that meeting were sent out in October 1995. In April 1996, the Secretariat issued the 2nd CD which included all the alterations agreed to at the first subcommittee meeting of TC 7/SC 5 held in Paris France in September 1995. Another International Working Group meeting was convened in the U. S. at NIST on October 28-30, 1996 to finalize the Recommendation. In February 1997, the minutes from that meeting were distributed to the U. S. National Working Group. Based on the decisions of the October meeting and comments received, the Secretariat drafted the 3rd CD and distributed it to the IWG in November 1997. This draft was then distributed to the U. S. NWG for review, comment, and vote. A NWG meeting was then scheduled to be held in January 1998 at the NCWM Interim Meeting.

Summary: A copy of a fax from Ian Hoerlein, Australia, was distributed to the group. It was probably in response to correspondence from Canada objecting to the October 1996 meeting and minutes. Following that, Australia then sent a fax to all participating countries asking for a vote of each item from the October 1996 meeting minutes. A copy of the October 1996 minutes was distributed to the group. It was also noted that the two documents that were distributed, were also being distributed by mail to all members of the TC 7/SC 8 NWG.

The United States was represented at the October 1996 meeting and expressed its position on the issues discussed. It was concluded that the group should concentrate on the 3rd CD as it pertains to the current opinions of the U. S. working group.

Proposed Additions from Canada were distributed to the group. However, there were no comments on the proposed additions from Canada's memorandum on the 3rd CD draft from Australia.

Status: There is no further information from the Secretariat (Australia).

WATER METERS:

Summary of OIML TC 8/SC 5 Water meters (responsibility UK)
National Working Group Meeting
January, 1998 - San Antonio, Texas

Status: *(Note: Information on this issue can be found in the International Working Group Meetings Water Meters summary in this report.)*

GAS METERING:

OIML TC 8/SC 7 Gas metering (responsibility Belgium)
National Working Group Meeting
January 1998 - San Antonio, Texas

The group was given an update on TC 8/SC 7 Gas Metering. Early in December, the United States received a working draft to the 1st Committee Draft of "Measuring Systems for Fuel Gas" (5th Version) to be discussed at an IWG meeting in Brussels, January 26-28, 1998. The U.S. is now a Participating Member of that committee. The document was sent out for comment to the U. S. Technical Advisory Group for ISO TC 28 members, the NCWM/NTETC Measuring Sector, as well as other OIML TC 8 U. S. working group participants.

A U. S. NWG meeting for TC 8/SC 7 "Gas Metering" (responsibility Belgium), was held July 12, 1998, Portland, Oregon at the NCWM Annual Meeting to discuss the papers sent out to the U. S. NWG last March and the upcoming International Working Group meeting.

Status: There is no further information from the Secretariat (Belgium). The 1st Committee Draft is due to be distributed by the Secretariat by September 1998.

LOAD CELLS:

Summary of OIML TC 9 R 60 Load cells (responsibility U.S.)

National Working Group Meeting
January, 1998 - San Antonio, Texas

Background: In 1994, the Secretariat solicited comments from the International Working Group (IWG) on a proposal to revise R 60. An IWG was held in May 1996 at Braunschweig, Germany, to discuss the comments. The meeting was attended by 32 persons representing 13 participating countries, Bureau International de Metrologie Legale (BIML) and Comité Européen des Constructeurs d'Instruments de Pesage (CECIP) . A majority of the 27 Participating (P)-members (14) is required for meeting decisions and a decision on the final Revision requires 2/3 of the P-members (18). Since there were only 13 P-members present, the issues were submitted for a postal vote. Based on the ballots and comments received, the Secretariat prepared the 1st CD R 60. The document was circulated for ballot of the IWG. Based upon the result of the ballot and the comments received, the Secretariat determined that another meeting of the IWG was required. This meeting was held in July 1997 at Teddington, UK. The meeting was attended by 32 persons representing 16 of the registered 28 P-members, BIML and CECIP. The decisions of the technical committee were supported by the majority of registered P-members. Based on those decisions, the Secretariat prepared the 2nd CD R 60, for circulation and vote. With a vote of 20 "FOR," 2 "AGAINST," 1 "ABSTAIN," and 5 votes not returned for Part 1 Metrological Requirements and a vote of 20 "FOR," 1 "AGAINST," 1 "ABSTAIN," and 6 votes not returned for Part 2 Test Report Format, the Secretariat prepared 3rd Committee Draft.

Summary: John Elengo informed the group on some of the new items in R 60 and their potential impact on the U. S. load cell manufacturers. He spoke about the new humidity classification, SH, that requires a two day steady state humidity test on the load cell; the selection of the load cell for testing using first the lowest capacity then using a 5:1 ratio to select the rest of the family. In addition, John Elengo spoke about the new Y and Z factors. These two factors are defined as follows: for a multiple range instrument, the factor Y, where $Y = E_{max} / v_{min}$ and for a multi-interval instrument, the factor Z, where $Z = E_{max} / (2 \times DR)$. John spoke about how these two parameters may be a better way to describe the load cell since the two important factors are the 1) zero recovery after 30 minutes and 2) the temperature affects on zero. The factor Z describes both of these important factors. Other modifications to R 60 discussed were: the minimum times required for removal of a test weight from the force machine; marking requirement; and, declaration of a factor "p_{LC}" that employs the concept of apportionment of error. A manufacturer can now declare a value of p_{LC} somewhere in the range of 0.3 to 0.8 for his load cell.

The next topic discussed was on "retroactivity/non-retroactivity" of new the requirements. At the meeting in July 1997 in the UK, several participants asked questions on whether a new requirement in R 60 would or would not be retroactive. The Secretariat was asked to develop a letter to BIML on this issue. Since returning from the UK, the issue has been researched and a letter to BIML was determined to be unwarranted. According to the OIML Certificate System for Measuring Instruments, Subclause 6.6, states: After revision of the relevant Recommendation(s), the responsible OIML working group(s) shall declare, and CIML shall confirm, whether instruments complying with the previous relevant Recommendation(s) also comply with the revised Recommendation(s), or whether they may not comply with those revisions. The group was informed that NIST would prepare a letter ballot to go out to the IWG to vote on whether load cells complying with the previous R 60 1994(e) Recommendation, also comply with the revised Recommendation, or whether they do not comply with those revisions. This procedure was discussed and it was agreed that the letter ballot did not need to go out until the revision of R 60 was further along in the development process. It was also agreed to send a copy of the letter ballot to the NWG for comment. Currently, OIML does not employ "non retroactivity" of a requirement.

The group was then given an update on the APLMF intercomparison of load cells. US/NIST & Australia/NSC are to be the pilot laboratories.

A U. S. NWG meeting for TC 9 R 60 Load Cells was held on July 12, 1998 in Portland, Oregon at the NCWM Annual Meeting. Comments indicate that the definition for load cells with electronics lacks clarity. Based on comments from the NIST Force Group, the Secretariat made the following revision to the language "... truncated to two significant digits to the right of the decimal place..." There were numerous concerns about the length of time the test machine is in use during the span stability test. The Scale Manufacturers Association has sent a letter to representatives of load cell manufacturers addressing the R 76 test requirements and the NIST laboratory ability to perform these tests. The Secretariat has distributed the 3rd CD to BIML; however, an approval is not anticipated until the November 1999 CIML meeting and publication to follow sometime in the year 2000.

Status: Comments have been received by US/NWG. The Secretariat plans to send the 3rd Committee Draft to BIML by August 1, 1998.

NONAUTOMATIC WEIGHING INSTRUMENTS:

Summary of OIML TC 9/SC 1 R 76 (responsibility Germany/France)
National Working Group Meeting
January, 1998 - San Antonio, Texas

The National Working Group (NWG) was briefed on the APLMF Workshop on R 76. This workshop was a precursor to a workshop to be held in Shanghai, China in September 1998. Industry members have expressed an interest in attending this workshop, even if a fee is required. Kerry Marston of Australia, coordinator of the workshop has not yet made a definitive statement as to whether or not industry members would be able to participate and cites resources as the possible issue. Sam Chappell (NIST) stated that the United States would request that a delegation participating in the workshop include industry if they desired to participate and indicated that the Technical Standards Activities office will pursue this further.

The NWG was given an update on the APLMF Intercomparison. Problems occurred with the nonautomatic weighing instruments being tested and they were sent back to Australia for repair and reverification. While at the APLMF in Tsukuba, Japan, several additional countries asked to participate in the R 76 Intercomparison. Once the scales were repaired and reverified, they were sent to these new participants. The intercomparison is expected to end sometime in 1998.

A U. S. NWG meeting for TC 9/SC 1 Non-Automatic Weighing Instruments was held on July 12, 1998 in Portland, Oregon at the NCWM Annual Meeting. The National Type Evaluation Program (NTEP) began accepting applications July 10, 1998 for tests at their California and Ohio laboratories. NTEP plans to use outside accredited laboratories to perform some of the electrical and EMI tests. Devices will be limited to a maximum capacity of 1000 kg. The Secretariat informed the NWG R 76 is approaching its 5 year review and that there has been feedback on R76 issues which conflict with what is accepted by the U.S. and other countries. The Secretariat will send a letter to the Secretariat of the R 76, and copy to BIML, to inquire about the upcoming 5 year review and some suggested revisions for consideration.

Status: There is no further information from the Secretariat (France & Germany).

WORK IN PROCESS - 1997

DIMENSIONAL MEASURING INSTRUMENTS

TC 7/SC 5 "Dimensional Measuring Instruments" (responsibility Australia). 3rd Committee draft was distributed to U. S. NWG for comment. The United States sent Australia its comments and a vote of approval to send to CIML for vote. See above for details.

WATER METERS

TC 8/SC 5 R 49 Revision of Water Meters (Intended for the Metering of Cold Water). See above for details.

ELECTRONIC WATER METERS

TC 8/SC 5/WG 1 "Electronic Water Meters" had suspended its work to develop an OIML IR in this area, but will resume that work in September. It is too early to project a timetable for that work.

MEASURING SYSTEMS FOR THE MASS OF LIQUIDS IN TANKS

TC8/SC2 R 125 Measuring systems for the Mass of Liquids in Tanks (responsibility of Australia). Document is being printed by BIML.

DYNAMIC MEASURING DEVICES AND SYSTEMS FOR CRYOGENIC LIQUIDS

TC 8\SC 6 R 81-1 Dynamic Measuring Devices and Systems for Cryogenic Liquids (including tables of density for liquid argon, helium, hydrogen, nitrogen and oxygen), Part 1: Metrological and Technical Requirements - Tests. Document is being printed by BIML.

R 81-1 Dynamic Measuring Devices and Systems for Cryogenic Liquids. Part 2: Test Report Format. Document has been sent to BIML for publication.

WEIGHTS

TC 9/SC 3 R 111 The Secretariat's proposal to combine R 111 with R 111-2, Parts 1 and 2, into one document was accepted by the group. The proposed structure conforms to "OIML Directives for the Technical Work, Part 2, Guide to the Drafting and Presentation of OIML International Recommendations and Documents." The separate terminology sections will be combined into one, as will the several separate Lists of Symbols. R 111-2, part 1, Test Procedures, will become new Annex A (mandatory annex). R 111-2, part 2, Pattern Evaluation Report, becomes new Annex B (mandatory annex). The current Annex A, Shapes and Dimensions, becomes new Annex C (informative annex). The current Annex B, Uncertainties for Weights, will be eliminated (see the last of the changes mentioned in the preceding section 6 of this summary).

R 33: A task group composed of U.S., France, and Germany will review R 33, revise it as necessary and re-issue the publication as an International Document instead of an International Recommendation.

R 47: Since there was no consensus to retire this document (as proposed by the Secretariat), the Secretariat will conduct a survey among the IWG members to determine if R 47 should be retained as is, revised, or retired.

R 52: There was no opposition to the Secretariat's proposal to incorporate R 52 weights into Class M_3 of R 111. Nevertheless, the proposal will be submitted for a ballot vote, as will all decisions made in the meeting.

AUTOMATIC INSTRUMENTS FOR WEIGHING ROAD VEHICLES IN MOTION

TC 9/SC 2 3rd CD R "Automatic Instruments for Weighing Road Vehicles In Motion." Document to be circulated by February 1998. No action by Secretariat (UK).

LOAD CELLS

TC 9 3rd CD of R 60 has been circulated to US/NWG. Responses were due back June 1, 1998. To be discussed at NWG meeting in Portland, Oregon.

The comments from the IWG were quite extensive and required major revisions to the 2nd CD of R 60 Part 1: Metrological Regulation for Load Cells and to Annex C Test Report Format. Many editorial changes were made. These changes included updating all references to IEC 801-X (19xx) to reflect the new numbering scheme and a number change to IEC 61000-4-X (1995-yy); grouping and rearranging the terminology section; renumbering, reorganizing, and rewording, for clarity, the marking requirements; adding a diagram graphically depicting and defining the marking symbols; and merging Annex C into the main body of R 60. In addition, the terminology section has been reorganized, an index of terms has been added, some of the definitions were modified, and a few more terms were added to define the testing requirements of R 76 "Nonautomatic Weighing Instruments." Instead of just referencing the test procedures and forms from R 76, the Secretariat decided to include those test procedures and forms (with some modifications) into Annex A Test procedures and Annex C Test Report Format to avoid divergent interpretations.

An entire new section on the requirements for load cells with electronics has been added. The Secretariat believes that the metrological requirements for this type of load cell are not yet fully developed. There is a need to address this issue because load cells with electronics are in use today.

Status: *(Note: Information on this issue can be found in the National Working Group Meetings Load Cells summary in this report*

APLMF

The APLMF 5th Forum Meeting, October 1998, Korea.

INTERCOMPARISONS

1. ***Nonautomatic Weighing Instruments***. The intercomparison has been completed; however, no word has been received from the Convenor.

2. ***Mass***. The intercomparison has been delayed, pending information from Asian Pacific Metrology Program (APMP).

3. ***Load Cells***. The intercomparison is currently underway. In order to speed the process, there are two pilot laboratories, the United States' National Institute of Standards and Technology (NIST) and Australia's National Standards Commission (NSC). NIST is responsible for the load cells to be tested by Germany, the United Kingdom, Russia, and Japan; and the NSC

is responsible for the Pacific Rim countries of China, Korea, Chinese Taipei, and Vietnam. The two pilot laboratories will each test four load cells, two 250-kg capacity, and two 20 000-kg capacity, and then one pair will be sent to the Asian-Pacific countries.

Status: Testing of all four load cells has been completed by the NIST Force Group. One pair of load cells has been sent to Germany and the other pair has been sent to China. It is expected that the intercomparison will be completed by October 1998.

WORKSHOPS

Two APLMF workshops will be held in Shanghai, Peoples Republic of China from August 31 - September 10, 1998:

1. **August 31 - September 2, 1998**
Introduction to High Capacity Weighing
Content: Automatic Rail-weighbridge, per OIML R 106
Totalizing Hopper Weighers, per OIML R 107
Belt Weighers, per OIML R 50

2. **September 3 - September 10, 1998**
OIML R 76 "Train the Trainer" Workshop
Content: Pattern Approval of Nonautomatic Weighing Instruments, per OIML R 76

OTHER MEETINGS

IMEKO/APMF International Metrology Measurement Confederation (IMEKO) TC 3, 16th International Conference on Force, Mass and Torque Measurements, and the Asian-Pacific Symposium on Measurement of Mass and Force, September 14-18, 1998, Taejon, Republic of Korea

Ronald D. Murdock, North Carolina, Chairman

Darryl L. Brown, Iowa
Mark Coyne, Brockton, Massachusetts
Monty H. Hopper, Kern County, California
George Shefcheck, Oregon

Renald Marceau, Canada, Technical Advisor
Tina Butcher, NIST, Technical Advisor
Juana Williams, NIST, Technical Advisor

Committee on Specifications and Tolerances

Appendix A (Item 330-2)
Comparison of Tolerances for Devices Delivering Less than One Gallon

Test Draft Quantity (Q)	OIML Acceptance Tolerance		LMB Acceptance Tolerance		Meter Indication	NIST Handbook 44 Slow-Flow Meter Normal Test Acceptance Tolerances			
	%	ml	%	ml		percent	minims	fluid drams	ml
≤ 0.2 pt	1.2	1.2	2.0	2.0	1 gill (0.25 pt)	0.75	15		0.92
0.2 pt < Q ≤ 0.4 pt	1.2	2.4	1.25	2.5	0.05 gal (0.4 pt)	0.75	25		1.54
0.4 pt < Q ≤ 1 pt	0.6	2.4	1.2	6.0	0.5 pt	0.75	30		1.85
1 pt < Q ≤ 1 qt	1.0	6.0	1.0	10.0	0.10 gal (0.8 pt)		45		2.77
					1 pt (0.125 gal)	0.75	60		3.70
					0.20 gal (1.6 pt)		90		5.55
1 qt < Q ≤ 2 qt	0.3	6.0	0.75	15.0	1 qt	0.75		2	7.39
2 qt < Q ≤ 1 gal	0.3	0.3% Q	0.6	30.0	0.5 gal	0.60		3	11.09
1 gal < Q ≤ 2 gal	0.3	0.3% Q	0.4	40.0	≥ 1 gal	0.60		6 per gal	22.18 per gal
Q > 2 gal	0.3	0.3% Q	0.25	0.25% Q					

% - percent

1 minim = 0.000 130 208 3 pints
1 fluid dram = 0.007 812 5 pints (exactly)
1 fluid ounce = 0.062 5 pints(exactly)
1 gill = 0.25 pints (exactly)
1 milliliter = 0.002 113 376 pints
1 gallon = 3785.412 ml

See Item 330-7 NIST SP 816 - 76th NCWM (1991)

Appendix B (Item 360-2)

Internationl Working Group Meetings

WEIGHTS

OIML TC 9/SC 3 Weights (responsibility United States)
International Working Group Meeting
May 19 – 22, 1998 - Gaithersburg, Maryland

(The following is a summary of the five major decisions made on each area of the agenda and the Committee Draft target dates.)

1. Open and new issues in OIML R 111-2, Part 1, Testing Procedures
In Clause 4, Measurement of the Conventional Mass, remaining disagreements over Table 1, Ambient Conditions During Calibration, were resolved and a revised table was accepted. The remaining questions regarding uncertainty calculations were cleared up. A revised version of the subclause on Statistical Control, including pertinent statistical tables, was introduced and accepted.

The magnetism section, Clause 5, was discussed at length. The Swedish delegation gave an informative presentation explaining the calculation formulas and proposed tolerance limits for magnetization and susceptibility and also presented a proposal for a revised version of the entire Clause 5. This received overall acceptance by the group with detail modifications to be added.

In Clause 6, Density, the concept of reducing the allowable density ranges by one-third or one-fourth and to show the reduced ranges in a table was dropped by its proponents. A revision of the table "Recommended Methods by Weight Class and Weight Size," a proposal for a revised subclause on substitution weighing under Test Method A (with modifications), and an additional proposed method, "Measurement of a Test Piece" were accepted.

Clause 7, Surface Roughness, was accepted in its 1st CD version without substantive changes.

The group was agreeable to a proposal that the calculations in R 111-2 should be illustrated through practical examples. However, to avoid any delay in completing the project as it is currently defined, it was agreed to postpone the development of sample calculations until the current effort is further along, at which time a task group will be formed for authoring the publication of calculation examples. Sweden offered to host a workshop to facilitate this project.

2. Open issues in OIML R 111-2, Part 2, Pattern Evaluation Report, 1st CD
Except for minor editorial corrections, the 1st CD version of this document was accepted.

3. Proposed revisions to OIML R 111
The following major changes were accepted, listed here in the order in which they appear in R 111:
In Table 1, Maximum Permissible Errors (MPE), some of the MPE values were changed to: a) have a uniform number of significant decimals, b) be more in line with the geometric progression factor of Ö10 between the classes, and c) be compatible with a practically achievable minimum limit of 1 mg for the uncertainty. To replace the current requirements on magnetic susceptibility (in 6.2 and 6.3) and magnetization (in 6.6), the proposed and accepted tables of maximum allowable values and the pertinent text will be moved from R 111-2 to R 111.

A proposal to change the density requirement of subclause 7.1 and the associated Table 3, Minimum and Maximum Limits for Density, will be presented for ballot. The problem with the current requirement 7.1 and Table 3 is that they are only valid at geographic altitudes below 300 m. A proposal by Germany was judged to be too complex to accept as presented and will be simplified by the proponent. The United States will prepare an alternate proposal with the option of using "true" mass to avoid the altitude problem.

In Clause 10, a proposal to allow user markings for all weight classes was accepted. The allowable height of the markings as well as the maximum number of symbols, numerals, or letters will be specified in a table, differentiated by weight class and size.

The Secretariat conducted a survey among the participants concerning which tests would be applicable to an entire weight set and/or samples within a weight set, depending on whether the test was of pattern approval, initial verification or subsequent verification. The result was a matrix table "Tests Required for Weight Sets" with a consensus by the group to include this table in R 111 (where it could be presented, e.g., in Clause 12, Submission to Metrological Controls).

There was agreement to delete the current Annex B, Uncertainties for Weights, from R 111, to avoid duplication of the information in R 111-2, "4.8 Uncertainty Calculations" and "4.9 Statistical Control."

4. Proposed consolidation of all parts of OIML R 111 into one document
The Secretariat's proposal to combine R 111 with R 111-2, parts 1 and 2, into one document was accepted by the group. The proposed structure conforms to "OIML Directives for the Technical Work, Part 2, Guide to the Drafting and Presentation of OIML International Recommendations and Documents."

The separate Terminology sections will be combined into one, as will the several separate Lists of Symbols:

-R 111-2, part 1, Test Procedures, will become new Annex A (mandatory annex).

-R 111-2, part 2, Pattern Evaluation Report, becomes new Annex B (mandatory annex).

-The current Annex A, Shapes and Dimensions, becomes new Annex C (informative annex).

-The current Annex B, Uncertainties for Weights, disappears (see the last of the changes mentioned in the preceding section 6 of this summary).

5. Secretariat's review and proposal regarding OIML R 33, R 47, R 52
The participants agreed as follows:

-R 33: A task group composed of United States, France and Germany will review R 33, revise as necessary and re-issue this publication as an International Document instead of an International Recommendation.

-R 47: As there was no consensus to retire this document (as proposed by the Secretariat), the Secretariat will conduct a survey among the IWG members to determine whether R 47 should be retained as is, revised, or retired.

-R 52: There was no opposition to the Secretariat's proposal to incorporate R 52 weights into Class M_3 of R 111. Nevertheless, the proposal will be submitted for a ballot vote, as will all decisions made in the meeting.

6. Target Dates
The Secretariat proposed the following milestone schedule to complete the project:

July 1, 1998	Decisions and Meeting Summary distributed to IWG for comment & vote. Draft 1st CD of R 111 based on decisions
October 1, 1998	1st CD of R 111 distributed for vote and comment to US/NWG
December 1, 1998	1st CD of R 111 distributed for vote and comment to IWG
April 1, 1998	1st CD of R 111 distributed for vote and comment to BIML for CIML vote

Status: Meeting Summary, Decisions from the meeting, and ballot items have been sent to IWG with copies being sent to US/NWG.

Report of the Committee on Administration and Public Affairs

Richard D. Greek, Co-Chairman
Agricultural Commissioner/Sealer
San Luis Obispo County, California

Bruce Martell, Co-Chairman
Supervisor, Consumer Assurance Division
Vermont Department of Agriculture

400 Introduction

This Report of the Committee on Administration and Public Affairs (A&P) for the 83rd Annual Meeting of the National Conference on Weights and Measures consists of the Interim Report offered in the NCWM Publication 16, "Program and Committee Reports," as amended by the Addendum Sheets issued during the Annual Meeting.

Table A identifies all of the issues contained in the Report by Reference Key Number, Item Title, and Page Number. All items are informational, indicated by the suffix **I**, or withdrawn, indicated by the suffix **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 its entirety.

Table A
Index to Reference Key Items

Table A (Continued)

Table B
Appendices

Table C
Voting Results

Reference Key No.	House of State Representatives		House of Delegates		Results
	Yes	No	Yes	No	
400 (Report in its Entirety)	39	0	65	0	Passed

Details of All Items

(In order of Reference Key Number)

401 I A&P Committee Work Plan

Planning involved identifying goals, assigning responsibilities and establishing priorities for projects including: Weights and Measures Week themes, safety issues, scholarships for inspector training, promotional concepts, and educational sessions during the NCWM Interim and Annual Meetings.

402 I Regional Weights and Measures Activities

N. David Smith, North Carolina, submitted information for comment to the Committee regarding the Southern Weights and Measures Association Internet Home Page. The web site can be viewed at *http://www.swma.org*.

The Committee also reviewed the following:
1. The 1998 reports of the Central and Northeastern Weights and Measures Associations Committees on Administration and Public Affairs. The reports cover the CWMA and NEWMA joint meeting held May 3-7, 1998, in Columbus, Ohio and included a report by Kathryn Dresser, Wisconsin, on the Central Weights and Measures Association Training Evaluation Work Group.

2. The final report of the Administration and Public Affairs Committee of the Western Weights and Measures 40th Annual Technical Conference (September 1997).

3. The final report of the Administration and Public Affairs Committee of the Southern Weights and Measures 52nd Annual Conference (October 1997).

403 Program Management

403-1 I Program Evaluation Working Group (PEWG)

The A&P Committee analyzed the past efforts of the PEWG toward provision of uniform performance measures to assess and optimize weights and measures program benefits and program efficiency and effectiveness through establishment of a national database. Because of a lack of resources, the A&P recommended that the working group be disbanded. The Committee expressed its appreciation for the diligent efforts expended by each member of the PEWG. (A summary of the work of the PEWG is attached as Appendix A.)

The Committee recommended to the Conference Chairman that a voluntary program assessment group be established to build upon the work of the PEWG and to develop a process for evaluating the existing information focusing upon the criteria for self-evaluation and program assessment. Evaluation of local programs with limited database resources should be possible.

After disbanding PEWG, the following individuals met on June 11 and 12, 1998, in Oklahoma City, Oklahoma to develop a proposal for a Voluntary Program Assessment Group (VPAW). The report of the group appears in Appendix B of this report.

