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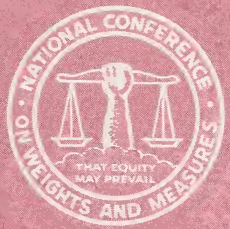
U.S. DEPARTMENT OF COMMERCE / National Bureau of Standards

Report of the 69th National Conference on Weights and Measures 1984



The National Bureau of Standards[1] was established by an act of Congress on March 3, 1901. The Bureau's overall goal is to strengthen and advance the nation's science and technology and facilitate their effective application for public benefit. To this end, the Bureau conducts research and provides: (1) a basis for the nation's physical measurement system, (2) scientific and technological services for industry and government, (3) a technical basis for equity in trade, and (4) technical services to promote public safety. The Bureau's technical work is performed by the National Measurement Laboratory, the National Engineering Laboratory, the Institute for Computer Sciences and Technology, and the Center for Materials Science.

The National Measurement Laboratory

Provides the national system of physical and chemical measurement; coordinates the system with measurement systems of other nations and furnishes essential services leading to accurate and uniform physical and chemical measurement throughout the Nation's scientific community, industry, and commerce; provides advisory and research services to other Government agencies; conducts physical and chemical research; develops, produces, and distributes Standard Reference Materials; and provides calibration services. The Laboratory consists of the following centers:

- Basic Standards[2]
- Radiation Research
- Chemical Physics
- Analytical Chemistry

The National Engineering Laboratory

Provides technology and technical services to the public and private sectors to address national needs and to solve national problems; conducts research in engineering and applied science in support of these efforts; builds and maintains competence in the necessary disciplines required to carry out this research and technical service; develops engineering data and measurement capabilities; provides engineering measurement traceability services; develops test methods and proposes engineering standards and code changes; develops and proposes new engineering practices; and develops and improves mechanisms to transfer results of its research to the ultimate user. The Laboratory consists of the following centers:

- Applied Mathematics
- Electronics and Electrical Engineering[2]
- Manufacturing Engineering
- Building Technology
- Fire Research
- Chemical Engineering[2]

The Institute for Computer Sciences and Technology

Conducts research and provides scientific and technical services to aid Federal agencies in the selection, acquisition, application, and use of computer technology to improve effectiveness and economy in Government operations in accordance with Public Law 89-306 (40 U.S.C. 759), relevant Executive Orders, and other directives; carries out this mission by managing the Federal Information Processing Standards Program, developing Federal ADP standards guidelines, and managing Federal participation in ADP voluntary standardization activities; provides scientific and technological advisory services and assistance to Federal agencies; and provides the technical foundation for computer-related policies of the Federal Government. The Institute consists of the following centers:

- Programming Science and Technology
- Computer Systems Engineering

The Center for Materials Science

Conducts research and provides measurements, data, standards, reference materials, quantitative understanding and other technical information fundamental to the processing, structure, properties and performance of materials; addresses the scientific basis for new advanced materials technologies; plans research around cross-country scientific themes such as nondestructive evaluation and phase diagram development; oversees Bureau-wide technical programs in nuclear reactor radiation research and nondestructive evaluation; and broadly disseminates generic technical information resulting from its programs. The Center consists of the following Divisions:

- Inorganic Materials
- Fracture and Deformation[3]
- Polymers
- Metallurgy
- Reactor Radiation

[1] Headquarters and Laboratories at Gaithersburg, MD, unless otherwise noted; mailing address Gaithersburg, MD 20899.
[2] Some divisions within the center are located at Boulder, CO 80303.
[3] Located at Boulder, CO, with some elements at Gaithersburg, MD.

Report of the

69th National Conference on Weights and Measures 1984

Sponsored by the National Bureau of Standards
Attended by Officials from the Various States, Counties, and Cities, and Representatives from U.S. Government, Industry, and Consumer Organizations
Boston, Mass., July 29-August 3, 1984

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United States Department of Commerce
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National Bureau of Standards
Ernest Ambler, *Director*

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ABSTRACT

The 69th Annual Meeting of the National Conference on Weights and Measures was held at the Westin Hotel in Boston, Massachusetts, during the week of July 29, 1984. Attendance totaled 396 (341 paid registrants and 55 guests) from forty-six (46) States, Guam, and Puerto Rico. The theme of the meeting was "Transferring Technology for Trade: A Team Effort."

Adoption of a NCWM Constitution and By-laws and a new Scales Code were major actions taken by the membership. The new Scales Code, which will be effective January 1, 1986, represented a significant advancement for device control. Other items addressed included such issues as labeling of gasoline-alcohol blends and national type evaluation.

Special meetings included those of the Task Force on Package Control, Metrologists' Workshops, the Associate Membership Committee, the Scale Manufacturers Association, the Industry Committee on Packaging and Labeling, the State regional weights and measures associations, and OIML Pilot Secretariat 20 (Prepackaged Products).

Reports by the several standing and annual committees of the Conference comprise the major portion of the publication. Also included are the addresses and technical papers delivered by Conference officials and other authorities from Government and industry.

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

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Note: Opinions expressed in non-NBS papers are those of the authors and not necessarily those of the National Bureau of Standards. Non-NBS speakers are solely responsible for the content and quality of their material.

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OFFICERS, OFFICIALS, AND COMMITTEES OF THE CONFERENCE

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(July 16, 1982 - July 21, 1983)

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Raymond Wells, Seraphin Test Measure Co.

GENERAL SESSION

Tuesday Afternoon, July 31, 1984

AGENDA

SAM F. HINDSMAN
Conference Chairman, Presiding

Call to Order
Presentation of Colors and National Anthem

Invocation and Pledge of Allegiance
REV. FRANCIS W. DANIELS
Conference Chaplain, Weights and Measures
Administrator, Wayne County, IN

Address: "Transferring Technology for Trade: A Team Effort"
SAM F. HINDSMAN
Conference Chairman

Welcoming Remarks
PAULA W. GOLD
Secretary of Consumer Affairs and
Business Regulations, State of Massachusetts

Address: "Future Stock To Avoid Future Shock"
ERNEST AMBLER
Conference President
Director, National Bureau of Standards

Address: "The Tower Of Babel"
STANLEY I. WARSHAW
Director, Office of Product Standards Policy,
National Bureau of Standards

Presentation of Certificates of Appreciation
SAM F. HINDSMAN
Conference Chairman

Honor Awards Presentation
ERNEST AMBLER
Conference President

Address: "State Metrology Laboratories: Perceptions and Reality"
ROSS J. ANDERSEN
Metrologist, State of New York

Address: "Benefits and Action Plan for Establishing a Complaint Handling System"
JOHN A. GOODMAN
President, Technical Assistance
Research Programs, Inc.

TRANSFERRING TECHNOLOGY FOR TRADE - A TEAM EFFORT

Sam F. Hindsman,
Chairman, National Conference on Weights and Measures

The theme of the 67th Annual Meeting of the Conference on Weights and Measures in 1982, "Crossroads for Weights and Measures", was appropriate because of the challenges facing the National Bureau of Standards, the Office of Weights and Measures, and the National Conference on Weights and Measures. Dr. Ambler, Director of NBS and President of the NCWM, and Dr. Ed Heffron, Chairman of the 67th NCWM, recognized the united effort that would have to be exerted by all interested parties in order to meet those challenges. The key parties were the National Bureau of Standards, the Office of Product Standards Policy, the Office of Weights and Measures, and the National Conference on Weights and Measures, as well as the manufacturers and users of weighing and measuring equipment. They are working more closely together than ever before to meet the challenges.

Many of you will recall that Dr. Ambler highlighted in Atlanta in 1982 the roles that were clearly NBS responsibilities:

1. to sponsor the NCWM,
2. to insure the basic capabilities of the State laboratories,
3. to coordinate the development of the National Type Approval Program, and
4. to support the Conference in the development of training materials in response to the introduction of electronic technology in the marketplace.

All activities related to these responsibilities are on schedule as planned.

The theme of the 68th Annual Meeting of the National Conference on Weights and Measures in 1983 was "Progress in Professionalism". Dr. Charles Greene recognized, in his comments to the 68th Conference in Sacramento, California, that the commitment of NBS to Weights and Measures and to the Conference was real and as promised by Dr. Ambler. The additional resources applied to the National Type Evaluation Program, the National Training Program, and the Laboratory Accreditation Program provide the basis for a quality laboratory and a more professional employee.

The theme of the 69th Annual Meeting of the National Conference on Weights and Measures, "Transferring Technology for Trade - A Team Effort", is appropriate because of the many changes we have witnessed in our everyday lives as both consumers and weights and measures professionals. I believe that we really have a team effort going to deal with these changes.

The membership of the NCWM will be called on at the 69th Annual Meeting to approve programs and actions that will demonstrate continued support of the recent outstanding progress that has been made in bringing the technical and legal basis up to date for the weights and measures community. Evidence of this progress can be found in the final reports of the committees and task forces dealing with several subjects. I will briefly report on the status of the following:

1. The Final Draft of the National Type Evaluation Program (NTEP).

The Task Force on National Type Evaluation, under the leadership of Ezio Delfino, has been working since 1976 on this project. Approval of the remaining steps toward development will permit implementation of the program in October, 1984, as planned. Of equal importance is the need for the States to adopt the uniform State regulation for NTEP; we should all work toward the establishment of the legal and administrative basis for involvement in the program by every State.

2. The Final Draft of the NCWM Constitution and Bylaws.

The membership will be called on to consider the final draft of the NCWM Constitution and Bylaws structured formally and based on the existing informal conference procedures.

3. A Permanent Code for Grain Moisture Meters for Handbook 44.

The Task Force for Grain Moisture Measurement Assurance, under the leadership of your Chairman, has worked on this project since 1976. The conference membership will be called on to consider the S & T Committee recommendation for a permanent code for Handbook 44.

4. The Second Draft of the New Tolerance Structure for the Scale Code.

The new tolerances greatly simplify the inspectors' job in the field. It has been under development for several years and enjoys broad support by weights and measures officials as well as the Scale Manufacturers Association. I am confident that you have developed the understanding necessary for the membership to vote confidently on the Scale Code.

5. The Task Force on Belt-Conveyor Scales has submitted its first draft of a proposed new code for belt conveyor scales for consideration by the Conference. Fred Gerk, Chairman, and the Task Force are to be commended for their efforts.

6. The Task Force on Package Control has addressed several important aspects of package control in the USA. The result will be increased uniformity and technical validity, as well as decreased cost to regulatory officials and industry alike in the regulation of consumer packaged commodities. A key step that the Conference will be addressing this week will be the second draft of Handbook 133. The Final Draft may be recommended for approval by the Conference in 1985.

7. The National Training Program. The National Bureau of Standards, through the Office of Product Standards Policy (the home of OWM), has assumed significant fiscal and technical responsibilities for the continued development of the training program. It is up to the NCWM to carry its full share of responsibilities through its committee structure, including the special working groups being formed to draft initial modules. The program is a bit behind the original schedule because of the decision to terminate the contractual relationship with the Texas Engineering Extension Service (TEEX); however, OPSP assigned a full time professional to the staff of OWM who will spend most of her time on this program. Through the additional staffing, selection of new contractors, and the recent increase in offers of voluntary assistance from industry, I believe that, within the next year, the program will return to the original schedule. Some training modules will be available for use during 1984.

Hopefully, the National Training Program will become the vehicle through which the transfer of technical information to each weights and measures employee will become a reality.

8. Task Force on Motor Fuels. Because of recent complaints regarding the quality of certain motor fuels in several States, the Executive Committee of NCWM has authorized the establishment of a task force whose mission will be to identify information and resources that are available and that will aid in the uniform evaluation and testing of motor fuels. Members of the Task Force are N. David Smith, Chairman, North Carolina; Sidney Andrews, Florida; George Mattimoe, Hawaii; Barbara Bloch, California; Curtis Williams, Georgia; Dave Karlish, Arkansas; and Frank Nagele, Michigan. The Task Force will work with the standards organizations, professional societies, industry, and trade groups for the resolution of the problems related to regulation of motor fuels. It will support the efforts of the American Society for Testing and Materials (ASTM) in modifying the ASTM D-439 gasoline standard to include oxygenated fuels - alcohol blends. The ASTM standard will serve as a national specification for adoption by the States.

Summary

The NBS, through the technical assistance that it provides to the standing committees and task forces, is meeting its commitment of responding to the needs of the weights and measures community.

The Conference has also faced up to its responsibilities by approval of the details of a National Type Evaluation Program, National Training Program, Grain Moisture Meter Code, new tolerance structure for the Scale Code, and cooperating in the development of a second draft of Handbook 133. We have seen a great spirit of cooperation and mutual support by the State officials and industry in accepting the challenge of advancement and the related implementation of the resulting advances. We have seen a great team effort from Dr. Ernest Ambler - NBS, Dr. Stan Warshaw - OPSP, Al Tholen -OWM, and his staff in the Weights and Measures Office. I am confident that the necessary team effort will continue through the completion of these initiatives and their full implementation by the States and industry.

The real job of implementation is now in our laps. We have the opportunity to:

1. develop a sound, comprehensive training program,

2. initiate the operation of a National Type Evaluation Program,

3. make major advances in the area of device inspection through the new scale code,

4. adopt a moisture meter code for Handbook 44, and provide the necessary follow-up to establish tolerance for other grains,

5. adopt a Constitution and Bylaws for the Conference, which is needed to remove questions regarding our goals and operational procedures, and

6. strengthen the Conference by increased membership and participation.

Based on our accomplishments recently, I am confident that we will collectively meet these challenges and that the implementation of the actions that we have designed and adopted will be on schedule during the next few years.

In closing, I am pleased to give special recognition to our Executive Secretary, Al Tholen. The accomplishments of the NCWM in the past few years are a direct result of his ability to plan and organize the activities of the NCWM. Al, would you please come forward. I am pleased to present this plaque which bears the following statement:

"Albert D. Tholen
In appreciation of
Outstanding Service to the
National Conference on Weights and Measures
69th Annual Meeting
July 28 - August 3, 1984

Sam Hindsman
Chairman"

FUTURE STOCK TO AVOID FUTURE SHOCK

Dr. Ernest Ambler
Director, National Bureau of Standards

It is a pleasure for me to speak again at this annual meeting of the NCWM. It is particularly gratifying this year, as indeed it has been on two previous occasions. The main reason is that together, the National Bureau of Standards and the National Conference on Weights and Measures have made significant progress in the new programs launched three years ago.

Through commitment and hard work, we are seeing results in five major areas:

- Strengthening of the State laboratories,
- Updating of handbooks
- Supporting the Conference,
- Establishing the National Type Evaluation Program, and
- Drafting several modules of the training program.

I feel so confident of the quality of our progress that I do not intend to say much about these matters this year. The results speak for themselves. I would like to mention a couple of loose ends that need to be tied.

These "loose ends" are the responsibility of members of this conference and involve actions needed to insure the reality of the NTEP, and reduce the complexity of device control.

Before the NTEP can function in fact, the States need to adopt the "Uniform Regulation for National Type Evaluation" in order to establish the legal basis for the program and reciprocity among the States. Several States have either adopted or are in the process of adopting the regulation.

However, the majority of States have not yet initiated action toward adoption. I hope, after this Conference, when they return home, the members of those States will be convinced of the importance to initiate and pursue vigorous action towards adopting this "Uniform Regulation for National Type Evaluation."

The other "loose end" that needs attention will greatly simplify the job for the field inspector in testing devices. I am referring to the new tolerance structure proposed for inclusion in handbook 44, which should be adopted by the conference at this meeting.

With those two important matters taken care of, I want to restate that we feel that things have gone well, and I expect that the rest of the pieces will "fall into place" on schedule.

A Broader Look at NBS Research

Today, I am going to devote the bulk of my time to describing, by illustrations, other parts of the NBS program. In the first place, I believe much of our work offers potential benefits to the Weights and Measures community. But, just as it is true that we take our support of the weights and measures constituencies seriously, so we also take our responsibilities to our other numerous constituencies. In fact, the statute establishing NBS, known as the organic act, states the following:

> "The Bureau is authorized to exercise its functions for the Government of the United States and for international organizations of which the United States is a member; for governments of friendly countries; for any State or municipal government within the United States; or for any scientific society, educational institution, firm, corporation, or individual within the United States or friendly countries engaged in manufacturing or other pursuits requiring the use of standards or standard measuring instruments".

As you can imagine, providing services to such a broad constituency demands extensive programs and wide-ranging interactions with the people involved.

While many of our constituents know something about NBS in a limited way, few seem to know the full breadth of NBS activities, nor the potential importance of them. Indeed, one of the major criticisms I get is that NBS is one of the most versatile and useful of all the federal laboratories, and few people know much about it. If this is so, then it is very appropriate for me to take this occasion to help rectify this deficiency. I want to bring you up to date on work of immediate use to you as well as related activities that you will, I believe, find of interest, even though they are aimed at broader or other constituencies.

NBS, as a research institution, must plan its program in spite of the great uncertainties associated with "looking ahead". We must conduct research within the framework of our mission; that is, to further the responsibilities assigned to us. The present emphasis is in five areas:

- Support the U.S. economy through services that improve quality control, innovation, and productivity.

- Improve measures for domestic and international trade and confidence in U.S. standards, practices, and technology.

- Promote U.S. science and the use of science through precision measurements and evaluation data.

- Serve as an authoritative reference for other agencies of government -- including State and local officials and distributors, consumers, engineers, and scientists.

- Perform measurement-intensive research for other agencies.

Some Statistics

The following statistics will give you a general idea of the magnitude of our job:

Annual information exchange

1,500 technical publications
2,500 technical talks
600 seminars held
15,000 attendees at NBS workshops and conferences

Annual services

7,000 instruments calibrated
40,000 standard reference materials produced
47,000 technical information inquiries
5,000 standards information inquiries

Personnel exchange

135 industry research associates
250 guest workers
115 foreign guest workers
37 visiting faculty and students
42 postdoctoral research associates
92 cooperative education

DESCRIPTION OF SELECTED NBS RESEARCH PROJECTS

MASS

Earlier, research at NBS in the area of mass has been a key to much of your work in device and package control, as well as in providing calibration services to your local industry. More recent research at NBS holds the promise of advancing the state-of-the-art significantly. the results of this work will provide the basis for advancing technology used in the marketplace by both industry and regulatory officials.

Current research in mass is in three areas:

1. Development and automation of mass comparators;
2. Simplified density measurements (immersed balances);
3. Better precision at the national and international level.

Mass Comparators

Many of you are familiar with the portable load-cell mass comparator developed by NBS. The comparator in Figure 1 is weighing the New York State weight dolly. This is a significant advance in highly precise weighing technology. It is electrical rather than mechanical in principle, and, therefore, can be interconnected with computers.

Computer compatibility (something you've seen in commercial weighing for many years) is in fact a major trend in the area of high-accuracy and high-precision weighing. it provides the basis for:

- Reduction in systematic errors, and

- Great labor savings in the laboratory of the future.

Although a major manufacturer agreed to continue production of a laboratory analytical balance that is the workhorse of many mass laboratories, including your weights and measures labs, laboratory automation is moving rapidly, and I predict that the analytical balance shown in Figure 2 will change dramatically.

The introduction of a simple servo-motor in the balance design as shown in Figure 3 will permit faster weighings and hook-up to computers.

This NBS prototype design of such a balance (See Figure 4) shows "weight exchangers" that place weights on the pan and remove them, eliminating human contact with (and transfer of body heat to) the weights.

Immersed Balance

The immersed balance shown in Figure 5 represents the culmination of several years of work that will permit NBS to actually measure the density of customers' kilogram weights (rather than assume a nominal density).

In fact, immersed weighing has already permitted NBS to offer a new standard reference material — silicon -- as a density standard.

Super Balance

In 1970, NBS developed, designed, and built a balance that is now "the" balance used to intercompare national kilograms at the International Bureau of Weights and Measures (otherwise known as the BIPM) in Paris.

Today, NBS is working on what I might call a "super balance" that will permit special studies such as:

- Mass comparison in a vacuum, and
- The study of the surface of weights themselves.

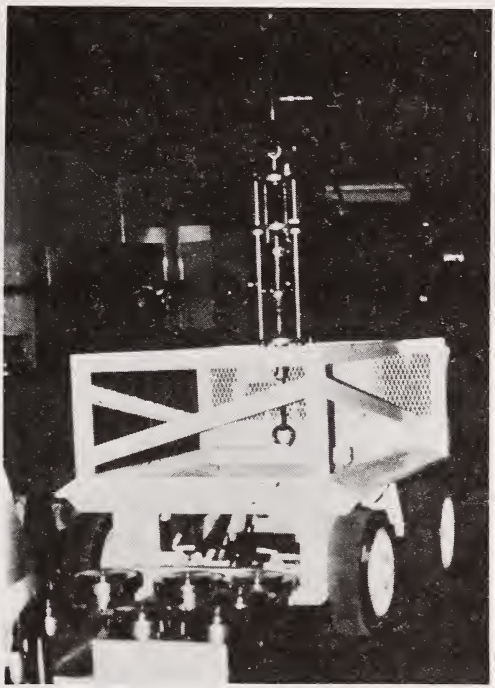


Figure 1 Mass Comparator Weighing New York's Weight Dolly

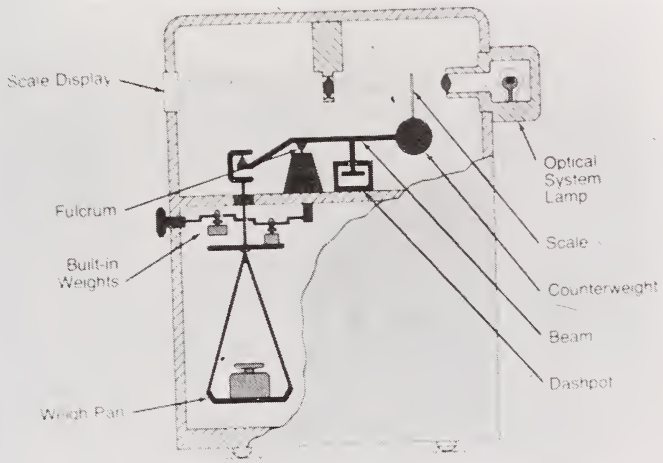


Figure 2 Laboratory Balance

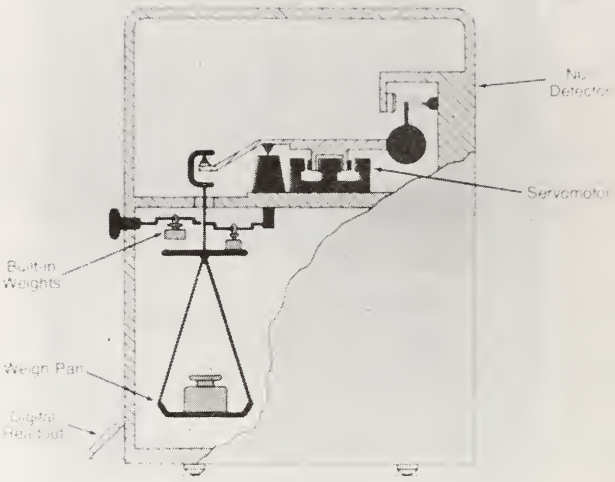


Figure 3 Balance with Servo-Motor

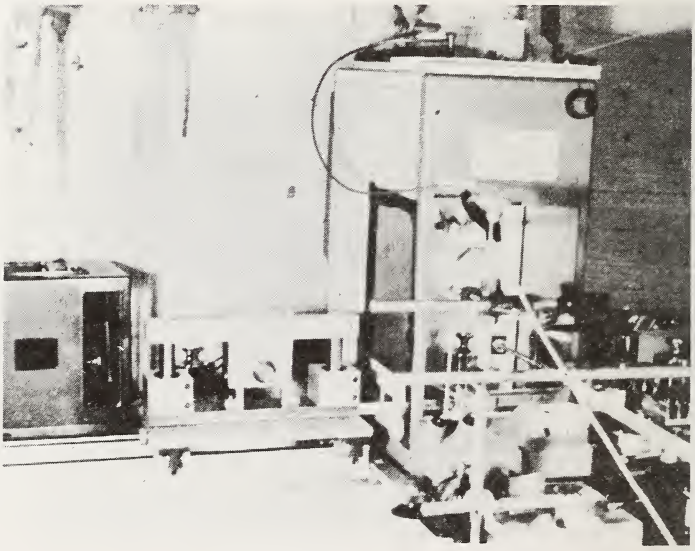


Figure 4 Prototype Design

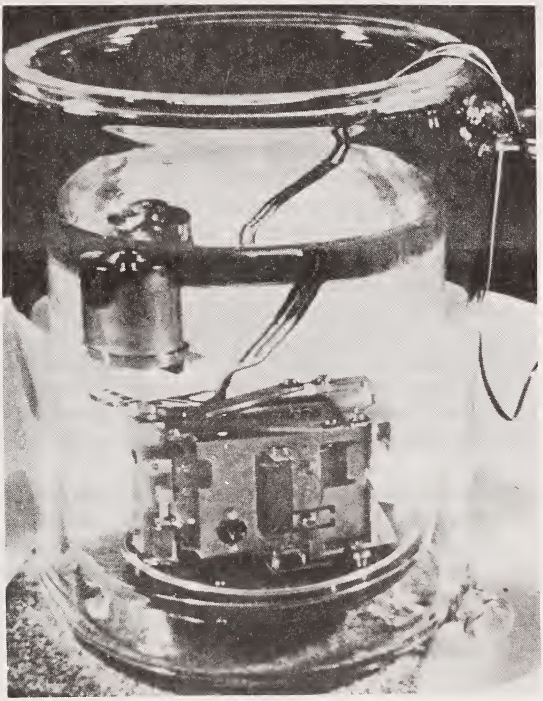


Figure 5 Immersed Balance

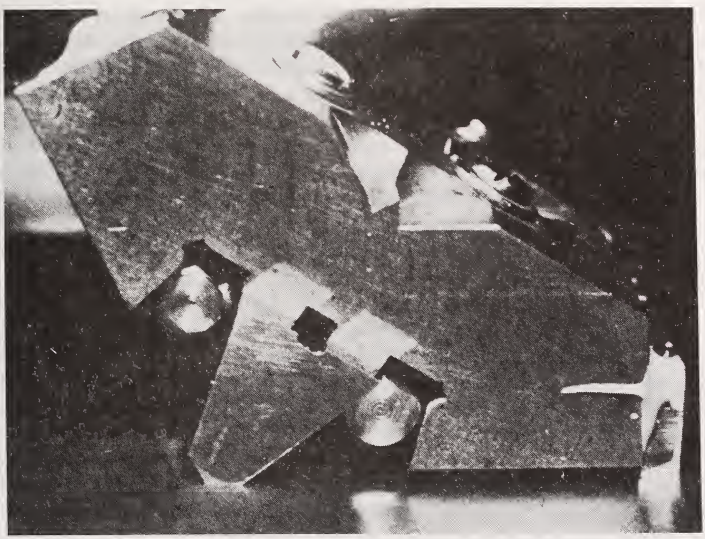


Figure 6 Grinding Knife Edge

KNIFE EDGES

The knife edge is crucial to the performance of this new balance and has required NBS scientists to extend their knowledge of the design and manufacture of knife edges. Figure 6 shows the jig that is used to grind the knife facets to a fine polish, leaving the edge in a condition far closer to "perfect" than we have ever been able to achieve before.

In summary, our research in mass comparators has already brought benefits to the weights and measures system:

1. Work at NBS is now incorporated in manufactured products and used in many State laboratories. Added capabilities will be emerging in the future that will speed up tolerance testing and mass calibration in State and industry laboratories.

2. Development of the new kilogram balance has the potential to upgrade the entire system. It promises to provide the basis for increased accuracy at all levels of the measurement chain, incorporating several new technologies. Furthermore, it may establish added capability in the NTEP and device evaluation areas.

COMPUTER NETWORKS

I mentioned the trend towards connecting a computer to laboratory balances. You and I know computers are becoming part of everything we buy or do — from operating our cars to running our offices. And we know that they can help us to be more efficient in what we do —something that is especially important at a time when we all are under tight budgets. Computers can be used most effectively when they can be connected to each other -- when they can "talk" to each other.

Users of computer systems want to interconnect them to share expensive data bases and computer hardware. with the advent of smaller and smaller computer systems used in laboratories, factories, offices, and homes, the ability to interconnect or "network" becomes even more critical.

Smaller systems and the increasing power they bring to the user are most effective when coupled with large systems that perform calculations and process large amounts of data. Today it is generally difficult and expensive to compose a network of off-the-shelf products from many different vendors, so users seeking new capabilities and competitive purchasing suffer.

This compatibility dilemma extends to the interconnection of mainframes, local networks, long-distances networks, and word processors.

The demand for interconnection — networking — has led to the development of special protocols that define the rules of communication among computer systems. These network protocols enable computers to

communicate with one another. Both users and industry are supporting efforts to develop standard protocols so that interconnections can be made more easily and at reduced cost.

NBS has been a leader in this effort, working with industry and other government agencies as well as international standards organizations. Using our special facilities, we have been instrumental in developing the specifications for network protocols, and the associated measurement methods that ensure the correctness and performance of products that implement those specifications. NBS-developed measurement methods are now used by communications and computer manufacturers in developing their products and services for network users.

Just two weeks ago at the national computer conference in Las Vegas, NBS, Boeing Computer Services, and General Motors successfully completed a series of tests and demonstrations with 13 computer manufacturers and communications companies to implement a set of networking standards that are or will become standards of the ISO (International Organization for Standardization). Many months of testing and cooperative research at NBS preceded the demonstration.

This effort will contribute to your ability as computer users to intermix brands of computers, selectively update parts of your computer hardware, and help you to get different computers — in different States, in different offices — to "talk" to one another.

AUTOMATED FACTORY AND QUALITY CONTROL

We read about factory automation and the related subject of quality control almost every day in the newspapers and magazines. There is a direct relationship of these subjects to weights and measures, as you well know.

Spinoffs in these areas have direct benefits to food processors, packagers, and device manufacturers, and indirect benefits to the weights and measures official and public in general.

There are parallels, for example, in the advances in manufacturing quality control (moving from inspection of final product to real time, on-line, in-process control) to weights and measures package control (moving from inspection of packages at retail, to in-plant, in-process control). Combining modern packaging techniques and package compliance philosophy holds the promise of greatly improving compliance rates and reducing enforcement headaches.

Improved quality control by packagers should ultimately lead to smaller tolerances. Improved quality control by device manufacturers will make the NTEP and inspectors jobs easier. Everyone will benefit.

Post Production Inspection and Process Control

The trend away from traditional product inspection (after production) towards greater use of process control may be seen in some examples taken from projects in the NBS Center for Manufacturing Engineering

(CME). The work involves controlling the dimensions of manufactured metal products made by cutting and machining techniques using computer controls.

The traditional approach to maintaining dimensional compatibility in mechanical manufacturing is through comparison of products with model artifacts, or prototypes, such as gauge blocks, thread gauges, or wire gauges.

This approach, however, is incompatible with new directions in manufacturing technology, particularly with flexible automated manufacturing where:

- Product batches tend to be small
- Production time is short
- The value added is large, and
- Little opportunity exists for product inspection during intermediate steps in the manufacturing process.

We believe that a better approach to control of product dimensions involves process control. An example of on-line, real-time process control is the use of sensors built directly into production machinery for on-line detection of spindle runout in metal turning operations. The sensors detect the unwanted lateral motion, or wobble, of the cutting tool. Computer-controlled settings detect any change in the machine part that could lead to a defective product.

Engineers refer to their sensor-equipped turning machine as a "smart machine." No downtime is required for adjustments. Scrapping the product and reworking defective products are avoided.

Another example at NBS is a milling machine, which is run under computer control, and automated work stations, which combine materials handling via robot with smart machines. We are also working on the problem of quality control in the interface process of robots and smart machines.

These items are some of the building blocks of the NBS flexible automated manufacturing research facility, which is now being put to work even while it is under construction. This is a research effort proving the concept of "making it right the first time."

STANDARD REFERENCE MATERIALS

Another program of the National Bureau of Standards that seeks to anticipate the future has a history as old as that of the National Conference on Weights and Measures.

In 1905, the American Foundrymen's Association asked NBS for assistance with measurements used for quality control during the production of cast iron. The principal objective was to improve control over the amount of carbon and sulfur in iron to meet quality specifications.

NBS responded by producing a set of four gray cast iron standards of different compositions -- and the standard reference materials program was born.

NBS standard reference materials (or SRMs) are of three major types, dealing with:

- o Chemical composition, such as gases used in monitoring pollution
- o Physical properties such as the silicon SRM for density that I mentioned earlier in reviewing NBS's mass measurement program, and
- o Engineering properties, such as a linewidth SRM needed in integrated circuit manufacturing.

In the 79-year history of the program, NBS has certified nearly 2,000 different SRMs with a current catalog offering of 900. About 40,000 SRMs are sold each year to 10,000 customers. Our customers include the steel, chemical, rubber, and plastics industries, nuclear energy and electric power companies, and the semiconductor, electronics, and computer industries.

One automobile manufacturer uses hundreds of different SRMs to control the quality of everything from raw materials to finished product.

The future trends in the standard reference materials program seem clear:

- Increasing complexity of materials, and
- a demand for better reference methods that will measure components or constituents to parts per million or billion accurately and precisely.

These trends are well illustrated by looking at the health industries.

- Four billion clinical tests in hospitals and laboratories cost consumers more than ten billion dollars each year. The old familiar "blood test" can today produce a computer-generated report of at least 30-50 pieces of data, each having significant diagnostic value to our doctors.

NBS has developed over 50 standard reference materials (SRMs) for use in:

- Determining the accuracy of clinical data and methods, as well as for evaluating commercially produced reference materials;
- Calibrating instruments and testing their performance; and

- Comparing clinical data from laboratories using different methods and instruments.

COOPERATIVE EFFORT

A number of standards organizations, trade associations, and other private sector groups have supported research associates at NBS to assist in the certification of SRMs. These organizations include ASTM, the Atomic Industrial Forum, the Motor Vehicle Manufacturers Association, and the College of American Pathologists.

Dating back to the inception of the Bureau in 1901, the NBS research associate program offers individuals from private companies and organizations an opportunity to conduct cooperative work at NBS on projects of mutual interest. Sponsoring organizations provide salaries for the research associates, while NBS makes facilities and staff available to the associates.

This program has proven to be an excellent vehicle for transferring the results of NBS research to those who can make the best use of such information. I would welcome — in fact, urge — you to sponsor a research associate from the weights and measures community, or encourage others to do so, to join with us at NBS on the solutions to a weights and measures problem. I think that such a program would strengthen our already strong ties.

SUMMARY

I have tried to give you some of the more important examples of what we at NBS are doing for you and for some of our other constituencies. You know, the future always brings surprises. What we are attempting to do today is develop the technical stock — the know-how — that you and others will need to counter the future shock that rapidly advancing technology brings. Working together, towards the same goal, we can continue to be prepared for the promise of the future.

THE TOWER OF BABEL

Stanley I. Warshaw
Chief, Office of Product Standards Policy
National Bureau of Standards

It is a great pleasure for me to be here today to address this 69th annual meeting of the National Conference on Weights and Measures, especially since Boston is my native city and it is always nice to come home.

NCMW ACHIEVEMENTS

Since this is my first address to the Conference, I would like to take this opportunity to recognize your continuing accomplishments.

Along with Dr. Ambler, I believe that the Conference has made impressive advances in a number of key areas in the past several years. Your initiative in developing plans for and implementing development of the type evaluation and national training programs as well as a number of administrative reforms is a sign of organizational health and progress. There is a strong sense of planning for the future, rather than being content to live in the past.

Another action by this Conference confirms my belief in your progressive leadership.

In 1983, the Western Weights and Measures Association Committee on Education, Administration, and Consumer Affairs, in its final report to the 26th Annual Technical Conference of the Association, recommended that efforts be made to coordinate information about computerized inspection programs.

The National Conference on Weights and Measures (NCWM) Committee on Education, Administration, and Consumer Affairs, when reviewing this recommendation at its interim meeting in January, agreed that having some data bases at the national level was a good idea. The committee also envisaged the NCWM playing a broader role in helping weights and measures jurisdictions develop data base capabilities for their requirements.

OPSP EXPERIENCE

Based on my personal experience and the data base work in our office, I believe that you can derive significant benefits, using computers in routine State tasks, by developing your own data base capabilities. If done carefully and cooperatively, the results will be rewarding in terms of efficiency and upgrading of your programs.

Before dealing with the specific questions raised by the Western and the National Conferences, I would like to share some of our recent experience in OPSP and our firsthand knowledge of benefits.

NVLAP

Our laboratory accreditation group used the data base capability of our new word processing equipment to create an automated information system that helps them keep track of the status of some 250 laboratories participating in the National Voluntary Laboratory Accreditation Program (NVLAP). The processes of accrediting a lab and periodically re-evaluating it are complex and involve a number of different steps. By using the automated information system, project managers ensure that projects stay on schedule and critical actions are not overlooked.

The laboratory accreditation group also uses data processing equipment to maintain a large mailing list. They can now easily make changes to the list, print out labels to simplify large mailings, and even merge their mailing list with standard letters to automatically print personalized copies of the letters, which saves time and results in a better quality output.

OWM

Many of you are aware of how the National Conference has benefited from OWM's use of data processing systems. About three years ago, OWM began using word processing equipment to produce Handbooks 44 and 130 and the Conference proceedings. As a result, they are now able to issue all three of these documents within a few months after the NCWM annual meeting; whereas, before automation of the data, it had sometimes taken a year to publish the proceedings and six months or more to issue change pages for Handbook 44. The improvement has been dramatic, especially if you consider that making changes to the documents now takes only a few days (all the rest of the time is taken up by reviews and printing).

Just recently, OWM completed an update of the index to the Conference proceedings through last year's meeting. Since this information is now automated, OWM will be able to quickly incorporate this year's proceedings references and publish an up-to-date index this fall. In the future, they will update the index each year.

As OWM explores other capabilities of the word processing system, you can expect additional improvements in productivity and increased services. Only recently, OWM found it could use the telecommunications capability of our equipment to transmit a draft of an NCWM training module to a contractor's microcomputer using telephone lines. I am sure this capability will have other applications within the Conference.

A VISION

Of course, we must move carefully, making sure that what is proposed is worth doing. As you know, it is sometimes easy to get carried away. Speaking of being carried away, Al Tholen came into my office the other day to talk about this subject. He said to me: "Stan, I had the most fantastic dream. I dreamt it was the year 1994 and all the weights and measures jurisdictions in the country were linked together by a vast computer network. At the touch of a key on their computers, they had instant access to the latest information from the NTEP program or the legal case precedent file; in seconds they could send messages to any jurisdiction; they could call up and print out the most up-to-date version of an NCWM training module or examination procedure outline."

"And that's not all. The jurisdictions used their computers to record device inspection data and print out reports that pinpointed problem areas."

"The computers did all of the number crunching for laboratory calibrations and eliminated time-consuming paperwork leaving the weights and measures officials more time to ensure equity in the marketplace. How about that?"

Well, I told Al that I thought he might have had one too many Manhattans before he went to bed, but I was only partially kidding. It is a scary thing about Al; he has had dreams like this before (like NTEP and the training program) and as you know, he is the kind of guy who likes to make dreams come true.

These are some examples of the benefits that OPSP has derived from its data processing system and dreams. Al's visions for the future may be exaggerated, but the point is that we are on the threshold of some pretty exciting and useful possibilities.

STATE SURVEY

As a first step in determining exactly what those possibilities might be, the education committee decided to survey the States and a selected group of county and city jurisdictions to get their views on the subject and learn more about existing data processing systems as applied to the administration of weights and measures programs.

Let me begin with some general results obtained from the survey. What will be potential benefits of using newer data systems, word processing, and computer capabilities across the board at the State level (first), and beyond that, among the States and with the National Bureau of Standards?

The potential benefits identified in the survey are:

Increased Productivity

Faster data retrieval & dissemination
Reduced paperwork & filing
Increased data handling capability

Better Quality Output

Reduced human error
More organized data

Better Management

More informed decision making
More objective performance evaluation
Easier identification of problem areas
More effective planning/resource allocation

As you can see, the respondents broke out these benefits in a little more detail. I think you will agree with me that these are excellent reasons for moving ahead on this project; however, what we are still dealing with is the notion that benefits sought are computer dependent.

Now we can get a little more specific. The responses to another question on the survey suggest a starting point. Groups having automated data files were asked to indicate the types of records they keep on weights and measures activities. The types of records cited most frequently are as follows:

Equipment Inspection Data - 34%
Weights & Measures Device Businesses - 29%
Devices Tested by Inspectors - 27%
Devices Rejected & Approved by Inspectors - 25%
Packaged Goods Inspection Data - 19%
Calibrations Completed - 19%

At the top of the list are records on weighing and measuring equipment inspections. More than a third of the respondents said they keep such records in automated files. Even more significant, out of 23 State respondents who said they had at least some information in automated files, 18 (or 78%) said they keep inspection data in these files.

The second type of records frequently kept in automated systems is closely related to the first. Lists of all businesses having commercial weighing and measuring devices are kept in automated form by 29 percent of the respondents (or 60% of the States having automated files).

Another question concerned possible roles for the NCWM.

The responses to this question indicate that weights and measures jurisdictions at all levels would welcome NCWM involvement in this area.

Over 70 percent of the respondents thought the Conference should play a role in developing standard formats for automated information exchange and standard software systems. Over 50 percent felt the Conference should develop a centralized mail/message processing system. The only area in which there seemed to be a lack of interest was coordination of common hardware acquisition. This may be because the purchasing procedures of some groups prohibit or discourage such arrangements.

If, as the survey results indicate, the NCWM does have a role to play, where should it begin?

NEW CHALLENGE

That is why I chose to present you today with a new challenge:

How can the NCWM and its members use computer age technology to improve the efficiency and effectiveness of weights and measures programs?

I realize that some State and local jurisdictions have been dealing with this questions for a number of years and have purchased equipment and developed extensive data bases in response; however, the majority of weights and measures offices either do not have such equipment or do not use the equipment they have to its fullest potential. I think the time is right to answer the question of how to use data processing technology to our mutual advantage.

LACK OF COMPUTER UNIFORMITY

One real problem is well known by almost everyone in the computer systems business. How do we get different makes of computers to "talk to each other?" There is very little uniformity when it comes to computer equipment (or hardware) used by the jurisdictions responding to the survey.

In the first place, respondents indicated that they have access to equipment with widely different capabilities - from word processors with slow speed and limited information storage to mainframe computers with great speed, vast information storage capabilities, and the power to accommodate a large number of terminals. If you take a closer look within each of these different categories, you find a bewildering variety of manufacturers and models.

This variety may be a tribute to our free enterprise system, but it becomes a nightmare for anyone struggling with the job of developing standard software or linking the devices together in a communications network.

One way to keep the problem from growing completely out of hand might be to focus on the current mix of equipment in the various jurisdictions, and attempt to identify a smaller group of devices as candidates for procurement by those jurisdictions not yet possessing computers. This course of action would be based on the assumption that, if you address the problem now while the majority of weights and measures jurisdictions do not have equipment or computer programs, it may be easier to find a solution; if you wait, the variety will continue to grow and become more unmanageable. I do not recommend this course of action; it has many potential procurement and technical twists that could cause more problems that it might solve. Additionally, I question whether we have the knowledge to do that evaluation and make the suggested choices.

What we now have among the Weights and Measures jurisdictions is a modern day tower of babel with many different machines speaking many different languages. Certainly, the Weights and Measures administrators will find computers more useful in their activities if the current barriers to communicating are reduced. It is a tough problem.

You might say it is a "can of worms." It is a problem that the NCWM would not be able to resolve on its own. If the facts ended here, I might recommend that the Conference put this issue on the back burner.

Help Is On The Way.

Actually, there is good reason to believe that this technical problem, that is how to get different models and makes of computers to "talk with each other," is being addressed by those who have technical expertise to solve it.

For example, as Dr. Ambler told you, NBS is actively involved in efforts to develop computer standards. The demonstration of new "open systems interconnection standards" in which NBS participated this month at the National Computer Conference in Las Vegas showed that equipment of different computer manufacturers could be linked together using the standards. That is an important beginning, but there is still a lot to be done.

Fortunately, the industry is motivated to make progress on this issue. Over 9,000 computer experts, users, and manufacturers attended the conference in Las Vegas. In a July 10 news article reporting on the conference, Washington Post writer Michael Schrage reported "- the talk of more than 710 computer companies showing their hard and soft wares at the annual National Computer Conference is the sound of computers talking to each other."

His article continues, "the trend that has captured much of the attention at the Las Vegas Convention Center is the effort to have computers from different companies communicate with one another. Computers - whether the small personal variety or the giant mainframes - are being viewed as parts of larger networks rather than as standalone devices." The key statement in the article is: "the ability to have computers talk to one another is the hottest item in the show."

A similar technical barrier faces thousands of computer users worldwide. The computer companies and professionals have concluded that this problem needs to be resolved for the good of the users and for the future of the computer industry.

The efforts through the International Organization for Standardization (ISO), mentioned by Dr. Ambler, are gaining a very broad acceptance.

The computer professionals have taken on the technical challenge.

TO DEVISE A PLAN

I want to return to the survey: the committee distributed 71 data processing profile forms and received 59 completed forms for a response rate of 83 percent. During this week, the Education Committee will be reviewing the responses to the survey and drafting recommendations for the conference.

There are many interesting user statistics I could cite in addition to those I have already discussed. However, I want to make the point that, if the NCWM decides to get involved in adopting standard software or formats for data base information exchange, information now exists that can be useful in setting priorities for software and designing formats.

I believe that your leadership has been wise in its timing. Your task should be one of tracking progress by the computer experts, rather than trying to become computer experts.

RECOMMENDATION

I recommend that a special study group of three or four State directors be established to develop a plan for proceeding with this initiative, "to improve the efficiency and effectiveness of weights and measures programs through the use of computer age technology." They would need to assemble the information I have noted, decide how to track technical advances, and describe the degree to which they envision the use of computers over time.

There is considerable information available to you:

- Information from the survey
- Software already developed and used by individual States
- Results of State program reviews
- The administration module being developed under the NCWM grant

I recommend that the subject be explored in two segments.

First uses at the State level that would be beneficial to most the States internally; that is, uses most efficient for State or jurisdictional requirements.

Second, the special study group needs to examine the extent to which data bases can be established and made accessible to states or other interested parties (updates of Handbook 44 or 130; legal precedents; specifications for laboratory or field equipment; laboratory protocols; device testing procedures; researching through the past NCWM proceedings, etc.).

If such a study group is established, NBS can provide the weights and measures program with additional staff time of a systems analyst and computer scientist to provide technical support in its activities.

In summary, the Conference has both a challenge and an opportunity. The challenge is to find common useful applications of data systems and computers at the State level that can be standardized and shared.

The opportunity has already begun to evolve since many States are already developing operating capabilities that hold promise of wide application.

I believe that this is the time to capitalize on this opportunity.

CERTIFICATES OF APPRECIATION

The Conference Chairman presented Certificates of Appreciation to members of the Standing Committees who had completed their tenure on each committee:

Sidney A. Colbrook, Illinois
Specifications and Tolerances Committee

Wesley R. Mossberg, Los Angeles County, California
Laws and Regulations Committee

Charles R. Cavagnaro, Office of Consumer Affairs, The White House
Liaison Committee

Joseph L. Swanson, Alaska
Education, Administration, and Consumer Affairs Committee

HONOR AWARDS PRESENTATIONS

Dr. Ambler presented Honor Awards to members of the Conference who, by attending the 68th Conference in 1983, reached one of the attendance categories for which recognition is made - attendance at 10, 15, 20, 25, and 30 meetings.

10 YEARS

Carroll Brickenkamp,	National Bureau of Standards
Louis D. Draghetti,	Town of Agawam, Massachusetts
Sam F. Hindsman,	State of Arkansas
Fred H. Katterheinrich	Hobart Corporation
Raymond J. Lloyd	Scale Manufacturers Association
Neal D. Peterson	General Mills, Inc.
Joseph Petrelli	Mobile Oil Corporaton
John B. Rabb	State of Alabama

15 YEARS

Frank L. Brugh	Indianapolis, Indianna
David P. Leahy	Kroger Company

20 YEARS

Stephen Hasko	National Bureau of Standards
Daniel I. Offner	St. Louis, Missouri
John L. O'Neill	State of Kansas
William R. Sevier	Princeton, Indianna

At the Interim Meetings of the National Conference held at the National Bureau of Standards January 16-20, 1984, the Executive Committee approved the presenting of Honor Award Certificates during the annual meeting at which the delegate qualified.

Dr. Ambler presented Honor Awards to members of the Conference who, by attending the 69th Annual Meeting this year, reached one of the attendance categories for which recognition is made - attendance at 10, 15, 20, 25, and 30 meetings.

10 YEARS

Sidney Colbrook	State of Illinois
Joseph Jones	Riverside, California
Harvey Lodge	Dunbar Manufacturing Company
Charles Smith	State of South Carolina
Edward Stadolnik	State of Massachusetts (Retired)
Carl A. Taubert	Pillsbury Company
Daryl Tonini	Scale Manufacturers Association

15 YEARS

Sydney Andrews	State of Florida
Donald L. Lynch	Kansas City, Kansas
Joseph Silvestro	Woodbury, New Jersey
Kendrick Simila	State of Oregon
Philip Swanson	Smith Meter Company

20 YEARS

Lacy DeGrange	State of Maryland
Richard Southers	American Petroleum Institute
Robert Walker	State of Indianna
Otto Warnlof	National Bureau of Standards
Eric Vadelund	National Bureau of Standards
Sam Valtri	Philadelphia, Pennsylvania

25 YEARS

George Franks	Bridgeton, New Jersey

30 YEARS

Richard Smith	National Bureau of Standards

STATE METROLOGY LABORATORIES: PERCEPTIONS AND REALITY

Ross J. Andersen
Metrologist, New York State
Bureau of Weights and Measures

Thank you Mr. Chairman, fellow delegates, and honored guests. It has been a number of years since a State metrologist addressed this body. Since then the Weights and Measures laboratories have seen some changes, but people's perceptions of the laboratories have remained much the same. The laboratories are mystical places where only the most precise measurements are made. Metrologists are perfectionists or to some, nit-pickers, and always out of touch with the "real world". It is a shame that these perceptions persist because metrologists are important members of the Weights and Measures team and we all work toward the same goals.

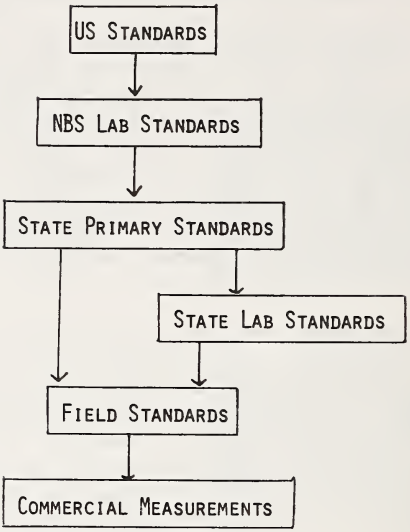
In the next few minutes I will talk about what is really happening in State metrology laboratories. What is the role of the laboratory and how does it fit in with the rest of our Weights and Measures system? What are the capabilities and limitations of our laboratories? I will also review the Regional Measurement Assurance Programs (MAP's), how they work, and their benefits not only to the metrologist but also to our Weights and Measurements Programs. I hope to encourage your support for Regional Measurement Assurance Programs involving every State metrologist in this country.

To start, it is helpful to take a step back and put the laboratories in perspective. The purpose of Weights and Measures is to assure the accuracy of commercial measurements, in the form of weighing or measuring devices or as packaged commodities. This is accomplished through a system of standards which link the commercial measurements to the US standards that define our basic units of measure. This system is called the standard hierachy. (See Figure at top of next page.) In the US, the hierarchy is shown at the top of the next page. Beginning at the commercial measurement, the field inspector verifies its accuracy against his field standards. The field standards are verified by the State metrologist, against either the State primary standards or the State laboratory standards. State laboratory standards are in turn verified against the State primary standards. The State primary standards were calibrated at the National Bureau of Standards, against the NBS laboratory standards, before they were given to the States. The NBS standards are of course maintained accurate relative to Kilogram 20 or the appropriate US standards.

While the role of NBS is greatly simplified in this diagram, the functions of the State laboratory and the field program are accurately portrayed. For me there are two important features of the hierarchy.

First, this system of standards is essentially a chain - - a chain that is only as strong as its weakest link. If commercial measurements are to be accurate and uniform across this country, then each group, from the

THE STANDARDS HIERARCHY



technicians at NBS, to the State metrologists, to the field inspectors, must be doing their part. To ascribe more importance to one group over another is to miss this interdependence.

The second feature is the decrease in accuracy as you move down the hierarchy, away from the US Standards. This presents for the laboratory metrologist some problems that make his job unique. Let me expand on this by contrasting the field inspector with the laboratory metrologist.

A field inspector is equipped with field standards certified by the laboratory metrologist. His main concern is the accuracy of the commercial measurement. Beyond caring for his standards and using them properly, the field inspector does not have to concern himself with the accuracy of his standards. Unlike the field inspector, the State metrologist must question the accuracy of his standards. First of all, he calibrates his own laboratory standards so he must be confident of their accuracy. Secondly, since the State primary standards are no longer recertified at NBS on a 10-year cycle, the State metrologist is also responsible for maintaining their accuracy and traceability to NBS.

The field inspector has an advantage over the laboratory metrologist in another respect; he has the Notes sections of Handbook 44. Together with standard EPO's, the Notes section tells what tests should be applied to a given device. A laboratory metrologist has no such aid. He is equipped with a large assortment of test procedures to choose from, but which procedure and also which standard to use are left up to him. I do not think it is possible to write a manual that would make these choices for the laboratory metrologist. In fact, it is this choice that makes the job interesting to me, and also makes relevance and significance much more important than perfection. The question then is, how is the metrologist equipped to make these choices?

Before a metrologist is certified, he needs proper training which is provided by the Office of Weights and Measures. This begins with a two-week basic course conducted at the OWM training facility in Gaithersburg. The training combines classroom and practical, hands-on instruction on the proper use of the State standards and measuring devices, and on the procedures used to tolerance test field standards. The training also covers the principles of accurate measurement so the metrologist is prepared to make those choices I spoke of.

When basic training is completed, the metrologist returns home to begin the first ten exercises in the Laboratory Auditing Program (LAP). These give him an opportunity to familiarize himself with his equipment and provide estimates of their accuracy. From here, the LAP program jumps to advanced measurement assurance programs and control charts. These provide estimates of the random measurement uncertainty for those measurement procedures used in the calibration of high precision weights. Only recently has an exercise been added to look at the testing of glass volumetric field standards.

The advanced measurement areas are covered in the Regional Training Seminars that are held regionally at one of the State laboratories. This is a classroom course that deals primarily in the area of calibrations. The measurement areas of mass, volume, and length are all covered with special attention to the considerations and corrections required to make high accuracy measurements. The homework assignment to complete the course gives the metrologist the opportunity to practice all the various calculations and actually use some of the new procedures he has learned. I must commend the staff at OWM for the overall quality of this training program. Over the last five years the program has improved greatly with the development of a solid curriculum and the preparation of lesson plans and training handbooks.

A metrologist is also equipped with standards and precision measuring devices. These come primarily from the State Standards Program. It is now over 15 years since the first State received its standards, and it is easy to look back at that program with 20/20 hindsight. There were mistakes, of course, such as the length bench and the 30-kilogram mass comparator, which only see use in a small number of labs. However, it is also easy to see that the bulk of the equipment is still

state-of-the-art, and is still working out very well in light of the basic premises of the program. If you consider that the idea was to support the State Weights and Measures Programs first and then provide calibrations to industry, you can see that the program has been a great success.

One problem that I see is the lack of information on the capabilities and limitations of our laboratories. Because the standards and devices are state-of-the-art, people assume that they can do the job easily. A comparison of the capabilities at 10 pounds and 5 gallons will illustrate what I mean. The 10-pound primary standard has an accuracy of around one part per million, or roughly 0.0001%. From there the metrologist calibrates his lab standards to an accuracy of about 0.001%. It is important to note that in the steps leading to the field standard, the standards are all ten times more accurate than the weight being calibrated.

The 5-gallon primary standard is a slicker plate measure which is only accurate to 0.04%, quite a contrast to the mass standard. Because of this relatively low accuracy we cannot incorporate a lab standard in the chain of standards. In fact, great care must be exercised by the metrologist to meet the 0.06% accuracy (3/4 cubic inch) required in the field standard. In this case the standard is only one and one-half times more accurate than the object under test.

My point here is, while a simple tolerance test can be used to certify a field test weight, it takes what amounts to a calibration to certify a test measure. This has even greater ramifications when you look at large volumetric standards. The metrologist begins with a 10-gallon slicker to calibrate his 100-gallon lab measure. The accuracy limitation of 0.05% in the field standard requires each step to be a calibration. This converts to about a 9-cubic inch accuracy at 100 gallons, and about 100 cubic inches at 1000 gallons. There is no room for allowance of a tolerance in this system.

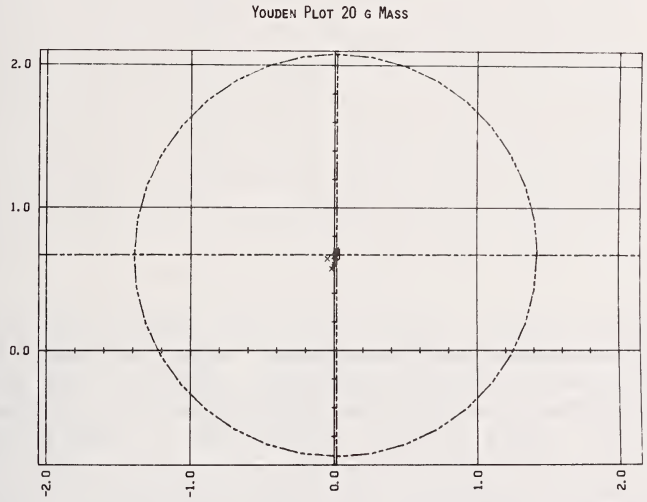
The same type of comparison can be made with the precision balances; in particular, those used to test small weights. The 100-gram balance was the most precise balance provided with the State standards. It has a resolution of 0.01 milligram. This balance has a basic accuracy of 0.10 milligram which was fine for testing field weights under the original Handbook 105-1, where the smallest tolerance was one milligram. However, in 1976 the Office of Weights and Measures published a revised tolerance chart. This action has made a microbalance a necessity for testing weights under 100 milligrams. The 0.015-milligram basic accuracy of the microbalance allows the metrologist to make valid decisions regarding conformance of the small weights with the new tolerances. I can also point out that calibration of these small weights for industry is possible only with the microbalance.

What we have is an excellent training program and quality standards and devices, but there are gaps. When I look at our laboratories I see fifty separate islands, all isolated from each other. The metrologists operate essentially in a vacuum, with each metrologist doing his own thing. What's more, we have had these standards for upwards of 15 years and we

still do not know that much about their accuracy. What is missing is some realistic evaluation and some constructive feedback. It may not have been expressed this way when the MAP's were set up, but this is what they were designed to provide.

The goals of the Regional Measurement Assurance Programs are to promote accurate measurement at the State laboratories and to share experience and knowledge among metrologists. The idea is to break the metrologist out of his vacuum and bring the laboratories together as a system rather than as separate islands. The means to this end is a program of evaluation and continuing training.

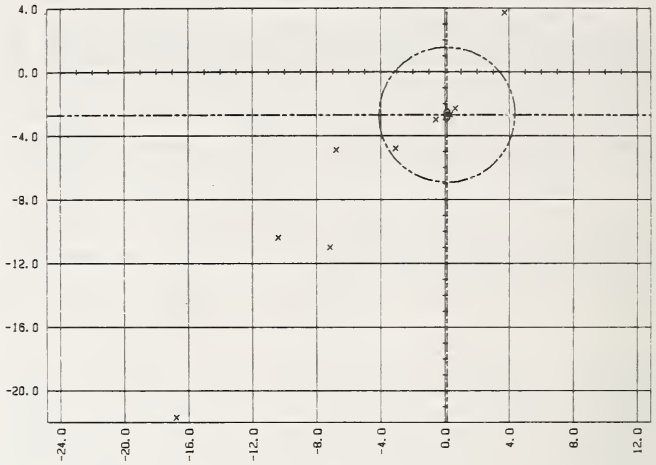
When you speak about MAP's people immediately think of round robin testing. While the round robins are a major part of the MAP activities, it must be stressed that they are only tools for evaluation and that they provide limited information. Let us look at the results of two round robin experiments. This graph is called a Youden Plot and is a graphic



means for displaying the results of interlaboratory tests. The objects being measured are two 20-gram mass standards. The procedure is the direct reading procedure used by most State laboratories to tolerance test field weights. Each laboratory measures and reports values for the two objects, X and Y. The two results are plotted on the graph as a point (X, Y) in cartesian coordinates. The focal point of the graph is the point defined by the accepted values of X and Y, in this case based on an NBS calibration. Laboratories making accurate measurements will have points falling close to this focal point. To give the graph some perspective a circle is drawn with its center at the focal point to define an area of

measurements accurate within 25% of the applied tolerance. This suitability criterion is taken from the Fundamental Considerations sections of Handbook 44. As you can see, all seven laboratories were making measurements that were within the circle and were accurate enough for their intended purpose. This plot shows how things should look.

This plot is based on measurements of two, 1-quart glass measuring flasks. The procedure is the volume transfer procedure used by most State



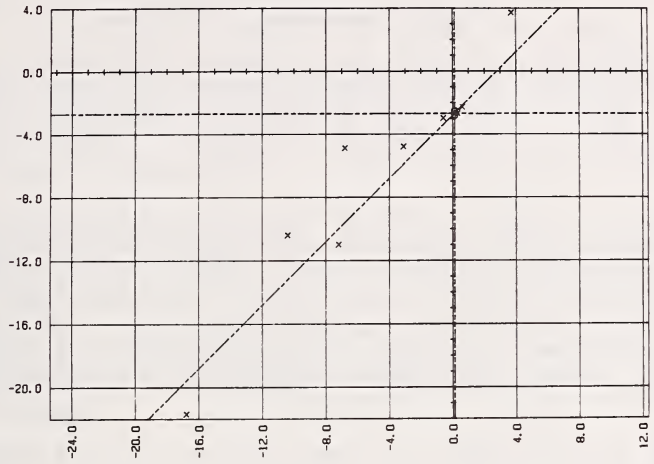
laboratories to tolerance test these flasks. Again the circle defined an area of measurements that are accurate within 25% of the applied tolerance. A problem now becomes readily apparent. Only four of the laboratories were making accurate measurements. In fact, the laboratory whose point is in the lower left corner was in error by more than the tolerance applied to the glass flask. Other than size, there is no real difference between a glass flask and a metal test measure. Consider how these large errors in field standards can affect your enforcement program.

Errors come from one of three sources, human, random, and systematic. Human errors are those blunders that plague all human endeavors. All metrologists make human errors; the trick is to discover them before they leave your laboratory. In general we all build in a degree of redundancy to catch these errors.

The second type of error, random error, is really not an error at all. Random errors are a fact of nature that cannot be eliminated. Whenever you measure something finely enough you will always get a scatter of results. These random errors are predictable, and so we can control their

effects. As it turns out, the round robin results have shown that metrologists do not appear to have a problem with either of these two kinds of errors. Our nemesis turns out to be the third type of error, systematic error.

This is the plot I just showed you with addition of a 45-degree line passing through the focal point. Random and human errors show up on



these plots as deviations away from this line. As you can see the points tend to spread out along the line. This pattern is indicative of systematic error or bias. Laboratories can repeat their measurements very closely. The problem is that they are also repeating their systematic errors.

There are two basic sources of systematic error, error in the standard and differences in measurements procedures. It should be obvious that any error in a standard is directly transferred to an object calibrated against it. The second source is much more subtle. Significant deviations from standard measurement procedures can easily cause large systematic errors. We are relatively certain that this is the cause of the large errors in the glass flask experiments. It is vital that this source of error be eliminated before you can assess errors from the first source, the standards.

I must stress again that the round robins are only an evaluational tool, and that the real benefit of MAP's is the continuing education. A metrologist operating in a vacuum will never see his systematic errors because his standard is himself. We must provide the metrologist with the means to evaluate himself relative to other laboratories and ultimately the National Bureau of Standards.

The Regional Measurement Assurance Programs have employed a number of approaches to the continuing education goals. For example, wherever possible the MAP's have tried to hold meetings at different laboratories, both State and industry. Touring another lab and hearing the metrologist describe his capabilities is very informative. Seeing how others cope with limitations of equipment and surroundings can often give alternative solutions to problems we have in our own labs.

Another approach we employ is technical demonstrations. Those who observe critically obtain a very personal evaluation by observing differences between themselves and the demonstrator. This should not be construed in the negative, as a competition, but rather as a positive learning experience. I think it is important that every metrologist participate as both instructor and as student.

Along the same lines, we use technical papers as educational tools. For each meeting of the Northeastern Measurement Assurance Program, we ask that metrologists prepare a paper. These papers do not have to be prize-winning essays, just a description of some procedure, policy, or technique that the metrologist uses to do his job. It is educational in that he must research and think through his subject in the preparation of his paper. He must then present his paper to the group, not so much to read it but to highlight the important points.

The best of these papers are being assembled into a technical manual. This manual is intended to be a reference source for the metrologist to turn to when he has a question or needs some technical information. One of our goals is to share these papers among the other MAP's. Some of them are also using this tool. We hope that this will be the beginning of many cooperative efforts among the active MAP's.

Logistically, the MAP's are still evolving. The present trend is to hold longer sessions of four to five days about once a year. A major effort is being made to combine these sessions with formalized training from the Office of Weights and Measures. Allowing for travel, a one-week seminar would provide for four full days of training.

The first day might be devoted to the tour of the host laboratory and to the technical demonstrations. These always lead to interesting questions and to open and lively discussions. The second day would center around the technical papers and the discussion of the round robin experiments. Here again the feedback is very informal and leads to a good exchange of ideas.

The final two days would be coordinated and conducted by the Office of Weights and Measures. The subject areas will come from the Basic and Regional Training curriculums or the LAP program with the emphasis on those measurements used in the round robin experiments.

We now have five MAP's set up in the northeast, southeast, midwest, southwest, and west. The trick now is to get States to participate. The MAP's offer a great potential to bring State labs together in that cohesive system I spoke of. Indeed I hope that full participation in a Regional Measurement Assurance Program would become a requirement for certification of a State laboratory. What mechanism could provide better ways to evaluate metrologists and laboratories? The Office of Weights and Measures will have regular contact with the metrologist to evaluate his knowledge and abilities, and the round robins will provide a true measure of a laboratory's measurement capability.

We have a commitment to a national training program involving all the parts of our Weights and Measures team. Let us not forget that the metrologist is an important part of that team. In the regional measurement assurance programs we have the vehicle to strengthen that part of Weights and Measures.

In closing let me address the State directors. Speaking for my fellow metrologists, I would ask two things. I ask first for your support of our participation in the measurement assurance programs. More important, however, I ask you to get involved. Find out how your laboratory is doing and where it could use improvement. I know that you will find the MAP's to be well worth your support, and as a result you will get a better metrologist, a better laboratory program, and a better Weights and Measures program.

COMMITTEE REPORTS

REPORT OF THE EXECUTIVE COMMITTEE

Sam F. Hindsman, Chairman
Director, Arkansas Bureau of Standards

REFERENCE KEY

100 INTRODUCTION

The Executive Committee submitted its report to the 69th Annual Meeting of the National Conference on Weights and Measures. The report consisted of a tentative report prepared as a result of the Interim Meeting held during the week of January 16, 1984 as amended by the final report developed as a result of the Annual Meeting.

After its component items were adopted, this report was adopted in its entirety by the membership (State Representatives 44 Yea; 0 Nay: Delegates 60 Yea; 0 Nay).

Voting Items

Formal action was required and taken by the membership on the following items:

101-1 Constitution and Bylaws
101-5 Committee Appointments
105-1 Executive Committee Sitting as the Board of Governors

Informational Items

The following items are informational and required no formal action by the membership.

100-1 Actions of the Conference Chairman
100-2 Task Force on Motor Fuels
101-2 Incorporation
101-3 Administrative Policies and Procedures
101-4 Standing Committee Procedures and Reports
101-6 NCWM/Regional Association Relationships
101-7 Nominating Committee
101-8 Honor Awards
101-9 Proceedings Index
101-10 Issues File
101-11 Electronic Mail

Informational Items (continued)

101-12	Missions of Weights and Measures Jurisdictions
102-1	National Training Program
103-1	OIML Status Report
104-1	Membership Incentives
106-1	Financial Report
106-2	Budget Review
107-1	The 69th Annual Meeting
107-2	The 70th Annual Meeting
107-3	Future Meeting Locations
108-1	NCWM Logo

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DETAILS OF VOTING ITEMS

101-1 CONSTITUTION AND BYLAWS

The National Conference on Weights and Measures is currently governed by "The National Conference on Weights and Measures -Its Organization, Procedures, and Membership Plan". A draft Constitution and Bylaws, which consists essentially of the material now contained in the current "Plan", modified to reflect the organizational and procedural changes adopted by the membership at its 68th Annual Meeting, was prepared by the Organization and Procedures Subcommittee, reviewed and modified by the Executive Committee, and printed in the Announcement Book for the 69th Annual Meeting.

The resultant draft (Appendix A) was amended by the Committee on the basis of comments received and discussed at the Annual Meeting.

The amended draft was adopted by the membership (State Representatives 42 Yea; 0 Nay: Delegates 61 Yea; 0 Nay).

101-5 COMMITTEE APPOINTMENTS

The establishment of the position of Chairman-Elect suggested the consideration of changes in the policies by which appointments could be made to the standing and annual committees.

Current Procedure

The present custom is for the Conference Chairman (incumbent) to appoint the new members to the standing committees at the general session on Tuesday of the week of the Annual Meeting; this in effect results in the "outgoing" Chairman appointing committee members who will serve under succeeding Chairmen. One could conclude that this approach has the virtue that the incumbent has a better knowledge of the capabilities of the candidates because of his year in office.

On the other hand, the appointments to the annual committees and to the special committees and task forces are made by the "incoming" chairman subsequent to the adjournment of the Annual Meeting (usually a month or two after the Annual Meeting) with at least two negative features: (1) the appointees do not have the benefit of public recognition by their peers, and (2) delay in appointment slows down the work of particular committees.

Proposal

With the new organizational feature of a Chairman-elect, that individual has a year to consider appointments to committees (standing, annual, or special). The incoming Chairman could be prepared to announce all of his/her appointments at the General Session on Thursday of the week of the Annual Meeting. This approach has the advantage of affording public recognition to the appointees, not only to the standing committees, but also to the annual committees, special committees, and task forces.

The Executive Committee recommended that the procedure be changed so that the Chairman-Elect will appoint the new members to the Standing Committees and to the Annual Committees just subsequent to his succession to the Office of Chairman during the week of the Annual Meeting.

The item was adopted by the membership (State Representatives 42 Yea; 0 Nay: Delegates 60 Yea; 0 Nay).

105-1 EXECUTIVE COMMITTEE SITTING AS THE BOARD OF GOVERNORS

The Executive Committee is the Board of Governors for the National Type Evaluation Program(NTEP). Concurrent with that change adopted by the NCWM at its 68th Annual Meeting, the Task Force on National Type Evaluation was discontinued and the responsibilities for the continued planning and establishment of the NTEP transferred to the Executive Committee when it functions as the Board of Governors of the NTEP.

Items discussed and dealt with included: (1) review of the current developmental status of the Handbook on Criteria and Procedures: (2) the criteria and procedures for laboratory authorization and, (3) the draft and further development of proposed administrative procedures including definitions of "modifications", "changes", "term of approval", "validity", "withdrawal of Certificate of Conformance".

(1) Test Criteria. The draft Handbook was originally adopted by the NCWM at its 67th Annual Meeting; additional material added to the handbook was adopted by the NCWM at its 68th Annual Meeting. The two sets of material are being integrated through word processing into a single volume. The goal is to complete the NBS review by the end of August, 1984(see the report of the Committee on Specifications and Tolerances for details).Note: Copies of the integrated draft are available for inspection.

(2) Laboratory Authorization. Part 2 of the draft NBS Handbook for State laboratory certification has been completed following the plan approved by the membership at the 68th Annual Meeting. It is currently undergoing review within the Office of Product Standards Policy (OPSP) prior to submission for NBS editorial review. The goal is to complete the NBS editorial review by the end of August, 1984. Note: Copies of the draft are available for inspection.

(3) Administrative Policy and Procedures. Draft policy and procedures for the administration of the NTEP were reviewed and revised by the NCWM Executive Committee prior to the Annual Meeting. At the Annual Meeting, the Committee reviewed commemts received prior to the meeting and presented during the Meeting. As a result of these comments and discussions, the Committee revised the draft and presented it for adoption as part of this item. The revised document is contained in Appendix B.

(4) Certificate of Conformance. The Executive Committee reviewed proposed formats for the Certificate of Conformance including recommended accompanying information. The Executive Secretary presented a mockup for review and for discussion by the Executive Committee. As the format reaches final design, it will be sent to the Board of Governors for review and modification as necessary prior to use.

The current draft is contained in Appendix C.

The goal of the NCWM is to initiate the operation of the National Type Evaluation Program in October, 1984.

The Executive Committee recommended: (1) the endorsement of the Laboratory Authorization Procedures and the Certificate of Conformance and, (2) the adoption of the Administrative Policies and Procedures.

The item was adopted by the membership (State Representatives 44 Yea; 0 Nay: Delegates 61 Yea; 0 Nay).

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DETAILS OF INFORMATIONAL ITEMS

100-1* IMPLEMENTATION OF ORGANIZATIONAL AND PROCEDURAL CHANGES, APPOINTMENTS, STATUS OF TASK FORCES AND SPECIAL COMMITTEES

The following items, completed prior to the Interim Meetings, were reported by the Chairman:

1. The National Type Evaluation Program (NTEP). - The Task Force on National Type Evaluation has been reorganized in conformance with the plan adopted by the NCWM.

A. The new Executive Committee is serving as the Board of Governors for the National Type Evaluation Program (NTEP). Ezio Delfino, Chairman-Elect, was assigned the responsibility to serve as the Chairman of the Board of Governors because of his long tenure as the Chairman of the Task Force on National Type Evaluation. The NTEP will be administered by the Executive Secretary.

B. The industry members of the Technical Committee for NTEP (which reports to the S & T Committee) are also serving as the Advisory Committee to the Board of Governors of NTEP. The Advisory Committee will represent the interests of industry to the NTEP.

2. Chairman-Elect. - Ezio Delfino has been involved in, or informed of, all Conference activities.

3. Budget Review Committee. - This Committee was appointed within 60 days of the Annual Meeting as required and is made up of the following persons:

Sam Hindsman, Chairman (ex officio), Arkansas
Charles Greene, New Mexico
Jim Lyles, Virginia
Bill Perry, Cardinal Scale Co.
Allan Nelson, ex officio, Connecticut
Al Tholen, ex officio, National Bureau of Standards

4. Budget. - Two tentative budgets (an NCWM operating budget and a Grant Budget) were prepared by the Executive Secretary and sent to the Budget Review Committee within the required 120 days following the Annual Meeting, and were reviewed by that Committee prior to the Interim Meetings.

5. An Organization and Procedures Subcommittee of the Executive Committee was established with the following members:

Ed Heffron, Chairman, Michigan
Norman Ross, Omaha, NE
Eugene Keeley, Delaware
Sidney Andrews, Parliamentarian, Florida

6. A Membership Subcommittee of the Executive Committee was established with the following members:

James Blackwood, Chairman, Dallas, TX
Robert Walker, Indiana
Lyman Holloway, Idaho

7. Leo Letey (Colorado) was appointed Chairman of the Advisory Committee on Grain Moisture Measurement, succeeding Sam F. Hindsman (Arkansas).

8. The Task Force on Package Control was assigned to the Liaison Committee because of the importance of coordinating its activities with other Federal agencies especially the USDA and the FDA.

9. The continuation of the Task Force on Belt Conveyor Scales was confirmed with Fred Gerk (New Mexico) as Chairman. Richard Hurley (Fairbanks) was appointed to the Task Force.

10. The slate of officers for the Associate Membership Committee was confirmed as follows:

Anthony Ladd, Chairman, A.J. Ladd Systems
Art Kroll, Vice Chairman, Gilbarco Inc.
Neal Peterson, Treasurer, General Mills
Richard Fonger, Bennett Pump Co.
Chip Kloos, Hunt Wesson
Walter Kupper, Mettler Instrument
Harvey Lodge, Dunbar Manufacturing Co.
Andrew Moore, Grocery Manufacturers of America
Robert Nelson, General Mills
Ray Wells, Seraphin Test Measure Co.

11. The Chairman attended the following meetings representing the NCWM:

The Western Weights and Measures Association meeting in Hawaii in August.

The Southern Weights and Measures Association meeting in Nashville in October.

The meeting of the Scale Manufacturers Association in Dallas in November.

A meeting held at S.M.A. headquarters in December to discuss the new scale code.

12. Auditing Committee - The following members were appointed to the Auditing Committee within 60 days of the Annual Meeting as required by the procedures adopted by the membership at the last meeting:

Gaylon Kennedy, Maine
John Berquist, Minnesota
William Sullivan, Seattle, WA

13. Status of Task Forces and Special Committees. In most cases, the Chairman had taken action to continue the special committees and task forces and had appointed necessary new members.

100-2* TASK FORCE ON MOTOR FUELS

Because of the introduction of gasoline-alcohol blends and the action of the NCWM at its 68th Annual Meeting calling for labeling, many State directors have voiced interest in the establishment of motor fuel quality standards and monitoring procedures and facilities.

The Chairman, in response to the voiced need, established a Task Force on Motor Fuels. Its mission is to assemble information and resources that are available from standards development organizations, professional organizations, private companies, and trade associations and to provide this information to interested State regulatory officials. The Task Force will be compiling information on testing equipment, training programs, inspection procedures, and the current status of State motor fuel laws and regulations. By identifying information and activity in this area, the Task Force will be able to provide a basis for uniformity in approach among the States, and identify unfulfilled needs in terms of information, resources, and knowledge.

The following members were appointed to the Task Force:

N. David Smith, North Carolina, Chairman
Sidney Andrews, Florida
Barbara Bloch, California
David Karlish, Arkansas
George Mattimoe, Hawaii
Frank Nagele, Michigan
Curtis Williams, Georgia

101-2* INCORPORATION

The pros and cons of incorporation of the NCWM were discussed. Allan Farrar, Legal Advisor to the Director of NBS, presented his views and answered questions raised. It appears that there are not any compelling reasons to incorporate. Lack of incorporation has not impeded the ability of the NCWM to function successfully since 1905.

It was also concluded that there is very little chance of personal or collective liability risks to the members; the Executive Secretary will continue to monitor the legal climate and explore the cost of insurance to cover the low possibility of risk.

101-3* ADMINISTRATIVE POLICIES AND PROCEDURES

The Executive Secretary compiled and put into a standard format all existing NCWM administrative policies and procedures previously adopted by the membership that were reported in the reports on the proceedings of the Annual Meetings. This compilation was reviewed by the Organization and Procedures Subcommittee and was the basis for discussion of recommended formats and final contents for an NCWM standard reference.

As a result of the review, the Executive Committee approved the proposed format and instructed the Executive Secretary to proceed with the task of deciding which of the policies and procedures should be transformed into the approved format and then to compile those into a draft NCWM "Policy and Administrative Manual" for review at the Interim Meetings in January, 1985.

101-4* STANDING COMMITTEE PROCEDURES AND REPORTS

Procedures. Various proposals have been made with the purpose of alleviating a perceived difficulty of the NCWM to comfortably attend to all of the business included in the Committee agendas within the confines of one week. Such proposals include segmenting NCWM business; for example, a suggestion had been made to handle L&R and S&T issues on a two-year schedule so that both Committee agendas would not be on the program in the same year. Another recommendation was made to consider scheduling Conference business on an 18-month cycle, as well as shifting the dates of the Conference meetings. The use of more automated voting procedures was also being investigated.

The Executive Committee, upon reviewing the various recommendations, decided against making any changes in the modus operandi at this time. It concluded that the introduction of the changes made at the 68th Annual Meeting resulted in removing this concern as an issue. The grouping of items into the three categories (Information, Consent Calendar, and Individual Voting items) worked smoothly and effectively; in fact, most of the Committee voting sessions were completed ahead of schedule.

Committee Reports. Under the current procedures of the Conference, the results of the interim committee meetings in January are reported in the form of standing committee "Interim Reports" (these reports are printed in the Announcement Book for the Annual Meeting). Following discussions of these reports at the Annual Meeting, the committees prepare "Final Reports".

This process was reviewed in the interest of finding ways to improve the handling of Committee business. The Executive Committee believes that any change in the present system would result in foreclosing the opportunity of the larger number of interested persons normally in attendance at the Annual Meeting to discuss the issues prior to the establishment of final positions by the Standing Committees. Therefore the Executive Committee decided to retain the current procedures.

101-6* NCWM/REGIONAL ASSOCIATION RELATIONSHIPS

Coordination. The Executive Committee explored the desirability and mechanisms for coordination of the activities among the four Regional Associations and between the NCWM and the four Regional Associations. Beginning in 1983, reports of the National Conference committees were provided to the Regional Associations by the NCWM Executive Secretary for use by their committees at the annual meetings of the Regionals.

In some cases, the Regionals sent their committee reports to the NCWM Executive Secretary for consideration by the NCWM committees and distribution to the other Regional Associations.

In anticipation of an agreement that the business of the regionals and of the NCWM should be coordinated, Mr. Richard Smith(NBS) has been assigned to establish procedures for the cross-feeding of information. This planning includes the maintenance of records, identifying the issues being addressed collectively, incorporation of the mailing addresses of the Regional Association officers and committee members into the NCWM automated mailing list, and establishment of regular interchange of information for inclusion in the various newsletters printed by the regionals and States.

The Executive Committee indorsed the continuation of the efforts to coordinate the common interests of the NCWM and the Regional Associations.

Realignment of Regional Associations. A suggestion was made that perhaps five Regionals would be an improvement on the the current alignment of four Regional Associations in dealing with common interests, travel restrictions, and management. The Executive Committee assigned this subject to the Organizations and Procedures Subcommittee for exploration through informal discussions with the leadership of the Regional Associations.

101-7* NOMINATING COMMITTEE

The Executive Secretary reported on plans to automate the attendance and activities records of the individual members of the NCWM. These data are used by the Nominating Committee during its deliberations, and serve as the basis for the honor award program. Although work had not begun on this project, the Executive Committee restated its interest in the project.

101-8* HONOR AWARDS

Honor awards for attendance at the Annual Meetings of the NCWM are currently presented to the honorees at the Annual Meeting following the one at which they qualified for the awards.

It is proposed that the awards be presented at the Annual Meeting at which the honorees have qualified. This procedure was instituted this year at the 69th Annual Meeting in July 1984 (Boston). Honor Awards were presented to those who qualified at the 68th Annual Meeting and to those who qualified at the 69th Annual Meeting.

101-9* PROCEEDINGS INDEX

The Executive Secretary reported that the project to update and automate the composite index of the reports on the proceedings of the Annual Meetings of the NCWM is currently underway and is scheduled for completion prior to the Interim Meetings in January, 1985.

101-10* ISSUES FILE

The Executive Secretary reported that work began on establishing a computerized "Issues File". Each issue introduced to or being considered

by one of the NCWM Committees will be identified in accordance with the policy adopted by the Conference at its 66th Annual Meeting (NBS SP 629, "Report of the 66th National Conference on Weights and Measures, 1981", Executive Committee Report, Item 604, Page 248).

Subsequent actions or decisions regarding any given issue will be entered into the file; at any time (e.g., meeting of a Regional Association Committee) the history and status of any issue can be printed and provided for use.

101-11* ELECTRONIC MAIL

The Executive Secretary described the computer capabilities that the Conference now has including word processing and data base management, as well as potential for electronic mail. The computer is compatable with others in the Office of Product Standards Policy and was purchased primarily to provide the capability to produce and maintain current the training modules as they are completed. Electronic mail was discussed including the desire of the Executive Committee to explore the potential benefits of computer to computer communications between the NCWM and the States.

101-12* MISSIONS OF WEIGHTS AND MEASURES JURISDICTIONS

A previously established study group examined the roles and missions of the State and local jurisdictions. As a result of several events that occurred subsequently (increased NBS support to the weights and measures program, demands on the NCWM membership to support the development of new major programs) the decision was made to discontinue the work of the special study group. However, trends in the marketplace continue to cause questions to be raised regarding expanding current or adding new missions for weights and measures programs. The issue dealing with labeling gasoline products, for example, was dealt with at the 68th Annual meeting. Other such areas of concern were discussed, as well as the advisability of reestablishing the original study group.

The Executive Committee decided against reestablishment of the special study group because of the many other commitments that have been made.

102 NATIONAL TRAINING PROGRAM

102-1* NATIONAL TRAINING PROGRAM

The development of draft modules of training by NCWM working groups is progressing. A major development was the mutually accepted agreement between the NCWM and the Texas Engineering Extension Service(TEEX) to terminate the contract for development of final training modules.

The Executive Secretary updated the Committee on the progress in maintaining the momentum of this program. New contractual support has been found and the program is nearly back on schedule. Steps have been taken by the NBS to increase the staff at NBS to assume some of the added workload created as a result of the termination of the TEEX contract. Additionally, the status of the finances and budget associated

with the NBS Grant was described. See the Report of the Committee on Education, Administration, and Consumer Affairs for details.

103 INTERNATIONAL ORGANIZATION OF LEGAL METROLOGY

103-1* OIML STATUS REPORT

Mr. David Edgerly reported on OIML activities related to the NCWM. He described the OIML committees on which the NCWM has participation or interest and summarized the status of each committee and its schedule for the future. Participation in OIML meetings, such as SP22/SR3 and SR6 dealing with pattern approval, initial and subsequent verification, and with metrological assurance, were reviewed to update the Executive Committee prior to their planning regarding participation in upcoming OIML meetings including decisions regarding the NCWM representation. See Report of the Committee on Liaison for details.

104 MEMBERSHIP

104-1* MEMBERSHIP INCENTIVES

The Membership Subcommittee of the Executive Committee reported on the discussions, recommendations, and actions taken regarding incentives to increase the membership of the NCWM including:

(1) lists of addresses of State and local officials were obtained and incorporated into the NCWM mailing list;

(2) integration of the mailing lists of the four Regional Associations into the master multi-list of the NCWM is expected to be completed prior to the January, 1985 Interim Meetings;

(3) discussion of variations in the classes of membership as well as related membership fees is continuing;

(4) a new NCWM brochure is being developed; and

(5) the plan for reduced registration fees for local weights and measures officials to attend the Annual Meetings was used for both the 68th and the 69th Annual Meetings.

Special Registration Fee Waiver.

The Executive Committee approved, and the Chairman carried out the following recommendation:

"The Conference Chairman should send a letter to the New England States (Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island) offering the opportunity to attend the 69th Annual Meeting in Boston for the $35.00 NCWM Membership fee (waiving the $50.00 Registration fee): this offer to be limited to Weights and Measures Officials who have never attended an Annual Meeting of the NCWM. Those who qualify and attend under this special offer will not have the right to vote but will receive the following benefits:

- admission to all business meetings,

- receipt of all NCWM materials for the year, and

- observation of the workings of the Conference."

Should an individual attending under this special arrangement wish to participate in the voting, he/she must pay the $50.00 Registration Fee.

Brochure.

Work on the Brochure will progress in terms of reflecting the format and content of the Constitution and Bylaws which was adopted at this Annual Meeting. The existing brochure (yellow) is adequate for use in the short term.

Conference Documents.

A proposal has been made to discuss ways of providing Conference documents in quantity to a State for a pre-established price. Under this plan the NCWM would establish a "State" membership or technical package. A version of this idea would be establishing a "package' containing a fixed quantity of HB 44, HB 130, etc. available for an established price; a State could purchase a package(s) to provide each member of the staff with the references needed for the year; the staff members would be added to the NCWM mailing list and routinely receive all other mailings including tech memos, and newsletters.

Summary.

Following discussion of the possible impacts on total membership and on NCWM income and expenditures, the Membership Subcommittee plans to restudy the various ideas.

106 BUDGET AND FINANCE

106-1* FINANCIAL REPORT

The Treasurer reported on the status of the 69th Annual Operating Budget (July 1,1983 to June 30,1984) including the investments of the monies surplus to operational requirements. The Executive Committee endorsed the actions taken and recommended that the Treasurer continue to follow the current administrative procedures regarding the budget and investment of NCWM funds.

106-2* BUDGET REVIEW

The 69th Annual Operating and Grant Budgets, as modified by the Budget Review Committee, were reviewed.

69th Annual Operating Budget. The Executive Secretary had made some changes in the Operating Budget as a result of prior comments from the Budget Review Committee. The Executive Secretary prepared a 70th Annual Operating Budget which was reviewed by both

the Budget Review and Executive Committees prior to the Annual Meeting. (see Appendix E for the current year budget).

Grant Budget (69th NCWM Year). The Budget was reviewed and accepted. The Executive Secretary prepared a grant budget for the 70th NCWM year for review by both the Budget Review and the Executive Committees prior to the Annual Meeting. (see Appendix E for the current year budget).

107 MEETINGS

107-1* THE 69TH ANNUAL MEETING

At the Interim Meetings, the Chairman outlined his plans for the 69th Annual Meeting including the theme "Transferring Technology for Trade: A Team Effort", the format for the week, and a discussion of the General Session including recommendations for speaker participation.

The meeting was held following the plans made at the Interim Meetings.

Format.

As a result of the realignment of the Conference Committees which resulted in the discontinuation of the P&C Committee and the restructuring of the Executive Committee, the Executive Committee met at both the Interim and Annual Meetings concurrently with the sessions of the standing committees.

The General Session (Tuesday Afternoon) of the 68th Annual Meeting was longer than in previous years because of the scheduling of a series of technical papers immediately following the ceremonial activities. The scheduling of technical papers was endorsed with the proviso that a break be scheduled following the ceremonial activities. The Tuesday afternoon General Session program was scheduled in two parts: Ceremonial and Technical.

Speakers.

The following persons addressed the General Session-Ceremonial:

Dr. Ernest Ambler, President of the NCWM

Paula W. Gold, Secretary of Consumer Affairs and Business Regulations for the State of Massachusetts

Dr. Stanley Warshaw, Director, Office of Product Standards Policy, NBS.

The following persons addressed the General Session-Technical:

Mr. John Goodman, President of TARP

Mr. Ross Andersen, State Metrologist (New York)

Special Activities.

The following special meetings were held:

A description of the proposed new tolerance structure for the scale code, Handbook 44, given on Wednesday morning preceding the meetings of the Regional Associations.

A seminar on "Temperature Adjustment of Petroleum Products", held on Thursday afternoon following the Closing Ceremony.

107-2* THE 70TH ANNUAL MEETING

The Conference Coordinator reported on the status of planning for the 70th Annual Meeting to be held in Washington, D.C. Agreement has been reached with the new (opened Feb., 1984) Marriott located at 14th and Pennsylvania Ave., N.W.

107-3* FUTURE MEETING LOCATIONS

The Executive Secretary reported on the status of planning for meetings beyond the 70th. Cities currently bidding for consideration as meeting sites include: Albuquerque or Las Cruces, New Mexico; Columbus, Ohio; Denver, Colorado; Detroit, Michigan; Little Rock, Arkansas; New Orleans, Louisiana; Charlotte, North Carolina; Nashville, Tennessee; and, Seattle, Washington.

Presentations were made on behalf of Little Rock, Arkansas (Hindsman), Grand Rapids, Michigan (Heffron), and Columbus, Ohio (Litzenberg and Stabler) at the Interim Meetings. . The following possible sequence was discussed, but no commitments were made:

71st Annual Meeting (1986) - New Mexico

72nd Annual Meeting (1987) - Little Rock, Arkansas

73rd Annual Meeting (1988) - Seattle, Washington

74th Annual Meeting (1989) - Grand Rapids, Michigan

75th Annual Meeting (1990) - Columbus, Ohio

The Executive Secretary was asked to review the proposals in terms of his knowledge of NCWM requirements and to report back to the Executive Committee as he develops further recommendations.

At the Annual Meeting, the Executive Secretary reported on his visits to Albuquerque, Little Rock, and Seattle.

The Executive Committee voted to hold the 71st Annual Meeting in Albuquerque, New Mexico, and the 72nd Annual Meeting in Little Rock, Arkansas. The Executive Secretary was authorized to proceed with the planning for these two meetings.

108-1 NCWM LOGO

Supplies of the decal of the NCWM Logo are very low. The Executive Secretary contacted the former supplier of the decals to reorder, and discovered that the supplier had discarded the master die. The supplier attempt to duplicate the original has not been successful either in color or graphics.

At the Interim Meetings, the Executive Secretary showed the Executive Committee the results of the attempts by the supplier to match the original, and a mockup of a possible replacement. The possible replacement portrays a two pan scale superimposed on a global image of the United States, thus representing the national scope of weights and measures.

The Executive Secretary, after further exploration, brought to the attention of the Committee that the NCWM Logo is identified in a Department of Commerce publication (Department Administrative Order 201-1) as a logo used for Department-related activities and organizations.

The Executive Committee reclassified this item as informational instead of voting pending determination of the consequences if the NCWM changed its logo.

S.F. Hindsman, Arkansas, Chairman
E.F. Delfino, California, Chairman-Elect
C.H. Greene, New Mexico, Past Chairman
A.M. Nelson, Connecticut, Treasurer
J.C. Blackwood, Texas
E.C. Heffron, Michigan
L.D. Holloway, Idaho
E. Keeley, Delaware
N.M. Ross, Omaha, NE
R.W. Walker, Indiana
A.D. Tholen, Executive Secretary, NBS

EXECUTIVE COMMITTEE

Appendix A

NATIONAL CONFERENCE ON WEIGHTS AND MEASURES

CONSTITUTION

AND

BYLAWS

INFORMATIONAL ITEM

Adapted from "The National Conference on Weights and Measures, Its Organization, Procedures, and Membership Plan" modified only to respond to the changes adopted by the membership at the 68th Annual Meeting held in Sacramento, California, July 1983, and the comments received and adopted at the 69th Annual Meeting held in Boston, Massachusetts, July 1984.

CONSTITUTION

ARTICLE I

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

ARTICLE II - OBJECTIVES

The objectives of The National Conference on Weights and Measures are:

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, and the District of Columbia.

B. Mechanism. To provide a mechanism to establish policy and coordinate activities within the Conference 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.

ARTICLE III - MEMBERSHIP

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

ACTIVE MEMBERSHIP. - Active membership is limited to weights and measures or measurement officers actively engaged in regulatory service and in the employ of States, Commonwealths, Territories, or Possessions of the United States, their political subdivisions, or the District of Columbia.

ADVISORY MEMBERSHIP. - Advisory membership is open to (1) representatives of agencies of the Federal Government who are concerned in any way with regulatory weights and measures officers or their official activities or who are interested in the objectives and activities of the Conference, and (2) persons who have retired from Federal, State, county, or city weights and measures employment.

ASSOCIATE MEMBERSHIP. - Associate membership comprises representatives of manufacturers, industry, business, consumers, and other persons who are interested in the objectives and activities of the Conference.

ARTICLE IV - OFFICERS

SECTION 1 - EX-OFFICIO OFFICERS

A. President. - The Director of the National Bureau of Standards is, ex-officio, the President of the Conference.

B. Executive Secretary. - The Director of the National Bureau of Standards designates a senior member of the Bureau staff, who is thoroughly conversant with weights and measures nationally, to serve the Conference as its Executive Secretary.

SECTION 2 - ELECTIVE OFFICERS

The Elective Officers of the Conference shall be:

Chairman-Elect,

4 Vice-Chairmen,

Treasurer, and

6 members at large to serve on the Executive Committee.

The consecutive reelection of a Chairman-Elect is prohibited; the Chairman-Elect shall not serve on any standing committee other than the Executive Committee. Should the Chairman-Elect for any reason be unable or unwilling to be installed as Chairman, his/her successor shall be elected in the manner prescribed. In this event, the newly elected Chairman-Elect shall be installed as Chairman.

A. Eligibility

1. Any active member in good standing shall be eligible to hold any office provided that the individual meets the other requirements set forth in the Constitution and Bylaws.

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

B. Nominations and Elections

1. The Chairman shall appoint a Nominating Committee consisting of the most recent active Past Chairman as Committee Chairman and six (6) active members. The Nominating Committee shall submit one name for each elective office and present its recommendation as a slate in its report to the Conference.

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.

3. Elections

Officers 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 Conference motions.

See Bylaws, Article VI - Voting System

4. Terms of Office

(a). The Chairman, Chairman-Elect, Past Chairman, Vice Chairmen, and Treasurer, shall serve for a term of one year or until their successors are respectively elected or appointed and qualified.

(b). The six Executive Committee members at large shall serve for 3-year terms; two elected each year.

(c). All officers shall take office immediately following the close of the Annual Meeting at which they were elected.

5. Filling Vacancies.

In case of a vacancy in any of the elective offices, the Executive Committee shall fill the office by appointment.

ARTICLE V - APPOINTIVE OFFICIALS

SECTION 1 - OFFICIALS, SPECIFIC

The Conference Chairman will appoint the following officials:

Chaplain

Parliamentarian

Assistant Treasurer

SECTION 2 - OFFICIALS, OTHER

A. Appointment.

The Conference Chairman shall appoint other officials to conduct Conference activities. See Bylaws, Article IV - Officers, and Article V - Committees.

B. Assumption of Office.

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

ARTICLE VI - MEETINGS OF THE CONFERENCE

A. Annual Meeting.

The Annual Meeting of members shall be held each year at the Annual Conference. The agenda for this meeting shall include the election of officers, reports from the various committees, task forces, study groups,and treasurer, and other items pertinent to the Conference.

The Annual Meeting may include the presentation of technical papers, discussions, displays, entertainment, or other events at the discretion of the Executive Committee.

B. Interim Meetings.

The Interim Meetings of the Executive Committee 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.

C. Special Meetings

1. The Conference Chairman is authorized to order a meeting of the Executive Committee at any time such a session is deemed by the Chairman to be in the best interest of the Conference.

2. Other Committees of the Conference are authorized to hold meetings at times other than the Annual Meeting or Interim Meeting provided that;

(a) such meeting or meetings have been provided for in the Conference budget approved by the Executive Committee, or

(b) such meeting or meetings are approved by the Chairman and funding is available within the approved budget, or

(c) such meeting or meetings are approved by the Chairman and the Executive Committee including agreement to increase the budget to cover the cost of the meeting.

3. A quorum shall consist of a majority of the eligible voters.

D. Rules of Order

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

ARTICLE VII - FEES AND DUES

The annual membership fees and the registration fees for the Annual Meeting shall be established (and may be revised) by a majority vote of the Executive Committee at any official meeting of that Committee.

ARTICLE VIII - AMENDMENTS TO THE CONSTITUTION

This Constitution may be amended, added to, or repealed at any Annual Meeting of the membership under normal Conference procedures. Proposed changes must be included in the Agenda of the Executive Committee for the Interim Meetings, published in the recommendations of the Executive Committee in its Tentative Report (contained in the Announcement Book of the Annual Meeting), and discussed at the general session of the Executive Committee at the Annual Meeting at which said changes will be voted on. Amendments to the Constitution must be approved by a minimum of a two thirds vote in both the House of State Representatives and the House of Delegates.

ARTICLE IX- BYLAWS

SECTION 1 - SUPPLEMENTATION OF CONSTITUTION

This Constitution shall be supplemented by Bylaws which shall detail the methods of operation of the Conference. Such Bylaws shall not be inconsistent with the provisions of the Constitution.

SECTION 2 - AMENDMENTS, ADDITIONS, AND REPEALS OF BYLAWS

The Bylaws may be amended, added to,or repealed in the same manner as prescribed for the Constitution (See Article VIII).

SECTION 3 - RENUMBERING

The Executive Secretary is authorized to renumber the Articles and Sections of the Constitution or Bylaws to accommodate any changes made.

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B Y - L A W S

ARTICLE I - APPLICATION FOR MEMBERSHIP

SECTION 1 - FORM OF APPLICATION

Each application for membership in this Conference shall be in the form prescribed by the Executive Committee.

SECTION 2 - SUBMISSION OF APPLICATION

Each application for membership shall be submitted to the Executive Secretary. The application shall be accompanied by the membership fee. Applications received by the Executive Secretary will be processed. The new applicants name will be added to the Conference membership mailing list.

ARTICLE II - FEES, MEMBERSHIP RECORDS

SECTION 1 - FEE

The fee for annual membership as well as the registration fee for the Annual Meeting are established and subject to revision by the Executive Committee.

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 - BILLING

The Executive Secretary shall bill each member for yearly dues two months prior to the expiration of the current membership year.

SECTION 4 - EVIDENCE OF MEMBERSHIP

Membership certificates and cards of suitable design, bearing the seal of the Conference, shall be issued to members. The Executive Secretary shall advise the Treasurer of the count of new members and will forward the membership monies for deposit in the Conference account.

ARTICLE III - USE OF THE INSIGNIA

The insignia of the Conference may be used or displayed only by members of the Conference, unless expressly authorized in writing by the Conference.

ARTICLE IV - DUTIES OF THE OFFICERS

SECTION 1 - CHAIRMAN

The Conference Chairman is the principal presiding officer at the meetings of the Conference and of the Executive Committee, makes appointments to the several standing and annual committees, and appoints other Conference officials to serve during his or her term of office. Those Conference Chairmen who accede to the office during the odd calendar years are appointed for a 2-year term as the Conference Representative to the U.S. Public Advisory Committee for International Legal Metrology in connection with matters of the International Organization of Legal Metrology (OIML). The period of this appointment includes the year as Chairman and the following year.

SECTION 2 - CHAIRMAN-ELECT

The Chairman-Elect will:

A. Serve as acting Conference Chairman in the event that the Chairman is unable to carry out the duties of that office;

B. Perform other duties assigned by the Conference Chairman;

C. Serve on the Executive Committee;

D. Serve as Chairman of the Executive Committee when it sits as the Board of Governors for National Type Evaluation.

SECTION 3 - VICE CHAIRMEN

The Conference Vice Chairmen preside over sessions of the meetings of the Conference as assigned by the Conference Chairman and assist the Chairman in the discharge of his or her duties.

SECTION 4 - EXECUTIVE SECRETARY

The Executive Secretary acts as the executive officer of the Conference, the secretary and executive officer of the Executive Committee, and the non-voting secretary to each standing committee, handles all details in connection with the arrangements for and the programs of the meetings, keeps the records of the proceedings of the meetings; manages the Conference administration and finances as prescribed in its Administrative Procedures; and certifies to the Treasurer the correctness of bills submitted to the Conference for payment.

SECTION 5 - TREASURER

The Treasurer receives and accounts for all monies collected and pays all Conference bills certified by the Executive Secretary as correct.

SECTION 6 - CHAPLAIN

The Chaplain performs the customary duties of that office.

SECTION 7 - ASSISTANT TREASURER

The Assistant Treasurer shall assist the Treasurer in the discharge of his or her duties.

SECTION 8 - PARLIAMENTARIAN

The Parliamentarian shall assist in assuring meetings of the Conference are conducted according to Robert's Rules of Order and any special rules adopted by the Conference.

ARTICLE V - COMMITTEES

SECTION 1 - ANNUAL COMMITTEES

The Annual Committees consist of the following:

A. Nominating Committee.

The Nominating Committee shall consist of seven members;

B. Resolutions Committee.

The Resolutions Committee shall consist of seven members;

C. Auditing Committee.

The Auditing Committee shall consist of three members; and

D. Credentials Committee.

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

B. Associate Membership Committee.

The Associate Membership Committee shall consist of not less than five nor more than ten members, appointed by the Conference Chairman from the associate membership. This Committee shall represent a cross-section of interest within the associate membership

SECTION 2 - STANDING COMMITTEES

Standing Committees. The standing committees are:

Executive Committee;

Committee on Specifications and Tolerances;

Committee on Laws and Regulations;

Committee on Education, Administration, and Consumer Affairs;

Committee on Liaison;

Finance Committee; and

Credentials Committee.

A. Membership (other than Executive, Finance, and Credentials Committees).

The membership of each of the standing committees is a normal complement of five members appointed by the Conference Chairman from the active membership (except that the members of the Committee on Liaison may be appointed from the active or the associate membership) on a rotating basis for 5-year terms, 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 members, preferably its senior member, to serve as its chairman.

At his or her option, the Chairman designates one or more advisory or associate members as consultants to a standing committee.

B. Executive Committee.

The Executive Committee consists of the President, Executive Secretary, the Conference Chairman, the Chairman-Elect, the most recent still active Past Chairman, the Treasurer, and six members elected at large from the active membership to serve 3-year staggered terms.

The President and Executive Secretary do not have votes on matters before the Executive Committee.

Insofar as possible, the Nominating Committee, in recommending candidates for the Executive Committee, shall consider regional representation.

The term of the Executive Committee runs from the adjournment of the Annual Meeting at which its members are elected through the succeeding Annual Meeting of the Conference.

(Initially, the six at large members shall be elected for the following terms: two members to serve for one year; two members to serve for two years; and two members to serve for three years -thereafter, their successors shall serve for three-year terms, and this parenthetical section deleted).

C. Finance Committee.

The Finance Committee, which shall also serve as the Budget Review Committee, shall be appointed by the Conference Chairman. It shall consist of him/her as Chairman, two weights and measures officials as voting members, and the Treasurer and Executive Secretary as ex-officio voting members. One associate member shall serve in an advisory capacity, without vote.

D. Credentials Committee.

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

SECTION 3 - SPECIAL COMMITTEES, TASK FORCES, AND STUDY GROUPS

Special committees, task forces, and study groups are appointed by the Conference Chairman from the active, advisory, or associate membership, in any combination, as the need arises or the Conference requests.

SECTION 4 - SUBCOMMITTEES

Upon recommendation of a committee, the Conference Chairman may appoint a subcommittee(s) to assist the committee in carrying out its responsibilities.

SECTION 5 - DUTIES AND FIELDS OF OPERATION OF COMMITTEES

A. Executive Committee

The Executive Committee, subject to the overriding authority of the Conference itself:

1. Selects the place, dates, and headquarters, and fixes the registration fee for each meeting of the Conference;

2. Fixes the annual membership fee;

3. May at its option fill any vacancy in any elective office of the Conference caused by death, resignation, or retirement from active official regulatory service;

4. Advises the Executive Secretary with respect to the programs for the meetings of the Conference and its committees and makes recommendations to the Conference, the Conference officers, and the committee chairmen.

The Executive Committee, in the interval between meetings of the Conference:

1. Authorizes interim meetings of Conference committees as needed,

2. Authorizes committee and other contingent expenditures(including travel and subsistence expenses of committee members and the Conference Chairman), and

3. Acts for the Conference in all routine or emergency situations that may arise.

Each newly constituted Executive Committee joins the new chairmen of standing committees in a breakfast meeting(as guests of the Conference) on the last day of the Conference, for general discussion and for transaction of business by the Executive Committee.

Questions before the Executive Committee are decided, whether by voice vote or ballot, on the basis of the majority of votes cast.

The Executive Committee:

1. serves as the Board of Governors for the National Type Evaluation Program (NTEP);

2. utilizes the technical committees of the NCWM to resolve technical issues regarding NTEP;

3. utilizes the industry members of the Technical Committee on National Type Evaluation, who will comprise the NTEP Advisory Committee and who will represent the interest of industry in advising the Board of Governors.

The Committee serves as a policy and coordinating body in matters of national and international significance which may include such areas as metrication, 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.

The Committee annually presents a report to the Conference on its activities, which are subject to Conference ratification.

B. Committee on Laws and Regulations.

The Committee on Laws and Regulations annually presents a report for Conference 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; and

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.

C. Committee on Specifications and Tolerances.

The Committee on Specifications and Tolerances annually presents a report for Conference 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, and

3. Procedures for testing commercial equipment.

D. Committee on Education, Administration, and Consumer Affairs.

The Committee on Education, Administration, and Consumer Affairs annually presents a report for Conference action.

Its scope embraces all matters dealing with the:

1. Education and training of weights and measures officials,

2. Promotion of weights and measures principles and techniques among the general public and the users of weighing and measuring devices,

3. Development and recommendation of administrative procedures and public relations programs, and

4. Identification of commercial weights and measures practices and problems that are of concern to consumers.

E. Committee on Liaison.

The Committee on Liaison annually presents a report for Conference action.

Its primary mission is to represent the Conference to the Federal Government; it considers and makes recommendations on matters concerning relationships of the Conference and Conference members with the Federal Government and particularly with the National Bureau of Standards.

F. 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 be published in Conference Announcement Booklet.

G. Resolutions Committee.

The Resolutions Committee annually presents for Conference action such resolutions as it has been directed by the Conference to prepare, and such additional resolutions as are deemed appropriate by the Committee.

H. Auditing Committee.

The Auditing Committee annually audits the books of the Treasurer and reports its findings to the Conference.

I. Credentials Committee.

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

J. Finance Committee.

The Finance Committee shall oversee the financial responsibilities of the Conference and serve as the Budget Review Committee.

K. Associate Membership Committee.

The Associate Membership Committee annually reports on its activities and makes recommendations to the Executive Committee.

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

ARTICLE VI - VOTING SYSTEM

All questions before a meeting of the Conference that are to be decided by a formal recorded vote of the active members are voted on in accordance with the following voting structures and procedures.

SECTION 1 - HOUSE OF STATE REPRESENTATIVES

A. Official Designation.

This body of officials shall be known as the "House of State Representatives."

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 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

A. Designation.

All other State and local weights and measures regulatory officials (those not sitting in the House of State Representatives) are grouped as a body known as the "House of Delegates."

B. Requirements.

No other special requirements apply.

SECTION 3 - 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.

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.

SECTION 4 - VOTING RULES

A. Proxie Votes.

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

B. Method.

All voting is by a show of hands, standing vote, or machine (electronic). No voice voting. No abstentions.

C. Timing.

Voting by both Houses is simultaneous.

D. Recording.

The voting system is designed to record the votes of the State representatives whether an electronic system, show of hands, or standing vote is used.

E. Applicability.

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

SECTION 5 - 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

C. Vote on individual items:

1. at committee discretion

2. on request by voting delegate with support of ten others.

SECTION 6 - FLOOR AMENDMENTS

A. Amendments.

Committee chairmen are allowed to offer amendments during the day of voting to make editorial changes in their final reports.

B. Changes.

Substantive changes can be made at the request of weights and measures officials only, and

1. a majority of the voting delegates of each House must vote favorably before a proposed amendment can be accepted for debate.

2. a two-thirds favorable vote of each House on the amendment is required for passage (the requirement for a minimum vote of 27 in both Houses also applies)

SECTION 7 - SEATING

A. Arrangement.
The seating arrangement for voting sessions is shown on the next page.

B. Supervision.

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

SECTION 8 - VOTING

At the conclusion of debate (if authorized) on a motion, there shall be a call for the vote by 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

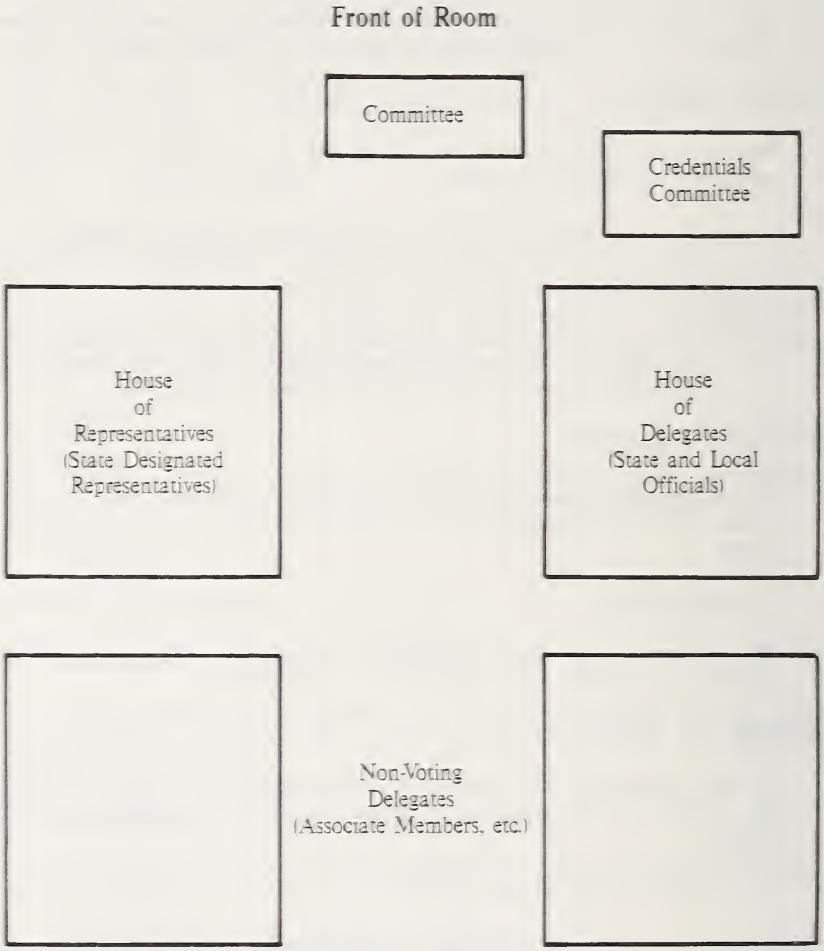

Figure 1. Seating Arrangement

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

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);*

C. Split Vote:

When the two Houses split on an issue 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.

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 9 - PROCEDURES

The Conference 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 Conference 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 Conference.

SECTION 10 - CHANGES IN ORGANIZATION AND PROCEDURE

Proposals for changes in organization or procedure of the Conference are not acted upon until the Annual Meeting of the Conference following the Annual Meeting at which such proposals are made.

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

Appendix B

NATIONAL TYPE EVALUATION PROGRAM

Policy and Procedures

CONTENTS

NATIONAL TYPE EVALUATION PROGRAM

ADMINISTRATIVE PROCEDURES

A. TYPE EVALUATION PROCESS

The "type evaluation process" follows a sequence of major steps:

- Request for type evaluation
- Decision to accept or reject the request to conduct evaluation
- Conduct of the type evaluation
- Evaluation of the type evaluation results
- Preparation of the type evaluation report
- Decision on conformance or nonconformance
- Issuance of the Certificate of Conformance or letter of nonconformance

B. STEPS IN THE "LEGAL METROLOGY CONTROL SYSTEM"*

The type evaluation process is the first step of regulatory involvement in the legal metrology control system.

Commonly, the type evaluation process is initiated when a manufacturer with an established manufacturing process submits production line instruments for type evaluation. Similarly an importer submits the device he plans to import for evaluation.

A manufacturer will normally submit a prototype device for evaluation before establishing an assembly line. (In some instances, a manufacturer may confer even earlier in the design stages, making use of drawings, schematics, etc.) It is not anticipated that a production unit will be tested under NTEP unless the manufacturer submits such a unit. (Production units are also subject to initial and periodic inspection by State and local officials.)

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*See "An SMA Recommendation for a Legal Metrology Control System," NBS Special Publication 566, pages 64-87.

The type evaluation process normally will be conducted in authorized laboratories. However, certain circumstances, such as limitations in test facilities, the estimated cost of test, or the complexity of the device to be evaluated, will make cooperation between the manufacturer and NTEP advantageous. In some circumstances, testing in other laboratories might be warranted as long as the testing is under the supervision of the representative(s) of an authorized laboratory.

If a production device is submitted to the NTEP for evaluation, the evaluation effort might be substantially less if the laboratory has had preliminary data about the performance of the device, especially if new technology or concepts are being used.

In the course of the process, the NTEP (and authorized laboratories) often becomes privy to proprietory information related to the device, manufacturing techniques, etc. These agencies are bound to protect this information and must carefully limit access to it, or to data concerning the type generated by these agencies, to properly authorized organizations or individuals, e.g., the applicant or the manufacturer only.

C. DEFINITIONS

1. "NATIONAL TYPE EVALUATION PROGRAM"

A program of cooperation between the National Bureau of Standards, the National Conference on Weights and Measures, the States, and the private sector for determining, on a uniform basis, conformance of a type with the relevant provisions of:

> National Bureau of Standards Handbook 44, " Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices";
>
> National Bureau of Standards Handbook 105-1, " Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures, Specifications and Tolerances for Field Standard Weights (NBS Class F)";
>
> National Bureau of Standards Handbook 105-2, "Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures, Specifications and Tolerances for Field Standard Measuring Flasks"; or
>
> National Bureau of Standards Handbook 105-3, "Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures, Specifications and Tolerances for Graduated Neck Type Volumetric Field Standards".

2. "TYPE EVALUATION"

A process for the testing, examination, and/or evaluation of a type by a Participating Laboratory under the National Type Evaluation Program.

3. "TYPE"

A model or models of a particular measurement system, instrument, element, or a field standard that positively identifies the design. A specific type may vary in its measurement ranges, size, performance, and operating characteristics as specified in the Certificate of Conformance.

4. "PARTICIPATING LABORATORY"

A State Measurement Laboratory that has been certified by the National Bureau of Standards, in accordance with its program for the Certification of Capability of State Measurement Laboratories, to conduct a type evaluation under the National Type Evaluation Program.

5. "CERTIFICATE OF CONFORMANCE"

A document issued by the National Bureau of Standards based on testing in participating Laboratories, said document constituting evidence of conformance of a type with the requirements of National Bureau of Standards Handbooks 44, 105-1, 105-2, or 105-3.

6. "DIRECTOR"

The Director means the _____ of the Department of _____.

D. EXTENT OF EVALUATION

The extent of type evaluation is as follows.

1. FULL TYPE EVALUATION

In general, type evaluation must be regarded as full or complete despite the fact that any type is subject to a variety of conditions that may limit the scope of the evaluation. These conditions may be inclusive or exclusive as in "...for use in measuring the volume of only water..." or "...not for use in measuring corrosive liquids..." The possible conditions of approval are many and include:

- restricted application of the device

- requirements concerning installation, safeguarding, maintenance, recalibration

In those cases where a permanance field test is required under NTEP, the 30-day test is a part of the "full" type evaluation.

2. PROVISIONAL EVALUATION

Under some circumstances, a type may be approved for legal use before evaluation has been completed. Such an approval is referred to as provisional.

Granting of provisional approval shall be qualified in writing that the manufacturer will modify or retrofit existing copies of the type if required.

Provisional approval will be granted with the understanding that further evaluation will take place before (full) approval can be considered. Use of the Provisional Evaluation will be minimized, and will be subject to authorization by the Board of Governors.

Provisional evaluation may, for example, be granted after only partial or limited evaluation when an urgent need for use of the device exists, and the NTEP is temporarily unable to carry out a complete evaluation.

E. KINDS OF TYPE EVALUATION

The kinds of type evaluation discussed in this section are distinguished from each other primarily by the reason for the evaluation, and will in turn call for all or selected portions of the evaluation procedure to be followed. They can be categorized as follows.

1. INITIAL EVALUATION

Initial evaluation is one of a device not previously evaluated under the NTEP. While this will often be a complete evaluation, previous experience with the manufacturer or with similar types of instruments may indicate that only a partial or a limited evaluation will suffice.

2. REEVALUATION

NTEP may, for good reason, decide to reevaluate a type that it has previously evaluated. Such a type may or may not have previously been approved. Reevaluation of a type is considered only for cause; that is, when:

a. new regulations are issued or,

b. new, important information concerning the type or its evaluation becomes known.

Reevaluation may result in issuance of a certificate of conformance, letter of non-conformance, an amendment of the previous certificate, or withdrawal of the certificate.

3. AMENDMENT TO CERTIFICATE OF CONFORMANCE

A type with a currently valid certificate of conformance may be evaluated in order to extend application of the type. Such an extension might, for example, be requested to recognize a change in the range of the measured quantity, or for the kind of commodities that may be measured.

In most such cases, evaluation to determine the validity of amendment will be sufficient; that is, the evaluation(s) will not go through the entire check list, but will test through the entire range of performance.

4. EVALUATION OF A TYPE PREVIOUSLY APPROVED BY PRE-NTEP JURISDICTION

A type that has already been approved in one or more jurisdictions may be submitted for evaluation under NTEP.

Discussions with the approving jurisdiction(s) might lead to the conclusion that the device meets all requirements of NTEP, in which case, an NTEP Certificate of Conformance will be issued without formal testing.

The NTEP may accept data obtained in or conclusions drawn from prior evaluation.

The NTEP may conclude that partial or limited evaluation will suffice to check for differences in the requirements of the testing jurisdiction and NTEP.

Prior to an NTEP evaluation, the report of the previous evaluation and regulations under which the prior evaluation was made will be examined, and a decision will be made to what extent the former evaluation can be accepted. This decision may be based in part on the similarity of requirements in the two cases and on the policies and reputation for competence of the pre-NTEP jurisdiction.

5. EVALUATION OF A TYPE NOT PREVIOUSLY APPROVED

Many devices in use have never undergone type evaluation either at the NBS or by a State. In such cases, request for evaluation under NTEP is at the option of the manufacturer.

It is possible that some such devices would not meet the requirements of the NTEP; however the assumption is made that all devices in use meet the requirements of Handbook 44 since they have undergone testing in the jurisdiction of the State(s) in which they are installed. The NTEP has no authority to change the status quo in these instances, even if inequities appear to exist.

6. DEVELOPMENT OIF NEW CRITERIA AND PROCEDURES

Type evaluation often deals with innovation and the application of new technology. It is anticipated, therefore, that the NTEP will encounter features to be tested for which no criteria or procedures have been developed. In such cases, the necessary criteria and/or procedures will be developed, ad hoc, by the NBS and participating laboratory representatives as expeditiously as possible.

These criteria and/or procedures will be submitted to the NTEP Technical Subcommittee either by letter ballot, regularly scheduled meeting, or at a specially called meeting, depending on the complexity or sensitivity of the material.

That material accepted by the Technical Committee will be introduced into the normal NCWM process through the S & T Committee and subsequently submitted to the NCWM membership for adoption as part of the NTEP Handbook on Criteria and Procedures.

Pending completion of the administrative process, the NTEP will issue a provisional Certificate of Conformance (provided the device meets the requirements of the proposed criteria and/or test procedures).

It is conceivable that a new feature or technology incorporated in the device being evaluated might not meet current NTEP requirements but is appropriate for its intended commercial use. In such a case, the NTEP can **WAIVE** or **ALTER** what is current practice, and issue a Provisional Certificate of Conformance pending adoption of the change(s) by the NCWM process.

If there is an NTEP consensus on the recommended criteria and procedures, **AND** the device meets the new requirements, the follow-up process is administrative. If no consensus can be reached on the criteria or procedures, but the device meets the requirements as proposed by the NBS, a provisional approval will be issued. If more demanding criteria or procedures are subsequently proposed and adopted, the device will be tested under these criteria or procedures.

The costs associated with the development, testing, and adoption of the new criteria and procedures will be absorbed by the NTEP program.

F. WHAT CONSTITUTES A "DIFFERENT" TYPE?

When two types(of a single manufacturer) are very much alike, a decision must be made whether one or two separate evaluation processes must be followed. Guidelines intended to help with such decisions follow.

1. SUPERFICIAL DIFFERENCES BETWEEN DEVICES

Different types produced by a particular manufacturer that are identical in design, materials and components used, and measurement ranges, but that differ superficially in their enclosure, detailed size, color, or location of non-metrological appointments (flasher lights, display location, button locations, etc.) can normally be regarded as being of the same type and covered by a single evaluation.

2. COMPONENT VARIATIONS

Types with nominally identical components or materials produced by a particular manufacturer that have been procured from different suppliers, can usually be regarded as the same type and will be covered by a single evaluation if the components or materials cannot be expected to affect the regulated metrological characteristics, reliability, or life of the devices.

When substitution of such components or materials may affect the characteristics, etc., separate evaluations may be required.

G. WHAT CONSTITUTES A "MODIFIED" TYPE

When a manufacturer makes changes related to an approved type, evaluation of the modification may be necessary. A type is considered MODIFIED if change is made that alters some metrological or technical characteristic.

H. CONSIDERATIONS PRECEDING EVALUATION

Certain considerations that are not part of the type evaluation process itself and that must precede it are discussed in the following paragraphs.

1. REASONS FOR INITIATING PROCESS

Reasons for initiating evaluation are listed below.

- new type

- existing type not previously evaluated for legal use or not evaluated by NTEP

- new application of an evaluated device

- modification of an approved device

- previous rejection or withdrawal of certificate of conformance coupled with newly presented facts concerning the device, improvements to the device, or a change in regulations.

2. RESPONSIBILITY FOR REPORTING OCCURRENCE OF MODIFICATIONS

The manufacturer is responsible for reporting changes that might require the attention of the NTEP; the decision to report must be dictated by the significance of the modification. Admittedly, the manufacturer will have to cope with the consequences in the marketplace if he decides that the modification is not of any significance and, in fact, it does prove to be significant. When reporting a change, the manufacturer shall follow either (a) or (b) below:

a. Notification of Change.

The manufacturer notifies the NTEP that a change has been made or is contemplated for an approved device. On the basis of the notification, the NTEP will decide whether to take no further action, issue an approval of a modification, or issue a new approval. NTEP will inform the manufacturer accordingly.

b. Request for Acceptance of Modification.

The manufacturer may make judgments concerning the modification and request issuance of an approval of a modification by citing the existing approval, detailing the changes, and giving any data, analysis, and conclusions concerning the technical or metrological consequences of the changes. Before taking further action, the NTEP will review the request to confirm the manufacturer's judgment in deciding to request approval of a modification as opposed to requesting a new evaluation.

3. CHOICE OF TESTING LABORATORY

Normally, the manufacturer may select the testing laboratory preferred. Usually the choice is expected to be based on location.

NTEP will try to honor the request. If another laboratory could conduct the evaluation sooner, the manufacturer will be given the opportunity to change the request. NTEP has the final authority to assign the testing laboratory.

When new technologies are applied to devices or when the NTEP is faced with evaluating categories of devices with which it has not dealt previously, it may find that it lacks the facilities or knowledge necessary to carry out some of the required evaluations. In such cases, it will turn for support to organizations that have the necessary capabilities.

Organizations that may be considered in these cases are listed below. Not all of these categories or organizations will be available in every case or for every type of device.

- other government laboratories
- laboratories of independent test organizations or of universities
- facilities of a manufacturer with approval of the applicant.

A type may usually be evaluated in the laboratory to which the subject instruments are taken. When devices or systems are not portable and must be assembled at a user site, at least part of the evaluation must take place in situ. Different aspects of a given evaluation can be carried out at different sites for convenience, such as at the factory, a laboratory, and a user location.

I. APPLICANTS FOR EVALUATION.

The certificate of conformance provides the evidence to be used by the Director for permission to sell those devices that have been manufactured to replicate the approved devices. Applicants for evaluation are therefore implying that the instruments later sold will be manufactured to replicate the approved device. The applicant must be, therefore, the manufacturer himself or a representative properly authorized by him for purposes of evaluation requests.

Examples of potential applicant for evaluation are:

- the manufacturer, including assemblers of systems comprised of subsystems produced by various manufacturers

- manufacturer's sales representatives

J. PERIOD OF VALIDITY OF APPROVAL.

Approval may cease to be valid when predetermined conditions are either met or not met (see Paragraph 1, below) or when approval is withdrawn as the result of a specific determination by the NTEP (see paragraphs 2 and 3, below). The questions of when and why an approval may lose validity is discussed in the following.

1. MAINTENANCE OF CERTIFICATE OF CONFORMANCE

Maintenance of approval depends on the performance of the device in use and in the course of periodic field verifications. Maintenance of approval may be made contingent on specific conditions; for example, minimum performance upon initial verification that devices of the type must continue to meet.

2. WITHDRAWAL OF CERTIFICATE OF CONFORMANCE

Approval may be withdrawn for various reasons. These include:

a. identification of deficiencies in the type not discovered before approval;

b. changes in regulations to take account of more stringent needs;

c. advances in the state-of-the-art; or

d. new technologies.

Withdrawal of approval will, however, be a last resort action.

The decision for withdrawal must be clearly established on the basis of evidence assembled by the Program administrator (the Executive Secretary). If the manufacturer agrees with the proposed withdrawal, notice of the action will be sent to each State Director.

3. FEEDBACK

The evaluation process under NTEP can generate only limited data. The data gathered during the initial and subsequent verifications of a larger number of devices of a given model will, when systematically analyzed, often yield information not available from the type evaluation. Such feedback can be used as the basis for revising the conditions of approval when the situation warrants this.