- Charles Carter, Oklahoma
- Sid Colbrook, Illinois
- Bill Corey, American Frozen Foods
- Richard Gonzales, Oklahoma
- Craig Leisy, Seattle, Washington, and
- Ed Price, Texas

NCWM Chairman, Aves Thompson, established a work group to be headed by Sid Colbrook, Illinois, to continue this effort. The key elements of voluntary program assessment would be the establishment of "minimum standards" for weights and measures inspection programs and the recommendation of model report forms for a record of inspections.

403-2 I Safety Information Clearing House

Committee members reviewed the Incident/Accident Report Forms (a sample report form is located in Appendix C) which have been completed and returned to the A&P Committee Technical Advisors. The purpose of provision of this information is accident prevention. Jurisdictions are requested to use this report form in their safety program documentation procedures. Completing this brief report will allow NCWM to alert other organizations and jurisdictions of hazards and possible corrective actions. At the present time, this information will not be included in a national listing; however, the Office of Weights and Measures maintains an independent database of this information. Committee members continue to work with their regional associations to complete this form and forward the information to the Committee Technical Advisors.

The A&P discussed various approaches to improve upon the current safety reporting system, exploring ideas such as publication of safety bulletins, newsletters, and safety fact sheets. A&P Technical Advisor James E. Ross, formerly of Oregon Measurement Standards, brings to the Committee his expertise as a former Safety Officer. Jim will be exploring these suggestion for future consideration by the Committee. Any suggestions will be appreciated. You may contact any Committee member or e-mail your suggestions to *james.ross@nist.gov* or call 301-975-4205.

403-3 I OWM Equipment Loan Program

Many jurisdictions lack equipment and standards needed for a weights and measures program. The Office of Weights and Measures (OWM) sponsors an equipment/standards loan program to these jurisdictions. All available equipment has been loaned out and no equipment will be available until there is additional funding. The Committee expresses its appreciation to Gilbert M. Ugiansky, Ph.D., for his initiative in establishing the equipment loan program and for his continuing support. You may contact Jim Ross, A&P Technical Advisor, to inquire about the status of the program (telephone 301-975-4205, e-mail *james.ross@nist.gov*).

403-4 I NCWM Internet Home Page (http://www.nist.gov/ncwm)

The NCWM Executive Committee has asked the A&P Committee to plan for and implement an NCWM Internet Home Page, to be ultimately independent of the site currently maintained by the NIST Office of Weights and Measures. Many possibilities to use the Internet for the benefit of NCWM members are under discussion; however, it will be helpful for the Committee to know how many NCWM members currently have access to the Internet or are about to obtain access.

The A&P Committee will be working with the NCWM Treasurer and the Executive Committee to determine the means, cost, and options for an NCWM Internet site. Included with this will be decisions on NCWM/non-NCWM member access, cost, and payment options. In the near future, the Internet represents a means to download various documents, forms, memos, and possibly, NIST Handbooks.

Please send your suggestions for items you would like to see included on the NCWM Home Page and your e-mail address to *joan.mindte@nist.gov*. Let the Committee know if you would like to see Internet demonstrations during the Regional Association or NCWM Annual Meetings.

403-5 I Publications Status Report

The NIST Office of Weights and Measures (OWM) reported to the A&P Committee on the status of NIST and NCWM publications. A summary of the distribution level, income, and costs of the publications was presented. NIST documents include NIST Handbooks 44, 130, 133, the NCWM Final Reports, and the metrology series of handbooks and publications. NCWM documents include the Interim Agenda, the Interim Reports, Publication 5 (NTEP Certificates and Index), Publication 12, Examination Procedure Outlines, Publication 14 (NTEP Administrative Policy, Test Procedures and Criteria, and Evaluation Checklists), Publication 19 (Examination Procedure for Price Verification), Publication 21 (Petroleum Products Sampling Procedures and Safety Manual), Training Course materials, the consumer brochures *"Getting What You Pay For," "How to Avoid Getting Burned When Buying Firewood,"* and *"Fuel for Thought, Getting What You Pay for at the Gas Station,"* the *W&M Today* newsletter, and other membership publications. (See the Publications Calendar and Publications Cost Estimates table on the next two pages.)

Fiscal Year 1998 OWM Publications Calendar

Status as of June 30, 1998

Month	Publication	Comments
January	NCWM Pub 5, 10th ed. NTEP CCs	Completed
February	*W&M Today* Newsletter	Completed
March	Draft NTEP Handbook	For the NTEP Laboratories
April	NCWM Pub 11, Nationall Training Program	In process
May	NCWM Pub 1 NCWM Bylaws NCWM Pub 2 NCWM Membership Directory NCWM Pub 5, Supp 1, NTEP CCs NCWM Pub 14 NTEP Administration NCWM Pub 16 Program & Committee Reports *W&M Today* Newsletter NTEP Quality Manual Template	Completed Completed Completed Ready for publication Completed Completed Completed
June	NCWM Pub 10 Conduct of Annual Meeting	Completed
August	*W&M Today* Newsletter	To contain Annual Meeting summaries
October	Report of the 83rd NCWM Handbook 44 - 1999 Handbook 130 - 1999 NCWM Pub 9 - Nominating Committee Report	 Just for Nominating Comm.
November	*W&M Today* Newsletter	Contains information on Interim Mtg. - Completed
December	NCWM Pub 15 - Interim Agenda	

NCWM Printing and Mailing Expenses

(Postage is Bulk Rate or Fourth Class, Except as Noted)
(Membership Year July 1, 1997-June 30, 1998)

Item	Quantity	Printing	Postage	Total
Welcome letters, Membership Certificates	3,034	$546.00[1] $.18 ea.	$1,669.00[3] $.55 ea (1st class)	$2,215,00
Pub 1 Constitution and By Laws (brand new members only)	666	453.00[3] $.68 ea	852.00[3] $1.28 ea (1st class)	1,305.00
Handbook notices	3,700	148.00[3] $.04 ea	363.00[3] $.098 ea	511.00
Handbook 44	3,300	11,000.00[3] $3.33 ea	5,742.00[3] $1.74 ea.	16,742.00
Handbook 130	3,100	4,200.00[3] $1.36 ea	5,394.00[3] $1..74 ea	9,594.00
Handbook 133, Supplements 1, 2, and 3 (for NCWM distribution)	1,820	19,347.00[3] $10..63 ea	3,167.00[3] $1.74 ea.	22,513.00
Handbook 133, Supplement 4 (for NCWM distribution)	1,825	4,198.00[3] $2.30 ea	1,259.00[3] $.69 ea	5,457.00
NCWM Membership Renewals and Invitations to Join	11,000	1,540.00[1] $.14 ea	3,850.00[3] (first class, envelopes & mailing service) $.35 ea	5,390.00
1998 Pub 2 Membership Directory	2,700	5,238.00[1] $1.94 ea	4,698.00[3] $1.74 ea	9,936.00
Pub 5 Index of Device Evaluations, 10th Edition	300	3,300.00[2] $11.00ea	522.00[3] $1.74 ea	3,822.00
Pub 5 Supplement to 10th Edition (1 of 2)	200	500.00[2] $2.50 ea	210.00[3] $1.05 ea	710.00
Pub 5, Reprint of 6th Edition	100	1,291.00[2] $12.91 ea	174.00[3] $1.74 ea	1,465.00
Pub 7 Weights and Measures Week Guide	300	195.00[3] $1.95 ea	69.00[3] $.69 ea	264.00
Pub 11 National Training Program	100	125.00[3] $1.25 ea	69.00[3] $.69 ea	194.00
Pub 12 Examination Procedure Outlines (EPOs)	100	375.00[3] $1.25 ea	207.00[3] $.69 ea	582.00
Pub 16 Program and Committee Reports	3,500	10,325.00[1] $2.95 ea	6,090.00[3] $1.74 ea	16,415.00
Pub 14 1998 Edition NTEP Administrative Procedures	250	5,200.00[2] $20.80 ea	435.00[3] $1.74 ea	5,635.00

NCWM Printing and Mailing Expenses (Postage is Bulk Rate or Fourth Class, Except as Noted) (Membership Year July 1, 1997-June 30, 1998)				
Item	**Quantity**	**Printing**	**Postage**	**Total**
Pub 15 Interim Agenda	3,200	4,500.00[1] $1.40 ea	9,600.00[3] (Priority Mail) $3.00 ea	14,100.00
Pub 14 brochure	2,800	112.00[3] $.04 ea	896.00[3] $.32 ea (First Class)	1,008.00
Memos to NCWM constituents to update Pub 2 data	3,400	340.00[3] $.10 ea	1,088.00[3] $.32 ea	1 428.00
NTEP Packets to State Directors	550	1,100.00[3] $2.00 ea	853.00[3] $1.55 ea (First Class)	1,953.00
Handbook 133, Third Edition (for sale by NCWM)	669	7,653.00[1] $11.44 ea	1,164.00[3] $1.74 ea	8,817.00
Handbook 133, 4th Supplement (for sale by NCWM)	1,228	3.131.00[1] $2.55 ea	847.00[3] $.69 ea	3,978.00
Totals	**47,842.00**	**$84,822.00**	**$49,218.00**	**$134,035.00**

[1] Paid by NCWM *[2] Paid by NTEP* *[3] Paid by NIST*

Summary of Printing and Mailing Expenses			
Key	**Printing**	**Postage**	**Total**
[1] Paid by **NCWM**	$32,933.00		$32,933.00
[2] Paid by **NTEP**	10,291.00		10,291.00
[3] Paid by **NIST**	41,593.00	49,218.00	90,811.00
Totals	**$84,817.00**	**$49,218.00**	**$134,035.00**

403-6 I NCWM Strategic Plan

The Committee received a report from Co-Chairman Richard D. Greek regarding the activities of the NCWM Training Delivery Plan Work Group, of which he is a member. The Committee will continue to assess the NCWM National Training Program (NTP) in light of current approaches to technical training relative to adequate training materials, standards, and assessment of effectiveness. A vision and goals need to be established building upon current OWM Instructor Training, NCWM courses and training materials and evaluated in the context of contemporary approaches to technical training and adult education. The A&P Committee received comments from NCWM members that they want to see shorter and refresher courses as the preferred approach.

At the 1998 Interim Meeting, the A&P and Executive Committees joined in a Strategic Planning Exercise led by Sonia Roussy of Measurement Canada on the future of the National Training Program. Overall objectives along with course materials and

resources for a uniform training program for industry and government individuals were looked at (the report of this exercise is in draft form in Appendix D). The long-range plan is focused on gathering additional input, evaluating information, and finalizing a plan to present as a voting item at the 84th or 85th NCWM. A first priority is a one-day training session for weights and measures administrators to be held during the NCWM 1999 Interim Meeting in Albuquerque, New Mexico.

404 Education

404-1 I National Training Program - Assessment

The Committee reviewed a summary of current participation by individual jurisdictions in the NTP Certification Program and activity in the NTP Registry from 1985 through June 1998; training activity reports were reviewed and the current system of tracking NCWM Educational Units (EUs) was evaluated; the status of the NIST grants to the NCWM for the development of training materials and delivery of instructor training for weights and measures officials were examined.

In September 1996, the National Institute of Standards and Technology (NIST) Office of Weights and Measures (OWM) added $75,000 to the remaining funds in the second training grant to the NCWM, which originally totaled $180,000.

The status of funds remaining under the second grant provided by NIST to the NCWM for the development of training materials and delivery of instructor training for weights and measures officials is as follows as of June 30, 1998:

Net outlays to date:	$ 248,600
Total unliquidated obligations: (money committed to contractor)	$ 3,100
Total grant funds authorized: ($180,000 plus 9/15/96 addition of $75,000)	$ 255,000
Unobligated balance of funds: (Money available for development of training materials and delivery of instructor training)	$ 3,300

NIST awarded a third training grant to the NCWM in the amount of $106,000, which sum must be expended by September 1, 1998. The status of the third grant provided by NIST to the NCWM, as of June 30, 1998, is:

Net outlays to date:	$ 34,369
Total grant funds authorized:	$ 106,000
Unobligated balance of funds	$ 71,631

These funds must be spent by September 1, 1998. Expenses for two Price Verification Instructor Training Courses conducted in June 1998 remain to be paid. The approximate unobligated balance of funds is $30,000.

If funds are available for additional training, the Committee's first priority is a for weights and measures administrator training during the 1999 Interim Meeting in Albuquerque. If additional funds become available, priority subjects include: Retail Motor-Fuel Dispensers and Consoles and Retail Computing Scales. An extension has been requested to allow use of the remaining funds.

The Committee expressed its appreciation to Gilbert M. Ugiansky, Chief of the NIST Office of Weights and Measures, for his initiative in obtaining needed funds for training.

The Committee continues to investigate options available for the most effective use of any additional grant funds which may become available. Areas under consideration include: redesign of NTP's training on scales; development of short courses, correspondence courses, interactive videos, and CD-ROMs; maintenance and updating of existing training materials; updating NCWM Publication 12, Examination Procedure Outlines (EPOs); and sponsoring additional instructor training courses.

A primary goal of the Committee is to develop a comprehensive National Training Program (NTP). Course materials are

gradually being updated to reflect current approaches to training, while building on the successes of the NIST-NCWM Instructor Training Programs. To date, 326 individuals have been trained. These instructors have agreed to return to their jurisdictions and transfer the course information to others, with an ultimate goal of creating economic equity through implementation of uniform inspection procedures. The challenge to the A&P, NCWM, and OWM is to build on these training methods by incorporating them into a comprehensive weights and measures training program. The A&P Committee is evaluating the National Training Program mission, objectives, strategy, standards, and materials, and is discussing methods by which new and revised courses may be added to the program. (See Item 404-4.)

The following is a listing of courses currently contained in the NTP Registry:

Introductory: Level 100

101 Weights and Measures Regulation in the United States
102 Introduction to Handbook 44
103 Introduction to Electronic Weighing and Measuring Systems

Scales: Level 200

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

Meters: Level 300

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

Measures: Level 400

Other Devices: Level 500 (linear, taximeters, etc.)

Commodities: Level 600

601 Checking the Net Contents of Packaged Goods
602 Commodity Regulations

Appendix E gives a summary of the NTP Certification Program activity and the NTP course summary appears as Appendix F to this report.

In addition, the following NIST-NCWM Instructor Training Course activity is documented in the Registry (please see Item No. 404-4 and Appendix H to this report):

Course No.

207 Retail Computing Scales
306 Liquefied Petroleum Gas Liquid-Measuring Devices
501 National Type Evaluation Program (NTEP)
603 Handbook 133, Checking the Net Contents of Packaged Goods
604 Price Verification

404-2 I Associate Membership Scholarship Fund - Training Delivery

At the 82nd NCWM, the Associate Membership Committee adopted a resolution to award 52 scholarships, each in the amount of $500, for a total of $26,000. The Associate Membership Committee (AMC) asked the A&P Committee on Administration and Public Affairs to administer the Scholarship Fund. The Committee will continue to examine other opportunities and potential sources for scholarship funding for 1998-1999.

All funds have been committed and are to be disbursed by July 31, 1998. A report on the distribution of training scholarships to the various weights and measures jurisdictions was given by Joan Mindte. A detailed summary is contained in Appendix G to this report. A detailed accounting of the AMC Scholarship Funds is also presented there.

The Committee expressed its gratitude to the Associate Membership Committee for the generosity and commitment to training of weights and measures personnel through continuation of the scholarship fund. The A&P and Executive Committee are evaluating the use and distribution of future funds.

404-3 I NCWM Training Courses Update and Maintenance

The Committee has adopted a plan to use the skills of NCWM Certified Trainers as well as outside vendors to develop, update, and perform any necessary maintenance of all NTP Training Courses and Examination Procedure Outlines (EPO's).

A major revision of existing course materials is necessary to make them consistent with the 1998 Edition of Handbook 44 and current NCWM formats and policies. The NCWM Committee on Administration and Public Affairs continues to seek proposals from individuals qualified to update these materials. The objective of this project is to revise the Inspector's (student's) Manuals and to develop the course outlines and lesson plans necessary for the guidance of instructors. During its Interim Meeting, the Committee reviewed the progress made using outside contractors to accomplish revision of materials. (See the Revision Status of NCWM Training Materials on the following page.) At the present time, there are no funds available to pursue contracts for the revision and update of training materials. In the interim, the Committee will review and revise the concepts and procedures for future contracts.

The Committee stresses the need for timely development of high-quality training materials for distribution to individuals attending the NIST-NCWM Instructor Training courses. The materials would then be available for the use of individuals completing the training upon return to their individual jurisdictions.

Discussion continued regarding the new checklist format for EPO's as the NCWM model and feedback received from jurisdictions. Comments about the new checklist format are still being solicited and will be considered.

The Training Resource Catalog was put into final form 2 years ago; however, it is difficult to manage, and has not been maintained as a priority. The Committee discussed where the document fits as an NCWM versus OWM priority and see if there is a better way to maintain the information in the catalog. A chart containing the revision status of NCWM training materials appears on the following page. In addition, the Committee and OWM are committed to working together to update Retail Computing Scales, Retail Motor-Fuel Dispensers and Consoles, Liquefied Petroleum Gas Liquid-Measuring Devices, and Publication 12, Examination Procedure Outlines (EPOs).

Revision Status of NCWM Training Materials
(As of June 30, 1998)

Course Numbers (Module Numbers Appear in Parentheses)	Date of Publication	Date of Last Revision	Revision Status*	Comments
103-Intro to Electronic Weighing and Measuring Systems (27)	1/28/85	5/95	N	
601-Checking the Net Contents of Packaged Goods (10)	11/29/85	9/90	N	
202-Retail Computing Scales-Electronic (1 and 2)	2/26/86	5/94	U	Jim Ross, OWM, will finalize the materials for publication by January 1, 1998
302-Retail Motor-Fuel Dispensers and Consoles (8)	7/14/86	9/90	U	Mike Belue will complete the contract to update these materials following the field test which is currently underway..
206-Vehicle and Axle-Load Scales (5)	10/17/86	12/91	U	OWM has updated the Inspector's Manual for changes to Handbook 44. Comments are being reviewed.
303-Vehicle-Tank Meters (20)	10/31/86	12/91	U	Juana Williams, OWM has updated these materials.
205-Meat Beams and Monorail Scales (6)	4/3/87		U	Revision begun by Jim Vanderwielen will be continued by Byron C. School, USDA/GIPSA,
204-Livestock and Animal Scales (7)	5/27/87		U	Paul Peterson, USDA/GIPSA (Ret.), has submitted a second draft of the Inspector's Manual (to be reviewed as time permits).
305-Liquefied Petroleum Gas Liquid-Measuring Devices (21)	8/5/87	2/98	U	Jim Ross, OWM, will finalize the materials for publication by January 1, 1999.
203-Medium-Capacity Scales (4)	6/22/88	10/92	N	
102-Introduction to NIST Handbook 44 (24)	5/18/89	6/93	N	Time constraints do not permit revision for changes to Handbook 44, 1998 edition.
602-Commodity Regulations (22)	6/8/90		N	
304-Loading-Rack Meters (19)	7/18/90		R	A proposal to update these materials is under consideration.
101-W & M Regulation in the U.S. (23)	6/14/93		N	

*Key to revision status abbreviations:
N = No revision planned in 1998
U = Revision is underway
R = Revision is planned for 1998

404-4 I Instructor Training Delivery

The Committee is exploring the means by which this successful method of training can be provided for all areas of weights and measures activities. Each regional association is asked to identify the specific weights and measures subject areas in which training is most needed and to relay the information to the A&P Committee. A summary of participation listed by State is included in Appendix H.

One key area identified by the Committee was assessment of the Instructor Training Program. How successful is it in practice at the State and local level? How can the program be further modified to increase its value to national weights and measures training? A sample training survey form is located in Appendix I.

During the 1998 Interim Meeting, the Committee met with NIST/OWM Instructor Trainers Tina Butcher, Tom Coleman, and Richard Suiter. The group discussed the components and overall structure of the program. It was agreed by all that the Committee and NIST/OWM will look to the regional associations to identify areas for future instructor training courses.

Although time constraints did not permit during the 83rd NCWM, meetings between the A&P Committee and NIST/OWM Instructor Trainers will be planned for future Interim and Annual Meetings.

404-5 I NCWM Certified Trainers

As of July 1998, 13 individuals had attained the status of NTP Certified Trainers:

The following chart denotes the courses each Certified Trainer has taught (as indicated on the trainer's application). These individuals will be polled in order to identify and add additional subjects in which they have presented training:

NCWM-NTP Certified Trainer	Date of Certification	NTP Courses Taught
Darryl L. Brown, Iowa Phone: 515-281-5716	1116/97	Course No. 601
Ken Butcher, NIST/OWM Phone: 301-975-3991	12/15/93	Course No.'s 202, 601, 602, 604
Barbara J. DeSalvo Phone: 614-728-6290	09/21/93	Course No.'s 103, 202, 601, 602
Kathy Dresser Phone: 608-224-4938	07/16/98	Course No.'s 202, 601, 604
Frank W. Forrest Phone: 860-566-4778	10/21/93	Course No.'s 302, 304
Paul Peterson, USDA/GIPSA (Ret.)	09/21/93	Course No.'s 204, 205
Richard L. Philmon, Illinois Phone: 217-782-8301	01/03/95	Course No.'s 202, 206, 302
Byron School, USDA/GIPSA Phone: 202-720-5541	11/07/97	Course No. 204
Thomas M. Stabler, STR, Inc Phone: 706-6666-0603	10/04/93	Course No.'s 202, 302, 601

Richard W. Suiter, OWM Phone: 301-975-4406	05/17/93	Course No.'s 103, 202, 204, 205, 207, 302, 501, 601
José A. Torres, Puerto Rico Phone: 787-724-5153	06/02/93	Course No.'s 102, 103, 202, 206, 302, 601, Metrology 201, 202
James Vanderwielen, GIPSA Phone: 202-720-3140	01/19/96	Course No. 204
Kenneth A. Wheeler, Ohio Phone: 614-728-6290	09/21/93	Course No.'s 202, 203, 204, 205, 206, 302, 303, 305, 601, 602

These individuals may be available to assist weights and measures jurisdictions in training of their personnel. You may feel free to contact them directly. In addition, the Committee is exploring the feasibility of implementing a plan to allow for greater involvement of the NCWM Certified Trainers in the NIST-NCWM Instructor Training Program.

The Committee will review and simplify the process for becoming a Certified Trainer.

404-6 W Management Training In Partnership With Industry

The A&P Committee explored the feasibility of establishing a program to partner with industry in the development of a clearinghouse to provide tuition-free corporate management training to weights and measures administrators. This item has been withdrawn by the Committee at this time; however, the item is expected to be reintroduced as an agenda item at some point in the future.

404-7 I Special Training Session - 1998 Conference

The Committee presented two special educational presentations during the 83rd Annual Meeting in Portland.

The first was delivered during the Tuesday morning Technical Session by Measurement Canada's (MC) Vice President for Program Development, Sonia Roussy, who described her agency's model for determining the extent of its regulatory involvement in the commercial measurement activities of each sector of Canada's economy. This delivered an overview of Measurement Canada's marketplace intervention model and how it fits into their strategic plan.

Following the General Session on Tuesday afternoon of the 83rd NCWM, Thomas R. Watson, Ph.D., of Watson Communications International, Inc., presented a communication audit survey which is used by companies across the country to improve organizational communications. Dr. Watson discussed the major causes of poor communication and described proven ways to improve communication on-the-job. Copies of the Audit Survey were given to all participants For additional information, you may contact Watson Communications International, Inc. (800) 741-5911 (e-mail: *wcitrw@aol.com).*

405 Public Relations

405-1 I Legislative Strategy

The Committee finalized the NCWM Legislative Guideline. The guide was distributed to participants during the 83rd NCWM. It was designed so that all State, regional, and local persons in leadership roles in weights and measures will have a tool to assist them in working with legislators at all levels. The Committee has included examples of the economic benefits resulting from an efficient weights and measures program. If copies are needed, please contact a Committee member or Joan Mindte (301-975-4003 or e-mail *joan.mindte@nist.gov*).

405-2 I Weights and Measures Week

The theme developed by the A&P Committee for Weights and Measures Week 1998 (March 1-7) was "Working Together: A Common Goal." Templates for press releases and informational materials, developed by the Committee, were sent to all State Directors in early January 1998.

The Committee worked to establish a theme for Weights and Measures Week 1999. During the 83rd Annual Meeting, the Committee sought feedback during the General Session and the Regional Association meetings. *Fuel for Thought* and the related pamphlet will be the foundation of the 1999 program. Some topics under consideration for Weights and Measures Week 1999 (March 1-7) included: Smart Shopping, Getting the Most from Your Dollar; and Scanner Accuracy Demonstrations. The A&P Committee needs feedback; please provide your ideas and some examples of media successes in your Weights and Measures Week activities. Assistance from the Associate Membership Committee may represent an additional resource for support of these efforts. To make your suggestions, please contact a Committee Member or Jim Ross, OWM (e-mail *james.ross@nist.gov*).

405-3 I National Consumers Week 1998

The Committee is inquiring into the feasibility of bringing attention to the work of weights and measures in conjunction with next year's National Consumers Week (October 1999). The week is proclaimed annually during the month of October by the President to highlight the importance of consumers in the marketplace. The celebration brings attention to resources available to consumers, such as the services and protections resulting from the efforts of weights and measures. Development of materials and receiving feedback remain a problem. The Committee will work with Kathleen Thuner to see if collaboration is advantageous in this area as well as part of the networking with other associations.

405-4 I Meetings, Networking With Other Associations

NCWM officers participate in numerous meetings and conferences throughout their terms of office. The events attended include regional weights and measures association meetings, industry association meetings, as well as international meetings. The NCWM representations at these meetings present excellent opportunities for sharing of information on a variety of issues, as well as exposure for the NCWM as a national forum. The Committee is exploring ways in which these opportunities and continuation of the regional Weights and Measures Roundtables can be optimized to benefit the NCWM, its members, as well as the regional associations.

The Committee discussed ways in which the NCWM can assist the regional associations with their membership development and how officer participation in various association meetings may be used as a venue to promote the NCWM, its membership, and programs.

The Committee will shift its focus to working with consumer organizations for possible collaboration of National Consumers and Weights and Measures Week activities.

405-5 I Marketing Weights and Measures in the United States

The A&P Committee was pleased to distribute its 4-panel brochure, *Fuel for Thought, Getting What You Pay For at the Gas Station,* during the 83rd NCWM. This colorful, multi-fold, 9" x 16" pamphlet provides information to help consumers be sure there is full value when making purchases at the gas station. The brochure describes the role of weights and measures officials in inspecting and testing devices for accuracy. The back panel of the pamphlet allows for placement of weights and measures jurisdiction information, contact names and numbers, etc. Copies are available for 15 cents each. There is a 10% discount on orders of 1,000 or more. Credit card orders are accepted: call (301) 975-4093 to order. To request sample brochures, contact: e-mail *joan.mindte@nist.gov* or call (301) 975-4003.

The brochure entitled *How to Avoid Getting Burned When Buying Firewood* is also available for purchase at 10 cents per copy.

The Committee is collecting samples of every public informational item that has been developed by weights and measures State and local jurisdictions. Samples requested include ALL items, from the elaborate annual report to the modest tri-fold pamphlet. By "cutting and pasting" from among these samples, the A&P Committee will develop a template format that speaks to all or parts of a weights and measures program. The template will be made available to individual jurisdictions for tailoring to their requirements.

To encourage participation in an exhibit of regional and local weights and measures pamphlets and brochures, the materials received were entered in a contest and made part of a display during the Annual Meeting in Portland. The items were judged on their attractiveness, appeal, creativity, and value for public information.

Competition was heavy in the contest to recognize the best items in the exhibit. All contributors are thanked for their participation. The A&P is pleased to announce the following winners:

First Prize:	Kathy Dresser, Wisconsin
Second Prize:	Santa Clara County, California, Weights and Measures
Third Prize:	Barbara DeSalvo, Ohio
Fourth Prize:	A. Courtney Yelle, Bucks County, Pennsylvania
Fifth Prize:	City of Seattle, Washington, Licenses and Consumer Affairs

We know the winners are enjoying their prizes of Vermont maple syrup and California wine (courtesy of the A&P Co-Chairs, Bruce Martell and Richard Greek). Be sure to start collecting ***YOUR*** brochures and pamphlets so they may be entered in next year's competition in Burlington, Vermont.

405-6 I Advertisement of the 83rd NCWM - 1998 Portland, Oregon

The Committee asked each Standing Committee to submit its highest priority items prior to the 83rd Annual Meeting for circulation to industry and other interested parties. The Committee also explored methods of publicizing these items by the creation of articles strategically placed in trade and other publications. .

The Committee discussed strategies for marketing the 84th NCWM in Burlington, Vermont. Co-Chairman Bruce Martell provided publications containing information about the area to meeting participants.

405-7 I Participation in the NIST 100th Anniversary Celebration

In the year 2001, the National Institute of Standards and Technology (NIST) will celebrate its Centennial. The theme selected for the event is: "NIST - First Century of Service to the Nation." This occasion will be a time for honoring and recognizing the contributions of the NBS/NIST to the world of science and technology, American industry, and the economy over the last 100 years.

The NCWM has been invited to actively participate in the celebration. The Committee has been directed by the Executive Committee to add this item to its Agenda and to continue the item through the 2001 activities. It is planned that the 86th Annual Meeting of the NCWM will be held in Washington, D.C., to allow for participation in the celebrations by attendees. The Committee will look into ways in which the NCWM can best contribute to the success of the Centennial.

For information regarding opportunities to participate in the 100th Anniversary of the National Institute of Standards and Technology, please go to the NIST web site (*http://centennial.nist.gov)*.

405-8 I Urban and Emerging Weights and Measures Issues

As part of the Tuesday morning Technical Sessions during the 83rd NCWM, Dave Frieders, San Francisco County Weights and Measures, delivered a presentation on Weights and Measures Enforcement and Emerging Issues. The topics presented related to a comparison of funding sources, staffing issues, and inspection work considerations among city, county, and State jurisdictions. The presentation included a video of an undercover investigation involving manipulation of fuel dispensing systems in the Los Angeles area, which was facilitated by Bob Atkins, Los Angeles County Weights and Measures, and Craig Leisy, Seattle, Washington, Licenses and Consumer Affairs.

The results of two surveys were distributed to participants: Survey of Weights and Measures Programs, and Survey of Taxicab Regulatory Programs. The results are a pilot effort; with small and non-random survey samples If you would like a copy of the results, contact Joan Mindte (301) 975-4003 or e-mail *joan.mindte@nist.gov.*

R. Greek, San Luis Obispo County, California, Co-Chairman
B. Martell, Vermont, Co-Chairman

C. Carter, Oklahoma
N. Kranker, Dutchess County, New York
R. Philmon, Illinois

Industry Representative: Chris Guay, Procter and Gamble

C. Gardner, Suffolk County, New York, Safety Liaison

J. Ross NIST, Technical Advisor
J. Mindte, NIST, Technical Advisor

Committee on Administration and Public Affairs

Appendix A

Program Evaluation Work Group
Summary

The Program Evaluation Work Group (PEWG) was appointed in April of 1994. The mission of this work group was to assist the Committee on Administration and Public Affairs in establishing a standard of "Core" data to be collected which would provide measures:

- To determine the effectiveness of weights and measures programs;
- To determine whether changes in programs or processes were effective; and
- To share information and data thus enabling jurisdictions to make marketplace and cost/benefits analysis.

The PEWG held two meetings and decided to develop a set of core data in the following two areas:

- Retail Motor Fuel Dispensers and
- Handbook 133 Package Inspection Procedures.

The members of the working group agreed to initiate a pilot program which would become a predecessor to a national weights and measures database. However, shortly after the development of the software, support for the project was not available.

The PEWG requested additional resources from the Executive Committee; however, none were received. It was the recommendation of this work group that if the necessary resources could not be provided, the efforts of this group could not be successful, and, therefore, should be disbanded.

Appendix B

Voluntary Program Assessment Meeting Summary

The group met June 11 and 12, 1998, in Oklahoma City, Oklahoma. The following is reported by the group.

Value. Voluntary Program Assessment (VPA) will promote the goals of the National Conference on Weights and Measures (NCWM) as established in Article II of the proposed Bylaws. In particular, VPA will aid the NCWM to, *"provide uniform training"* and *"improved delivery of weights and measures programs."* VPA will also implement recommendations of both the Privatization Work Group and Program Evaluation Work Group (PEWG) that a national program be established to promote uniformity and minimum standards in weights and measures inspections. It is recognized that most weights and measures jurisdictions have adopted National Institute of Standards and Technology (NIST) Handbooks 44, 133, and parts of 130, but often inspection procedures vary.

History. The need for a Voluntary Program Assessment was identified by the Privatization Work Group at its first meeting held in Richmond, Virginia, during October 9-10, 1992. A report of that meeting stated that: *"Uniformity and quality is needed across the country in order to ensure the long term health of weights and measures."* [NCWM Publication 16 (1993), Appendix G, p. 95.] The PEWG followed up some of the work of the Privatization Work Group. The PEWG determined that there was a problem with a diversity of inspection procedures and record keeping among jurisdictions which made it difficult to gather data to develop performance measures. Item 403-1 for the 83rd Annual Meeting of the NCWM contains a proposal by the Administration and Public Affairs (A&P) Committee that *"a voluntary program assessment work group be established . . . to evaluate and improve local programs."*

Key Elements. The key elements of the proposed Voluntary Program Assessment would be the establishment of "minimum standards" for weights and measures inspection programs and the recommendation of model report forms for a record of inspections. Inspectors must be trained in the minimum standards and equipment must be certified by a NIST-certified lab. A jurisdiction could elect to participate or not and apply for assessment for some or all of the areas of weights and measures inspection work it performs. The VPA would be administered by the NCWM through the A&P Committee. A jurisdiction that successfully completed an assessment would be awarded a certificate of recognition. A review would be performed annually. The jurisdiction would be required to mail copies of inspection records for specified periods to members of a 3-person committee for review of conformance with the "minimum standards". The leader of the committee would forward their findings to the A&P Committee for approval. Only public sector members of the NCWM may participate on the review committees or approve assessments on the A&P Committee. The NCWM would keep records of assessments performed and certificates issued. Initially, the review committees for each area of inspection would consist of the work group members who developed the "minimum standards". If a jurisdiction did not meet the "minimum standards", it would be given a period of time to correct the deficiency before its certificate of recognition is withdrawn.

Areas of program assessment would include most of the same inspection types addressed by Examination Procedure Outlines (EPOs). Device inspection areas of assessment would include:

- small-capacity scales
- medium-capacity scales
- large-capacity scales (e.g., vehicle scales, livestock scales, railroad scales, hopper scales, belt conveyor scales)
- volume measuring devices
  - petroleum meters
    - fuel dispensers
    - LPG meters
    - loading-rack meters
    - vehicle-tank meters
    - CNG meters
  - mass-flow meters
  - miscellaneous volume
    - ag-chem meters
    - water meters

- grain-moisture meters
- taxicab meters
- other Handbook 44 measuring devices not specified above
- package inspection
  - random pack
  - standard pack
  - volumetric
- scanning systems

It is recommended that a pilot working group be formed to develop a model format for minimum standards and sample forms. Fuel dispensers would be a good start because the PEWG did a lot of research in this area of inspection a few years ago. Industry Associate Members of the NCWM will be asked to participate in the working groups developing the minimum standards for each area of inspection..

Questions and Answers:

Q. Will it take a lot longer to complete inspections than it does now?

A. No extra time will be needed if a jurisdiction is already following procedures contained in Handbooks 44, 130, or 133. Some extra time may be required for completing inspection reports.

Q. Will it cost a lot of money to obtain a certificate of recognition?

A. There may be costs to upgrade equipment if needed. The assessment is voluntary. A jurisdiction may find it easier to justify funding for upgrading equipment to meet the requirements of the assessment program.

Q. Will the Voluntary Program Assessment take away some autonomy from jurisdictions?

A. The goal of the NCWM is uniformity. All jurisdictions already have input in Handbooks as members of the NCWM. The assessments are voluntary. The NCWM A&P Committee public sector membership will approve the reviews. Remember, the Voluntary Program Assessment will not limit jurisdictions from doing more - these are minimum requirements.

Q. We have a system that works now - why change it?

A. It doesn't work as well as it should - the lack of uniformity of inspection procedures is a problem. A jurisdiction that conforms with the minimum standards will receive a certificate of recognition that proves the jurisdiction is performing inspections in accordance with the Handbooks.

Appendix C

Incident/Accident Report
(To be completed & submitted unsigned, anonymously)

The purpose of this form is accident prevention. Please incorporate this summary into your safety program documentation procedures. Completing this brief report will allow NCWM to alert other organizations and jurisdictions of hazards and possible corrective actions.

1. What weights & measures function was the employee performing, where, and when?

_____
_____
_____
_____
_____

2. Briefly describe the incident.

_____
_____
_____
_____
_____

3. Contributing factors (check all that are appropriate):

- ☐ inexperience
- ☐ lack of training
- ☐ employee error
- ☐ insufficient personnel
- ☐ haste
- ☐ weather conditions
- ☐ equipment failure
- ☐ failure to follow procedures
- ☐ job fatigue
- ☐ environmental conditions
- ☐ other
- ☐ improper equipment
- ☐ lack of protective gear
- ☐ hazardous materials
- ☐ unsafe work surface
- ☐ housekeeping

Comments:

_____
_____
_____
_____
_____

4. Recommendations for corrective action:

_____
_____
_____
_____

You may continue your comments on the back of this sheet

Please mail completed form to: James E. Ross, NIST, Building 820, Room 223, Gaithersburg, MD 20899 (telephone: 301-975-4205)

Continuation of Comments on Numbered Items

1.

2.

3.

4.

Miscellaneous remarks:

Appendix D

Work Plan for Developing a Training Delivery Plan in a Three Year Cycle July 1998 (Draft)

NCWM STRATEGIC PLANNING
Training Work Plan Development
Introduction

This report reflects efforts of the work group assigned to outline a work plan to develop an NCWM training delivery plan in a three-year cycle to address the training needs of NCWM members and other stakeholders in national legal metrology. Current work group members include Barbara Desalvo, Richard Greek, and Max Gray. Bruce Martell also contributed to the work of the group.

With 749 weights and measures regulatory jurisdictions, an estimated 3000 W&M regulatory officials in the United States, and over 20,000 individuals in the private sector involved in commercial measurement, it is realized that the NCWM cannot meet every training need of all those involved in legal metrology. It is the intent of this work group to summarize activities that will assist in developing an effective training delivery plan and outline a draft work plan that will 1) identify key issues that must be addressed; 2) identify key people or groups that could be assigned to, or provide assistance in, addressing and resolving those issues; 3) establish a time line for developing recommended Conference positions on the issues; and 4) result in an ongoing, comprehensive and cohesive Professional Development Plan in a three-year cycle for Conference approval and implementation.

To assist the work group in developing a work plan, an Executive Committee participant from Canada kindly facilitated a joint session of the Executive and A&P Committees that identified issues that needed to be addressed to provide a uniform training delivery program for regulatory and industry officials involved in legal metrology. It is the final product of that session that is the framework we are using to organize an action plan for developing the Three-Year Training Delivery Plan.

What follows is a draft, brief discussion of each issue to be addressed including text that mentions "sub-issues" that should be considered. Included within each issue is the work group's recommendation of the individuals or groups that would best be able to address a particular issue and a recommended time frame for addressing each issue.

It should be noted that, while the plan attempts to include all individuals involved in legal metrology, it does not address training for metrologists. There is a successful training delivery system, coordinated by NIST, in place for metrologists which could be used as a model in addressing certain issues.

The Executive Committee will obviously play a critical role throughout the planning process and should be kept informed of all progress by each group as issues are addressed. However, the work group feels that the Administration and Public Affairs Committee should serve as the developing and coordinating body throughout the process and be responsible for taking the information on each issue and putting together a model comprehensive and cohesive NCWM Training Delivery Program, with objectives, goals, plans, schedules, etc. stated and described as clearly as possible. The final plan should be considered as a voting item on the A&P agenda.

WHAT ISSUES MUST BE ADDRESSED BY A TRAINING PLAN THAT WILL ENSURE UNIFORM TRAINING PROGRAMS FOR INDUSTRY AND GOVERNMENT INDIVIDUALS INVOLVED IN LEGAL METROLOGY?

I. TRAINING PROGRAM MUST BE CLIENT FOCUSED

As with any product or service provided by an organization, the needs of the customers must be determined. Customers, or potential customers, must be defined, and the needs of those customers must be assessed effectively. Tools or techniques must be identified or developed and employed in determining customer needs. Who are the customers of the NCWM training delivery plan and what are their needs and preferences (by subject and level)?

Additionally, there is the need to identify customer preferences for types of training delivery and the potential for success for each type of delivery. Each type of audience (e.g. industry, regulatory, field officials, administrators, etc.) may respond differently to various delivery techniques or may have limitations (time, abilities, etc.) that prevent certain techniques from being viable alternatives. The Conference may have limitations that prevent certain delivery approaches from being appropriate (e.g., one-on-one). What delivery approaches are available and preferred by different customers, or for different subjects? What techniques are appropriate considering limitations and resources? What delivery techniques offer the best results considering limitations and customer preferences?

The above questions need to be considered and responses need to be prioritized. The A&P Committee has conducted multiple surveys, including an ongoing survey at the regional level, which should provide general answers to some of these issues. The NCWM Certified trainers could provide information. There is a training evaluation work group in the Central Group that has reported on training program needs and could be a source of this information. There have been voting items on A&P reports on which the Conference members (key customers) have indicated preferences for certain types of training. National Training Program (NTP) data, such as number of participants nationwide in each course, provides indications of customer preferences.

Action: The work group feels that this issue could best be addressed by the A&P Committee and their NIST Technical Advisor. The customers that are to be served by an NCWM training delivery system must be defined. Review of previous surveys, NCWM Final reports, and other available information along with additional assessment of customers needs could be conducted; prioritized lists of customer preferences and needs and prioritized delivery techniques could be established and published by Spring, 1999.

II. EFFECTIVENESS OF TRAINING PROGRAM

A clear picture of what the training program, and delivery plan, is to accomplish is critical in developing such a program. There is no clear goal, or "target", for the current system. The Conference needs to establish such a target which can be a flexible, but not a moving, target. The target should be clearly defined and communicated to all involved in developing the delivery plan. Means to measure the output or outcomes of the delivery system must be developed, and the goals, or target, stated in measurable terms.

Uniform and well defined training standards must be established. A commitment to uniform training curriculum and materials, a commitment to keeping the materials up to date, and a commitment to providing an opportunity to all identified customers (jurisdictions, industries, etc.) to receive uniform training that meets the standards is another essential component of the plan.

Evaluation benchmarks must be established and the plan compared to the benchmarks through a dependable, objective evaluation process.

As with the entire program, the training standards and benchmarks must be applicable to all customers, both in the public and private sectors.

A commitment to provide resources for accreditation of the program, its components, and participants must be made by the Conference and the players in the delivery process.

What does the NCWM want the training delivery system to accomplish? How will the outcome be measured? To what standards will the training be held, and what benchmarks will be set to assess the success of the program? Who will manage and/or direct the customer-focused program? Who will be accountable for monitoring its successes and/or failures? How will the materials, instructors, etc. be accredited and kept up to date?

The "effectiveness" issues need to be firmly structured, defined and documented, much like the documentation of the National Training Program which is found in NCWM Publication 11.

Action: The work group feels that the NCWM Executive Committee and the OWM could best address these, and related, issues through a coordinated effort within the next year with a position developed for inclusion on the 1999 Executive Committee agenda. This process is already being addressed and developed in Section E of the draft MOU between NCWM, Inc. and NIST.
A work group made up of members from Executive, OWM, A&P, and a third party with expertise in training program management could possibly be assembled to perform this task.

III. ADEQUATE FUNDING FOR A COMPREHENSIVE TRAINING PROGRAM

The level of funding dedicated to a training delivery system will drive many aspects of the program and influence many of the decisions that must be made by everyone involved in developing a delivery plan. Identifying financial resources required for the target delivery system, sources of funding, responsibility for who pays for some costs involved, issues concerning cost sharing, costs/benefits issues and means for measuring the benefits and other related issues must be developed in conjunction with the desired effectiveness of the system.

A plan for marketing of the benefits of a training delivery system must be developed . Policy makers at the federal, state, and local level and affected industries must be committed to the plan and to providing resources for training.

The level of funding provided by NCWM, NIST, AMC, etc. must be established and agreed upon. Financial vs. in-kind contributions must be considered. Addendums to the anticipated MOU between the Conference and NIST should provide specific information regarding each party's commitment to the training delivery system in terms of funding, effort, and the role each will assume.

Other sources of funding must be explored. Available grants, potential revenue from sale of materials, registration fees, etc. should all be explored as possible sources of funds for a training program. The group assigned the task of developing a budget and sources of funds should seek assistance from others outside the Conference with knowledge, experience or expertise in funding of educational programs (e.g. grant writers). Any and all opportunities for funding should be explored.

Action: The work group recommends that a select group be established to address funding of a training delivery program. The group should include
Executive Committee members familiar with the NCWM budget and involved in the MOU development, the Chief of OWM, at least one AMC member, a Committee. Levels of funding to be dedicated to training delivery should be established as specifically as possible in three-year cycles for planning purposes. In addition to periodic reporting to the Executive Committee, a draft-three year training delivery system budget should be developed by 2000.

IV. PLAN FOR PROGRAM CONTINUITY

Commitment to long-term maintenance of the program must be made. While funding and funding sources are critical to long-term maintenance, that issue would be addressed by the group charged with funding development. Long-term plans, such as those for initial training, frequency of retraining, scheduling and publishing the schedule, short-term training vs. long-term development of trainees, keeping materials updated and distributed, etc. should be described as part of a comprehensive training delivery plan.

This issue relates to decisions such as who will manage and direct the delivery system, its quality, effectiveness and the measurement of its success. Part of the shortcomings of the current system is the lack of long-term planning and commitment to maintaining the system, the materials and other resources.

Action: **The work group recommends that OWM and the A&P Committee be assigned to draft a plan for long-term scheduling and maintenance of the delivery system. Responsibility for assuring upkeep and updating of materials, maintenance of a trainers database, means to monitor initial training and retraining and related issues should be decided and assigned. The mechanism to communicate these decisions, whether through addendums to the MOU, contracts, or other means, should be identified and recommended to the Executive Committee.**

V. EFFECTIVE TRAINING DELIVERY

Specific decisions regarding effective training delivery must be made once the other issues are developed. A coordinator or coordinating group must be determined. Who will deliver the training, or how various training topics will be delivered according to developed standards, must be determined. A process for evaluating the effectiveness of material, instructors, and students must be in place to monitor effectiveness of the delivery system. A means to effectively address and resolve challenges should also be put in place.

Location of training sessions, identifying adequate facilities, whether training delivery is centralized or decentralized, should be decided as part of the planning of the delivery system.

What role will currently available NCWM training materials, especially the NTP Training modules, play in the training delivery system, and how will the materials be maintained?

Rewards for participants, trainers, and administrators that support the training should be developed. Issues concerning a uniform recognition or certification process of participants in the system must be addressed if certification is a desired component.

Action: The work group recommends that the NCWM A&P Committee review the current delivery techniques, reward systems, certification processes, and assess the strengths and weaknesses of each; research additional training delivery techniques not previously employed in NCWM W&M training and assess the strengths and weaknesses of each; then prioritize each technique according to criteria established prior to the review, and offer recommendations to the Conference as to the delivery techniques that offer the greatest probability of success in meeting the "targets" established during the work plan.

Since resources, customer preferences, and long-term continuity and maintenance of the program are key influences on the decisions regarding selection of the most effective techniques, the A&P Committee, along with anyone else appointed to assist, should begin this process in mid-1999 when the previous issues are addressed and reported by each assigned group. Appropriate, or preferred, delivery techniques for each topic or type of training could be

recommended by the Annual Meeting, 2000.

VI. ROADBLOCKS AND OPPORTUNITIES

Each group designated to address an issue should identify possible roadblocks to success as part of the issue development, and contingency plans should be included in the strategy development. As mentioned, the three-year cycle training delivery plan must be flexible, especially regarding roadblocks and obstacles, as well as opportunities, that may arise during the development and implementation of the plan.

Action: Each group addressing the issues that are components of the plan should include as part of their recommendations a list of possible roadblocks, threats and opportunities and contingency plans.

Summary of Key Issues

The organizations, agencies, and individuals involved in the development and implementation of the work plan must appreciate that this project is a process. Commitments must be made to realistic goals, quality, and timeliness. The stages of the following Summary of Key Issues will not always be addressed in order, may be addressed more than once, and often concurrently.

1) Identify Customers and Needs

- Who?
- What?
- Priorities?

2) Identify Successful Delivery Approach

Consider:

- Availability
- Preference
- Surveys (past and present)
- Regional Work Groups
- Trainers
- Components

3) Set Targets and Goals

- Clear
- Documented
- Flexible with no moving targets

4) Establish Standards

Commit to:

- Uniformity
- Quality
- Maintenance

Must be:

- Credible
- Measurable
- Realistic (e.g. voluntary)
- Attainable

5) Develop Evaluation Criteria and Process

- Objective
- Reliable
- Appropriate to goal and customer

6) Provide for Accreditation

- Participant
- Program

7) Define Roles

- Management
- Coordination
- Delivery
- Maintenance
- Evaluation
- Accreditation
- Accountability

8) Funding

- Resources (available and required)
- Budget Outline
- Sources (e.g. private / public grants, registration / maintenance fees)

Must include:

- Continuous cultivation
- Means to measure benefits

9) Marketing

- Program
- Benefits

10) Continuity

Commit to :

- Developing professionals
- Long-Term Planning
- Maintenance
- Ongoing development
- Monitoring

Appendix E

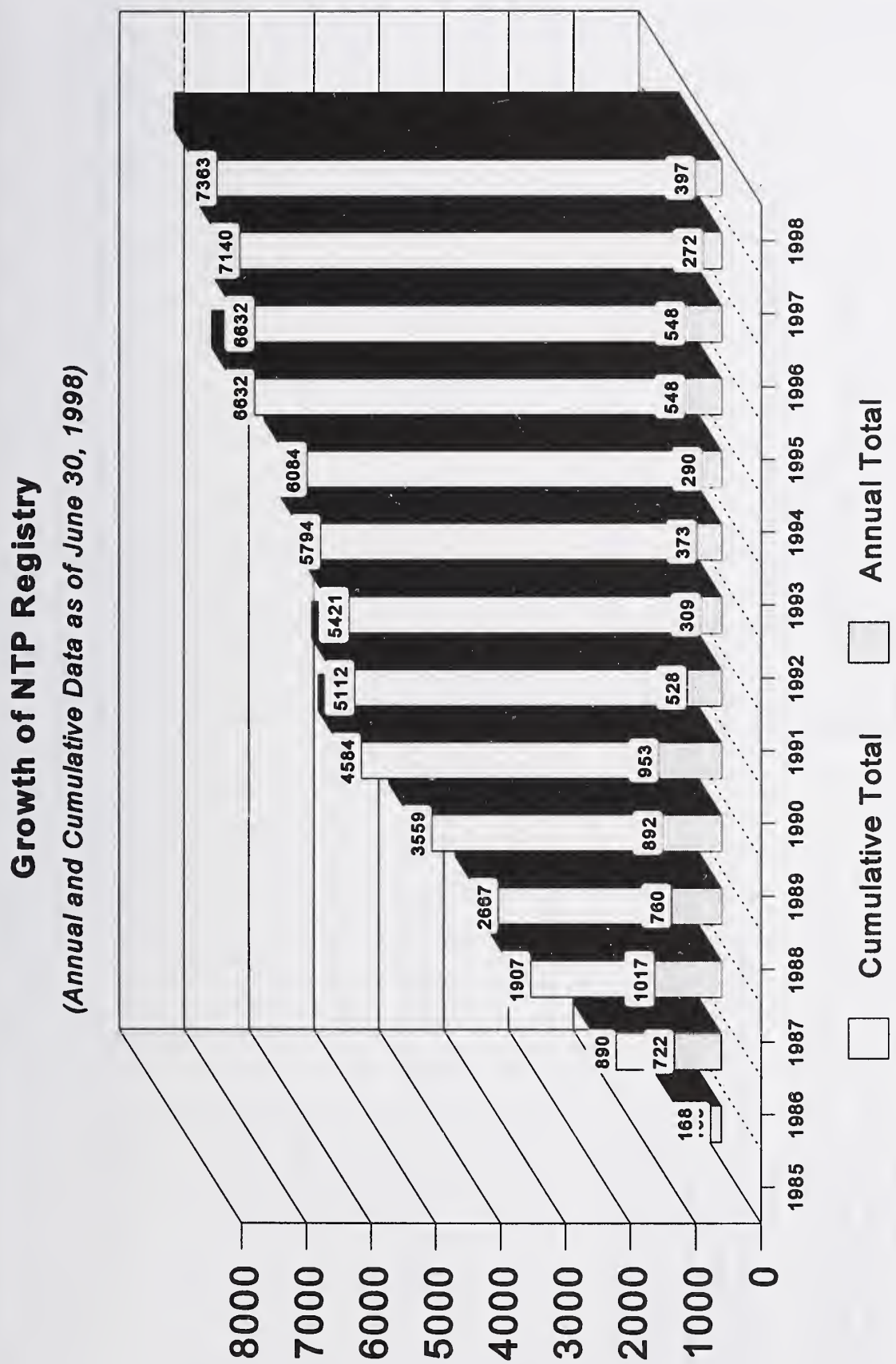
Certification Summary

(As of June 30, 1998)

State	Total No. of Certif.	Total No. of People	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	104	5	6	8	3	2		7	49	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	120	70		12		17		48	21	21			
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	15		2		7		7	15				11
NV	13	11		1		1		1	6			1	
NH	32	8	6	5	5			2	6	6			
NM	39	24		9					14			15	
NC	39	35							20				19
ND	3	3							6				
OH	341	124		60	30	29		37	90	52		7	35
OR	54	18	16	15				5	10		1	1	6
PA	108	56		26	4	7		6	27	18			19
PR	91	49		33					33				25
SD	28	13			7			12	6				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	41	4						6					5
VA	5	5				3						2	
WA	28	21		10					15			1	
WI	4	4										4	
Other													
GIPSA**	48	40				36	6	6					
Totals	1972	1030	75	311	94	189	17	219	569	194	31	44	226

* NTP Module 1 was incorporated in Module 2, now Course No. 202 (May 1994)
**USDA Grain Inspection/Packers and Stockyards Administration

Appendix F


Growth of NTP Registry
(Annual and Cumulative Data as of June 30, 1998)
8000
7000
6000
5000
4000
3000
2000
1000
0
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
168
722
890
1017
1907
760
2667
892
3559
953
4584
528
5112
309
5421
373
5794
290
6084
548
6632
548
6632
272
7140
397
7363
Cumulative Total
Annual Total

NATIONAL TRAINING PROGRAM REGISTRY
SUMMARY OF ACTIVITY
(As of June 30, 1998)

Courses Listed in Registry:

Introductory: Level 100
101 Weights and Measures Regulation in the United States
102 Introduction to Handbook 44
103 Introduction to Electronic Weighing and Measuring Systems

Scales: Level 200
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

Meters: Level 300
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

Measures: Level 400
Other Devices: Level 500 (linear, taximeters, etc.)