Depending on circumstances, the experience gained during verifications may justify later changes in the approval; in extreme cases, it might result in withdrawal of the Certificate of Conformance.

K. RESULTS OF EVALUATION.

The results of evaluation include both a report of objective findings and a report of conclusions and recommendations made concerning approval. These may be given in a single document or in two separate documents as indicated below. Separate documents are especially appropriate when evaluation and approval are the responsibilities of different officials (for example, when testing of the device is carried out in a State laboratory and approval is issued by NBS). These reports will be retained permanently by the NCWM.

1. REPORT OF OBJECTIVE FINDINGS

The report will be a permanent, objective record of the evaluation process and its results, against which future evaluations can be compared. It will identify the type, components and salient documents examined, personnel and laboratories that carried out the evaluation, and any special procedures, standards, and equipment used in the process. It will contain important data, ambient conditions, and the time data were taken, or identify the repositories of such data and the values of measured metrological characteristics and the associated uncertainties. These characteristics will include all those subject to requirements in regulations and those that will form the basis for the definition of the type. To the extent that findings are not based on measurement, but on visual inspection, they will be as objective as possible in each instance.

2. REPORT OF CONCLUSIONS AND RECOMMENDATIONS RESULTING FROM EVALUATION

The report giving conclusions and recommendations will be based on the findings of the testing laboratory and will provide the basis for a decision regarding approval or non-approval.

The recommendation can, for example, be one of the following:

- Certificate of Conformance

- Provisional Certificate of Conformance

- Rejection (unqualified); the main reasons for rejection should be given

- Recommendation that the type be rejected, but that it be approved in the future if specified modifications are made to satisfaction, as may be demonstrated by a partial reevaluation

- Recommendation that the type be rejected, that the applicant be adequately informed about its deficiencies, and that the type be accepted for a complete reevaluation in the future, provided the applicant declares that the deficiencies have been corrected.

3. DEFECTIVE EVALUATION

If a device has a significant area of non-compliance that was overlooked in a type evaluation under NTEP, costs of re-evaluation will be borne by the testing laboratory. Every effort will be made by the NTEP to afford the manufacturer in such cases with adequate time to meet requirements including time to modify and/or retrofit the devices in use.

If a device for which a Certificate of Conformance was issued is later found (in use) to have a feature that was not operational or present during the NTEP evaluation, the Certificate of Conformance is subject to withdrawal whether or not the feature is believed to meet the requirements of Handbook 44. If the manufacturer requests a re-evaluation with the new feature, and the device is approved, an amendment to the Certificate of Conformance will be issued. If the device does not meet approval as a result of the new feature, the Certificate of Conformance will be withdrawn.

Whether the device is approved or not, the manufacturer will be responsible for reimbursing the NTEP for costs incurred in the re-evaluation.

L. CERTIFICATE OF CONFORMANCE

The Certificate of Conformance may include the following information:

1. APPLICATION OF THE TYPE

- approved ranges

- maximum capacity

- reference conditions

- normal conditions of use

- approved subjects of measurement: physical quantities, commodities, materials, objects, or phenomena that may be measured

- special restrictions on application

2. ACCURACY

- accuracy class

- nominal error(s); maximum permissible error(s)

- required use of calibration charts, corrections, or instrument constants

3. REQUIREMENT OF MANUFACTURER

- required name plate information and stamps, marks, and seals affixed at the factory

4. REQUIREMENTS FOR USE

- installation requirements

- legally required auxiliary equipment and its minimum characteristics

- in the case of approval of auxiliary equipment, identification of the measuring instruments in conjunction with which it may be legally used

- Operating instructions

5. SUMMARY OF FINDINGS

The summary lists the characteristics, attributes, and conditions of the type that are subject to regulation.

M. LETTER OF NONCONFORMANCE

A letter of nonconformance will include the following information:

-applicant, manufacturer, manufacturer's type for which application was made

-applicable regulations

-specific components, and salient documents examined

-characteristics and the values of their parameters found to be deficient as well as the corresponding acceptable values

-other conditions not fulfilled (when there are many reasons for rejection, only the major reasons will be given)

When reasons for non-conformance are based on relatively small deficiencies or when deficiencies can be easily corrected, the letter may list changes that would make it acceptable and, perhaps, invite resubmission of the request after these changes have been made (see K.2).

N. APPEAL PROCESS.

If at any stage in the evaluation process, especially that involving a decision to NOT issue a Certificate of Conformance or to WITHDRAW a previously issued Certificate of Conformance, the manufacturer may request review of the decision.

The first level of review will be the NTEP Board of Governors. The Board will , if requested by the manufacturer, review the case and either endorse the decision or pass it to the NBS for review. (In their evaluation, the Board may request the advice of the Advisory Committee)

The second level of review will be the NBS, the issuer of the NTEP Certificates of Conformance. If the NBS confirms the recommendation of the NTEP, and the manufacturer disagrees at this stage, he may appeal the decision through the Federal Government process.

O. DISTRIBUTION OF OUTPUTS OF EVALUATION.

In all cases, a Certificate of Conformance, a letter of nonconformance, amendment to an existing certificate, or similar document reflecting the approval decision will be sent to the applicant at the earliest possible time. NTEP will send to the applicant copies of, or excerpts from, the reports of evaluation and of conclusions and recommendations.

The Certificate of Conformance will also be sent to all the States and major jurisdictions. An Annual Report will be published in the proceedings of the NCWM. The content of the report will also be published providing the following information:

1. Number assigned to the Certificate of Conformance
2. Date Certificate of Conformance is issued
3. Company name
4. Model designation
5. Brief description of model
6. Capacity

(END OF APPENDIX)

APPENDIX C

U.S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
GAITHERSBURG, MARYLAND 20899

CERTIFICATE NO._____

Page of

Certificate of Conformance

For Weighing and Measuring Devices

For:	Submitted by:
Accuracy Class:_____	

Standard Features and Options

This device was evaluated under the **NATIONAL TYPE EVALUATION PROGRAM (NTEP)** and found to comply with the applicable technical requirements of **NBS HANDBOOK 44,** "Specifications, Tolerances, and Other Technical Requirements for Commercial Weighing and Measuring Devices".

Evaluation results and device characteristics necessary for inspection and use in commerce are on the following pages. For further information, contact the National Bureau of Standards, address above, or telephone (301) 921-2401.

NOTE: The National Bureau of Standards does not "approve", "recommend", or "endorse" any proprietory product or material, either as a single item or as a class or group. Results shall not be used in advertising or sales promotion to indicate explicit or implicit endorsement of the product or material by the Bureau.

Date:

_____
Chief, Office of Weights and Measures

REPORT OF THE COMMITTEE ON LAWS AND REGULATIONS

Presented by
Wesley R. Mossberg, Chairman
Director of Weights and Measures
County of Los Angeles, California

REFERENCE KEY

200 INTRODUCTION

The Committee on Laws and Regulations submits its report to the 69th Annual Meeting of the National Conference on Weights and Measures (NCWM). This report is the amended interim report of the Committee which was printed in the Conference Announcement.

The report contains the recommendations of the Committee formed on the basis of written and oral comments received during the year.

All references are to National Bureau of Standards Handbook 130 "Uniform Laws and Regulations". Paragraphs to be added or completely revised are so identified. Partial changes to paragaraphs are shown as follows: wording to be deleted is shown lined out; wording to be added is underlined.

Abbreviations:	UWML:	Uniform Weights and Measures Law
	UPLR:	Uniform Packaging and Labeling Regulation
	UMOSR:	Uniform Regulation for the Method of Sale ofCommodities
	URR:	Uniform Regulation for the Voluntary Registration of Servicepersons and Service Agencies for Commercial Weighing and Measuring Devices
	UODR:	Uniform Open Dating Regulation

The report includes 20 Reference Key Items. Seven are recommendations for specific action by the Conference and are to be voted on; they are identified by printing their Reference Key Numbers and heading in **bold type.** Thirteen are informational items only, not subject to vote;(although one information item was moved to a vote - see item 204-2); they are identified by an asterisk next to their Reference Key Number. A complete list of all items follows:

CONSENT VOTING ITEMS

These are voting items that were grouped in the final vote.

Handbook 130

201-1 References to Handbook 67 in UWML and UPLR

Uniform Weights and Measures Law

202-1 Section 13. Powers and Duties of Local Officials

Uniform Packaging and Labeling Regulation

203-1 Sections 6.7.1. (d) Proviso and 6.7.2. Proviso - Random Package Quantity Declaration

203-2 Multi-Unit, Combination, and Variety Packages - All Units Clearly Visible

Uniform Regulation for the Method of Sale of Commodities

204-3 Peat, Peat Moss, Potting Soil, and Other Soil Amendments

SEPARATE VOTING ITEMS

These items were voted upon separately.

Uniform Regulation for the Method of Sale of Commodities

204-2* Ice Cream and Frozen Dessert Combination Foods

204-5 Section 2.19. Gasoline-Alcohol Blends

Uniform Regulation for the Voluntary Registration of Seravicepersons and Service Agencies for Commeracial Weighing and Measuring Devices

205-2 Uniform Regulation for the Voluntary Registration of Servicepersons and Service Agencies for Commercial Weighing and Measuring Devices

(The results of voting appear at the end of each of these items.)

INFORMATION ITEMS

Handbook 130

201-2* Use of the term "Intrastate" in UWML and UPLR

Uniform Packaging and Labeling Regulation

203-3* Section 7. Declaration of Quantity: Nonconsumer Packages - Metric Only Labels
203-4* Survey on State Adoption of the Uniform Packaging and Labeling Regulation

Uniform Regulation for the Method of Sale of Commodities

204-1* Section 1.5. Meat, Poultry, and Seafood
204-2* Ice Cream and Frozen Dessert Combination Foods
204-4* Section 2.12. Polyethylene Products - Testing in the Plant
204-6* Method of Sale of Petroleum Products
204-7* Review of the Uniform Regulation for the Method of Sale of Commodities

Uniform Regulation for the Voluntary Registration of Service Persons and Service Agencies for Weighing and Measuring Devices

205-1* Background and Discussion of URR

Uniform Open Dating Regulation

206* Uniform Open Dating Regulation

Other Items

207-1* Adoption of NBS Handbook 133
207-2* Policy and Guidlelines on Motor Fuel Deliveries (Gas Pump) Price Posting Related to Cash Discounts

(These items were adopted as part of the final report of the committee.)

201 HANDBOOK 130

201-1 REFERENCES TO HANDBOOK 67 IN UWML AND UPLR

(This item was carried over from the 68th NCWM, 1983, in which it was Items 202-3 and 203-1.)

Section 11.13. of the Uniform Weights and Measures Law authorizes the Weights and Measures Director to "...employ recognized sampling procedures, such as are designated in National Bureau of Standards Handbook 67, 'Checking Prepackaged Commodities.' "

Section 12.2 of the Model State Packaging and Labeling Regulation states that "the magnitude of variations permitted...shall be those expressly set forth in this regulation and those contained in the procedures and tables of National Bureau of Standards Handbook 67, Checking Prepackaged Commodities."

Progress towards transferring Handbook 133 from NBS to NCWM responsibility is being made (see Item 207-1 in this report). Since the NBS published Handbook 133, several States are using the procedures and magnitude of variations set out in that document rather than Handbook 67.

Two proposals were studied:

1. Drop references to any handbook in both UWML and UPLR, referring instead to "recognized sampling and testing procedures."

2. Add references to Handbook 133 in both, i.e., "...in NBS Handbook 67 or Handbook 133..."

The Committee members do not favor the first proposal because

- "Recognized sampling and test procedures" raises the question of who or what organization recognizes the procedures. Perhaps a trade association could argue that their procedures are recognized and thus represent the test against which packages must be judged.

- The need for national uniformity in test methods is not served by recommending any recognized test methods.

Therefore, the Committee recommends the following addition to Section 11.13. of the UWML:

> **11.13. Weigh, measure, or inspect packaged commodities kept, offered, or exposed for sale, sold, or in the process of delivery, to determine whether they contain the amounts represented and whether they are kept, offered, or exposed for sale in accordance with this Act or regulations promulgated pursuant thereto. In carrying out the provision of this section, the director shall employ recognized sampling procedures, such as are designated in National Bureau of Standards Handbook 67, "Checking Prepackaged Commodities," or in National Bureau of Standards Handbook 133, "Checking the Net Contents of Packaged Goods."**

The Committee further recommends the following addition to Section 12.2. of the UPLR:

> **12.2. MAGNITUDE OF PERMITTED VARIATIONS. — The magnitude of variations permitted under Sections 12., 12.1., 12.1.1., and 12.1.2. of this regulation shall be those expressly set forth in this regulation and those contained in the procedures and tables of National Bureau of Standards Handbook 67, "Checking Prepackaged Commodities" or National Bureau of Standards Handbook 133, "Checking the Net Contents of Packaged Goods."**

(Item 201-1 was adopted as part of the consent calendar.)

201-2* USE OF THE TERM "INTRASTATE" IN UWML AND UPLR

(This item was carried over from the 68th NCWM, 1983, in which it was Item 201-4.)

Section 11.15. of the UWML (and Sec. 12.1.2. of the UPLR) recognize reasonable variations from the stated quantity of contents "only after the commodity has entered (is introduced into) intrastate commerce."

The Committee has been advised by the Special Study Group (see text of item 201-4 in 1983 Report of the 68th NCWM) of an inconsistency with Federal laws and regulations and of the possibility of undue burden on interstate commerce if States enforce this part of the regulation, since the quoted language is not part of the Federal requirements that recognize reasonable variations for moisture loss.

The changes recommended by the Study Group were:

For the UWML:

11.15. Allow reasonable variations from the stated quantity of contents, which shall include those caused by loss or gain of moisture during the course of good distribution practice or by unavoidable deviations in good manufacturing practice ~~only after the commodity has entered intrastate commerce.~~

For the UPLR:

Delete present wording in section 12.1.2. and replace with:

12.1.2. VARIATIONS RESULTING FROM EXPOSURE — The statement of net quantity of contents as it is shown on a label shall not be false or misleading and shall express an accurate statement of the quantity of the contents of the container exclusive of wrappers and packing substances. Reasonable variations caused by loss or gain of moisture during the course of good distribution practices or by unavoidable deviations in good manufacturing practice will be recognized. Variations from stated quantity of contents shall not be unreasonably large.

(The proposed language for 12.1.2. is taken from Section 317.2 (h) (2) of Title 9 of the Code of Federal Regulations as published by the U.S. Department of Agriculture.)

The Committee discussed the Study Group's recommendations at some length during the Interim Meetings. Several points were made:

Firstly, the Committee is agreed that there should be no inconsistency among Federal and State laws and regulations governing the same products; therefore, references to "only after the commodity has entered (is introduced into) intrastate commerce" should be dropped.

Secondly, both the UWML and UPLR recommend an allowance for variations due to the loss or gain of moisture even though the Conference is on record as supporting accurate net contents at retail. The Committee members believe that the only way to resolve such an apparent conflict is to acknowledge moisture loss only in those instances when Federal laws and regulations make provision for moisture loss. The State and local weights and measures agency has jurisdiction over packaged goods spanning both food and nonfood, consumer and nonconsumer products. Food, drugs, and cosmetics under such Federal laws as the Federal Food, Drug, and Cosmetic Act, the Wholesome Meat Act, and the Wholesome Poultry Products Act require that moisture loss be permitted. Pesticides under the Environmental Protection Act are not given allowances for moisture loss. Therefore, clarifying language to this effect is proposed for the UWML and UPLR.

Thirdly, recommended language for the UPLR proposed by the Study Group would have given "variations resulting from exposure" (the title of Section 12.1.2. of the UPLR) due to "unavoidable deviations in good manufacturing practice." This, in the Committee members' opinions, would permit moisture loss at point-of-pack — something the Committee is strongly against.

Fourthly, the Committee members believe that references to "loss or gain of moisture" as proposed for the UPLR is not broad enough to encompass nonfood products under the jurisdiction of the Federal Trade Commission, but that the present language of Section 12.1.2, "caused by ordinary and customary exposure" is broad enough to include moisture loss or gain for food, drugs, and cosmetics, and can include solvent (not necessarily moisture) loss for soaps and other similar consumer products under the jurisdiction of the Federal Trade Commission.

Therefore, the Committee had planned to recommend the following revision for Section 11.15 of the Uniform Weights and Measures Law:

> 11.15. Allow reasonable variations from the stated quantity of contents which shall include those caused by unavoidable deviations in good manufacturing practice or by loss or gain of moisture during the course of good distribution practice ~~or by unavoidable deviations in good manufacturing practice only after the commodity has entered intrastate commerce,~~ the latter variation only where mandated by Federal law or regulation.

The Committee further planned to propose the following revision of Section 12.1.2. of the Uniform Packaging and Labeling Regulation:

> 12.1.2. VARIATIONS RESULTING FROM EXPOSURE. — Where mandated by Federal law or regulation, reasonable variations from the declared weight or measure shall be permitted when caused by ordinary and customary exposure to conditions that normally occur in good distribution practice and that unavoidably result in change of weight or measure~~, but only after the commodity is introduced into intrastate commerce:~~ Provided~~,~~ that ~~the phrase "introduced~~

~~into intrastate commerce" as used in this paragraph shall be construed to define the time and the place at which the first sale and delivery of a package is made within the State, the delivery being either:~~

~~(a) directly to the purchaser or to his agent, or~~

~~(b) to a common carrier for shipment to the purchaser, and this paragraph shall be construed as requiring that, so long as a shipment, delivery, or lot of packages of a particular commodity remains in the possession or under the control of the packager or the person who introduces the package into intrastate commerce, exposure variations shall not be permitted.~~

During the Discussion Session of the Committee's report at the Annual Meeting two issues were raised. First, the proposed terminology might be interpreted as denying moisture loss to companies not shipping product across State borders and therefore not under Federal jurisdiction. This could unfairly burden local packers competing with packers doing iinterstate commerce. Second, the deleted language in Section 12.1.2 of the UPLR had defined the point at which moisture loss could be considered as beginning. Several Conference members expressed a desire for the Committee to determine whether there could be some definition reinserted as to when "good distribution practice" begins. **Therefore, the Committee recommends carrying this item over for further study and review.**

202 UNIFORM WEIGHTS AND MEASURES LAW

202-1 SECTION 13. POWERS AND DUTIES OF LOCAL OFFICIALS

It has been brought to the attention of the Committee by Mr. D. Lynch, Director of Weights and Measures Control for the City of Kansas City, Kansas that Section 13 of the Uniform Weights and Measures Law currently restricts the duties of local officials to those enumerated in Sections 11.9. through 11.13. of that law.

In fact, it may be necessary to delegate other responsibilities to local officials as set forth in Section 11. For example, it may be necessary to establish open dating requirements (per Section 11.4.) for an urban area whereas such requirements are not seen as necessary in the rural State in which the urban area is located. The Committee members believe that Section 13 should be revised so as to permit delegating to local agencies any power or duty not reserved to the State by law or regulation. Of course, local agency ordinance or action may not in any way conflict with State requirements. **The Committee recommends the following revision:**

SECTION 13. POWERS AND DUTIES OF LOCAL OFFICIALS

Any weights and measures official appointed for a county or city shall have the duties and powers enumerated in this act, excepting those duties reserved to the State by law or regulation. ~~Sections~~

~~11.9. through 11.13. and the powers enumerated in Section 12 of this Act.~~ These powers and duties shall extend to their respective jurisdictions, except that the jurisdiction of a county official shall not extend to any city for which a weights and measures official has been appointed. No requirement set forth by local agencies may be less stringent than or in conflict with the requirements of the State.

(Item 202-1 was adopted as part of the consent calander.)

203 UNIFORM PACKAGING AND LABELING REGULATION

203-1 SECTION 6.7.1. (d) PROVISO AND SECTION 6.7.2. PROVISO - RANDOM PACKAGE QUANTITY DECLARATION

(This item was carried over from the 68th NCWM, 1983, in which it was Item 203-2.)

It has been recommended that random package labels be permitted that would print label weights to three decimal places for pounds, for example, to 0.005 lb or to 0.002 lb. Scales indicating to 3 decimal places in pounds are permitted in Handbook 44. The UPLR follows Food and Drug Administration (FDA) and U.S. Department of Agriculture (USDA) regulations that permit declarations to no more than two decimal places. The Committee has corresponded with both Federal agencies. The FDA has responded saying that they do not see such labels as useful to the consumer. The USDA has responded that they do not oppose such a proposed change to the regulations but need data on the precision of such devices and, of course, wish to move in a coordinated fashion with FDA.

In discussions at the Interim Meetings, the Committee was informed by federal agency representatives that their interest in random package labeling applied to packages moving in interstate commerce. Since present applications of this weighing equipment are mainly in retail stores such as delicatessens and confectioners that wish to prepack packages during slow over-the-counter sales periods, it is highly unlikely that such random packages would enter interstate commerce. Therefore, the Committee recommends changing the UPLR to permit random labels to three decimal places but adding information that this practice is prohibited if the packages enter interstate commerce (see recommended footnote). The Committee believes there is valid reason to permit random labels to be produced from these scales indicating to three decimal places:

-Scales reading to three decimal places are more precise and accurate than those reading to two, permitting better inventory control for the scale user, and better resolution of tare and less money value error for the consumer. With many food items approaching $20 per lb, the additional precision is warranted.

-It is inconsistent to permit better precision for direct sales but not in prepackaged sales.

The recommended revision is as follows:

6.7. PRESCRIBED UNITS, INCH-POUND SYSTEM —

6.7.1. LESS THAN 1 FOOT, 1 SQUARE FOOT, 1 POUND, OR 1 PINT. —The declaration of quantity shall be expressed in terms of

(a) in the case of length measure of less than 1 foot, inches and fractions of inches;

(b) in the case of area measure of less than 1 square foot, square inches and fractions of square inches;

(c) in the case of weight of less than 1 pound, ounces and fractions of ounces;

(d) in the case of liquid measure of less than 1 pint, fluid ounces and fractions of fluid ounces;

Provided, that the quantity declaration appearing on a random package may be expressed in terms of decimal fractions of the largest appropriate unit, the fraction being carried out to not more than ~~two~~ three* decimal places.

6.7.2. WEIGHT: DUAL QUANTITY DECLARATION.—On packages containing 1 pound or more but less than 4 pounds, the declaration shall be expressed in ounces and, in addition, shall be followed by a declaration in parentheses expressed in terms of the largest whole unit: Provided, that the quantity declaration appearing on a random package may be expressed in terms of pounds and decimal fractions of the pound carried out to not more than ~~two~~ three* decimal places.

Add the following as a footnote:

*Random packages entering interstate commerce are restricted by Federal regulations to two decimal place quantity declarations. For example, see 9 CFR 101.105 (j)(2) for meat and meat products, 21 CFR 101.105(j)(2) for non-meat and non-poultry foods and 16 CFR 500.9(b) for certain nonfood consumer commodities.

The Committee also seeks the assistance of the Committee on Liaison in continuing to recommend to Federal agencies changes of their regulations to permit random labels to three decimal places.

(Item 203-1 was adopted as part of the consent calendar.)

203-2 MULTI-UNIT, COMBINATION, AND VARIETY PACKAGES -ALL UNITS CLEARLY VISIBLE

It has been proposed to eliminate requirements for a total quantity statement for multi-unit, combination, and variety packages (Sections 10.4., 10.5., and 10.6.) if the outer wrapping is completely transparent and each individual item inside the outer wrapping is clearly visible and

complies with all labeling requirements. Such exemption already exists in FDA regulations for open multi-unit retail packages.

Relatively simple combinations of food or nonfood package combinations were shown to the Committee as examples of packages that were individually labeled and clearly exposed in a rectangular gift box. The industry spokesman argued that, if total quantity statements were not required, changes could be made based on materials supply (substitution of tea varieties and weights, for example) without having to reprint the gift package label. However, the Committee members were aware of multi-unit, combination, and variety packages in which a total quantity of contents declaration was important:

-The principal display panels on individual units may become obscured by decorative packing materials or because the units shift in the package.

-More than three or four units in a package makes a value comparison difficult because of the arithmetic required to add all the units' net weights (or other measure).

-Many gift packages are irregular in shape and require substantial manipulation to determine all the individual units in the package.

The Committee members feel that requirements for a declaration of total quantity of contents for multi-unit, combination, and variety packages as set out in Sections 10.4. through 10.6. of the UPLR are adequate and should be retained. In addition, the Committee recommends adding the following footnote to Section 10.4. Multi-Unit Packages:

> **Open multi-unit retail food packages under the authority of the Food and Drug Administration that do not obscure the number of units or prevent examination of the labeling on each of the individual units are not required to declare the number of individual units or the total quantity of contents of the multi-unit package if the labeling of each individual unit complies with requirements so that it is capable of being sold individually. (See also Section 11.12.)**

The Committee would like to emphasize that no changes are being proposed to the sections on multi-unit, combination, and variety packages. All that is being proposed is the addition of a footnote that would provide information on existing regulations under FDA on open multi-unit food packages.

(Item 203-2 was adopted as part of the consent calendar.)

203-3* SECTION 7. DECLARATION OF QUANTITY: NONCONSUMER PACKAGES-METRIC ONLY LABELS

(This item was carried over from the 68th NCWM, 1983, in which it was Item 203-3.)

The American National Metric Council's Chemicals and Allied Products Sector Committee has made significant progress in planning for conversion to the metric system. The Conference is on record as endorsing the changeover to metric. Both the Federal government (FDA and FTC) and

many States require inch-pound labeling on consumer packages in order to provide full information and to reduce consumer confusion. The UPLR would permit nonconsumer packages to appear with metric-only labeling.

As the result of a survey conducted by the Committee last year, it was discovered that a few States would not permit nonconsumer packages to appear with only metric declarations.

The Committee members understand that there are nonconsumer packages intended for institutional or small business use that find their way into the retail trade. It is also understood that the small businessman deserves as much protection afforded by regulations as does the consumer. However, the Committee members feel that it should not be the intent of the State packaging and labeling regulations to preclude the sale between industries and sale for export of industrial chemicals and raw materials with metric labeling only. Both the ANMC and the Committee explored the possibility of better defining what is meant by "nonconsumer packages." No single definition was entirely satisfactory.

The Committee has decided to take up this issue with the individual States that reported in last year's questionnaire that they could not permit the use of metric-only labels on nonconsumer packages. The Committee wishes to determine whether at the present time or in the future industrial chemicals and products of a similar nature could be shipped in commerce with metric-only labels.

203-4* SURVEY ON STATE ADOPTION OF THE UNIFORM REGULATION

As part of its long range plan, a review of the Uniform Packaging and Labeling Regulation is being undertaken by the Committee. The first step in the review is the intercomparison of the UPLR with present State requirements. The Committee's technical advisor was asked to make this intercomparison. The text of this intercomparison appears as Appendix A to this report. The Committee thanks all those weights and measures officials who reviewed the material in the interim report and submitted corrections including citations to the Committee.

204 UNIFORM REGULATION FOR THE METHOD OF SALE OF COMMODITIES

204-1* SECTION 1.5. MEAT, POULTRY, AND SEAFOOD

The Southern Weights and Measures Association has recommended changes to Section 1.5. of the UMOSR. The "fast food" industy is, to a significant degree, in competition with retail grocery stores. "Fast food" outlets are specifically exempted from having to sell their meat, poultry, and seafood products by weight if their products fall under Section 1.5.(b) and (c). In fact, weights and measures jurisdictions have generally not enforced method of sale requirements in the restaurant trade.

It has been observed that many retail grocery or convenience stores are selling ready-to-eat chicken parts from delicatessen or similar counters. Because these grocery or convenience stores do not sell items for consumption on the premises (they do not have tables and chairs or restaurant licenses), they do not qualify for the exemption under Section 1.5(b). One State has received complaints from grocery and convenience store retailers that much of the food purchased at "fast food" outlets is not intended for consumption on the premises either, but is "carry-out" in nature. These retailers would like to enter into more direct competition with "fast food" outlets by not having to sell their ready-to-eat items by weight, since "fast food" outlets are so exempted. The State proposes that a special exemption be provided for ready-to-eat chicken parts only since this is the most common item found in direct competition with "fast food" outlets, since ready-to-eat chicken parts are sold nationally by count, and since it is important to avoid a generalization to other delicatessen and convenience store items that could be considered ready-to-eat.

In addition, it was pointed out to the Committee that the term "several" in Section 1.5.(c) is vague in describing what comprises a ready-to-eat meal.

It was also argued that Section 1.5.(d) only provides options for the sale of meat, poultry, or seafood in a sandwich but does not address the method of sale of sandwiches in general. After study of the entire section, the Committee has concluded that this latter defect is the problem with Section 1.5.(b) and (c) as well; that is, that across the nation items sold for consumption on the premises and ready-to-eat meals are generally excluded from sale by weight even if meat, poultry, or seafood is not part of the item or meal.

Finally, the Committee notes that the title to Section 1.5. MEAT, POULTRY, AND SEAFOOD should be broadened to include fish that may be from fresh water. The term "seafood" only applies to marine fish and shellfish.

In order to accommodate all these issues, the Committee is planning to recommend revision of Section 1.5. and the addition of a new section and footnote. However, the Committee invites comments by letter and from the floor at the annual meeting on this complicated but important subject. Therefore, the Committee will carry over this item in order to receive more input. The proposed changes are:

> 1.5. MEAT, POULTRY, FISH, AND SEAFOOD.* — Shall be sold by weight, except that shellfish ~~the following, which~~ may be sold by weight, measure, or count.~~:~~
>
> ~~(a) shellfish;~~
>
> ~~(b) items sold for consumption on the premises;~~

~~(c) items sold as one on several elements comprising a ready-to-eat meal sold as a unit for consumption elsewhere than on the premises where sold;~~

~~(d) items sold as part of a sandwich.~~

1.5.1. In Combination With Other Foods

When meat, poultry, fish, or seafood is combined with some other food element to form a distinctive food product, the quantity representation may be in terms of the total weight of the product or combination, and a quantity representation need not be made for each element.

1.5.1.1. Stuffed Poultry or Meat Products

In the case of ready-to-cook stuffed poultry or meat products, the label must show the total net weight of the stuffed poultry or meat product and the minimum net weight of the poultry or meat in the product excluding the meat or poultry that may be part of the stuffing.

Add the following footnote:

*See Section 1.12. for additional exemptions for ready-to-eat food.

Add the following new section:

1.12. READY-TO-EAT FOOD. — The following may be sold by weight measure, or count:

(a) items sold for consumption on the premises;

(b) items sold as one of three or more different elements, excluding condiments, comprising a ready-to-eat meal sold as a unit, for consumption elsewhere than on the premises where sold;

(c) ready-to-eat chicken parts cooked on the premises but not packaged in advance of sale;

(d) sandwiches and sandwich-like commodities when offered or exposed for sale on the premises where packed or produced and not intended for resale.

204-2* ICE CREAM AND FROZEN DESSERT COMBINATION FOODS

(This item was carried over from the 68th NCWM, 1983, in which it was Item 204-2.)

There have been questions about appropriate labeling and package test methods for ice cream and frozen dessert novelties such as sandwiches, cones, etc. The Committee had hoped to convince the Food and Drug Administration (FDA) that frozen dessert foods comprised of a combination of items (ice cream, cookies, coatings, nuts, etc.) might be classified as combination foods and thus be subject to a net weight declaration. The FDA has provided their opinion that there exists a firmly established trade custom for ice cream and other frozen dessert foods to be sold in terms of fluid volume.

In addition, it was reported by Mr. John Speer, president of the International Association of Ice Cream Manufacturers (IAICM) at the interim meeting that IAICM was unsuccessful in devising an audit test procedure (based on weighing) applicable to the broad array of frozen dessert novelties in the marketplace.

Since the Committee was not successful in its efforts to require frozen desserts to bear net weight declarations, it seems appropriate to transmit the findings of the Committee for use by weights and measures enforcement officials as well as provide information on the examination and testing of packaged frozen dessert novelties.

Net contents declarations: A fluid volume declaration (e.g., 3 fl oz) is acceptable for the ice cream or ice-cream-like portion of a frozen novelty.

If flavorings such as nuts, chips, cookies, fruit, or similar materials are mixed with or are in such close association with the ice cream portion that they cannot be separated from the ice cream portion (such as syrup toppings or ice cream rolled in nuts or chips), these materials are included as part of the fluid volume declaration.

If cookies, cones, wafers, or other foods are part of a frozen dessert novelty but can be separated from the novelty (such as an ice cream sandwich or ice cream cone), these are not part of the fluid volume declaration. The Food and Drug Administration considers a count of these parts of the dessert novelty to be acceptable for declaration purposes (e.g., 3 fl oz ice cream plus 2 cookies).

Net contents test procedure: Below are listed equipment and procedure (as provided by the California Department of Measurement Standards) for testing ice cream in single serving sizes.

Equipment:

1. One quart of kerosene.

2. One accurately graduated wide mouth glass tube graduated in fluid ounces, i.e., the mouth opening must be large enough to admit the sandwich or bar.

3. One glass rod, pipette, or metal wire.

4. One deep freeze box, or available use of same.

Procedure:

1. Leave sandwiches or products in a deep freeze box, the colder the better, until they are thoroughly frozen. This is the only way you can remove the paper and cookie, if any, from the ice cream portion.

2. Pour a sufficient amount of kerosene into your glass tube leaving room for six (6) fluid ounces of measurable overflow; e.g., if using a 32-fluid ounce tube, put in 26 fluid ounces of kerosene. Take an accurate reading of the level of the kerosene.

   Kerosene is recommended because it is the cheapest product obtainable that ice cream will not emulsify or mix with.

3. Remove all tare material from the dessert including cookies, cones, and wafers that can be pried from the frozen dessert ice-cream-like portion and gently drop the ice cream into the kerosene. Make sure you scrape all ice cream from tare material or cookies and also drop this into the kerosene.

4. You will find that the ice cream will float. Take glass rod, pipette, or wire and gently submerge the ice cream below the level of the kerosene.

5. Take an accurate reading of the new level of the kerosene in the tube. The increase in level is the amount of displacement of the ice cream or the "net contents" in fluid ounces.

Caution: Kerosene test should be conducted in well ventilated area.

It was brought to the Committee's attention that its recommendations in this report will result in differences in compliance test results:

- The ice cream portion cannot always be separated cleanly from other components of the novelty.

- One weights and measures official may decide that certain components of a novelty can be separated from the ice cream and another official may decide that they cannot be separated.

Based on information supplied to it by the IAICM, the Committee is persuaded of the need for a method of sale for ice cream and frozen dessert novelties. The Committee believes that a total fluid volume declaration (rather than fluid volume of ice cream plus count of cookies, for example) should be recommended for inclusion in the Uniform Regulation for the Method of Sale of Commodities. (The Committee Chairman reported orally during the voting session that the Committee felt limited by the FDA requirement that the ice cream portion be labeled by fluid volume.)

However, because this approach would be a substantive change from the Committee's recommendation in its interim report, the Committee alerts the Conference to its intentions and recommends that this item be carried over at this time.

The Committee requests that weights and measures officials and industry field test a total-fluid-volume test method and report their findings to the Committee before the next interim meeting, January 1985. (This test procedure would be the same as the one printed as part of this report deleting step 3 in that procedure.)

(A motion was made to debate this item; it did not receive a majority of votes to debate. The Committee offered to put the item before the floor for debate. A split vote returned the item to the Committee for further consideration.)

204-3 PEAT, PEAT MOSS, POTTING SOIL, AND OTHER SOIL AMENDMENTS

(This item was carried over from the 68th NCWM, 1983, in which it was Items 204-3 and 204-8.)

At the 1983 annual meeting, arguments were made from the floor that the declaration of weight for soil amendment organics in general, and especially for potting soil, peat humus, composted cow manure, and peat moss, was not a meaningful declaration for the consumer who buys such products by their expected coverage to a given depth or similar volumetric usage. Permitting either volume declarations or weight declarations, in fact, impedes value comparisons by consumers. Therefore, it was proposed to eliminate weight as a permitted declaration (other than supplemental) in Section 2.4.2. (PEAT AND PEAT MOSS) of the UMOSR, and to add a new section to the UMOSR requiring sale by cubic measure for potting soil, peat humus, and composted cow manure.

Any method of sale requirement in this general area is complicated by several factors:

- Existing State regulations require that fertilizers and products that make claims as to their nutrient value be labeled by weight. Packages of composted cow manure generally claim nitrogen, phosphorus, and potassium values, requiring that they be sold by weight. If a method of sale by volume is proposed for all products not making nutrient claims, the consumer would still be thwarted in making value comparisons between products making claims and similarly used products making no claims.

- The terminology used to describe and distinguish these products is ambiguous. For example, one industry representative classified these products as "single component organics" (peat humus, peat moss, composted cow manure, leaf mold), "composted organics" (peat moss), and "combined component organics" ("complete" potting soils). Another manufacturer of "soilless mixes and conditioners" mentioned formulations containing peat moss, vermiculite, perlite, bark, and granite sand. The Committee notes that the identity statements of these products is as varied: "growing medium", "redi-mix", "peat-lite mix". An inspector will have a certain amount of difficulty distinguishing what type of product is being testing since the identity statements are so irregular.

- According to potting soil industry spokesmen, volumetric fill is common in the smaller sizes (4-8 quart), but filling by weight is the most economic for larger packages. A representative from the West Coast peat moss industry said that that segment of the industry would

oppose requirements for labeling by weight since the weight of a given volume of sphagnum peat is much less than an equal volume of peat humus. There appears to be some agreement among industry representatives that the potting soil mixes are very easily compacted, although at the time of pack the weight/volume relationship is well defined. Requiring potting soil mixes and "single component organics" to be labeled by volume will require testing similar to that for peat and peat moss -- sifting through a mesh to "refluff" the product so that it becomes similar to its density at time of pack. Standard methods of test do not now exist for soil mixes, but could probably be derived from the American Society for Testing and Materials (ASTM) Test Method D2978-71 "Standard Method of Test for Volume of Peat Materials." The Committee must assume that weights and measures officials testing soil mixes and similar products already labeled by volume are using the ASTM test method mentioned above, but has no specific information to this effect.

In conclusion, the Committee members believe that this is a complicated area requiring several issues to be resolved:

1. It is true that labeling of similarly used products by weight or by volume impedes consumers from making value comparisons. However, certain similarly used products must be labeled by weight (fertilizers, cow manure). Therefore, requiring all similarly used products to be labeled by volume will require two declarations in some instances. The Committee does not know if this would be prohibited by other existing regulations in this area.

2. Although there is the possibility of adding water and sand in order to add to the weight of certain products, no standards currently exist for maximum moisture content or ash content for these products (as has been established for peat and peat moss products).

3. If standardization in the method of sale is perceived as important, some standardization in identity will be necessary. It is not possible at the present time to definitively distinguish these products solely by their statement of identity.

In conclusion, no information as to the extent of the problem or background material such as specific test data or marketplace labeling examples has been provided that will enable the Committee to make any firm recommendations at this time. Last year, the Committee reported that no weights and measures jurisdiction or other party indicated a problem with current labeling practices. Since then, one manufacturer has recommended a volume labeling or volume plus weight labeling requirement giving examples of possible soil mixes which all weighed the same but filled different volumes. One weights and measures official also spoke at the discussion session of the Annual Meeting in favor of volume labeling. The Committee is still not convinced, based on the evidence brought before it, that there is a serious enough problem to warrant the many steps necessary to achieve standardization in this field.

Therefore, the Committee recommends no further action on these products at this time.

(Item 204-3 was adopted as part of the consent calendar.)

204-4* SECTION 2.12. POLYETHYLENE PRODUCTS - TESTING IN THE PLANT

At the 68th annual meeting, representatives from California, Louisiana, Minnesota, New Jersey, North Carolina, and Texas (major polyethylene sheeting manufacturers are located in these States) met informally with two representatives of the polyethylene packaging industry. Since then, at least three industry representatives have written either the Conference or individual States requesting assistance to monitor the industry by testing agricultural and construction polyethylene sheeting and film in the manufacturing plant and warehouse. They contend that because of the extremely competitive nature of their business and because few weights and measures enforcement agencies are checking the accuracy of the labels, it is becoming increasingly difficult to deliver accurately labeled packages of polyethylene and successfully compete.

During the fall, four States collected information on polyethylene packages. One State that tested sheeting by net weight found 61% of the 176 lots they checked to be short weight. A second State checked the sheeting by length, width, net weight, and thickness. This State found only three out of eleven lots to meet the labeled net weight, but none of the lots met the labeled thickness. Shortages in thickness ranged from -3 to -34% of the thickness declared on the package.

Obviously a serious situation exists.

The Committee met with representatives of the Flexible Packaging Association and other polyethylene sheeting representatives at the interim meeting. These industry spokesmen requested in-plant inspection and enforcement action on every manufacturer not meeting label requirements. They expressed their frustration that not every manufacturer's product was being tested and that what testing was being performed was infrequent, at best.

The Committee wishes to call this problem to the attention of the entire weights and measures enforcement community.

The Office of Weights and Measures will make available to anyone who requests it a packet of materials that explains in greater detail the nature of the problem, how to test the product, where the major manufacturers are located, and some of the preliminary test results. This material will be sent to all those States in which manufacturers are located and their continuing assistance in testing this product will be sought. Obviously, not every jurisdiction can test the gauge thickness of the sheeting but even net weight tests will indicate serious shortages. The Committee members believe that this is a unique opportunity to assist an industry in stamping out unfair trade practices and that weights and measures enforcement agencies should help in every way they can.

Mr. S. E. Weary of the Flexible Packaging Association notified the Conference at its Annual Meeting that the American Society for Testing and Materials (ASTM) has just adopted a new standard, ASTM D4397, on polyethylene, that will replace the old Voluntary Product Standard (VPS) 17-69 that was withdrawn several years ago. Although this change will not substantively affect the information in Section 2.12.7. of the Uniform Regulation for the Method of Sale of Commodities concerning the net weight declaration of polyethylene products, it should be of great interest to the weights and measures community that there now exists a voluntary standard for polyethylene sheeting. Plans for private laboratory testing and certification of polyethylene sheeting as meeting this ASTM standard were also announced.

204-5 SECTION 2.19. GASOLINE-ALCOHOL BLENDS

The NCWM adopted a one percent ethanol/methanol in gasoline labeling guideline in 1983. The guideline is:

> All motor fuel kept, offered, or exposed for sale, or sold containing at least one percent by volume ethanol or methanol should be identified on the motor fuel dispenser as "with" or "containing" ("ethanol"), ("methanol") or ("ethanol/methanol") or similar wording.

It was proposed that the guideline adopted last year be made a section of the UMOSR, and include minimum type size and wording for the pump face label. It was also proposed that the Committee encourage the work of the American Society for Testing Materials (ASTM) to arrive at (1) limits for alcohol/gasoline mixtures based on performance tests and (2) test methods for determination of the overall quality of alcohol/gasoline mixtures.

In discussions held and presentations made at the interim meeting, all parties generally supported labeling of alcohol-gasoline blends. They also generally agreed that the gasoline-alcohol blend to be most wary of was methanol and gasoline with no cosolvent added to the blend. A proposal was made that the maximum amount of alcohol be labeled on the pump face including information as to the presence of a cosolvent. Part of the rationale behind this proposal is that reporting a maximum percentage would permit the retailer to vary what is put into his storage tanks but not beyond the labeled amounts. Another proposal was made that gasoline without alcohol be so labeled. A third proposal was made that fuel approved by the U.S. Environmental Protection Agency (EPA) or fuel meeting the standards of the American Society for Testing and Materials (ASTM) be so labeled.

The Committee members believe that labeling as to the presence of ethanol or methanol in gasoline should be kept simple. The recommended guideline sets a minimum level of alcohol for labeling purposes. Recommendations as to labeling the maximum alcohol content is no more precise since the actual content may be somewhere between the minimum and maximum. Labeling the maximum percentage of alcohol, or the presence of cosolvents, or that the blend meets EPA or ASTM standards,

although important and to be encouraged, must be accompanied by consumer education as to what such figures or labeling mean and information as to how a retailer can safely remain within the labeling limits.

The Committee does not believe that requirements should be added to label gasoline not containing alcohol as "contains no alcohol" because this may stifle the development and use of gasoline-alcohol blends by implying that gasoline should not contain alcohol.

Mr. L.M. Gibbs, of Chevron Research Company and Chairman of the Oxygenated Compounds Study Group of ASTM Committee D-2 on Petroleum Products and Lubricants gave an update at the interim meetings on the work of this group in developing a specification for gasoline-oxygenate blends. (Alcohols — such as ethanol and methanol —are "oxygenates.") He said that it is planned to incorporate the necessary specifications into the existing specification ASTM D439 for "Automotive Gasoline," and retitle D439 "Spark-Ignition Engine Fuel." There is a great amount of work to be done towards this goal:

-Performance, including driveability, must be correlated with the properties of these blends.

-The test methods that have been developed must be tested.

-Several test methods have to be developed.

At the present time it is expected that modifications to D439 will be advisory in nature concerning oxygenate blends.

The Committee recommends that the new Task Force on Motor Fuel consider close association or active participation with this vital activity.

State and local officials need to be aware of the test method to detect alcohol (methanol or ethanol) at the one percent level. The following method will not detect what kind of alcohol is present. It is estimated that if the procedure is carefully followed, it should be possible to detect alcohol content close to the one percent level.

The following method is derived from an appendix to "Proposed Specification for Gasohol and Leaded Gasohol" (which has no status as an ASTM standard but is published on behalf of ASTM Committee D-2 for information only).

FIELD TEST FOR THE DETERMINATION OF THE TOTAL ETHANOL, METHANOL, AND WATER CONTENT IN GASOLINE

This method was primarily developed as a field procedure to determine the total combined ethanol, methanol, and water content of a fuel sample. Its applicability to blends containing higher alcohols has not yet been established.

Summary of Method

A sample of fuel is shaken at room temperature with ethylene glycol. The change in volume of the ethylene glycol layer is related to the amount of alcohol (ethanol or methanol) and water in the fuel.

Apparatus

Graduated Glass Mixing Cylinder, glass-stoppered, 100-mL with 1-mL graduations. This must be capable of accepting a total volume of at least 110 mL with the stopper in place.

Pipet, volumetric, 10 mL.

Pipet Filler or Bulb.

Reagents

Ethylene Glycol, Specification D2693, or Reagent Grade, with 0.02 g/1000 mL methyl violet dye added (methylene blue or other water soluble dyes may also be used). Note that commercially available "antifreeze" is not pure ethylene glycol and is not a suitable substitute or ethylene glycol.

Acetone, commercial grade.

Precautionary Statements

Gas-Alcohol Blend — Volatile and extremely flammable. Harmful or fatal if swallowed. Keep away from heat, sparks, or open flame. Keep container closed, use only in well-ventilated area. Avoid prolonged or repeated breathing of vapor or contact with skin or eyes. If swallowed, do not induce vomiting. Call a physician immediately.

Ethylene Glycol — Harmful or fatal if swallowed. If swallowed, induce vomiting immediately. Call a physician immediately. Wash thoroughly after handling.

Acetone — Extremely flammable. May cause eye and skin irritation. Keep away from heat, sparks, or open flame. Keep container closed. Use with adequate ventilation. Avoid prolonged or repeated breathing of vapors. Avoid contact with eyes and skin.

Preparation of Apparatus

Clean the graduated cylinder thoroughly before carrying out this test as follows:

-Remove traces of fuel and ethylene glycol from the graduated cylinder and stopper by flushing twice with acetone and drain dry.
-Rinse twice with sample of fuel to be tested and drain.
-Clean pipet by filling twice with acetone, drain, and air dry using the bulb.

Procedure

Measure 100 mL of fuel sample to be tested into the graduated mixing cylinder at room temperature.
Pipet 10 mL of ethylene glycol into the cylinder and stopper the cylinder. (Caution--Draw ethylene glycol into the pipet using the pipet filler or bulb. Do not suck with mouth.)
Invert the cylinder holding the stopper with a finger and shake the cylinder back and forth for 15 s using about 10-in strokes for a total of 25 back and forth strokes.
Immediately place the cylinder on a vibration-free surface, and allow the contents to settle undisturbed for 5 min.
Record the volume of the ethylene glycol/alcohol layer in the bottom of the cylinder to the nearest 0.2 mL.

Calculation

Calculate the volume percentage of alcohol using a previously prepared calibration curve. This should preferably be developed using appropriate mixtures (that is 2, 5, 8, 10, 12, 15, and 20%) of the specified denatured alcohol and blended into the base gasoline. For field use, if the gasoline or alcohol source is not known, an average of a number of such curves may be used. In case of dispute, chromatographic procedures will be required.

Precision

Repeatability -- Duplicate results by the same operator for fuel containing 10% denatured ethanol should be considered suspect if they differ by more than 1.0 mL. Results for other blends should be of similar repeatability.

METHOD OF SALE REQUIREMENTS

Based on further discussions during the NCWM Annual Meeting, the Committee is persuaded that invoicing requirements must be added to any pump labeling requirement for posting of the presence of ethanol or methanol in gasoline.

The Committee still believes that recommending labeling of the maximum amount of alcohol in a motor fuel is premature at this time:

- The field test method recommended in the Committee's report may not be accurate enough for enforcement of a posting requirement as to the maximum percent alcohol content. The majority of States must presently rely on this field test method as its only tool for compliance testing.

- The Committee believes that the gasoline retailer will have an enormous variety of blends to select from very soon, making any posting of alcohol content meaningless in terms of accuracy.

- The Committee's recommendation does not preclude additional voluntary labeling information and consumer education efforts as to percentage amounts, meeting ASTM standards, etc.

The Committee recommends the following section be added to the UMOSR:

2.19. GASOLINE - ALCOHOL BLENDS

2.19.1. Method of Retail Sale - All motor fuel kept, offered, or exposed for sale, or sold, at retail containing at least one percent by volume of ethanol, methanol, or a combination shall be identified as "with," "containing," (or similar wording) "ethanol," "methanol" or "ethanol/methanol" on the dispenser front panel in a position clear and conspicuous from the driver's position, in a type at least one-half the size of the product identity but in no case less than one half inch in height, 1/16 inch stroke (width of type).

2.19.2. Documentation in Wholesale Transactions - At any point in the wholesale distribution chain, there must be disclosed, at the time of delivery of the fuel, on an invoice, bill of lading, shipping paper, or other documentation, the presence and amount of oxygenates (in terms of percent by weight) contained in the fuel; Provided that the term "oxygenates" means any oxygen-containing compound (such as an alcohol or an ether.)

(A motion was made to amend this item by adding to Section 2.19.1. that the "maximum volume percent of the ethanol or methanol and cosolvent" be required to be posted. The Chair recognized a majority vote to debate. The motion to amend was defeated. A second motion was made to change the size of lettering required by Section 2.19.1. by deleting the requirement for it to be "one-half the size of product identity." The Chair recognized a majority vote to debate, but the motion to amend was defeated. A third motion was made to change the requirement for "percent by weight" to "percent by volume" in Section 2.19.2. The Chair recognized a majority vote to debate, but the motion to amend was defeated. A fourth motion was made to delete Section 2.19.2. The Chair recognized a majority vote to debate, but the motion to amend was defeated. Finally, Item 204-5 was adopted.)

204-6* METHOD OF SALE OF PETROLEUM PRODUCTS

For several years, a great deal of controversy has accompanied proposals emanating from the Committee on Specifications and Tolerances (S&T) and from the Committee on Laws and Regulations (L&R) pertaining to temperature adjustment of petroleum products. The S&T Committee has wrestled with the Vehicle Tank Meter Code of Handbook 44 (1979, 1980, 1982, 1983). The L&R Committee proposed a method of sale requirement for home heating oil (1980). All proposals to change existing NCWM Handbooks were defeated. The Western Weights and Measures Association proposed that the L&R Committee again take up the issue of a method of sale, requiring the sale of liquid petroleum products to be in terms of a gallon defined as 231 cubic inches at 60 degrees Fahrenheit.

Everyone on the Committee recognizes the inherent physical characteristics of liquids -- that a given volume of liquid will change when the temperature of the liquid is changed. What is not so well agreed upon is how to handle the economic and political aspects of this issue. For example, LPG is usually sold today on a temperature adjusted

basis but there is great resistance to home heating oil being sold that way. Requiring automatic temperature adjustment by an entire industry appears to be a major stumbling block; few favor the use of look-up tables and manual corrections; and yet, there seems to be an obvious inequity when some sales of a given amount of product in a given State are on a temperature-adjusted basis and others not.

The Committee had planned to study whether there were areas of agreement within the weights and measures community on the regulation of certain commodities, as complicated by the status of certain technologies, and on the cost-benefit of changing existing practices within certain segments of the industry (LPG, gasoline, diesel, fuel oil, etc.). For example, the following questions were to be explored:

-Should a method of sale be applicable to only certain petroleum products (e.g., LPG)?

-Should a method of sale be applicable only when temperature adjustment can be made automatically (as opposed to table look-ups)?

-Should small delivery sizes (e.g., less than 30-50 gallons) be exempted from temperature adjustment?

After discussion with representatives of the American Petroleum Institute and the National LP Gas Association, the Committee was persuaded that temperature adjustment should be addressed as a whole (rather than piece-meal), and that the entire Conference membership should be exposed to the latest information and have the opportunity to debate the issues long before Committee action in this area (and that a position on such a pervasive subject cannot be developed in a short time). It was pointed out that the Temperature Compensation Symposium held in 1979 was not held as part of the National Conference on Weights and Measures (NCWM) annual meeting, and that many weights and measures officials were not therefore able to hear all aspects of the issue. **The L&R Committee therefore proposes to carry this item over, without making any recommendation at the present time, in order for the entire Conference to review alternative solutions, and to plan an NCWM approach to the issues. The technical, legal, and economic issues, alternatives, and constraints will be aired at the annual meeting this July and a consensus will be sought by circulating a questionnaire during the meeting.**

The Committee is aware that this issue may become part of the deliberations of the newly established Task Force on Motor Fuel at some future time. However, the focus of the new task force is presently intended to be on gasoline and alcohol/gasoline mixtures only. The Committee members believe that the issue of temperature adjustment of petroleum products in general should be aired before the NCWM membership.

204-7* REVIEW OF THE UNIFORM REGULATION FOR THE METHOD OF SALE OF COMMODITIES

(This item was carried over from the 68th NCWM, 1983, in which it was Item 204-1.)

Last year, as a result of the intercomparison of existing State requirements with the UMOSR, it was determined that fewer than ten States had adopted more than 50% of the Uniform Regulation. The Committee decided to review the UMOSR in order to determine whether certain sections of the uniform regulation were still needed since so few States had adopted these sections. After some discussion, the Committee members agreed that the usefulness of the UMOSR cannot be gauged only by how well or how poorly each section has been adopted across the nation. Both Committee members and State representatives present at these discussions agreed that the NCWM UMOSR is a national standard to which most States refer when asked by packagers, retailers, and other types of businesses as to how to sell any given commodity. States encourage packagers and manufacturers planning to market a product interstate to refer to the UMOSR and UPLR for answers to their questions concerning proper methods of sales and package marking. Thus, the UMOSR, although all sections have not been widely adopted as State regulations, is a standard of practice that the Committee feels strongly should be retained. Unfortunately, a voluntary standard of practice is not enforceable. **Therefore, the Committee members continue to encourage individual States to consider when updating their weights and measures law, the automatic citation provisions added to the UWML (see Item 202-1 of the Committee's 1983 report). Alternatively, States should consider adoption of the most recent version of the UMOSR.**

205 UNIFORM REGULATION FOR THE VOLUNTARY REGISTRATION OF SERVICEPERSONS AND SERVICE AGENCIES FOR COMMERCIAL WEIGHING AND MEASURING DEVICES

205-1* BACKGROUND AND DISCUSSION

(This item was carried over from the 68th NCWM, 1983, in which it was Item 205.)

After several years of work, (see especially 1982 and 1983 Committee Reports) the Committee is prepared to recommend a major revision of the URR.

The major changes proposed for the existing regulation are:

-Registration will explicitly depend upon the qualifications of each applicant.

-Minimum equipment requirements are established by referencing the NOTES sections of Handbook 44.

-The certificate of registration will automatically expire at the end of one year.

-The responsibilities of the registered serviceperson are enumerated.

-Calibration of equipment by other State weights and measures laboratories is recognized.

-Informal reciprocity with respect to other voluntary registration programs has been dropped (due to the difficulty of managing record keeping and operating procedures).

-What action or failure of action constitutes a violation of the regulation is described.

The Committee was asked to retain registration of agencies (rather than just persons). The Committee has responded by inserting in the regulations the registration of agency and persons along with the registration of persons. The Committee members believe that registration of the agency only (without regard to servicepersons employed by the agency) will not permit monitoring of the quality of each individual's work, a key ingredient in successful operation of a registration program.

The Committee was asked to stagger the date of registration. This has been accomplished.

The Committee was asked to add references to NBS Handbooks 105-1, -2, and -3. This has also been done.

Finally, it was proposed that this regulation be made mandatory rather than remain voluntary. Arguments in favor of mandatory registration are:

-The public is safeguarded by mandatory registration in the same way that traffic safety is maintained by means of mandatory drivers' licensing.

-There is no way to prevent poor work quality if unregistered servicepersons perform the work (i.e., you can't "pull their license").

-With voluntary registration, there are two standards in effect, one for registrants and one for everyone else.

However, the Committee members believe that a strong registration program depends on its voluntary nature:

-A voluntary program is not a restraint of trade. A voluntary registration regulation does not impede anyone's right to do business, it only restricts the right to remove a rejection tag and to place equipment into service.

-Higher standards for qualification and maintenance of registration can be imposed with a voluntary registration than can be instituted with a mandatory registration.

-Withdrawal of registration under a mandatory program requires the most careful administration of due process, because it will mean putting a person out of business.

In addition to recommending adoption of the regulation itself, the Committee recommends that each weights and measures jurisdiction establish an administrative policy and document the operating procedures that will accompany the registration program. Such operating procedures may include:

- Specific Qualifications For Certification, for example:
  - -Application form and fee, if applicable
  - -Time in training, what qualifies as training
  - -Time in experience, what qualifies as experience
  - -Knowledge of regulations and handbooks
  - -Oral, written, or performance examinations
  - -Proof of suitable equipment and standards availability, and proof of annual standards calibration
  - -Formal, signed agreement with weights and measures agency concerning duties and responsibilities of registrant including the use of placed-in-service reports

- Assignment of Certificate of Registration
  - -Registration numbers for agency and person
  - -Establishment of historical file
  - -Establishment of categories of authority (retail motor fuel dispensers, scales up to and including x pounds, etc.)

- Monitoring Program
  - -Tests, forms, and reports to be completed by serviceperson Encluding number of readings, actual device performance, etc.
  - -Tests, forms, and reports to be completed by weights and measures official
  - -Sampling period for field checks
  - -Keeping of historical record

Notification of Agency or Repairperson
  - -Improper repair
  - -Device that did not pass inspection
  - -Suspension of regisration
  - -Withdrawal of registration

The Committee recommends the following revision:

205-2 UNIFORM REGULATION FOR THE VOLUNTARY REGISTRATION OF SERVICEPERSONS AND SERVICE AGENCIES FOR COMMERCIAL WEIGHING AND MEASURING DEVICES

SECTION 1. POLICY

For the benefit of the users, manufacturers, and distributors of commercial weighing and measuring devices, it shall be the policy of the Director of Weights and Measures, hereinafter referred to as "Director," to accept ~~voluntary~~ registration of (a) an individual and (b) an agency ~~that~~ providing acceptable evidence that he, she, or it is fully qualified by training or experience to install, service, repair, or recondition a commercial weighing or measuring device; has a thorough

working knowledge of all appropriate weights and measures laws, orders, rules, and regulations; and has possession of or available for use, and will use calibrated weights and measures standards and testing equipment appropriate in design and adequate in amount. (An employee of government shall not be eligible for registration.)

The Director will check the qualifications of each applicant. It will be necessary for an applicant to have available sufficient standards and equipment (see Section 5).

It shall also be the policy of the Department to issue to qualified applicants, whose applications for registration are approved, a "Certificate of Registration." This gives authority to remove rejection seals and tags placed on Commercial and Law-Enforcement Weighing and Measuring Devices by authorized weights and measures officials, to place in service repaired devices that were rejected, or to place in service devices that have been newly installed.

The Director is NOT guaranteeing the work or fair dealing of a Registered Serviceperson or Service Agency. He will, however, remove from the registration list any Registered Serviceperson or Service Agency that performs unsatisfactory work or takes unfair advantage of a device owner.

Registration with the Director shall be on a voluntary basis. The Director shall reserve the right to limit or reject the application of any Serviceperson or Service Agency and to revoke his, her, or its permit to remove rejection seals or tags for good cause.

This policy shall in no way preclude or limit the right and privilege of any ~~qualified~~ individual or agency not registered with the Director to install, service, repair, or recondition a commercial weighing or measuring device. (however, see Section 6.)

SECTION 2. DEFINITIONS

2.1. REGISTERED SERVICEPERSON. — The term "Registered Serviceperson" shall be construed to mean any individual who for hire, award, commission, or any other payment of any kind, installs, services, repairs, or reconditions a commercial weighing or measuring device, and who voluntarily ~~registers~~ applies for registration ~~himself or herself~~ as ~~such~~ with the Director of Weights and Measures.

2.2. REGISTERED SERVICE AGENCY. — The term "Registered Service Agency" shall be construed to mean any agency, firm, company, or corporation that for hire, award, commission, or any other payment of any kind installs, services, repairs, or reconditions a commercial weighing or measuring device, and that voluntarily registers itself as such with the Director of Weights and Measures. Under agency registration, identification of individual servicepersons shall ~~not~~ be required.

2.3. COMMERCIAL AND LAW-ENFORCEMENT WEIGHING AND MEASURING DEVICE. —The term "Commercial and Law-Enforcement Weighing and Measuring Device" shall be construed to include any weight or measure or weighing or measuring device commercially used or employed in establishing the size, quantity, extent, area, or measurement of quantities, things, produce, or articles for distribution or consumption, purchased, offered, or submitted for sale, hire, or award, or in computing any basic charge or payment for services rendered on the basis of weight or measure. It and shall also include any accessory attached to or used in connection with a commercial weighing or measuring device when such accessory is so designed or installed that its operation affects ~~or may effect~~ the accuracy of the device. It also includes weighing and measuring equipment in official use for the enforcement of law or for the collection of statistical information by government agencies.

~~SECTION 3. RECIPROCITY~~

~~The Director may enter into an informal reciprocal agreement with any other State or States that has or have similar voluntary registration policies. Under such agreement, the Registered Servicepersons and the Registered Service Agencies of the States party to the reciprocal agreement are granted full reciprocal authority, including reciprocal recognition of certification of standards and testing equipment, in all States party to such agreement.~~

SECTION 43. REGISTRATION FEE

There shall be charged by the Director an annual fee of ~~$1.00~~ ($) per Registered Serviceperson and ~~$5.00~~ ($) per Registered Service Agency to cover costs at the time application for registration is made, and annually ~~during the month of January~~ thereafter.

SECTION 54. VOLUNTARY REGISTRATION

An individual or agency qualified by training or experience may apply for registration to service weighing devices or measuring devices on an application form supplied by the Director. Said form, duly signed and witnessed, shall include certification by the applicant that the individual or agency is fully qualified to install, service, repair, or recondition whatever devices for the service of which competence is being registered; has in possession or available for use, and will use, all necessary testing equipment and standards; and has full knowledge of all appropriate weights and measures laws, orders, rules, and regulations. An applicant also shall submit appropriate evidence or references as to qualifications. Application for registration shall be voluntary, but the Director is authorized to reject, or limit the scope of, any application.

SECTION 5. MINIMUM EQUIPMENT

Applicants must have available sufficient standards and equipment to adequately test devices as set forth in the Notes section of each applicable code in NBS Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices." When applicable, this equipment will meet the specifications of National

Bureau of Standards Handbook 105-1, "Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures, Specifications and Tolerances for Field Standard Weights (NBS Class F)," National Bureau of Standards Handbook 105-2, "Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures, Specifications and Tolerances for Field Standard Measuring Flask," or National Bureau of Standards Handbook 105-3, "Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures, Specifications and Tolerances for Graduated Neck Type Volumetric Field Standards." See also Section 9.

SECTION 6. CERTIFICATE OF REGISTRATION

The Director will review and check the qualifications of each applicant. ~~Upon receipt and acceptance of properly executed application form, t~~ The Director shall issue to the applicant a "Certificate of Registration," including an assigned registration number if it is determined that the applicant is qualified. ~~which shall remain effective until either returned by the applicant or withdrawn by the Director.~~ The "Certificate of Registration" will expire one year from the date of issuance.

SECTION 7. PRIVILEGES AND RESPONSIBILITIES OF A VOLUNTARY REGISTRANT

A bearer of a Certificate of Registration shall have the authority to remove an official rejection tag or mark placed on a weighing or measuring device by the authority of the Director; place in service, until such time as an official examination can be made, a weighing or measuring device that has been officially rejected; and place in service, until such time as an official examination can be made, a new or used weighing or measuring device. The Registered Serviceperson or Service Agency is responsible for installing, repairing, and adjusting devices such that the devices are adjusted as closely as practicable to zero error.

SECTION 8. PLACED IN SERVICE REPORT

The Director shall furnish each Registered Servicemanperson and Registered Service Agency with a supply of report forms to be known as "Placed in Service Reports." Such a form shall be executed in triplicate, shall include the assigned registration number, and shall be signed by a Registered Servicemanperson or by a servicemanperson representing a Registered Agency for each rejected device restored to service and for each newly installed device placed in service. Within 24 hours after a device is restored to service, or placed in service, the original of the properly executed Placed in Service Report, together with any official rejection tag removed from the device, shall be mailed to the Director at (address) . The duplicate copy of the report shall be handed to the owner or operator of the device, and the triplicate copy of the report shall be retained by the Registered Servicemanperson or Agency.

SECTION 9. EXAMINATION AND CALIBRATION OR CERTIFICATION OF STANDARDS AND TESTING EQUIPMENT

A registered Serviceperson and a Registered Service Agency shall submit, at least annually ~~biennially~~ to the Director, for examination and certification, any standards and testing equipment that are used, or are

to be used, in the performance of the service and testing functions with respect to weighing and measuring devices for which competence is registered. 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 traceability to the National Bureau of Standards will also be recognized as equipment suitable for use by Registered Servicepersons or Service Agencies in this State.

SECTION 10. REVOCATION OF CERTIFICATE OF REGISTRATION

The Director is authorized to ~~may for good cause, after careful investigation and consideration~~ suspend or revoke a Certificate of Registration for good cause which shall include but not be limited to: taking of unfair advantage of an owner of a device; failure to have test equipment or standards certified; failure to use adequate testing equipment, failure to adjust Commercial or Law-Enforcement Devices to comply with Handbook 44 subsequent to service or repair.

SECTION 11. PUBLICATION OF LISTS OF REGISTERED SERVICE-PERSONS AND REGISTERED SERVICE AGENCIES

The Director shall publish, from time to time as he deems appropriate, and may supply upon request, lists of Registered Servicepersons and Registered Service Agencies.

SECTION 12. EFFECTIVE DATE

This regulation shall become effective on _____.

(Item 205-2 was adopted).

206* UNIFORM OPEN DATING REGULATION

(This item was carried over from the 68th NCWM, 1983, in which it was item 206.)

Last year the Committee printed in its report the Association of Food and Drug Officials (AFDO) "Uniform State Open Dating Bill" for the information of NCWM members. It had been proposed that the NCWM uniform regulation be brought into conformity as much as possible with the AFDO uniform bill. After careful study, the Committee members were of the opinion that in most of the instances of variation between the versions, the AFDO requirements were improvements on the NCWM version.

At the 1983 annual meeting a comment was received that open dating requirements did not fit into the bounds of weights and measures responsibilities. This argument was raised at the time of the original adoption of this regulation in 1973 and will probably continue to be a point of contention between some jurisdictions for some time to come. As the economy evolves and as the needs of the nation's citizenry change,

weights and measures will change. Open dating was perceived as a need for the packaged retail food purchaser and began to be required in the early 1970's. Since few other regulatory agencies operate so pervasively as weights and measures at the retail food store level, in the interests of program efficiency, weights and measures jurisdictions were given open dating requirements to administer at that time. Packagers have perceived that consumers want this information and have generally voluntarily supplied it following either the NCWM or AFDO requirements as guidelines. Open dating requirements as standards of practice for packagers to voluntarily follow are unnecessarily complicated if there are two different standards covering the same practice. Moreover, as rural areas become urbanized, the Committee members believe open dating regulations will become increasingly necessary and should be retained as a voluntary standard for those jurisdictions that need such regulations.

The Committee therefore provides the following revision of the uniform Open Dating Regulation for information. Some differences with the AFDO uniform bill still remain: meat, poultry, and seafood are still excluded in the NCWM revision (the AFDO bill does not exempt these items); the NCWM revision would permit "words of similar import" to "sell by" and "best if used by"; and the NCWM revision requires a "sell by" date on food spoiling within 60 days of packaging (the AFDO bill requires it on all food spoiling within 90 days of packaging). The Committee will therefore continue to work with AFDO to achieve uniformity between the two versions. The Committee intends to propose adoption of a revised version next year.

UNIFORM OPEN DATING REGULATION

SECTION 1. PURPOSE, SCOPE, AND APPLICATION

(a) Purpose. The purpose of this regulation is to cause certain foods to be identified relative to physical sensory qualities for both use by the user and rotation by the distributor(s).

(b) Scope. This regulation prescribes the method of posting and identification date, date determination, required records, responsible persons, and foods subject to the regulation. In addition, this regulation provides for exemption of certain foods and for sale of foods after the expiration of an identifying open date.

~~Except for packages and commodities in package form open dated in accord with existing regulations, or specifically exempted therefrom, any open dating information provided or required for any perishable and semiperishable food commodity shall provide such information in the manner prescribed herein.~~

SECTION 2. DEFINITIONS

2.1 "SELL BY" DATE. -- "'Sell by' date" means a recommended last date of sale that permits a subsequent period before deterioration of qualities described in 2.2., 2.3., and 2.4.

2.2. PERISHABLE FOOD. — "Perishable food" means any food having a significant risk of spoilage, loss of value, or loss of palatability within 60 days of the date of packaging.

2.3. SEMI-PERISHABLE FOOD. — "Semi-perishable food" means any food with greater than 60 days, but less than 6 months after the date of packaging before having a significant risk or spoilage, loss of value, or loss of palatability.

2.4. LONG SHELF-LIFE FOOD. — "Long shelf-life food" means any food in which a significant risk of spoilage, loss of value, or loss of palatability would not occur sooner than 6 months after the date of packaging including foods preserved by freezing, dehydrating, or being in a hermetically sealed container.

2.5. PREPACKAGED. — "Prepackaged" means packaged prior to being displayed or offered for retail sale.

2.6. "BEST IF USED BY" DATE. — "'Best if used by' date" means a date prior to deterioration of qualities described in 2.3. and 2.4.

2.7. PERSON. — "Person" means an individual, partnership, association, or corporation.

~~2.1. FOOD COMMODITY IN PACKAGE FORM. — The term "food commodity in package form" shall be construed to mean a food commodity put up or packaged in any manner in advance of sale in units suitable for retail sale. Where the term "food package" is used in this Regulation, it shall be construed to mean "food commodity in package form"-as-herein-defined.~~

~~2.2. CONSUMER PACKAGE. PACKAGE OF CONSUMER COMMODITY. — A "consumer package" or "package of consumer commodity" shall be construed to mean a food commodity form that is customarily produced or distributed for sale through retail sales agencies or instrumentalities for-consumption-by-individuals.~~

~~2.3. PERISHABLE, SEMIPERISHABLE FOOD COMMODITY. — The term "perishable or semiperishable food commodity" shall mean any food commodity in package form which the manufacturer or packer determines as having a significant risk of spoilage, loss of value, or loss of palatability within 60 days of the date of packaging. Provided, That the term-does-not-include-meats,-poultry,-seafood,-and-fresh-produce.~~

~~2.4. PULL DATE. — The term "pull date" means the last date on which a perishable or semiperishable food commodity should be sold without a significant risk of spoilage, loss of value, or loss or palatability, if stored by the purchaser after that date for the period and in the manner which such-commodity-can-reasonably-be-expected-to-be-stored.~~

SECTION 3. SALE OF PERISHABLE FOOD AND DATE DETERMINATION.

3.1. "SELL BY" DATE. — A retail food establishment shall not sell or offer for sale prepackaged perishable food unless identified with a "sell by" date.

3.2. SALE AFTER EXPIRATION OF SELL BY DATE. —

3.2.1. ADVERTISEMENT. — Perishable food shall not be offered for sale after the "sell by" date unless it is wholesome and advertised in a conspicuous manner as being offered for sale after the recommended last date of sale. The placement of a sign, sticker, or tag is acceptable for such advertising if it is easily readable and clearly identifies the perishable food as having passed the recommended last date of sale.

3.2.2. RESPONSIBILITY FOR ADVERTISEMENT. — The retailer or final seller is responsible for the advertisement, described in 3.2.1., of a perishable food offered for sale after the recommended last date of sale.

3.3. DETERMINATION OF SELL BY DATE. —

3.3.1. REASONABLE PERIOD FOR CONSUMPTION. — A manufacturer, processor, packer, repacker, retailer or other person who prepackages perishable food, shall determine a date which allows a reasonable period after sale, for consumption of the food, without physical spoilage, loss of value, or loss of palatability. A reasonable period for consumption shall consist of at least one third of the approximate total shelf life of the perishable food.

3.3.2. RESPONSIBILITY FOR SELL BY DATE. — A retailer who purchases prepackaged perishable food may upon written agreement with the person prepackaging such food determine, identify, and be responsible for the sell by date placed on or attached to each package of such food.

3.4. MANNER OF EXPRESSING DATE. —

3.4.1. MONTH AND DAY OR DAY OF WEEK. — A person described in section 3.3.1. or 3.3.2. shall place or attach to each package of perishable food a date by month and day. However, bakery products with a shelf-life of not more than 7 days may be dated with the day of the week representing the last recommended day of sale.

3.4.2. THE TERM "SELL BY". — The "sell by" date shall be displayed with the term "sell by" or words of similar import immediately preceding or immediately over the designated date unless a prominent notice is on the label describing the date as a "sell by" date and indicating the location of the date.

3.4.3. ABBREVIATION OF WEEKDAY. — If the day of the week is solely designated as provided in section 3.4.1., the name of the day may be abbreviated by the use of either the first two or first three letters of the name of the day.

3.4.4. EXPRESSION OF MONTH AND DAY. — Except as provided for in section 3.4.1., the date shall be designated by the first three letters of the month followed by a numeral indicating the calendar day or designated by the month represented numerically followed by a numeral designation of the calendar day. The month and day designation shall be separated by a period, slash, dash, or spacing. When a numeral designation of the first nine days of the month is used, the number shall include a zero as the first digit; for example, 01 or 03.

3.4.5. EXPRESSION OF THE YEAR. — The "sell by" date may include the year following the day if such year is expressed as a two or four digit number separated as described in section 3.4.4

~~SECTION 3.--DATING REQUIREMENTS~~

~~No person who manufactures or packages a perishable or semiperishable food commodity in package form may distribute, or cause to be distributed for purposes of sale, such commodity unless such consumer packages are labeled to show the pull date in accordance with Sections 5, 6, 7.~~

SECTION 4. SALE OF SEMI-PERISHABLE AND LONG SHELF-LIFE FOOD.

4.1. "BEST IF USED BY" DATE. — A manufacturer, processor, packer, repacker, or other person who prepackages semi-perishable or long shelf-life food may place upon or attach to the package an open date providing it is designated by the "best if used by" date.

4.2. SALE AFTER EXPIRATION OF "BEST IF USED BY" DATE. — A retail food establishment may sell or offer for sale food beyond the designated "best if used by" date providing the food is wholesome and the sensory physical quality standards for that food have not significantly diminished.

4.3. MANNER OF EXPRESSING DATE. — The "best if used by" date as required by section 4.1. shall be placed upon or attached to each container or package and be limited to the terms "best if used by" or words of similar import followed by or immediately over the date designated by the month and year unless a prominent notice is on the label describing the date as a "best if used by" date and indicating the location of the date. The date shall be designated by the first three letters of the month followed by a numeral indicating the year. The use of the day of the month is permissible providing the day of the month is placed prior to the month; for example, 30 Jun 81.

~~SECTION 4.--COMMODITIES TO BE DATED~~

~~All perishable and semiperishable food commodities, when put up in consumer packages, are required to be dated with a pull date in accordance with this Regulation.~~

SECTION 5. PLACEMENT OF THE DATE.

The date, whether a "sell by" or "best if used by," shall be printed, stamped, embossed, perforated, or otherwise shown on the package, label on the package, or tag attached to the package in a manner that is easily readable and separate from other information, graphics, or lettering so as to be clearly visible to a prospective purchaser. The date shall not be superimposed on other required information or obscured by other information, graphics, or pricing. Regardless of the type size used, the date shall be easily readable. These requirements do not preclude the serving of a supplemental notice elsewhere on a package describing and/or indicating the location of the date.

~~SECTION 5.--DATE REQUIRED~~

~~The date required by the Regulation shall be construed to mean the date by which the commodity should be removed from the channel for regular sale (pull date). The date may be accompanied by a statement appropriately identifying it as a pull date by the use of such terms as "not-to-be-sold-after," "sell-by," or words of similar import.~~

~~SECTION 6.--MANNER OF EXPRESSING DATE~~

~~Commodities subject to this Regulation must be dated in accordance with this section. The date must show first the month and then the day of the month, followed by the year, if used. The month must be shown by letters that clearly identify the month or by digits "1" through "12," where "1" signifies January, "2" signifies February, and so on through "12" which signifies December. The day of the month must be shown by the digits "1" through "31," to show the date within the month specified. The digits for the month must be separated from the digit or digits for the date within the month by a space, a dash, an asterisk or other symbol. Bakery products with a shelf life of 7 days or less and subject to this Regulation may be open dated with the days of the week or abbreviation of same, in lieu of the foregoing requirements, as follows:~~

~~Sunday------SU, SUN---------- Thursday,---TH, THU, THUR~~
~~Monday------MO, MON---------- Friday------FR, FRI~~
~~Tuesday-----TU, TUES---------- Saturday----SA, SAT~~
~~Wednesday---WE, WED~~

~~SECTION 7.--PLACEMENT OF DATE~~

~~The date required or permitted by this Regulation must be placed on each package, made available to purchasers. The date shall be presented in a size, manner, and style clearly and easily legible to the purchaser at the time of making or accepting a selection for purchase.~~

SECTION 6. FACTORS FOR THE DATE DETERMINATION.

A person who, as provided for in this regulation , places either the "sell by" date or "best if used by" date shall determine the date taking into consideration the food quality, characteristics, formulation, processing impact, packaging or container and other protective wrapping or coating, customary transportation, and storage and display conditions. For

purposes of calculating this date, home storage conditions shall be considered similar to the usual retail store except that refrigerated food may be calculated using a home storage temperature standard of 40 degrees Fahrenheit (4.4 degrees Celsius).

SECTION 7. RECORDS

A person responsible for establishing the date for perishable, semi-perishable, and long shelf-life food shall keep a record of the method used for the determination of that date. A record revision is necessary whenever a factor affecting date determination is altered. Such record shall be retained for not less than 6 months after the most recent "sell by" or "best if used by" date and be available during normal business hours for examination upon request by (insert agency name).

SECTION 8. EXEMPTIONS

8.1. This regulation does not apply to fresh fruits and vegetables offered for sale unpackaged or in a container permitting sensory examination, other non-packaged food and food products, salt, and crystallized refined sugar.

8.2. This regulation does not apply to meat, poultry, fish, or seafood.

8.3. This regulation does not apply to an individually packaged food item that is a component of a larger packaged food item if the larger food item is identified with a date the same as or earlier than the date of the component.

SECTION 9. PREEMPTION OF LOCAL, COUNTY, AND MUNICIPAL ORDINANCE

A municipality or county shall not adopt or impose standards or requirements other than those provided for in this regulation.

~~SECTION 8. PREEMPTION~~

~~No person subject to this Regulation shall be required to affix any date to any food commodity in package form except as provided for by law or regulation of the United States or by law or regulation of this State.~~

SECTION 10. EFFECTIVE DATE

This regulation shall become effective on and after (insert appropriate date).

~~SECTION 9. EFFECTIVE DATE~~

~~Full compliance with this Regulation by any manufacturer or packer shall be attained within 1 year after this Regulation, by its terms, becomes applicable to such manufacturer or packer.~~

207-1* ADOPTION OF NBS HANDBOOK 133

The Committee met jointly with the Liaison Committee and the Task Force on Package Control during the Interim Meetings to review the changes being proposed by NBS in preparation for a second edition of Handbook 133 (H-133) "Checking the Net Contents of Packaged Goods." (See Liaison Committee report for more details.)

H-133 was published in 1981. Since that time NBS has conducted several workshops and seminars on the handbook in different parts of the country, developed a field manual as a condensed version for the field inspector, and begun development of a video cassette training course.

Many weights and measures officials have had reservations about some aspects of the handbook. Some are concerned about the more complicated sampling procedures, especially Category A sampling plans. Some believe the Maximum Allowable Variations proposed in H-133 are too large for random-pack packages put up in a retail store. Some had hoped the handbook could provide more definitive procedures for handling packages subject to moisture loss.

The Committee has had the opportunity to review the NBS plan for changes being proposed for H-133 (see Liaison Committee report for details). It should be noted, for example, that there is a very close similarity between Category B plans in H-133 and Handbook 67 (H-67).

The Committee believes that the second edition of H-133 will go a long way towards clarifying and simplifying package test methodology. However, there are some aspects of package testing that cannot be solved by the National Bureau of Standards alone. For example, NBS took a simplified approach to the issue of the limits of reasonable package variations by proposing a single set of figures called the Maximum Allowable Variations or MAV for all types of packages. Exceptions to the MAV's are noted in H-133 for textiles as set forth in the NCWM's Uniform Packaging and Labeling Regulation. The Committee believes that this sets a precedent for the NCWM to consider requests for deviations to the MAV's for either easier-to-pack packages (such as perhaps store packed random packages may be) or harder-to-pack packages (such as produce or other items may be). Last year the Committee reviewed a request from the baking industry on this issue (request for a limit larger than H-133 MAV's) and determined that it was an appropriate subject to explore (see item 203-5 in 1983 Committee report).

Another example is the issue of moisture loss. This issue is more than a strictly technical one. The Conference voting membership is on record as favoring full net weight at retail. This position is in opposition to those Federal and State regulations that permit variations due to exposure during good distribution practices, and is probably opposed by a substantial portion of the packaging industry. Here again, the Conference is an ideal forum for reviewing and proposing solutions to the issue of moisture loss through negotiation and discussion by all affected parties, either on a product-by-product basis or across the board.

During the interim meetings, a questionnaire was circulated concerning the issue of adoption of the Second Edition of H-133. (See questionnaire below.)

It should be made clear that the Conference did not adopt H-67 in the same sense that it adopted H-44, which was made a part of the ongoing annual activities of the NCWM. The Committee is recommending adoption of H-133 so that revisions and annual updates can be made by the voting membership and so that the document can become a standard of practice for the entire weights and measures community. The Committee believes that one of the reasons there is a poor record in uniformity of testing by the States (see past years' Task Force on Package Control reports) is that H-67 was never updated as changes were perceived to be needed. Out of 31 responding to the questionnaire, 23 recommended adoption at the 69th Annual Meeting and eight recommended postponement. Although a clear majority favors adoption, the Committee, upon reflection, believes that the entire Conference membership should have an opportunity to study and discuss the Second Edition of H-133. The Second Edition has not yet been published but was distributed in draft form at the 69th annual meeting to the State Directors. **Therefore, the Committee intends to recommend adoption of H-133 next year and to develop a list of priorities for action (MAV's, moisture loss, etc.). The Committee requests information from the membership regarding these priorities.**

HANDBOOK 133 QUESTIONNAIRE

A great amount of effort has been devoted to provide a sound technical basis for use by both regulatory officials and industry in the area of package control. This effort has culminated in the development of Handbook 133 by the NBS. The 1st Edition, published in 1981, has provided an opportunity to actually test its approach, including statistical sampling plans, in the field, wholesale house and packaging plant. As a result of the experience to date, a series of meetings have been held to discuss proposed changed and improvements in the Handbook. The NBS will be publishing the 2nd Edition of Handbook 133 this year, incorporating the improvements it believes are justified.

The Laws and Regulations Committee is seriously considering recommending the adoption of the Handbook (2nd Edition) at the 69th Annual Meeting in Boston.

Do You -

__ Recommend proposing adoption at the 69th Annual Meeting?

__ Recommend postponing adoption by the NCWM?

If you recommend postponement

Why?_____

_____

207-2* POLICY AND GUIDELINES ON MOTOR FUEL DELIVERIES (GAS PUMP) PRICE POSTING RELATED TO CASH DISCOUNTS

On February 27, 1984, the credit-card surcharge prohibition in the Cash Discount Act expired. The Committee is informed that the House voted to extend the Cash Discount Act until May 31, 1985 but that the Senate did not act on the House bill before its summer recess. The Senate is expected to act when it reconvenes in the Fall. The Committee will continue to keep informed on action by Congress and on sales practices in this area and will be prepared to recommend NCWM action, if necessary, at the annual meeting to review or revise existing NCWM policy in this area (see Item 207-1 of the 68th NCWM, 1983 Report). Comments are invited.

W. R. Mossberg, Los Angeles, CA, Chairman
T. F. Brink, Vermont
G. E. Mattimoe, Hawaii
E. P. Skluzacek, Minnesota
D. E. Stagg, Alabama
C. S. Brickenkamp, Technical Advisor, NBS

COMMITTEE ON LAWS AND REGULATIONS

VOTING RESULTS - COMMITTEE ON LAWS AND REGULATIONS

Voting Key	House of State Representatives		House of Delegates	
	Yes	No	Yes	No
201-1	38	0	54	0
202-1				
203-1				
203-2				
204-3				
204-2	23	19	11	47
205	38	1	45	4
204-5-1st amendment	26	17	53	7
204-5-1st amendment	16	22	44	14
204-5-1st amendment	23	13	49	5
204-5-1st amendment	6	30	1	51
204-5	33	4	49	5
200	39	0	58	0

APPENDIX A

COMPARISON OF STATE REGULATIONS WITH THE UNIFORM PACKAGING & LABELING REGULATION

This comparison was made by Dr. C.S. Brickenkamp, NBS Technical Advisor to the Committee, and Ms.Paula Boelke, Physical Science Aide, Office of Weights and Measures, NBS.

SECTION/STATE	AL	AK	AZ	AR	CA	CO	CT	DE	DC	FL	GA	HI	ID	IL
NOTES	x fully adopted				* different from NCWM version									
	p adopted				in part									
Section 1. Application														
1a. Inner wrap	x	x	x	x	x	x	x	x		x	x	x	x	x
1b. Shipping	x	x	x		x	x		x		x	x	x	x	
1c. Auxiliary	x	x	x	x	x	x	x	x		x	x	x	x	x
1d. Tray Pack	x	x	x	x	x	x	x	x		x	x	x	x	x
1e. Open carriers	x	x	x		x	x		x		x	x	x	x	x
Section 2. Definitions														
2.1. Commodity		x	x	x	x	x		x		x	x	x	x	x
2.2. Consumer Pkg	x	x	x	x	x	x		x		x	x	x	x	x
2.3. Nonconsumer	x	x	x	x		x		x		x	x	x	x	x
2.4. Random	x	x	x	x	x	x	x	x		x	x	x	x	x
2.5. Label		x	x	x	x	x	x	x		x	x	x	x	x
2.6. Person			x	x	x		x	x		x		x	x	x
2.7. Display panel	x	x	x	x	x	x	x	x		x	x	x	x	x
2.8. Multi-unit	x	x	x		x	x		x		x	x	x	x	x
Section 3. Declaration of Identity: Consumer Package														
3.1. Declaration	x	x	x	x	x	x	x	x		x	x	x	x	x
3.1.1. Parallel	x	x	x	x	x	x		x		x	x	x	x	x
Section 4. Declaration of Identity: Nonconsumer Package														
	x	x	x	x	x	x		x		x	x	x	x	x
Section 5. Declaration of Responsibility: Consumer And Nonconsumer Packages														
	x	x	x	x	x	x	x	x		x	x	x	x	x

SECTION/STATE	AL	AK	AZ	AR	CA	CO	CT	DE	DC	FL	GA	HI	ID	IL
Section 6. Declaration of Quantity: Consumer Packages														
6.1. General			x		x	p						p		
6.2. Largest	x	x	x	x	x	x	x	x		x	x	x	x	x
6.2.a.1. In-lb	x	x	x	x	x	x	x	x		x	x	x	x	x
6.2.a.2. In-lb	x	x	x	x	x	x	x	x		x	x	x	x	x
6.2.b. Metric			x		x	x						x		
6.3. Quantity		x	x	x	x	x	x	x		x	x	x	x	x
6.3.1. Net wt		x	x	x	x	x	x	x		x	x	x	x	x
6.3.2.Lines/type		x	x	x	x	x	x	x		x	x	x	x	x
6.4. Terms	x	x	x	x	x	x	x	x		x	x	x	x	x
6.4.1.a. Weight	x	x	x	x	x	x	x	x		x	x	x	x	x
6.4.1.b. Measure	x		x	x	x	x	x	x		x	x	x	x	
6.4.1.c. Count	x	x	x	x	x	x	x	x		x	x	x	x	x
6.5.a. In-lb Wt.	x	x	x	x	x	x	x	x		x	x	x	x	x
6.5.b. In-lb Liq.	x	x	x	x	x	x	x	x		x	x	x	x	x
6.5.c. In-lb Lin.	x	x	x	x	x	x	x	x		x	x	x	x	x
6.5.d. In-lb Area	x	x	x	x	x	x	x	x		x	x	x	x	x
6.5.e. In-lb Vol.	x	x	x	x	x	x	x	x		x	x	x	x	x
6.5.f. In-lb Dry	x	x	x	x	x	x	x	x		x	x	x	x	x
6.5.1. Symbols	p	x	x	x	x	x	x	x		x	x	x	x	x
6.5.2. "Ounce"	x	x	x	x	x	x	x	x		x	x	x	x	x
6.6.a.Metric Wt.	x		x		x	x						x		
6.6.b.Metric Liq.	x	x	x	x	x	x	x	x		x	x	x	x	x
6.6.c.Metric Lin.	x		x		x	x						x		
6.6.d.Metric Area	x		x		x	x						x		
6.6.e.Metric Vol.	x		x		x	x						x		
6.6.1. Symbols	x	p	x	p	x	x	p	p		p	x	x	p	p
6.6.1.a. Grammar			x		x	x						x		
6.6.1.b. L & mL			x		x	x						x		
6.7. In-lb Prescr	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.1.a. Length	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.1.b. Area	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.1.c. Weight	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.1.d. Liquid	x	x	x	x	x	x	x	x		x	x	x	x	x
Proviso	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.2. Weight	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.3. Liquid	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.4. Length	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.5. Area	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.6.a. Length	x	x	x	p	x	x	x	x		x	x	x	x	x
6.7.6.b. Area	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.6.c. Weight	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.6.d. Liquid	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.7.a. Bidimen.	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.7.b.	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.7.b.1.	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.7.b.2.	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.7.b.3.	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.7.c.	x	x	x	x	x	x	x	x		x	x	x	x	x

SECTION/STATE	AL	AK	AZ	AR	CA	CO	CT	DE	DC	FL	GA	HI	ID	IL
6.7.7.c.1.	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.7.c.2.	x		x		x	x				x		x		
6.7.7.c.3.	x	x	x	x	x	x	x	x		x	x	x	x	x
6.7.7.d.	x	x	x	x	x	x	x	x		x	x	x	x	x
6.8.Metric Prescr	x		x		x	x					x	x		
6.8.1. Less than	x		x		x	x					x	x		
6.8.1.a. Length	x		x		x	x					x	x		
6.8.1.b. Area	x		x		x	x					x	x		
6.8.1.c. Weight	x		x		x	x					x	x		
6.8.1.d. Liquid	x		x		x	x					x	x		
Proviso	x		x		x	x								
6.8.2.a. Length	x		x		x	x					x	x		
6.8.2.b. Area	x		x		x	x					x	x		
6.8.2.c. Weight	x		x		x	x					x	x		
6.8.2.d. Liquid	x		x		x	x					x	x		
6.8.3.a.	x		x		x	x					x	x		
6.8.3.b.	x		x		x	x					x	x		
6.8.3.b.1.	x		x		x	x					x	x		
6.8.3.b.2.	x		x		x	x					x	x		
6.8.3.b.3.	x		x		x	x					x	x		
6.9. Count: Ply	x	x	x	x	x	x	x	x		x	x	x	x	x
6.9.a. Area	x	x	x	x	x	x	x	x		x	x	x	x	x
6.9.b. Ply	x	x	x	x	x	x	x	x		x	x	x	x	x
6.9.c. Count	x	x	x	x	x	x	x	x		x	x	x	x	x
6.9.d. Dimensions	x	x	x	x	x	x	x	x		x	x	x	x	x
6.10.a. Fractions	x		x		x	x					x	x		
6.10.b.	x	x	x	x	x	x	x	x		x	x	x	x	x
6.10.b.1.	x	x	x	x	x	x	x	x		x	x	x	x	x
6.10.b.2.	x		x		x	x		x		x	x	x	x	
6.10.c. Common	x	x	x	x	x	x	x	x		x	x	x	x	x
6.10.d. Decimal	x	*	x	*	x	x	*	x		x	x	x	x	*
6.11.1. Supplem.	x	x	x	*	x	x	*	x		x	x	x	x	x
6.11.2. Combined	x	x	x	x	x	x	x	x		x	x	x	x	x
6.11.3. Rounding	x		x		x	x					x	x		
6.12. Qualific.	x	x	x	x	x	x	x	x		x	x	x	x	x
6.13. Average			x	p	x	x	p				x	x		

Section 7. Declaration of Quantity: Nonconsumer Packages

7.1. General			x	x	x	x								
7.2. Location		x	x	x	x	x		x		x	x	x	x	x
7.3. Terms			x	x	x	x		x		x	x	x	x	x
7.4.a. In-lb wt		x	x	x	x	x	x	x		x	x	x	x	x
7.4.b. Liquid		x	x	x	x	x	x	x		x	x	x	x	x
7.4.c. Linear		x	x	x	x	x	x	x		x	x	x	x	x
7.4.d. Area		x	x	x	x	x	x	x		x	x	x	x	x
7.4.e. Volume		x	x	x	x	x	x	x		x	x	x	x	x
7.4.f. Dry		x	x	x	x	x	x	x		x	x	x	x	x
7.4.1. Symbols			x	x	x	x	x	x		x	x	x	x	x
7.5.a. Metric-wt.			x	p	x	x	x				x	x		

SECTION/STATE	AL	AK	AZ	AR	CA	CO	CT	DE	DC	FL	GA	HI	ID	IL
7.5.b. Liquid		x	x		x	x	p	x		x	x	x	x	x
7.5.c. Linear		p	x		x	x					x	x		
7.5.d. Area		p	x		x	x					x	x		
7.5.e. Volume		p	x		x	x	p				x	x		
7.5.1. Symbols			x		x	x	p				x	x		
7.6. Average		p	x			x		x		x	x	x	x	x
Section 8. Prominence And Placement: Consumer Packages														
8.1. General	x	x	x	x	x	x	x	x		x	x	x	x	x
8.1.1. Location	x	x	x	x	x	x	x	x		x	x	x	x	x
8.1.2. Style	x	x	x	x	x	x	x	x		x	x	x	x	x
8.1.3. Color	x	x	x	x	x	x	x	x		x	x	x	x	x
8.1.4. Free area	x	x	x	x	x	x	x	x		x	x	x	x	x
8.1.4.a.	x	x	x	x	x	x	x	x		x	x	x	x	x
8.1.4.b.	x	x	x	x	x	x	x	x		x	x	x	x	x
8.1.5. Parallel	x	x	x	x	x	x		x		x	x	x	x	x
8.2. Area of PDP	x	x	x	x	x	x	x	x		x	x	x	x	x
8.2.a. Rectangle	x	x	x	x	x	x	x	x		x	x	x	x	x
8.2.b. Cylinder	x	x	x	x	x	x	x	x		x	x	x	x	x
8.2.c. Other	x	x	x	x	x	x	x	x		x	x	x	x	x
8.2.1. Minimum ht	x	x	x	x	x	x	x	x		x	x	x	x	x
8.2.2.Proportions	x	x	x	x	x	x	x	x		x	x	x	x	x
Table 1.	x	x	x	x	x	x	x	x		x	x	x	x	x
Section 9. Prominence And Placement: Nonconsumer Packages														
9.1. General	x	x	x		x	x		x		x	x	x	x	x
Section 10. Requirements: Specific Consumer Commodities, Nonconsumer Commodities, Packages, Containers														
10.1.Display card	x	x	x	x	x	x	x	x		x	x	x	x	x
10.2. Eggs	x	x	x		x	x		x		x	x	x	x	x
10.3. Aerosols	x	x	x		x	x	x	x		x	x	x	x	x
10.4. Multi-unit	x	x	x	x	x	x	x	x		x	x	x	x	x
10.4.a. Number	x	x	x	x	x	x	x	x		x	x	x	x	x
10.4.b. Quantity	x	x	x	x	x	x	x	x		x	x	x	x	x
10.4.c. Total	x	x	x	x	x	x	x	x		x	x	x	x	x
10.5. Combination	x	x	x	x	x	x	x	x		x	x	x	x	x
10.6. Variety	x	x	x		x	x	x	x		x	x	x	x	x
10.7. Cylinders	x	x	x		x	x	x	x		x	x	x	x	x
10.8.1.Containers	x		x		x	x		x		x	x	x	x	
10.8.1.a. Bags	x		x		x	x		x		x	x	x	x	

SECTION/STATE	AL	AK	AZ	AR	CA	CO	CT	DE	DC	FL	GA	HI	ID	IL
10.8.1.a.1.In-lb	x		x		x	x		x		x	x	x	x	
10.8.1.a.2.Metric			x		x	x						x		
10.8.1.a.2.1.	x		x		x	x		x		x	x	x	x	
10.8.1.a.2.2.			x		x	x						x		
10.8.1.b.Oblong	x		x		x	x		x		x	x	x	x	
10.8.1.c.Circular	x		x		x	x		x		x	x	x	x	
10.8.1.d.Cups	x		x		x			x		x	x	x	x	
10.8.2. Capacity	x		x		x	x		x		x	x	x	x	
10.8.2.a.1. In-lb	x		x		x	x		x		x	x	x	x	
10.8.2.a.2.	x		x		x	x		x		x	x	x	x	
10.8.2.a.3.	x		x		x	x		x		x	x	x	x	
10.8.2.b. Metric			p		x	x						x		
10.8.3. Terms	x		x		x	x		x		x	x	x	x	
10.9.1. Apparel	x		x		x	x		x		x	x	x	x	
10.9.2. Textiles	x		x		x	x		x		x	x	x	x	
10.9.2.a. Sheets	x		x		x	x		x		x	x	x	x	
10.9.2.b. Flat	*		x		x	x		*		*	x	x	*	
10.9.2.c. Pillow	*		x		x	x		*		*	x	x	*	
10.9.2.d.Blanket	x		x		x	x		x		x	x	x	x	
10.9.2.e.Tab.clo.	x		x		x	x		x		x	x	x	x	
10.9.2.f.Drape	x		x		x	x		x		x	x	x	x	
10.9.2.g.Carpet	x		x		x	x		x		x	x	x	x	
10.9.2.h.Towel	x		x		x	x		x		x	x	x	x	
10.9.2.i. Misc.	x		x		x	x		x		x	x	x	x	
10.9.2.j. Odd	x		x		x	x		x		x	x	x	x	
10.9.2.k. Remnant	x		x		x	x		x		x	x	x	x	
10.9.3.a.Tex var.	x		x			x		x		x	x		x	
10.9.3.b.	x		x			x		x		x	x		x	
10.9.4. Exemption	x		x		x	x		x		x	x	x	x	
10.9.4.a.	x		x		x	x		x		x	x	x	x	
10.9.4.b.	x		x		x	x		x		x	x	x	x	
10.9.4.c.	x		x		x	x		x		x	x	x	x	
10.9.5. Threads	x		x		x	x	p			x	x	x	x	
10.9.5.a.	x		x		x	x	*			x	x	x	x	
10.9.5.b. Yarn	x	x	x		x	x				x	x	x	x	
10.9.5.c. Symbol	x		x		x	*	x			x	*	x	x	
10.9.5.d. Indus	x	*	x		x	x	x			x	x	x	x	
10.10.a. Seeds	x				x	x				x	x	x		
10.10.b.	x				x	x				x	x	x		
10.10.c.	x				x	x				x	x	x		

SECTION/STATE	AL	AK	AZ	AR	CA	CO	CT	DE	DC	FL	GA	HI	ID	IL
Section 11. Exemptions														
11.1. General	x	x	x		x	x		x		x	x	x	x	x
11.2. Random	p	p	x	x	x	x	x	x		x	x	x	x	x
11.2.a. Weight	x	x	x	x	x	x	x	x		x	x	x	x	x
11.2.b. Price	x	x	x	x	x	x	x	x		x	x	x	x	x
11.2.c. Total	x	x	x	x	x	x	x	x		x	x	x	x	x
11.3. Confections	x	x	x	x	x	x	x	x		x	x	x	x	x
11.4. Indiv.Serv.	x	x	x	x	x	x	x	x		x	x	x	x	x
11.5. Tobacco	x	x	x	x	x	x	x	x		x	x	x	x	x
11.6. Glass Cont.	x	x	x	x	x	x	x	x		x	x	x	x	x
11.7. Cigarettes	x		x	x	x	x		x		x	x	x	x	x
11.8. Federal	x	x	x			x	x	x		x	x	x	x	x
11.9.a. Dairy	x	x	x		x	x	x	x		x	x	x	x	x
11.9.b.	x	x	x		x	x	x	x		x	x	x	x	x
11.9.c.	x	x	x	x	x	x	x	x		x	x	x	x	x
11.9.d.	x	x	x	*	x	x	x	x		x	x	x	x	x
11.10.a. Juice	x		x		x	x	x	x		x	x	x	x	
11.10.b.	x		x		x	x		x		x	x	x	x	
11.10.c.	x		x		x	x		x		x	x	x	x	
11.11. Soft-drink	x	x	x		x	x		x		x	x	x	x	x
11.11.a.	x	x	x		x	x		x		x	x	x	x	x
11.11.b.	x	x	x		x	x		x		x	x	x	x	x
11.12. Multi-unit	x	x	x		x	x		x		x	x	x	x	x
11.12.a.	x	x	x		x	x		x		x	x	x	x	x
11.12.b.	x	x	x		x	x		x		x	x	x	x	x
11.13. Butter	x	x	x		x	x		x		x	x	x	x	x
11.14. Eggs	x	x	x			x		x		x	p	x	x	x
11.15. Flour	x	x	x		x	x		x		x	x	x	x	x
11.16. Small Pkg	x	x	x		x	x	x	x		x	x	x	x	x
11.17. Decorative	x	x	x	x	x	x	x	x		x	x	x	x	x
11.18.a.Combo pkg	x	x	x		x	x		x		x	x	x	x	x
11.18.b.	x	x	x		x	x		x		x	x	x	x	x
11.18.c.	x	x	x		x	x		x		x	x	x	x	x
11.19. Margarine	x		x		x	x		x		x	x	x	x	x
11.20. Corn flour	x		x		x	x		x		x	x	x	x	x
11.21. Drugs	x				x	x		x		x		x	x	x
11.22. Film	x		x		x	x		x		x		x	x	
11.22.a.	x		x		x	x		x		x		x	x	
11.22.b.					x	p		p				x	p	
11.22.c.	x		x		x	x				x		x		
11.23.a. Paints	x		x		x	x		x		x	x	x	x	
11.23.b.	x				x	x				x	x	x		
11.24. Antifreeze	x		x		x	x		x		x	x	x	x	
11.25. Motor oil	x		x		x	x		x		x	x	x	x	
11.26. Pillows	x		x		x	x					x	x		
11.27. Var. wts.	x		x		x	x					x	x		

SECTION/STATE	AL	AK	AZ	AR	CA	CO	CT	DE	DC	FL	GA	HI	ID	IL
11.28. Count	x		x		x	x				x	x	x		
11.29. Fishing	x	x	x		x	x				x	x	x		
Section 12. Variations To Be Allowed														
12.1.1. Net	x	x	x	x		x	x	x		x	x	x	x	x
12.1.2. Exposure	x	x		*		x	x	x		x	x	x	x	x
12.1.2.a.	x	x		x		x	x	x		x	x	x	x	x
12.1.2.b.	x	x		x		x	x	x		x	x	x	x	x
12.2. Magnitude	*	*	*	*			*	*		*	*	x	*	*
Section 13. Retail Sale Price Representations														
13.1.a.Cents-off			x			x				x				
13.1.b. Use			x			x				x				
13.1.b.1.			x			x				x				
13.1.b.2.			x			x				x				
13.1.b.3.			x			x				x				
13.1.b.4.			x			x				x				
13.1.b.5.			x							x				
13.1.b.6.			x							x				
13.1.c.			x			x				x				
13.1.d.			x			x				x				
13.2.a.Intro Off.			x			x				x				
13.2.b.			x			x				x				
13.2.b.1.			x			x				x				
13.2.b.2.			x			x				x				
13.2.b.3.			x			x				x				
13.2.b.4.			x			x				x				
13.2.c.			x			x				x				
13.2.c.1.			x			x				x				
13.2.c.2.			x			x				x				
13.2.d.			x			x				x				
13.2.e.			x			x				x				
13.3.a. Economy			x							x		x		
13.3.b.			x							x		x		
13.3.b.1.			x							x		x		
13.3.b.2.			x							x		x		
13.3.b.3.			x							x		x		
13.3.c.			x							x		x		
13.3.d.			x							x		x		
Section 14. Revocation Of Conflicting Regulations														
				x				x		x		x		x

STATE	CITATIONS TO STATE REGULATIONS
AL	Weights and Measures Regulation No. 3 (1981)
AK	Alaska Status Chapter 75, "Weights and Measures Act"; Alaska Administrative Code, Chapter 3, Section 33 (1974)
AZ	Arizona Revised Statutes, Weights and Measures Rules and Regulations, Title 41, Chapter 15, Article 3 (1981)
AR	Circular 2A, Regulation No. 1 (1969)
CA	California Code, Title 4, Chapter 8, Sub 6, Article 2 (1983)
CO	"Measures and Standards Act of 1981" Colorado Revised Status, 35-14-121 to 35-14, 133 (1981); Section 43-45, Title 43, Chapter 752, Weights and Measures
CT	Rules and Regulations pertaining to Labeling, Packaging and Sale of Commodities, Section 42-115j-1 through 42-115j-8 (1968)
DE	Regulations: Weights and Measures, Packaging and Labeling (1972)
DC	(None)
FL	Rule of Department of Agriculture and Consumer Services (Chapter 5F-3) "Model State Packaging and Labeling Regulation" (1980)
GA	Weights and Measures Rules and Regulations 40-15-3 through 40-15-5 (1984)
HI	Hawaii Administrative Code, Title 4, Sub 7, Chapter 90 (1982)
ID	Regulations for Weights and Measures, Part 4 (1972)
IL	"Weights and Measures Act of 1963" as amended, Ill. Rev. State, Chap. 147; Rules and Regulations Article 1 "Packaging and Labeling", 1970

SECTION/STATE	IN	IA	KS	KY	LA	ME	MD	MA	MI	MN	MS	MO	MT	NE
Section 1. Application														
1a. Inner wrap	x	x	x	x		x	x	x	x	x		x	x	
1b. Shipping	x	x	x	x		x	x	x		x		x	x	
1c. Auxiliary	x	x	x	x		x	x	x	x	x	x	x		
1d. Tray pack	x	x	x	x		x	x	x	x	x		x	x	
1e. Open carriers	x	x	x	x		x	x	x	x	x		x	x	
Section 2. Definitions														
2.1. Commodity		x	x	x		x	x	x				x	x	
2.2. Consumer Pkg		x	x	x		x	x	x				x	x	
2.3. Nonconsumer		x	x	x		x	x	x				x	x	
2.4. Random		x	x	x		x	x	x	x			x	x	
2.5. Label	x	x	x	x		x	x	x	x	x		x	x	
2.6. Person		x	x	x		x	x	x	x			x	x	
2.7. Display panel	x	x	x	x		x	x	x	x	x		x	x	
2.8. Multi-unit		x	x	x		x	x	x	x			x	x	
Section 3. Declaration of Identity: Consumer Package														
3.1. Declaration	x	x	x	x		x	x	x	x	x	x	x	x	
3.1.1. Parallel	x	x	x	x		x	x	x	x	x		x	x	
Section 4. Declaration of Identity: Nonconsumer Package														
	x	x	x	x	p	x	x	x	x	x	x	x	x	
Section 5. Declaration of Responsibility: Consumer and Nonconsumer Packages														
	x	x	x	x	p	x	x	x	x	x	p	x	x	
Section 6. Declaration of Quantity: Consumer Packages														
6.1. General			x			x						x		
6.2. Largest	x	x	x	x		x	x	x	x	x		x	x	
6.2.a.1. In-lb	x	x	x	x		x	x	x	x	x		x	x	
6.2.a.2. In-lb	x	x	x	x		x	x	x	x	x		x	x	
6.2.b. Metric			x			x						x		
6.3. Quantity	x	x	x	x		x	x	x	x	x	p	x	x	
6.3.1. Net wt	x	x	x	x		x	x	x	x	x		x	x	

SECTION/STATE	IN	IA	KS	KY	LA	ME	MD	MA	MI	MN	MS	MO	MT	NE
6.3.2.Lines/type	x	x	x	x		x	x	x	x	x		x	x	
6.4. Terms	x	x	x	x	p	x	x	x	x	x	x	x	x	
6.4.1.a. Weight		x	x	x		x	x	x	x		x	x	x	
6.4.1.b. Measure		x	x	x		x	x	x	x		x	x	x	
6.4.1.c. Count		x	x	x		x	x	x	x		x	x	x	
6.5.a. In-lb Wt.	x	x	x	x	x	x	x	x	x	x	x	x	x	
6.5.b. In-lb Liq.	x	x	x	x	p	x	x	x	x	x	p	x	x	
6.5.c. In-lb Lin.	x	x	x	x	x	x	x	x	x	x	x	x	x	
6.5.d. In-lb Area		x	x	x		x	x	x	x			x	x	
6.5.e. In-lb Vol.	x	x	x	x		x	x	x	x	x		x	x	
6.5.f. In-lb Dry	x	x	x	x	x	x	x	x	x	x	x	x	x	
6.5.1. Symbols		x	x	x		x	p	x	x			x	x	
6.5.2. "ounce"	x	x	x	x	x	x	x	x	x	x	x	x	x	
6.6.a.Metric Wt.	x		x		*	x				x				
6.6.b.Metric Liq.	p	x	x	x	x	x	x	x		p	p	x	x	
6.6.c.Metric Lin.			x			x						x	x	
6.6.d.Metric Area	x			x								x		
6.6.e.Metric Vol.	x	x			x				x			x		
6.6.1. Symbols		p	x	p		x	p	p	p			x	p	
6.6.1.a. Grammar	x	x	x		x							x		
6.6.1.b. L & mL		x			x							x		
6.7. In-lb Prescr		x	x	x		x	x	x	x		x	x	x	
6.7.1.a. Length		x	x	x		x	x	x	x		x	x	x	
6.7.1.b. Area		x	x	x		x	x	x	x		x	x	x	
6.7.1.c. Weight	x	x	x	x		x	x	x	x	x	x	x	x	
6.7.1.d. Liquid	x	x	x	x		x	x	x	x	x	x	x	x	
Proviso		x	x	x		x	x	x	x			x	x	
6.7.2. Weight	x	x	x	x		x	x	x	x	x	*	x		
6.7.3. Liquid	x	x	x	x		x	x	x	x	x	*	x	x	
6.7.4. Length		x	x	x		x	x	x	x		*	x		
6.7.5. Area		x	x	x		x	x	x	x		*	x		
6.7.6.a. Length		x	x	x		x	x	x	x		x	x	x	
6.7.6.b. Area		x	x	x		x	x	x	x		x	x	x	
6.7.6.c. Weight	x	x	x	x		x	x	x	x	x	x	x	x	
6.7.6.d. Liquid	x	x	x	x		x	x	x	x	x	x	x	x	
6.7.7.a. Bidimen.		x	x	x		x	x	x	x			x	x	
6.7.7.b.		x	x	x		x	x	x	x			x	x	
6.7.7.b.1.		x	x	x		x	x	x	x			x	x	
6.7.7.b.2.		x	x	x		x	x	x	x			x	x	
6.7.7.b.3.		x	x	x		x	x	x	x			x	x	
6.7.7.c.		x	x	x		x	x	x	x			x	x	
6.7.7.c.1.		x	x	x		x	x	x	x			x	x	
6.7.7.c.2.		x	x	x		x	x		x			x	x	
6.7.7.c.3.		x	x	x		x		x				x		
6.7.7.d.		x	x	x		x	x	x	x			x	x	
6.8.Metric Prescr			x			x						x		
6.8.1. Less than			x			x						x		
6.8.1.a. Length			x			x						x		
6.8.1.b. Area			x			x						x		

SECTION/STATE	IN	IA	KS	KY	LA	ME	MD	MA	MI	MN	MS	MO	MT	NE
6.8.1.c. Weight			x			x						x		
6.8.1.d. Liquid			x			x						x		
Proviso			x			x						x		
6.8.2.a. Length			x			x						x		
6.8.2.b. Area			x			x						x		
6.8.2.c. Weight			x			x						x		
6.8.2.d. Liquid			x			x						x		
6.8.3.a.			x			x						x		
6.8.3.b.			x			x						x		
6.8.3.b.1.			x			x						x		
6.8.3.b.2.			x			x						x		
6.8.3.b.3.			x			x						x		
6.9. Count: Ply		x	x	x		x	x	x	x		p	x	x	
6.9.a. Area		x	x	x		x	x	x	x			x	x	
6.9.b. Ply		x	x	x		x	x	x	x			x	x	
6.9.c. Count		x	x	x		x	x	x	x			x	x	
6.9.d. Dimension		x	x	x		x	x	x	x			x	x	
6.10.a. Fractions			x			x						x		
6.10.b.	x	x	x	x		x	x	x	x	x	x	x	x	
6.10.b.1.	x	x	x	x		x	x	x	x	x	x	x	x	
6.10.b.2		x	x	x		x	x	x	x			x		
6.10.c. Common	x	x	x	x		x	x	x	x	x	x	x	x	
6.10.d. Decimal	x	x	x	x		x	x	x	x	x	*	x	x	
6.11.1. Supplem.		x	x	x	p	x	p	x	p			x	x	
6.11.2. Combined		x	x	x		x	x	x	x		x	x	x	
6.11.3. Rounding			x			x						x		
6.12. Qualific.	x	x	x	x	x	x	x	x	x	x	x	x	x	
6.13. Average					*	x						x		

Section 7. Declaration of Quantity: Nonconsumer Packages

7.1. General			x			x						x		
7.2. Location		x	x	x		x	x	x	x			x	x	
7.3. Terms		x	x	x		x	x	x	x			x	x	
7.4.a.In-lb wt.		x	x	x		x	x	x	x			x	x	
7.4.b. Liquid		x	x	x		x	x	x	x			x	x	
7.4.c. Linear		x	x	x		x	x	x	x			x	x	
7.4.d. Area		x	x	x		x	x	x	x			x	x	
7.4.e. Volume		x	x	x		x	x	x	x			x	x	
7.4.f. Dry		x	x	x		x	x	x	x			x	x	
7.4.1. Symbols		x	x	x		x	x	x	x			x	x	
7.5.a. Metric-wt.			x			x						x		
7.5.b. Liquid		x	x	x		x	x	x				x	x	
7.5.c. Linear			x			x						x		
7.5.d. Area			x			x						x		
7.5.e. Volume			x			x						x		
7.5.1. Symbols			x			x						x		

SECTION	IN	IA	KS	KY	LA	ME	MD	MA	MI	MN	MS	MO	MT	NE
7.6. Average		x	x	x	*	x	x	x	x			x	x	
Section 8. Prominence And Placement: Consumer Packages														
8.1. General	x	x	x	x		x	x	x	x	x	x	x	x	
8.1.1. Location	x	x	x	x		x	x	x	x	x		x	x	
8.1.2. Style	x	x	x	x		x	x	x	x	x		x	x	
8.1.3. Color	x	x	x	x		x	x	x	x	x		x	x	
8.1.4. Free area	x	x	x	x		x	x	x	x	x		x	x	
8.1.4.a.	x	x	x	x		x	x	x	x	x		x	x	
8.1.4.b.	x	x	x	x		x	x	x	x	x		x	x	
8.1.5. Parallel	x	x	x	x		x	x	x	x	x		x	x	
8.2. Area of PDP	x	x	x	x		x	x	x	x	x		x	x	
8.2.a. Rectangle	x	x	x	x		x	x	x	x	x		x	x	
8.2.b. Cylinder	x	x	x	x		x	x	x	x	x		x	x	
8.2.c. Other	x	x	x	x		x	x	x	x	x		x	x	
8.2.1. Minimum ht	x	x	x	x		x	x	x	x	x		x	x	
8.2.2.Proportions	x	x	x	x		x	x	x	x	x		x	x	
Table 1.	x	x	x	x		x	x	x	x	x		x	x	
Section 9. Prominence And Placement: Nonconsumer Packages														
9.1. General		x	x	x		x	x	x	x			x	x	
Section 10. Requirements: Specific Consumer Commodities, Nonconsumer Commodities, Packages, Containers														
10.1.Display card	x	x	x	x		x	x	x	x	x		x	x	
10.2. Eggs	x	x	x	x		x	x	x	x	x		x	x	
10.3. Aerosols		x	x	x		x	x	x	x		x	x	x	
10.4. Multi-unit	x	x	x	x		x	x	x	x	x		x	x	
10.4.a. Number	x	x	x	x		x	x	x	x	x		x	x	
10.4.b. Quantity	x	x	x	x		x	x	x	x	x		x	x	
10.4.c. Total	x	x	x	x		x	x	x	x	x		x	x	
10.5. Combination		x	x	x		x	x	x	x			x	x	
10.6. Variety		x	x	x		x	x	x	x			x	x	
10.7. Cylinders	x	x	x	x		x	x	x	x	x		x	x	
10.8.1.Containers		x	x	x		x	x	x	x			x	x	
10.8.1.a. bags		x	x	x		x	x	x	x			x	x	
10.8.1.a.1.In-lb		x	x	x		x	x	x	x			x	x	
10.8.1.a.2.Metric			x			x						x		
10.8.1.a.2.1.		x	x	x		x	x	x	x			x	x	
10.8.1.a.2.2.			x			x						x		
10.8.1.b. Oblong		x	x	x		x	x	x	x			x	x	
10.8.1.c.Circular		x	x	x		x	x	x	x			x	x	
10.8.1.d. Cups		x	x	x		x	x	x	x			x	x	

SECTION/STATE	IN	IA	KS	KY	LA	ME	MD	MA	MI	MN	MS	MO	MT	NE
10.8.2. Capacity		x	x	x		x	x	x	x			x	x	
10.8.2.a.1. In-lb		x	x	x		x	x	x	x			x	x	
10.8.2.a.2.		x	x	x		x	x	x	x			x	x	
10.8.2.a.3.		x	x	x		x	x	x	x			x	x	
10.8.2.b. Metric			x			x						x		
10.8.3. Terms		x	x	x		x	x	x	x			x	x	
10.9.1. Apparel		x	x	x		x	x	x	x			x	x	
10.9.2. Textiles		x	x	x		x	x	x	x			x	x	
10.9.2.a. Sheets		x	x	x		x	x	x	x			x	x	
10.9.2.b. Flat		x	x	*		x	*	*	*			x	*	
10.9.2.c. Pillow		x	x	*		x	*	*	*			x	*	
10.9.2.d. Blanket		x	x	x		x	x	x	x			x	x	
10.9.2.e Tab.clo.		x	x	x		x	x	x	x			x	x	
10.9.2.f.Drape		x	x	x		x	x	x	x			x	x	
10.9.2.g. Carpet		x	x	x		x	x	x	x			x	x	
10.9.2.h. Towel		x	x	x		x	x	x	x			x	x	
10.9.2.i. Misc.		x	x	x		x	x	x	x			x	x	
10.9.2.j. Odd		x	x	x		x	x	x	x			x	x	
10.9.2.k. Remnant		x	x	x		x	x	x	x			x	x	
10.9.3.a.Tex Var.		x	x	x		x	x	x	x			x	x	
10.9.3.b.		x	x	x		x	x	x	x			x	x	
10.9.4. Exemption		x	x	x		x	x	x				x	x	
10.9.4.a.		x	x	x		x	x	x				x	x	
10.9.4.b.		x	x	x		x	x	x				x	x	
10.9.4.c.		x	x	x		x	x	p				x	x	
10.9.5. Threads		x	x	x		x	x	x	x			x		
10.9.5.a.		x	x	x		x	x	x	x			x		
10.9.5.b. Yarn		x	x	x		x	x	x	x			x		
10.9.5.c. Symbol		x	x	x		x	*	x				x		
10.9.5.d. Indus		x	x	x		x	x	x	x			x		
10.10.a. Seeds		x	x	x		x						x	x	
10.10.b.		x	x	x		x						x	x	
10.10.c.		x	x	x		x						x	x	
Section 11. Exemptions														
11.1. General		x	x	x		x	x	x	x			x	x	
11.2. Random	x	x	x	x		x	x	x	x	x		x	x	
11.2.a. Weight	x	x	x	x		x	x	x	x	x		x	x	
11.2.b. Price	x	x	x	x		x	x	x	x	x		x	x	
11.2.c. Total	x	x	x	x		x	x	x	x	x		x	x	
11.3. Confections	x	x	x	x	*	x	x	x	x	x		x	x	
11.4. Indiv. Serv	x	x	x	x		x	x	x	x	x		x	x	
11.5. Tobacco		x	x	x		x	x	x	x			x	x	
11.6. Glass Cont.		x	x	x		x	x	x	x			x	x	
11.7. Cigarettes		x	x	x		x	x	x	x			x	x	
11.8. Federal		x	x	x		x	x	x	x	x		x	x	
11.9.b. Dairy	x	x	x	x		x	x	x	x	x		x	x	

SECTION/STATE	IN	IA	KS	KY	LA	ME	MD	MA	MI	MN	MS	MO	MT	NE
11.9.c.	x	x	x	x		x	x	x	x	x		x	x	
11.9.d.	x	x	x	x		x	x	x	x	x		x	x	
11.10.a. Juice	x	x	x	x		x	x	x	x	x		x	x	
11.10.b.	x	x	x	x		x	x	x	x	x		x	x	
11.10.c.	x	x	x	x		x	x	x	x	x		x	x	
11.11. Soft-drink	x	x	x	x		x	x	x	x	x		x	x	
11.11.a.	x	x	x	x		x	x	x	x	x		x	x	
11.11.b.	x	x	x	x		x	x	x	x	x		x	x	
11.12. Multi-unit	x	x	x	x		x	x	x	x	x		x	x	
11.12.a.	x	x	x	x		x	x	x	x	x		x	x	
11.12.b.	x	x	x	x		x	x	x	x	x		x	x	
11.13. Butter	x	x	x	x		x	x	x	x	x		x	x	
11.14. Eggs		x	x	x		x	x	x	x			x	x	
11.15. Flour	x	x		x		x	x	x	x	x		x	x	
11.16. Small pkgs	x	x		x		x	x	x	x	x		x	x	
11.17. Decorative		x		x		x	x	x	x			x	x	
11.18.a.Combo pkg		x		x		x	x	x	x			x	x	
11.18.b.		x		x		x	x	x	x			x	x	
11.18.c.		x		x		x	x	x	x			x	x	
11.19. Margarine	x	x		x		x	x	x	x	x		x	x	
11.20. Corn flour	x	x		x		x	x	x	x	x		x	x	
11.21. Drugs	x	x		x		x		x	x	x		x	x	
11.22. Film		x		x		x	x	x	x	x		x	x	
11.22.a.		x		x		x	x	x	x	x		x	x	
11.22.b.		p				x				x		x		
11.22.c.		x		x		x	x	x	x	x		x	x	
11.23.a. Paints		x		x		x	x	x	x	x		x	x	
11.23.b.		x		x		x				x		x	x	
11.24. Antifreeze		x		x		x	x	x	x	x		x	x	
11.25. Motor oil		x		x		x	x	x	x	x		x	x	
11.26. Pillows		x		x		x				x		x		
11.27. Var. Wts.		x		x		x				x		x		
11.28. Count		x		x		x				x		x		
11.29. Fishing		x		x		x				x		x		

Section 12. Variations To Be Allowed

12.1.1. Net		x		x	*	x	x	x	x	x	x	x	x	
12.1.2. Exposure		x		x		x	x	x	x	x	x	x	x	
12.1.2.a.		x		x		x	x	x	x	x	x	x	x	
12.1.2.b.		x		x		x	x	x	x	x	x	x	x	
12.2. Magnitude		x		*		x	*	*	*	x	*	x	*	

Section 13. Retail Sale Price Representations

13.1.a. Cents Off	x	x				x				x		x		
13.1.b. Use	x	x				x				x		x		
13.1.b.1.	x	x				x				x		x		

SECTION/STATE	IN	IA	KS	KY	LA	ME	MD	MA	MI	MN	MS	MO	MT	NE
13.1.b.2.	x	x				x				x		x		
13.1.b.3.	x	x				x				x		x		
13.1.b.4.	x	x				x				x		x		
13.1.b.5.	x	x				x				x		x		
13.1.b.6.	x	x				x				x		x		
13.1.c.		x				x						x		
13.1.d.	x	x				x				x		x		
13.2.a Intro Off.		x				x						x		
13.2.b.	x	x				x				x		x		
13.2.b.1.	x	x				x				x		x		
13.2.b.2.	x	x				x				x		x		
13.2.b.3.	x	x				x				x		x		
13.2.b.4.	x	x				x				x		x		
13.2.c.	x	x				x				x		x		
13.2.c.1.	x	x				x				x		x		
13.2.c.2. Defin	x	x				x				x		x		
13.2.d.		x				x						x		
13.2.e.	x	x				x				x		x		
13.3.a. Economy		x				x						x		
13.3.b.		x				x						x		
13.3.b.1.		x				x						x		
13.3.b.2.		x				x						x		
13.3.b.3.		x				x						x		
13.3.c.		x				x						x		
13.3.d.		x				x						x		
Section 14. Revocation Of Conflicting Regulations		x				x		x						x

STATES	CITATIONS TO STATE REGULATIONS
IN	Indiana Code, Title 16, Chap. 29-31 (adopts Code of Federal Regulations) (1978)
IA	Model State Packaging and Labeling Regulation, 1977 (no State citation provided)
KS	Kansas Statutes 83-150 to -153, "Weights and Measures Laws" (1949); 1980 Model State Packaging and Labeling Regulation (no State citation provided) Adopted by reference from legislature
KY	Kentucky Administration Regulations Title 302, Chapter 75, (1975)
LA	Rules and Regulations Adopted by the Commission of Weights and Measures, State of Louisiana Regulations No. 203 (1953)

ME Maine Revised Status 1964, Title 10 (1979) (Automatic adoption of most recent NCWM regulation)

MD Maryland Department of Agriculture Regulation, Title 15, Subtitle 3, Chapter 2 (1973)

MA Model State Packaging and Labeling Regulation, 1971 (No State citation provided) (1971)

MI Michigan Department of Agriculture, Food Division, Regulation No. 551, "Weights, Measures, Packaging and Labeling" (1973)

MN Citation not provided; adopts code of Federal Regulations by reference

MS Mississippi Weights and Measures Law, Chap 221, Laws of 1964 (1964)

MO Code of State Regulations, Title 2, Division 90, Chap 22.140 NBS Handbook 130 Model State Laws and Regulations (1984)

MT Administrative Rules of Montana 8.5. 201 (1980)