Commodities: Level 600
601 Checking the Net Contents of Packaged Goods
602 Commodity Regulations

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. 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. 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		13		20		8		10	42	17		3	12		145
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	24	18	10		13	75	8	8		39		292
GA				7		11	4		8	17						47

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. 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. 601 Module 10	Course No. 602 Module 22	
HI				4	12	12	11	11	11	12	11	12		24	6	127
ID				8	9		10		46	10			12	11	10	117
IL					8	1	2		9	23				2	1	46
IN			48	48	56	46	20		65	104	44		2		27	460
IA					10		5	8	17	4				9	2	55
KS	9		3	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			6			40
MD			6		29		6			28	33	4			4	110
MA				12	23	4			7	41	31	2	4	3	1	128
MI			94	53	50		21		38	8	22		13	29		328
MN							2			12		2	3		1	20
MS						2	3		3							8
MO		3	63	22		13	2		8	44				27		182
MT						5	7		10	6			1			37
NE		16	19	27	17	4	7	14	30	35			2	18		204
NV			11	8	1		1		1	12			1		15	35
NH	6			6	5	7			3	7	8		2			44
NJ				172	21	21				108	109					431
NM					20		13			23			17	25		98
NY					74											175
NC							2			18				19	16	57
ND				12				2		3		3	3			21
OH		53	77	122	103	47	45	4	75	130	64		10	56	12	823
OK			17	2		2			4	5				22		52

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. 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. 601 Module 10	Course No. 602 Module 22	
OR	18		23	16	17				8	12	13	1	29	16	12	165
PA	34		27	32	132	51	8		8	96	25		1	58	19	541
PR			38	25	32					33				24		147
RI					1				1		1					3
SC					25		2			28						55
SD				10		7	10		12	8			1	10	10	68
TN				5	27		6		6	32						76
TX			5		25		8		12	24			4			78
UT	17	7	38	17	22	14	17		12	19	10		2	20		165
VT	6			5		3	3		9	11		1		1	2	43
VI		5							6	6			2	6		23
VA		39	10	13		24	5		16	26	25		4	38		230
WA	13		12	16	13				18	16			3	10	14	115
WV							3									3
WI	56		25	65	61		16		19	40	26		10	43		361
WY			11	3		11				18			16			60
Other																
Associate Members										6		8	3	10		30
FGIS*				13												13
GIPSA				3			30	12	5							50
Total Trained	**204**	**123**	**579**	**888**	**994**	**354**	**349**	**48**	**522**	**1296**	**458**	**54**	**192**	**726**	**179**	**6966**
Percent of Total Certified[1]	**37%**	**N/A**	**N/A**	**N/A**	**32%**	**27%**	**54%**	**36%**	**42%**	**44%**	**42%**	**57%**	**23%**	**31%**	**NA**	**39%**

* Federal Grain Inspection Service

** USDA Grain Inspection/Packers and Stockyards Administration

[1]A total of 1,969 certificates have been awarded to 942 individuals under the NTP Certification Program.

***Module 1 was incorporated in Course 202 in 1994.

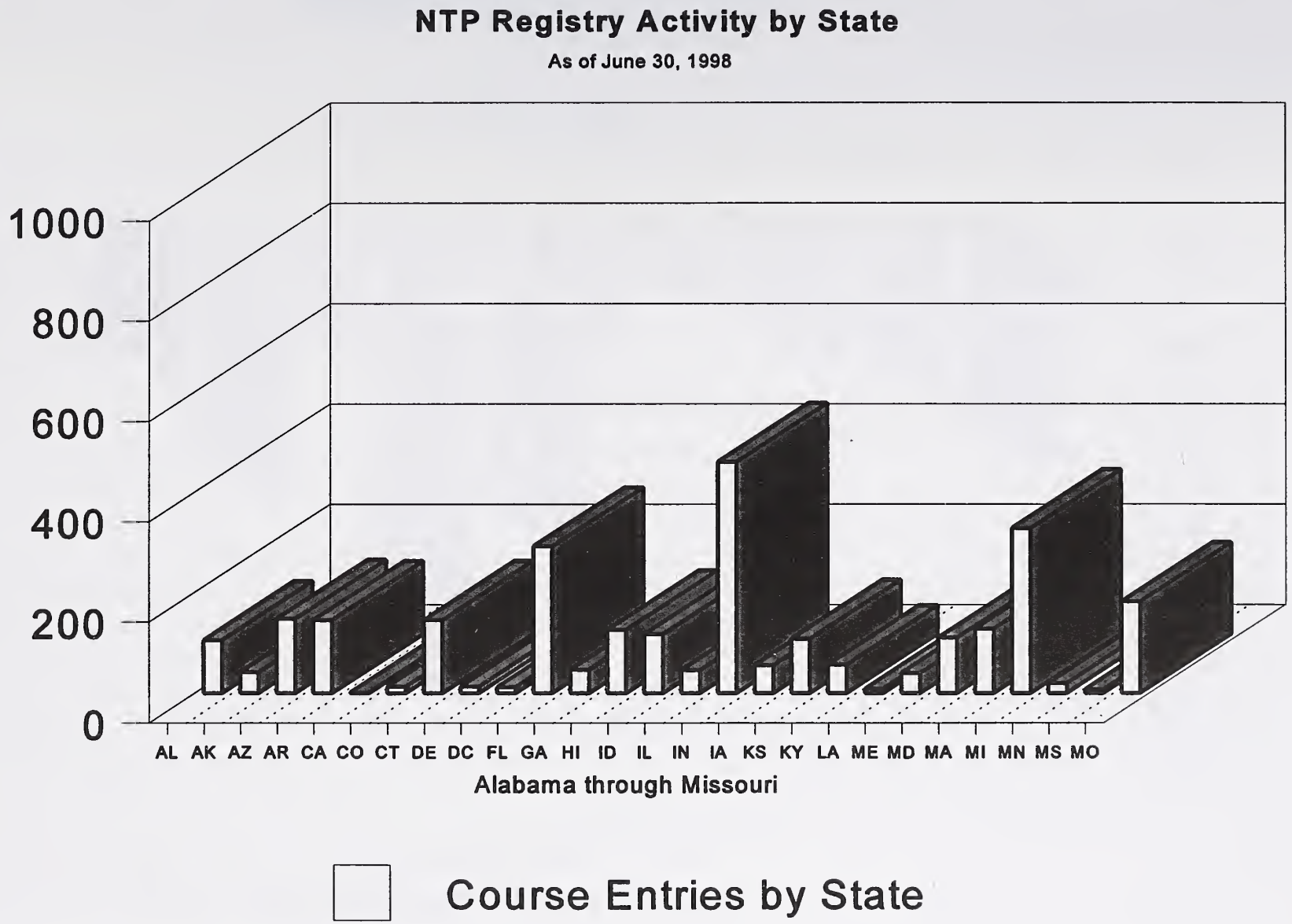
NATIONAL TRAINING PROGRAM REGISTRY
SUMMARY OF METROLOGY SEMINAR ACTIVITY
(As of June 30, 1998)

Courses Listed in the NTP Registry:

No. 201, Basic Metrology I
No. 202, Basic Metrology II
No. 203, Intermediate Metrology
No. 204, Advanced Metrology

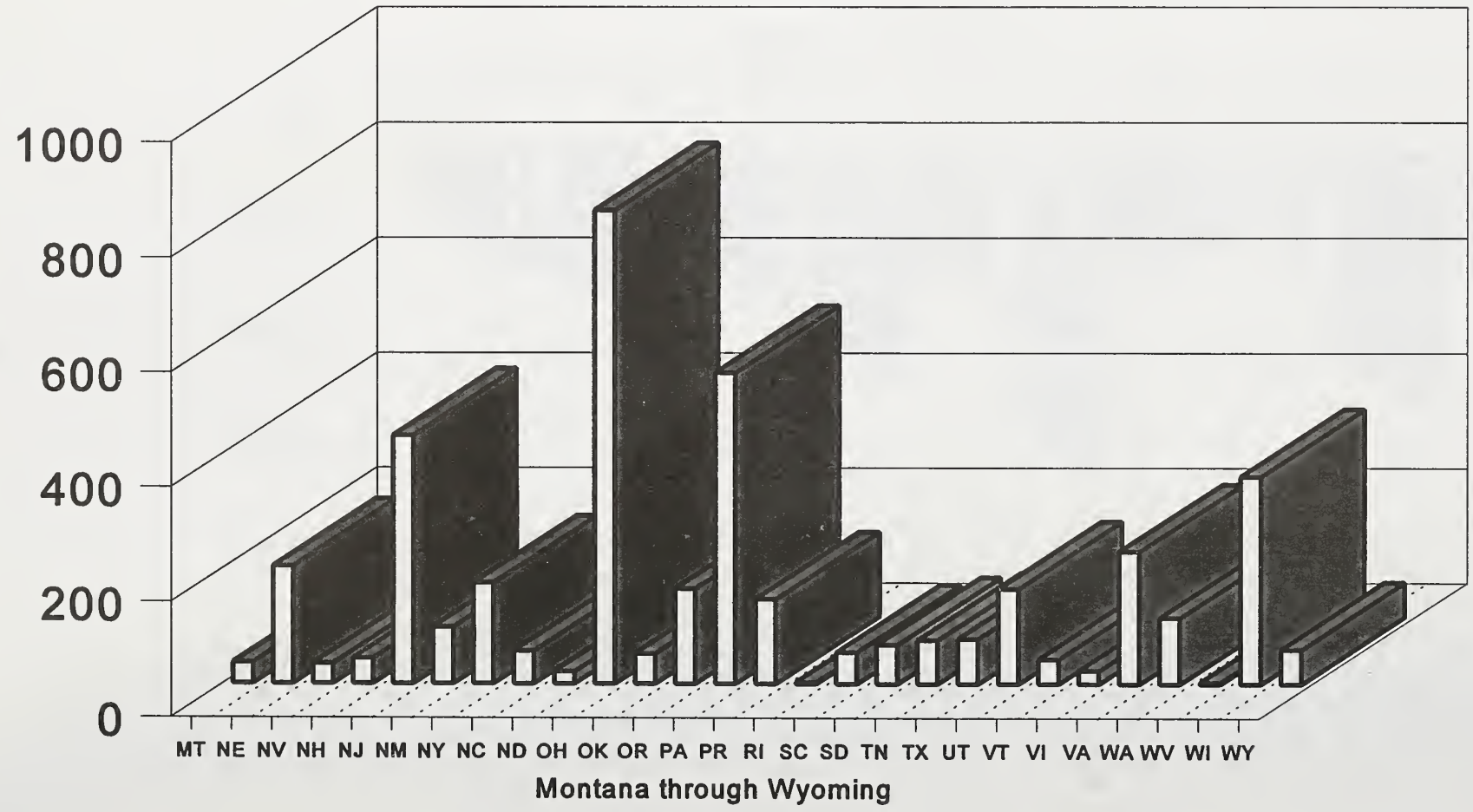
Individuals Trained by Course					
	Course No.				
State	201	202	203	204	Totals
AL		1			1
AK	1	2	1		4
AZ	3	3	3	1	10
CA	1	1	2	1	35
CO	2	2	1		5
CT			2		2
DE	1	1	2	1	5
FL	4	4		1	9
GA	1	1	1		3
HI	2	2			4
ID	1	1	1		3
IL	5	4	1		10
IN	1	1	2		4
IA	1	1	1		3
KS	2	2	2	1	7
KY	2	2			4
ME	2	2	1		5
MD	6	6	8		20
MA	1	1			2
MI	1	1	3		5
MN	1		2	1	4
MS	2	2	3		7
MO	2	2	1		5
NE			2		2
NV	1	1			2
NH	1	1	1		3
NJ			1		1

Individuals Trained by Course					
	Course No.				
State	201	202	203	204	Totals
NM	1	1			2
NY	2	2	2	1	7
NC	7	7	4	2	20
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			4
SD	1	1			2
TN	3	3	1		7
TX	3	3	2		8
UT		1			1
VT			1		1
VA	3	3	3		9
WA				1	1
WV	3	3	1		7
WI			2		2
Other					
Canada			2		2
Associate Members	71	18	33	22	144
GIPSA	6	1			7
Totals	**157**	**102**	**102**	**36**	**397**


NTP Registry Activity by State
As of June 30, 1998
1000
800
600
400
200
0
AL AK AZ AR CA CO CT DE DC FL GA HI ID IL IN IA KS KY LA ME MD MA MI MN MS MO
Alabama through Missouri
Course Entries by State

NTP Registry Activity by State

As of June 30, 1998



Course Entries by State

Continuing Education Units (CEUs/NCWM EUs) Awarded***
By the National Conference on Weights and Measures
(As of June 30, 1998)

Module Number	NCWM EUs /CEU's **	No. of Partic-ipants	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	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*	994		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	3000.00
4	3.1	354				492.90	198.40	170.50	145.70				74.40		15.50		1097.40
5	3.1	522			96.10	133.30	381.30	217.00	220.10	18.60	52.70	55.80	89.90	75.60	263.50	3.10	1607.00
6	3.1	48			12.40			55.80		15.50	6.20		31.00		27.90		148.80
7	3.1	349			12.40		248.00	117.80	80.60	80.60	130.20	43.40	179.80	99.20	12.40	77.50	1081.90
8	2.8	1296		288.40	856.80	260.40	739.20	324.80	112.00	156.80	252.00	50.40	170.80	215.60	98.60	103.60	3628.80
10	2.8	726	75.60	372.40	302.40	128.80	417.20	120.40	148.40	123.20	177.20	27.70	16.80	39.20	53.20	30.80	2033.30
19	3.5	54						59.50	49.00	38.50			21.00	17.50	3.50		189.00
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	192			105.00	129.50	147.00	52.50	31.50		42.00	52.50	3.50	3.50	79.80	24.50	671.30
22	2.45	179						230.30	191.10	2.45			14.70				438.55
23	1.00	123									57.00	36.00	6.00	4.00	3.00	17.50	123.50
24	1.5	579					15.00	402.00	156.00	34.50	34.50	84.00	93.10	22.50	10.50	9.00	870.10
27	1.1	888	155.10	402.60	165.00	66.00	36.30	22.00		24.20	53.90	16.50	1.10	15.40	2.20	16.50	976.80
Totals		6966	230.70	1435.40	2642.30	2197.40	2564.40	2381.10	1257.80	795.05	811.90	633.50	1042.8	531.30	733.50	515.10	17781.25

*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, 1998)

Course No.*	No. of NCWM EUs/ CEUs**	Partic-ipants	1990 Total	1991 Total	1992 Total	1993 Total	1994 Total	1995 Total	1996 Total	1997 Total	1998 Total	Grand Totals
201	3.60	157	97.20	54.00	7.20	28.80		244.30	72.00	39.60	21.60	**564.70**
202	3.50	102	101.50	52.50	14.00	28.00		129.50	10.50		21.10	**357.10**
203	3.10	102	49.60	40.30	37.60	6.20		151.90	31.00			**316.60**
204	2.50	36				5.00		42.50		37.50	4.75	**89.75**
Totals		**397**	**248.30**	**146.80**	**58.80**	**68.00**	**None**	**568.20**	**113.50**	**77.10**	**47.45**	**1328.15**

* 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).

Appendix G

Associate Membership Training Scholarship Funds Activity

July 1, 1997 - June 30, 1998

(Funds **Must** Be Disbursed by July 31, 1998)

As of July 24, 1998

The Associate Membership Committee (AMC) has provided 52 $500 scholarships for the following purposes; all training to be completed by July 31, 1998:

- for training of weights and measures field personnel,
- One $500 scholarship per region may be used to support publication of the weights and measures association's newsletter.

State	Re-gion	Request Date	Funds Re-quested	Funds Awarded	Funds Paid Out	No. Of Scholar-ships	Type of Training	Use Planned	Status
AK	W	09/18/97	$500	$500		1	Handbook 133 training; dates to be determined, Mike Campbell, instructor, 3-5 students	Student and instructor expenses	Per Ed Comiskey - training held week of 7-20-98-request to follow
AR	S	09/30/97	1,500	1,500	1-29-98 $208 travel advance 451.26 instructor. expenses 376.98 student expenses	3	Vehicle Scale Testing, June, NIST Certified Instructor Ken Wheeler, 23-28 students, Ken Wheeler Instructor	Student and instructor expenses	$1,036.24 total approved for payment as of 7-10-98
CA	W	09/19/97	3,105,22	3,000	3,000	6	Ongoing Scanner Inspection Training,- 10/97-6/98; Instructors Steve Clay, Marianne Delperdang, Karen Langford, Roger Macey, and Pat McDermott; 125 students	Student and instructor expenses	approved $3,000 for payment 7/23/98
CWMA	C	09/23/97	6,598.39	6,000	6,000	12	Train-the-Trainer, June, 1998 Howick Associates, Instructors, students from: Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin	Student and instructor expenses	6.000 approved for payment 7-11-98
CWMA	C	09.29/97	500	500	500	1	Expenses of 2 CWMA Newsletters	Expenses of publication and mailings	Approved for payment 7-16-98
ID	W	09/16/97	1,168	1,000	1,000	2	Handbook 133 October 26-30; Jack Kane, Montana, and Fred Stienbacher, instructors; 11 students	Student and instructor expenses and supplies (calculators)	Conducted and approved for payment 12/3/97
IN	C	09/09/97	500	500	324.61	1	Course No. 202, Retail Computer Scales; 1/26-29/98, Mike Horan, instructor; 30-40 students	Student and instructor expenses	Ralph Smith expenses $324.61 approved 3-9-98 (balance retumed to AMC)
LA	S	09/05/97	1,800	1,500	1.500	3	Handbook 133 and Volumetric Testing; 02/97 (3 days), 32 hours); Danny McCartney, instructor; 40 students	Student and instructor expenses	Approved for payment 7-22-98 $1,500 only
MA	NE	08/27/97	600	500	500	1	Weights and measures training; Harvey Paclat, instructor; 40 inspectors	Training materials and room rental	Approved for payment 3-9-98
MO	C	8/28/97	2,112	1,500	1,379.04	3	Training: How Missouri Laws Support HB 44 & 130; 22 officials; Dwain Snider & Wayne Fritts, instructors	Expenses of students and instructors	$1,379.04 approved for payment 7-21-98

State	Re-gion	Request Date	Funds Re-quested	Funds Awarded	Funds Paid Out	No. Of Scholar-ships	Type of Training	Use Planned	Status
NEWMA	NE	8/27/97	500	500	500	1	Support of NEWMA Newsletters (3-4 issues per year)	Expenses of publication	Approved for payment 3-9-98
OH Jackson County	C	09/30/97	565	500	335.30	1	Expenses of one weights and measures official to attend Retail Computing Scales Class, 11/17-21/97, Ken Wheeler/Barbara DeSalvo, instructors	Expenses of student	Conducted and approved for payment 12/3/97
PA	NE	10/01/97	2,000	1,500		3	Price Verification training, 11/97-04/98; M. Caszatt, B Lundbers, M. McGoff, and D. Ruday instructors; 25 students (county weights and measures personnel)	Expenses of students	Dean Ely to submit vouchers directly to the NCWM Treasurer
SWMA	S	09/03/97	500	500	500	1	Support of SWMA Newsletter	Expenses of publication	Approved for payment 10/16/97
TN	S	09/15/97	500	500	302.79	1	Grain Moisture Meter Training, laboratory and field; fall 1997; Instructor provided by the State of Georgia; 1 student, Tom Smith	Student expenses	Approved and paid 3/9/98
WA	W	09/25/97	610	500	500	1	Scanner training; Art Fluharty, instructor; 10 students	Student expenses and room rental	Approved for payment 7-21-98
WI	C	09/29/97	6,000	5,000	Per Al Porter's instruction: 500 advance to MI & 500 advance to IL 4,238.43 - WI	10	Course 204, Meat Beams and Monorail Scales; USDA GIPSA instructor; 14 State inspectors; 3-4 city inspectors	Student expenses and room rental	1,000 advanced 2-98 4,000 approved 7-21-98
WWMA	W	09/25/97	500	500	500	1	Support of WWMA Newsletter	Expenses of publication	Approved for payment 4-9-98
		Totals	**$28,755**	**$26,000**		**52**			

Summary of Scholarship Activity by Region

Region	Funds Requested	Funds Awarded	Funds Claimed (as of 7-23-98)
Central Weights and Measures Association (CWMA)	$15,677	$14,000	
Northeast Weights and Measures Association (NEWMA)	3,000	2,500	
Southern Weights and Measures Association (SWMA)	4,300	4,000	
Western Weights and Measures Association (WWMA)	5,778	5,500	
Totals	**$28,755**	**$26,000**	

Appendix H

NATIONAL TRAINING PROGRAM REGISTRY
SUMMARY OF NIST-NCWM INSTRUCTOR TRAINING PROGRAMS
(As of June 30, 1998)

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	30	14	18	27	146	91	326

Total NCWM Educational Units Awarded						
Course No. 207	**Course No. 306**	**Course No. 307**	**Course No. 501**	**Course No. 603**	**Course No. 604**	**Total**
98.60	49.00	50.40	59.40	511.00	200.20	968.60

ALABAMA

Steadman Hollis	Handbook 133
Frank Gissendanner	Price Verification
	Handbook 133

ALASKA

Mike Campbell	Handbook 133
	Retail Computing Scales
John M. Landis	NTEP
Mike Nethercott	Price Verification

ARIZONA

Carson Keith	NTEP
John Moore	Handbook 133
	Price Verification
David A. Turner	Retail Computing Scales
Sheryl Walls	Handbook 133
	Price Verification

ARKANSAS

Tim Chesser	Handbook 133
Roger Frazier	Retail Motor Fuel Dispensers
	Price Verification
Harlin Wheeler	Handbook 133

CALIFORNIA

Steve Clay	Handbook 133
James Delperdang	Retail Computing Scales
Marianne Delperdang	Price Verification
Ron Dugdale	Price Verification
Richard Greek	NTEP
Dennis Johannes	Handbook 133
	Price Verification
Roger Macey	Handbook 133
Brett Saum	LPG

COLORADO

Bob Athearn	Handbook 133 Price Verification
Scott Boyd	NTEP
Howard Nobel	Handbook 133

CONNECTICUT

Bill Donahoe	Handbook 133
Frank Forrest	Retail Computing Scales
Thomas Phelps	LPG Handbook 133
Charles R. Smith	Price Verification
Peter Wilson	Handbook 133

DELAWARE

Steve Connors	Handbook 133
Tony Deserto	LPG Price Verification
William Lageman	Price Verification
Stephen Nickerson	Handbook 133

DISTRICT OF COLUMBIA

Jeff Mason	Handbook 133 Price Verification Retail Computing Scales

FLORIDA

Carlos D'Arcy	Handbook 133
Fred Derby	Handbook 133
Bob Garris	Price Verification
Don M. Williams	Price Verification
Bryan Yongue	Handbook 133

GEORGIA

Sam Burtz, Jr.	Price Verification
Jerry Flanders	Handbook 133
Oscar Garrison	Handbook 133

HAWAII

Earl Payanal	Retail Computing Scales NTEP
Dianne Yamamoto	Price Verification Handbook 133

IDAHO

Kevin Merritt	Handbook 133 Price Verification

ILLINOIS

Richard Philmon	Handbook 133
Greg Plym	LPG
Tad Tucker	Handbook 133
Kyran Wagenecht	Retail Computing Scales

INDIANA

Jerry Clingaman, Jr.	Handbook 133
Mike Horan	Handbook 133 Retail Computing Scales Price Verification