SECTION/STATE	NV	NH	NJ	NM	NY	NC	ND	OH	OK	OR	PA	PR	RI	SC
Section 1. Application														
1a. Inner wrap		x	x		x	x		x	x	x	x			x
1b. Shipping	x	x			x	x		x	x	x			x	x
1c. Auxiliary		x	x		x	x		x	x	x	x			x
1d. Tray pack		x	x		x	x		x	x	x	x			x
1e. Open carriers		x			x	x		x	x	x	x			x
Section 2. Definitions														
2.1. Commodity		x			x	x		x	x	x	x			x
2.2. Consumer pkg		x			x	x		x	x	x	x			x
2.3. Nonconsumer		x	x		x	x		x	x	x	x			x
2.4. Random		x	x		x	x		x	x	x	x	x		x
2.5. Label		x	x		x	x		x	x	x	x	x	p	x
2.6. Person		x	x		x	x		x	x	x	x	x		x
2.7. Display panel		x	x		x	x		x	x	x	x	x	x	x
2.8. Multi-unit		x	x		x	x		x	x	x	x			x
Section 3. Declaration of Identity: Consumer Package														
3.1. Declaration		x	x		x	x		x	x	x	x	x		x
3.1.1. Parallel		x	x		x	x		x	x	x	x			x
Section 4. Declaration of Identity: Nonconsumer Package														
		x	x		x	x		x	x	x		x		x
Section 5. Declaration of Responsibility: Consumer And Nonconsumer Packages														
		x	x		x	x		x	x	x	x	x		x
Section 6. Declaration of Quantity: Consumer Packages														
6.1. General	p	x			*	x								
6.2. Largest		x	x		x	x		x	x	x	x	x		x
6.2.a.1. In-lb		x	x		x	x		x	x	x	x	x		x
6.2.a.2. In-lb		x	x		x	x		x	x	x	x	x		x
6.2.b. Metric		x				x								
6.3. Quantity		x	x		x	x		x	x	x	x	x	p	x
6.3.1. Net wt		x	x		x	x		x	x	x	x	x		x
6.3.2. Lines/type		x	x		x	x		x	x	x	x	x		x

SECTION/STATE	NV	NH	NJ	NM	NY	NC	ND	OH	OK	OR	PA	PR	RI	SC
6.4. Terms		x	x		x	x		x	x	x	x	x		x
6.4.1.a. Weight		x	x		x	x		x	x	x	x			x
6.4.1.b. Measure		x	x		x	x		x	x	x	x			x
6.4.1.c. Count		x	x		x	x		x	x	x	x			x
6.5.a. In-lb Wt.	x	x	x		*	x		x	x	x	x	x	x	x
6.5.b. In-lb Liq.	p	x	x		x	x		x	x	x	x	p	p	x
6.5.c. In-lb Lin.	x	x	x		x	x		x	x	x	x	x	x	x
6.5.d. In-lb Area		x	x		x	x		x	x	x	x	x		x
6.5.e. In-lb Vol.		x	x		x	x		x	x	x	x	x		x
6.5.f. In-lb Dry		x	x		x	x		x	x	x	x	x	x	x
6.5.1. Symbols		x	x		x	x		x	x	p	x	p		x
6.5.2. "Ounce"		x	x		x	x		x	x	x	x	x	x	x
6.6.a.Metric Wt.		x			x	x								
6.6.b.Metric Liq.		x	x		x	x		x	x	x	x		p	
6.6.c.Metric Lin.		x			x	x								
6.6.d.Metric Area		x			x	x								
6.6.e.Metric Vol.		x			x	x								
6.6.1. Symbols		x	p		x	x		p	p	p	p			p
6.6.1.a. Grammar		x			x	x			x					
6.6.1.b. L & mL		x				x								
6.7. In-lb Prescr		x	x		x	x		x	x	x	x	x	x	x
6.7.1.a. Length		x	x		x	x		x	x	x	x	x	x	x
6.7.1.b. Area		x	x		x	x		x	x	x	x	x	x	x
6.7.1.c. Weight		x	x		x	x		x	x	x	x	x	x	x
6.7.1.d. Liquid		x	x		x	x		x	x	x	x	x	x	x
Provision		x	x		x	x		x	x	x				x
6.7.2. Weight		x	x		x	x		x	x	x	x	x	*	x
6.7.3. Liquid		x	x		x	x		x	x	x	x	x	*	x
6.7.4. Length		x	x		x	x		x	x	x	x	x	*	x
6.7.5. Area		x	x		x	x		x	x	x	x	x	*	x
6.7.6.a. Length		x	x		x	x		x	x	x	x		x	x
6.7.6.b. Area		x	x		x	x		x	x	x	x		x	x
6.7.6.c. Weight		x	x		x	x		x	x	x	x		x	x
6.7.6.d. Liquid		x	x		x	x		x	x	x	x		x	x
6.7.7.a. Bidem.		x	x		x	x		x	x	x	x			x
6.7.7.b.		x	x		x	x		x	x	x	x			x
6.7.7.b.1.		x	x		x	x		x	x	x	x			x
6.7.7.b.2.		x	x		x	x		x	x	x	x			x
6.7.7.b.3.		x	x		x	x		x	x	x	x			x
6.7.7.c.		x	x		x	x		x	x	x	x			x
6.7.7.c.1.		x	x		x	x		x	x	x	x			x
6.7.7.c.2.		x			x	x		x	x	x				x
6.7.7.c.3.		x	x		x	x		x	x		x			x
6.7.7.d.		x	x		x	x		x	x	x	x			x
6.8.Metric Prescr		x			x	x								
6.8.1. Less than		x			x	x								
6.8.1.a. Length		x			x	x								
6.8.1.b. Area		x			x	x								
6.8.1.c. Weight		x			x	x								

SECTION	NV	NH	NJ	NM	NY	NC	ND	OH	OK	OR	PA	PR	RI	SC
6.8.1.d. Liquid		x			x	x								
Proviso		x			x	x								
6.8.2.a. Length		x			x	x								
6.8.2.b. Area		x			x	x								
6.8.2.c. Weight		x			x	x								
6.8.2.d. Liquid		x			x	x								
6.8.3.a.		x			x	x								
6.8.3.b.		x			x	x								
6.8.3.b.1.		x			x	x								
6.8.3.b.2.		x			x	x								
6.8.3.b.3.		x			x	x								
6.9. Count: Ply		x	x		x	x		x	x	x	x			x
6.9.a. Area		x	x		x	x		x	x	x	x			x
6.9.b. Ply		x	x		x	x		x	x	x	x			x
6.9.c. Count		x	x		x	x		x	x	x	x			x
6.9.d. Dimensions		x	x		x	x		x	x	x	x			x
6.10.a. Fractions		x			x	x								
6.10.b.		x	x		x	x		x	x	x	x			x
6.10.b.1.		x	x		x	x		x	x	x	x			x
6.10.b.2.		x			x	x		x	x	x	x			x
6.10.c. Common		x	x		x	x		x	x	x	x		x	x
6.10.d. Decimal		x	x		x	x		x	x	x	x			x
6.11.1. Supplem.	x	x	x		x	x		x	x	x	x			x
6.11.2. Combined		x	x		x	x		x	x	x	x	x	*	x
6.11.3. Rounding		x			p	x								
6.12. Qualific.	x	x	x		x	x		x	x	x	x	x	x	x
6.13. Average	x	x			x	x								

Section 7. Declaration of Quantity: Nonconsumer Packages

7.1. General		x			x	x								
7.2. Location		x	x		x	x		x	x	x	x			x
7.3. Terms		x	x		x	x		x	x	x	x			x
7.4.a. In-lb wt		x	x		x	x		x	x	x	x			x
7.4.b. Liquid		x	x		x	x		x	x	x	x			x
7.4.c. Linear		x	x		x	x		x	x	x	x			x
7.4.d. Area		x	x		x	x		x	x	x	x			x
7.4.e. Volume		x	x		x	x		x	x	x	x			x
7.4.f. Dry		x	x		x	x		x	x	x	x			x
7.4.1. Symbols		x	x		x	x		x	x	x	x			x
7.5.a. Metric-wt.		x			x	x								
7.5.b. Liquid		x	x		x	x		x	x	x	x			
7.5.c. Linear		x			x	x								
7.5.d. Area		x			x	x								
7.5.e. Volume		x			x	x								
7.5.1. Symbols		x			x	x								
7.6. Average		x	x		x	x		x	x	x	x			x

SECTION/STATE	NV	NH	NJ	NM	NY	NC	ND	OH	OK	OR	PA	PR	RI	SC
Section 8. Prominence And Placement: Consumer Packages														
8.1. General		x	x		x	x		x	x	x	x			x
8.1.1. Location		x	x		x	x		x	x	x	x			x
8.1.2. Style		x	x		x	x		x	x	x	x	x	x	x
8.1.3. Color		x	x		x	x		x	x	x	x	x	x	x
8.1.4. Free area		x	x		x	x		x	x	x	x	x	x	x
8.1.4.a.		x	x		x	x		x	x	x	x	x	*	x
8.1.4.b.		x	x		x	x		x	x	x	x	x	x	x
8.1.5. Parallel	x	x		x	x		x	x	x	x		x	x	
8.2. Area of PDP		x	x		x	x		x	x	x	x		x	x
8.2.a. Rectangle		x	x		x	x		x	x	x	x		x	x
8.2.b. Cylinder		x	x		x	x		x	x	x	x		x	x
8.2.c. Other		x	x		x	x		x	x	x	x		p	x
8.2.1. Minimum ht		x	x		x	x		x	x	x	x	x	x	x
8.2.2.Proportions		x	x		x	x		x	x	x	x	x		x
Table 1.		x	x		x	x		x	x	x	x	x	x	x
Section 9. Prominence And Placement: Nonconsumer Packages														
9.1. General		x	x		x	x		x	x	x				x
Section 10. Requirements: Specific Consumer Commodities, Nonconsumer Commodities, Packages, Containers														
10.1.Display card		x	x		x	x		x	x	x	x			x
10.2. Eggs		x	x		x	x		x	x	x	x			x
10.3. Aerosols		x	x		x	x		x	x	x	x	x		x
10.4. Multi-unit		x	x		x	x		x	x	x	x	x		x
10.4.a. Number		x	x		x	x		x	x	x	x	x		x
10.4.b. Quantity		x	x		x	x		x	x	x	x	x		x
10.4.c. Total		x	x		x	x		x	x	x	x	x		x
10.5. Combination		x	x		x	x		x	x	x	x			x
10.6. Variety		x	x		x	x		x	x	x	x			x.
10.7. Cylinders		x	x		x	x		x	x	x	x			x
10.8.1.Containers		x			x	x		x	x	x	x			x
10.8.1.a. bags		x			x	x		x	x	x	x			x
10.8.1.a.1.in-lb		x			x	x		x	x	x	x			x
10.8.1.a.2.metric		x			x	x								
10.8.1.a.2.1.		x			x	x		x	x	x	x			x
10.8.1.a.2.2.		x			x	x								
10.8.1.b.oblong		x			x	x		x	x	x	x			x
10.8.1.c.circular		x			x	x		x	x	x	x			x
10.8.1.d.cups		x			x	x		x	x	x	x			x
10.8.2. Capacity		x			x	x		x	x	x	x			x
10.8.2.a.1. In-lb		x			x	x		x	x	x	x			x
10.8.2.a.2.		x			x	x		x	x	x	x			x
10.8.2.a.3.		x			x	x		x	x	x	x			x
10.8.2.b. Metric		x				x								

SECTION/STATE	NV	NH	NJ	NM	NY	NC	ND	OH	OK	OR	PA	PR	RI	SC
10.8.3. Terms		x			x	x		x	x	x	x			x
10.9.1. Apparel		x			x	x		x	x	x	x			x
10.9.2. Textiles		x			x	x		x	x	x	x			x
10.9.2.a. Sheets		x			x	x		x	x	x	x			*
10.9.2.b. Flat		x			x	x		*	*	*	x			*
10.9.2.c. Pillow		x			x	x		*	*	*	*			*
10.9.2.d. Blanket		x			x	x		x	x	x	x			x
10.9.2.e. Tab.clo		x			x	x		x	x	x	x			x
10.9.2.f. Drape		x			x	x		x	x	x	x			x
10.9.2.g. Carpet		x			x	x		x	x	x	x			x
10.9.2.h. Towel	x			x	x		x	x	x	x			x	
10.9.2.i. Misc		x			x	x		x	x	x	x			x
10.9.2.j. Odd		x			x	x		x	x	x	x			x
10.9.2.k. Remnant		x			x	x		x	x	x				x
10.9.3.a.Tex var.		x			x	x		x	x	x	x			x
10.9.3.b.		x			x	x		x	x	x	x			x
10.9.4. Exemption		x			x	x		x	x	x				x
10.9.4.a.		x			x	x		x	x	x				x
10.9.4.b.		x			x	x		x	x	x				x
10.9.4.c.		x			x	x		x	x	x				x
10.9.5. Threads		x			x	x		x	x	x	x			x
10.9.5.a.		x			x	x		x	x	x	x			x
10.9.5.b. Yarn		x			x	x		x	x	x	x			x
10.9.5.c. Symbol		x			*	x		x	x	x	x			x
10.9.5.d. Indus		x			x	x		x	x	x	x			x
10.10.a. Seeds		x			x	x		x	x	x	x			
10.10.b.		x			x	x		x	x	x	x			
10.10.c.		x			x	x		x	x	x	x			

Section 11. Exemptions

11.1. General		x	x		x	x		x	x		x			x
11.2. Random		x	p		x	x		x	x	x	x			x
11.2.a. Weight		x	x		x	x		x	x	x	x			x
11.2.b. Price		x	x		x	x		x	x	x	x			x
11.2.c. Total		x	x		x	x		x	x	x	x			x
11.3. Confections		x	x		x	x		x	x	x	x			x
11.4. Indiv Serv		x	x		x	x		x	x	x	x			x
11.5. Tobacco		x	x		x	x		x	x	x	x			x
11.6. Glass Cont.		x	x		x	x		x	x	x	x			x
11.7. Cigarettes		x	x		x	x		x	x	x	x			x
11.8. Federal		x	x		x	x		x	x	x	x			x
11.9.a. Dairy		x	x		x	x		x	x	x	x			x
11.9.b.		x			x	x		x	x	x	x			x
11.9.c.		x	x		x	x		x	x	x	x			x
11.9.d.		x	x		x	x		x	x	x	x			x
11.10.a. Juice		x			x	x		x	x	x	x			x
11.10.b.		x			x	x		x	x	x	x			x
11.10.c.		x			x	x		x	x	x	x			x

SECTION/STATE	NV	NH	NJ	NM	NY	NC	ND	OH	OK	OR	PA	PR	RI	SC
11.11. Soft-drink		x	x		x	x		x	x	x	x			x
11.11.a.		x	x		x	x		x	x	x	x			x
11.11.b.		x	x		x	x		x	x	x	x			x
11.12. Multi-unit		x	x		x	x		x	x	x	x			x
11.12.a.		x	x		x	x		x	x	x	x			x
11.12.b.		x	x		x	x		x	x	x	x			x
11.13. Butter		x	x		x	x		x	x	x	x			x
11.14. Eggs		x	x		x	x		x	x	x	x			x
11.15. Flour		x	x		x	x		x	x	x	x			x
11.16. Small pkg		x	x		x	x		x	x	x	x			x
11.17. Decorative		x	x		x	x		x	x	x	x			x
11.18.a.Combo pkg		x	x		x	x		x	x	x	x			x
11.18.b.		x	x		x	x		x	x	x	x			x
11.18.c.		x	x		x	x		x	x	x	x			x
11.19. Margarine		x	x		x	x		x	x	x	x			x
11.20. Corn flour		x	x		x	x		x	x		x			x
11.21. Drugs		x	x		x	x		x	x	x	x			x
11.22. Film		x			x	x		x	x	x	x			x
11.22.a.		x			x	x		x	x	x	x			x
11.22.b.		x			p	x								
11.22.c.		x			x	x		x	x	x	x			x
11.23.a. Paints		x			x	x		x	x	x	x			x
11.23.b.		x			x	x		x	x	x				
11.24. Antifreeze		x			x	x		x	x	x	x			x
11.25. Motor oil		x			x	x		x		x	x			x
11.26. Pillows		x			x	x			x	x				
11.27. Var. wts.		x			x	x			x	x				
11.28. Count		x			x	x			x	x				
11.29. Fishing		x			x	x			x	x				

Section 12. Variations To Be Allowed

12.1.1. Net	*	x	x		x	x		x	x	x	x			x
12.1.2. Exposure	*	x	x			x		x	x	x	x			x
12.1.2.a.		x	x			x		x	x		x			x
12.1.2.b.		x	x			x		x	x		x			x
12.2. Magnitude		x	*		x	x		*	*	*	*			*

Section 13. Retail Sale Price Representations

13.1.a. Cents Off		x							x	x				
13.1.b. Use		x							x	x				
13.1.b.1.		x							x	x				
13.1.b.2.		x							x	x				
13.1.b.3.		x							x	x				
13.1.b.4.		x							x	x				
13.1.b.5.		x							x	x				
13.1.b.6.		x							x	x				

SECTION/STATE	NV	NH	NJ	NM	NY	NC	ND	OH	OK	OR	PA	PR	RI	SC
13.1.c.		x							x	x				
13.1.d.		x							x	x				
13.2.a.Intro Off.		x							x	x				
13.2.b.		x							x	x				
13.2.b.1.		x							x	x				
13.2.b.2.		x							x	x				
13.2.b.3.		x							x	x				
13.2.b.4.		x							x	x				
13.2.c.		x							x	x				
13.2.c.1.		x							x	x				
13.2.c.2.		x							x	x				
13.2.d.		x							x	x				
13.2.e. Defin.		x							x	x				
13.3.a. Economy		x							x	x				
13.3.b.		x							x	x				
13.3.b.1.		x							x	x				
13.3.b.2.		x							x	x				
13.3.b.3.		x							x	x				
13.3.c.		x							x	x				
13.3.d.		x							x	x				
Section 14. Revocation Of Conflicting Regulations		x							x					

STATES	CITATIONS TO STATE REGULATION
NV	Nevada Revised Statutes, Title 51, Chapter 581 (1983)
NH	New Hampshire Revised Statutes Annotated 359-A as inserted by 1969, 457.2 (adopts NCWM recommendations by reference) (1969)
NJ	New Jersey Administrative Code, Department of Law and Public Safety, "Weights and Measures Rules" Title 13, Subtitle I, 1973 with revision to 1982
NM	(None)
NY	New York Codes, Rules, and Regulations, Chapter V, Weights and Measures (1978)
NC	North Carolina Administrative Code Title 2, Chapter 38, Section .0300 (1984) (adopts 1984 Packaging and Labeling Regulation in NBS Handbook 130 by reference with exeptions)
ND	(None)

OH	Ohio Packaging and Labeling Regulations, Regulation 901:6-3-01 to 6-3-12 (1977)
OK	Regulation No. 1-A (1980 NCWM Packaging and Labeling Regulation adopted)
OR	Oregon Administrative Rules, 603-27-105 (1980)
PA	Pennsylvania Code, Title 70, Part II, Chapter 21 (1980) (adopted 1970 NCWM Packaging and Labeling Regulation)
PR	Regulation Establishing the Form of Labeling Prepacked Packages and Other Products for Use and Consumption, WM-6, Commonwealth of Puerto Rico Consumer Services Administration (1970)
RI	Rhode Island General Laws, Title 47 as amended, Chapter 165, Public Laws 1966 (1966)
SC	South Carolina Regulations 5-530 through 5-540 Code of Laws of S.C. (1976)

SECTION/STATE	SD	TN	TX	UT	VT	VA	VI	WA	WV	WI	WY
Section 1. Application											
1a. Inner wrap		x		x	x	x		x		x	
1b. Shipping			*	x	x	x				x	
1c. Auxiliary		x		x	x	x		x		x	
1d. Tray pack		x		x	x	x		x		x	
1e. Open carriers				x	x	x		x		x	
Section 2. Definitions											
2.1. Commodity		x	*	x	x	x		x		x	
2.2. Consumer Pkg		x		x	x	x		x	x	x	
2.3. Nonconsumer		x		x	x	x		x	x		
2.4. Random		x	x	x	x	x		x	x	x	
2.5. Label		x			x	x		x	x	x	
2.6. Person		x	*		x	x		x	x	x	
2.7. Display panel		x			x	x		x	x	x	
2.8. Multi-unit		x			x	x		x	x	x	
Section 3. Declaration of Identity: Consumer Package											
3.1. Declaration		x			x	x		x	x	x	
3.1.1. Parallel		x			x	x		x	x	x	
Section 4. Declaration of Identity: Nonconsumer Package											
	x	x			x	x		x	x		x
Section 5. Declaration of Responsibility: Consumer And Nonconsumer Packages											
	x	x	x		x	x	p	x	x	x	x
Section 6. Declaration of Quantity: Consumer Packages											
6.1. General				p	x						
6.2. Largest		x		x	x	x		x	x	x	
6.2.a.1. In-lb	p	x		x	x	x		x	x	x	
6.2.a.2. In-lb	p	x		x	x	x		x	x	x	
6.2.b. Metric				x	x						
6.3. Quantity		x	*		x	x		x	x	x	
6.3.1. Net wt		x			x	x		x	x	x	
6.3.2. Lines/type		x			x	x		x	x	x	

SECTION/STATE	SD	TN	TX	UT	VT	VA	VI	WA	WV	WI	WY
6.4. Terms	p	x	*		x	x	x	x	x	*	
6.4.1.a. Weight		x	x		x	x		x	x	x	
6.4.1.b. Measure		x	x		x	x		x	x	x	
6.4.1.c. Count	p	x	x		x	x		x	x	x	
6.5.a. In-lb Wt.	x	x	x	x	x	x		x	x	x	
6.5.b. In-lb Liq.	p	x	x	x	x	x		x	x	x	
6.5.c. In-lb Lin.		x	x	x	x	x		x	x	x	
6.5.d. In-lb Area		x		x	x	x		x	x	x	
6.5.e. In-lb Vol.		x		x	x	x		x	x	x	
6.5.f. In-lb Dry	x	x	*	x	x	x		x	x	x	
6.5.1. Symbols	x	x	*	x	x	x		x	x	x	
6.5.2. "Ounces"	x	x		x	x	x		x	x	x	
6.6.a.Metric Wt.	x		*	x	x						
6.6.b.Metric Liq.	x	x		x	x			x	x	x	
6.6.c.Metric Lin.	x			x	x						
6.6.d.Metric Area	x			x	x						
6.6.e.Metric Vol.	x			x	x						
6.6.1. Symbols	x	p		x	x	p		p	p	p	
6.6.1.a. Gramnar	x			x	x	x			x		
6.6.1.b. L & mL	x			x	x						
6.7.In-lb Prescr	x	x		x	x	x		x	x	x	
6.7.1.a. Length	x	x		x	x	x		x	x	x	
6.7.1.b. Area	x	x		x	x	x		x	x	x	
6.7.1.c. Weight	x	x		x	x	x		x	x	x	
6.7.1.d. Liquid	x	x		x	x	x		x	x	x	
Proviso	x	x			x	x		x	x	x	
6.7.2. Weight	x	x		x	x	x		x	x	x	
6.7.3. Liquid	x	x		x	x	x		x	x	x	
6.7.4. Length	x	x		x	x	x		x	x	x	
6.7.5. Area	x	x		x	x	x		x	x	x	
6.7.6.a. Length	x	x		x	x	x		x	x	x	
6.7.6.b. Area	x	x		x	x	x		x	x	x	
6.7.6.c. Weight	x	x		x	x	x		x	x	x	
6.7.6.d. Liquid	x	x		x	x	x		x	x	x	
6.7.7.a. Bidimen.	x	x		x	x	x		x	x	x	
6.7.7.b.	x	x		x	x	x		x	x	x	
6.7.7.b.1.	x	x		x	x	x		x	x	x	
6.7.7.b.2.	x	x		x	x	x		x	x	x	
6.7.7.b.3.	x	x		x	x	x		x	x	x	
6.7.7.c.	x	x		x	x	x		x	x	x	
6.7.7.c.1.	x	x		x	x	x		x	x	x	
6.7.7.c.2.	x			x	x	x			x		
6.7.7.c.3.	x	x		x	x	x		x	x	x	
6.7.7.d.	x	x		x	x	x		x	x	x	
6.8.Metric Prescr	x			x	x						
6.8.1. Less than	x			x	x						
6.8.1.a. Length	x			x	x						
6.8.1.b. Area	x			x	x						
6.8.1.c. Weight	x			x	x						
6.8.1.d. Liquid	x			x	x						

SECTION/STATE	SD	TN	TX	UT	VT	VA	VI	WA	WV	WI	WY
Proviso	x				x						
6.8.2.a. Length	x			x	x						
6.8.2.b. Area	x			x	x						
6.8.2.c. Weight	x			x	x						
6.8.2.d. Liquid	x			x	x						
6.8.3.a.	x			x	x						
6.8.3.b.	x			x	x						
6.8.3.b.1.	x			x	x						
6.8.3.b.2.	x			x	x						
6.8.3.b.3.	x			x	x						
6.9. Count: Ply	x	x		x	x	x		x	x	x	
6.9.a. Area	x	x		x	x	x		x	x	x	
6.9.b. Ply	x	x		x	x	x		x	x	x	
6.9.c. Count	x	x		x	x	x		x	x	x	
6.9.d. Dimensions	x	x		x	x	x		x	x	x	
6.10.a. Fractions	x			x	x						
6.10.b.	x	x		x	x	x		x	x	x	
6.10.b.1.	x	x		x	x	x		x	x	x	
6.10.b.2.	x			x	x	x			x	x	
6.10.c. Common	x	x	x	x	x	x		x	x	x	
6.10.d. Decimal	x	*	*	x	x	x		*	x	x	
6.11.1. Supplem.	x	x			x	x	x	x	x	x	
6.11.2. Combined	x	x			x	x		x	x	x	
6.11.3. Rounding	x				x						
6.12. Qualific.	x	x			x	x	x	x	x		
6.13. Average	x		*		x						

Section 7. Declaration of Quantity: Nonconsumer Packages

7.1. General	x			p	x						
7.2. Location	x	x			x	x		x	x		
7.3. Terms	x	x			x	x		x	x		
7.4.a. In-lb wt	x	x		x	x	x		x	x		
7.4.b. Liquid	x	x		x	x	x		x	x		
7.4.c. Linear	x	x		x	x	x		x	x		
7.4.d. Area	x	x		x	x	x		x	x		
7.4.e. Volume	x	x		x	x	x		x	x		
7.4.f. Dry	x	x		x	x	x		x	x		
7.4.1. Symbols	x	x		x	x	x		x	x		
7.5.a. Metric-wt.	x			x	x						
7.5.b. Liquid	x	x		x	x	x		x	x		
7.5.c. Linear	x			x	x						
7.5.d. Area	x			x	x						
7.5.e. Volume	x			x	x						
7.5.1. Symbols	x			x	x						
7.6. Average	x	x		x	x	x		x	x		

SECTION/STATE	SD	TN	TX	UT	VT	VA	VI	WA	WV	WI	WY
Section 8. Prominence And Placement: Consumer Packages											
8.1. General	x	x		x	x	x		x	x	x	
8.1.1. Location	x	x		x	x	x		x	x	x	
8.1.2. Style	x	x		x	x	x		x	x	x	
8.1.3. Color	x	x		x	x	x		x	x	x	
8.1.4. Free area	x	x		x	x	x		x	x	x	
8.1.4.a.	x	x		x	x	x		x	x	x	
8.1.4.b.	x	x		x	x	x		x	x	x	
8.1.5. Parallel	x	x		x	x	x		x	x	x	
8.2. Area of PDP	x	x		x	x	x		x	x	x	
8.2.a. Rectangle	x	x		x	x	x		x	x	x	
8.2.b. Cylinder	x	x		x	x	x		x	x	x	
8.2.c. Other	x	x	*	x	x	x		x	x	x	
8.2.1. Minimum ht	x	x		x	x	x		x	x	x	
8.2.2.Proportions	x	x		x	x	x		x	x	x	
Table 1.	x	x		x	x	x		x	x	x	
Section 9. Prominence And Placement: Nonconsumer Packages											
9.1. General	x	x		x	x	x		x	x		
Section 10. Requirements: Specific Consumer Commodities, Nonconsumer Commodities, Packages, Containers											
10.1.Display card	x	x		x	x	x		x	x	x	
10.2. Eggs	x	x		x	x	x		x	x	x	
10.3. Aerosols	x	x		x	x	x		x	x	x	
10.4. Multi-unit	x	x		x	x	x		x	x	x	
10.4.a. Number	x	x		x	x	x		x	x	x	
10.4.b. Quantity	x	x		x	x	x		x	x	x	
10.4.c. Total	x	x		x	x	x		x	x	x	
10.5. Combination	x	x		x	x	x	x	x	x	x	
10.6. Variety	x	x		x	x	x		x	x	x	
10.7. Cylinders	x	x			x	x		x	x	x	
10.8.1.Containers	x			x	x	x			x	x	
10.8.1.a. Bags	x			x	x	x			x	x	
10.8.1.a.1.In-lb	x			x	x	x			x	x	
10.8.1.a.2.Metric	x			x	x						
10.8.1.a.2.1.	x			x	x	x			x	x	
10.8.1.a.2.2.	x			x	x						
10.8.1.b. Oblong	x			x	x	x			x	x	
10.8.1.c.Circular	x			x	x	x			x	x	
10.8.1.d. Cups	x			x	x	x			x	x	
10.8.2. Capacity	x			x	x	x			x	x	
10.8.2.a.1. In-lb	x			x	x	x			x	x	
10.8.2.a.2.	x			x	x	x			x	x	
10.8.2.a.3.	x			x	x	x			x	x	
10.8.2.b. Metric	x			x	x						

SECTION/STATE	SD	TN	TX	UT	VT	VA	VI	WA	WV	WI	WY
10.8.3. Terms	x			x	x	x			x	x	
10.9.1. Apparel	x			x	x	x			x	x	
10.9.2. Textiles	x			x	x	x			x	x	
10.9.2.a. Sheets	x			x	x	x			x	x	
10.9.2.b. Flat	x			x	x	*			*	*	
10.9.2.c. Pillow	x			x	x	*			*	*	
10.9.2.d.Blanket	x			x	x	x			x	x	
10.9.2.e.Tab.clo.	x			x	x	x			x	x	
10.9.2.f.Drape	x			x	x	x			x	x	
10.9.2.g.Carpet	x			x	x	x			x	x	
10.9.2.h.Towel x			x	x	x			x	x		
10.9.2.i. Misc.	x			x	x	x			x	x	
10.9.2.j. Odd	x			x	x	x			x	x	
10.9.2.k. Remnant	x			x	x	x			x	x	
10.9.3.a.Tex Var.	x			x	x	x			x	x	
10.9.3.b.	x			x	x	x			x	x	
10.9.4. Exemption	x			x	x	x			x	x	
10.9.4.a.	x			x	x	x			x	x	
10.9.4.b.	x			x	x	x			x	x	
10.9.4.c.	x			x	x	x			x	x	
10.9.5. Threads	x			x	x	x			x	x	
10.9.5.a.	x			x	x	x			x	x	
10.9.5.b. Yarn	x			x	x	x			x	x	
10.9.5.c. Symbols	x			x	x	x			x	*	
10.9.5.d. Indus	x			x	x	x			x	x	
10.10.a. Seeds	x			x	x	x			x	x	
10.10.b.	x			x	x	x			x	x	
10.10.c.	x			x	x	x			x	x	

Section 11. Exemption

11.1. General	x	x		x	x	x		x	x	x	
11.2. Random	x	p		x	x	x		p	x	x	
11.2.a. Weight	x	x		x	x	x		x	x	x	
11.2.b. Price	x	x		x	x	x		x	x	x	
11.2.c. Total	x	x		x	x	x		x	x	x	
11.3. Confections	x	x		x	x	x		x	x	x	
11.4. Indiv. Serv	x	x	*	x	x	x		x	x	x	
11.5. Tobacco	x	x		x	x	x		x	x	x	
11.6. Glass cont.	x	x		x	x	x		x	x	x	
11.7. Cigarettes	x	x		x	x	x		x	x	x	
11.8. Federal	x	x		x	x	x	x	x	x	x	
11.9.a. Dairy	x	x		x	x	x		x	x	x	
11.9.b.	x	x		x	x	x		x	x	x	
11.9.c.	x	x		x	x	x		x	x	x	
11.9.d.	x	x		x	x	x		x	x	x	
11.10.a. Juice	x			x	x	x			x	x	
11.10.b.	x			x	x	x			x	x	
11.10.c.	x			x	x	x			x	x	
11.11. Soft-drink	x	x		x	x	x		x	x	x	

SECTION/STATE	SD	TN	TX	UT	VT	VA	VI	WA	WV	WI	WY
11.11.a.	x	x		x	x	x		x	x	x	
11.11.b.	x	x		x	x	x		x	x	x	
11.12. Multi-unit	x	x		x	x	x		x	x	x	
11.12.a.	x	x		x	x	x		x	x	x	
11.12.b.	x	x		x	x	x		x	x	x	
11.13. Butter	x	x			x	x		x	x	x	
11.14. Eggs	x	x		x	x	x		x	x	x	
11.15. Flour	x	x			x	x		x	x	x	
11.16. Small pkg x	x			x	x		x	x	x		
11.17. Decorative	x	x			x	x		x	x	x	
11.18.a.Combo pkg	x	x		x	x	x		x	x	x	
11.18.b.	x	x		x	x	x		x	x	x	
11.18.c.	x	x		x	x	x		x	x	x	
11.19. Margarine	x	x			x	x		x	x	x	
11.20. Corn flour	x	x			x	x		x	x	x	
11.21. Drugs	x	x	*	x	x	x		x	x	x	
11.22. Film	x			x	x	x			x	x	
11.22.a.	x			x	x	x			x	x	
11.22.b.	x			p	x						
11.22.c.	x			x	x	x			x	x	
11.23.a. Paints	x			x	x	x			x	x	
11.23.b.	x			x	x	x			x	x	
11.24. Antifreeze	x			x	x	x			x	x	
11.25. Motor oil	x			x	x	x			x	x	
11.26. Pillows	x			x	x	x			x		
11.27. Var. wts	x			x	x	x			x		
11.28. Count	x		*	x	x	x			x		
11.29. Fishing	x			x	x	x			x		

Section 12. Variations To Be Allowed

12.1.1. Net	x	x	x	x	x	x		x	x	x	
12.1.2. Exposure	x	x	x		x	x		x	x	x	
12.1.2.a.	x	x			x	x		x	x	x	
12.1.2.b.	x	x			x	x		x	x	x	
12.2. Magnitude	x	*	*		x	*		*	*	*	

Section 13. Retail Sale Price Representations

13.1.a. Cents-off	x				x				x		
13.1.b. Use	x				x				x		
13.1.b.1.	x				x				x		
13.1.b.2.	x				x				x		
13.1.b.3.	x				x				x		
13.1.b.4.	x				x		x		x		
13.1.b.5.	x				x				x		
13.1.b.6.	x				x				x		
13.1.c.	x				x				x		

SECTION/STATE	SD	TN	TX	UT	VT	VA	VI	WA	WV	WI	WY
13.1.d.	x				x				x		
13.2.a.Intro Off.	x				x				x		
13.2.b.	x				x				x		
13.2.b.1.	x				x				x		
13.2.b.2.	x				x				x		
13.2.b.3.	x				x				x		
13.2.b.4.	x				x				x		
13.2.c.	x				x				x		
13.2.c.1.	x				x				x		
13.2.c.2.	x				x				x		
13.2.d.	x				x				x		
13.2.e.	x				x				x		
13.3. Economy	x				x	x			x		
13.3.a. Defin.	x					x					
13.3.b.	x				x	x			x		
13.3.b.1.	x				x	x			x		
13.3.b.2.	x				x	x			x		
13.3.b.3.	x				x	x			x		
13.3.c.	x				x	x			x		
13.3.d.	x				x	x			x		
Section 14. Revocation Of Conflicting Regulations			x			x			x		

STATE	CITATIONS TO STATE REGULATIONS
SD	South Dakota Codified Law Chapter 39-4 (1979) and Regulation No. 20.01.02.03 in process of adoption as of May 1984
TN	Regulation Pertaining to Packaging and Labeling (Regulation No. 1) (1970)
TX	"Weights and Measures Laws," Revised Civil Statutes of Texas, 1925 as Amended, Title 93, Chapter 7, (1980); Weights and Measures Rules and Regulations 176.44.10.001-.006 (1980)
UT	Regulations Governing the Packaging and Labeling of Commodities Promulgated Under Authority of Title 4, Chapter 9, Section 2, Utah Code Annotated 1953, As Amended A70-05-W3
VT	Vermont Statutes Annotated, Title 9, Chapter 73, Subchapter 4 (1973) (adopts NCWM Packaging and Labeling Regulation by reference)
VA	Rules and Regulations for the Enforcement of the Virginia Weights and Measures Law, Sections 3.1-919 through 3.1-969, Code of Virginia 1950, Regulation No. 1 (1975)

VI Consumer Code of the Virgin Islands, Title 12 A, (1981)

WA Washington Administrative Code 16-666-003 to -130 (1970) Order No. 1135

WV West Virginia Administrative Regulations Chapter 21-2, Series I (1976)

WI Wisconsin Chapter Ag 53, (1975) Department of Agriculture

WY "Wyoming Food and Drug Laws", Wyoming statutes, Section 35-222 to -253 (1961)

REPORT OF THE COMMITTEE ON SPECIFICATIONS AND TOLERANCES

Presented by
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Weights and Measures Program Manager
Illinois Department of Agriculture

REFERENCE KEY

300 INTRODUCTION

The Committee on Specifications and Tolerances submits its report to the 69th Annual Meeting of the National Conference on Weights and Measures (NCWM). This report is the amended interim report of the Committee which was printed in the Conference Announcement.

The report contains the recommendations of the Committee formed on the basis of written and oral comments received during the year.

All references are to National Bureau of Standards Handbook 44 "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices." Paragraphs to be added or completely revised are so identified. Partial changes to paragaraphs are shown as follows: wording to be deleted is shown lined out; wording to be added is underlined.

The report includes 28 Reference Key Items. Seventeen are recommendations for specific action by the Conference and are to be voted on; they are identified by printing their Referenace Key Numbers and headings in **bold type.** Eleven are informational items only, not subject to vote; they are identified by an asterisk next to their Reference Key Number. A complete list of all items follows:

Section 2.20. Scales Code

301-1 Scales Code Format and Tolerances
301-2 Minimum Test Weights and Test Loads for In-Service Tests
301-3 S.1.4.2. Values Displayed, Temperature Conditions
301-4* S.1.6.3. Customer's Indications
301-5* S.4.3. Multiple Load Receiving Elements
301-6* Performance Tests on Recording Elements
301-7* Railway Track Scales
301-8* Wheel-Load Weighers
301-9 Self-Operated Recycling Materials Devices and Systems
301-10 NTETC

302* Section 2.21. Belt-Conveyor Scales Code

Section 3.30. Liquid-Measuring Devices Code

303-1 S.1.4.4. Money-Value Computations
303-2 S.2.5. Zero-Set-Back Interlock
303-3 UR.1.1.1. Length of Discharge Hose/For Marinas and Airports
303-4 Retail Motor Fuel Devices/Equipped with Large Capacity Meters
303-5* Vapor Recovery
303-6* Artificial Heating of Petroleum Products
303-7 Non-temperature Compensated Wholesale Devices
303-8* Temperature Compensation
303-9* Agri-Chemical Meters
303-10* All Codes for Volumetric Measuring Devices
303-11 NTETC

Section 3.32. Liquefied Petroleum Gas Liquid-Measuring Devices Code

304-1 Computing Type Devices
304-2 Temperature Compensation

305 Section 3.33. Liquefied Petroleum Gas Vapor-Measuring Devices Code

Section 4.43. Farm Milk Tanks Code

306-1 S.3.5. External Gage Assemblies
306-2 N. NOTES

307 Section 5.56. Grain Moisture Meters Tentative Code

* * *

The following ten items have been placed on the consent calender and are to be voted on in a single ballot:

301-10	304-1	306-2[1]
303-1	304-2	307
303-7	305	
303-11	306-1	

301 SECTION 2.20. SCALES

301-1 SCALES CODE FORMAT AND TOLERANCES

The draft proposal included in the Report of the Committee to the 68th Conference (1983) had been reviewed by Conference members and many valuable comments and suggestions were received. During the Interim Meetings, a joint meeting of all committees and attendees was held during which a complete new draft was circulated, reviewed, and discussed. All present agreed that this draft proposal was a vast improvement over the

[1]On a request from the floor, Item 306-2 was removed from the consent calendar. The remaining nine items were adopted.

present code, especially with respect to the simplification of the tolerance section.

Concern with Two Concurrent Tolerance Sections

Agreement was reached that field personnel would have no problem in learning, with just a few hours instruction, the new tolerance structure and applying it to the those appropriate devices, which would be readily identifiable in the field by the required markings applied by the manufacturer as to accuracy class and scale division value (d) or verification interval (e). The members of the Committee on Specifications and Tolerances had recommended adoption of the new tolerance structure and the retention of the existing tolerances as the only way adequate code recognition could be made for equipment presently in use. Some in attendance expressed concern, however, about the retention of the present tolerance sections applicable to existing devices concurrent with the new tolerance structure to subsequently installed devices. This does result in two sets of performance criteria.

Assuming that field personnel are familiar with the existing requirements, this would not present a problem since the new code is so readily learned and applied. The major obstacle, then, is that new personnel would need to learn both.

Compatibility is Broad

This would not be a concern for most devices that the official deals with in routine field work. Although the new tolerance structure is expressed in a more simplified manner, the applicable tolerance values are practically the same for all vehicle, axle-load, livestock, and railway track scales (Class III L), the only difference being that new devices of Class III L are limited to 10 000 divisions. This is also true for other devices when the number of scale divisions is from 2000 to 5000.

Examples of scales falling within this category are as follows:

Scale Capacity	Value of d	n
30 pounds	0.01 pound	3 000
30 pounds	1/4 ounce	1 920
250 pounds	1 ounce	4 000
1 000 pounds	0.5 pound	2 000
5 000 pounds	1.0 pound	5 000
10 000 pounds	2 pounds	5 000
100 000 pounds	10.0 pounds	10 000

For these devices, the new tolerance structure could be applied without any significant change.

Potential Problems

Particular problems are small capacity scales (e.g., fan scales and counter scales having significantly less than 2000 scale divisions) and larger capacity scales other than vehicle, axle-load, livestock, and railway track scales, with more than 5000 scale divisions. Alternatives for dealing with this problem are to maintain existing parts T.1., T.2., and T.3. of the code or to develop a simplified version of those parts.

Another area of concern was in dealing with wheel-load weighers. It is the Committee's opinion that the addition of a definition for portable axle-load weighers and the tolerance application as provided in the new sections adequately solve this problem.

Since the first publication of the proposed code, there has also been considerable discussion of that particular paragraph of the Notes Section specifying the amount of test weights to be used in the conduct of tests. Since this new recommendation has no specific impact on the proposed code, it was decided that this part be removed from it and that it be dealt with separately. Thus, this subject is a separate item in this report.

Conclusions

The Committee on Specifications and Tolerances recommends adoption of the proposed code with the new tolerance structure and replacement of the current T.1., T.2., and T.3. with the modification as presented therein. The net result will be a single tolerance structure for the most part, thus significantly reducing the concern related to operating with two tolerance structures. It also recommends the redefinition of portable axle-load weighers and the treatment of the issue on test weights as a separate item. The proposed code appears in its entirety at the end of this Report as Appendix A.

(Item 301-1 was adopted)

301-2 MINIMUM TEST WEIGHTS AND TEST LOADS FOR IN-SERVICE TESTS

This subject had previously been dealt with as part of the proposed Scale Code. As mentioned in the previous item (301-1) it was decided to deal with this recommendation as a separate item. It is the view of the Committee that the code should include a specified minimum test load so that the tests that are conducted are adequate to determine the performance characteristics of the device, and ensure equity for device manufacturers, service personnel, users, and consumers. It is recognized that this could cause problems for jurisdictions not having the amount of test weights specified; however, without such a recommendation, those same jurisdictions have another problem; i.e., convincing the responsible parties to provide funds for obtaining the necessary standards.

Therefore, the Committee recommends the following addition to the Notes Section:

N.2. Recommended Minimum Test Weights and Test Loads* For In-Service Tests (Except Railway Track Scales).- The recommended minimum test weights and test loads for in-service tests are as specified in the following table:

Device capacity (pounds)	Recommended minimums (in terms of device capacity)		Recommended (where practicable)
	Test weights (greater of)	Test loads*	
0 to 100	105%		
101 to 1 000	50% or 100 lb	105%	
1 001 to 40 000	25% or 500 lb	50%	Test weights to dial face capacity, 1000d, or test load to used capacity, if greater than minimums specified
40 000 +	12.5% or 10 000 lb	25%	

*The terms "test load" means the sum of the combination of field standard test weights and any other applied load used in the conduct of a test using the substitution or build-up test methods.

Renumber N.2 to N.2.1. and N.2.1. to N.2.1.1.

(Item 301-2 was adopted.)

301-3 S.1.4.2. VALUES DISPLAYED, TEMPERATURE CONDITIONS

A recommendation was received to amend this paragraph to be consistent with the criteria specified in the Handbook, "Type Evaluation Examinations, Criteria and Test Procedures." In that Handbook it is stated that this requirement is not applicable to equipment when, after a normal installation, the power supply is intended to be supplied continuously.

The Committee agrees with the proposal and recommends that paragraph S.1.4.2. be amended by adding the following phrase at the beginning of the paragraph:

"Except on devices installed with power normally supplied continuously, and not equipped with an external power switch."

(Item 301-3 was defeated.)

301-4* S.1.6.3. CUSTOMER'S INDICATIONS

A recommendation was received to amend this paragraph to make it clear that multiplier keys can be incorporated in a computing scale. It is the view of the Committee that computing scales equipped with multiplier keys are acceptable, providing the device is not equipped with annunciator lights or any other means that would indicate to the customer that any unit price entry is on the basis of any terms other than the price per pound. It is also their view that any change in the wording of this paragraph could be less clear; the Committee therefore recommends no change.

301-5* S.4.3. MULTIPLE LOAD-RECEIVING ELEMENTS

A comment was received that this paragraph should be amended by deleting the exception for bench and counter scales, so that it would apply to two digital computing scales interfaced with one printer. The exception for bench and counter scales was included when this paragraph was adopted because the condition of the load receiving element is obvious to all parties concerned, there was no evidence of a problem with this equipment, and it was not practical to require mechanical equipment such as a bifurcated scale to be so designed. The original purpose of this requirement was to correct a condition where it was not obvious which load receiving element was in use for an indicated quantity and specifically, a cabinet dial interfaced with a monorail scale and a dormant scale. It is the view of the Committee that the consumer and users of systems with two computing scales and one printer have adequate safeguards so that fraud is not facilitated and that code amendment is not necessary.

301-6* PERFORMANCE TESTS ON RECORDING ELEMENTS

It was brought to the attention of the Committee that certain recording elements interfaced with vehicle scales were designed in such a manner that, after a weight was recorded, additional recording of any values is inhibited until the load receiving element had been returned to a zero-load. With this feature, it is not possible to record all test loads during the conduct of an increasing load test as specified in H-112, EPO #13. Manufacturers of this equipment stated that this feature was incorporated at the request of users to prevent scale operators from issuing duplicate tickets which could be used for fraudulent purposes.

It is the view of the Committee that this design is acceptable, and that the performance of a recording element can be determined adequately in an official test, with the application of any loads of different quantities. To eliminate what seems to be a conflict between the Code and the EPO, the Committee recommends that the EPO be amended stating that when a device is equipped with such a feature, at least four different loads should be applied to determine the correct performance of the recording element.

301-7* RAILWAY TRACK SCALES

Several comments were received concerning coupled-in-motion unit train test procedures, and allowable differences between the static weights and dynamic weights of individual cars. It is the Committee's view that further information and discussions with all interested parties is necessary before any recommendation can be made. Therefore the Committee will request the Chairman of the Conference to appoint a task force, consisting of representatives of manufacturers, users, and weights and measures officials, to resolve these issues and make recommendations to the Committee. This task force will be effective for two years maximum and hopefully can complete its work by January 1986.

301-8* WHEEL-LOAD WEIGHERS

The committee received several recommendations regarding wheel-load weigher tolerances and data concerning their performance capabilities. Many comments were offered during the interim meeting from State Highway Weight Enforcement Officials, the Federal Highway Administration, Equipment Manufacturers, and Weights and Measures Officials. It is the Committee's view that these devices are necessary and appropriate for use in Highway Weight Enforcement programs, that the major problem with existing tolerances is the performance capability of these devices at the low end, and that the proposed scale code if adopted will adequately care for this situation by providing an increased tolerance at the low end of the weighing range. Since the scale has the least use at the low end, this will not impact inequitably on truckers or officials in the weight limit enforcement process.

301-9 SELF-OPERATED RECYCLING MATERIALS DEVICES AND SYSTEMS

The committee reviewed further information available on this subject since its Report to the 1983 Conference (Item 301-13). The committee is aware that recycling is continuing to grow and that there are many devices and methods used to determine the quantity of the material being sold. Certain of these devices are small bulk weighing systems, weighing individual loads from 12 ounces to 12 pounds and others operate on a count principle. Other information indicates that many recycling centers are using conventional scales. Many of these conventional devices are of 1000- to 2000-pound capacity with scale divisions of 1 or to 2 pounds. Loads weighed are from 3 to 5 pounds to 50 pounds or more. When weighing unknown quantities on a device with 2-pound scale divisions, the uncertainty is $\pm$ 1/2 of that scale division or 1 pound. It is reasonable to assume that the buyer will weigh to the closest scale division; therefore a 5-pound load on a 2-pound scale division device, will most certainly be weighed at 4 pounds. This results in a 20% shortage to the seller.

The Committee offers the following guidelines to Weights and Measures officials to aid in determining the appropriateness of a scale for these applications.

(a) The smallest load to be weighed should be equal to or greater than 20 scale divisions. Thus if the smallest load to be weighed is 5 pounds (a plastic garbage bag filled with whole aluminum cans) the value of the scale division should be 4 ounces or less. With that scale division the uncertainty in the weighing of a 5-pound bag of cans is 2 ounces, which is 2 1/2%, not 20%.

(b) The average draft should be at least equal to 100 scale divisions (0.5% uncertainty) and preferably greater. The following table illustrates the maximum weighing errors that can result (on a scale with zero error) due to the value of the scale division (d).

Load expressed in d	Relative error in %
10	5
20	2.5
40	1.25
50	1
100	0.5
200	0.25
500	0.1

For those devices referred to by the Industry as reverse vending machines, the Committee offers the following guidelines:

Machines Operating on a Multiple Count Principle:

Although there is no code for counting machines, these devices are subject to weights and measures supervision and particular attention should be given to the following requirements of NBS H-44, General Code.

G-S.1.	Identification
G-S.6.	Marking; Operational Controls, Indications, and Features (proper and complete operating instructions should be displayed to the customer)
G-S.7.	Lettering (all markings shall be distinct and easily readable and reasonably permanent)
G-UR.1.2.	Environment
G-UR.2.1.	Installation
G-UR.2.3.	Accessibility for Testing Purposes
G-UR.3.1.	Method of Operation
G-UR.3.4.	Responsibility; Money-Operated Devices (including a posting of the price being paid in a clear and conspicuous manner).
G-UR.4.4.	Assistance in Testing Operations (supplying cans for testing material)

Machines Operating on a Weighing Principle:

Most of these devices are bulk weighing machines and should be considered as such. However, since these devices are of a special design, certain code provisions and requirements can be applied only with due regard to that design, their intended purpose, and conditions of use. In

addition to those paragraphs of NBS H-44 referenced for machines operating on a count principle, particular attention should be given to G-UR.1.1. Suitability of Equipment. In determining the appropriateness of the value of the scale division, the ratio of the average draft to the value of the scale division should be at least 75:1 for small drafts (2 pounds or less) and approximately 150:1 for larger drafts. Thus, for devices with a hopper capacity or draft size up to 2 pounds, a 0.01-pound scale division is appropriate, for devices with a hopper capacity of 3 to 6 pounds, a 0.02-pound scale division is appropriate, and for devices with a hopper capacity from 7 to 12 pounds, a 0.05-pound scale division is appropriate.

The display of the weighed quantity to the customer is not considered necessary, as it serves little useful purpose. The customer does have possession of the cans and can either pre-weigh the lot or weigh out a sample of say 12 cans and count the remainder to determine the approximate weight. The dispensing of the money is considered indication enough of the quantity sold. There is ample precedent for this since a taxi-meter indicates the cost of the product being measured in terms of money, rather than miles. It is, of course, necessary to have some internal means for displaying quantity in terms of weight for testing purposes.

It is also considered necessary that the design of the equipment be such that it automatically assumes a zero-load reference before each draft is weighed. Thus any debris, moisture etc., remaining in the hopper after each draft is automatically tared-out.

The device should also be designed so that a static test with test weights can be conducted. The tolerance values specified in the Scale Code should be applied.

A dynamic or operational materials test should also be conducted with available product. Since there are no performance criteria specified in the Code for a materials test, one should be established. As a result of at least three years study, it has been determined that an equitable and "state of the art" value is 5%. Last year's report also presented ample justification for this value with respect to equity.

In order to provide adequate support for enforcement purposes, it is recommended that the Code be amended as follows:

Add a new paragraph T.3.11. to read

> T.3.11. TOLERANCE VALUES/FOR MATERIALS TEST ON CUSTOMER-OPERATED BULK-WEIGHING SYSTEMS FOR RECYCLED MATERIALS.- The maintenance and acceptance tolerance shall be $\pm$ 5 percent of the applied materials test load except that the average error on 10 or more materials test loads shall not exceed 2 1/2 percent.

Add a new paragraph N.1.7. to read:

N.1.7. MATERIALS TEST.- A materials test shall be conducted on all customer-operated bulk weighing systems for recycled materials using bulk material for which the device is used. Insert into the device, in a normal manner, several accurately pre-weighed samples (free of foreign material) in varying amounts approximating average drafts.

A motion was made to amend this item by including a requirement that these devices display weight values of the product and zero load. The chair recognized a majority vote to debate. The motion to amend was defeated.

(Item 301-9 was adopted.)

301-10 REPORT OF THE NATIONAL TYPE EVALUATION TECHNICAL COMMITTEE (NTETC), SCALES AND WEIGHING SYSTEMS SECTION

This Technical Committee met for a one-half day session during the interim meeting. As a result, the Committee recommends Conference adoption of the following additions to the Handbook, Type Evaluation Examinations, Criteria and Test Procedures.

1. Add the following to paragraph 4 in that part headed G-S.1. Identification:

   On a scale or weighing element installed in a checkout stand, the information required by this paragraph may be located under and separate from the scale platter, providing the platter can be easily removed without the use of a tool.

This is considered appropriate, since the scale manufacturer cannot guarantee that the scale will not be recessed in the checkout stand. Further, it is consistent with the required location of the level indicating means, which also must be checked during an examination by the Weights and Measures officials.

2. Add the following to that part headed Keyboard Tare:

   3. If a device will accept a tare entry in excess of scale capacity, a net weight indication must be a negative value, or the net display must be blank or display an error symbol.

3. Add to that part headed Recorded Representations under paragraph 5. dealing with random labels:

   d. The symbol "$" or the word "dollars" is required with the total price and may be printed by the device or pre-printed on the label. Defining the unit price in either manner is not necessary.

4. Add a part as follows:

Weighing Systems Equipped With a Single Indicating Element And More Than One Weighing Element

1. An indication of any summed weight value shall include an over capacity indication, and a behind zero indication if any of the weighing elements are in either of these conditions. This applies whenever any or all of the weighing elements are empty or loaded. It does not apply to indicated negative values for a behind zero balance condition.

2. Means shall be provided for setting each weighing element to a zero balance indication. The zero-setting-mechanism shall not provide a summed weight indication.

3. The capacity by scale division value shall be marked adjacent to the weight display in a manner dependent upon the particular scale installation as follows:

   a. When all weighing elements have the same capacity and the load on each can be displayed independently and summed, the marking shall be the capacity and scale division value of an individual weighing element.

   b. When all weighing elements have the same capacity and only the summed weight values can be displayed, the capacity and scale division value for the summed capacity shall be marked.

   c. When a summed value for all weighing elements and a summed value from any two elements can be displayed independently, the capacity and scale division value shall be marked for both the total summed capacity and the capacity of the two elements.

   d. When the weighing elements have different capacities and the load on each can be displayed independently, the capacity of each shall be marked.

5. Include a test procedure for E.M.I. consistent with the test procedures outlined in the S.M.A. recommendation adopted by the 63rd NCWM (1978). The criteria for acceptability will be consistent with the applicable paragraphs of the Pre-draft OIML document on Electronic Weighing Instruments as developed by the U.S. National Working Group for OIML PS7/RS2.

The meeting included discussions on subjects for which no decisions were made. These subjects that will be included for further consideration at future meetings are as follows:

a. The security aspects on computer and data collection equipment so designed that program or disc changes are readily accessible to the user or operator.

b. Methods and evaluation criteria for electro-static discharge tests.

c. International symbols for certain scale functions and indications.

(Item 301-10 was adopted.)

302* SECTION 2.21. BELT-CONVEYOR SCALES CODE

During the interim meeting, the Committee received a report from the Chairman of the Belt-Conveyor Scale Code Task Force. The Task Force has held three meetings and considerable work was done by correspondence as well. As a result, a Pre-draft has been completed; however, one more meeting is necessary to finalize the Draft.

The Committee expresses its appreciation to all those members of the Task Force who worked diligently to accomplish so much in such a short period of time.

The Draft (Appendix A) is an informational item for review by the Conference over the ensuing year. The Committee requests comments from all interested parties for their review and discussion during its interim meeting in 1985 so that it may offer a revised code for Conference action in 1985.

303 SECTION 3.30 LIQUID-MEASURING DEVICES CODE

303-1 S.1.4.4. MONEY-VALUE COMPUTATIONS

Over the last several years, the reports of the Committee have referenced and offered many solutions to the problem of escalating motor fuel prices. Code amendments have been made providing equitable criteria for the design and performance of retail motor fuel dispensers. Provision has been made for increased money-value divisions necessary with higher unit prices. An on-going problem has been an agreement between analog money-value divisions on the dispenser and digital money-value divisions on the console. It has been the view of the Committee, supported by Conference action, that these must agree. Device manufacturers have responded that this is too restrictive. Further compounding this problem is the uncertainty in the readability of the indicated quantity values on an analog dispenser when attempting to determine compliance with this paragraph.

It is the view of the Committee that the previous principles referenced must be adhered to, but that certain amendments to the code can provide equitable, yet less restrictive, design criteria to accomplish this.

Therefore, the Committee recommends code amendments as follows:

Amend S.1.4.4. Money-Value Computations to read:

S.1.4.4. MONEY-VALUE COMPUTATIONS.- Money-value computations on a retail device shall be of the full-computing type in which the money value at a single unit price, or at each of a series of unit prices, shall be computed for every delivery within either the range of measurement of the device or the range of the computing elements, whichever is less. ~~In a design evaluation~~ The ~~test any~~ analog money value indication shall not differ from the mathematically computed money value (Quantity x Unit Price = Sales Price), for any delivered quantity, by an amount greater than ~~one-half the value of the money value division. In a field test, the difference shall not be greater than the value of the money value division.--Amended-1982~~ the values shown in Table 1.

TABLE 1.- Maximum Allowable Variations for Money-Value Computations on Mechanical Analog Computers

Unit Price		Money Value Division	Maximum Allowable Variation	
			Design Test	Field Test
From	To and Including			
0	$ 1.00/gallon 0.25/liter	1¢	± 1¢	± 1¢
$1.00/gallon 0.25/liter	$ 3.00/gallon 0.75/liter	1¢ or 2¢	± 1¢	± 2¢
$3.00/gallon 0.75/liter	$10.00/gallon 2.50/liter	1¢ or 2¢ 5¢	± 1¢ ± 2 1/2¢	± 2¢ ± 5¢

Amend N.4.4.1. Money-Value Computation Tests/Laboratory Design Evaluation Test to read:

N.4.4.1. LABORATORY DESIGN EVALUATION TESTS.- In the conduct of laboratory design evaluation tests, compliance with paragraph S.1.4.4. shall be determined by using the cone gear as a reference for the total quantity delivered. The maximum allowable variation of the indicated delivered quantity shall be an indication with the index of the indicator in coincidence within the width of the graduation. The maximum allowable variation of the indicated sales price shall be ~~plus or minus one half the value of the smallest-money-value-division.~~ as shown in Table 1.

Amend N.4.4.2. Money-Value Computation Tests/Field Tests to read:

N.4.4.2. FIELD TESTS.- In the conduct of field tests to determine compliance with paragraph S.1.4.4. the maximum allowable variation in the indicated sales price shall be ~~plus or minus the value of the minimum-money-value-division.~~ as shown in Table 1.

Renumber tables and table references that follow as necessary.
T.2.2., T.2.3., TABLE 1, TABLE 2.

(Item 303-1 was adopted.)

303-2 S.2.5. FOR RETAIL DEVICES/ZERO-SET-BACK INTERLOCK

A comment was received that there is evidence in the field that operators are "hanging the nozzle" in a manner such that it appears to be a normal position, but in fact it is not, thus bypassing the interlock and resulting in short measure to customers. This condition is not evident to most consumers, and in some instances it is not difficult for an operator to hang the nozzle in this manner. The Committee agrees that there is a need to correct this situation with an amendment to this paragraph. It recognizes that the change recommended can result in subjective judgments but feels the problem is severe enough to warrant a change, and that reasonable judgments will result. Therefore the committee recommends that this paragraph be amended to read:

> S.2.5. FOR RETAIL DEVICES ONLY, ZERO-SET-BACK INTERLOCK.- A retail motor-fuel device of the meter type shall be so constructed that, after a particular delivery cycle has been completed by movement of the starting lever to any position that shuts off the device, an effective automatic interlock will prevent a subsequent delivery being started until the indicating elements and recording elements, if the device is equipped and activated to record, have been returned to their correct zero positions. Provision shall be made for the starting lever to be in its designed shut-off position and for the zero-set-back interlock to be engaged before the discharge nozzle can be returned to its designed hanging position or what appears to be its intended hanging position from a reasonable customer position. In a system with more than one dispenser supplied by a single pump, there shall be incorporated in each dispenser an effective automatic control valve which will prevent product being delivered by a dispenser until the indicating elements on that dispenser have been returned to a correct zero position. Amended 1981, 1984. The underlined phrase is non-retroactive and enforceable as of January 1, 1985.

(After agreement that in S.2.5 the phrase "; that is, any position where the top of the nozzle is placed in its designed receptacle and the lock can be inserted." had been adopted by the 66th NCWM in 1981 but inadvertently omitted in printing Handbook 44, item 303-2 was withdrawn; the omitted phrase is to be added to the 1985 edition of Handbook 44.)

303-3 UR.1.1.1. LENGTH OF DISCHARGE HOSE/FOR MARINAS AND AIRPORTS

A comment was received that to require hoses in excess of 18 feet to be adequately protected from environmental factors was too restrictive. The comment continued that measurement problems did not result when hoses of 26 feet in length were used and not coiled and covered and that this paragraph should bmeasurement problems. The key is the performance of the equipment at a given installation. When a device is equipped with a "hard wall hose" and there are no extreme temperature changes, and all other conditions of the installation and valve operation are good, hose protection may not be necessary. Thus, it is difficult to specify any

particular hose length as the correct one. The test of a device "as found" without a double reset to correct any "computer jump" that results in short measure can be a good indication of hose problems.

The Committee does concur with this comment and recommends that this section be amended by deleting "18 feet" and inserting "26 feet."

Further, the Committee reminds the Conference that when measurement problems are encountered at any installation, and the cause of the problem is determined to be an inadequately protected hose of any length, hose protection can be required under General Code, paragraph G-UR.2.1. Installation.

(Item 303-3 was adopted.)

303-4 RETAIL MOTOR FUEL DISPENSERS/EQUIPPED WITH LARGE-CAPACITY METERS

The Committee received several comments that there are in use retail motor fuel dispensers (mostly non-computing types) equipped with large-capacity meters installed at truck stops. These deliver at a rate in excess of 25 gal/min and up to 60 gal/min. The questions in need of answers in the enforcement process are:

a) what tolerances are applicable?
b) what are appropriate slow flow and fast flow test drafts?
c) should the delivery rates be marked on the device and, if so, where?

It is the view of the Committee that these devices serve a useful purpose; it makes the following recommendations:

1. Since these are retail motor fuel dispensers the appropriate tolerance application is the same as for all other retail devices, that is T.2.1. Tolerance Values/On Retail Devices.

2. A slow flow test should be conducted at the minimum discharge rate marked on the device or the minimum discharge rate at which the device will deliver when equipped with an automatic discharge nozzle set at its slowest setting, whichever is less.

The requirements of N.4.2.2. specify that a slow flow test should be conducted at the two previous rates mentioned, but additionally "or at 5 gal/min., whichever is least." Since most of these devices operate at a 5:1 ratio between maximum and minimum flow rates (60:12, 50:10, 30:6), amendment to this paragraph is necessary. Therefore,

Add a new paragraph to read:

N.4.2.3. FOR RETAIL MOTOR-FUEL DEVICES WITH A MARKED MAXIMUM DISCHARGE RATE OF 25 GALLONS PER MINUTE [100 L/MIN] OR MORE.- A "special" test shall be made at a minimum discharge rate of

(a) the minimum discharge rate marked on the device, or

(b) the minimum discharge rate at which the device will deliver when equipped with an automatic discharge nozzle set at its slowest setting, whichever is less.

Renumber the paragraphs that follow.

3. To properly determine the performance characteristics of these devices it will be necessary to conduct tests using equipment larger than 5-gallon provers. Therefore amend N.3.4. to read:

N.3.4. TEST DRAFTS/FOR OTHER RETAIL DEVICES.- On devices with a designed maximum discharge rate of less than 20 gallons per minute [80 L/min], tests shall include drafts of one or more amounts, including drafts of at least 5 gallons. On devices with a marked maximum discharge rate of 20 gallons per minute [80 L/min] or greater, tests shall include drafts of one or more amounts, including drafts of at least the amount delivered by the device in one minute at the maximum flow rate developed by the installation.

4. It is considered necessary that these devices are marked with the maximum and minimum flow rates; therefore add the following new paragraph:

S.4.4. MARKING REQUIREMENT/FOR RETAIL DEVICES ONLY. - On a retail device with a designed maximum discharge rate of 25 gallons per minutes [100 L/min] or greater, the maximum and minimum discharge rates shall be marked on the device, on an exterior surface visible after installation. The minimum discharge rate shall not exceed 20% of the maximum discharge rate. (Nonretroactive as of January 1, 1985)

(Item 303-4 was adopted.)

303-5* VAPOR RECOVERY

The Committee was informed that there is some consideration being given to expanding the application of Stage II - Vapor Recovery (on retail motor fuel dispensers). Stage II has been in effect in California for several years, and as a result, the California Division of Measurement Standards has had considerable experience in this area. If any jurisdiction is faced with this problem, requirements and other data are available from the California Division of Measurement Standards or the NBS Office of Weights and Measures.

303-6* ARTIFICIAL HEATING OF PETROLEUM PRODUCTS

This subject was addressed by the committee in its Report to the 1983 NCWM (Item 303-5). Since that time the Committee has received information that this practice continues; specifically, at certain truck stops fuel is being preheated prior to being measured. It is the view of the committee that this practice is unethical and certainly a fraudulent marketing practice.

The Committee recommends that during the tests of retail motor fuel dispensers, the temperature of the product as dispensed should be determined. If the results indicate that the temperature of the product is warmer than it would have attained in a normal unheated storage environment, legal action should be taken immediately.

For further information or aid, contact the NCWM S&T Committee, c/o Technical Advisor, Office of Weights and Measures, National Bureau of Standards, Washington, D.C. 20234, telephone (301) 921-2401.

303-7 NON-TEMPERATURE-COMPENSATED WHOLESALE METERS

The Committee received a comment that paragraph N.2. specifies that during tests of these devices care should be taken to reduce to a minimum, volume changes resulting from changes in temperature of the test liquid, and N.5. requires that corrections be made for any changes in volume resulting from differences in liquid temperatures between the time of passage through the meter and the time of volumetric determination in the prover. In the test of this equipment it has been found that the temperature of the product in the prover is sometimes different than the temperature of the product at the meter. If the cubical coefficient of thermal expansion of the product being measured is 0.0005 per ^{o}F, a 5 ^{o}F temperature difference is a change in volume equal to 0.0025 or 0.25%. On a test draft of 500 gallons this is a change of 1.25 gallons or 288.75 cubic inches. The acceptance tolerance on this test is 137.5 cubic inches and the maintenance tolerance is 275 cubic inches. Thus, a 5 ^{o}F temperature differential is more than two times the acceptance tolerance and also more than the maintenance tolerance.

Often these temperature differences are unavoidable in the testing process, consequently it is important that the temperature of the product be determined at the meter and in the prover during the testing process.

Since there is presently no requirement that means be provided for determining the temperature of the product at the meter, the Committee recommends that the code be amended by adding the following new non-retroactive paragraph:

> S.2.6. DESIGN OF MEASURING ELEMENTS/FOR WHOLESALE DEVICES/TEMPERATURE DETERMINATION.- For test purposes, means shall be provided to determine the temperature of the liquid either

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

(b) in the meter inlet or discharge line and immediately adjacent to the meter. (Non-retroactive as of January 1, 1985)

Renumber the paragraphs that follow.

(Item 303-7 was adopted.)

303-8* TEMPERATURE COMPENSATION

Once again, the Committee received several comments on the subject as it applies to the Liquid-Measuring Devices Code and the Vehicle Tank Meters Code. These comments included adding technical requirements applicable to temperature compensating mechanisms to the Vehicle-Tank Meters Code, adding requirements to the Liquid-Measuring Devices Code for temperature compensating means on wholesale devices in recognition of the latest technology, and adding a definition for a U.S. petroleum gallon.

The Committee has addressed all of these issues in years past, but there has not been a sufficient majority vote for Conference adoption of most recommendations made.

The Committee has not changed its view from that expressed in previous reports, and is hesitant in repeating those recommendations which have not been adopted. The basic underlying problem seems to be the hesitancy on the part of the States to specify that petroleum products must be sold at each specific level of distribution under a uniform standard; that is, all "gross" or all "net" gallons.

It is apparent that problems have developed because of this, particularly at the wholesale level, when certain dealers purchase on the basis of "gross" gallons and others within the same marketing area purchase on the basis of "net" gallons. When a temperature variation of 20 °F can result in a volume differential of as much as 1%, inequity can prevail, and it becomes evident that a uniform standard is essential for equitable and orderly marketing practices.

Thus, the Committee recommends that a symposium be held at this years Conference and that all interested parties present as much factual information as possible, so that a determination may be made as to what definitive uniform standard is appropriate for each and every application.

303-9* AGRI-CHEMICAL METERS

At the interim meeting, the Committee received a draft code applicable to devices used to measure these products from the Meter Manufacturers Technical Committee (MMTC). This draft code includes those parts of the Liquid-Measuring Devices Code and Vehicle-Tank Meters Code that would be applicable to both loading-rack and vehicle-tank meters, with only minor changes. The only significant change is the recommended tolerances. The MMTC has indicated that the major reason for the

recommended tolerances is that these liquids, unlike petroleum products, are generally corrosive, non-lubricating, and in some cases, very temperature sensitive which creates extreme viscosity changes within a given product. They are also in many cases blends of various products that are not subject to the same level of quality control as petroleum products.

A somewhat minor problem is product identification; that is, what products are to be covered.

There are other problems for which decisions must be made. Since the Environmental Protection Agency has stringent requirements for the disposal of many of these chemicals, it may prove difficult to flush test measures or provers used for testing. This may also impact on the prover size used for tests.

Thus, the Committee offers the recommendations of the MMTC for consideration and study by the Conference. The Committee urges all those involved to review these recommendations over the ensuing year and to submit any resulting data and recommendations.

The MMTC recommends that the products to be covered include the following liquids: fertilizer, feed, herbicides, pesticides, insecticides, fungicides, deofoliants, and similar liquids normally used in the agriculture and chemical industries.

The MMTC recommended tolerances to be applied are as follows:

On Normal Tests		On Special Tests
Maintenance Tolerance	Acceptance Tolerance	Maintenance and Acceptance Tolerance
1% of indicated volume	0.5% of indicated volume	1% of indicated volume

303-10* ALL CODES DEALING WITH VOLUMETRIC MEASURING DEVICES

The Committee received a comment that these codes as they presently appear in NBS H-44 could be made more convenient for users. The LMD Code, for example, contains requirements for loading-rack meters and retail motor fuel dispensers and there is a separate code for Vehicle Tank Meters. There are also many requirements applicable to indicators and graduations that are repeated in several codes.

a. For computing systems, the date, quantity, unit price, and total price shall be recorded and shall agree with the indications on the dispenser.

b. For non-computing analog dispensers, when the billing is on the basis of the individual quantities for each transaction (non-cumulative), the value of the smallest unit of displayed quantity for each transaction shall be not greater than 0.1 gallon providing the "pulser" and the recorded quantity used for billing is equal to or less than 0.01 gallon. (Code Reference also S.1.4.4.2.)

6. On dispensers equipped with electronic digital indicating elements, the system shall automatically stop delivery before exceeding either the maximum quantity or maximum total price that can be indicated.

S.2.5. ZERO-SET-BACK-INTERLOCK

4. The use of the interlock shall be effective under all conditions when any control on the console, except a system emergency shut-off, is operated and after any momentary power failure.

Add Section to Criteria Applicable to all Liquid Measuring Devices as follows:

G-S.5.1. INDICATING AND RECORDING ELEMENTS/GENERAL

6. Zero Indication.- The zero indication must consist of at least the following minimum indications as appropriate:

a. One digit to the left and all digits to the right of a decimal point.

b. If a decimal point is not used at least one active decade plus any constant zeros.

c. A fixed or constant zero cannot appear after a decimal point; i.e., all decades to the right of a decimal point must be active.

NOTE: For Retail Motor Fuel Dispensers see also S.1.4.1.
For Vehicle Tank Meters see also S.1.1.5.
For Liquefied Petroleum Gas/Liquid Measuring Devices see also S.1.4.1.

Add Sections to Specific Criteria For Vehicle Tank Meters as follows:

G-S.5.1. INDICATING AND RECORDING ELEMENTS/GENERAL

5. Tax Computation.- Each tax shall be computed separately, rounded to the nearest cent, and summed to obtain the total price of the sale.

The Committee is cognizant of this situation and has included in its five-year plan, as developed last year, a complete review of these codes during 1985. As a result it is expected that the Committee will have a complete re-draft of these codes for consideration during its interim meeting in January 1986 and finalized for 1986 Conference action.

303-11 REPORT OF THE NATIONAL TYPE EVALUATION TECHNICAL COMMITTEE (NTETC), METERS AND MEASURING SYSTEMS SECTION

This Technical Committee met for a one-half day session during the interim meeting. As a result the Committee recommends Conference adoption of the following additions to the Handbook, "Type Evaluation Examinations, Criteria and Test Procedures."

Add sections to Specific Criteria For Retail Motor Fuel Dispensers as follows:

G-S.5.1. INDICATING AND RECORDING ELEMENTS/GENERAL -

1. Discount Pricing.- The unit price is pre-set in the dispenser by the operator in the normal manner and all discounts for any sale are computed on the basis of a) the pre-set unit price, or b) the computed total price or c) the discount per gallon.

   *a. A console interfaced with either an analog or a digital indicating dispenser may recompute a total price displayed by the dispenser, if the price to be paid by the customer is different from the value displayed.

   *b. For a sale in a preset amount, either money or quantity, discount may be offered to the customer either in terms of money returned or as additional product delivered provided that the discount is extended on the additional product delivered.

   *c. A console shall be capable of switching back and forth repeatedly between the normal and discounted total prices.

   d. The algorithms for computing a discounted price or a customer discount shall be one of the following:

   (1) Q X (UP - discount) = new total price

   (2) total price - Q X (UP - discount) = discount

   Each rounded to nearest cent

   (3) total price - (Q X discount) = new total price

   Each rounded to nearest cent

*Existing checklist requirements.

2. Selectable Unit Price Capability - A device (console or dispenser) so designed that an operator or customer can select the unit price for a particular transaction at the time of sale.

*a. A dispenser may be equipped with means for selecting two or more unit prices, provided that the unit price selected cannot be changed after the initial flow begins.

Any unit price selected may be continuously displayed on the dispenser after the conclusion of a delivery and sale, provided that any total price displayed is in mathematical agreement with the equation quantity X unit price = total price.

After the termination of one sale, a unit price different from that of the previous sale cannot be automatically selected and displayed until the quantity and total sales values have been returned to zero.

*b. A console may be equipped with means for selecting two or more unit prices, provided that the unit price selected cannot be changed after the operating mechanism at the dispenser is in the "on" position.

3. Debit Card Transaction - A transaction in which payment is made directly from the purchaser's account by electronic funds transfer.

a. A receipt must be available to the customer at the completion of the transaction. The issuance of the receipt may be initiated at the option of the customer.

b. The customer receipt must contain the following information:

the identity of the seller, purchaser, and product purchased (codes may be used); the date of the transaction, the quantity purchased, the unit price, and the total price.

4. Cash Value Card - A card encoded with the cash value of the initial purchase price which authorizes a customer to purchase products up to the cash value of the card. The value of the card is decreased in amounts equal to individual purchases.

Means shall be provided to the customer to determine the initial cash value of the card and the remaining cash value prior to and after each transaction.

5. Invoice Billing - A system where customers are billed for one or more transactions at the end of a billing period.

*Existing Checklist Requirements.

S.1.1.5. RETURN TO ZERO

2. Automatic or manual means shall be provided to assure that the system on the outlet side of the meter is pressurized before recording an initial zero condition as required by UR.2.1.

3. A printer shall be so designed that the recording of zero shall reflect the actual initial condition of the meter prior to delivery.

During the meeting a lengthy discussion ensued concerning the criteria that were developed for electronic cash register receipts when interfaced with a service station console. Agreement could not be reached; therefore this criteria will be included on the agenda for the next meeting of this Committee. In the meantime, the criteria developed will serve on a tentative basis for evaluations of this equipment conducted by the Office of Weights and Measures and the State of California.

Future items will also include EMI and electro-static discharge test methods and performance criteria.

(Item 303-11 was adopted)

304 SECTION 3.32. LIQUEFIED PETROLEUM GAS LIQUID-MEASURING DEVICES CODE

304-1 COMPUTING TYPE DEVICES

The committee received a comment that the requirements of this Code applicable to computing type devices have not been amended consistent with the changes made in the Codes for Liquid-Measuring Devices and Vehicle-Tank Meters. To correct this oversight, the committee recommends that this code be amended as follows:

Amend S.1.4.4. MONEY-VALUE COMPUTATIONS to be consistent with S.1.4.4., S.1.4.4.1., S.1.4.4.2., and S.1.4.4.3. of the Liquid-Measuring Devices Code.

Amend N. Notes to be consistent with N.4.4.1. and N.4.4.2. of the Liquid-Measuring Devices Code.

(Item 304-1 was adopted)

304-2 TEMPERATURE COMPENSATION

The Committee received a comment that the technical requirements of this code applicable to temperature compensation apply only to automatic temperature compensating mechanisms. These requirements do not apply to wholesale sales of liquefied petroleum gas by means of calibrated containers or by weight. The comment further stated that in some instances, customers have received compensated deliveries from one

refinery, uncompensated deliveries from another refinery, but are billed by the distributor. This results in the customer receiving conflicting statements between the refinery and the distributor. Some refineries also compensate using the specific gravity of the product at a temperature other than 60 °F.

Another concern expressed was that Paragraph UR.2.4.2. Written Invoices only applied when an automatic temperature compensator was used in the delivery, and that the same principle should be applied to all compensated volume sales.

The Committee agrees with these comments and recommends the suggested Code Amendments that follow:

Add a new paragraph to read:

> UR.2.4.2.- TEMPERATURE COMPENSATED SALE.- All sales of liquefied petroleum gas in a liquid state, when the quantity is determined by an approved measuring system equipped with a temperature compensating mechanism, or by weight and converted to gallons, or by a calibrated container, shall be in terms of the United States gallon of 231 cubic inches and the volume shall be expressed at 60 °F.

Renumber UR.2.4.2. to UR.2.4.3. and amend to read:

> UR.2.4.3. ~~WRITTEN~~ INVOICES.- Any ~~written~~ invoice based on a the reading of a device that is equipped with an automatic temperature compensator or based on a weight converted to gallons, or based on the volume of a calibrated container, shall have shown thereon that the volume delivered has been adjusted to the volume at 60 °F.

(Item 304-2 was adopted)

305 SECTION 3.33. LIQUEFIED PETROLEUM GAS VAPOR-MEASURING DEVICES CODE

A comment was received that in this Code paragraph A.1. Application, S.2.1. Pressure Regulation, and UR.2.2. Invoices should be amended primarily for clarity purposes. The committee agrees and recommends code amendments as follows:

Amend A.1. to read:

> A.1.- This code applies to positive displacement ~~low-pressure (5 psi or less)~~ devices used for the measurement of liquefied petroleum gas in the vapor state.

Amend S.2.1. Pressure Regulation by adding the following paragraph:

> Where vapor is being measured at a pressure of one pound per square inch or more, the delivery pressure shall be maintained within $\pm$ 0.25 pound per square inch. Pressure variations due to regulator lock off shall not increase the operating pressure by more than 25%.

Add a new paragraph N.4.2.3. to read:

> N.4.2.3. PRESSURE REGULATION TEST.- On devices operating at a pressure of one pound per square inch or more, a pressure regulation test shall be made at both the minimum and maximum use load to determine the proper operation of the regulator and the proper sizing of the piping and dispensing equipment. These tests may include a test of 24 hours during which the pressure is recorded.

Amend paragraph UR.2.2. Invoices by adding at the beginning of the paragraph the following:

> A customer purchasing liquefied petroleum gas measured by a vapor meter shall receive from the seller an invoice for each billing period. The invoice shall have shown clearly thereon the total charge for the billing period, the total quantity being billed, the altitude correction factor, the last meter reading and the date of that reading, and the rate schedule number at which the product is being billed. If the vapor meter is equipped with an automatic temperature compensator, or any other means are used to compensate for temperature, the invoice shall have shown thereon that the volume has been adjusted to the volume at 60 °F.

(Item 305 was adopted)

306 SECTION 4.43. FARM MILK TANKS CODE

306-1 S.3.5. EXTERNAL GAUGE ASSEMBLIES

The Committee received a comment that air locks could develop in these assemblies and cause an incorrect reading. The Committee agrees and recommends this part be amended by adding the following new paragraph:

> S.3.5.5. VENTING.- An external gauge tube shall be adequately vented at the top, open to the atmosphere. Any attachment to the gage tube shall not adversely affect the operation of this vent.

(Item 306-1 was adopted)

306-2 N. NOTES

A comment was received that the information contained in the Report of the Committee to the 1983 NCWM regarding meniscus readings should be included in the notes section of this Code. The Committee agrees and recommends this section be amended by adding the following paragraph:

N.6. READING THE MENISCUS.- When a reading or setting is to be obtained from a meniscus formed by milk or other opaque liquid, the index or reading line is the position of the highest point of the meniscus. When calibrating a device with water and the device is to be used with an opaque liquid, the reading should be obtained accordingly; that is, the position of the highest point of the meniscus.

(Item 306-2 was adopted)

307 SECTION 5.56. TENTATIVE CODE, GRAIN MOISTURE METERS

During its interim meeting, a meeting was held with the Grain Moisture Meter Advisory Committee. As a result the Committee recommends that this code be made permanent with the following changes:

Delete paragraph S.1.4.2. Digital Indications/Range of Moisture Content.

Change paragraph S.1.6.2. Operating Range to non-retroactive.

Amend paragraph S.3.3. Conversion and Correction Tables, by adding the following sentence.

f) Values exceeding any measurement range shall not be included.

(Item 307 was adopted)

In continuation of established policy, the listing of OWM Reports of test completed since last year is included at the end of this report. (Appendix B.)

The Committee expresses its sincere and grateful appreciation to all those offering comments and suggestions. In most instances, the information was presented in an orderly and effective manner, which greatly facilitated review of the information by the Committee and action thereon. It is only through such cooperative effort that the Conference can continue to attain uniform and equitable measurement standards. The Committee also expresses its appreciation to all those participating in the Interim Meeting. The comments and suggestions greatly aided the Committee in its deliberations.

S. A. Colbrook, Illinois, Chairman
K. S. Butcher, West Virginia
F. Gerk, New Mexico
D. A. Guensler, California
R. W. Probst, Wisconsin
O. K. Warnlof, Technical Advisor, NBS

COMMITTEE ON SPECIFICATIONS AND TOLERANCES

VOTING RESULTS - COMMITTEE ON SPECIFICATIONS AND TOLERANCES

REFERENCE KEY	House of State Representatives		House of Delegates	
	Yes	No	Yes	No
301-10				
303-1				
303-7				
303-11				
304-1	42	0	62	0
304-2				
305				
306-1				
307				
301-1	45	1	60	2
301-2	44	0	58	0
301-3	8	34	7	44
301-9*	19	19	14	34
301-9	36	6	41	10
303-3	36	1	48	0
303-4	40	0	45	0
306-2	39	1	39	2
300	42	0	50	0

*motion of amendment

APPENDIX A

DRAFT

BELT-CONVEYOR SCALE SYSTEMS

A. APPLICATION

A.1.- This code applies to belt-conveyor scale systems used for the weighing of bulk materials.

A.2.- The code does not apply to:

(a) devices used for discrete weighing while moving on conveyors
(b) devices that measure quality on a time basis
(c) check-weighers
(d) controllers or other auxiliary devices except as they may affect the weighing performance of the belt conveyor scale.

A. 3.- See also General Code requirements.

S. SPECIFICATIONS

S.1. DESIGN OF INDICATING AND RECORDING ELEMENTS

S.1.1. GENERAL.- A belt-conveyor scale system shall be equipped with a primary indicating element in the form of a master weight totalizer and shall also be equipped with a recording element and a rate of flow recorder. An auxiliary counter shall not be considered part of the master weight totalizer.

S.1.2. UNITS.- A belt-conveyor scale shall indicate and record weight units in terms of pounds, tons, long tons, metric tons, or kilograms. The value of a scale division (d) expressed in a unit of weight shall be equal to:

a. 1, 2, or 5, or

b. a decimal multiple or submultiple of 1, 2, or 5; or

c. a binary submultiple of an inch-pound unit of weight

S.1.3. VALUE OF THE SCALE DIVISION.- The value of the scale division shall not be greater than 0.05% (1/2000) of the rated capacity of the scale.

S.1.4. RECORDING ELEMENTS AND RECORDED REPRESENTATIONS.-The value of the scale division of the recording element shall be the same as that of the indicating element. It shall record the units of measurement (i.e., pounds, tons, etc.), the date, and time.

S.1.5. RATE OF FLOW INDICATION AND RECORDERS.- A belt-conveyor scale shall be equipped with a rate of flow indicator and a disc or strip chart recorder. An alarm system shall be provided to help prevent underloading or overloading. The alarm signal shall operate at not less than 35% and not greater than 98% of the scale rated capacity and shall not be fitted with means to disconnect the signal. The type of alarm used (audio or visual) shall be determined on the basis of the individual installation.

S.1.6. ADVANCEMENT OF PRIMARY INDICATING ELEMENT AND PRINTER.- The primary indicating element and recording element shall advance only when the belt conveyor is in operation.

S.1.7. MASTER WEIGHT TOTALIZER.- The master weight totalizer shall not be resettable without breaking a security means.

S.1.8. POWER LOSS.- In the event of power failure, the accumulated measured quantity on the master weight totalizer of an electronic digital indicator shall be retained in memory during the power loss.

S.2. DESIGN OF WEIGHING ELEMENTS.- A belt-conveyor scale system shall be designed to combine automatically belt travel with belt load in order to provide a determination of the weight of the material that has passed over the scale.

S.2.1. ADJUSTABLE COMPONENTS.- An adjustable component that can affect the zero load balance condition or the performance of the device (except as prescribed in S.6.1) shall be held securely in adjustment and shall not be capable of adjustment without breaking a security means.

S.2.2. OVERLOAD PROTECTION.- The load receiving elements shall be equipped with means for overload protection of not less than 150 percent of rated capacity. The accuracy of the scale in its normal loading range shall not be affected by overloading.

S.2.3. TEMPERATURE EFFECTS.- The conveyor scale system shall comply with the performance requirements at temperatures from 150 °F to 115 °F.

The conveyor scale (without the belt) shall comply with the following: For a change in temperature of 20 °F (at a rate of less than 10 °F per hour), the master weight totalizer shall not change by more than the value of two scale divisions when the system is operated at no load for a time period equal to the time required to deliver the minimum test load.

S.2.4. POWER SUPPLY EFFECTS.- The conveyor scale system shall comply with the performance requirements without zero adjustment for variation of -15% to +10% of nominal voltage and $\pm$ 2% of nominal frequency.

S.3.- MARKING REQUIREMENTS.- A belt-conveyor scale system shall be marked with the following: (See Also G-S.1)

a. The rated capacity in units of weight per hour (minimum and maximum).

b. The value of the scale division.

c. The design speed in terms of feet or meters per minute at which the belt will deliver the rated capacity.

d. The design load in terms of pounds per foot or kilograms per meter.

e. Power supply requirements.

f. Operational temperature range.

g. National Weights & Measures type evaluation identification.

S.4. SPEED MEASUREMENT.- A scale system shall be equipped with a belt speed or travel sensor so that there is no possibility that slip will occur whether the belt is empty or loaded.

S.5. ZERO SETTING

S.5.1. DESIGN OF ZERO-SETTING MECHANISM.- The range of the zero-setting mechanism shall be not greater than 2 percent of the rated capacity of the scale without breaking the security means. Automatic and semi-automatic zero-setting mechanisms shall be so constructed that the resetting operation is carried out only after a whole number of belt revolutions and the completing of the setting or of the whole operation is indicated.

S.5.2. SENSITIVITY AT ZERO LOAD.- (For Initial Verification) When the system is operated for a time period equal to the time required to deliver the minimum test load and with a test load equal to two scale divisions applied directly to the weighing element, the totalizer shall advance not less than one or more than three scale divisions. An alternative test of equivalent sensitivity shall also be acceptable.

N. NOTES

N.1. GENERAL.- Belt-conveyor scales are capable of weighing bulk material accurately; however, their performance can be detrimentally affected by the conditions of the installation. (See User Requirements).

N.1.1. MATERIALS TEST.- Official tests of the belt-conveyor scale system shall be done by weighing, on a certified reference scale (see T.1.1., paragraph d), the quantity of material that has passed over the belt conveyor scale (or will pass over the scale if the material is pre-weighed) and adjusting the belt-conveyor scale to the reference scale.

N.1.2. SIMULATED TESTS - Simulated loading conditions as recommended by the manufacturer and approved by the certifying authority may be used to properly monitor the system operational performance between official tests, but shall not be used for official certification.

N.2. CONDITIONS OF TESTS.- A belt-conveyor scale shall be tested after it is installed on the conveyor system with which it is to be used and under such environmental conditions as may normally be expected. It shall be tested at normal use capacity and may be tested at any other rate of flow that may be used at the installation. Each test shall be not less than 2000 scale divisions and at least three revolutions of the belt. In addition, one of the following must be met, whichever is applicable:

a. Ten minutes operation

b. A normal weighment not to exceed 1000 tons

c. Additional tests as deemed necessary by the certifying authority to adequately determine the performance of the device.

N.3. ZERO-LOAD TEST.- If a belt-conveyor scale system has been idle for a period of two hours or more, the system shall be run under load for not less than 30 minutes or not less than one hour under a no-load condition when the temperature is above 41 °F (5 °C). When the temperature is below 41 °F additional warmup time is required before beginning the zero tests. The totalizer indication shall not change more than ± one scale division when the instrument is operated at no load for a period equivalent to the time required to deliver the minimum totalized load.

The zero load test shall be conducted over a whole number of belt revolutions of not less than three revolutions or 10 minutes operation, whichever is greater.

The totalizer shall not change more than ± three scale divisions during any portion of the zero test.

N.4. MATERIAL-TEST PROCEDURE.- Use bulk material, preferably that material for which the device is normally used. Either pass a preweighed quantity of material over the belt-conveyor scale system in a manner as similar as feasible to actual loading conditions, or statically weigh (on a suitable scale as defined in T.1.1., paragraph d) all material that has passed over the belt-conveyor scale during a material test. Means for weighing the material-test load will depend on the capacity of the belt-conveyor scale and availability of a suitable verification scale for the test. To assure that the test load is accurately weighed and determined, the following precautions shall be observed:

a. The containers, whether they are 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. Stencilled tare weight of railway cars or trucks shall not be used.

c. Gross and tare weights shall be determined on the same verification scale.

d. When a 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.

e. When a railway track scale is used to weigh the test load, not more than 24 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 eight hours.

f. The test shall not be conducted when it is raining or snowing unless adequate precautions are taken to assure that the weight of the test load is not affected.

g. A minimum of three individual tests shall be conducted for each official verification.

T. TOLERANCES

T.1. APPLICATION.- Tolerances for commercial weighments of materials measured on conveyor scale systems shall be as follows:

T.1.1. ON INITIAL VERIFICATION.- The acceptance tolerance shall be $\pm$ 0.25% of test load under the following conditions:

a. The installation of a device/system is for commercial use.

b. After major reconditioning, relocation, or after 3 months of non-use of the device/system.

c. After official rejection of the device/system by the certifying authority and subsequent service.

d. The quantity of the applied load for a materials test shall be verified by means of a reference weighing device (e.g., vehicle, railway track, or hopper scale) which shall, concurrent with the materials test, be adjusted to an accuracy of $\pm$ 0.05% of applied load. Where practical, the substitution method of testing the verification scale to used capacity shall be employed.

T.1.2. SUBSEQUENT VERIFICATION.- The maintenance tolerance shall be $\pm$ 0.5% of applied load. Maintenance tolerances are applicable to materials tests when concurrent standards verification of the reference weighing device cannot be met.

T.2. REFERENCE STANDARDS.- Verifying the accuracy of the reference weighing device is the responsibility of the certifying authority.

UR. USER REQUIREMENTS

UR.1. USE REQUIREMENTS.- A belt-conveyor scale system shall be operated within the manufacturer's recommended operational range.

UR.1.1. MINIMUM DELIVERY.- Delivered quantities of less than the minimum test load shall not be considered a valid weighment.

UR.1.2. SECURITY MEANS.- When a security means has been broken, it shall be reported to the certifying authority.

UR.2. CONVEYOR DESIGN CONSIDERATIONS.- In addition to the requirements of UR.3.2., the scale accuracy can be affected by belt tension, angle of inclination, total belt length, and belt speed. The following guidelines apply, although some of these may be exceeded or excepted for certain installations after consultation with the scale manufacturer.

a. The scale conveyor should be less than 1000 feet, and more than 40 feet, from tail pulley to head pulley.

b. The scale conveyor should not contain vertical or horizontal curves.

c. The scale conveyor should have an inclination angle less than 10 degrees. Angles greater than 10 degrees require careful consideration of the material to be weighed because rollback of the material will cause weighing errors.

d. Belt speed should not exceed 1000 feet per minute. In general, lower belt speeds with larger belt loading are more desirable for accurate weighing.

e. Conveyors that have high belt tension because of length and steep inclination angle require heavier belting that is less flexible. It is more difficult to obtain accurate weighing with conveyors that have large tension variations. The conveyor scale must be located in an areas in which low tension is sufficient.

f. Winged pulleys should not be used.

g. The conveyor stringers should be designed so that relative deflection between any two adjacent idlers within the weigh area does not exceed 0.025 inch (0.6 mm) under load.

UR.3. INSTALLATION REQUIREMENTS.-

UR.3.1. PROTECTION FROM ENVIRONMENTAL FACTORS.- The indicating elements, the lever system or load cells, and the load receiving element of a belt scale shall be adequately protected from

environmental factors such as wind, moisture, dust, weather, and radio frequency interference (RFI) and electromagnetic interference (EMI) that may adversely affect the operation or performance of the device.

UR.3.2. CONVEYOR INSTALLATION.- The design and installation of the conveyor leading to and from the weigh scale is critical with respect to scale performance. The following requirements shall be met:

a. Conveyor Belting- Conveyor belting shall be no heavier than necessary for planned use. The belt shall contact the center or horizontal portion of the idlers under all conditions of loading. The mass per unit length of the belting shall be as constant as practical. Splices shall not cause any undue disturbance in scale operation (see N.3.).

b. Take-Up Mechanism- The take-up mechanism shall be of the free-moving type, and provide constant tension.

c. Training Idlers- Training idlers shall not be allowed within 40 ft (12m) or 10 idler spacings, whichever is greater, on either side of the scale.

d. Conveyor Stringers- Conveyor Stringers shall be continuous in the weighing area including the scale weigh idlers and at least four idlers either side of the scale, to minimize deflection under load.

e. Conveyor Supports- A conveyor scale shall be so installed that neither its performance nor its operation will be adversely affected by any characteristic of the foundation, supports, or any other equipment. Supports shall be located at all weighing element load-bearing points with additional supports to meet recommended deflections. The span of such support shall include four idlers before and after the scale.

f. Weigh Idlers- Weigh idlers shall be matched, evenly spaced, and normal (square) to the conveyor. At least four idlers on either side of the weighbridge shall be similarly matched, aligned, and properly maintained.

g. Scale Location Identification- The scale and the four idlers on each end 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. The scale shall be readily accessible for maintenance purposes.

h. Guard Devices- All live portions of the scale shall be protected by appropriate guard devices to prevent accidental interference with the weighing operations.

i. Conveyor Loading- The conveyor loading mechanism shall be designed to provide uniform belt loading. The distance from the loading point to the scale shall allow for adequate settling time of the material on the belt before it is weighed. Feeding mechanisms

shall have positive closing or stopping action so that material leakage does not occur. Feeders shall provide an even flow over the scale through the full range of scale operation. Sufficient impact idlers shall be provided in the conveyor under each loading point to prevent a deflection of the belt during the time material is being introduced.

j. Belt Tracking- The belt shall not extend beyond the edge of the idler roller in the weighing area.

k. Simulated Loading Device Storage- Suitable protection shall be provided for storage of this equipment.

l. Tripper and Movable Head Pulley- A conveyor scale system shall not be installed on a conveyor containing a tripper or a movable head pulley.

UR.3.3. CERTIFIED REFERENCE SCALE.- A certified reference scale shall be available and conveniently located to permit efficient material testing of the belt conveyor scale system as required by the certifying authority.

UR.3.4. BELT TRAVEL (SPEED).- The belt travel transducer shall be so positioned that it accurately represents the speed of the belt at the scale location for all flow rates between the maximum and minimum values. The belt travel transducer shall be so designed and installed that there is no slip.

UR.4. LOADING.- The feed of material to the scale shall be controlled to assure that, during normal operation, the material flow is in accordance with manufacturer's recommendation for rated capacity.

UR.5. MAINTENANCE.- Belt-conveyor idlers and scales shall be maintained and serviced in accordance with manufacturer's instructions and the following:

a. Scale Maintenance- Periodic scale service shall be provided by adequately trained personnel. At least two persons on site must be thoroughly familiar with the scale and its operation. The scale shall be kept clean and a history of scale maintenance and stability shall be maintained to determine the frequency of cleaning and maintenance.

b. Scale Alignment- "Wire line" alignment checks shall be considered any time conveyor work is performed in the scale area or in accordance with manufacturer's recommendation.

c. Simulated Loading Equipment- Simulated loading equipment shall be cleaned and properly maintained. A correction factor shall be determined for the simulated loading equipment when material tests are conducted.

d. Records- Records of calibration and maintenance including conveyor alignment shall be maintained for at least three years to develop a history of scale performance. Copies of the report shall be mailed to the certifying authority as required. The current date and correction factor(s) for simulating loading equipment shall be recorded and maintained in the scale cabinet.

e. Security Means- Breaking a security means on adjustable elements or components shall be reported immediately to the appropriate certifying authority.

UR.6. COMPLIANCE.- Prior to initial verification, the scale manufacturer shall certify to the owner that the scale meets code requirements. Prior to initial verification and each subsequent verification, the scale owner or his agent shall notify the certifying authority in writing that the belt conveyor scale system is in compliance with this specification and ready for material testing.

DEFINITION OF TERMS USED IN CONNECTION WITH BELT CONVEYOR SCALES

Auxiliary Counter. An indicator in a location remote from the scale indicating the weight of material that has been determined by the scale.

Belt-Conveyor Scale. A device that employs a weighing element in contact with a belt to sense the weight of the material being conveyed, and the speed (travel) of the material, and integrates these values to produce total delivered weight.

Certifying Authority. The authorized jurisdiction responsible for certifying the accuracy of belt-conveyor scales.

Chart Recorder. An element used with a belt-conveyor scale that continuously records the rate-of-flow of bulk material over the scale.

Conveyor Stringers. Support members for the conveyor on which the idlers are mounted.

Feeding Mechanism. The gate, short belt, vibrator feeder, stroker feeder, etc., that deposits material to be weighed on the belt conveyor.

Head Pulley. The pulley at the discharge end of the belt conveyor. The head pulley is generally the drive pulley.

Idler Space. The center-to-center distance between idler rollers measured parallel to the belt.

Idlers or Idler Rollers. Freely turning cylinders mounted on a frame to support the conveyor belt. For a flat belt the idlers will consist of one or more horizontal cylinders transverse to the direction of belt travel. For a troughed belt, the idler will consist of one or more horizontal cylinders and one or more cylinders at an angle to the horizontal to lift the sides of the belt to form a trough.

Loading Point. The location at which material to be conveyed is applied to the conveyor.

Master Weight Totalizer. An indicating element used with a belt-conveyor scale to indicate the weight of material that was passed over the scale. The master weight totalizer is the primary indicating element of the belt-conveyor scale.

Recording Element. A device used to print on tickets, tape, or other papers, the weight of material that has passed over the scale in a given time.

Rated Scale Capacity. The weight that can be delivered by the device in one hour of operations.

Simulated Loading. A loading method using means other than material to determine the performance of a belt-conveyor scale.

Tail Pulley. The pulley at the opposite end of the conveyor from the head pulley.

Take-Up. A device to provide sufficient tension in a conveyor belt ensuring that the belt will be positively driven by the drive pulley. A counter-weighted take-up consists of a pulley free to move in either the vertical or horizontal direction with dead weights applied to the pulley shaft to provide the tension required.

Training Idlers. Idlers of special design or mounting intended to shift the belt sideways on the conveyor to assure the belt is centered on the conveying idlers.

Tripper. A device for unloading a belt conveyor at a point between the loading point and the head pulley.

Weighment. A single complete weighing operation.

Wing Pulley. A pulley, usually used as the tail pulley, made of widely spaced metal bars in order to set up a vibration to shake loose material from the underside (return side) of the belt.

APPENDIX B

OFFICE OF WEIGHTS AND MEASURES REPORTS OF TEST

No.	Date	Company	Model	Equipment Description	Capacity	n
1983						
708	10/15/83	Ohaus Scale Corporation	870	Counter Scale	1 lb	16 (500)
709	10/15/83	Ohaus Scale Corporation	800	Counter Scale	5 lb	1312 (1640)
710	9/19/83	Gilbarco, Inc.	TRIMPAC AL 2801	Retail Motor Fuel Dispenser	99.999 gal	
711	9/19/83	Seedburo Equipment Company	8860	Class III Grain Test Scale	5 000 g	10 000
712	9/19/83	National Semiconductor	MT 2001	Cash Register	29.99 lb	2 999
713	10/15/83	Ferranti Indiana, Inc.	201736	Retail Motor Fuel Dispenser		
714	10/15/83	National Cash Register Corp.	1830	Self Service Fuel Terminal		
715	9/19/83	Mettler Instruments Corp.	ED 2180	Indicating Element	30 lb	75 000
			EA 15	Weighing Element		
716	10/15/83	Koppens Automatic U.S.A.	VM80-LPK80-1	Measuring Element	1-22 gpm	
717	11/10/83	Sweda International, Inc.	5606	Stand Alone Cash Register	30 lb	3 000
718	11/10/83	Sweda International, Inc.	2820	Stand Alone Cash Register	30 lb	3 000
719	11/10/83	Sweda International, Inc.	5826	Stand Alone Cash Register	30 lb	3 000
720	11/10/83	Sweda International, Inc.	7645	Stand Alone Cash Register	30 lb	3 000
721	11/25/83	TIAM Corporation	NEXUS 50A	Counter Scale	1 lb	4 500
722	2/15/83	Measuregraph Company	Probe	Fabric Measuring Device	$999.99	35 999
723	12/10/83	Micro Motion, Inc.	C200	LPG Liquid Meter		
724	12/15/83	National Controls, Inc.	3800	Bench Scale	30 lb	3 000
725	12/22/83	Fairbanks Weighing Division	50-36001	Ticket Printer		
726	12/22/82	Masstron Scales, Inc.	M 5000	Indicating Element	2 000 lb	10 000
727	12/30/83	Ishida Scales Mfg. Co.	ALPHA COSMIC-300	Computing Scale	30 lb	3 000
728	12/30/83	Metro Equipment Corporation	TP-122	Tape Printer	60 lb	3 000
729	12/30/83	Metro Equipment Corporation	RP-922	Tape Printer	60 lb	3 000
730	12/30/83	Metro Equipment Corporation	TP-127	Tape Printer	60 lb	3 000
731	12/30/83	A&D Engineering, Inc.	AD-4316	Indicating Element	100 lb	10 000
732	12/30/83	General Electronic Systems	521	Indicating Element	100 lb	10 000
733	12/30/83	Electroscale Corporation	551	Indicating Element	400 lb	20 000
734	12/30/83	Allegany Technology, Inc.	MEGA-8	Indicating Element	50 lb	5 000
735	12/30/83	Allegany Technology, Inc.	LP-5X7-MS-10K	Weighing Element	10 000 lb	5 000
736	12/30/83	World Wide Weighing, Inc.	760LH	Weighing Element	30 000 lb	1 500

No.	Date	Company	Model	Equipment Description	Capacity	n
737	12/30/83	National Semiconductor	DTS 2101	Cash Register	30 lb	3 000
738	12/30/83	Fairbanks Weighing Division	90-500	Data Management System		
739	12/30/83	Toledo Scale	7530	Weighing Element	200 000 lb	10 000
740	12/30/83	Toledo Scale	151	Indicating Element	200 lb	20 000
741	12/30/83	Flex-Weigh Corporation	DWM III	Indicating Element	100 lb	10 000
742	12/30/83	TEC America, Inc.	SL 43-50	Weighing Element	50 lb	5 000
743	12/30/83	Metro Equipment Corporation	SSP-503	Label Printer	100 lb	10 000
744	12/30/83	Metro Equipment Corporation	PAL-10K	Indicating Element	100 lb	10 000
745	12/30/83	Berkel, Inc.	511	Computing Scale	15 lb	1 500
746	12/30/83	Fairbanks Weighing Division	70-4170	Bench Scale	1 000 lb	5 000
1984						
747	1/16/84	Metro Equipment Corporation	POLO-10K	Indicating Element	100 lb	10 000
748	1/31/84	GSE Inc.	620	Indicating Element	125 lb	2 500
749	4/15/84	Global O.T.C.F.	Automator 650	Prepackaging Scale	30 lb	3 000
750	2/15/84	Kubota America Corporation	FP-800	Computing Scale	30 lb	3 000
751	2/15/84	Cardinal Scale Manuf. Co.	60120-PRC-2	Vehicle Scale Weighing Element	120 000 lb	6 000
752	2/15/84	RBR Scales, Inc.	1300	Indicating Element	10 lb	5 000
753	3/15/84	Centrodyne Corp. of America	Silent 550	Digital Electronic Taximeter	$999.99	99 999
754	3/15/84	Moreau S.A. (Meto)	CS 491	Computing Scale	30 lb	3 000
755	4/15/84	Ameacon, Inc.	WEIGH MATE 82	Indicating Element	120 000 lb	6 000
756	4/15/84	Global O.T.C.F.	Concentrator 220	Computing Scale	30 lb	3 000
757	4/15/84	Consolidated Controls Corp.	UMC 1000	Indicating Element	100 lb	10 000
758	4/30/84	Masstron Scale, Inc.	M1000	Indicating Element	400 lb	8 000
759	4/30/84	Masstron Scale, Inc.	M2500	Indicating Element	5 000 lb	10 000
760	4/30/84	TEC America, Inc.	SL-59-30L	Computing Scale	30 lb	3 000
761	5/7/84	Mettler Instrument Corp.	CE400/49	Jewelers Balance	410 lb	410 000
762	5/7/84	Mettler Instrument Corp.	PE600/49	Counter Scale-Grain Test Scale	610 lb	61 000
763	5/15/84	Morrison Weighing System	T-3500 M	Indicating Element	100 000 lb	10 000
764	6/15/84	New Brunswick Intl., Inc.	DPS-6000	Prepackaging Scale	30 lb	3 000
765	6/15/84	Prepackaging Scale	9000 Series	Prepackaging Scale	30 lb	3 000
766	6/15/84	Allegany Technology	301	Crane Scale Weighing Element	60 000 lb	6 000
767	6/15/84	Allegany Technology	601	Crane Scale Weighing Element	40 000 lb	4 000
768	6/15/84	Allegany Technology	BSP-50	Weighing Element	50 lb	5 000
769	6/15/84	Mettler Instruments Corp.	SAUTER E1200	Indicating Element	30 lb	30 000
770	6/15/84	National Controls, Inc.	3800-300F	Bench Scale	300 lb	3 000
771	6/15/84	Sweda International, Inc.	5820	Cash Register	30 lb	3 000
772	6/15/84	Toledo Scale	2095	Bench Scale Weighing Element	400 lb	10 000

ADDENDUM TO REPORTS OF TEST

Number	Date	Company	Model
372 & 414 627	11/21/83	National Cash Register Corporation	2552 and 2557 4000
644	12/9/83	National Cash Register Corporation	2126
605	12/9/83	National Controls, INc.	5785
646	12/20/83	TEC America, Inc.	M-2300-10
693	12/30/83	K-Tron Arizona, Inc.	MS-2
547	12/30/83	Metro Equipment Corporation	AC-2020
315, 431, 432	12/20/83	National Semiconductor, DATACHECKER/DTS	
624	1/31/84	Omron Electronics, Inc.	RS80-50
670	4/15/84	Toledo Scale	8430 PLU
498, 523	4/15/84	Veeter Root	2002E and VR 312020-595
446	4/15/84	Hobart Corporation	1840
570	5/28/84	National Controls, Inc.	3200
502	5/29/84	Fairbanks Weighing System	H90-30XX-FM
502, 614	5/29/84	Fairbanks Weighing Division	H90-30XXZM and H90-15XZM
547	5/30/84	Metro Equipment Corporation	AC-30-20, AC-2015

REPORT OF THE COMMITTEE ON EDUCATION, ADMINISTRATION, AND CONSUMER AFFAIRS

Presented by
Joseph L. Swanson, Chairman
Director, Division of Measurement Standards, State of Alaska

REFERENCE KEY

400 INTRODUCTION

The Committee on Education, Administration, and Consumer Affairs submits its report to the 69th Annual Meeting of the National Conference on Weights and Measures (NCWM). This report is the amended interim report of the Committee which was printed in the Conference Announcement.

The report contains the recommendations of the Committee formed on the basis of written and oral comments received during the year.

All items are informational and require no formal action of the NCWM.

Reference Key	Subject
401*	National Weights and Measures Week
402*	Reports from Regional Education Committees
403*	OWM Weights and Measures Newsletter
404*	National Training Program
404-1*	Training Modules Under Development
404-2*	Proposed Training Modules
404-3*	Program Contractors
404-4*	Production Schedule
404-5*	Certification Procedure

The Chairman moved adoption of the entire report with editorial privileges to the Executive Secretary. The motion carried as follows:

	Yes	No
State Representatives	45	0
Delegates	50	0

401 NATIONAL WEIGHTS AND MEASURES WEEK

The Committee appoints Phil Stagg of Louisiana and Peggy Adams of Bucks County, Pennsylvania, as Co-chairpersons for National Weights and Measures Week 1985.

The Committee would like to thank the Scale Manufacturers Association, the American National Metric Council, Hobart Corporation, Fairbanks Weighing Division, and the Institute for Weights and Measures for the excellent promotional materials provided for Weights and Measures Week 1984.

Co-chairperson Peggy Adams reported to the Conference that House Joint Resolution #623 (Attachment 6) had been introduced by Congressman Peter Kostmayer, 8th Congressional District, Pennsylvania, on June 29, 1984, designating the week beginning March 1, 1985, as "National Weights and Measures Week." Ms. Adams reported that it takes 218 co-sponsors to move the joint resolution through Congress. The Committee urges that all members of the Conference utilize the letter format provided by the Committee to request the co-sponsorship of H. J. Res. 623 by their Congressional delegation.

Ms. Adams also reported that she was developing a slide presentation on all weights and measures functions for use by Conference members. She requested that anyone who had slides that might be appropriate for such a presentation send them to her at the following address: Bucks County Department of Consumer Protection and Weights and Measures, Annex Building, Broad and Union Streets, Doylestown, Pa., 18901.

402 REPORTS FROM REGIONAL EDUCATION COMMITTEES

The Committee reviewed the following reports:

1. The final report of the Committee on Education, Administration, and Consumer Affairs to the 26th Annual Technical Conference of the Western Weights and Measures Association (July 24-29, 1983).

2. The final report of the Education Committee to the 38th Annual Conference of the Southern Weights and Measures Association (October 24-27, 1983).

3. The 1984 Final Report of the Committee on Education, Administration, and Consumer Affairs to the Northeastern Weights and Measures Association.

In the report of the Education Committee of the Western Weights and Measures Association, it was suggested that there was a need to catalog computerized weights and measures inspection programs. As an initial step in addressing the need cited by the Western committee, members of the National Education Committee decided to send a questionnaire to all jurisdictions for the purpose of identifying computer hardware and software currently being used. For the results of the questionnaire see Attachment 7. After having reviewed the results of the survey, the Committee recommends that the leadership of the Conference appoint a group to make an in-depth study of electronic information processing capabilities and their benefit to Conference members.

Members of the Western Education Committee also suggested that time be provided at each annual meeting of their Conference for a mutual discussion of administrative problems, new approaches, new enforcement philosophies, or other material related to the administration of weights and measures programs. This topic was addressed during the National Committee's discussion of a proposal to establish Directors Roundtables (see Attachment 1). Members of the Committee endorsed the concept of having Directors Roundtables at the regional conferences and agreed to recommend:

(1) that each regional association put an item on the agenda of its next meeting to consider establishing a program such as the one described in Attachment 1;

(2) that the experiences of the regional associations should be taken into consideration before deciding whether to recommend the initiation of Directors Roundtables at the National Conference.

The Committee is pleased to report that the Western and the Southern Weights and Measures Associations have scheduled Directors Roundtables for their fall meetings and will report their results to the Committee for discussion at its Interim Meeting.

403 WEIGHTS AND MEASURES NEWSLETTER

Joan Koenig reported to the Conference that the NBS Office of Weights and Measures has started publication of a newsletter for the weights and measures community (see Attachment 2). The Committee urges that Conference members support the newsletter by sending to OWM newsworthy items of information.

404 TRAINING PROGRAM

404-1 TRAINING MODULES UNDER DEVELOPMENT

During the 69th Annual Meeting, the Committee took the following actions concerning the training modules under development:

a. Reviewed the final working draft of Module 1, Mechanical Retail Computing Scales, with Landvater Associates, and agreed to begin field testing September 1984.

b. Reviewed the final working draft of Module 27, Introduction to Electronic Weighing and Measuring Systems, prepared by ConsulTrain, Inc., and agreed to begin field testing September 1984 with the assistance of OWM.

c. Began reviewing the first draft of Module 23, Weights and Measures Administration, prepared by Landvater Associates.

d. Began reviewing the final draft of Module 5, Vehicle and Axle-Load Scales, prepared by Working Group C.

e. Continued its review of Module 6, Monorail and "Meat Beam" Scales, and Module 7, Livestock and Animal Scales, prepared by Working Group D.

The Committee formulated a method of field testing and evaluating the draft training modules and will implement it during the field testing of modules 1 and 27.

404-2 PROPOSED TRAINING MODULES

The Committee:

a. Reconsidered its approach to developing the elective technical modules (26-37) and decided that the first module in the series should be an introduction to electronic weighing and measuring systems as outlined by Chairman Joe Swanson (see Attachment 3).

b. Revised the list of proposed training modules to reflect the new approach to the elective technical modules and to add new modules such as Linear-Measuring Devices, Test Equipment, Theory of Scale Tolerance, National Type Evaluation Program, and Laboratory Administration (see Attachment 4). The list is subject to further change.

404-3 PROGRAM CONTRACTORS

The Committee had originally contracted with the Texas Engineering Extension Service (TEEX) to develop all of the modules into professional training documents. On September 21, 1983, the NCWM terminated its contract with TEEX for mutual convenience. At the Interim Meeting, the Committee selected the following contractors to work on specific training modules:

Contractor	Modules
Landvater Associates Summit, New Jersey	1 - Mechanical Retail Computing Scales 2 - Electronic Retail Computing Scales 23- Weights and Measures Administration
ConsulTrain, Inc. Rockville, Maryland	27- Introduction to Electronic Weighing and Measuring Systems

404-4 PRODUCTION SCHEDULE

The Committee updated the training module production schedule as shown in Attachment 5. The Committee is seeking the support and assistance of Conference members to serve on working groups for the following modules:

Module 21, LPG Meters
Module 20, Vehicle Tank Meters
Module 11, Prescription and Jewelers' Balances
Module 13, Hopper Scales
Module 19, Loading Rack Meters

Anyone who would like to volunteer to serve on one of these working groups should contact Joan Koenig, Office of Weights and Measures, National Bureau of Standards, Gaithersburg, Maryland 20899.

The Committee would like to express its thanks to members of the Conference and the OWM staff who have contributed to the development of the modules.

404-5 CERTIFICATION PROCEDURE

The Committee will discuss the attached procedure (see Attachment 8) with the expectation that it will be recommended as a voting item at the 70th Annual Meeting of the NCWM. Comments are requested.

J.L. Swanson, Alaska, Chairman
T.F. Geiler, Hyannis, MA
B.R. Niebergall, North Dakota
P.A. Stagg, Louisiana
S.J. Darsey, Florida
J.A. Koenig, Technical Advisor, NBS

COMMITTEE ON EDUCATION, ADMINISTRATION, AND CONSUMER AFFAIRS

ATTACHMENT 1

DIRECTORS ROUNDTABLES

Proposal: It is proposed that the Regional Weights and Measures Conferences set aside time for State Weights and Measures Directors to meet and discuss common problems or exchange information about successful new programs.

Format: It is suggested that two to three hours be set aside for each roundtable meeting. A committee of three or four directors should be appointed to establish the theme of the roundtable prior to the meeting. The committee should notify all State Directors of the theme chosen and should encourage them to come prepared to discuss the topic chosen from the point of view of their particular State program.

Possible themes might be:

Implementation of the New Scale Code
Public Relations Programs
Interactions with the Media
Cost-Cutting Measures
The Impact of Rapidly Changing Technologies on State Weights and Measures Programs
The Politics of Weights and Measures Administration
Reporting Program Accomplishments
How to Adopt NCWM Model Codes and Regulations
The Proper Mix of Programs - Devices, Packages, Complaint Handling, Undercover Buying and Selling
New Equipment for Weights and Measures Use

Benefits: Provide a forum for the exchange of valuable information among directors, and promote the establishment of personal relationships among the participants that could lead to greater cooperation and pooling of resources. New directors especially should benefit from the opportunity the roundtables will provide to make valuable contacts and learn from the experience of others.

ATTACHMENT 2

OFFICE OF WEIGHTS AND MEASURES NEWSLETTER

Name: W&M Today (Weights and Measures Today)

Purposes:

1. To keep the weights and measures community (enforcement officials at the State and local levels, manufacturers of weighing and measuring devices, equipment users, and others) informed about activities of the National Bureau of Standards Office of Weights and Measures (NBS/OWM) of possible interest to them;

2. To publicize the activities of the National Conference on Weights and Measures (NCWM), which develops uniform weights and measures laws and regulations; and

3. To provide a forum for the informal exchange of information among members of the weights and measures community.

Contents:

1. Publications announcements
2. Schedules of OWM training seminars
3. Schedules of NCWM meetings
4. Updates on the development of NCWM's National Training Program
5. News on the certification of State measurement laboratories
6. News of NCWM activities
7. Information on the National Type Evaluation Program
8. News about NCWM members and OWM staff
9. Information on the latest technical developments in the weights and measures area.

Regular Features:

1. "Conference Clips" - News notes related to the NCWM
2. "For Good Measure" - A readers forum column with questions/answers and comments from individuals in the weights and measures field
3. "Calendar" - A listing of weights and measures-related meetings, seminars, and training programs.

Frequency of Issuance:

To be published 4-6 times a year

Distribution:

1200 copies

ATTACHMENT 3

PROPOSED MODULE ON ELECTRONIC WEIGHING AND MEASURING SYSTEMS

Intended Audience

All weights and measures officials

Purpose

1. To provide an awareness of the electronic systems in the marketplace; their complexity, capabilities, and component interrelationships as they relate to weighing and measuring in commercial transactions.

2. To provide an introduction to the language required to understand the functions of integrated systems.

3. To identify and provide a brief discussion of the components that make up an integrated system.

Content Parameters

1. The approach to be taken is to take representative samples of weighing systems (retail grocery scales and vehicle scales), volumetric systems (retail petroleum dispensers), measuring systems (taximeters); and provide a history, origin, and evaluation of both the systems and Handbook 44's attempts to regulate each of these systems.

2. Provide an introduction to the language used to describe and discuss the modern electronic systems and their functions.

3. In block diagram format, discuss the components that comprise a modern integrated system and the interrelationship of the components: input device (scale, petroleum, meter, keyboard, etc.); processing unit (CPU); storage (disk, chip, etc.); and output (display, tape, etc.).

ATTACHMENT 4

PROPOSED TRAINING MODULES

Module No.	Subject
1	Mechanical Retail Computing Scales (Cylinder,Fan Computing, and Prepackage)
2	Electronic Retail Computing Scales (Digital Electronic Computing and Electronic Cash Registers)
3	Bench, Counter, and Hanging Scales (Automatic and Nonautomatic Indicating)
4	Dormant and Industrial Medium-Capacity Scales (Portable, Floor, Built-In, and Crane; Automatic and Nonautomatic Indicating
5	Vehicle and Axle-Load Scales (Mechanical and Electronic)
6	Monorail Scales and Meat Beams
7	Livestock and Animal Scales (Mechanical and Electronic)
8	Retail Motor Fuel Dispensers and Consoles (Single Product, Blend and Twin Motor Fuel Dispenser; Mechanical and Electronic)*
9	Linear Measuring Devices (Taximeters; Odometers; Fabric-, Wire-,and Cordage-Measuring Devices)*
10	Checking the Net Contents of Packaged Goods (Random, Standard Mass, Liquid, Linear, Special Products)
11	Prescription and Jewelers' Balances
12	Dairy Product and Grain Test Scales
13	Hopper Scales (Automatic Grain and Construction Material; Mechanical and Electronic)
14	Wheel-Load Weighers (Mechanical and Electronic)
15	Belt-Conveyor Scales (Mechanical and Electronic)
16	Weights (Equal Arm and Counterpoise)
17	Hand-Crank Fuel Pumps
18	Lubricant Devices and Motor Oil Bottles
19	Loading-Rack Meters
20	Vehicle-Tank Meters (Power-Operated and Gravity; Compensated and Uncompensated)
21	Liquefied Petroleum Gas Liquid and Vapor Meters and Motor Fuel Devices (Retail and Wholesale)
22	Labeling of Packaged Products (Net Contents Statement, Responsibility, Method of Sale)
23	Weights and Measures Administration (Functions, History, Organization, Legal Authority Including Uniform Laws and Regulations, and Penalties)
24	Handbook 44 (Organization and Use and Related References)
25	Communications (Weights and Measures Officials Relationships with Device Owners and Operators, Industry and Consumers)

26	Test Equipment, Use and Calibration*
27	Introduction to Electronic Weighing and Measuring Systems*
28	Solid State Circuits and Applications
29	Load Cells and Analog-to-Digital Conversion*
30	EMI, RFI, Electrostatic Discharge*
31	Statistics as Applied to Weights and Measures*
32	Variable Frequency Inspection*
33	Environmental Testing*
34	Systems/Computer/Administration*
35	Theory of Scale Tolerances*
36	National Type Evaluation Program*
37	Laboratory Administration

* Changes or additions

Attachment 5

Production Schedule*

	D		D+6		D+8		D+12		D+14		D+20		D+22		D+24	
Module	O	R	O	R	O	R	O	R	O	R	O	R	O	R	O	R
1	1/83	5/83	7/83	11/83	9/83	2/84	1/84	6/84	3/84	9/84	9/84	12/84	11/84	1/85	1/85	2/85
23	7/83	3/84	1/84	--	3/84	--	7/84	7/84	9/84	10/84	3/85	3/85	5/85	4/85	7/85	5/85
2	2/83	2/83	8/83	4/84	10/83	6/84	2/84	10/84	4/84	1/85	10/84	5/85	12/84	6/85	2/85	7/85
27	3/83	2/84	9/83	--	11/83	--	3/84	6/84	5/84	9/84	11/84	11/84	1/85	12/84	3/85	1/85
8	5/83	7/83	11/83	5/84	1/84		5/84		7/84		1/85		3/85		5/85	
6	4/84	8/83	10/84	1/84	12/84		4/85		6/85		12/85		2/86		4/86	
5	10/83	1/84	4/84	7/84	6/84		10/84		12/84		6/85		8/85		10/85	
3	1/84	1/84	7/84	7/84	9/84		1/85		3/85		9/85		11/85		1/86	
4	2/84	2/84	8/84	8/84	10/84		2/85		4/85		10/85		12/85		2/86	
7	5/84	1/84	11/84	7/84	1/85		5/85		7/85		1/86		3/86		5/86	

Key

O = Original schedule
R = Revised schedule
D = Working Group begins work
D+6 = Working Group delivers a draft to Education Committee
D+8 = Committee gives draft to a Contractor
D+12 = Contractor completes working copy of Module
D+14 = Contractor delivers Module to Committee for field test
D+20 = Results of field test delivered to Committee
D+22 = Committee and Contractor agree on final changes
D+24 = Contractor submits final copy of Module to Committee

*The dates given in the "revised schedule" columns do not necessarily follow the original 24-month schedule because some schedules have been accelerated to get the training program back on track and others have been modified to meet the needs of the Education Committee or the contractors. The committee intends to follow the 24-month schedule as closely as possible in the development of future modules.

ATTACHMENT 6

County of Bucks

DEPARTMENT of CONSUMER PROTECTION
and WEIGHTS and MEASURES
Annex Building, Broad & Union Sts., Doylestown, Pa. 18901 — 215-348-2911

County Commissioners

CARL F. FONASH, *Chairman*
LUCILLE M. TRENCH, *Vice-Chairman*
ANDREW L. WARREN

Peggy H. Adams
Director

July 16, 1984

Memorandum for: Weights and Measures Officials

From: Peggy H. Adams, Chief Sealer/Director
Bucks County Consumer Protection/Weights
and Measures, Pennsylvania
and
Philip A. Stagg, Director
Weights and Measures
Louisiana Department of Agriculture

Co-chairmen, National Weights and Measures
Week, 1984

Subject: Weights and Measures Week Joint Resolution - 1985

Congressman Peter Kostmayer, 8th Congressional District, Pennsylvania has reintroduced the 1984 Weights and Measures Week Joint Resolution with some changes. The new resolution #623 (enclosed) was introduced on June 29, 1984 and referred to the Post Office and Civil Service Committee of the United States Congress.

We need your help in contacting your congressman to be a co-sponsor. Ask your congressman/woman to place his or her name on the Joint Resolution as a co-sponsor (218 are needed) so that the resolution will move from the committee to the full house for voting purposes. After passage, it will be sent to the Senate. Do not only ask for support but request sponsorship.

The following names were listed as co-sponsors for HB #443 and must be contacted again:

32 Co-sponsors:
As introduced...Borski, Edgar, Foglietta, Gray, Williams (OH), McCloskey, Anthony, Fuqua, Boland, Edwards (AL), Barnard, Levitas, LaFalce, Hammerschmidt, Murtha, Mavroules, Heftel, Bethune, Kennelly, Roe, Hortonk Wolpe, Hughes, Albosta, Conte, Shumway, McHugh, Lundine, Ray, Erreich, Burton (IN), Carr.