IOWA

Darryl Brown	Retail Computing Scales Price Verification Handbook 133 Retail Motor Fuel Dispensers NTEP
Susan Bulver	Price Verification
Ivan Hankins	Handbook 133
Michael Norris	Retail Computing Scales
Charles Oakley	Retail Computing Scales
Arlyn Oman	Handbook 133 NTEP
Ralph Venteicher	LPG

KANSAS

Teg Chaffee	Retail Computing Scales
Maureen Henzler	Handbook 133 Price Verification Retail Computing Scales
Lewis Hutfles	LPG
Robert Schneider	Retail Motor Fuel Dispensers
Charles Stutsman	NTEP

KENTUCKY

Randy Wise	Handbook 133 Price Verification
James Kemp	Handbook 133

LOUISIANA

Archie Lambert	Retail Motor Fuel Dispensers
Isiah Lawson	Handbook 133 Price Verification
Danny McCartney	Retail Computing Scales Handbook 133

MAINE

John Cunningham	Retail Computing Scales

	Price Verification
Danny Newcombe	Price Verification
Harold Prince	Handbook 133

MARYLAND

Gene Baumann	Handbook 133
Bob Eaves	Handbook 133
	Price Verification
Tom Fagan	Handbook 133
Michael Frailer	Handbook 133
	Retail Computing Scales
Lisa Griffith	Handbook 133
William Hall	Handbook 133
Mark Lambert	Handbook 133
Donald Mason	Handbook 133
	Price Verification
	LPG
Barbara Miller	Handbook 133
Edward Payne, Jr.	Handbook 133
	Price Verification
	Retail Computing Scales
	NTEP
Jim Price	Handbook 133
Kenneth Ramsburg	Handbook 133
	Price Verification
	LPG
	Retail Computing Scales
	Retail Motor Fuel Dispensers
Richard Wotthlie	HB 133
	LPG
	Retail Computing Scales
	NTEP

MASSACHUSETTS

Stephen Agostinelli	Handbook 133
	Retail Motor Fuel Dispensers
Stephen Berard	Handbook 133
	Price Verification
Mark Coyne (Brockton)	Retail Computing Scales
	Handbook 133
	NTEP
Robert McGrath (Boston)	Handbook 133
	NTEP
Richard Oliver	Retail Computing Scales
Harvey Paclat (Boston)	Handbook 133

MICHIGAN

Dan Dickerson	Price Verification
Terry Gawel	Price Verification
	Retail Computing Scales
Frank Iacopeli	Handbook 133
Duncan Steve MacLaren	NTEP
Brad Pagrati	Price Verification
Ed Paladi	Handbook 133
Mike Pinagel	Handbook 133
	Price Verification
	LPG
	Retail Computing Scales
	NTEP

	Handbook 133
Judi VanScott	Price Verification

MINNESOTA

Roger Menk	Handbook 133
Julie Quinn	Price Verification

MISSISSIPPI

Herald Baughman	Price Verification
Ralph Blake	Handbook 133
	Price Verification
	Retail Computing Scales
William E. Burgess, Jr.	Price Verification
Gerald Broom	LPG
Sammy Lang	Handbook 133

MISSOURI

Wayne Fritts	Retail Computing Scales
	Handbook 133
	Price Verification
Dwain Snider	NTEP

MONTANA

Randy Griswold	Price Verification
Jack Kane	Handbook 133
	LPG
	NTEP
	Retail Motor Fuel Dispensers
Alfred Page	LPG
Fred Steinbacher	Handbook 133
H. Ray Waylett	Retail Computing Scales

NEBRASKA

Scott Arner	LPG
Don Onwiler	NTEP
	Retail Motor Fuel Dispensers
Terrence Powell	Handbook 133

NEVADA

Kevin Coyne	HB 133
George Dorsa	Price Verification
Edward M. Hoganson	HB 133
	Retail Computing Scales
	Price Verification
David M. Scheller	Price Verification

NEW HAMPSHIRE

Richard Cote	Price Verification
	Handbook 133
	Retail Computing Scales
Jeff Wentworth	Price Verification
Kevin Young	LPG
Ernest T. West	Handbook 133

NEW JERSEY

Robert Alviene	Handbook 133
John McGuire	Handbook 133
Joseph Romano	Price Verification

NEW MEXICO

Joe Gomez	Price Verification
	Handbook 133
Wilfred Mendoza	LPG
Johnny M. Peralta	Handbook 133
Steve Sumner	Price Verification

NEW YORK

Steven A. Martin	Price Verification
Michael Sikula	Handbook 133

NORTH CAROLINA

Gerald Brown	Price Verification
	Handbook 133
Jerry Butler	Retail Computing Scales
William Nelson	Handbook 133
Donnie Perry	Handbook 133

NORTH DAKOTA

William Bianco, Sr.	Handbook 133

OHIO

Barbara DeSalvo	Handbook 133
John R. Gray	Handbook 133
Thomas Kamphaus	Price Verification
Roger Lawson	Handbook 133
Kenneth Wheeler	Retail Computing Scales
Jeffrey Yankosky (Cincinnati)	Handbook 133

OKLAHOMA

Charles Carter	Handbook 133
	Retail Computing Scales
	Price Verification

OREGON

Clark Cooney	LPG
Henry Lasher	Retail Computing Scales
Christina A. Parks	Handbook 133
James E. Ross	NTEP
Russ Wyckoff	Retail Motor Fuel Dispensers

PENNSYLVANIA

Robert Bonner	Price Verification
Charles Bruckner	Price Verification
Mary Ann Caszatt	Price Verification
	Handbook 133
	Retail Computing Scales
	Retail Motor Fuel Dispensers
	NTEP
Michele DeMarshall (Philadelphia)	Handbook 133
	Price Verification
	Retail Computing Scales
Dean Ely	LPG
	Price Verification
Rick A. Fogal	Handbook 133
	Price Verification
	Handbook 133
Bradley Lundberg	Price Verification
	Retail Motor Fuel Dispensers
Michael McGoff	Price Verification
Donald McGowan	Price Verification
George Mensch	Price Verification
Anthony Pagano	Price Verification
Edward Petricca	Price Verification
Steven Reilly (Bucks County)	Handbook 133
Ronald Roof	Price Verification
Douglas Rudy	Price Verification
Danielle Shiako	Price Verification
Joshua Stephanian	Price Verification
A. Courtney Yelle (Bucks County)	Price Verification

PUERTO RICO

Otilio Rodriguez Colon	Handbook 133

RHODE ISLAND

Bernard Augustine	Price Verification
Lynda Agresti Maurer	Handbook 133

SOUTH CAROLINA

David Ellisor	Price Verification
	Handbook 133
	Retail Computing Scales
	NTEP
Ronnie P. West	Price Verification

SOUTH DAKOTA

Dick Bowman	Handbook 133
Ralph Busch	NTEP
	Retail Motor Fuel Dispensers
David B. Ellisor	Handbook 133

TENNESSEE

Gary Cloyd	Handbook 133
Charles E. Coleman	Handbook 133
	Price Verification
	Retail Computing Scales
	Retail Motor Fuel Dispensers
Dale Drinnon	Handbook 133
Rickey Freeman	Handbook 133
Randy Jennings	LPG
William LaFont	HB 133
Danny Ray Scott	Retail Computing Scales
	Handbook 133
	NTEP

James Thompson	Handbook 133
Robert G. Williams	Price Verification
Clyde E. Woods	Handbook 133

TEXAS

Deborah Danford	Handbook 133
Harvey Fischer	Handbook 133
Oscar Garrison	Handbook 133
Pete Holcombe	Price Verification
Sally Preston	Handbook 133
Edwin J. Price	Price Verification
	Handbook 133
Richard Rendon	Retail Computing Scales
Damon Slaydon	Handbook 133
	Price Verification
Jim Wiechkoske	LPG

UTAH

Brett Gurney	Handbook 133
Mitzi Hansen	Price Verification

VERMONT

Ray Cioffi	Handbook 133
James Cameron	Handbook 133
Hugh Lund	Price Verification

VIRGINIA

John L. Bates	Price Verification
Wes Diggs	Handbook 133
Jeff Rogers	Handbook 133

VIRGIN ISLANDS

Collin Brooks	Price Verification
Archie Corbitt	Handbook 133

WASHINGTON

John Allen	Handbook 133
	LPG
Tim Douglass (Seattle)	Price Verification
Bruce Feagan (Seattle)	Handbook 133
	Retail Computing Scales
Arthur Fluharty	Price Verification
Rick Mulcahy	Retail Computing Scales
Keith Stoner (Seattle)	Retail Motor Fuel Dispensers

WEST VIRGINIA

Steve Casto	LPG
	Retail Computing Scales
	Handbook 133
	NTEP
William A. Cobb	Handbook 133
	Price Verification
Dennis F. Harrison	Retail Motor Fuel Dispensers

WISCONSIN

Kathryn Dresser	Price Verification
	Handbook 133
	Retail Computing Scales
	NTEP
	Retail Motor Fuel Dispensers

WYOMING

Kim W. Decker	Handbook133
Quince Olsen	Handbook 133
Ron Weber	Handbook 133

NATIONAL CONFERENCE ON WEIGHTS AND MEASURES (NCWM) NATIONAL TRAINING PROGRAM (NTP) TRAINING SURVEY

The NCWM Committee on Administration and Public Affairs needs your assistance to develop a comprehensive National Training Program that meets your individual needs and creates economic equity by implementing uniform inspection procedures. While there has been success and growth through the NIST-NCWM Instructor Training Program, the existing NTP Courses (Modules) have not been consistently updated due to lack of funds and time. Please complete this survey as instructed below and return so we can identify our training needs.

Please Answer the Following

1. Who are you? ☐ Inspector ☐ Administrator ☐ Industry Representative
2. How many persons do you have the responsibility to train?

   _____
3. Does your jurisdiction/organization have defined training standards based on the NTP?

   _____

3a. Does your jurisdiction/organization have ☐ mandatory ☐ voluntary requirements for inspector training?

   _____
4. Has your jurisdiction/organization identified individuals to manage and/or conduct training? _____
5. How many individuals in your jurisdiction/organization have used or been trained using the following in the past 2 years?
   a. NIST-NCWM Instructor training _____
   b. NTP (Module) Courses (live trainer) _____
   c. NTP (Module) Courses (self-study) _____
6. What are the advantages/disadvantages of each:
   NIST-NCWM Instructor Training: _____
   _____
   NTP (Module) classes _____
   _____
   NTP (Module) self-study _____
   _____
7. How would you rate the quality of each training mechanism:
   (circle one in each category)

a. NIST-NCWM Instructor Training	Very Low 1	2	3	4	Very High 5
b. NTP (Module) classes	Very Low 1	2	3	4	Very High 5
c. NTP (Module) self-study	Very Low 1	2	3	4	Very High 5

8. Would you recommend improvements to NIST-NCWM Training?

   _____
   _____
   _____
9. In what areas does your jurisdiction/organization need training?

   _____
   _____
   _____
10. Are current training materials adequate for these needs?

    _____
11. If NTP Courses are not used, are training materials ☐ Developed in-house or ☐ Acquired from another source?
    State where _____
12. Do you use NTP courses for the following:
    ☐ Classroom ☐ Self-study ☐ Correspondence ☐ Developing other training courses?
13. Are current NTP courses
    ☐ too short ☐ too extensive ☐ too simple ☐ too complex?
14. What other media would you support?
    ☐ Computer-based Training ☐ Videos ☐ Other?
    (Explain) _____
    _____
15. How valuable is the NTP Trainer Certification program and why? _____
    _____
16. Are NTP Educational Units (EUs) valuable to your jurisdiction/organization as a method of recognition?
17. Is NTP field certification valuable to your jurisdiction/organization as a method of recognition?
18. Would your jurisdiction/organization be willing to assist the NCWM in:
    ☐ developing and maintaining training materials?
    ☐ field testing courses prior to release?
    ☐ conducting training for other jurisdictions/businesses?

Comments: _____
_____
_____

Jurisdiction/Organization **Person Completing Survey** **Date**

Report of the Resolutions Committee

Vernon Lee Massey, Chairman
Shelby County Weights and Measures
State of Tennessee

Reference
Key No.

700

GENERAL

The Resolutions Committee thanks the members of the National Conference on Weights and Measures who contributed their time and talents for arranging the conduct and success of this 83rd Annual Meeting. Thank you to the following people:

(1) Ken Simila, Retired Director, Measurement Standards Division, Oregon Department of Agriculture, for his enthusiastic welcome to the participants and guests of the NCWM; for his historical account of the development and growth of the State of Oregon;

(2) the Measurement Standards Division of the Oregon Department of Agriculture, particularly George Shefcheck and his staff, for the hospitality extended to the Conference and assistance in preparing and conducting the Annual Meeting;

(3) Sergeants-at-Arms, Clark Cooney and Russ Wyckoff, Measurement Standards Division, Oregon Department of Agriculture, for their assistance during Conference sessions;

(4) the members of Boy Scout Troop 777 of Portland for presenting the colors during the opening of the General Session;

(5) Ray Kammer, Director of the National Institute of Standards and Technology (NIST), for his remarks to the membership indicating a bright future for continuation of the NIST partnership with NCWM; to Director Kammer for outlining the NIST approach to promoting global trade; to Director Kammer for assuring that NIST will continue to have the best measurement standards laboratory in the world; to Director Kammer for discussing the NIST budget initiative which would include funds: (1) for an educational facility for training of weights and measures personnel, industry, and international groups; (2) for continuing the important instructor training courses; (3) for research on new weights and measures technology; and (4) for regular recalibration of State primary standards;

(6) Steven A. Malone, Chairman, and the officers and appointed officials of the National Conference on Weights and Measures for their assistance and service toward progress on national issues;

(7) 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;

(8) regulatory officials of State and local jurisdictions for the advice, interest, and support of weights and measures administration in the United States;

(9) representatives of business and industry for their cooperation and assistance in committee and Conference work, especially the continuing support as demonstrated by granting scholarships for training; the associate membership organization for the hospitality exhibited in sponsored social functions; particularly to Bob Fuehne, Ralston Purina Company, for arranging the outing to the Flying M Ranch;

(10) the retired NCWM membership for continued support of the work of the NCWM and participation in these Annual Meetings.

(11) the staff of the Portland Hilton Hotel for assistance;

(12) the National Institute of Standards and Technology and the Office of Weights and Measures for dedicated assistance in planning and conducting the work and program of the National Conference on Weights and Measures, especially to Ann Turner, Phillip Bryson, and Michele Krebs for their professional and hospitable conduct of the administrative operations of the meeting; to Dr. Gil Ugiansky for his participation and for continued support, especially for his efforts to ensure continuation of the effective instructor training and equipment loan programs.

On this occasion of the 83rd Annual Meeting of the National Conference on Weights and Measures, the Committee recognizes and expresses appreciation to the following individuals:

Steven N. Malone and the members of the NCWM, Inc., Board of Directors for their perseverance in achieving adoption of the new NCWM, Inc. Bylaws and execution of the Memorandum of Understanding (MOU) between NCWM, Inc., and NIST which was signed during this 83rd Annual Meeting; the MOU reaffirms the long-term cooperation between NCWM, Inc. and NIST.

METRIC LABELING

WHEREAS, in 1997 the NCWM and U.S. Industry learned that the European Union (EU) had announced that it intended to enforce its metric only labeling requirements beginning January 1, 2000. This EU directive (80/181/EEC) would specifically forbid optional use of English units on all products; and

WHEREAS, since that announcement, American and European businesses have petitioned the EU for a delay in the effective date. The metric-only requirement will result in increased expenses for businesses operating in the global marketplace since the U.S. Fair Packaging and Labeling Act (FPLA) prohibits metric-only labeling; and

WHEREAS, recently, the NCWM learned that the EU has proposed an amendment to the Directive to extend the implementation date for a metric only labeling requirement to 2010. In its consideration of the extension, the EU has stated it recognizes that this issue will arise again in the year 2010 if the U.S. FPLA is not amended to permit a metric-only labeling; and

WHEREAS, in 1988, the U.S. Congress declared the metric system to be the primary system of measurement for the United States and its use by U.S. businesses in international trade will continue to grow as the global economy expands;

NOW, THEREFORE, be it

RESOLVED that the NCWM support the EU proposal to delay its metric only labeling requirements until the year 2010 in order to provide ample opportunity for the U.S. Congress to amend the FPLA to **permit** packers an option to label their current packages with metric-only units.

NOW, THEREFORE, be it further

RESOLVED that the NCWM initiate a nationwide effort by concerned industry, government agencies, and consumers to petition the U.S. Congress to amend FPLA to **permit** metric-only labeling as an option. This will enable American firms who also do business in the EU, and other metric only markets, to use a *global* package labeled in a manner to be compliant in all markets.

V. Massey, Shelby Co., Tennessee, Chairman
M. Hile, Arkansas
L. Jones, Ohio
J. Silvestro, Gloucester, New Jersey

J. Mindte, NIST, Coordinator

Resolutions Committee

Report of the Nominating Committee

Barbara J. Bloch, Chairman
Director of Measurement Standards
State of California

Reference
Key No.

800

The Nominating Committee met during the Interim Meeting at the Crown Plaza Saint Anthony Hotel, San Antonio, Texas, at which time the Committee nominated the persons listed below to be officers of the 84th National Conference on Weights and Measures, Inc. In the selection of nominees from the Active membership, consideration was given to professional experience, qualifications of individuals, Conference attendance and participation, and other factors considered to be important.

The following slate of officers was selected by unanimous vote of the Nominating Committee:

CHAIRMAN-ELECT:	G. Weston Diggs, Virginia
VICE-CHAIRMEN:	Raymond Kalentkowski, Connecticut Don Onwiler, Nebraska Vernon Massey, Tennessee Dennis Ehrhart, Arizona
EXECUTIVE COMMITTEE:	Mike Hile, Arkansas Michael S. Pinagel, Michigan
TREASURER:	J. Alan Rogers, Virginia

At the NCWM Annual Meeting, the Active membership approved new Bylaws for NCWM, Inc. The new Bylaws established an 11-member Board of Directors, changed the title of "Vice Chairman" to "Presiding Officer," and made the Presiding Officer position an appointed rather than an elected position. Consequently, the Nominating Committee prepared a revised slate to comply with the new Bylaws. The revised slate, which appears on the next page, was published in the Addendum Sheets to the Executive Committee's (Board of Directors) report prior to the voting session. It was adopted by a unanimous vote of the NCWM membership.

B. Bloch, California, Chairman
S. Colbrook, Illinois
C. Gardner, Suffolk County, New York
T. Geiler, Barnstable, Massachusetts
J. A. Rogers, Virginia
N. D. Smith, North Carolina
J. Truex, Ohio

Nominating Committee

Slate for the New Board of Directors of the National Conference on Weights and Measures, Inc.

Board of Directors

Name and Affiliation	Representation/Office	Term Ends
Charles Carroll, MA[1,2]	Active Membership (Northeastern Region)	1999
Barbara DeSalvo, OH[1]	Active Membership (Central Region)	2000
Mike Hile, AR[1]	Active Membership (Southern Region)	2003
Gary West, NM[1]	Active Membership (Western Region)	2002
Michael Pinagel, MI	At-Large	2003
Louis Straub, MD	At-Large	2001
Richard Davis, Fort James Corp.	Associate Membership[3]	2001
G. Weston Diggs, VA[1]	Chairman-Elect	
J. Alan Rogers, VA[1]	Treasurer	

Also on the Board: (These individuals have already been elected by the NCWM membership)

Aves Thompson, AK[1]	Chairman
Steven Malone, NE[1]	Past Chairman; Chairman, NTEP Committee

[1] Members of the NTEP Committee.
[2] Replacing Stanley Millay following his resignation from the Executive Committee.
[3] The Associate Membership Director serves a 3-year term at the request of the Associate Membership Committee.

Report of the Auditing Committee

Robert Williams, Chairman
Standards Administrator
Tennessee Dept. of Agriculture Weights and Measures

Reference
Key No.

900

The Auditing Committee met on Sunday, January 11, 1998, during the NCWM Interim Meeting in San Antonio, TX. The purpose of the meeting was to review the financial reports of the Conference Treasurer.

The following persons were also in attendance: J. Alan Rogers, VA, Conference Treasurer, and Ann Turner, NIST, Conference Coordinator.

The Auditing Committee finds the financial reports of the Conference Treasurer to be in order and correct according to Conference procedures.

Mr. Rogers also reports that, due to incorporation and recommendations of last year's Auditing Committee, the Conference is contracting with a Certified Public Accountant to conduct an audit of the financial and procedural process used by the NCWM. The external auditor will review the past 2 years (1997 and 1998). The auditors report is due to be completed by early June and will be reviewed by the Auditing Committee for presentation to the Executive Committee at the Annual Meeting in Portland, Oregon.

R. Williams, Chairman

D. Onwiler, Nebraska
R. Philmon, Illinois

A. Turner, NIST, Technical Coordinator

Auditing Committee

TREASURER'S REPORT

NCWM GENERAL ACCOUNT
FISCAL YEAR REPORT
1/1/97 - 12/31/97

Category Description		
NCOME/EXPENSE		
INCOME		
Income Accounts:		
Earned Interest	2,449.61	
		2,449.61
Membership Fees:		
Funds for Transfer to Associate Account	255.00*	
Associate Membership Fees	53,550.00	
Government Membership Fees	57,295.00	
Total Membership Fees		111,100.00
NTEP Seminars:		
Metrology Seminars	30,225.00[1]	
Total NTEP Seminars:		30,225.00
Other Income:		
Miscellaneous		
Other Income - Other	648.51[2]	
Total Other Income		648.51
Promotions	65.00	
		65.00
Publications:		
HB-133 Third Edition Sales	5,866.06	
NCWM Publications Sales	720.50	
NTP Training Module Sales	560.00	
HB 44 & HB 130 Sales	61.00	
Funds for Transfer to NTEP	220.00*	
Other Publications	10.00	
Total Publications		7,437.56
Registration Fees:		
Annual Meeting	40,445.00	
Interim Meeting 1997	19,125.00	
Interim Meeting 1998	3,625.00	
Total Registration Fees		63,195.00
Services Revenues:	2,848.50[3]	
Annual Mtg. Opt. Evening		
Total Services Revenues		2,848.50
TOTAL INCOME		217,969.18

EXPENSES			
Expense Accounts:			
Administration:			
Bank Charges	114.23		
Credit Card Discounts and Fees	434.07		
Contracts/Personnel	16,327.16		
Equipment/Supplies/Stationary	3,831.53		
Mailing/PO Box	391.30		
Miscellaneous	450.00		
Late Fees	70.87		
NTP/CEU/Copyright/Equipment	1,180.05		
Liability/D&O Insurance	1,917.00		
Treasurer Bond	441.00		
Total Administration		25,157.21	
Chairman/Chairman Elect	17,568.20		
		17,568.20	
NCWM Annual Meeting Expenses:			
Awards	500.00		
Hotel/Food Service	36,104.36		
Joint Outing	7,819.37[3]		
Personnel/Photo	644.00		
Printing Announcement	7,379.00		
Miscellaneous	3,731.89[4]		
Total NCWM Annual Meeting		56,178.62	
NCWM Interim Meeting Expenses:			
Hotel/Food Service	23,234.41		
Print Agenda	3,976.00		
S & T Committee	2,241.20		
L & R Committee	1,977.38		
A & P Committee	1,871.32		
Other Committees/TF's	1,707.85		
Printing/Personnel/Equipment/Misc.	176.00		
Executive Committee	6,306.29		
Total NCWM Interim Meeting		41,490.45	
NTP Seminars:			
Metrology Seminars	35,998.35[1]		
Total NTP Seminars		35,998.35	
Other Meetings-Committees	23,233.13		
Total Other Meetings-Committees		23,233.13	
Task Force and Special Committees	3,748.00		
Total Task Force and Special Committees		3,748.00	
Printing:			
Publications Reimbursed	19,369.83		
Membership	2,011.45		
Total Printing		21,381.28	
Total Expense Accounts			224,755.24

TOTAL INCOME/EXPENSES	(6,786.06)
Carryover 12/31/96	126,028.44
Year Ending Balance 12/31/97	119,242.38
Account Balance 12/31/97	118,767.38
Difference	(475.00)*
Year Ending Adjusted Balance	118,767.38

* Income received through Credit Card sales which were credited to the NCWM General Account during December 1997 and not transferred into the appropriate account until January 1998. (Associate Account $225.00 - NTEP Account $220.00)

---

1. Balances include money collected from industry participants in NCWM/NIST metrology training seminars that was set aside for additional training activities.

Fiscal Year	Income	Expenses	Balance
1993	-0-	-0-	-0-
1994	3,800.00	3,371.30	428.70
1995	25,260.00	9,686.92	15,573.08
1996	31,069.47	33,847.36	(2,777.89)
1997	30,225.00	35,998.35	(5,773.35)
Totals	90,354.47	82,903.93	7,450.54

2. Includes returned travel advancements and foreign bank charges collected.
3. Fees collected at the annual meeting for the joint conference outing were distributed to the Associate Account on a 60 percent basis and to the NCWM Account on a 40 percent basis.
3. Conference provided 40 percent of the total cost of the joint outing.
4. This expense includes $2,763.00 for souvenir items, $425.89 for dinner with NIST upper management, and $517.00 for guest tours at the Annual Meeting.

NCWM ASSOCIATE ACCOUNT
FISCAL YEAR REPORT
1/1/97 - 12/31/97

Category Description			
INCOME/EXPENSE			
INCOME			
Income Accounts:			
Earned Interest	691.85		
Membership Dues	22,725.00		
Joint Outing NCWM 40%	6,058.00		
Joint Outing Income	1,107.95		
Total Income Accounts		30,582.80	
TOTAL INCOME			30,582.80
EXPENSES			
Expense Accounts:			
Service Charges	6.29		
Training Grants	17,319.65		
Conference Outing	15,145.00		
Total Expense Accounts		32,470.94	
TOTAL EXPENSES			32,470.94
TOTAL INCOME/EXPENSE			(1,888.14)
Carryover 12/31/96			44,003.86
Year Ending Balance 12/31/97			42,115.72
Account Balance 12/31/97			42,340.72
Difference			225.00*
Year Ending Adjusted Balance			42,340.72

*Total of $225.00 collected through Credit Card sales received during December 1997 that were not transferred into Associate Account until January 1998.