The following names are already co-sponsors of HB #623:

5 Current Co-sponsors:
Borski, Edgar, Foglietta, Akaka, Fuqua

If you have any questions, please contact Peggy H. Adams at (215) 348-7442 or Bucks County Consumer Protection/ Weights and Measures, Broad and Union Streets, Doylestown, Pennsylvania, 18901.

PHA:fb

The Honorable (Fill in Name)
United States House
of Representatives
Washington, DC 20515

Dear Representative (Fill in Name):

I am writing to request that you become co-sponsor of House Joint Resolution #623 which was introduced by Congressman Peter Kostmayer, 8th Congressional District, Pennsylvania.

House Joint Resolution #623 is a request for a Presidential Proclamation in support of National Weights and Measures Week, March 1-7, 1985.

Uniform weights and measures form the cornerstone of commerce. Weights and measures regulation is a service of government dedicated to providing equity in the marketplace. Officials engaged in this activity protect both the buyer and seller in the millions of daily transactions that occur throughout this country and, in fact, the world. Weights and measures officials inspect and certify the accuracy of weighing, measuring, and timing devices such as scales, gasoline dispensers, taximeters, and oil truck meters. They also ensure the accuracy of net weight declarations on packaged commodities. The increasing complexity of today's technology increases the importance of weights and measures officials, as both industry and the consumer rely on them for accuracy.

The National Conference on Weights and Measures, an organization of enforcement officials of the States, counties, and cities of the United States and officials of the Federal Government, representative of manufacturers, industry, business, consumers, and other interested persons, has sponsored National Weights and Measures Week during March 1-7 each year in an effort to focus attention on the weights and measures officials at all levels of government who perform important services with respect to accuracy and uniformity of commercial weighing and measuring.

There are approximately 4,000 weights and measures officials in some 800 jurisdictions in the United States. Their work is unknown to most American consumers. Thus, a Presidential Proclamation would assist in focusing public awareness on this most important service.

As 218 Representatives must co-sponsor House Joint Resolution #623 so that the Committee on Post Office and Civil Service can act on it, it is important that you become a co-sponsor. Favorable Congressional action is necessary for the President to issue an appropriate proclamation.

I am enclosing a copy of the Resolution with the hope that after you read it, you will co-sponsor this Resolution and lend your support to it by asking other members of Congress to do likewise.

Sincerely,

(Fill in your name and title)

Enclosure

98th Congress
2d Session

H. J. RES. 623

Designating the week beginning March 1, 1985, as "National Weights and Measures Week".

IN THE HOUSE OF REPRESENTATIVES

June 29, 1984

Mr. Kostmayer (for himself, Mr. Borski, Mr. Edgar, Mr. Foglietta, Mr. Gray, Mr. Akaka, and Mr, Fuqua) introduced the following joint resolution; which was referred to the Committee on Post Office and Civil Service

---

JOINT RESOLUTION

Designating the week beginning March 1, 1985, as "National Weights and Measures Week".

Whereas there is a need to better acquaint the public with the services provided by Federal, State, county and city governments to protect consumers and businesses with respect to weights and measures;

Whereas with the advent of the Universal Product Code, the metric system, and electronic devices, weights and measures officials nationwide will be the principal persons called upon to assist the public in understanding their use; and

Whereas the public will increasingly rely on the skills of weights and measures professionals to provide instruction, maintain accuracy of devices and packages, and improve the proper use of the myriad of technological devices in business and commerce: Now, be it

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the week of March 1-7, 1985, is designated "National Weights and Measures Week". The President is requested to issue a proclamation calling upon the people of the United States and interested groups and organizations to observe that week with appropriate ceremonies and activities.

ATTACHMENT 7

SURVEY RESULTS

Total Surveys Mailed: 71

Total Responses: 59 (83% return)

21 Respondees (36%) have no DP equipment

38 Respondees (64%) at least have access to some type of DP equipment

DATA PROCESSING PROFILE

Agency Name_____
Date_____
Agency Contact_____
(Individual who may be contacted for further information)

1. Does you organization use any of the following equipment to support its activities? (Please check all that apply.)

20 (34%) a. Dedicated word processors.
Do you own or control them? Yes___ No___
Please specify manufacturer and model:
_____

18 (31%) b. Microcomputers
Do you own or control them?: Yes___ No___
Please specify manufacturer and model:
_____

9 (15%) c. Minicomputers
Do you own or control them?: Yes___ No___
Please specify manufacturer and model:
_____

21 (36%) d. Mainframe computers
Do you own or control them?: Yes___ No___
Please specify manufacturer and model:
_____

2. If you do not have data processing equipment, but plan to acquire such equipment in the next two years, please indicate what type of equipment you plan to get (see above list):
_____

3. If you keep automated data files, what types of records related to weights and measures activities are kept? (Please check all that apply in the list below or attach a list of the specific data items you record.)

Compliance Testing

20 (34%) a. Weighing and measuring equipment inspection data

11 (19%) b. Packaged goods inspection data

17 29%) c. List of all weighing and measuring device businesses

Laboratory Metrologists

11 (19%) d. Data on number and types of calibrations completed

5 (8%) e. Control chart files

5 (8%) f. Control charts - range charts

4 (7%) g. Weighing design calculations

5 (8%) h. Air buoyancy calculations

5 (8%) i. Volume calibration calculations

1 (2%) j. Youden plots

Inspector Performance

16 (27%) k. Data on the number and kinds of devices tested by each inspector

15 (25%) l. Data on the number and kinds of devices rejected and approved by each inspector

Service Personnel and Agencies

7 (12%) m. Compliance records of new and repaired devices installed or serviced by service agency personnel.

Test Reports

4 (7%) n. Reports of Test by the National Bureau of Standards or other States (device type approval)

Other

13 (22%) o.(Please specify)_____

4. Do you have electronic data communications capability? (Please check all that apply.)

11 (19%) a. Asynchronous (teletype compatible - many microcomputers have this capability).

8 (14%) b. Synchronous (high speed data communications - for example, ANSI X.24, IBM 3780)

5 (8%) c.Other (Please specify)_____

5. What benefits have resulted from your use of a computer system?

_____

_____

_____

_____

6. What problems (if any) have you experienced in using a computer system?

_____

_____

_____

_____

7. Do you think the National Conference on Weights and Measures should play a role in any of the following areas? (Please check all that apply):

44 (75%) a. Development of standard formats for automated information exchange

33 (56%) b. Centralized mail/message processing

42 (71%) c. Development of standard software systems

18 (31%) d. Coordination of common hardware acquisition (or actual contact negotiation)

7a. Could you contribute resources to any of the above activities? Yes 12(20%) No 22(37%) Maybe 4(7%)

7b. Could you serve as a pilot site? Yes 19(32%) No 17(29%) Maybe 5(8%)

_____

It would be appreciated if you could attach to this profile a list of the programs you use, sample reports, or other information that would provide a better understanding of the data processing system you use.

ATTACHMENT 8

NATIONAL CONFERENCE ON WEIGHTS AND MEASURES UNIFORM ADMINISTRATIVE PROCEDURES FOR CERTIFICATION OF WEIGHTS AND MEASURES OFFICIALS

These procedures provide a vehicle through which the National Conference on Weights and Measures may certify that a weights and measures official is competent to inspect and test weighing and measuring devices, and determine net content on package goods in accordance with the model laws and regulations adopted by the National Conference on Weights and Measures.

The purpose of the program is twofold. First, to enhance uniform enforcement of weights and measures laws and regulations within the National Conference on Weights and Measures member jurisdictions and second, to provide a national recognition through the issuance of a certificate to the individual weights and measures official.

LETTER OF AGREEMENT

The _____(Name of Jurisdiction)_____ will participate with the National Conference on Weights and Measures in the training of weights and measures officials.

The _____(Name of Jurisdiction)_____ agrees to:

1. Train its officials in accordance with, and utilizing the training modules published by, the National Conference on Weights and Measures.

2. Adhere to the procedures of the "Uniform Administrative Procedures for the Certification of Weights and Measures Officials."

3. Have the undersigned serve as a certifying officer in accordance with the "Uniform Administrative Procedures for the Certification of Weights and Measures Officials."

_____
(Signed by individual responsible for weights and measures enforcement in the jurisdiction)

A. Responsibilities of the certifying officer of the jurisdiction:

1. Provide training in accordance with the training officers guide in each individual training module.

2. Establish a training file on each participant to include:
   a) schedule of training;
   b) test scores;
   c) evaluation of training;
   d) letter to National Conference on Weights and Measures Executive Secretary requesting participants certification; and
   e) copy of certificate issued by the National Conference on Weights and Measures.

3. Submit an annual report of certification to the Education, Administration, and Consumer Affairs Committee of the National Conference on Weights and Measures to include:

   a) Attestation that all training records are current and in accordance with the "Uniform Administrative Procedures for the Certification of Weights and Measures Officials."

   b) Training was provided in accordance with the "Training Officers Guide" for each individual module for which a certificate was issued.

   c) Statement outlining the jurisdictions training program to include:

      1) Type of individual selected to perform training; and

      2) What procedures are used to assure that individuals are performing in accordance with training provided or that the training was effective.

   d) Attestation that individuals holding certification of an individual module have received training on any changes in the module in that calendar year.

   e) Number of individuals that have received certification that calendar year.

   f) Upon an individual weights and measures official's successful completion of a training module, submit the name of the official and attest and verify that the official has completed the required training and is fully qualified to perform the procedures within the specific module.

   g) Report due by January 15 and will cover activity for the previous calendar year.

B. Responsibilities of the Executive Secretary of the National Conference on Weights and Measures:

1. Will issue a certification in the name of the National Conference on Weights and Measures for each weights and measures official for whom he receives an attestation of successful completion of a module from the participating jurisdiction's certifying officer.

2. Will maintain, in alphabetical order of participating jurisdictions, a roster to contain the name of the certifying officer for each jurisdiction and the name of each official who has received certification, identifying the modules for which he/she has been certified.

3. Will submit a report to the Education, Administration, and Consumer Affairs Committee at the interim meeting each year that lists the participating jurisdictions, the certifying officer, and the number of certificates that were issued in the previous calendar year.

C. Responsibilities of the Education, Administration, and Consumer Affairs Committee:

1. Review the annual reports of the certifying officers to assure compliance with these procedures.

2. Request Office of Weights and Measures staff and officers and standing committee members of the National Conference on Weights and Measures who are visiting participating jurisdictions to review files and procedures and report any variances to the committee.

3. Where a variance in procedure has been detected by the committee, instruct the Executive Secretary to remove that jurisdiction from the active list of participating jurisdictions and withhold issuance of all certifications until the variance can be corrected.

4. Report annually, to the National Conference on Weights and Measures, the names of participating jurisdictions and number of officials holding certification.

REPORT OF THE COMMITTEE ON LIAISON

Presented by
N. David Smith, Director
Consumer Standards Division
North Carolina Department of Agriculture
Raleigh, North Carolina

REFERENCE KEY

500 INTRODUCTION

The Committee on Liaison submits its report to the 69th Annual Meeting of the National Conference on Weights and Measures (NCWM). This report is the amended interim report of the Committee which was printed in the Conference Announcement.

The report contains the recommendations of the Committee formed on the basis of written and oral comments received during the year.

Item 506, Packaged Products Net Contents Variations Resulting From Exposure, is the only voting item; all other items are informational. The Chairman moved approval of Item 506. The motion carried:

	Yes	No
State Representatives	39	0
Delegates	50	0

The Chairman moved adoption of the entire report with editorial privilege to the Executive Secretary. The motion carried as follows:

	Yes	No
State Representatives	44	0
Delegates	57	0

A complete list of all items follows:

501 OWM PROGRAM
502 PROGRESS TOWARD DEVELOPMENT OF A SECOND EDITION OF HANDBOOK 133
503-1 FEDERAL GRAIN INSPECTION SERVICE
503-2 NET WEIGHT - USDA/FDA
503-3 AEROSOL NET WEIGHT LABELING
503-4 NET WEIGHT LABELING OF MARGARINE
503-5 CASH-CREDIT PRICING
504 RAILROAD FREIGHT CAR STENCILLED TARE WEIGHTS
505 OIML ACTIVITIES
506 PACKAGED PRODUCTS NET CONTENTS VARIATIONS RESULTING FROM EXPOSURE

507 CONSUMER COMPLAINT HANDLING
508 TASK FORCE ON PACKAGE CONTROL
509 OTHER

The report includes 13 Reference Key Items. One is a recommendation for specific action by the Conference and is to be voted on; it is identified by printing the Reference Key Number and heading in **bold type.** Twelve are informational items only, not subject to vote; they are identified by an asterisk next to their Reference Key Number.

501 OWM PROGRAM

Mr. Tholen reported on the status of the OWM program within the Office of Product Standards Policy (OPSP). The funding of the weights and measures program is remaining essentially constant at $1,200,000 per year.

The major change reported was the assignment of Ms. Joan Koenig to the program for a one-year period to manage the development of the National Training Program including the administration of the Grant to the NCWM and the coordination of technical support to the NCWM Committee on Education, Administration, and Consumer Affairs. This assignment has, in turn, made it possible to institute a new task which had been identified in the Long Range Plan—coordination of programs of the NCWM and the regional weights and measures associations; the standing committees of these groups will be provided with the reports (and the results of deliberations) of their counterparts in the interest of bringing more knowledge to the issues as well as "weeding out" issues that do not need national attention.

With the acquisition of word processing capabilities in the OWM and the NCWM, the Office is able to get documents out more rapidly (note the earlier publication dates of the 1984 Editions of HB 44, and HB 130, and the Proceedings of the 68th Annual Meeting). Development of the manuals under the National Training Program will be enhanced by the use of the new equipment.

The Office staff is currently working on updating the "Case Book" and the proceedings "Index". This work is being done by several college students, following varying schedules, under the supervision of OWM staff members. The Index is expected to be completed (in word processing) ready for review and publication by the end of October 1984. The Case Book will take much longer because of the difficulty of searching for precedents by State.

OPSP is using a character reader to read existing documents into the word processing system (this avoids the cost and delay in keying large numbers of pages). It is anticipated that this system will enable other handbooks to be updated sooner (e.g., Handbook 82).

502* PROGRESS TOWARD DEVELOPMENT OF A SECOND EDITION OF HANDBOOK 133

The material in Appendix A provides an explanation of and illustrates the changes proposed by OWM. The material reflects the comments contained in the July 1, 1983, NBS memorandum which was made available at the National Conference on Weights and Measures in Sacramento and those received from the survey questionnaire sent to State and local directors on August 30, 1983.

During a review of these proposed changes to HB 133 at the Interim meetings in January, several points or comments were made. These include:

Moisture Loss

-moisture loss allowances are not required for all products — for example, EPA does not provide for them.

-a spokesman from the American Meat Institute recommended that for meat and poultry products: moisture loss is that lost to the atmosphere; moisture seepage into the tare materials is also moisture loss; and free flowing moisture is part of the product.

-"moisture loss" is not all that could be involved. The FTC regulations specifically mention "variations due to exposure." This could mean solvent loss, not necessarily water loss, for products under FTC jurisdiction (e.g., soaps and detergents).

Why there are two categories of Sampling Plans

Several comments at the first meeting were made that more information is desirable as to when to use category A or B plan. At the second meeting, the task force proposed wording to provide this guidance, but it was not satisfactory to those attending. The general consensus was to let the jurisdictions become familiar with the procedures and let experience "shake-out" a position on this problem at a later time.

Maximum Allowable Variations

Two problems remain:

-random pack packages put up at the retail store have fewer variables contributing to individual package variations than other types of packages. They may need special tighter MAV's than HB 133 recommends.

-some packages are more difficult to pack and need larger MAV's.

The Conference provides an ideal forum for addressing these problems on a product-by-product or other basis.

A draft of the Second Edition has been prepared and is in internal review at NBS.

503 FEDERAL AGENCY ACTIVITIES

503-1 FEDERAL GRAIN INSPECTION SERVICE

Representatives of the FGIS, Richard Pforr, Chief, Scale Testing and Weighing Branch, and Ben Banks, Program Manager, reported a successful year of operation for the Railroad Track Scale Program. The following list summarizes their past year's activities.

-15 master scales were tested. The Laramie, Wyoming; Topeka, Kansas; and Oakland, California master scales are out of service.

-88 tests were performed on 44 official grain railroad track scales.

-5 grain-industry owned test cars were field calibrated and put in service as monitor cars.

-27 railroad-owned test cars were calibrated at the Clearing facility in Chicago and 11 railroad-owned test cars were field calibrated. Ten railroad-owned track scales were tested as part of the field calibrations.

-3 State and other-industry owned test cars were field calibrated.

-11 railroad track scales owned by other industries were tested.

-32 pairs of loadometers were tested for the State of Iowa.

According to the FGIS, they will continue to respond to requests from other industries and States on a total cost recovery basis with priority being given to the testing of grain-industry and master track scales. However, the FGIS reports that in the absence of additional resources few, if any, additional non-grain track scales can be tested.

The members of the conference are reminded that, except for grain-industry scales, the FGIS is not an official testing agency; therefore, it is essential that weights and measures officials certify the testing by the FGIS of non-grain scales. The committee urges cooperation by the States with the FGIS on this most important matter.

The FGIS reports that the traditional east/west itineraries for the two test cars have been changed. It is the expectation of the FGIS that the change will result in more efficient operation of the test cars.

The FGIS continues to work towards national uniformity. As a result of the acceptance by the Conference of the Automatic Bulk Weighing Code developed by the NCWM Committee on Specifications and Tolerances, FGIS regulations have been changed to allow FGIS to adopt applicable provisions of Handbook 44.

503-2 NET WEIGHT — USDA/FDA

Mr. John McCutcheon, USDA, stated that the agency's net weight proposal published in 1980 was still under consideration. Mr. Howard Pippin, FDA, stated that his agency's net weight proposal which was published jointly with USDA in 1980 was also under consideration and that the FDA decision to adopt or withdraw the proposal would be predicated upon the USDA's decision. No date was given by either agency as to when a decision would be reached.

503-3 AEROSOL NET WEIGHT LABELING

Howard Pippin representing the Food and Drug Administration (FDA) advised that final action on this proposal was still pending.

The NCWM petitioned the FDA on May 4, 1979 to change their regulations to require food and cosmetic aerosol products to bear declarations of quantity in terms of net weight only. In the meantime, section 10.3 of the NCWM Uniform State Packaging and Labeling Regulations does require most aerosol package labelers to comply with the net weight labeling position espoused by the Conference.

503-4 NET WEIGHT LABELING OF MARGARINE

Action is no longer pending or anticipated on the Committee's 1982 request to the FDA to seek repeal of the Federal one-pound (maximum) limit on the size of the margarine packages sold at retail.

The following additional developments are noted, however, since the Committee's July 1983 report (item 502-4) to the Conference.

1. Opposition to the one-pound limit repeal within the margarine industry itself appears to be based on a continuing concern that there would be an undue proliferation of package sizes, notwithstanding the NCWM's Uniform Regulation for the Method of Sale of Commodities (section 1.3) which specifies permitted margarine sizes.

2. Margarine packages continue to be knowingly produced and distributed for retail sale in violation of both Federal and State laws pertaining to permitted sizes. The ongoing violations of Federal law involve the open and direct marketing of 5-lb packages of margarine at retail stores. The violations at the State level involve the marketing of 12-ounce margarine packages by two or more manufacturers.

3. The trade association for the margarine industry, the National Association of Margarine Manufacturers, has indicated to the Committee that at the present time their Association has no policy position for removing the one-pound limit, although it may be discussed later this year.

503-5 CASH-CREDIT PRICING

On February 27, 1984, the credit-chard surcharge prohibition in the Cash Discount Act expired. Legislative activity with respect to the credit-card surcharge prohibition is in a state of flux. The two Houses of Congress have not at the present time come to an agreement on the subject. The House passesd a bill extending the Act to May 31, 1985, and the Senate sent to the House legislation that would authorize business to impose surcharges of up to 5 percent on purchases made with credit cards if the fees are clearly advertised.

The NCWM in 1983 voted to support dropping the credit surcharge prohibition when it expired. The Liaison Committee had urged the Conference to adopt this position because of the disruptive effect of the credit surcharge ban on the orderly dispensing of motor fuels at retail through single price computing pumps. The Liaison Committee urges members of the Conference to express their opinions to their Congressmen.

504 RAILROAD FREIGHT CAR STENCILLED TARE WEIGHTS

In a July 1982 letter to the Executive Secretary, Mr. J.J. Robinson of the Association of American Railroads, indicated that the AAR is in the process of entering into a computerized data base the tare weight and stenciled dates of the national railroad freight car fleet. The AAR feels that this program will be of tremendous benefit in identifying rail cars with overdue stenciled dates. The members of the Conference were reminded, however, that the railroads' mechanical interchange rules specify restenciling whenever the tolerance is exceeded but not to exceed every 60 months. This requirement applies to most freight cars. At the present time, covered hopper cars and several other special car types can only be reweighed and restenciled by the car owner or its authorized representatives. The AAR is considering placing this car type under the general provisions of the interchange rule that requires restenciling by any railroad whenever the tare weight of such car is found to exceed the specified tolerance.

A letter dated March 1, 1984, from Mr. Robinson reads as follows:

"At the January 1984 Interim Meetings of the NCWM, the Committee on Liaison requested an update on the status of freight car tare weights. As I indicated some months ago, the AAR has expanded its UMLER (Universal Machine Language Equipment Register) file, which is a computerized register of the national freight car fleet, to include the tare weight and date weighed for all freight cars. Since the additional fields are relatively new, we are still in the process of increasing the completeness and accuracy of this data.

"We have, in the meantime, developed a special program to analyze each car owner's tare weight data on an annual basis. This program was implemented in January of this year, and all car owners were recently furnished a printout of their respective car fleets. This report segregates the general service fleet by car type (i.e., box, hopper, gondola, etc.) and lists the number of cars not weighed within the past 60 months, as well

as the number of additional cars that should be lightweighed during the current calendar year. The expiration of 60 months does not necessarily indicate that a car's tare weight is inaccurate, but does increase the possibility of error.

"It should be noted that there are still some discrepancies between the tare weight reflected in the UMLER file and the weight actually stencilled on the car. These discrepancies are being corrected.

"As you know, the railroads, along with many other industries, experienced a significant decline in business activity during the past several years due to the general economic recession that prevailed nationwide. It was only during the fourth quarter of 1983 that carloadings finally began to gradually increase. During 1982 and most of 1983, over 20% of the total car fleet was out of service as surplus or bad ordered equipment. Since most of these cars were stored and not needed, it was neither practical nor economical to switch such cars out of storage solely for the purpose of lightweighing them.

"You will recall that certain car types (i.e., equipped box cars, refrigerator cars, covered hopper and tank cars, etc.) are "exempt" from the 60-month periodical reweighing provisions of the railroads' Interchange Rules. In addition, as set forth in Paragraph 3.4.5 of Section 3.4., RAILROAD CAR TARE WEIGHTS, of the Model State Regulation For The Method Of Sale Of Commodities, such cars must be reweighed only when they bear no lightweight stencilling or when repairs/alterations result in a change of weight in excess of the permissible lightweight tolerance. It is not known how many of these cars have not been weighed within 60 months or which, if any cars, do not meet the permissible tolerances. However 58,895 or 6% of these exempt cars were reweighed during 1983.

"In addition, 106,823 or 12% of the "non-exempt" general service fleet cars were reweighed during 1983. As of January 1, 1984, 24.3% of the serviceable "non-exempt" freight car fleet tare weights or some 179,775 cars have not been reweighed within the past 60 months. We are concerned about these overdue cars which could possibly have inaccurate stencilled lightweights and have urged the railroads to verify their accuracy. With the increase in freight carloadings, it is anticipated that the railroads' lightweight activity will also increase substantially. We are monitoring this situation closely, plan to generate the UMLER tare weight summary report at least annually, and will keep you advised of the rail carriers' progress."

The NCWM recognizes and supports the efforts of the AAR in computerizing the stenciled dates of the national car fleet since this program will facilitate the identifying of cars whose stenciled dates go back more than 60 months.

505 OIML ACTIVITIES

The committee met jointly with the Executive Committee to receive a status report concerning Conference and NBS participation in activities of the International Organization of Legal Metrology (OIML).

Mr. David Edgerly, manager of the NBS Standards Management Program, reported that, as in previous years, U.S. participation in the OIML remains active. Highlights of U.S. initiatives taken within OIML during 1983 that are of direct interest to the National Conference include:

Cryogenic Meters - NBS worked with the Compressed Gas Association and the National Conference on Weights and Measures in the development of a draft OIML International Recommendation on cryogenic meters for use in measuring nitrogen, oxygen, and argon. The draft includes provisions of the measurement standard used within the European Industrial Gases Committee. The first international meeting on the draft was held in December.

Electronic Weighing Instruments - Work on the draft OIML Recommendation on electronic scales continued in 1983. NBS, in cooperation with the Scale Manufacturers Association and a U.S. Working Group of scale manufacturers, produced a 3rd draft Recommendation. The draft was circulated to OIML member nations for review and was the subject of an international meeting in September. The work is important in that it will establish internationally uniform requirements for electronic scales used in trade.

Weights - NBS developed a draft OIML Recommendation which consolidates five existing Recommendations covering various types and classes of mass standards used in trade and industry throughout the world. It will soon be circulated for comment.

Materials Testing Machines - NBS, in cooperation with a U.S. Working Group consisting of manufacturers of materials testing equipment, has completed work on two draft OIML Recommendations dealing with general performance requirements for testing machines and with requirements for tension and compression testing machines. These drafts are now out for balloting within OIML. The Recommendations are important in that they are the first international standards dealing exclusively with the testing machine itself. Work going on within ISO, for example, deals with materials tests and not with the machines themselves. A third Recommendation on verification devices for calibrating testing machines has been developed and is now undergoing review within OIML member nations. This work is expected to be completed in 1984.

Prepackaged Products - NBS, in cooperation with a U.S. Working Group consisting of manufacturers and government representatives, developed a draft OIML Recommendation covering the labeling of consumer type prepackaged products. The draft is intended to establish internationally uniform requirements for the labeling of prepackaged products and is important to international trade. After presentation, review, and revision of the U.S. draft at two international meetings, agreement was reached in June 1984 to submit a third draft of the document to all member nations of the OIML working group for balloting, the next step in the process toward acceptance as an international standard.

Metrological Controls - NBS completed work on three draft OIML Documents pertaining to methods by which legal metrology officials assure the correctness of instruments and measurements covered by regulation. The drafts establish general principles for conducting pattern evaluation

tests and for carrying out tests to determine an instrument's correctness for use after installation and during its period of use in trade. The drafts are important in that they seek to introduce new means of control such as manufacturer self-certification or third party accreditation as alternatives to traditional government only testing programs. Based upon the comments received at an April international meeting, the drafts have been revised and sent back to the U.S. Working Group.

International Measurement Vocabulary - An international working group consisting of representatives of the OIML, IEC, and BIPM has completed work on the first edition of a joint international vocabulary of fundamental measurement terms. NBS participated in the work through OIML and IEC. The new vocabulary will soon be published by ISO and will be available for purchase through the four Organizations at a cost of about 100 FF ($12).

506 PACKAGED PRODUCTS NET CONTENTS VARIATIONS RESULTING FROM EXPOSURE

General

The committee reported to the 68th National Conference in Sacramento in July 1983 that this subject was on its agenda as a future work item. At the 1984 interim committee meetings considerable discussion was generated on the subject. While no conclusions were reached, the following breakdown of specific problem areas within the broad topic were agreed on within the Committee:

1. Several legal bases exist in the United States that recognize in differing degrees variations from the declared net contents of packaged products based on exposure associated with "good distribution practices."

2. Problems exist with respect to State and local enforcement involving exposure variations to be applied. Uniform Standards or a comprehensive information base for variations with "good distribution practices" are not available to assist regulatory officials. The tendency, in the past, has been to apply different allowances on a case-by-case basis. This is sometimes justified by climatic differences but leads to non-uniformity.

3. A basis should be established where legitimate variations do occur and are legally recognized to determine appropriate allowances, which include in each type of situation:
- method of determining moisture content
- establishment of the appropriate type of allowance/jurisdiction for variations (dependent on the range of exposure conditions that reasonably occur).

4. The relationship between the need to recognize exposure variations and any proposed "I-Mark Program" or other quantity control system should be defined. Thus, the development of a method of treating variations resulting from exposure can be established independently of the quantity control system proposal. Allowances for variations must work in

any package quantity control system but the details of how should be evolved as a related but separate activity. A separate working group within an expanded Task Force on Package Control is probably the most feasible way to tackle this problem.

5. Resolution of the concerns of the weights and measures jurisdictions and industry regarding variations in package net contents resulting from exposure, while dealing broadly with consumer packaging and products, will have little or no direct impact on consumers.

A Specific Example

The Committee received information on a specific example of a problem being experienced in a commodity by an individual company.

The problem concerns borax, an inorganic, hydrated product, which, subsequent to being packaged as a powdered laundry type cleanser/whitener, can lose up to 23.6% of its weight. The effectiveness and efficiency of the product when used by consumers on a volume basis, is not affected by this decrease in net weight. A presentation on this specific problem was made at the 69th Conference. (See Appendix B).

The Committee supports efforts for resolution of this borax problem by appropriate NCWM and FTC action; it exemplifies the moisture variation problem resulting from exposure of hydrated compounds.

507 CONSUMER COMPLAINT HANDLING

The Committee received a report from Charles R. Cavagnaro, U.S. Office of Consumer Affairs (USOCA) concerning an educational presentation on consumer complaint handling systems presented at the Southern Weights and Measures Association Conference on October 26, 1983 in Nashville, Tennessee.

The presentation was jointly sponsored by the USOCA and the NCWM and featured a national expert reviewing complaint handling research findings, the essentials of effective complaint handling systems, and the use of complaint handling data in management decision making. Weights and measures officials in attendance considered the information received practical and immediately useful.

In recognition of the potential value of this information to weights and measures officials, the Committee recommended to the Conference Executive Committee that a similar presentation be featured at the National Conference on Weights and Measures in Boston.

Committee Chairman David Smith assisted by Mr. Cavagnaro conveyed the Committee's recommendations to the Executive Committee.

508 TASK FORCE ON PACKAGE CONTROL

The task force met on two occasions during the interim NCWM committee meetings at the National Bureau of Standards in January 1984. Additional

information was received on, and progress to date was shared concerning, the ongoing activities of the task force's three working groups.

These developments and results are reported to the conference membership through the Liaison Committee. While no specific recommendations are being made at this stage of the task force's work, comments from interested parties are actively solicited concerning any of the following items.

Item 1 - Survey Report by the Subcommittee on NBS Handbook 133

On March 16, 1983, Albert Tholen, acting on behalf of the National Conference on Weights and Measures (NCWM), sent out a request for comments to improve or revise National Bureau of Standards Handbook 133 and its accompanying field manual version. Copies of the comments received were summarized and sent to each State Director of Weights and Measures on July 1. Copies were also made available at the NCWM in Sacramento. Unfortunately, only four (4) State and local regulatory agencies responded.

It was the objective of the Subcommittee to obtain opinions and comments from State and local regulatory officials. Acceptance of changes to Handbook 133 by weights and measures officials is crucial to NCWM acceptance.

Questionnaire

Consequently, a survey questionnaire was designed and sent out to all State and major local jurisdiction Weights and Measures Directors on August 30. A preliminary compilation of the survey results was made available at the September 30, 1983 meeting on Handbook 133 at the National Bureau of Standards. As of January 16, 1984, 38 responses were received with the results as summarized on Appendix D.

Item 2 - Report on the California Statewide "Market Place Survey" Approach

At the invitation of the Task Force, the State of California presented information on an alternative method of monitoring package net content compliance that has been tried in that State on a limited basis. This new approach, called the "Market Place Survey," is currently being tested and evaluated in California.

The "Market Place Survey" approach ranks the packaged products being offered for sale in that jurisdiction (California) by their total estimated annual dollar sales volume. Specific commodities or types of packaged products are then assigned to smaller units (counties) in the jurisdiction for testing from samples selected randomly from numerous retail outlets. In this manner no one of the smaller jurisdictional units (counties) is overburdened and yet each commodity being checked can be adequately sampled over the State. This approach also should focus the jurisdiction's major effort on the key dollar volume items.

The results of each commodity type "Market Place Survey" are then used to summarize the compliance level of each producer included in the survey. While the vast majority of packagers do an excellent job of complying with net content labeling requirements, the few who do not can reasonably be expected to be detected by this approach without the fear that only one or two "underfilled" lots resulted in the negative action. Moreover, this retail level inspection approach will detect types of shortweight packages that in-plant testing can never reveal. These are the shortages resulting from exposure that are not permitted because: 1) they are due to poor distribution practices, 2) they are in products such as "economic poisons" under EPA, or 3) they are Federally inspected meat, poultry, or other food products that were repackaged at the retail level.

The "Market Place Survey" approach could possibly be expanded to a nationwide basis by assigning certain States the responsibility to survey specific types of packaged products. However, since the mix of producers and their product distribution will differ from State to State, commodity coordination and adequate brand coverage could be difficult to achieve. Also, because the individual States' resources available to implement the "Market Place Survey" approach vary widely, the effectiveness of this type of program might be limited in certain areas. Nevertheless, the concept of this approach does have elements that are close to the existing patterns of package net contents compliance testing, while offering improvements over the present methods. The "Market Place Survey" deserves further study and evaluation to determine if, as a whole, it is an alternative for or, if in part, it could serve as an adjunct to an in-plant type of packaged products compliance testing program such as the task force is exploring in its evolving "I-Mark" system concept.

Item 3 - Report of the Working Group on the U.S. "I-Mark" Program, Administrative Phase

In its 1983 report to the Conference (1983 Item 505), the NCWM Task Force on Package Control included a discussion paper entitled TOWARD A RATIONALIZED U.S. NATIONAL PACKAGE CONTROL SYSTEM. The paper included a skeletal outline for a new concept or approach for U.S. package control called the "I"-Mark System. This approach is similar to the European Economic Community's "E"-mark program. The Task Force Working Group has now prepared a description of the essential elements for a U.S. "I"-Mark System (as outlined in the Task Force's previously mentioned discussion paper) in the form of a preliminary draft. (See Appendix C). This draft consists of a program description with supporting administrative and legal background documents. It was not part of the tentative report because neither the Task Force nor the Liaison Committee had an opportunity to review it during the interim committee meetings in January. The preliminary draft was sent to all State weights and measures directors and directors of major city jurisdictions. The draft was reviewed and discussed at an open meeting of the Task Force during the 69th Conference. A summary listing of the key concerns expressed about the "I-Mark" program concept in both the oral and written comments received by the Task Force is given below.

1. The enforcement required to identify and verify instances of short measure would be extensive and may result in defective products being released before action can be taken.

2. Resources required to implement the I-Mark program would have to be increased to enable regulatory officials in the States where packers are located to audit each plant's quality control program and to examine and evaluate production records in the event of potential short measure cases. In the case of industry, if minimum quantity control standards are not met, companies may opt not to participate rather than increase their quality control efforts.

3. Discrimination between participating and nonparticipating packagers may take place because of the implied exemption of participating companies and the tendency for regulatory officials to focus their attention where direct action can be taken.

4. The proposal is in conflict with State laws and reguglations requiring enforcement action on short measure products.

5. States will receive little in exchange for the suspension or delay of their enforcement actions.

6. The monitoring of packaged goods can best be handled by retail inspections as opposed to limiting actions to individual short measure cases or in-plant inspections. In-plant inspections ignore changes to products that occur during the distribution process. Also concern over the accuracy and authenticity of plant records has been expressed.

7. If short measure is confirmed, it is not clear where the responsibility lies, i.e., manufacturer, wholesaler, or retailer.

In addition to this summary listing of key concerns expressed by weights and measures officials, the Task Force has received several comments and requests by others to make further comments on the draft "I-Mark" concept. To facilitate that process the Task Force will hold open a written comment period (to either Task Force Co-chairmen) until September 1, 1984. Subsequent to September 1984 the Task Force will issue a Final Report. This will include a more complete listing of the pros and cons expressed about the "I-Mark" program concept. It will also offer to the NCWM, Task Force suggestions and recommendations for any successor entities within the National Conference structure dealing with simplifying or improving the enforcement of net content labeling of packaged products.

509 OTHER

Peggy Adams, Co-Chairman of National Weights and Measures Week, reported that information kits will be mailed to all jurisdictions. The Institute for Weights and Measures, National Scale Manufacturers Association, and Fairbanks Weighing Division will also mail promotional materials. Congressman Peter Kostmayer, Pennsylvania, introduced Joint Resolution 442 in the House of Representatives for a Presidential Proclamation for National Weights and Measures Week. However, it did not receive the required 210 co-sponsors by March 1, 1984. Congressman Kostmayer has since reintroduced the legislation as Joint Resolution 623. Members are strongly urged to have their Congressman contact Congressman Kostmayer's office now to join as co-sponsors.

All jurisdictions are requested to send copies of their National Weights and Measures Activities to Peggy Adams.

N. D. Smith, North Carolina, Chairman
P. H. Adams, Bucks County, PA
C. R. Cavagnaro, U.S. Office of Consumer Affairs
C. R. Kloos, Hunt-Wesson Foods, Inc.
K. J. Simila, Oregon
S. Hasko, Technical Advisor, NBS

COMMITTEE ON LIAISON

APPENDIX A

IDENTIFICATION AND EXPLANATION OF PROPOSED CHANGES TO NBS HANDBOOK 133

UNITED STATES DEPARTMENT OF COMMERCE
National Bureau of Standards
Washington, D.C. 20234

December 20, 1983

MEMORANDUM FOR National Conference on Weights and Measures (NCWM)
Committee on Liaison
Committee on Laws and Regulations
State Weights and Measures Directors
Interested Organizations and Individuals

From: Albert D. Tholen, Chief
Office of Weights and Measures

Subject: National Bureau of Standards Recommended Changes to Handbook 133

The attached material contains an explanation of our position (in the left column), and the changes that we propose to make to Handbook 133 prior to reprinting the handbook in a second edition (in the right column). Material to be deleted is either identified as such (i.e., delete the second sentence of the third paragraph), or lined out (i.e., ~~voluntary~~). Material to be added is shown in "bold" type (**Allowances for moisture loss during the course of good distribution practices must be provided**).

Our intent is to address all of the comments contained in the July 1, 1983 memorandum sent to you (Subject: Comments Received on Handbook 133). The attached compilation is in the same sequence as the material in the earlier memorandum. A direct comparison between the two compilations should be the easiest way to evaluate the proposed changes.

The NCWM has scheduled time at its interim meetings in January 1984 to discuss the proposed changes. In addition to the substantive material addressed in the attachment, we will be making editorial changes to the handbook to correct minor errors and to incorporate improvements in the instructions and forms provided for use by the official during inspection activities.

Attachment

Preface, Purpose, and Scope

It was suggested that the Preface is misleading and lengthy. The Preface and Purpose have been shortened and updated.

At the time of publication of the first edition, the Food and Drug Administration (FDA) and the U.S. Department of Agriculture (USDA) had planned to update their regulations and had proposed adoption of substantial parts of H-133. Since these proposals were never promulgated, it seems appropriate to delete references to the Federal agencies and focus on the principal audience, the State and local weights and measures officials.

One comment indicated that the legal correctness of the handbook should be doubted. We have no reason to doubt the procedures given in this handbook as acceptable compliance testing tools.

As suggested by Virginia's Division of Product and Industry Regulation, the term "supersedes" has been dropped and the term "predecessor" used.

Delete Preface and Purpose and replace with the following:

PURPOSE

This handbook has been prepared as a procedural guide for compliance testing of packaged goods. Compliance testing of packaged goods is the determination of the conformance of the results of the packaging, distribution, and retailing process (the packages) with specified legal requirements. Although the handbook has been developed primarily for use by weights and measures officials of the States, counties, and cities, it will also be useful to commercial and industrial establishments involved in the packing, distribution, and sale of packaged commodities.

Delete the first paragraph of Scope and replace with the following:

SCOPE

The handbook differs from its predecessor (NBS Handbook 67) in two significant areas:

1. Two categories of sampling plans are presented for packages subject to the average requirement. (The sampling plans in Handbook 67 have been modified and appear as "Category B" sampling plans in Handbook 133.)

2. Comprehensive test procedures are provided in detail for a wide variety of commodities.

Section 1.1.

One comment indicated that the Introduction is misleading and that the last sentence in Section 1.1. "suggests that the Handbook is compatible with existing regulations at the Federal level and such has not been demonstrated." The last sentence in Section 1.1. is merely intended to warn the weights and measures official that Federal regulations do change and that H-133 may not contain the most recent information in this area. It should be said, however, that the handbook has not been demonstrated to be incompatible with existing Federal regulations. Therefore, no changes are recommended for this section.

Section 1.2.2.

It was recommenced that the section be omitted because it appeared that the section introduced a new system of net contents checking. The wording in this section has been clarified to indicate that it applies only to pressed and blown glass tumblers and stemware.

It was pointed out that the NCWM standards do not meet the definition of "voluntary standards". The term "voluntary" has been dropped.

Change to read:

1.2.2. An Exception

The National Conference on Weights and Measures (NCWM), an organization of State and local weights and measures officials, has adopted ~~voluntary~~ standards **called "uniform laws and regulations"** upon which individual jurisdictions may model their laws and regulations. Several States have adopted that portion of the NCWM Model State Uniform Regulation for the Method of Sale of Commodities **that** provides a tolerance for ~~certain package label~~ **quantities pressed and blown glass tumblers and stemware.** In **that** regulation, such a tolerance is called an "allowable difference". When packaged product quantities are given tolerances, the average and individual package requirements described above do not apply. This handbook provides procedures for testing these product quantities **glassware** in Section 3.7.

Section 1.3.1.

Comments indicate that the section is confusing especially if perceived as a directive rather than general guidance. The section has been reworded and rearranged in order to provide clearer guidance to administrators of State and local weights and measures programs as to the advantages and disadvantages of testing at various levels of production and distribution.

It was suggested in comments received on the handbook that product put up in the retail store should have moisture allowances applied to it. We agree that variations due to loss or gain of moisture must be permitted during the course of good distribution practices. The question to be answered is: at what point in tne process does "good manufacturing practice" end and "good distribution practice" begin? We have used as our guide in the handbook the procedures of the FDA and the USDA. Product that has been packaged but is still located in the manufacturer's plant is presumed to be under the control of the manufacturer. In such instances, a moisture allowance is not applied by Federal inspectors. Similarly, product packaged in a retail store for sale in that store is still at the point of pack; a moisture allowance at this point is, therefore, not appropriate.

1.3.1. Where to Test

Package commodities may be tested in any location from packaging plant to retail outlet.

Point of Pack

Checking packages at the location where they are packaged ("point of pack") has the greatest impact on the packaging process: From the ~~viewpoint of efficiency, the best location to test any individual~~ packaged product **is** at the ~~location~~ where the product is packaged. The official can sample from the largest number of packages **of a single product** available at one place; **and, the manufacturer can immediately correct any problems found before packages are distributed. Small economies are also available since** the packager can often recover and repackage the product from packages that must be opened for testing purposes ~~and the official can immediately inform the manufacturer-of-the-test-results.~~

When the product is packaged at the retail store (the supermarket meat counter being the classic example), package inspection at retail is equivalent to inspection at the production point. ~~Many of the disadvantages of retail inspection that are noted above are, of course, avoided in this instance. Allowances for moisture loss are not applied, and, any shortage may be immediately corrected.~~

Package testing at production point cannot entirely replace that at wholesale or retail outlets. Since only manufacturing practices can be examined at production point, testing of packages at wholesale and retail outlets must also be part of a complete package inspection program. The results of distribution practices, possible tampering with the product, and environmental

effects can only be monitored by wholesale and retail checking. Thus, inspection resources should be divided, if possible, between testing at the packaging location and testing at wholesale and retail locations.

The effectiveness of package testing programs conducted by individual State and local agencies would be maximized if these agencies established reciprocity with other State, county, and city jurisdictions to recognize results of tests carried out by other agencies at packaging plants.

Wholesale

Just as checking packages at the point-of-production has the greatest impact upon packaging processes in terms of the number of packages upon which decisions can be made, checking at wholesale has a greater impact than checking at retail. Therefore, Warehouse-outlet package testing is a good alternative, wherever possible, to testing at the production point in terms of efficiency testing large amounts of product. There is a severe drawback to checking at wholesale, however. This is the problem of getting to the stacks of pallets, breaking down film-wrapped or wired skids, and finally opening sealed cartons. Labor costs, equipment, and time requirements, including the time needed to restack skids and pallets, can be excessive. Because of the importance of wholesale testing to the follow-up of inaccuracies discovered during retail checking, guidelines are given in Appendix C.6. to simplify selection of the package sample at wholesale outlets.

Retail

Package testing at retail checks the soundness of the manufacturing, distribution, and retailing processes of the widest variety of goods available at single locations.

Package testing at retail locations checks the accuracy of the package label at the locations where consumers purchase the product. **It is an excellent means for State and local jurisdictions to monitor problems and look for potential problems.**

Retail package testing does not permit checking very many lots of an individual product or a substantial amount of any single production lot. Thus, it is more difficult to detect generally good or bad packaging processes, and the impact of a single inspection on a packager and his/her process is small. Therefore, at the very least, follow-up inspection of a particular brand or code number at a number of retail and wholesale outlets is extremely important in any retail checking scheme.

The greatest number of processes impinges on the quality or quantity of the product at the point of sale, such that the greatest number of causes is possible for any inspection lot being out of compliance. A shortage in weight or measure may be the result of mistreatment of the product in the store, of a failure to rotate stock, of mishandling by a middle agent, or of failure of some part of the packaging process. Therefore, locating fault in order to correct defects will be more difficult when retail testing is employed.

Moisture Loss

The term "may" was used to distinguish hermetically-sealed packages from other types of packages. The paragraph has been revised and highlighted as a separate section.

~~Allowances for loss of moisture may have to be applied to packages and commodities when tested at wholesale and retail locations.~~

Allowances for moisture loss during the course of good distribution practices must be provided. Allowances for moisture loss are not applied at point of pack testing or to hermetically sealed packages.

Section 1.4.

It was recommended that references to allowable differences be dropped. See Section 1.2.2. for further information on this subject. The second paragraph of this section repeated what is contained in Section 1.6. and has been shortened accordingly.

Reword the second paragraph of Section 1.4 as follows:

It is possible to test packages for compliance with package requirements without using sampling techniques; in such cases, the quantity of contents of all the packages available for test must be measured, averaged, and then compared with the labeled quantity, and the variation from the labeled quantity of each individual package compared with the maximum allowable variation for that package type and size. If allowable differences are established, the quantity inside every package is compared against the labeled quantity plus or minus the allowable difference the regulation cites. This is a costly and time-consuming technique for regulatory agencies and, in certain instances, will require opening all of the packages inspected. See Section 1.6. on 100% Testing for an explanation of tests to be conducted.

Section 1.6.

Several comments were made that 100% testing is stricter than sampling and is therefore inconsistent with the sampling procedures given in the handbook. However, no revision is proposed for Section 1.6. The State and local regulations are explicit as to the requirements that must be met if an entire lot, shipment, or delivery is tested:

- the average of a lot, shipment, or delivery must equal or exceed the label;
- no (zero) packages may be "unreasonably" short measure.

Sampling is not required by the regulations and is only a tool of the inspection agency.

Section 1.7.

Comments indicate that the general guidance as to when to use what category of sampling plan was unclear and insufficient and that it cast doubt on Category B plans. It was the intent of the original wording in this section to link the sampling plan categories in a very general way with enforcement practices in the U.S. These practices vary so much that specific guidance is not possible at this time. Therefore, additional information on the differences between Category A and B plans is provided (see Section 1.8.) and the very general guidance that Section 1.7. contained on choices of how to use the sampling plans is deleted. This will provide the regulatory agency with more information that should be helpful in making a reasoned choice between the categories of plans and provide the agency the flexibility to select the inspection approach appropriate for the particular circumstances.

Delete 2nd, 3rd, and 5th paragraphs.

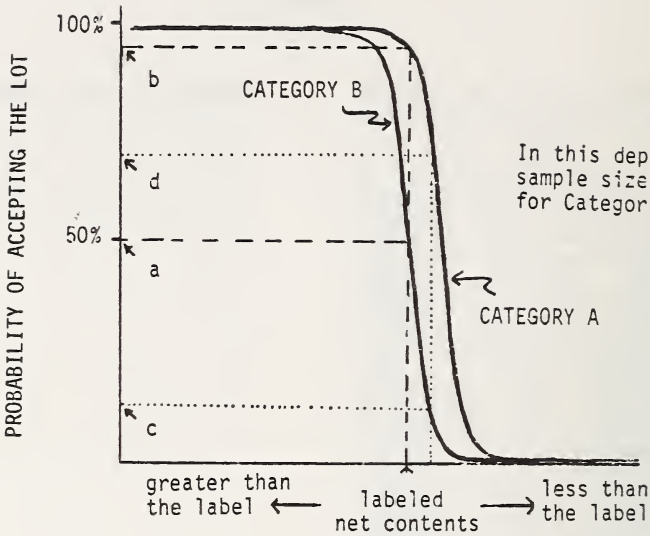
Section 1.8.

The original wording of this section provides general contrasts between Categories A and B without providing a description of how a sampling plan distinguishes between good and bad lots. Comments suggest that the statistical meanings of "consumers risk" and "producers risk" were not understood, and that Category B plans were somehow suspect in comparison with Category A plans. Additional graphical information is provided that will help describe these categories of plans.

Revise as follows:

1.8. Why There Are Two Categories of Sampling Plans

Judgments based on **sampling** (less than complete information) ~~(samples)~~ cannot be made with complete accuracy. **Inherent in sampling** are risks of making wrong decisions. **There is** ~~they are~~ the risk of accepting lots that do not conform to the regulation and **there is** the risk of **rejecting** ~~failing~~ lots that do conform. ~~Sampling plans can be designed to have predetermined risks of making the wrong decisions.~~



The figure[1]/ illustrates conceptually some of the differences between Category A and Category B sampling plans.

Lots That Average at the Labeled Net Contents

For lots that average at the labeled net contents (see the dashed line):

- Category B sampling plans would be expected to accept such lots 50% of the time (point "a")
- Category A sampling plans would be expected to accept the lots more often (point "b").

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[1]/This description has been greatly simplified by showing only lots that have a variability that fits well within the MAV limits; these lots all have the same relative variability as compared with the MAV. See G. N. Lauer, "Probabilities of Noncompliance for Sampling Plans in NBS Handbook 133," in the Journal of Quality Technology, Vol. 14, p. 162, July 1982, for probabilities for lots of differing variabilities.

Lots That Average Below the Labeled Net Contents

For lots that average less than the labeled net contents (see the dotted line):

- The same relationship holds, that is, Category A plans (see point d) would pass such lots more often than Category B plans (see point c), but
- The probability of such lots being passed in either Category drops as one would expect ("b" versus "d" and "a" versus "c").

Lots That Average Above the Labeled Net Contents

Similarly, for lots that average greater than the labeled net contents (moving to the left on the drawing):

- The same relationship holds, that is, Category A plans would pass such lots more often than Category B plans, but
- The probability of lots being passed in either Category increases, as one would expect.

Although Category A sampling plans are provided in order to reduce the risk of failure when the lot average equals the labeled weight, it has been traditional in package testing in the U.S. to use sampling plans like Category B. In the drawing above, the comparison of Category B with A has been made only when the sample size is the same; Category A plans have been designed with larger sample sizes than Category B plans so as to better discriminate between conforming lots and underweight lots (then the curve for a Category A plan would be steeper - more vertical - than for Category B).

It has been traditional in package checking in the U.S. to use sample plans like Category B. Such plans

have a 50-50 risk of acceptance-failure for lots that do average at the labeled weight (and when individual packages fit well within their allowed limits). This kind of plan in some way splits the risk between packer and consumer. For some possible consequences (called "of relatively great severity"), however, the 50% risk may be excessive for the packer who is indeed producing lots complying with regulation.

Therefore, other sampling plans (those of Category A) are given, which provide a much smaller risk of failure for the packer when the lot average does equal the labeled weight. If small sample sizes were used, this kind of plan would not provide sufficient protection to the consumer. Therefore, Category A plans are given with larger sample sizes that will give better discrimination between conforming lots and underweight lots.

A Category B failure is not as strong an indication of an underweight lot as is a Category A failure; however, a Category B plan gives more consumer protection than a Category A plan of the same sample size.

Section 1.9.

Some comments indicate that this section does not properly recognize the mandatory nature of permitting moisture loss. Except for Table 1-1, which will be cross referenced to Appendix B, no changes are proposed for this section. The handbook makes the point several times that provisions must be made for moisture loss in good packaging and distribution practices. Until all parties can agree on test methods or values to be applied(if that is possible or practicable at all), the official will have to rely

on the general knowledge available and apply good judgment. Provision is made on the inspection forms to factor in values to provide for moisture loss.

Section 1.10.

This section has been clarified in order to indicate that no single moisture loss value or test method is being recommended or advised by the handbook.

Revise as follows:

1.10. DECISIONS PRELIMINARY TO PACKAGE INSPECTION

Prior to conducting package inspections, the package testing official must, at the very least, be given preliminary guidance by his or her supervisor or the program administrator concerning:

- which sampling plan category is to be used under what circumstances in the jurisdiction, and

- what moisture allowance is to be used under what circumstances in the jurisdiction;

- what procedures are to be followed when inspecting packages susceptible to moisture loss.

Section 2.3.1.

In order to avoid confusion with the Universal Product Code, the term "lot code" will be used in this section and elsewhere in the handbook.

In addition, a paragraph is added that distinguishes product under the jurisdiction of FDA and USDA from product under the jurisdiction of State and local agencies only.

Revise as follows:

2.3.1. The Inspection Lot of Standard Pack Packages

Standard pack packages are those packages which are put up with identical labels and only in certain selected quantity sizes. An example of a standard pack meat item would be canned hams labeled "5 pounds."

The sentences in bold will also be added to Section 2.3.2. The Inspection Lot of Random Pack Packages.

- When the location of test is a retail store, the inspection lot must consist of packages with identical labels. ~~It is not necessary, but may at times be desirable, to segregate packages according to the same manufacturer's lot symbol or code.~~ **State and local regulations apply to "lots, shipments, or deliveries." Packages with different codes comprising a shipment or delivery may be acted upon as a single inspection lot. However, for food, drugs, and cosmetics under the jurisdiction of FDA or USDA, segregation of lots by lot code is necessary before final action is taken. Follow-up inspection also will require segregation of lots by lot codes.**

- When the location of test is a warehouse, the inspection lot must consist of packages with identical labels and with the same manufacturer's lot symbol or **lot** code.

- When the location of test is on-line at a packaging plant, the inspection lot must consist of packages with identical labels and manufacturer's **lot** code, and should not exceed one uninterrupted production run. As small as one hour's production may be convenient for sampling purposes.

  Note that the inspection lot is not, in general, the same as the "production lot."

Section 2.3.3.

This section explains that the size of the inspection lot must be determined in order to refer to Tables 2-2 or 2-5 for selecting a sampling plan. Comments were made concerning the need to explain what is appropriate when only one or two packages is available for test. We believe this guidance belongs in Section 2.3. concerning the formation of the inspection lot.

Add the following introductory statement for cross reference:

Refer to discussion on the definition of lot (Section 2.3.) for further information on forming the inspection lot from which a sample will be drawn.

Add the following paragraph at the end of Section 2.3. to address the question about small sample sizes:

State and local regulations apply to "lots," "shipments," or "deliveries." A shipment or delivery will rarely be comprised of only one or two packages. When only one or two packages are found on retail shelves, more packages should be sought in storerooms or cases. When only one or two packages are available for test in a single location and it is evident that the shipment or delivery was larger, the average net contents of the shipment or delivery cannot be determined. Only individual package errors can be ascertained and compared with the limits of reasonable variation (called Maximum Allowable Variations). If shortages are found for one or two packages, records should be kept and follow-up inspections conducted on larger lots or in other locations.

Section 2.4.

This section explains what a "package error" is. Comments were made that advice on obviously defective packages should be given. We believe Appendix C already covers this subject and that Appendix C should be referred to in Section 2.3.3., rather than in Section 2.4.

Add the following paragraph at the end of Section 2.3.3.:

Obviously defective individual packages are not to be selected from the inspection lot to become part of the sample (see Appendix C for guidance in this situation). However, obviously defective packages should not be reintroduced into commerce.

Section 2.6.

It was recommended that a smaller sample size be added to the Category A plans. No changes are proposed to the Category A sampling plans. A Category A sampling plan with a sample size of less than 30 will permit too many nonconforming lots to pass the inspection test. In addition, the average range method that is part of the Category A plans requires more than two or three values of a range of five to get an adequate estimate of the inspection lot variability.

Section 2.7.

It was recommended that Category B plans be dropped or only provided for audit purposes. In our opinion, Category B sampling plans remain viable tools for the official to use and we choose to retain them. We believe that the handbook differentiates between the characteristics of the two categories so that the official can make an appropriate choice in the selection of plans for use in any given situation. (See Section 1.8.)

Section 2.8.

It was recommended that wording in this section be changed so that it does not imply that action on single packages is allowed. On the other hand, there are some jurisdictions that follow the average principle in testing for compliance but are legally restricted to citations on a package-by-package basis. Therefore, only very general advice on defective packages can be given.

Revise wording as follows:

2.8. INDIVIDUAL PACKAGES

Even if the lot complies with the package requirements using a sampling plan, individual packages in the sample may be short by more than the maximum allowable variation from the labeled quantity. However, any individual package that is short by more than the MAV from the labeled quantity is considered defective and should be repacked, relabeled, or otherwise handled on an individual basis. Defective packages should not be reintroduced into commerce.

Section 2.9.2.

An explanation for the use of MAV/6 is provided.

Revise section as follows:

2.9.2. Choosing the Unit of Measure

As a general rule, the official should record package measurements in units less than or equal to the MAV/6. **This is a general extension of the principle expressed in NBS handbook 44, page 1-9, that the error of standards used without correction "should be not greater than 25% of the smallest tolerance to be applied when the standard is used". Since packages are tested not only against an individual package requirement, but also against the average requirement, the errors made in individual package measurements are added (and they do not cancel out). Therefore, the 1:4 principle is tightened to 1:6, a ratio that permits readily available testing equipment to be used.**

Section 2.11.

It was argued that wet tare should not be recommended for use in inspection. A letter from the USDA, however, indicates that their officials use wet tare. Nevertheless, a testing official must use what is available. Therefore, a recommendation as to dry or wet tare will not be made.

Change the first paragraph on page 2-14 to read:

Wet tare should be used wherever possible. In some cases (e.g., canned or glass- or plastic-packed goods), dry tare weights are equivalent to wet tare (within the measurement precision of field test scales). However, the net contents value, which is obtained when a dry tare value is substracted from the package's gross quantity, will not always represent the amount of product that can subsequently be obtained from the package. For example, oils or moisture from the product may be absorbed by the packaging material when in contact with the product, increasing the weight of the packaging material and

decreasing the weight of the product after packaging. ~~Therefore, caution in the use of dry tare values is advised. (When it is available, the use of dry tare value can be valuable in audit testing; however, in order to locate possible violations without opening any packages under test).~~

Section 2.11.4.

It was recommended that F-type cans be included in the alternative tare procedure.

Add the following sentence at the end of the 1st paragraph:

"F-Style" rectangular cans, of the type in which turpentine, mineral spirits, and similar products are packaged are also likely candidates requiring the use of this procedure.

Section 2.12.

This section is revised to reflect changes that have been made throughout the document to clarify that allowable differences apply to glassware only.

Revise last sentence of first paragraph as follows.

Package quantities Pressed and blown glass tumblers and stemware given a tolerance **(or an allowable difference** -- see Section 5.7.) are not compared with the MAV.

Additional data on packages weighing less than 1.28 oz (36 g) and over 50 pounds indicate that Table 2-8 should be changed as shown on the next pages.

Modify Tables 2-8 and 2-11 as shown on the following pages.

Because of changes to equipment requirements (see Section 5.6.1.), preservation of the MAV/6 principle enlarges the MAV to 3% for the labeled length of 0 to 1 yard. Therefore, modify Table 2-11 as shown on the third following page

Regarding the "difficult to fill" commodities, we will recommend that the NCWM Committee on Laws and Regulations study these questions and (working within the mechanisms of the Conference) seek a Conference consensus position.

Table 2-8. Maximum allowable variations for an individual package labeled by weight[a].

Avoirdupois units			Metric units	
Labeled weight	MAV		Labeled weight	MAV
Pounds or ounces	Decimal pounds	Fractional ounces	Grams	Grams
up to and including 0.026 lb up to and including 0.41 oz	0.002		up to and including 11.6	1
0.026+[b] to[c] 0.08 lb 0. 41+ to 1.28 oz	0.004	1/16	11.6 + [b] to[c] 36	2
0.08+ to 0.12 lb 1.28+ to 1.92 oz	0.008	1/8	36+ to 54	4
0.12+ to 0.18 lb 1.92+ to 2.88 oz	0.012	3/16	54+ to 82	5
0.18+ to 0.26 lb 2.88+ to 4.16 oz	0.016	1/4	82+ to 118	7
0.26+ to 0.34 lb 4.16+ to 5.44 oz	0.020	5/16	118+ to 154	9
0.34+ to 0.46 lb 5.44 + to 7.36 oz	0.024	3/8	154+ to 209	11
0.46+ to 0.58 lb 7.36+ to 9.28 oz	0.028	7/16	209+ to 263	13
0.58+ to 0.70 lb 9.28+ to 11.20 oz	0.032	1/2	263+ to 318	15
0.70+ to 0.84 lb 11.20+ to 13.44 oz	0.036	9/16	318+ to 381	16
0.84+ to 0.94 lb 13.44+ to 15.04 oz	0.040	5/8	381+ to 426	18
0.94+ to 1.08 lb 15.04+ to 17.28 oz	0.044	11/16	426+ to 490	20
1.08+ to 1.26 lb	0.048	3/4	490+ to 572	22
1.26+ to 1.40 lb	0.052	13/16	572+ to 635	24
1.40+ to 1.54 lb	0.056	7/8	635+ to 698	25
1.54+ to 1.70 lb	0.060	15/16	698+ to 771	27

[a]Applies only to shortages in package weight (minus package errors)

[b]0.026+ means "greater than 0.026"

[c]"to" means "to and including"

Table 2-8. (continued). Maximum allowable variations for an individual package labeled by weight.

Avoirdupois units			Metric units	
Labeled weight	MAV		Labeled weight	MAV
Pounds	Decimal pounds	Fractional ounces	Grams or Kilograms	Grams
1.70+ to 1.88	0.064	1	771+ to 852	29
1.88+ to 2.14	0.070	1 1/8	852+ to 971	32
2.14+ to 2.48	0.078	1 1/4	971+ to 1.125	35
2.48+ to 2.76	0.086	1 3/8	1.125+ to 1.350	40
2.76+ to 3.20	0.094	1 1/2	1.350+ to 1.600	45
3.20+ to 3.90	0.11	1 3/4	1.600+ to 1.800	50
3.90+ to 4.70	0.12	2	1.800+ to 2.100	55
4.70+ to 5.80	0.14	2 1/4	2.100+ to 2.640	65
5.80+ to 6.80	0.15	2 1/2	2.640+ to 3.080	70
6.80+ to 7.90	0.17	2 3/4	3.080+ to 3.800	80
7.90+ to 9.40	0.19	3	3.800+ to 4.400	85
9.40+ to 11.70	0.22	3 1/2	4.400+ to 5.200	100
11.70+ to 14.30	0.25	4	5.200+ to 6.800	115
14.30+ to 17.70	0.28	4 1/2	6.800+ to 8.20	130
17.70+ to 23.20	0.31	5	8.20+ to 10.60	145
23.20+ to 31.60	0.37	6	10.60+ to 14.30	170
31.60+ to 42.40	0.44	7	14.30+ to 19.25	200
42.40+ to 54.40	0.50	8	19.25+ to 24.70	230
54.40+	2%		24.70+	2%

Table 2-11. Maximum allowable variations for an individual package labeled by length (width) or by area[a]

Length		
Inch-Pound	Inch-Pound or Metric	Metric
Labeled length yards	MAV (expressed as a percentage of the labeled length)	Labeled length meters
0 to[c] 1	3%	0 to[c] 1
1+[b] to 48	1.5%	1+[b] to 40
48+ to 96	2%	40+ to 85
96+ to 154	2.5%	85+ to 140
154+ to 330	3%	140+ to 300
330+ to 1100	4%	300+ to 1000
1100+	5%	1000+
Area		
The MAV for packages labeled by area is 3% of the labeled area.		