NCWM NTEP ACCOUNT
FISCAL YEAR REPORT
1/1/97 - 12/31/97

Category Description			
INCOME/EXPENSE			
INCOME			
Income Accounts:			
Grant-Grain Equipment		6,127.37	
Earned Interest		6,465.17	
Return of Travel Advance		190.40	
NTEP Operations			
CoC Maintenance Fees	140,600.00		
Publications 5 & 14 Sales	15,080.08		
Sales of NTEP Seals	3,000.00		
Total NTEP Operations		171,463.02	
Total Income Accounts			171,463.02
TOTAL INCOME			171,463.02

EXPENSES			
Expense Accounts:			
Personal Services	27,008.08		
Legal Fees	800.00		
Insurance	3,535.71		
Equipment	500.00		
Bank Charges	20.95		
Total Administration		31,864.74	
Grain Moisture Task Force	10,778.70		
Total Grant		10,778.70	
NTEP Operations:			
Board of Governors	705.48		
OIML	1,600.00		
NTEP Publication 5 and 14	12,506.77		
NTETC Weighing/Belt Conveyor Scale	13,234.18		
NTETC Measuring Sector	7,656.31		
Software Work Group	3,719.97		
NTEP Laboratory Training	13,869.98		
Total NTEP Operations		53,292.69	
NTEP Logo:	1,120.95		
NTEP Seals			
Total NTEP Logo		1,120.95	
Total Expense Accounts			97,057.08
TOTAL EXPENSES			97,057.08
TOTAL INCOME/EXPENSE		74,405.94	
Carryover 12/31/96		349,561.54	
Year Ending Balance 12/31/97		423,967.48	
Transfer to Certificates of Deposit		(200,000.00)	
Account Balance 12/31/97		224,187.48	
Difference		220.00*	
Year Ending Adjusted Balance		224,187.48	

* Total of $220.00 collected through Credit Card sales received during December 1997 that were not transferred into NTEP Account until January 1998.

NCWM GRANT ACCOUNT
FISCAL YEAR REPORT
1/1/97 - 12/31/97

Category Description			
INCOME/EXPENSE			
INCOME			
Income Accounts:			
Grants Received		103,688.00	
TOTAL INCOME			103,688.00
EXPENSES			
Expense Accounts:			
Grands Awarded and Services Paid	94,305.68		
TOTAL EXPENSES			94,305.68
TOTAL INCOME/EXPENSE			9,382.32
Carryover 12/31/96			3,000.00
Year Ending Balance 12/31/97			12,382.32
Account Balance 12/31/97			12,382.32
Difference			-0-
Year Ending Adjusted Balance			12,382.32

New Chairman's Address

Aves D. Thompson
Chief, Alaska Division of Measurement Standards
Anchorage, Alaska

Thank you for the kind introduction. Steve, please stay with me at the podium. Steve, I know that I speak for the entire membership of the National Conference on Weights and Measures when I express our sincere appreciation for all of the things that you have done this year. You have guided us successfully through a very critical time in our 83-year history. You have provided strong leadership and wise counsel during our deliberations. On behalf of the Conference, I wish to present you with this plaque commemorating your year as Chairman and acknowledging you as the Chairman of the Board of NCWM, Inc. I know that your service to the Conference is not over, and we all look forward to great things from the Standing Committee on NTEP. Please help me thank Steve with a round of applause.

We are at the end of a very long week. I personally want to congratulate all of the members of the Conference who have worked so hard and have accomplished so much.

The National Conference is an ever-changing body. When I first became a member of the Conference nearly 12 years ago, there was a Standing Liaison Committee. The A&P Committee was known affectionately as the Education Committee. There were no industry representatives on the Executive Committee, the L&R Committee, or the A&P Committee. Although there was industry participation at the meetings, it was heresy to even think that an Associate Member might be given the opportunity to sit at the table during the committee meetings.

We are here today with no Executive Committee, but rather a Board of Directors. I am not only the Conference Chairman but the Chairman of the Board of Directors. Our Board of Directors includes one Associate Member with the possibility of as many as three. The NTEP Committee is a standing committee of the Conference with full authority to conduct its affairs subject to Board of Directors and membership approval. Our Associate Members are represented by an Industry Representative on the L&R and A&P Committees. Now .... think about this... Associate Members voted this morning on matters of Conference business!

As I review where we are, I am astounded. We can thank all of the past Conference Chairs for helping us get to where we are today, for each of them in their own way has contributed to our success. What Barbara Bloch re-energized in the form of Strategic Planning, Steve Malone nurtured through the very critical stages of our new organization, and a whole lot of people worked very, very hard to accomplish a series of very ambitious objectives. We have now a new entity, the National Conference on Weights and Measures, Inc., with a rich, 83-year history and a strong, growing membership committed to clear goals and objectives.

One of the most significant accomplishments is the signing of a Memorandum of Understanding at our opening session on Tuesday. This historic agreement between the National Conference on Weights and Measures, Inc., and the National Institute of Standards and Technology, Office of Weights and Measures, marks a new beginning in what has been a very long and productive relationship between our two organizations. The Board of Directors will be working closely with NIST and OWM staff to ensure that we both meet our goals in this MOU.

It is important to stop for a moment to reflect on our relationship with NIST and particularly the Office of Weights and Measures. Although this has been a year of change and uncertainty, Gil and the staff at OWM have worked hard to help us. They have offered many constructive suggestions, written many drafts, sat through interminable meetings, and listened to our harangues while always maintaining their professionalism. While we have not always heeded their advice, we do sincerely appreciate their help. We will continue to work together in a full partnership to achieve our common goal of equity in the marketplace. Let's give Gil and his staff a round of applause for the good work that they do.

Although the Conference will be dealing with many important issues during this next year, I would like to discuss a few ideas that I believe will benefit the Conference. During the Strategic Planning process, we were again reminded that once goals have been set and agreed upon, all that we do should be in support of those goals. With that in mind, I have established four objectives for my term of office.

The objectives that I intend to pursue are:

(1) To continue the work of the reorganization by finalizing the formal business plan for the NTEP; and by finalizing the formal business plan for training.

(2) To enhance the value of the NTEP Program by making electronic copies of NTEP Certificates of Conformance available on the Internet.

(3) To provide an outreach to device service technicians to strengthen our working relationships.

(4) To finalize the product survey protocol as soon as possible.

To accomplish these goals, I propose the following strategies:

Each of the planning groups will meet at least once either in person or via teleconference before the end of this calendar year to have draft proposals ready for the Interim Meeting in January 1999, as we will again have a strategic planning meeting on the Saturday before the start of the Interim Meeting.

Solicit proposals for a CC information system with a target implementation date of no later than March 1, 1999.

Conduct a 1- day meeting on September 25, 1998, with representatives of ISWM, SMA, SDA, GPMA, MMA and other interested groups to explore ways to improve the relationships with service technicians. The meeting will be on the Friday following the Annual Meeting of the Western Weights and Measures Association at the Sheraton Old Town Hotel in Albuquerque.

Conduct a meeting or meetings to finalize the product survey protocols as soon as possible. The next meeting will be conducted during the WWMA Annual Meeting in Albuquerque on Monday, September 21, 1998.

Some of the other issues that will require our attention during the next year come to mind:

The Legislative Liaison Committee will be asked to explore ways for the Conference to meet the challenges of privatization in State and local jurisdictions. If a jurisdiction wants help, we need to be ready to help.

I asked the Resolutions Committee and the L&R Committee to develop a resolution to demonstrate NCWM support for a 10-year delay in the implementation of the EC directive that will require metric only quantity declarations on packaged items. Further, the resolution proposed changes to the FPLA to allow an option of metric only quantity declarations. I am pleased that the resolution passed this morning.

We need to come to grips with the "R" words. [Editor's note: This refers to the terms "remanufactured," "reconditioned," and "repaired" as applied to weighing and measuring devices.]

We need to ask our industry partners in our State and local jurisdictions to join us in the work of the Conference. This will translate into a growing membership.

We need to continue working with our OWM partners to maximize our training efforts.

Finally, we need to continue the work to achieve mutual test data exchange agreements where there is clear benefit for the United States. We need to develop win/win agreements.

As with any good organization, good people make good things happen. With that thought in mind, I am pleased make the following appointments for 1999:

For a 5-year appointment to the Specifications and Tolerances Committee:
Will Wotthlie, Program Supervisor in the State of Maryland

For a 5-year appointment to the Laws and Regulations Committee:
Don Onweiler, Program Manager in the State of Nebraska

For a 5-year appointment to the Administration and Public Affairs Committee:
David Frieders, Director of Weights and Measures for San Francisco County, California

Will the three of you please stand and be recognized. Let's give them a hand.

I have accepted the AMC nominations for Associate Member Representatives on the L&R and A&P Committees. I am appointing

Chris Guay of Proctor and Gamble to the L&R Committee for a 5-year and Jackie Wollner of Nestle USA to the A&P Committee for a 5-year period.

I have also accepted the AMC nominations for appointments to the AMC. Those nominees are hereby appointed:

Chair - Gale Prince, Kroger Co.
Vice Chair - Frances Holland, Schlumberger Industries
Secretary/Treasurer - Cary Frye, International Dairy Foods Association
Paul Zalon, Nestle USA
David Quinn, Fairbanks Scales
Chris Guay, Procter & Gamble Co.
Dave Cook, Kraft Foods
Darrell Flocken, Mettler-Toledo
John Baker, Pier 1 Imports
Chip Kloos, Colgate-Palmolive Co.

The new Bylaws provide that the Presiding Officers of the 84th Annual Meeting of the National Conference on Weights and Measures be appointed by the Chairman. These are the people who preside during the sessions of the Annual Meeting, who were called Vice-Chairs. As these officers have been elected in the past, there is no past practice or precedence for selecting them. I am pleased to announce that I have appointed the four Vice-Chairs who were nominated by the Nominating Committee; all have agreed to serve in these positions:

Ray Kalentkowski, CT
Don Onwiler, NE
Vernon Massey, TN
Dennis Ehrhart, AZ

Will the four of you please stand and be recognized.

I make the following appointments to the Nominating Committee:

Steve Malone, NE, Chairman
Barbara Bloch, CA
Charles Gardner, Suffolk County, NY
N. David Smith, NC
Jim Truex, OH
Tom Geiler, Barnstable, MA
Sid Colbrook, IL

The following appointments are made to the Resolutions Committee:

Reappoint Louis Jones, OH, Chairman, (1 year)
John Tilson, MS (2 years)

This one is special. For the first time in our history, an Associate Member is being appointed to a Special Purpose Committee. I am pleased to appoint Chip Kloos to the Resolutions Committee for a 3-year period.

I am pleased to reappoint Mike Hile, AR as our Chaplain.

Our Parliamentarian has retired and I have not yet made an appointment to fill that vacant position.
As mentioned in the A&P report concerning the Voluntary Program Assessment work group, I make the following appointments:

Sid Colbrook, IL, Chair
Ross Andersen, NY
Charles Carter, OK
Bill Corey, American Frozen Foods
Craig Leisy, City of Seattle, WA

This group is charged to help us all better understand our individual programs and ways that we can measure and improve our performance.

Help me thank all of these appointees for their willingness to serve our Conference.

Each year the new Chairman is responsible for establishing a theme for the year. I have chosen the theme "Setting Standards of Excellence in Pursuit of Equity."

Ray Kammer rhetorically asked us in his address on Tuesday, "How do we stay the best?" I think the answer is by Setting Standards of Excellence.

I think that all of us agree that our lofty goal is equity. While we pursue that lofty goal, we must set standards of excellence for ourselves, for our organizations, and for our Conference. Excellence is the standard. Don't accept anything less.

I thank the Conference for the opportunity that it has given me. I thank Edward Moses, who made it possible for me to take advantage of this opportunity. I thank my staff at home. Lastly, I thank my wife, Phyllis for her unending support.

I leave you with some thoughts about the future:

A noted Danish physicist named Niels Bohr once said, " Prediction is very difficult, especially about the future."
Paul Valery, another scientist said, "The future is not what it used to be."
And, it is Alan Kay, who is generally recognized as a pioneer in Graphic User Interface, who said, "The best way to predict the future is to create it."

We have an opportunity to create our future. Let's meet the challenge with courage and enthusiasm. Remember that what we do here does make a difference. Thank you.

NCWM 83rd Annual Meeting
Portland, Oregon
July 12-16, 1998

List of Participants

Adams, Bruce 8920
Metrology Manager
MN Dept Public Service/W&M Div
2277 Hwy 36
Roseville, MN 55113
Telephone: 612-639-4010
FAX: 612-639-4014
E-Mail: badams@dpsv.state.mn.us

Adams, Deidre 700
Product Manager
IBM Corp
5601 Six Forks Rd Dept MNV
Raleigh, NC 27609
Telephone: 919-301-5810
FAX: 919-301-5891
E-Mail: dmadams@us.ibm.com

Ahrens, Thomas 955
Mechanical Engineer
NIST
820 W Diamond Ave Rm 227
Gaithersburg, MD 20899
Telephone: 301-975-4013
FAX: 301-975-926-
E-Mail: tahrens@nist.gov

Alvarez, Margaret 3421
Director Wghts & Meas & Commod
TX Dept of Agriculture
PO Box 12847 1700 Congress Ave
Austin, TX 78711
Telephone: 512-463-7604
FAX: 512-463-8225
E-Mail: malvarez@agr.state.tx.us
URL: http://www.agr.state.tx.us

Alviene, Robert 24249
Assistant Superintendent
Morris Co Wghts & Meas
PO Box 900 Wghts & Meas Dept
Morristown, NJ 07963-0900
Telephone: 201-285-2955
FAX: 201-285-6075

Andersen, Ross J. 2994
Acting Director
NY Bureau of Wghts & Meas
1 Winners Circle
Albany, NY 12235
Telephone: 518-457-3146
FAX: 518-457-5693
E-Mail: Agmweigh@emi.com

Anderson, George 26192
President
DurEquip
3125 101st Ave NE
Blaine, MN 55449
Telephone: 800-521-0951
FAX: 612-785-7095
E-Mail: george@durequip.com
URL: http://durequip.com

Andrews, Ted M. 19815
Quality Assurance Manager
WAWA Inc
260 Baltimore Pike
Wawa, PA 19063
Telephone: 610-358-8180
FAX: 610-358-8165

Angell, Jr., Karl H. 9698
Director
WV Weights & Measures
570 MacCorkle Ave West
St Albans, WV 25177
Telephone: 304-722-0602
FAX: 304-722-0605
E-Mail: angelk@mail.wvnet.edu

Arima, Walter S. 5891
Inspector Meas Stds Div
OR Dept of Agriculture
635 Capitol Street NE
Salem, OR 97310-0110
Telephone: 503-986-4670
FAX: 503-986-4784
E-Mail: warima@oda.state.or.us

Arnoldy, Anton 8460
Senior Engineer
Dow Agrosciences
9330 Zionsville Rd
Indianapolis, IN 46268
Telephone: 317-337-7931
FAX: 317-337-7922
E-Mail: aarnoldy@dowagro.com

Atkins, Robert 28799
Deputy Director
Los Angeles Co Wghts & Meas
11012 S Garfield Avenue
South Gate, CA 90280
Telephone: 562-940-8922
FAX: 562-861-0278

Baker, John A. 1195
Merchandise Admin Manager
Pier 1 Imports
301 Commerce Suite 600
Fort Worth, TX 76102
Telephone: 817-878-8306
FAX: 817-332-5727
E-Mail: vjlocker@pier1.com

Balaze, Ron 8988
Metrologist
MI Dept of Agriculture
940 Venture Lane
Williamston, MI 48895
Telephone: 517-655-8202 ext 315
FAX: 517-655-8303
E-Mail: balazer@state.mi.us

Beattie, Dennis A. 12901
Volumetric Specialist
Measurement Canada
4th Floor 400 St Mary Ave
Winnipeg Manitoba, R3C 4K5
Canada
Telephone: 204-983-8910
FAX: 204-983-5511
E-Mail: beattie.dennis@ic.gc.ca

Bell, Irving 4473
Sr Executive Staff Rep
Coca-Cola Company
One Coca-Cola Pl/PO Drawer 1734
Atlanta, GA 30301
Telephone: 404-676-2623
FAX: 404-676-7166

Belue, F. Michael 691
President
Belue Associates
1319 Knight Drive
Murfreesboro, TN 37128
Telephone: 615-867-1010
FAX: 615-867-0609
E-Mail: Bassoc@aol.com

Bennett, Celeste 9286
MFQ Investigations Food Div
MI Dept of Agriculture
940 Venture Lane
Williamston, MI 48895
Telephone: 517-655-8202 ext 314
FAX: 517-655-8303
E-Mail: bennettc9@state.mi.us

Bloch, Barbara J. 7004
Director
CA Measurement Standards Div
8500 Fruitridge Rd
Sacramento, CA 95826
Telephone: 916-229-3000
FAX: 916-229-3026
E-Mail: BBloch@cdfa.ca.gov
URL: http://www.cdfa.ca.gov/measurement

Blythe, Glen 3448
Lubrizol
29400 Lakeland Blvd
Wickliffe, OH 44092
Telephone: 440-943-4200

Boulware, Allen 10577
Systems Engineer
BCE Technologies Inc
620 Ware Blvd
Tampa, FL 33619
Telephone: 800-252-6111
FAX: 813-620-1206
E-Mail: bce@bce-tech.com

Bradshaw, Harold D. 2738
Inspector
Clark Co Wghts & Meas
City County Bldg Room 314
Jeffersonville, IN 47130-4087
Telephone: 812-285-6289

Braun, William H. 2983
Sole Proprietor
W H B Resources
5743 Jeffrey Place
Fairfield, OH 45014-3524
Telephone: 513-829-2106
FAX: 513-829-9892

Brooks, Bruce 10138
District 3A Inspector
ID Bureau of Wghts & Meas
1807 Gallop
Idaho Falls, ID 83404
Telephone: 208-524-6465

Brown, Darryl 11437
Chief Wghts & Meas
IA Dept of Agriculture
H A Wallace Building
Des Moines, IA 50319
Telephone: 515-281-5716
FAX: 515-281-6800
E-Mail: Darryl.Brown@idals.state.ia.us

Brown, Michael 6257
Measurement Stds Specialist
OR Dept of Agriculture
635 Capitol St NE
Salem, OR 97310-0110
Telephone: 503-986-4670
FAX: 503-986-4784
E-Mail: mbrown@oda.state.or.us
URL: www.oda.state.or.us/Measurement_Standards/MSDINFO.html

Brucker, Norman R. 9192
Regional Scale Inspector
Burlington Northern Santa Fe
80 44th Ave NE
Minneapolis, MN 55421-2599
Telephone: 612-782-3482
FAX: 612-782-3061

Brumbaugh, Robert T. 297
President
Systems Associates Inc
1932 Industrial Dr
Libertyville, IL 60048
Telephone: 847-367-6650
FAX: 847-367-6960
E-Mail: sai@ameritech.net

Bryson, Phillip 30881
Office of Weights and Measures
NIST
Bldg 820 Rm 223
Gaithersburg, MD 20899
Telephone: 301-975-4004
FAX: 301-926-0647
E-Mail: phillip.bryson@nist.gov

Buccelli, Mark 8926
Regional Supervisor
MN Dept Public Service/W&M Div
2277 Highway 36
St Paul, MN 55113-3800
Telephone: 612-639-4010
FAX: 612-639-4014
E-Mail: ebuccelli@dpsv.state.mn.us

Buendel, Gerald A. 3297
Program Manager
WA Dept of Agriculture
PO Box 42560
Olympia, WA 98504-2560
Telephone: 360-902-1856
FAX: 360-902-2086
E-Mail: jbuendel@agr.wa.gov

Burns, Jr., Charles A. 7575
Chief Inspector
Birmingham Wghts & Meas
City Hall Rm 207 710 N 20th St
Birmingham, AL 35203
Telephone: 205-254-2246
FAX: 205-254-2925

Bush, Ralph 6218
Inspector
SD Weights & Measures
2050 W Main Ste 1
Rapid City, SD 57702
Telephone: 605-355-3034
FAX: 605-394-5317

Butcher, Ken 2512
Weights & Measures Coordinator
NIST
Bldg 820 Rm 223
Gaithersburg, MD 20899
Telephone: 301-975-3991
FAX: 301-926-0647
E-Mail: kbutcher@nist.gov

Cagann, Susan 10582
Senior Attorney
Safeway Inc
5918 Stoneridge Mall Rd
Pleasanton, CA 94588
Telephone: 925-467-3700

Cahill, Leslie 2694
VP Government Affairs
American Seed Trade Assn
601 13th St NW Suite 570 South
Washington, DC 20005
Telephone: 202-638-3128
FAX: 202-638-3171

Carroll, Charles H. 4393
Assistant Director
MA Division of Standards
One Ashburton Place
Boston, MA 02108
Telephone: 617-727-3480
FAX: 617-727-5705

Carter, Charles 4010
Inspector II
San Bernardino Co Wghts & Meas
777 E Rialto Ave
San Bernardino, CA 92415-0720
Telephone: 909-387-2105
FAX: 909-387-2449

Carter, Charles D. 9838
Prog Adm Agr Resources PICS
OK Dept of Agriculture
2800 N Lincoln Blvd
Oklahoma City, OK 73105-4298
Telephone: 405-521-3864 x261
FAX: 405-522-4584
E-Mail: charlesc/okagri@mail.okag.state.ok.us

Casanova, Max C. 362
Mgr Cust Serv Ramsey Products
Ramsey Technology Inc
501-90th Avenue NW
Minneapolis, MN 55433-8006
Telephone: 612-783-2659
FAX: 612-783-2525

Causgrove, H. Penny 3847
Retired Sealer of Wts & Meas
18 Davis St
New Haven, CT 06515
Telephone: 203-387-4913

Cerny, Louis T. 30640
Railroad Consultant
Consultant
310 Summit Hall Rd
Gaithersburg, MD 20877
Telephone: 301-947-0208
FAX: 301-947-1296

Chang, Po 1854
Project Engineer
US Postal Service
8403 Lee Highway
Merrifield, VA 22082
Telephone: 703-280-7322
FAX: 703-280-8402
E-Mail: pchang@email.usps.gov

Chappell, Samuel E. 10610
Chief Standards Management
NIST
Bldg 820 Rm 162
Gaithersburg, MD 20899
Telephone: 301-975-4024
FAX: 301-926-1559
E-Mail: schappell@nist.gov
URL: http//ts.nist.gov/ts/htdocs/210/215/215.htm

Clark, Buddy 1865
Inspector
Hamilton Co Wghts & Meas
101 Monticello Court
Noblesville, IN 46060-5442
Telephone: 317-773-4713
FAX: 317-776-8454

Claussen, Richard H. 103
Inspector
Porter Co Weights & Measures
155 Indiana Ave Ste 206
Valpariso, IN 46383
Telephone: 219-465-3585
FAX: 219-465-3592

Clem, Fred P. 169
City Sealer
Columbus Weights & Measures
240 Greenlawn Ave
Columbus, OH 43223
Telephone: 614-645-7397
FAX: 614-645-3994
E-Mail: fpclem@juno.com
URL: http://www.publicsafety.ci.columbus.oh.us

Colbrook, Sidney A. 47
Wghts & Meas Bureau Manager
IL Dept of Agriculture
PO 19281 801 E Sangamon Ave
Springfield, IL 62794-9281
Telephone: 217-785-8301
FAX: 217-524-7801
E-Mail: scolbroo@agr084r1.state.il.us

Cole, Billy 18969
Service Manager
Precision Weight Scale Co Inc
33 Highview Rd
Sellersville, PA 18960
Telephone: 215-723-9523
FAX: 215-723-7727

Coleman, Thomas 8246
Weights & Measures Coordinator
NIST
Bldg 820 Rm 223
Gaithersburg, MD 20899
Telephone: 301-975-4868
FAX: 301-926-0647
E-Mail: t.coleman@nist.gov

Comiskey, Ed 7580
Measurement Stds Supervisor
AK Div Measurement Stds/CVE
12050 Industry Way
Anchorage, AK 99515
Telephone: 907-345-7846
FAX: 907-345-2313
E-Mail: ed_comiskey@dot.state.ak.us

Cook, David A. 21724
Functional Quality Manager
Kraft Foods Inc
1 Kraft Court MS/GV758
Glenview, IL 60025
Telephone: 847-646-4406
FAX: 847-646-3620
E-Mail: davecook@kraft.com

Cook, Steven E. 7915
Program Supervisor
CA Measurement Standards
8500 Fruitridge Rd
Sacramento, CA 95826
Telephone: 916-229-3043
FAX: 916-229-3026
E-Mail: SCook@cdfa.ca.gov

Cooney, Clark 10965
Inspector Meas Stds Div
OR Dept of Agriculture
635 Capitol Street NE
Salem, OR 97310-0110
Telephone: 503-986-4670
FAX: 503-986-4784
E-Mail: ccooney@oda.state.or.us
URL: http://www.oda.state.or.us/oda.html

Corey, Jr., William J. 16337
Secretary
American Frozen Foods
355 Benton Street
Stratford, CT 06497
Telephone: 203-378-7900 X3405
FAX: 203-386-8683

Cotsoradis, Constantine V. 8232
Director
KS Dept of Agr/ W & M Div
PO Box 19282
Topeka, KS 66619-0282
Telephone: 785-862-2415
FAX: 785-862-2460
E-Mail: ccotsora@kda.state.ks.us
URL: http://www.ink.org/public/kda/weights/wm.html

Coyne, Mark P. 220
City Sealer
Brockton Weights & Measures
City Hall Rm B12 45 School St
Brockton, MA 02401
Telephone: 508-580-7120
FAX: 508-559-7960
E-Mail: Measures@aol.com

Craft, Lenord J. 9799
Agr Commissioner/Sealer
Tulare Co Dept Agr Comm/Sealer
2500 W Burrel Avenue
Visalia, CA 93291-4584
Telephone: 209-733-6391
FAX: 209-733-6568
E-Mail: Tulag@lightspeed.net
URL: http://bizweb.lightspeed.net/~tulareag

Craig, Chuck 9669
Assistant Director
OR Dept of Agriculture
635 Capitol Street NE
Salem, OR 97310-0110
Telephone: 503-986-4556
FAX: 503-986-4747

Cripe, Donald O. 9794
Sealer
Stanislaus Co Dept Agr/W&M
725 County Center Three Court
Modesto, CA 95355
Telephone: 209-525-4610
FAX: 209-525-4619
E-Mail: AGCOM50@THEVISION.NET
URL: http://WWW.THEVISION.NET/AGCOM50

Critzer, Charles F. 163
Inspector
Bartholomew Co Wghts & Meas
440 3rd Street
Columbus, IN 47201-6722
Telephone: 812-379-1507

FAX: 812-379-1765

Cummings, Leonard W. 10611
Consumer Protection Compliance
Safeway Inc
5918 Stoneridge Mall Rd
Pleasanton, CA 94588-3229
Telephone: 925-467-2434

D'Errico, Pasquale 6046
Chief Supervisor
NJ Weights & Measures
1261 US Route 1 & 9 South
Avenel, NJ 07001
Telephone: 908-815-4840

Daniels, A. Raymond 343
184 Freyn Dr
Centerville, OH 45458-2235
Telephone: 513-433-8435

Davis, Gerald E. 968
System Supvr Scale Insp
Conrail
2001 Market St #10 B
Philadelphia, PA 19101-1410
Telephone: 215-209-1620
FAX: 215-209-4943

Davis, Richard L. 3806
Mgr Product Safety&Compliance
Fort James Corp
1915 Marathon Ave PO Box 899
Neenah, WI 54956-0899
Telephone: 920-729-8174
FAX: 920-729-8089
E-Mail: richard.davis@
fortjamesmail.com

DeSalvo, Barbara J. 3842
Supervisor Weights & Measures
OH Dept of Agriculture
8995 East Main St Bldg #5
Reynoldsburg, OH 43068-3399
Telephone: 614-728-6290
FAX: 614-728-6424
E-Mail: desalvo@odant.agri.state.
oh.us
URL: http://www.state.oh.us/agr

Diggs, G.W. (Wes) 9034
Supervisor
VA Products & Industry Stds
PO Box 1163 Room 402
Richmond, VA 23218
Telephone: 804-786-2476
FAX: 804-786-1571

Douglas, Tim 5830
License & Standards Inspector
Seattle Consumer Affairs Unit
805 South Dearborn Street
Seattle, WA 98134
Telephone: 206-386-1297
FAX: 206-386-1129
E-Mail: Tim.Douglas@
ci.seattle.wa.us

Eason, L.F. 3886
Metrologist Standards Division
NC Dept of Agriculture
4040 District Dr
Raleigh, NC 27607
Telephone: 919-733-4411
FAX: 919-733-8804
E-Mail: leason@mail.agr.
state.nc.us

Ebinger, Gary L. 11842
Inspector
Huron Co Weights & Measures
1 East Main St 2nd Floor
Norwalk, OH 44857-1512
Telephone: 419-668-8643
FAX: 419-663-6948
E-Mail: huronco@
acc norwalk.com

Edmond, Jr., John D. 13176
Regional Supervisor
USDA GIPSA
46 East Ohio Street Ste 434
Indianapolis, IN 46204
Telephone: 317-226-6424
FAX: 317-226-5499

Ehrhart, Dennis 13484
Chief Enforcement Officer
AZ Dept of Weights & Measures
9545 E Doubletree Ranch Rd
Scottsdale, AZ 85258-5539
Telephone: 602-255-5211 X2234
FAX: 602-255-1950
E-Mail: dehrhart@wm.state.az.us

Ehrlich, Chuck 8551
Deputy Chief Tech Stds Act Prg
NIST
820 W Diamond Ave Rm 269
Gaithersburg, MD 20899
Telephone: 301-975-4834
FAX: 301-926-1559
E-Mail: charles.ehrlich@nist.gov

Erickson, Mark A. 22638
Approvals Engineer
Rice Lake Weighing Systems
230 West Coleman Street
Rice Lake, WI 54868
Telephone: 715-234-9171 Ext322
FAX: 715-234-6967
E-Mail: mareri@RLWS.com

Eskew, James H. 3435
Coord for Metrology/Wts & Meas
TX Dept of Agriculture
119 Cumberland Rd
Austin, TX 78704
Telephone: 512-462-1441
FAX: 512-475-1642
E-Mail: heskew@agr.state.tx.us

Eskind, Chris 8829
Measurement Specialist
Shell Oil Products
Two Shell Plaza Rm 1257 PO Box
2099
Houston, TX 77252-2099
Telephone: 713-241-0455
FAX: 713-241-3984
E-Mail: caeskind@shellus.com

Everhart, Jerry L. 22300
Metrologist
JTI Systems Inc
8223 Rte 725
Camden, OH 45311
Telephone: 937-787-4012
FAX: 937-787-3459
E-Mail: jtitwo@rt66.com

Feagan, Bruce 8395
Inspector Weights & Measures
Seattle Licenses & Cons Affs
805 S Dearborn Street
Seattle, WA 98134
Telephone: 206-386-1266
FAX: 206-386-1129
E-Mail: bruce.feagan@ci.
seattle.wa.us

Feezor, Robert K. 11200
Superintendent Scales
Norfolk Southern Corp
Building Box 142 99 Spring Street
Atlanta, GA 30303
Telephone: 404-527-2537
FAX: 404-527-2769
E-Mail: rkfeezor@nscorp.com

Fischer, Harvey 12482
Quality Assurance Specialist
TX Dept of Agriculture
PO Box 12847
Austin, TX 78711
Telephone: 512-463-7401
FAX: 512-463-8225
E-Mail: hfisher@agr.state.tx.us
URL: http://www.agr.state.tx.us

Fisher, John E. 9936
Stds & Specs Division Chief
PA Dept of General Services
2221 Forster St Room G-28
Harrisburg, PA 17125
Telephone: 717-787-3862
FAX: 717-783-9078
E-Mail: jfish@pro.gsinc.state.pa.us

Flanders, Jerry 8129
Division Director Fuel & Meas
GA Dept of Agriculture
Agr Bldg 19 MLK Drive Room 321
Atlanta, GA 30334
Telephone: 404-656-3605
FAX: 404-656-9648
E-Mail: jflander@agr.state.ga.us

Flocken, Darrell E. 30642
Mgr Internat'l Wghts & Meas
Mettler-Toledo Inc
1150 Dearborn Drive
Worthington, OH 43085
Telephone: 614-438-4393
FAX: 614-438-4355
E-Mail: flocken@mtwt.mt.com

Fluharty, Arthur 10204
Inspector II Wghts & Meas
WA Dept of Agriculture
30025 45th Ct South
Auburn, WA 98001
Telephone: 360-902-1857
FAX: 360-902-2086
E-Mail: ARTZDEETWO@
aol.com

Forester, Patrick 9172
Metrologist
TX Dept of Agriculture
119 Cumberland Rd
Austin, TX 78704
Telephone: 512-462-1441
FAX: 512-475-1642
E-Mail: PForeste@agr.state.tx.us

Fraley, Ken L. 4148
State Metrologist
OK Bureau of Standards
2800 N Lincoln Blvd
Oklahoma City, OK 73105-4298
Telephone: 405-521-3864 x370
FAX: 405-521-4912
E-Mail: kfraley@odagis.
oklaosf.state.ok.us

Frieders, David 30012
Director of Weights & Measures
San Francisco County
501 Cesar Chaves #109A
San Francisco, CA 94124
Telephone: 415-285-5012
FAX: 415-285-8776
URL: http://www.ci.sf.ca.us/ag//

Frye, Cary P. 25959
VP Scientific & Regulatory
International Dairy Foods Assn
1250 H St NW Suite 900PO Box 549
Washington, DC 20005
Telephone: 202-737-4332
FAX: 202-331-7820
E-Mail: cfrye@idfa.org

Fuehne, Bob 10443
Manager QA Pet Foods
Ralston Purina Co
Checkerboard Square - 4RN
St Louis, MO 63164
Telephone: 314-982-2916
FAX: 314-982-4240
E-Mail: rfuehne@ralston.com

Fulmer, Carol P. 4463
Assistant Commissioner
SC Dept of Agriculture
PO Box 11280
Columbia, SC 29211
Telephone: 803-737-9690
FAX: 803-737-9703

Gaby, David J. 31259
Prod Supervisor Tech Marketing
BetzDearborn
9669 Grogan's Mill Rd
The Woodlands, TX 77380
Telephone: 281-367-2442
FAX: 281-363-7790

Galantuomini, David 11071
District 4B Inspector
ID Bureau of Wghts & Meas
PO Box 135 1931 Cedar Avenue
Lewiston, ID 83501
Telephone: 208-799-5025

Gallagher, Terry D. 15304
Inspector Meas Stds Div
OR Dept of Agriculture
635 Capitol St NE
Salem, OR 97310-0110
Telephone: 503-986-4670
FAX: 503-986-4784
E-Mail: tgallagh@oda.state.or.us

Gallo, Mike 30912
Sr Prod Support Engineer
Wayne Div-Dresser Industries
124 W College Ave PO Box 1859
Salisbury, MD 21802-1859
Telephone: 410-546-6859
FAX: 410-548-6913

Gammel, Michael 24217
Inspector Measurement Stds Div
OR Dept of Agriculture
635 Capitol St NE
Salem, OR 97310-0110
Telephone: 503-986-4670
FAX: 503-986-4784
E-Mail: mgammel@oda.state.or.us

Gardner, Charles A. 3438
Director
Suffolk Co Wghts & Meas
County Center N Bldg 340
Hauppauge, NY 11788
Telephone: 516-853-4621
FAX: 516-853-4578
E-Mail: cagardne@suffolk.
lib.ny.us

Geiler, Thomas F. 219
Director Health Safety & Env
Barnstable Consumer Affairs
PO Box 2430 230 South Street
Hyannis, MA 02601
Telephone: 508-790-6251
FAX: 508-778-2412
E-Mail: tgeiler@capecod.net

Gerber, Kevin 14652
PO Box 143
Paragould, AR 72450

Gerber, Victor L. 2455
Metrologist/W & M Coordinator
WY Dept of Agriculture
2219 Carey Ave
Cheyenne, WY 82002
Telephone: 307-777-6586
FAX: 307-635-8327
E-Mail: vgerbe@missc.state.wy.us

Gerstmar, Rich 10080
Inspector Measurement Stds Div
OR Dept of Agriculture
635 Capitol St NE
Salem, OR 97310-0110
Telephone: 503-986-4670
FAX: 503-986-4784
E-Mail: rgerstma@oda.state.or.us

Glover, Karen 31109
Approvals Coordinator
Pennsylvania Scale Co
21 Graybill Road PO 566
Leola, PA 17540
Telephone: 717-656-2653
FAX: 717-656-3216
E-Mail: klg@redrose.net

Gray, Maxwell H. 7991
Chief Weights & Measures
FL Dept of Agr & Cons Services
3125 Conner Blvd Lab 2
Tallahassee, FL 32399-1650
Telephone: 850-488-9140
FAX: 850-922-6064
E-Mail: graym@doacs.state.fl.us

Greek, Richard D. 2875
Agr Commissioner Sealer
San Luis Obispo Co Wghts Meas
2156 Sierra Way Suite A
San Luis Obispo, CA 93401
Telephone: 805-781-5910
FAX: 805-781-1035
E-Mail: SluisOA@smtp1.cdfa.cago

Greenleaf, Louis 12624
State Superintendent
NJ Weights & Measures
1261 US Route 1 & 9 South
Avenel, NJ 07001
Telephone: 732-815-4840
FAX: 732-382-5298

Gregory, Larry 28607
Design Engineer
Mobil Oil Corp
3225 Gallows Road Rm 7W323
Fairfax, VA 22037-0001
Telephone: 703-849-6206
FAX: 703-849-5645

Grenier, Michael F. 77
Supervisor II
NH Dept of Agr Markets & Food
PO Box 2042
Concord, NH 03302-2042
Telephone: 603-271-3709
FAX: 603-271-1109

Guay, Christopher B. 840
Principal Reg Affairs
Procter & Gamble Co
5299 Spring Grove Av Ivry Dale Tech
Cincinnati, OH 45217
Telephone: 513-627-6016
FAX: 513-627-6086
E-Mail: guay.cb@pg.com

Guensler, Darrell A. 38
Deputy Secretary
CA Department of Food & Agric
1220 N Street Rm 409
Sacramento, CA 95814
Telephone: 916-654-3021
FAX: 916-654-0403
E-Mail: DGuensle@cdfa.ca.gov
URL: http://www.cdfa.ca.gov

Hadyka, Paul 9402
Industrial Specialist
USDA GIPSA STOP 3631
1400 Independence Ave SW
Washington, DC 20250-3631
Telephone: 202-720-0262
FAX: 202-720-1015
E-Mail: phadyka@fgisdc.usda.gov
URL: http://www.usda.gov/gipsa/index.htm

Hannigan, Philip G. 25712
Technical Assistant
Scale Manufacturers Assn
6724 Lone Oak Blvd
Naples, FL 34109
Telephone: 941-514-3441
FAX: 941-514-3470
E-Mail: phil@scalemanufacturers.org
URL: http://www.scalemanufacturers.org

Harmon, Nathan 8681
National Support
Tec America Inc
4401-A Bankers Circle
Atlanta, GA 30360
Telephone: 770-449-3040
FAX: 770-453-0866
E-Mail: harmonnw@tecamerica.com

Harris, Georgia 9324
Metrologist Office Wts & Meas
NIST
Bldg 820 Rm 223
Gaithersburg, MD 20899
Telephone: 301-975-4014
FAX: 301-926-0647
E-Mail: gharris@nist.gov

Hatfield, Larry 30090
Director Regulation/Inspection
KY Dept of Agriculture
106 West 2nd Street
Frankfort, KY 40601
Telephone: 502-564-4870
FAX: 502-564-5669
E-Mail: lhatfield@mail.state.ky.us

Hayes, Ronald G. 9061
Program Administrator
MO Dept of Agriculture
PO Box 630
Jefferson City, MO 65102
Telephone: 573-751-2922
FAX: 573-751-8307
E-Mail: rhayes@mail.state.mo.us

Heck, David K. 11242
Mgr Mkt Legislation & Regs
Chevron Products Co
6001 Bollinger Canyon Rd Bldg L
San Ramon, CA 94583-2348
Telephone: 925-842-6033
FAX: 925-842-8710
E-Mail: dkhe@chevron.com

Heydemann, Dr. Peter L.M. 30180
Director Technology Services
NIST
Bldg 820 Rm 312
Gaithersburg, MD 20899
Telephone: 301-975-4502
E-Mail: pheydemann@nist.gov
URL: hhtp://ts.nist.gov/ts

Hile, Mike 7153
Director
AR Bureau of Standards
4608 West 61st St
Little Rock, AR 72209
Telephone: 501-225-1598
FAX: 501-562-7605

Hochstetler, Herman R. 5855
Inspector
Elkhart Co Wghts & Meas
117 N 2nd Room 107
Goshen, IN 46526-3231
Telephone: 219-535-6472
FAX: 219-535-6622
E-Mail: elwtmeaf@npcc.net

Holland, Frances P. 15654
Regulatory Affairs
Schlumberger Technologies
825 Greenbriar Circle #M
Chesapeake, VA 23320-2638
Telephone: 757-366-4400 x162
FAX: 757-424-2746
E-Mail: holland@chesapeake.rps.slb.com

Hopper, Monty H. 11132
Director
Kern Co Weights & Measures
1116 East California Avenue
Bakersfield, CA 93307
Telephone: 805-861-2418
FAX: 805-324-0668

Houser, Greg 10081
Inspector Meas Stds Div
Oregon Dept of Agriculture
635 Capitol St NE
Salem, OR 97310-0110
Telephone: 503-986-4670
FAX: 503-986-4784
E-Mail: ghouser@oda.state.or.us

Humphreys, Roy 30272
Director
MO Dept of Agriculture
1616 Missouri Blvd
Jefferson City, MO 65102-0281
Telephone: 573-751-4316
FAX: 573-751-0281

Iannelli, Gerard C. 2690
Director Metric Program
NIST
Bldg 820 Rm 321
Gaithersburg, MD 20899
Telephone: 301-975-5019
FAX: 301-948-1416
E-Mail: gerard.iannelli@nist.gov
URL: http://www.nist.gov/metric

Insalaco, Cosmo C. 107
Agr Commissioner/Sealer
Fresno Co Dept of Agriculture
1730 South Maple
Fresno, CA 93702
Telephone: 209-456-7510
FAX: 209-456-7379
E-Mail: FresnoAG@smtp1.cdfa.ca.gov

Jabbour, Zeina J. 8768
Physicist
NIST
Sound Bldg 233 Em A147
Gaithersburg, MD 20899
Telephone: 301-975-4468
FAX: 301-417-0514
E-Mail: zeina.jabbour@nist.g

James, Vamessa L. 3247
Gary Weights & Measures
1407 East 36 Ave
Gary, IN 46409

Jeffries, Jack Y. 2199
Consumer Protection Adm
FL Division of Standards
3125 Conner Blvd Fld Ops Bldg 1
Tallahassee, FL 32399-1650
Telephone: 850-487-2634
FAX: 850-922-8971

Jennings, Randy F. 10648
Petroleum Administrator
TN Dept of Agriculture
PO Box 40627 Melrose Station
Nashville, TN 37204
Telephone: 615-837-5147
FAX: 615-837-5335
E-Mail: rjennings3@mail.state.tn.us

Joelson, Mark R. 4238
1150 18th St. NW Ste 900
Washington, DC 20036
Telephone: 202-530-1316
FAX: 202-296-1493

Johannes, Dennis 7551
Assistant Director
CA Measurement Standards
8500 Fruitridge Road
Sacramento, CA 95826
Telephone: 916-229-3006
FAX: 916-229-3026
E-Mail: DJohannes@cdfa.ca.gov

Johnson, Gordon W. 3351
Manager Regulatory Affairs
Gilbarco Inc
7300 West Friendly Avenue
Greensboro, NC 27420
Telephone: 336-547-5375
FAX: 336-547-5516
E-Mail: Gordon_Johnson@Gilbarco.Com

Joines, Debbie A. 11709
Mechanical Engineering Supr
Wayne Div-Dresser Industries
124 College Ave PO Box 1859
Salisbury, MD 21802-1859
Telephone: 410-546-6699
FAX: 410-548-6913
E-Mail: daj@wayne.com

Jones, Lewis R. 30860
Chief Weights and Measures
OH Dept of Agriculture
8995 East Main Street Bldg #5
Reynoldsburg, OH 43068-3399
Telephone: 614-728-6290
FAX: 614-728-6424
E-Mail: jones@odant.agri.state.oh.us
URL: http://www.state.oh.us/agr

Kalentkowski, Raymond 7243
Supervisor
CT Dept of Consumer Protection
165 Capitol Ave
Hartford, CT 06106
Telephone: 860-566-4778
FAX: 860-566-7630
E-Mail: weights@hotmail.com

Kammer, Raymond G. 30777
Director
NIST
Bldg 101 Rm A1134
Gaithersburg, MD 20899
Telephone: 301-975-2300
FAX: 301-869-8972
E-Mail: kammer@nist.gov

Kanouse, Larry 8390
Inspector III Wghts & Meas
WA Dept of Agriculture
2510 NW 299th Street
Ridgefield, WA 98642
Telephone: 360-902-1857
FAX: 360-902-2086

Kantzes, Jim 10614
B P Oil
9655 Emery Rd
Warrensville Hgts, OH 44115
Telephone: 216-586-6176
FAX: 216-441-8131

Kelly, Jeffrey A. 30649
International Sales Manager
Hoffer Flow Controls Inc
107 Kitty Hawk Lane
Elizabeth City, NC 27909
Telephone: 252-331-1997
FAX: 252-331-2886
E-Mail: jkelly@hofferflow.com

Kline, Nelson 6266
Measurement Stds Specialist
OR Dept of Agriculture
635 Capitol St NE
Salem, OR 97310-0110
Telephone: 503-986-4670
FAX: 503-986-4784
E-Mail: nkline@oda.state.or.us
URL: www.oda.state.or.us/Measurement_Standards/MSDINFO.html

Kloos, Chip 3453
Assc Dir Technology Statistics
Colgate-Palmolive Company
PO Box 1343 909 River Rd
Piscataway, NJ 08855-1343
Telephone: 732-878-7101
FAX: 732-878-7844
E-Mail: chip_kloos@colpal.com

Koenig, Joan A. 9036
Weights & Measures Coordinator
NIST
Bldg 820 Rm 223
Gaithersburg, MD 20899
Telephone: 301-975-4007
FAX: 301-926-0647
E-Mail: jkoenig@nist.gov

Kranker, Nelson 9394
Director
Dutchess Co Dept of Cons Affrs
94 A Peach Road
Poughkeepsie, NY 12601
Telephone: 914-486-2949
FAX: 914-486-2947

Krueger, Dennis A. 4898
NCR Office W&M & Laser Safety
NCR Corp
2651 Satellite Boulevard
Duluth, GA 30096
Telephone: 770-623-7743
FAX: 770-623-7827
E-Mail: KRUEGD@Exchange.AtlantaGA.NCR.com

Kuizinas, Paul 6287
Measurement Stds Specialist
OR Dept of Agriculture
635 Capitol St NE
Salem, OR 97310-0110
Telephone: 503-986-4670
FAX: 503-986-4784
E-Mail: pkuisina@oda.state.or.us
URL: www.oda.state.
r.us/Measurement_Standards/
MSDINFO.html

Kushnir, Dan 9902
Sales Manager
Seraphin Test Measure
PO Box 227
Rancocas, NJ 08073-0227
Telephone: 800-573-6322
FAX: 800-373-6322
E-Mail: dkushnir@
seraphinusa.com
URL: www.seraphinusa.com

Lagemann, William 7976
Wghts & Measures Inspector
DE Dept of Agriculture
2320 S Dupont Hwy
Dover, DE 19901
Telephone: 302-739-4811 x37
FAX: 302-697-6287

Lameris, Gary 14148
Design Engineer & NTEP Rep
Hobart Corp
Executive Offices 701 Ridge Avenue
Troy, OH 45374
Telephone: 937-332-3053
FAX: 937-332-3007
E-Mail: lamergj@pmifeg.com
URL: http://www.hobartcorp.com

Land, Janet L. 6699
Technical Writer Editor
NIST/Office of Wghts & Meas
Bldg 820 rm 223
Gaithersburg, MD 20899
Telephone: 301-975-5195
FAX: 301-926-0647
E-Mail: janet.land@nist.gov

Land, Robert L. 187
Inspector
Anderson Weights & Measures
Aderson City Bldg PO Box 2100
Anderson, IN 46011-1592
Telephone: 765-646-6186
FAX: 317-646-9886

Langford, Stephen 14657
Cardinal Scale Mfg Co
203 East Daugherty PO Box 151
Webb City, MO 64870
Telephone: 417-673-4631
FAX: 417-673-5001
E-Mail: slangford@cardet.com

Larson, Kelleen K. 10960
Metrologist
AZ Dept of Weights & Measures
9545 E Doubletree Ranch Rd
Scottsdale, AZ 85258-5539
Telephone: 602-451-2972
FAX: 602-661-6688
E-Mail: klarson@wm.state.az.us

Lasher, Henry 8458
Inspector Measmt Stds Div
OR Dept of Agriculture
635 Capitol St NE
Salem, OR 97310-0110
Telephone: 503-986-4670
FAX: 503-986-4784
E-Mail: hlasher@oda.state.or.us

Leber, John 10615
General Manager
Swanson Bark & Wood Products
2405 Talley Way
Kelso, WA 98626
Telephone: 360-414-9663
FAX: 360-578-1947

Lee, G. Diane 30662
Physical Scientist
NIST
Bldg 820 Rm 223
Gaithersburg, MD 20899
Telephone: 301-975-4405
FAX: 301-926-0647
E-Mail: diane.lee@nist.gov

Leisy, Craig 30290
Supervisor Weights & Measures
Seattle Licenses & Cons Affs
805 S Dearborn Street
Seattle, WA 98134
Telephone: 206-386-1296
FAX: 206-386-1129
E-Mail: craig.leisy@
ci.seattle.wa.us

Lemon, Brian 3400
Consumer Pkg & Labeling Spect
Industry Canada
400 St Mary Ave 4th Floor
Winnipeg Manitoba R3C 4K5,
Canada
Telephone: 204-983-8911
FAX: 204-983-5511
E-Mail: lemon.brian@ic.gc.ca

Lodge, Harvey M. 355
Product Manager
Cargotec Inc
307 Broadway
Swanton, OH 43558
Telephone: 419-825-2331
FAX: 419-826-8439

Lori, Anthony 3160
Superintendent
Morris Co Wghts & Meas
PO Box 900
Morristown, NJ 07963
Telephone: 201-285-2957
FAX: 201-285-6075

Love, Thomas C. 6295
Measurement Stds Specialist
OR Dept of Agriculture
635 Capitol St NE
Salem, OR 97310-00110
Telephone: 503-986-4670
FAX: 503-986-4784
E-Mail: tlove@oda.state.or.us
URL:
www.oda.state.or.us/Measurement_Sta
ndards/MSDINFO.html

Lovell, James J. 7584
Metrologist
AK Div Measurement Stds/CVE
12050 Industry Way
Anchorage, AK 99515
Telephone: 907-345-7846
FAX: 907-345-6835
E-Mail: jim_lovell@dot.state.ak.us

Lowe, Gary G. 28414
Inspector Measurement Stds Div
OR Dept of Agriculture
635 Capitol Street NE
Salem, OR 97310-0110
Telephone: 503-986-4670
FAX: 503-986-4784
E-Mail: glowe@oda.state.or.us

Lunceford, David 94
Area Lab Manager ITS
Caleb Brett
3009 Vanguard Building C
Memphis, TN 38131
Telephone: 901-398-3711
FAX: 901-398-3949

Lyng, Bruce 30846
Prog Offr Fair Busi Practice
Industry Canada
50 Victoria St
Hull Quebec K1A 0C9,
Canada
Telephone: 819-953-6441
FAX: 819-953-2931
E-Mail: lyng.bruce@ic.gc.ca
URL: http://strategis.ic.gc.ca/FBP

Malone, Steven A. 554
Director
NE Div of Wghts & Meas
Box 94757/301 Centennial Mall South
Lincoln, NE 68509-4757
Telephone: 402-471-4292
FAX: 402-471-3252
E-Mail: stevenam@agr.state.ne.us

Mann, Mike 12701
Inspector II Weights & Measure
WA Dept of Agriculture
425 N Columbia Ctr Blvd Apt J107
Kennewick, WA 99336
Telephone: 360-902-1857
FAX: 360-902-2086

Marceau, Renald 10211
Sr Program Officer/Prog Dev
Measurement Canada
11 Holland Ave Tower A
Ottawa Ontario, K1A 0C9
Canada
Telephone: 613-952-2629
FAX: 613-952-1736
E-Mail: marceau.renald@ic.gc.ca

Marcouiller, Sheryl A. 16244
Senior Food & Drug Counsel
Kraft Foods Inc
Three Lakes Drive N4F
Northfield, IL 60093-2753
Telephone: 847-646-4206
FAX: 847-646-4431

Martell, Bruce 10126
Supervisor Consumer Assur Div
VT Dept of Agriculture
116 State St Drawer 20
Montpelier, VT 05620-2901
Telephone: 802-828-2436
FAX: 802-828-2361
E-Mail: brucem@
agr.state.vt.us

Martin, John 8391
Inspector I Wghts & Meas
WA Dept of Agriculture
3343 Allen Lane
Leavenworth, WA 98826-9426
Telephone: 360-902-1857
FAX: 360-902-2086

Massey, Vernon Lee 3634
Sealer
Shelby Co Weights & Measures
157 Poplar Suite 402
Memphis, TN 38103
Telephone: 901-576-3920
FAX: 901-576-3796

McCeader, Chris 4333
Inspector
Gary Co Weights & Measures
1710 Broadway
Gary, IN 46407-2205
Telephone: 219-881-5205

McCourt, Denise 30830
Marketing Coordinator
American Petroleum Institute
1220 L Street NW
Washington, DC 20005-4070
Telephone: 202-682-8227
FAX: 202-682-8222

McGee, Mike 24794
InspectorII Weights & Measures
WA Dept of Agriculture
315 East 91st Street
Tacoma Park, WA 98445
Telephone: 360-902-1857
FAX: 360-902-2086

McGrath, Robert 10683
Sealer
Boston ISD Weights & Measures
1010 Massachusetts Ave
Boston, MA 02118-2606
Telephone: 617-635-5328
FAX: 617-635-5383

McGuire, Stephen E. 4000
Metrologist Wghts & Meas
IL Dept of Agriculture
PO Box 19281
Springfield, IL 62794-9281
Telephone: 217-785-8480
FAX: 217-524-7801
E-Mail: smcguire@
agr084r1.state.il.us

McKay, David O. 8438
Supervisor Weights & Measures
UT Dept of Agriculture & Food
PO Box 146500
Salt Lake City, UT 84114-6500
Telephone: 801-538-7158
FAX: 801-538-7126
E-Mail: agmain.domckay@
state.ut.us
URL: www.a.state.ut.us

McMurry, Richard 30374
Inspector
Monroe Co Wghts & Meas
119 W 7th St
Bloomington, IN 47401
Telephone: 812-349-2566
FAX: 812-339-6481

Mercer, Patrick 8991
Dir Motor Fuel Qual Wghts&Meas
MI Dept of Agriculture
940 Venture Lane
Williamston, MI 48895
Telephone: 517-655-8202 ext.312
FAX: 517-655-8303
E-Mail: mercerp@state.mi.us

Merritt, Kevin 11070
District 1C Inspector
ID Bureau of Wghts & Meas
2216 Kellogg Lane
Boise, ID 83712
Telephone: 208-332-8690
E-Mail: kmerritt@agri.state.id.us

Mills, Nigel G. 25005
Sr Consulting Engineer
Hobart Corp
701 Ridge Avenue
Troy, OH 45374-0001
Telephone: 937-332-3205
FAX: 937-332-3007
E-Mail: Millsng@pmifeg.com

Mindte, Joan 12500
Training Coordinator
NIST
Bldg 820 Rm 223
Gaithersburg, MD 20899
Telephone: 301-975-4003
FAX: 301-926-0647
E-Mail: joan.mindte@nist.gov

Mingo, J. Art 4991
District 2A Inspector
ID Bureau of Wghts & Meas
119 Polk
Twin Falls, ID 83301
Telephone: 208-734-4418

Monaco, James 10078
Inspector Meas Stds Div
OR Dept of Agriculture
635 Capitol St NE
Salem, OR 97310-0110
Telephone: 503-986-4670
FAX: 503-986-4784
E-Mail: jmonaco@oda.state.or.us

Moore, John M. 13489
Inspector
AZ Dept of Weights & Measures
9545 E Doubletree Ranch Rd
Scottsdale, AZ 85258-5539
Telephone: 602-255-5211 X2239
FAX: 602-255-1950
E-Mail: jmoore@wm.state.az.us

Morrison, Stephen F. 7853
Chief Deputy Sealer
San Luis Obispo Co Wghts Meas
2156 Sierra Way
San Luis Obispo, CA 93401
Telephone: 805-781-5910
FAX: 805-781-1035
E-Mail: SluisOAg@smtp1.cdfa.cago

Morrow, Thomas L. 3380
Business Unit Manager
TEC America Inc
4401 A Bankers Circle
Atlanta, GA 30360
Telephone: 770-449-3040 x184
FAX: 770-453-0866

Mulcahy, Rick 10087
Inspector I Weights & Measures
WA Dept of Agriculture
9233 Quinalt Dr NE
Olympia, WA 98516
Telephone: 360-902-1857
FAX: 360-902-2086

Munoz, Michael J. 138
Computer/Network Specialist
NIST
Building 820 Room 203
Gaithersburg, MD 20899
E-Mail: owmservr@nist.gov

Murdock, Ronald D. 8366
Program Manager Standards Div
NC Dept of Agriculture
PO Box 27647 Dept SD 2 W Edenton St
Raleigh, NC 27602
Telephone: 919-733-3313
FAX: 919-715-0524
E-Mail: ron_murdock@ncdamail.agr.state.nc.us

Murnane, Robert 9659
President
Seraphin Test Meas/Pemberton
PO Box 227 30 Indel Avenue
Rancocas, NJ 08073-0227
Telephone: 609-267-0922
FAX: 609-261-2546

Nelson, Allan M. 2515
President
NW Associates
23 Garden Gate Rd
Southington, CT 06489
Telephone: 860-620-0253
FAX: 203-374-1110
E-Mail: callnw@hotmail.com

Newcombe, Danny 11164
Metrologist
ME Quality Assurance & Regs
28 State House Station
Augusta, ME 04333
Telephone: 207-287-7587
FAX: 207-287-5576
E-Mail: Bunkie21@aol.com

Nikanjam, Manuch 10618
Senior Staff Engineer
Chevron Products Co
100 Chevron Way
Richmond, VA 94802
Telephone: 501-242-2741
FAX: 501-242-2390

Noel, Andre K. 3043
Industrial Product Manager
Schlumberger Industries
1310 Emerald Road
Greenwood, SC 29646
Telephone: 864-223-1212 X2247
FAX: 864-223-0341
E-Mail: noel@greenwood.wm.slb.com

Nover, Neal J. 15476
VP Marketing
Nover-Engelstein & Assc Inc
100 Springdale Rd Bldg A3 Ste 226
Cherry Hill, NJ 08003-3360
Telephone: 609-489-1817
FAX: 609-751-0559
E-Mail: nealnov@aol.com

O'Bryan, O.R. "Pete" 2595
QA Manager
Foster Farms
PO Box 457
Livingston, CA 95334-9900
Telephone: 209-394-6914 X4610
FAX: 209-394-6913

Onwiler, Don 25584
Program Manager
NE Dept Agr/Div Wghts & Meas
301 Centennial Mall S
PO Box 94757
Lincoln, NE 68509
Telephone: 402-471-4292
FAX: 402-471-3252
E-Mail: donlo@agr.state.ne.us

Orr, Vincent R. 12695
Senior Manager Quality Systems
Armour Swift-Eckrich
3131 Woodcreek Drive
Downers Grove, IL 60515-5429
Telephone: 630-512-1070
FAX: 630-512-1124
E-Mail: vorr@crfc.com

Osterberg, Kent 9708
Inspector
OR Dept of Agriculture
635 Capitol Street NE
Salem, OR 97310-0110
Telephone: 503-986-4670
FAX: 503-986-4784

Osterkamp, Renee 9885
Administrative Assistant
SD Weights & Measures
118 W Capitol Avenue
Pierre, SD 57501-2080
Telephone: 605-773-6983
FAX: 605-773-6631

Oswald, Wesley S. 10001
District 1A Inspector
ID Bureau of Wghts & Meas
2216 Kellogg Lane
Boise, ID 83712
Telephone: 208-332-8690

Otto, Jeffrey B. 30703
Metrology Lab
3M Corporation
3M Center Bldg 205-1-01
St Paul, MN 55144-1000
Telephone: 612-733-9029
FAX: 612-736-7325
E-Mail: jbotto@mmm.com

Palidwor, W.G. 15273
Director Prairie Region
Measurement Canada
400 St Mary Ave 4th Floor
Winnipeg Manitoba,
Canada R3C 4K5
Telephone: 204-983-2674
FAX: 204-983-5511
E-Mail: palidor.bill@ic.gc.ca

Parks, Christine A. 9635
Inspector Measurement Stds Div
OR Dept of Agriculture
635 Capitol St NE
Salem, OR 97310-0110
Telephone: 503-986-4670
FAX: 503-986-4784
E-Mail: cparks@oda.state.or.us

Parrish, Johnny 28288
Engineering Group Manager
Fisher-Rosemount Petroleum
Hwy 301 North PO Box 450
Statesboro, GA 30458
Telephone: 912-489-0303
FAX: 912-489-0410

Peri, Richard 9493
Manager Technical Services
NATA
4226 King Street
Alexandria, VA 22302
Telephone: 803-845-9000
FAX: 803-845-8176
E-Mail: rperi@nata-online.org

Phillips, Jim 28854
Deputy Inspector
Delaware Co Weights & Measures
County Bldg 100 West Main Room 20
Muncie, IN 47305
Telephone: 317-747-7714

Phillips, Michelle I. 9076
Assistant Administrator
Indianapolis Wghts & Meas
200 E Washington St Ste 1142
Indianapolis, IN 46204-3325
Telephone: 317-327-4272
FAX: 317-327-4291

Philmon, Richard L. 9168
Program Manager
IL Dept of Agriculture
PO 19281 801 E Sangamon Ave
Springfield, IL 62794-9281
Telephone: 217-785-8301
FAX: 217-524-7801

Pinagel, Michael S. 22299
Wghts & Meas Program Manager
MI Dept of Agriculture
940 Venture Lane
Williamston, MI 48895
Telephone: 517-655-8202 X 301
FAX: 517-655-8303
E-Mail: pinagelm@state.mi.us
URL: http://www.mda.state.mi.us

Pound, Marvin G. 7830
Field Supervisor
GA Dept of Agriculture
815 Milledeville Hwy
Devereux, GA 31087
Telephone: 404-656-3605
FAX: 404-656-9380

Prince, Gale 10651
Director Regulatory Compliance
Kroger Co
1014 Vine St
Cincinnati, OH 45202-1100
Telephone: 513-762-4209
FAX: 513-762-4372
E-Mail: gprince@Kroger.com

Proctor, Mike 7263
District 3B Inspector
ID Bureau of Wghts & Meas
906 Redwood
Pocatello, ID 83201
Telephone: 208-232-8270

Pynakker, Stephen 7301
City Sealer
Hammond Weights & Measures
649 Conkey Street
Hammond, IN 46324-1101
Telephone: 219-853-6377

Quinn, David W. 11509
V P Service Operations
Fairbanks Scales
821 Locust
Kansas City, MO 64106
Telephone: 816-471-0231
FAX: 816-471-5951
E-Mail: dave.quinn@fancor.com

Reinfried, Robert A. 9388
Executive Director
Scale Manufacturers Assn
6724 Lone Oak Blvd
Naples, FL 34109
Telephone: 941-514-3441
FAX: 941-514-3470
E-Mail: rar@scalemanufacturers.org
URL: http://www.scalemanufacturers.org

Renkes, Robert N. 1174
Executive Vice President
Petroleum Equip Institute
PO Box 2380
Tulsa, OK 74101
Telephone: 918-494-9696
FAX: 918-491-9895

Rhodes, Lyn A. 2598
Manager of Quality Control
Foster Farms
843 Davis Street PO Box 457
Livingston, CA 95334
Telephone: 209-394-7901 x4348
FAX: 209-394-6913

Ripka, Bill 3173
Applications Engineer
Ramsey Technology Inc
501 90th Ave NW
Minneapolis, MN 55433
Telephone: 612-783-2664
FAX: 612-780-2548

Ripley, Debbie 10028
Engineer
NIST
Bldg 820 Rm 164
Gaithersburg, MD 20899
Telephone: 301-975-4859
FAX: 301-926-2871
E-Mail: deborah.ripley@nist.gov

Robbins, Russell E. (Rusty) 10326
Director Weights & Meas Div
MS Dept of Agr & Commerce
PO Box 1609
Jackson, MS 39215-1609
Telephone: 601-359-1149
FAX: 601-354-6502

Rocchio, Paul C. 3541
Mgr State Government Affairs
International Mass Retail Assn
1700 North Moore St Ste 2250
Arlington, VA 22209
Telephone: 703-841-2300 X133
FAX: 703-841-1184

Rogers, J. Alan 9374
Program Manager
VA Product & Industry Stds
PO Box 1163 Rm 402
Richmond, VA 23218
Telephone: 804-786-2476
FAX: 804-786-1571

Ross, James E. 9027
Weights & Measures Coordinator
NIST
820 W Diamond Ave Rm 215
Gaithersburg, MD 20899
Telephone: 301-975-4025
E-Mail: james.ross@nist.gov

Rothleder, Joseph 3495
Principal State Metrologist
CA Measurement Standards
8500 Fruitridge Rd
Sacramento, CA 95826
Telephone: 916-229-3022
FAX: 916-229-3026
E-Mail: JRothleder@cdfa.ca.gov

Roussy, Sonia 12899
VP Program Development
Measurement Canada
11 Holland Ave Tower A Ste 513
Ottawa Ontario, K1A 0C9
Canada
Telephone: 613-952-4285
FAX: 613-952-1736

Salinas, Alfonso 8044
Inspector Assistant
Lake Co Wghts & Meas
2293 North Main Street
Crown Point, IN 46307
Telephone: 219-755-3680
FAX: 219-755-3064

Schafer, Tom W. 10000
Metrologist
ID Bureau of Wghts & Meas
2216 Kellogg Lane
Boise, ID 83712
Telephone: 208-332-8690
FAX: 208-334-2378
E-Mail: tschafer@agri.state.id.us

Sebring, Lynn 23996
NIST
Bldg 820 Rm 223
Gaithersburg, MD 20899
Telephone: 301-975-4006
FAX: 301-926-0647
E-Mail: lynn.sebring@nist.gov

Shefcheck, George S. 6241
Administrator Measurement Stds
OR Dept of Agriculture
635 Capitol St NE
Salem, OR 97310-0110
Telephone: 503-986-4668
FAX: 503-986-4784
E-Mail: gshefche@oda.state.or.us
URL: www.oda.state.or.
us/Measurement_Standards/MSDINFO
.html

Silvestro, Joseph 2809
Superintendent
Consumer Protection/Wgts & Msr
152 N Broad St Box 337
Woodbury, NJ 08096
Telephone: 609-853-3358
FAX: 609-853-2770

Simila, Kendrick J. 2510
Retired Adm Meas Stds Div
OR Dept of Agriculture
635 Capitol St NE
Salem, OR 97310-0110
Telephone: 503-551-0469
FAX: 503-986-4784
E-Mail: ksimila@oda.state.or.us

Simpkins, Curtis E. 2632
Inspector
Grant Co Wghts & Meas
401 S Adams St Grant Co Complex
Marion, IN 46953-2037
Telephone: 317-668-8871 x170

Simpson, Marlene 9069
Office Specialist
OR Meausrement Standards
635 Capital Street NE
Salem, OR 97310-0110
Telephone: 503-986-4675
FAX: 503-986-4784
E-Mail: msimpson@
oda.state.or.us

Sinclair, Dennis H. 6315
Measurement Stds Specialist
OR Dept of Agriculture
635 Capitol St NE
Salem, OR 97310-0110
Telephone: 503-986-4670
FAX: 503-986-4784
E-Mail: dsinclai@oda.state.or.us
URL: www.oda.state.
or.us/Measurement_Standards/MSDIN
FO.html

Skuce, John C. 10442
Mgr Mech Eng & Quality
Smith Meter Inc
PO Box 10428
Erie, PA 16514-0428
Telephone: 814-898-5405
FAX: 814-899-3414

Slaydon, Damon G. 6340
Dep Dir/Consumer & Commodity
TX Dept of Agriculture
PO Box 12847
Austin, TX 78711
Telephone: 512-463-7659
FAX: 512-463-8225
E-Mail: dslaydon@agr.state.tx.us
URL: http://www.agr.state.tx.us

Smith, N. David 2391
Director Standards Division
NC Dept of Agriculture
PO Box 27647 Dept SD
Raleigh, NC 27611
Telephone: 919-733-3313
FAX: 919-715-0524
E-Mail: david_smith@ncdamail.
agr.state.nc.us
URL: http://www.agr.state.
nc.us/standard/

Spencer, John W. 3536
President
Mulch Manufacturing Inc
6747 Taylor Rd SW
Reynoldsburg, OH 43068
Telephone: 614-864-4004
FAX: 614-864-1946

Stadick, Peter J. 18857
Engineer-Instrumentation
Cargill Inc Grain Division
12800 Whitewater Dr
Minnetonka, MN 55343
Telephone: 612-984-0575
FAX: 612-984-0306
E-Mail: pete_stadick@cargill.com

Stapleton, Simon J. 7980
NCWM Attorney
NCWM
1279 Timberbranch Ct
Charlottesville, VA 22902
Telephone: 804-367-8407
E-Mail: dmvsjs@dmv.state.va.us

Steele, Kent D. 28765
Food Safety/Environmental Mgr
Safeway Inc
5918 Stoneridge Mall Rd
Pleasanton, CA 94588-3229
Telephone: 925-467-2423
FAX: 925-467-3126
E-Mail: kent.steele@safeway.com
URL: www.safeway.com

Stoner, Keith 9553
Inspector
Seattle Licenses & Cons Affrs
805 S Dearborn St
Seattle, WA 98134
Telephone: 206-386-9076
FAX: 206-386-1129
E-Mail: keith.stoner@
ci.seattle.wa.us

Straub, Louis E. 6248
Chief Weights & Measures
MD Dept of Agriculture
50 Harry S Truman Parkway
Annapolis, MD 21401
Telephone: 410-841-5790
FAX: 410-841-2765
E-Mail: strauble@mda.
state.md.us
URL: http://www.mda.state.
md.us/geninfo/genera5.htm

Stump, Lawrence J. 13717
Director
IN Weights & Measures
1330 West Michigan St
Indianapolis, IN 46206
Telephone: 317-233-8132
FAX: 317-233-8131

Suiter, Richard C. 2368
Weights & Measures Coordinator
NIST
820 W. Diamond Suite 223
Gaithersburg, MD 20899-0001
Telephone: 301-975-4406
FAX: 301-926-0647
E-Mail: richard.suiter@nist.gov

Sullivant, Billy W. 2466
Laboratory Supervisor
AR Bureau of Standards
4608 West 61 St
Little Rock, AR 72209
Telephone: 501-225-1598
FAX: 501-562-7605

Swogger, David 108
Inspector
Dekalb Co Wghts & Meas
1390 County Road #5
Corunna, IN 46730
Telephone: 219-281-2047
FAX: 219-281-2747

Szyndrowski, Chester 10302
Inspector
East Chicago Wghts & Meas
628 Rescobie Ln
Schererville, IN 46375
Telephone: 219-865-1880

Tansing, Elizabeth 896
Food Marketing Institute
800 Connecticut Ave NW
Washington, DC 20006
Telephone: 202-429-8296
FAX: 202-429-4549

Thomas, Scott 31087
Brownie Tank Manufacturing Co
1241 72nd Ave NE
Fridley, MN 55432
Telephone: 612-571-1744
FAX: 612-571-0180
E-Mail: scottt@determan.com

Thompson, Aves D. 10201
Chief
AK Div Measurement Stds/CVE
12050 Industry Way Bldg O
Anchorage, AK 99515
Telephone: 907-345-7750
FAX: 907-345-6835
E-Mail: aves_thompson@commerce.state.ak.us
URL: http://www.state.ak.us/local/akpages/COMMERCE/ms.htm

Thompson, Merrill S. 590
Attorney
Baker & Daniels
PO Box 8500 Main Street
Bridgeton, IN 47836
Telephone: 765-548-2211
FAX: 765-548-2214

Thuner, Jeffrey 11827
Program Supervisor
CA Div of Measurement Stds
169 East Liberty Avenue
Anaheim, CA 92801
Telephone: 714-680-7896
FAX: 714-449-7249
E-Mail: JThuner@cdfa.ca.gov

Thuner, Kathleen A. 5869
Agr Comm Sealer Wghts & Meas
San Diego Co Dept of Agr
5555 Overland Ave Bldg 3
San Diego, CA 92123-1292
Telephone: 619-694-2741
FAX: 619-565-7046
E-Mail: kthuner@co.san-diego.ca.us

Titko, Steve 5435
Mgr Tech & Develpt Organics
Scotts Co
14111 Scottslawn Rd
Marysville, OH 43041
Telephone: 937-644-7101
FAX: 937-644-7629

Tonini, Daryl E. 1336
Technical Director
Scale Manufacturers Assn
6724 Lone Oak Blvd
Naples, FL 34109
Telephone: 941-514-3441
FAX: 941-514-3470
E-Mail: dtonini@scalemanufacturers.org
URL: http://www.scalemanufacturers.org

Traettino, Robert M. 8923
VP of Quality & Regulatory Afs
Liquid Controls LLC
105 Albrecht Drive
Lake Bluff, IL 60044-9951
Telephone: 847-295-1056 x300
FAX: 847-295-1057
E-Mail: btraetti@lcmeter.com

Truex, James C. 2178
W&M Inspection Manager
OH Dept of Agriculture
8995 E Main St Bldg #5
Reynoldsburg, OH 43068-3399
Telephone: 614-728-6290
FAX: 614-728-6424
E-Mail: truex@odant.agri.state.oh.us
URL: http://www.state.oh.us/agr

Tucker, Richard L. 9070
Sr Approvals Engineer
Tokheim Corporation
PO Box 360
Ft Wayne, IN 46801
Telephone: 219-470-4610
FAX: 219-470-4720
E-Mail: RTucker@Tokheim.com

Turner, Ann H. 236
Weights & Measures Coordinator
NCWM
PO Box 4025
Gaithersburg, MD 20885
Telephone: 301-975-4012
FAX: 301-926-0647
E-Mail: ann.turner@nist.gov

Ugiansky, Gilbert M. 30690
Chief OWM
NIST
Building 820 Room 223
Gaithersburg, MD 20899
Telephone: 301-975-4005
FAX: 301-926-0647
E-Mail: g.ugiansky@nist.gov
URL: http://www.nist.gov/owm

Vormittag, Thomas 13774
Lab Manager Black Mesa
Commercial Testing & Eng Co
PO Box 474
Kayenta, AZ 86033
Telephone: 520-677-5006

Wallace, David R. 4475
Chief Meas Standards Section
CO Dept of Agriculture
3125 Wyandot St
Denver, CO 80211
Telephone: 303-477-4220
FAX: 303-477-4248

Watters, Jeffrey 6998
Measurement Canada
123 Labelle Blvd Suite 101
Rosemere Quebec, J7A 2G9
Canada
Telephone: 450-434-7434
FAX: 450-434-9735
E-Mail: watters.jeffrey@ic.gc.ca

Weiss, Jeff 9702
Inspector
OR Drept of Agriculture
635 Capitol Street NE
Salem, OR 97310-0110
Telephone: 503-986-4670
FAX: 503-986-4784

West, Gary D. 8345
Director Stds & Consumer Serv
NM Dept of Agriculture
PO Box 30005 MSC 3170
Las Cruces, NM 88003-8005
Telephone: 505-646-1616
FAX: 505-646-2361
E-Mail: GDW@NMDA.NMSU.EDU

Whitaker, Scott 8997
Cargotec Inc
6405 N 50th Suite B
Tampa, FL 33610
Telephone: 813-628-4633
FAX: 813-628-4772

Williams, Juana 10827
Physical Scientist
NIST
Bldg 820 Rm 223
Gaithersburg, MD 20899
Telephone: 301-975-3989
FAX: 301-926-0647
E-Mail: juana.williams@nist.gov

Wise, Randy 10293
Administrative Branch Manager
KY Dept of Agriculture
106 West 2nd Street
Frankfort, KY 40601
Telephone: 502-564-4870
FAX: 502-564-5669
E-Mail: rwise@mail.state.ky.us

Wollner, Jackie 24011
Quality Manager
Nestlé USA
800 North Brand Blvd
Glendale, CA 91203
Telephone: 818-549-6315
FAX: 818-549-6908
E-Mail: jackie.wollner@
us.nestle.com

Woodward, Cary 497
Deputy Inspector
Hamilton Co Weights & Measures
2224 W 186th St
Westfield, IN 46074
Telephone: 317-896-5700

Wotthlie, Richard W. 8257
Program Mgr Weights & Measures
MD Dept of Agriculture
50 Harry S Truman Parkway
Annapolis, MD 21401
Telephone: 410-841-5790
FAX: 410-841-2765
E-Mail: wotthlrw@
mda.state.md.us

Wyckoff, Russ 8459
Inspector Measmt Stds Div
OR Dept of Agriculture
635 Capitol St NE
Salem, OR 97310-1315
Telephone: 503-986-4670
FAX: 503-986-4784
E-Mail: rwyckoff@oda.state.or.us

Zalon, Paul 7312
Director Regulatory Affairs
Nestlé USA
100 Manhattanville Rd
Purchase, NY 10577
Telephone: 914-251-3487
FAX: 914-251-3600
E-Mail: PAUL.ZALON@
US.NESTLE.COM

☆ U. S. GOVERNMENT PRINTING OFFICE: 1998-454-531/93231

U.S. Department of Commerce
National Institute of Standards & Technology
Gaithersburg, MD 20899-0001