[a] Applies only to shortages in package measure (minus package errors).

[b] 1+ means greater than 1

[c] "to" means "to and including"

See Section 2.13. for exceptions: textiles, polyethylene sheeting.

Section 2.13.

The source for the MAV values for polyethylene sheeting will be footnoted.

Add footnote:
***1978 communication from the National Flexible Packaging Association (now the Flexible Packaging Association).**

Section 2.14.

We do not intend to imply that there is a single method or value that is to be used when allowing for moisture loss; however, a point in the procedure must be provided for taking moisture loss into account.

Delete this section in its entirety and substitute the following:

In those cases requiring allowance for moisture loss, the allowance value (converted to units of weight if necessary) is subtracted from the "nominal gross weight"(see Section 2.11. and Section 3.5.) to obtain a corrected nominal gross weight. This corrected nominal gross weight is then compared with the gross weight of each unopened package in the sample in order to determine individual package errors.

Section 3.1.

It was recommended that modern equipment be referenced.

Insert the following paragraph just prior to the paragraph beginning "Commercial Scale-";

Electronic Digital Scale. Electronic digital scales appropriate for package testing are available with displays ranging from 0.0001 lb to 0.01 lb and capacities from 6 to 50 lb (and greater). The keys to selecting appropriate equipment for package testing purposes are:

-The scale must meet all requirements of NBS Handbook 44, Scale Code T.3.1., except that the acceptance tolerance should be 1/2 that given in the Handbook Table 4.

- The scale should be equivalent to equal-arm scales in terms of sensitivity (for example, a minimum scale division of 0.002 lb or 1 g for weighing small packages down to 1.92 oz or 82 g). If the scale does not have appropriate sensitivity, weighing by substitution must be employed.

- The scale must be portable and rugged.

- Errors should not be introduced by slight out-of-level conditions.

- For the convenience of the inspector (although not mandatory) the scale should be battery powered.

Section 3.12.

It was recommended that the term "drained" be changed to net throughout this Section. This will be done.

Section 3.13.

It was recommended that the second sentence in the fourth paragraph be reworded.

Delete paragraphs 4 and 5 and substitute the following:

Using the tare sample packages, the official should weigh and record the gross weight of the product-filled cans before and after breaking the vacuum seal. Compute the average gross weight difference (open weight minus sealed weight). Subtract the average gross weight difference from the average tare. Record the average tare minus the average difference in gross weights on a worksheet and annotate on the report form as "corrected average tare". The nominal gross weight is equal to: the corrected average tare weight plus the labeled weight.

Section 4.4.

Work is still in progress concerning the equivalency of the displacement method and the flask method currently in the handbook. Therefore, no change is proposed.

Table 4-2

This table is provided in order to make sure that any difference in weight observed from two different weighings of the same quantity would be due only to the repeatability of the weighing device. The blank space will be filled in and other guidance will be provided.

Section 5.2.

There appears to be some confusion about the special sampling plans provided for packages labeled by a count less than "50." Unlike the other sampling plans that contain a column headed "number of packages allowed to exceed the MAV," these sampling plans (Table 5-1, p. 5-4) contain a column headed "number of packages allowed to contain fewer than the labeled count." Since the MAV is not used directly in the sampling plan, individual packages that are under the labeled count by more than the MAV are considered defective but will not necessarily fail the lot. Thus, the manufacturer is not being penalized by the provision that the MAV is zero for very low count. Therefore, no changes are planned for this section.

Section 5.6.

It has been recommended that weighing not be given as a method of determining compliance of sanitary paper products. We concur.

Add the following to the first paragraph:

The count of sanitary paper products cannot be determined adequately by weighing; variability in sheet weight and core weight requires that official tests be made by actual count.

Section 5.6.1.

It has been recommended that the rule in Section 5.6.1. be modified because of the difficulty in using such fine divisions. We concur.

Delete first paragraph.

Change third paragraph to read:

Rule 12 in [30 cm] in length, ~~0.01~~ 0.02 in [0.5 mm] divisions.

Section 5.6.2.

It has been recommended that additional guidance be given in Section 5.6.2. because the sizes of individual sheets in a package may vary.

Add step 6 as follows:

6. **Individual sheets within a package or roll may vary. If the above procedure indicates lot non-conformance, measure at least 10 sheets selected at random from each package. Average these to determine the dimensions and use these average dimensions in steps 4 and 5 above.**

Section 5.7.

The term "voluntary" will be deleted in footnote 10 on page 5-11.

The term "plastic" will be deleted from Section 5.7.1.

Change the first sentence of the first paragraph to read as follows:

The package requirement that the average quantity of a lot (shipment or delivery) meet or exceed the labeled quantity is not applied to ~~that category of products to which a "tolerance" or "allowable difference" has been provided by regulation~~ **pressed and blown glass tumblers and stemware.**

Appendix A

It was recommended that "allowable differences" and "tolerance" be deleted from Appendix A. These definitions are required for the use of selected portions of the handbook and cannot be deleted.

Appendix B

It was recommended that a reference to pickles be added to this appendix. Appendix B is intended to list only net contents requirements, not other packaging and labeling and method of sale requirements. A reference is added to one source for this other information.

Add the following sentence to the first paragraph of the Appendix:

Additional information concerning packaging and labeling and appropriate methods of sale is contained in NBS Handbook 130.

APPENDIX B

U. S. BORAX PRESENTATION TO COMMITTEE ON LIAISON

69th National Conference on Weights and Measures

Presented by

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United States Borax & Chemical Corporation
Los Angeles, California

and

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U. S. Borax Research Corporation
Anaheim, California

Coauthor: Donald J. Ferm
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Anaheim, California

BY MR. MANN

Mr. Chairman, Members of the Committee, Members of the Conference, honored guests, United States Borax & Chemical Corporation, better known as U.S. Borax, and U.S. Borax Research Corporation, thank you for the opportunity to make this presentation.

My name is John Mann. I am Senior Counsel for U.S. Borax, and joining me in the presentation will be Dr. Scott Griffin, who is the Manager, Consumer Products Research, for U.S. Borax Research Corporation.

Our presentation concerns the peculiar qualities of the mineral borax, used in several of U.S. Borax's products, most notably in consumer products made for use in the laundry, not as detergents but along with detergents.

U. S. Borax operates a mine and refinery in the Mojave Desert in California, where it mines and refines the mineral borax. The refined borax is then shipped in bulk, some to industrial customers, some to our two plants, one at Burlington, Iowa, the other at Wilmington, California. At those plants, it is used in making the consumer products in question. Incidentally, U.S. Borax and its predecessor companies have been selling borax for use in the laundry for a hundred years.

Our consumer products are packaged at the plants in cartons in granular form, and distributed nationwide, ultimately for sale to consumers at retail. Federal and State regulations require us to state the net weight of each carton on its label. However, a peculiarity of borax is that it can lose up to more than 23% of its weight due to moisture loss to the atmosphere. The speed of dehydration depends on temperature and humidity. Some moisture can be regained in rare conditions of temperature and humidity, but in normal distribution the moisture loss is unavoidable.

The ironic part is that the borax does not decrease in volume because of the moisture loss. Since the consumer is directed to use the products by volume, e.g., by cup or fractions of a cup, the weight loss does not really matter to the consumer. Nor does the moisture loss affect the efficacy of the products.

Our difficulty in complying with Federal and State net weights labelling regulations, and our hope to achieve some appropriate relief, bring us before you today.

Dr. Griffin will now provide you with more detailed background on the nature of the mineral borax and its tendency to lose moisture in various conditions of temperature and humidity.

BY DR. GRIFFIN:

Borax is a naturally occurring hydrated salt with the chemical name sodium tetraborate decahydrate. This form of borax has 10 moles of water associated with every mole of sodium tetraborate, and, under certain conditions of temperature and humidity, water can be lost from the crystal to the atmosphere.[1,2] Under normal conditions encountered in commerce, borax can lose up to a maximum of five moles of water resulting in another form of borax, sodium tetraborate pentahydrate. This process of dehydration is depicted in Table I. It should be recognized that the pentahydrate shown in Table I is the final result of complete loss of five moles of water, and many intermediate states of hydration between five moles and ten moles can exist depending on the extent of dehydration. Also, the equation shown in Table I is reversible, that is, partially dehydrated borax can absorb water from the atmosphere under conditions of high humidity (to be described later).

As is shown in Table I, the decahydrate form of borax contains 47.23% water, and on dehydration to the pentahydrate, 23.62% of its original weight is lost as water to the atmosphere.[2]

The laundry products sold by U.S. Borax containing borax decahydrate are BORATEEM and 20 MULE TEAM Borax. The latter is essentially pure borax, and BORATEEM contains over 98% borax. Hence, both products can be expected to lose up to a maximum of slightly over 23% of their original weight by dehydration.

Table I

DEHYDRATION OF BORAX

$$Na_2B_4O_7 \cdot 10H_2O \longrightarrow Na_2B_4O_7 \cdot 5H_2O + 5H_2O$$

M. W.	381.32	291.26	90.05
% Contained Water	47.23	30.92	-
% of Original Wt.	-	76.38	23.62

Table II

WEIGHT LOSS OF BORATEEM PLUS WITH RESPECT TO TIME

	Time in Storage(1)				
	Initial	4 Weeks	8 Weeks	12 Weeks	21 Weeks
Average Weight Loss (Grams) (Cumulative)	-	74.38	167.33	224.8	300.50
Average Percent Net Weight Loss (Cumulative)	-	5.33	11.43	15.25	20.50
Degree of Hydration Moles H_2O/Mole $Na_2B_4O_7$	9.63	8.38	7.18	6.48	5.32

(1) Stored at 80-84°F, 45-50% Relative Humidity.

Table III

BORATEEM

EFFECT OF DEHYDRATION ON CARTON VOLUME

Initial Volume	% Wt Loss	Before Vibration			After Vibration		
		g/1000 cc	Carton Volume	Percent △V	g/1000 cc	Carton Volume	Percent △V
1322	0	881	1322	0	878	1327	+0.4
1329	14.5	707	1416	+6.5	730	1371	+3.6
1333	21.1	664	1393	+4.5	675	1371	+2.9
1350	23.0	661	1384	+2.5	675	1356	+0.4
1346	23.6	653	1387	+3.0	668	1359	+1.0

Table IIIa

BORATEEM - REPLICATED STUDY

EFFECT OF DEHYDRATION ON CARTON VOLUME[A,B]

Initial Volume (cc)	% Wt. Loss	Before Vibration			After Vibration		
		g/1000 cc	Carton Volume (cc)	Percent △V	g/1000 cc	Carton Volume (cc)	Percent △V
1354	0	875	1354	0	873	1357	+0.22
1359	7.1	774	1428	+5.08	787	1404	+3.31
1357	17.4	688	1425	+5.01	697	1408	+3.76
1357	22.4	644	1431	+5.45	654	1410	+3.93

[A] 40 oz. BORATEEM cartons were stored for 29 days at 100-104°F and 21.9-51.5% relative humidity (60.5% initial reading).

[B] All results are an average of 6 replications.

Table IIIb

20 MULE TEAM BORAX - REPLICATED STUDY

EFFECT OF DEHYDRATION ON CARTON VOLUME[A,B]

Initial Volume (cc)	% Wt. Loss	Before Vibration			After Vibration		
		g/1000 cc	Carton Volume (cc)	Percent V	g/1000 cc	Carton Volume (cc)	Percent V
2892	0	838	2892	0	830	2921	+0.99
2890	10.0	745	2931	+1.42	737	2958	+2.35
2879	13.2	692	3029	+5.21	691	3032	+5.31
2894	22.7	587	3194	+10.40	617	3040	+5.04

[A] Borax cartons (5 lb , 4 oz) were stored for 34 days at 100-104°F and 39.5-56.9% relative humidity.

[B] All results are an average of 3 replications.

Table IV

THE EFFECT OF DEHYDRATION OF BORAX IN BORATEEM ON PRODUCT EFFICACY

	% Weight Loss	Average % Improvement Over Detergent Alone			
		Fabric Whiteness	Soil Removal	Stain Removal	
				Enzyme Specific	General
Initial	N/A	128	112	160	112
4 Weeks	5.33	146	114	158	109
8 Weeks	11.43	140	118	167	108
12 Weeks	15.25	149	112	168	108
21 Weeks	20.50	127	111	146	108

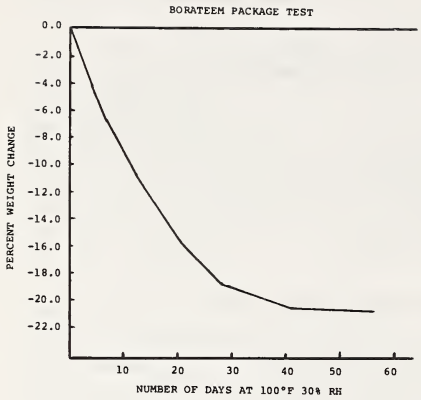

Figure 1

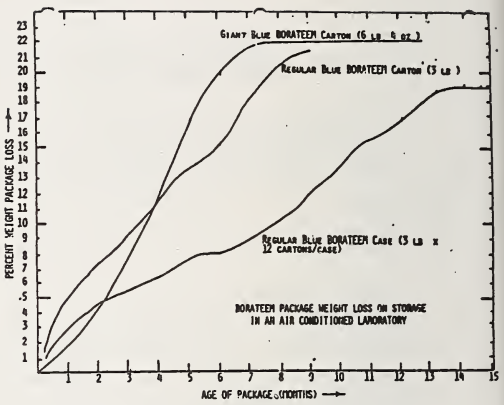

Figure 2

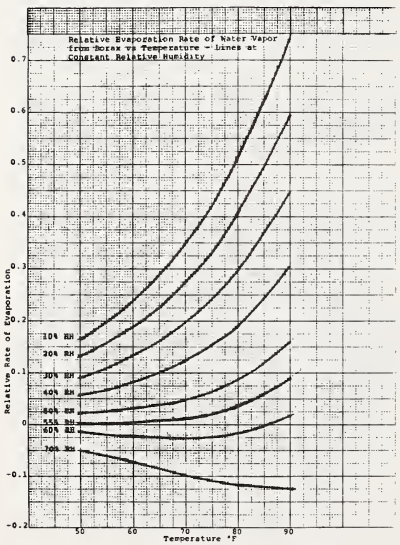

Figure 3

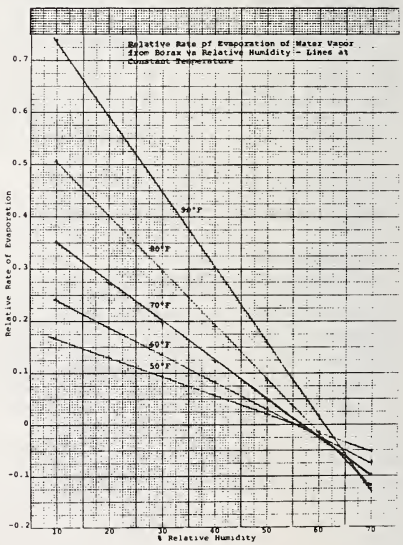

Figure 4

The results of a controlled laboratory study of the dehydration of BORATEEM are summarized in Table II.[3] Cartons of BORATEEM PLUS*[1] (3 lb) were stored under conditions of 45-50% relative humidity at a temperature of 80-84 °F. It can be seen that approximately 11.4% of the original weight was lost after only eight weeks, and 20.5% after 21 weeks. The degree of hydration of the borax was determined (by chemical analysis) at each time interval. It can be seen that the number of moles of water per mole of borax decreased in correspondence to the weight loss to 5.32 moles after 21 weeks.[3]

The weight loss in BORATEEM cartons stored at 100 °F in 30% relative humidity is depicted graphically in Figure 1. Under these conditions, weight loss is very rapid, reaching approximately 18% in only 30 days and leveling at 20% weight loss after 40 days. Further weight loss to the theoretical maximum of slightly over 23% takes place only very slowly.

Shown in Figure 2 are the weight losses from three BORATEEM cartons stored for over one year in an air-conditioned laboratory at the U.S. Borax manufacturing facility in Burlington, Iowa.[2] The two cartons that stood alone on the shelf lost approximately 11% of their initial weight after four months and 15 to 20%, respectively, after six months. In contrast, BORATEEM, which remained packed in a case (12 cartons/case), lost weight more slowly. After six months, approximately 8% of the original weight had been lost, and about 17% after one year had elapsed. It appears that cartons packed together in a case lose moisture more slowly, possibly due to reduced air flow through the cartons. Based on these results, it can be predicted that BORATEEM cartons stored together on a retail shelf will show difference degrees of weight loss - depending on how long they were in the case, their position in the case, and how they are packed on the shelf.

Results of theoretical calculations of the relative rate of evaporation of water vapor from borax versus temperature are plotted in Figure 3.[4] The data are plotted along lines of constant relative humidity. It can be seen that at relative humidities of 50% or below, the relative rate of evaporation increases with increasing temperature. At 60% relative humidity, only above 85 °F will there be any weight loss due to loss of moisture. At relative humidities of 70% or more, a weight gain is predicted at all temperatures, increasing as the temperature is increased.

The same data are presented in Figure 4, but with the relative rates of evaporation plotted against % relative humidity along lines of constant temperature.[4] These show that for a given temperature the relationship between humidity and rate of evaporation is linear, and at all temperatures the rate of evaporation increases as the % relative humidity decreases. It can also be seen that at 60-65% relative humidity, the rate of evaporation is essentially zero, and below 55% relative humidity weight losses will occur at 50 °F and above. Under conditions of modern

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1*BORATEEM PLUS is the former name of BORATEEM: The products are essentially identical.

commerce, with dehumidified warehouses and air-conditioned retail outlets, borax products will spend a significant time in environments conducive to weight loss by dehydration. Thus, it is not surprising that shortweight packages are frequently found on retail shelves,[5] despite stringent controls taken at the manufacturing plants to ensure that BORATEEM and 20 MULE TEAM Borax are packed at or above the stated label weight.[6]

Packaging materials other than cardboard boxes have been investigated to reduce moisture loss during storage. However, measures such as lining the cartons with moisture barrier coatings increase the tendency of borax to cake. Caking of borax products causes a severe inconvenience to the consumer who must break up large lumps in order to remove product from the box and measure is for use in the washing machine.[2] Packaging of BORATEEM in a moisture barrier has also been shown to cause more rapid deterioration of the enzymes contained in the product.[7] Enzymes are important stain removal ingredients and their loss diminishes the efficacy of the product.

It has been suggested occasionally that U.S. Borax should dry the borax down to a stable moisture level before packaging it. As a matter of fact, U.S. Borax does make 5 mole borax for industrial uses. But tests have proved that our processed 5 mole is not suitable for consumer products since it does not dissolve well in water, but rather forms hard lumps. We simply do not know of any alternative and technically feasible process for drying 10 mole borax, in any significant quantity, down to 5 mole borax in a way that will result in a material suitable for our present 10 mole products.

Despite the relative ease with which water is lost by dehydration, the size of the borax crystal does not decrease during this process.[1] Numerous studies have been done that show that the volume of borax or BORATEEM in a given carton does not decrease when the product loses weight by dehydration.[2,8,9] Results of one of these studies are summarized in Table III.[9] Cartons of BORATEEM were placed on a 110 °F oven with recirculating air in order to effect rapid dehydration. Bulk density and volume measurements were taken at various increments of weight loss. As expected, the bulk density decreases with weight loss, but in no instance does the volume decrease below that of the initial, undehydrated volume.

In the above study, each data point represents a single carton of product. However, in a recently completed test, a sufficient number of BORATEEM cartons were stored in a 100-104 °F oven to allow six replications (each full carton is one replication) to be removed and measured at each weight loss interval.[14] Results of this study are summarized in Table IIIa. As in the previous experiment, the bulk density decreases with weight loss, but there is no decrease in the volume. Instead, there is approximately 5% volume increase.

A similar replicated study was carried out with 20 MULE TEAM borax, except that three replications per weight loss interval were used due to the much larger size of these cartons (5lb 4oz each).[14] The results of this study are summarized in Table IIIb. It can be seen that up to 22.7% weight loss by dehydration there was the expected decrease in the bulk density. As with BORATEEM, there was no decrease in volume but rather a volume increase. At 22.7%, the volume increase was surprisingly large (+10.40% before vibration, +5.04% after vibration), but could be related to the rapid rate of dehydration under the oven conditions. A long-term, replicated weight loss experiment (BORATEEM and 20 MULE TEAM Borax) under ambient laboratory conditions is in progress.

Studies have also been done that show that the jostling and shaking expected to be experience by packages in transportation and handling will not lead to a reduction in the volume of the contents as measured by the method discussed below.[9] The results of vibration of cartons (for 60 minutes on a platform shaker) are shown in Tables III, IIIa, and IIIb. It can be seen that in no case are carton volumes diminished below the initial volume after dehydration followed by vibration.

The product bulk density and package volume are obtained by a procedure that is a modification of an ASTM Standard Test Method for free-fall bulk density determination.[10] In the procedure, the powdered product is allowed to fall freely from a funnel into a tared receiver of known volume. After determination of the product bulk density, the volume of the package contents can be calculated from the measured net weight and the bulk density.[11] The equipment required for the procedure is not elaborate, and the measurements can be done with excellent repeatability. In a volume determination of BORATEEM, the average of six measurements was 842.2 mL, with a standard deviation of 1.576 mL and a 95% confidence interval of 6.956 mL.

Repeated measurements using the above free-fall bulk density method have shown that results are sensitive to minor dimensional differences in the equipment.[15] To limit variability in results due to the equipment, it is recommended that standard apparatus be adopted for use in measuring the bulk density of products containing borax. ASTM Method E727-80 mentions the use of a Cox funnel in the procedure.[10] A standard apparatus utilizing a Cox No. 29 metal, slide gate funnel and an O'Haus No. 104 density cup (1 dry pint) are readily available from a commercial supplier.[16] This method is currently in use at the U.S. Borax refinery,[15] and the commercial availability of this apparatus as well as any dimensional changes that might be introduced will be monitored carefully by U.S. Borax.

Instructions printed on the labels of the BORATEEM and 20 MULE TEAM Borax cartons inform the user that the products are to be measured out by volume (1/2 cup units). As discussed above, the contents of a given carton do not diminish in volume with loss of weight by dehydrations. Thus, the user receives no reduction in the number of cups (or 1/2 cups) regardless

of the state of product hydration.[12] The active ingredients in BORATEEM (borax, flourescent whiteners, enzymes, etc.) are not volatile and do not escape from the product when water is lost. The user receives the same weight of active ingredients per carton of product no matter what weight of water has been lost. The effect of dehydration of borax in BORATEEM on product efficacy in actual washing tests has been thoroughly studied.[3,13] Some of these results are summarized in Table IV. Data are shown as % improvement in washing a fabric with detergent plus BORATEEM over washing the fabric with detergent alone. It can be seen that weight loss of BORATEEM at various time intervals did not result in a diminishing of the efficacy of the product as indicated by four cleaning parameters - fabric whitening, soil removal, removal of enzyme specific stains (such as blood), and the average removal of 12 standard stains.[3,13]

In summary, data have been presented showing that borax and BORATEEM lose weight by dehydration under many environmental conditions. However, the volume of the product in a package is not reduced with the weight loss, and the consumer has no reduction in the number of volumetric units (1/2 cups) available for use regardless of the weight loss. Furthermore, the efficacy of the product as a laundry additive is not diminished in any way.

The procedures and references cited in this report are available on request to weights and measures jurisdictions. Testing of the conclusions reported herein is welcome, and technical details regarding measurement of product bulk densities and carton volumes will be provided gladly. Upon request, weights and measures jurisdictions will be supplied with recommended minimum volumes for each size carton of BORATEEM and 20 MULE TEAM Borax.[15] Measurement of actual product volumes should result in volumes equalling or exceeding the recommended minimum volumes, thereby verifying the conclusions in this report that product volumes do not decrease with weight loss due to loss of moisture, and that the consumer continues to receive full product value despite the weight loss.

BY MR. MANN:

As you can see, U.S. Borax is placed in an unenviable and, I believe, unfair, position. We can guarantee volume, and volume is surely what matters to the consumer. But weight is what matters as existing regulations are enforced, and we cannot guarantee that. I need hardly say that our inability to do so has caused us many headaches in various jurisdictions over the years, both in terms of penalties assessed against us and annoyance to our customers, especially the retail stores and chains that carry our products.

However, we can commit to specific volumes for our products, and, as Dr. Griffin has shown, we can provide weights and measures officials with an objective, easily repeatable test for volume.

What we hope to obtain from the Conference is the willingness to deal with the peculiar situation of borax-based products, and to work out some fair and appropriate resolution of the situation. The Conference is the one institution best suited for achieving such a resolution.

It would be our preference to have the adoption of a procedure by which weights and measures inspectors would evaluate products containing borax for regulatory compliance by a volumetric test. Such a procedure is actually being used now in the State of West Virginia on an experimental basis, and, I understand, is working to the satisfaction of weights and measures officials there.

It works as follows: Upon finding a shortweight lot, the inspector tests two cartons from the sample for volume, using the method shown by Dr. Griffin. The cartons are evaluated against a statement of net volume submitted to the jurisdiction -- and this could appear on the label of the carton. The volumetric test functions as a kind of in-the-field verification or confirmation that the product has not lost volume. If the volume test is passed, the lot is in compliance.

Adoption of such a procedure might require a change in Handbook 133, and perhaps also in Handbook 130. That is why Conference involvement is so important.

Thank you for your attention. If there are any questions, Dr. Griffin and I will answer them now.

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3. USBRC Report No. CP-78-1, "Effect of Weight Loss (Dehydration) of BORATEEM PLUS on Efficacy as a Laundry Additive - Final Report," February 13, 1978, D. J. Ferm.

4. USBRC Report No. CP-84-6, "Relative Rate of Evaporation of Water Vapor From Borax," (in progress at time of presentation to National Conference, and completed August 13, 1984), D. J. Ferm.

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13. USBRC Report No. CP-77-11, "Effect of Weight Loss (Dehydration) of BORATEEM PLUS on Efficacy as a Laundry Additive - Interim Report," October 4, 1977, D. J. Ferm.

14. USBRC Report No. CP-84-4, "Replicated Weight Loss Studies of BORATEEM and 20 MULE Team Borax Under Accelerated Conditions," July 31, 1984, D. J. Ferm.

15. USBRC Report No. CP-84-2, "BORATEEM Bulk Density," July 19, 1984, D. J. Ferm.

16. The O'Haus No. 104 Density Cup (1 pint) and Cox No. 29 Slide Gate Funnel are available from the Sweetboro Equipment Co., 1022 W. Jackson Blvd., Chicago, IL 60607.

APPENDIX C

I-MARK PROGRAM DESCRIPTION

(PRELIMINARY DRAFT)

The goal of the U.S. I-Mark Program is to establish a voluntary but widely accepted (by government, industry, and consumers) system to certify full net contents of packaged products moving in interstate and intrastate commerce that will be consistent with Federal law and compatible with the NCWM uniform State and local laws and regulations and that will simplify and unify to the maximum extent possible the policies, procedures, and requirements of net content inspection of packaged products in the United States.

Under the U.S. I-Mark Program, inspections of packaged products for net content compliance would continue to be conducted by State or local jurisdictions at:

Level 1 - the plant or packaging site, and/or
Level 2 - wholesaler premises and distribution warehouses, and/or
Level 3 - the retail outlet or point of final sale.

In instances of apparent noncompliance of I-Marked products only at Levels 2 and 3, official sanctions would not be taken by a jurisdiction unless or until confirmation that the product(s) involved had not been produced in conformance with I-Mark Program standards. Non-I-Marked products would be treated the same as they presently are ... no changes are contemplated or intended.

The NCWM will design and register a U.S. I-Mark Program label mark or symbol which it will license for use by each participating firm to place on package labels if the firm operates a net quantity assurance program that has been approved by NCWM.

A participating firm or an industry trade association, on behalf of several firms within an industry, prepares and submits a written net quantity assurance program (NQAP) description for approval by NCWM. The program must contain the minimum elements specified by and meet the standards set by the NCWM.

NCWM will submit the NQAP application to NBS for technical review. (NOTE: The proposed services to be provided by NBS are outlined in the draft Resolution from NCWM which is among the detail documents that follow.) This review will result in either an NBS recommendation of NCWM approval or a request to the submitter for revisions. If additional information or revisions are required, NCWM will forward NBS's comments to the applicant for response.

Net quantity assurance programs that are already in existence under the supervision of USDA or FDA may be the subject of an NQAP application. Review by NBS and acceptance or rejection by the NCWM will be the

same as for other programs. However, in the event that NBS raises technical questions about such a program, the applicant will have the responsibility for meeting with the appropriate Federal agency and NBS to resolve the issues. It is the intent of the I-Mark Program that, upon approval of such programs, the participating firm will not be required to operate two separate, different, or inconsistent net quantity assurance programs.

Upon recommendation of approval by NBS, NCWM will make its final review of each proposed NQAP. If everything is in order and the participating firm provides evidence that the program has been implemented, the NCWM and the participating firm enter into a Licensing and Inspection Agreement. In the case of a program that was submitted by an industry trade association, NCWM would enter into a separate agreement with each firm that indicated its intent to operate a net quantity assurance program in accord with the approved industry program.

Upon execution of the Licensing and Inspection Agreement, the participating firm will be entitled to place the I-Mark on its product labels and will also be entitled to expect that its product would not be held or ordered off-sale officially during its distribution, prior to a confirmed official finding that either the approved in-plant I-Mark net quantity assurance program standards had been violated for the lot(s) involved or, where applicable, that good distribution practices had not been followed.

In turn, any State or local weights and measures enforcement official would be entitled to ask for certified copies of the net quantity assurance program records for any questioned lot(s) or to schedule a visit to the plant to review those records for the questioned lot(s). This right to obtain records or inspect records is available whether or not the official represents the State in which the plant is located. If the plant is located in another jurisdiction or State, it is an I-Mark System objective to ultimately be able to rely on (by means of objective weights and measures program evaluation, upgrading, and accreditation) the nearest fully qualified local or State jurisdiction to conduct a plant site check and lot records review when and where deemed necessary.

Overall responsibility for developing and administering the U.S. I-Mark System, including the NQAP minimum requirements and standards would be a joint NCWM-NBS responsibility (similar to the National Type Evaluation Program for devices), with advice and comment encouraged from industry, other Government agencies, and consumer organizations. The auditing of approved industry net quantity assurance programs would be under the technical direction or guidance of NBS with assistance from qualified State and local jurisdictions or, in the case of approved programs supervised by USDA or FDA, of those agencies. The right to use the I-Mark would be terminated if a participating firm abandoned the use of the net quantity assurance program or failed to correct audit findings.

- PRELIMINARY DRAFT -

SUPPORTING DOCUMENTS - I-MARK

PART I - DRAFT DOCUMENTS

PART I - DRAFT DOCUMENTS

Section 1. LICENSE AND INSPECTION AGREEMENT

This agreement is entered into by the National Conference on Weights and Measures (hereinafter called NCWM) and _____ _____ (hereinafter called the Processor) on behalf of and for the benefit of State and local weights and measures officials who are members or eligible for membership in the NCWM.

WHEREAS, the NCWM is an organization of weights and measures enforcement officials of the States, counties, and cities of the United States and the NCWM is interested in promoting uniformity of requirements and methods among State and local jurisdictions and in fostering understanding and cooperation among weights and measures officials and industries, businesses, and consumers; and

WHEREAS, the NCWM is the owner of an inspection mark (hereinafter designated the I-mark) which certifies accuracy in net quantity in packaging food and/or non-food commodities; and

WHEREAS, the Processor is engaged in the production of food and/or non-food commodities for sale in interstate and/or intrastate commerce; and

WHEREAS, the Processor wishes to obtain authority to place the NCWM's I-mark on its packages of food and/or non-food products and in pursuance thereof prepared and submitted to the NCWM a net quantity assurance program (hereinafter designated the NQAP); and

WHEREAS, the NCWM submitted said NQAP to the National Bureau of Standards/Office of Weights and Measures (hereinafter NBS/OWM) for technical review and evaluation; and

WHEREAS, the Processor's NQAP has been approved by NBS/OWM and by NCWM and the terms and requirements of that program are described in detail in Exhibit A; and

WHEREAS, the Processor has implemented the NQAP, or will do so upon execution of this agreement; and

WHEREAS, that portion of the Processor's product that is subject to Federal net contents jurisdiction and Federal law and regulation must bear statements of net content that are accurate but that allow deviations caused by unavoidable deviations in good manufacturing practice and by loss or gain of moisture during the course of distribution despite the use of good distribution practices; and

WHEREAS, testing of interstate commodities by State and local weights and measures enforcement officials at wholesale or retail locations consequently may not be conclusive as to the cause of any deficiency in stated net contents; and

WHEREAS, the parties believe that the I-mark and NQAP procedures will assist State and local weights and measures enforcement officials in verifying that observed deficiencies may be the result of unavoidable deviations in good manufacturing practice or of moisture loss during distribution and thus may not constitute a failure to comply with applicable law; and

WHEREAS, the parties believe that the I-mark program will assure weights and measures enforcement officials in jurisdictions other than the State in which the plant is located, that the products of the Processor have been subject to an in-plant net quantity assurance program that is sufficient under normal circumstances to certify that packages leaving the plant bear correct net content labeling, and the parties intend that State and local weights and measures enforcement officials rely upon said certification;

NOW THEREFORE, in consideration of the mutual promises contained herein, the parties agree as follows:

1. The processor agrees,

a. to implement and operate the net quantity assurance program described in Exhibit A, as it may be amended from time to time by consent of the parties, for the entire term of this agreement;

b. to designate for each of its production plants a person who will respond to inquiries of State and local weights and measures enforcement officials concerning the net quantity assurance program with respect to specific lots of product;

c. to provide at the request of any State or local weights and measures enforcement official, certified copies of the production net quantity assurance records for the specific lot of product being questioned by the State or local weights and measures enforcement official;

d. to make records of specific lots available for inspection by any State or local weights and measures enforcement official during business hours upon reasonable notice of a request to inspect;

e. to make records of the net quantity assurance program available for audit by NBS/OWM, provided that if the Processor's program is monitored by the USDA or the FDA, the audits by these Federal agencies may be deemed sufficient and duplicative audits shall not be conducted without cause.

2. NCWM agrees, for itself and for the benefit of State and local weights and measures enforcement officials,

a. to permit the Processor to apply to the label of each of its packaged products that have been packed under the control of the net quantity assurance program described in Exhibit A, the I-mark symbol delineated in Exhibit B;

b. to forbear the imposition of official sanctions (such as administrative warnings; off-sale orders or injunctions; civil penalties and diversionary agreements; or prosecution) against the Processor's product until such time as the Processor's designated plant-contact person has been notified and has been given reasonable time to produce net quantity assurance records for the lot under question, provided that if such records show beyond a reasonable doubt that full net quantity was packed, no official action shall be taken;

c. to obtain an agreement from NBS/OWM to provide technical and administrative services in reviewing net quantity assurance programs and in keeping records of applications for and audits of such programs.

3. The term of this agreement shall be for _____ years and it may be renewed by the parties for additional periods of _____ years.

4. This agreement may be terminated at any time by agreement of the parties or upon 30 days notice following occurrence of the following events:

a. the Processor terminates the net quantity assurance program and thereafter fails to seek approval for a substitute net quantity assurance program;

b. NBS/OWM and/or USDA or FDA audits indicate that the requirements of the net quantity assurance program are not being met and the Processor has failed or refused to take corrective action;

c. the NCWM terminates its participation in the I-mark program; or

d. State or local weights and measures enforcement officials unreasonably take official action against the Processor's products without first reviewing net quantity assurance records.

5. Upon termination of this agreement, the Processor agrees that it will not apply the I-mark to its product labels, provided that any product that was packed prior to the receipt of notice of termination may be marked with the I-mark. NCWM agrees that on an after receipt of the notice of termination, the Processor shall not be obligated to supply records nor respond to inquiries or visits of State or local weights and measures enforcement officials.

6. This agreement may be amended or modified at any time by mutual agreement of the parties in writing.

WHEREFORE, the parties have executed this license and inspection agreement this _____ day of _____, 19__.

Section 2.

(Instructions on reverse side)

CERTIFICATION MARK APPLICATION, PRINCIPAL REGISTER, WITH DECLARATION (Corporation) (Association)	MARK *(Identify the mark)* I-Mark
	CLASS[1]: ☐ A. GOODS ☐ B. SERVICES

TO THE COMMISSIONER OF PATENTS AND TRADEMARKS:

NAME OF CORPORATION[2] Association
NATIONAL CONFERENCE ON WEIGHTS AND MEASURES

STATE OR COUNTRY OF INCORPORATION
Not applicable, applicant is an association.

BUSINESS ADDRESS OF CORPORATION c/o Office of Weights and Measures, National Bureau of Standards, Gaithersburg, Maryland

The above identified applicant has adopted and is exercising legitimate control over the use of the certification mark shown in the accompanying drawing[3] for the following goods ~~(services)~~[4] foods and non-food packaged products,

and requests that said mark be registered in the United States Patent and Trademark Office on the Principal Register established by the Act of July 5, 1946.

The certification mark, as used by persons authorized by applicant, certifies[5] inspection of food and non-food packages for net content using procedures approved by applicant;

said mark was first used on the goods (services)[4] by a person authorized by applicant on _____ *(date)*;

was first used by a person authorized by applicant on the goods (~~services~~)[4] in interstate & intrastate *(type of commerce)*

commerce[6] on _____ *(date)*; and is now in use in such commerce.

7

The mark is used by applying it to [8] the principal display panel(s) of packaged food and non-food products

and five specimens showing the mark as actually used are presented herewith.

Applicant is not engaged in the production or marketing of any goods or services to which the mark is applied.

9

_____ *(name of officer of corporation)*,

being hereby warned that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any registration resulting therefrom, declares that he/she is

Chairman *(official title)*

of applicant corporation and is authorized to execute this instrument on behalf of said corporation; he/she believes said corporation to be the owner of the certification mark sought to be registered; to the best of his/her knowledge and belief no other person, firm, corporation, or association has the right to use said mark in commerce, either in the identical form or in such near resemblance thereto as may be likely, when applied to the goods (services)[4] of such other person, to cause confusion, or to cause mistake, or to deceive; the facts set forth in this application are true; and all statements made of his/her own knowledge are true and all statements made on information and belief are believed to be true.

NATIONAL CONFERENCE ON WEIGHTS AND MEASURES *(name of corporation)*

By _____ Chairman *(signature of officer of corporation, and official title of officer)*

_____ *(date)*

PTO Form 4.9a (Certification Mark) (Corporation) Patent and Trademark Office - U.S. DEPT. of COMMERCE

Section 3.

SAMPLE MARK SKETCH

Section 4. DRAFT RESOLUTION

(date)

NATIONAL CONFERENCE ON WEIGHTS AND MEASURES

WHEREAS, the NCWM has adopted a voluntary program for assuring correct net content through means of an I-mark label symbol which may be applied by participating processing or packaging firms to their food and non-food packages that have been packed under a net quantity assurance program approved by the NCWM, and

WHEREAS, this program is designed to assure weights and measures enforcement officials in jurisdictions other than the State in which the plant is located, that the products of the participating firm have been subject to an in-plant net quantity assurance program that is sufficient under normal circumstances to certify that packages leaving the plant bear correct net content labeling, and this program intends that State and local weights and measures enforcement officials rely upon said certification, and

WHEREAS, the program will also ease burdens on participating firms by making net content enforcement decisions more uniform and predictable, and

WHEREAS, NBS is mandated by Federal law to promote uniformity in weights and measures laws and methods of inspection and to assist members of NCWM on technical matters related to weights and measures, and

WHEREAS, by virtue of these responsibilities and through the development of procedures and handbooks for use by State and local weights and measures enforcement officials, the NBS has developed technical expertise in evaluating quantity assurance programs, including sampling and other statistical matters,

NOW THEREFORE, the National Conference on Weights and Measures hereby resolves to ask the assistance of NBS in the promotion and acceptance of the I-mark program in the following ways:

1. to accept from NCWM copies of applications for approval of net quantity assurance programs submitted by individual firms or, preferably, by industry trade associations on behalf of similarly situated firms;

2. to review all elements of the application and program, including but not limited to —

type of product;
type of packaging machinery;
technical literature on packaging machinery;
speed of line;
rate of sampling;

identification of parties responsible for operation of the quantity assurance program (such as technicians, production employees, or others and the chain of command);
definition of sample, lot, and tare;
limits for individual packages, subgroups of packages, and ranges of deviations;
target weights, volumes, or other fills;
procedures for adjusting limits, if any;
rules on rounding;
description of codes on packages;
requirements for record keeping, filing, and reporting, including length of retention or records;
procedures for checking weighing and measuring devices and packaging equipment to assure accuracy;
methods for assuring that records are accurate.

3. if an application seeks approval for a net quantity assurance plan that has already been approved by the USDA or the FDA, to conduct a review and prepare specific comments which the applicant may use to conduct discussions with FDA or USDA as the case may be, to the end that no firm will be required to meet conflicting requirements under Federal programs and the I-mark program,

4. upon completion of its initial review, to issue to NCWM either a recommendation of approval or a recommendation for clarification or changes in the program in sufficient detail to allow an applicant to present an acceptable substitute and to cooperate with applicants and with NCWM in the review and approval process,

5. to provide NCWM each year with a report of the number of applications, the number of participating firms, and other details of the I-mark program and to provide a reasonable amount of administrative and clerical support for the I-mark program and to keep records of applications and actions taken on those applications,

6. to take all steps necessary to assure that the operation of the I-mark program and the net quantity assurance programs approved thereunder comply with Federal law and regulations.

BE IT FURTHER RESOLVED that the NCWM, in order to make the I-mark program operate smoothly and efficiently, promptly submit all applications to the NBS for review, conduct a prompt review of its recommendations, assist in the development of policy guidelines for the program, encourage firms to make joint applications through industry trade associations, and encourage State and local weights and measures enforcement officials to recognize and adopt the principles of the I-mark program.

Section 5. LISTING OF MAJOR ACTIONS REQUIRED TO INITIATE THE PROPOSED I-MARK SYSTEM

Action	Description
1.	Revise NCWM organization and procedures to provide for participation in the I-Mark Program, including designation of a program committee or Board (Executive or a new standing committee) to administer and supervise the program and explicit authorization for the President of NCWM or some other appropriate official to execute the License and Inspection Agreements.
2.	Develop minimum requirements for and standards to be met by Net Quantity Assurance Programs (NQAP) that firms participating under the I-Mark System would be subject to, including coordination of requirements with the FDA and USDA where applicable.
3.	Contract for the design of an I-Mark symbol that is not already registered with the U.S. Patent and Trademark Office and adoption of the design by NCWM.
4.	Obtain commitment from NBS to participate in substantially all of the areas identified as requiring NBS assistance in Section 4 (NCWM Resolution).
5.	Select prototype industry or firm(s) that have developed a satisfactory NQAP to begin the program on a trial basis.
6.	After the first use of the I-Mark in commerce, file the certification mark application with the U.S. Patent and Trademark Office.

PART II - LEGAL BASIS/BACKGROUND

Section 6. FEDERAL STATUTES AND REGULATIONS

Federal jurisdiction over interstate commerce arises from Article I, Section 8 of the U.S. Constitution, which grants to Congress the power "... to regulate Commerce with foreign Nations, and among the several States..." Pursuant to this authority, Congress has, over the years, adopted laws providing for the labeling, marking, and inspection of goods moving in commerce. Historically, the regulation of foods and drugs preceded the regulation of cosmetics, toys, pesticides, and other consumer products.

Congress has divided regulatory responsibility among a number of Federal agencies. However, responsibility over various food products is currently lodged in only two agencies, the Food and Drug Administration (FDA) and the Department of Agriculture (USDA).

The basic laws granting regulatory authority to the the FDA are:

(1) The Federal Food, Drug, and Cosmetic Act which is codified at 21 U.S.C. Sec. 301 - 392.

Section 343 of that act specifies that food is misbranded unless its package bears a label containing an accurate statement of the quantity of contents.

Section 374 confers authority on FDA to make inspections, enter establishments, and take samples for the enforcement of the law.

(2) The Fair Packaging and Labeling Act which is codified at 15 U.S.C. Sec. 1451 - 1461.

Section 1453 requires that packaged "consumer commodities" be labeled with a separate statement of net quantity of contents.

Section 1459 defines a consumer commodity as any "food" ... except "any meat or meat product, poultry or poultry product ..."

The basic laws administered by the USDA are:[1]/*

(1) The Wholesome Meat Act codified at 21 U.S.C. Sec. 601 - 695.

Section 610 prohibits the distribution of misbranded products and Section 601(n)(5) requires a label showing "... an accurate statement of the quantity of the contents ..." in order for a package to be properly labeled.

*Footnotes appear at the end of the draft.

Under sections 603, 604, and 606, USDA inspectors are required to inspect animals before slaughter and the carcasses after slaughter, and all meat food products, and are granted access at all times whether or not the establishment is operating.

Section 601(j) defines a meat food product as a product made from cattle, sheep, swine, goats, horses, mules, or other equines.

(2) The Poultry Products Inspection Act codified at 21 U.S.C. Sec. 401 - 470.

Section 458(a)(2) prohibits the distribution of any misbranded poultry products.

As in the Wholesome Meat Act, a package of poultry must bear a label showing "... an accurate statement of the quantity of the product ..." 21 U.S.C. Sec. 453(h)(5).

Section 455 authorizes the ante mortem and post mortem examination of poultry and poultry products.

Both USDA and FDA have adopted regulations under these statutes. USDA's packaging and labeling regulations for both meat and poultry are found at 9 CFR, Part 317. Section 317.2 outlines the required features of labels, including the requirement for a principal display panel(s), specifying type sizes, specifying descriptive information that must appear, and allowing for variations from stated net weight caused by "... loss or gain of moisture during the course of good distribution practices or by unavoidable deviations in good manufacturing practice ..." 317.2(h)(2)). In addition, USDA retains preapproval authority over product labels by virtue of 317.4.

FDA's packaging and labeling regulations under both the FDCA and the FPLA are found at 21 CFR, Part 101. Subpart A contains general labeling provisions; subpart B covers specific food labeling requirements; and subpart F describes exemptions from food labeling requirements. Section 101.105 deals specifically with net weight requirements and contains authority to allow variations from stated net weight caused by "... loss or gain of moisture during the course of good distribution practice or by unavoidable deviations in good manufacturing practice ..." 101.105(q).

Section 7. FEDERAL PREEMPTION

Article VI of the U.S. Constitution contains what is popularly known as the supremacy clause, giving precedence to the laws passed by Congress. The clause reads as follows:

> This Constitution, and the laws of the United States which shall be made in Pursuance thereof; and all Treaties made, or which shall be made, under the Authority of the United States, shall be the supreme Law of the Land; and the judges in every State shall be

bound thereby, and any Thing in the Constitution or Laws of any State to the Contrary notwithstanding.

Over the years, the Courts in interpreting and applying this clause have evolved a legal doctrine known as preemption, which lays down some rules for deciding in any particular fact situation, whether Federal or State law controls or whether there is room for regulation by both.

The first rule is that if Congress unmistakably ordained that Federal law will control, then the courts will not enforce a contrary State law. The Supreme Court in Rath vs Jones found such an unmistakable indication in the Wholesome Meat Act which in Section 678 prohibits the imposition of "marking, labeling, packaging, or ingredient requirements in addition to, or different than, those made under" the Act. The Court said,

> California's use of a statistical sampling process to determine the average net weight of a lot implicitly allows for variations from stated weight caused by unavoidable deviations in the manufacturing process. But California makes no allowance for loss of weight resulting from moisture loss during the course of good distribution practice. Thus the State law's requirement — that the label accurately state the net weight, with implicit allowance only for reasonable manufacturing variations -- is "different than" the Federal requirement, which permits manufacturing deviations and variations caused by moisture loss during good distribution practice.

A second rule is that Congress may make an unmistakable indication by implication — where the subject matter requires a uniform national regulatory treatment or where only national supervision is adequate.

A third rule is that even without explicit preemptory language in the Federal law, State law may be precluded if (1) compliance with both sets of regulations is impossible, (2) the sets of regulations inevitably collide or conflict, or (3) the State law stands as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress. It was this last problem that led the Supreme Court to preempt California's net weight regulations as applied to flour regulated under the Food, Drug & Cosmetic Act and the Fair Packaging and Labeling Act. The Supreme Court, thus, did not rely on any statutory language in either the FDCA or the FPLA, but instead imposed a "common law" preemption.

The Court said,

> As Congress clearly stated, a major purpose of the FPLA is to facilitate value comparisons among similar products. Obviously, this goal cannot be accomplished unless packages that bear the same indicated weight in fact contain the same quantity of the product for which the consumer is paying ... Packages that meet the Federal labeling requirements and that have the same stated quantity of contents can be expected to contain the same amount of flour solids ... Despite any changes in weight resulting from

changes in moisture content during distribution, the packages will contain the same amount of flour solids when they reach the consumer. This identity of contents facilitates consumer value comparisons.

The State's refusal to permit reasonable weight variations resulting from loss of moisture during distribution produces a different effect ... Thus as a result of the application of the California standard, consumers throughout the country who attempted to compare the value of identically labeled packages of flour would not be comparing packages which contained identical amounts of flour solids. Value comparisons which did not account for this difference — and there would be no way for the consumer to make the necessary calculations — would be misleading ... Under the Constitution, that result is impermissible, and the State law must yield to the Federal.

Finally, the outcome in the application of these rules depends greatly on the particular facts involved in any conflict. Therefore, in some instances,in which there seems to be an irreconcilable conflict between the two sets of regulations, the Court has held that both can coexist and in other instances, where the conflict seems less immediate, the Court has required Federal preemption. An instance of the former situation was presented by the case of Florida Lime and Avocado Growers, Inc. vs Paul where California's test for the maturity of avocados was allowed to stand even though it was completely different from USDA's test, because California was attempting to regulate the final sale while USDA was attempting to facilitate grower cooperation. The Rath vs Jones case is an example of the latter situation since, theoretically, a packer could comply with both California's minimum weight requirements and the Federal requirement of accuracy because the court concluded that Federal agents were not interested in putting a stop to overweight packages.

Section 8. EXTRATERRITORIAL JURISDICTION

The governments of the States are sovereign within their territorial limits, except for prohibitions in the Constitution or if their actions conflict with powers delegated to the national Government or with Congressional laws.[2]/ States, thus have exclusive jurisdiction over persons or property within those limits, but their jurisdiction does not ordinarly extend beyond the borders.[3]/ Therefore, a weights and measures official in one State cannot inspect a plant in another State or demand records of plant operations carried on in another State.[4]/

However, over the years the States have evolved a variety of agreements and practices for dealing with interstate issues. Some of these arrangements are subject to Congressional approval; others don't require consent because they don't impede national sovereignty.[5]/

In any event, the proposed I-mark system, based on contracts between participating firms and the NCWM, reaches the same result without the need for elaborate, time consuming implementation. Under the I-mark system, the State or local enforcement official, as a third party beneficiary to the I-mark contract, could call and arrange to make a

direct on-site inspection of an out-of-State plant or a direct inspection of production records for any lot of product that has come to his attention as a problem.

Section 9. REGISTRATION OF CERTIFICATION MARK

The label symbol for the I-mark program constitutes a type of property interest, the ownership of which is recognized under the United States trademark laws upon completion of appropriate registration.[6]/ The symbol and its proposed use are classified as a "certification mark." This means it is a mark used in connection with the products of one or more persons other than the owner of the mark to certify quality or accuracy of such goods. The Conference will be the owner of the mark; the participating manufacturers will be the users of the mark.

The registration process is initiated by filing an application with the Patent and Trademark Office. A partially completed application form is attached. The application must also include a drawing of the mark, five specimens or facsimiles, and a nominal filing fee.[7]/

As to the mark itself, it must be coined, arbitrary, fanciful, or suggestive, characteristics which earn it the designation of "technical," but not something that (1) falsely suggests a connection with persons, institutions, beliefs, or national symbols; (2) consists of or simulates the flag, or other insignia of the United States, any State, or municipality; (3) consists of a name, portrait, or signature of a living person or a deceased President of the United States without permission; or (4) resembles a mark already registered so that its use would cause confusion, mistake, or deception.

The last requirement has the greatest impact on the actual physical appearance of the label symbol. We have made a preliminary search of the registrations and the suggested embodiment of the I-mark appears to be available at this time. When the specific design of the mark is prepared, an exhaustive search of the registrations should be made to assure that registration will ultimately be granted. In addition, certain marks that are descriptive of the goods, descriptive of their origin, or merely a surname will delay registration for a five-year period.[8]/ Therefore, in choosing the I-mark design, these characteristics should be avoided.

The time for filing the application is not critical. In fact, in order to obtain the right to file, the mark must already have been used in commerce.[9]/ Both the date of first authorization for use and examples of the actual application of the mark to the label must be provided with the application.

Section 10. SPECIFIC LABEL RULES

The physical appearance of package labels under FDA is covered by 21 CFR Sec. 101.1 - 101.6, 101.15, and 101.105. Section 101.1 provides for a "principal display panel" and 101.2, which provides for an "information panel," specifies type sizes and prominance. Among the variety of

mandatory information that must be placed on the principal display panel and the information panel (where applicable) are (1) a statement of identity of the contents (21 CFR 101.3); (2) a list of ingredients (21 CFR 101.4); and (3) the name and place of business of the manufacturer, packer, or distributor (21 CFR 101.5); and the net quantity of contents (21 CFR 101.105).
The addition of other information, statements, marks, or designs to the principal display panel is not prohibited except where it might detract, because of overcrowding or insufficient space, from the prominence required by the law for mandatory items. Furthermore, supplemental statements of net weight may be placed on the package at locations other than the principal display panel, so long as they do not exaggerate the amount of food contained in the package.

USDA's label specifications are outlined in 9 CFR Sec. 317.2. Mandatory information for the principal display panel includes (1) the name of the product and (2) if fabricated from more than one ingredient, the list of ingredients, (3) the name and place of business of the manufacturer, packer, or distributor, (4) an accurate statement of the net quantity of contents, (5) the official inspection legend and official establishment number, and (6) information on standards of identity, if required. Section 317.2(h)(8) prohibits use of any term qualifying a unit of weight and Section 317.8 prohibits "false" indications of quality.

Under the regulatory systems then, the I-mark would be eligible for placement on the package, and more specifically, on the principal display panel. The only possible limitation would be related to package size and thus to the potential size of the principal display panel.

Section 11. LEGAL ASPECTS OF LICENSING CONTRACTS

The I-mark program has elements of ordinary contract law, but because of its sponsorship, it also has elements of a public franchise -- a special privilege to be used for the accomplishment of a public benefit. For example, it is binding mutually upon the parties and is enforceable according to its terms.[10]/ The I-mark would be a nonexclusive license or franchise because NCWM contemplates issuing similar rights to any participating firm that adopts an approved net quantity assurance program.[11]/ Furthermore, NCWM would reserve authority to review and audit the operation of the net quantity assurance programs.[12]/ However, the I-mark would not be like a franchise, because its use would not be perpetual and it may be abandoned by a participating firm without special penalty.[13]/

As with contracts or franchises, the misuse of the I-mark or failure to operate the net weight quantity assurance program in accordance with its terms of approval, will result in a forfeiture of the right to use the I-mark. This forfeiture may be enforced in a court of law.[14]/ On the other hand, the I-mark contract itself makes clear that the right will not be forfeited for merely technical violations that are corrected by the participating firm. Termination will occur if the violations are persistent and substantial.[15]/

Finally, also like a franchise, the right to use the I-mark cannot be transferred to others without approval of NCWM because the right is based upon operation of a net quantity assurance program that is specific to the original participating firm's plant.[16]/

Section 12. THIRD PARTY BENEFICIARY LAW

Under traditional contract law, only persons who are parties to contracts may obtain their benefits or sue to enforce their terms. However, an exception to this rule has evolved in the law, known as the doctrine of third party beneficiaries.[17]/ A third party beneficiary is given the right to sue to enforce a contract between other parties and may obtain all the benefits of a contract between other parties.

Third party beneficiaries are generally divided into three classes; (1) donee beneficiaries, (2) creditor beneficiaries, and (3) consequential beneficiaries.[18]/ These types of beneficiaries have different types of rights. The great weight of authority recognizes a direct enforceable right, both at law and in equity, arising from a contract promising performance for either of the first two types of beneficiaries -- the donee beneficiary and the creditor beneficiary.[19]/

The rule, as it has been stated by the Federal courts, is as follows:

> It is a general rule in contract law that a third party may enforce a promise as having been made for his benefit, if it appears from the face of the promise or in the light of the contracting situation that he was intended in fact to be a donee beneficiary of the promisee or - when the situation is one in which no intention to make a gift appears - if the promise has the effect as a matter of law, from the nature of the obligation, of according recognition to him, whether directly or by sound implication, as a creditor beneficiary of the promise, so that in either situation he stands in the position of necessarily being more than a mere incidental beneficiary as to the promisor's performance.[20]/

The State weights and measures enforcement officials are the third party beneficiaries of the contract between the NCWM and participating firms. They will not be formal signatories to those contracts. Since they are not creditors of either the NCWM or the participating firms, they would be classified as donee beneficiaries; that is, they are obtaining rights in the nature of a gift from the contracting parties.

The I-mark license and inspection contract reflects the intention of the parties, both the NCWM and the participating firms, to benefit State and local weights and measures officials by granting them the right to inspect plants and specified records, although located in other States. Since the determining factor is the intention of the contracting parties,[21]/ the contract language will assure that the agreement is made for the benefit of those officials.[22]/

Section 13. POTENTIAL REMEDIES

Ordinarily, in contract law and the law of franchises and licenses there are judicial remedies short of contract termination that can be used to assure correct and full performance of obligations.[23]/ However, since the sponsor of the I-mark is a voluntary association of weights and measures enforcement officials, the necessity of going to court for each violation would be too burdensome. Therefore, the I-mark contract with participating firms provides for notice of violations, a period for bringing the plan into compliance, and failing this, for termination of the right to use the I-mark.

The question then arises as to what remedies might be available in the event that termination of the I-mark contract does not result in cessation of the use of the I-mark on the label. This is probably a very remote event since the program is entirely voluntary. In such an event, the judicial remedy of injunction would be available. An injunction is a court order directing the person named to refrain from doing certain specified acts[24]/ and it is granted in situations where there is a continuing violation and compensation by way of a damage award is not feasible or possible.[25]/

While the law allows collection of prospective damages where a contract breach is total[26]/ and continued use of the I-mark would mislead the consuming public, the calculation and proof of such damages would be exceedingly difficult. The injunction would be the primary avenue of direct relief.

The most rapid remedy, however, will probably lie with USDA and FDA which have the authority to retain or seize goods that are misbranded.[27]/ The unauthorized use of the I-mark would constitute a misrepresentation of quality and thus a misleading or false indication. Misleading information on package labels is prohibited by Federal law.

In addition, NCWM could ask NBS to compile a list of manufacturers who are ineligible for use of the I-mark. If a State or local enforcement official observed unauthorized use, he would be alerted that full compliance testing is warranted.

Section 14. STATUTORY AUTHORITY OF FEDERAL AGENCIES

Implementation of the I-mark program will not require additional legislation at the Federal level.

USDA and FDA already have authorization to inspect products under their jurisdiction as indicated in the section of this report entitled Federal Statutes and Regulations. The only statutory restriction on inspections is that they be conducted " ... in a reasonable manner ..."[28]/ Moreover, each of them is authorized to conduct cooperative programs with State and local officials[29]/ and in the case of FDA, local officials may be asked to conduct Federal inspections on behalf of the agency.[30]/

In addition, the kinds of issues likely to arise in connection with the I-mark program will involve the details of net quantity assurance plans. The currently approved Federal plans (largely in USDA) are not official regulations; they are not published in the Federal Register and, for the most part, are not of general application. Therefore, modifications in these plans, if they become necessary at all, can be accomplished by informal negotiations and without lengthy formalities.

The other essential Federal participant is the National Bureau of Standards, which will provide review and audit services for the I-mark program. The enabling legislation for the NBS is found in 15 USC Sec. 271 - 284. Section 272 (5) requires cooperation with the States in securing uniformity in weights and measures and methods of inspection and Section 273 authorizes the exercise of this function on behalf of "any State" or "any ... firm engaged in manufacturing ... requiring the use of standards or standard measuring equipment..."[31]/ Furthermore, NBS's regulations authorize "... cooperation with other governmental agencies and with private organizations in the establishment of standard practices, incorporated in codes and specifications ..." and "... advisory service to government agencies on scientific and technical problems..."[32]/

Section 15. CONCLUSIONS

As noted in the 1983 Task Force Discussion Paper, the initial effort will involve food commodities regulated under the Fair Packaging and Labeling Act, the Food, Drug, and Cosmetic Act, the Wholesome Meat Act, and the Poultry Products Inspection Act since the procedures and practices already in place under the regulatory schemes can be readily adapted to use under the U.S. I-mark program. The quantity assurance programs for other commodities will probably require an additional developmental period.

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[1]/USDA also possesses inspection authority for eggs and egg products under the Egg Products Inspection Act, 21 U.S.C. Sec. 1031 - 1056; for seeds under the Federal Seed Act, 7 U.S.C. Sec. 1551 - 1611; and for fresh fruits and vegetables under the Perishable Agricultural Commodities Act, 7 U.S.C. Sec. 499a - 499s.

[2]/Parker vs Brown, 317 US 341, 87 L Ed 315, 63 SCt 307.

[3]/This principle involves a State acting in its sovereign capacity. In a proprietary capacity a State may enter into virtually any activity beyond its borders.

[4]/The issue is not what he may be able to get by asking and seeking voluntary compliance, but whether ultimately he has authority to compel compliance. Many industries, especially those with large interstate distribution of product, will comply readily with requests by officials from a State in which product is distributed and sold.

[5]/The factor that determines whether Congressional consent is necessary relates to whether the result of the agreement has the potential for an adverse impact on national sovereignty. In an 1893 case the issue was stated as whether the combination "tends to the increase of political power in the States which may encroach upon or interfere with the just supremacy of the United States," Virginia vs Tennessee, 13 SCt 728, 148

US 503, 37 LEd 537 (1893). If the I-mark were to be organized in terms of an interstate compact that would grant inspection authority to agents and employees of other States, it would probably require Congressional consent since it would tend to create an enforcement force not dependent on the laws of any one State and yet not subject to Federal supervision.

[6]/The Trademark Act of 1946 provides for two types of registrations -- on the Principal Register and on the Supplemental Register. The Supplemental Register contains a more diverse collection of trademarks than the Principal Register, but the legal consequences of registration on the Principal Register are more beneficial. Registration on the Principal Register carries with it the right to sue in U.S. courts to prevent infringement and also to prevent the importation of goods bearing an infringing mark. It also constitutes constructive notice of ownership and prima facie evidence of the validity of the registration, registrant's ownership of the mark, and registrant's exclusive right to use the mark in commerce. Registration on the Supplemental Register grants only the right to sue in U.S. courts.

[7]/Certification marks consist of only two classes -- goods or services. A $35 filing fee for each class is required at the time of application. In this instance only a single fee is necessary.

[8]/Such descriptive names ordinarily are refused registration on the Principal Register because they do not constitute "technical marks;" however, the law does allow their registration if the applicant can show that they have become "distinctive" of the goods in commerce. The Patent and Trademark Office will accept as prima facie evidence of "distinction," the substantially exclusive and continuous use of the mark for the preceding five years.

[9]/"Commerce" is defined as commerce which may be regulated by Congress, i.e., interstate or foreign commerce.

[10]/Grand Trunk Western R. Co. vs South Bend, 277 US 544, 57 L Ed 633, 33 SCt 303.

[11]/Frost vs Corporation Commission, 278 US 515, 73 L Ed 483, 49 SCt 235.

[12]/Atlantic & G. R. Co. vs Georgia, 98 US 359, 25 L Ed 185.

[13]/Ohio Public Service Co. vs State, 274 US 12, 71 L Ed 898, 47 SCt 480; Day vs Tacoma R. & Power Co. 80 Wash 161, 141 P 347.

[14]/Los Angeles R. Co. vs Los Angeles, 152 Cal 242, 92 P 490.

[15]/New York Electric Lines Co. vs Empire City Subway Co., 235 US 179, 59 L Ed 184, 35 SCt 72.

[16]/Branch vs Jesup, 106 US 468, 27 L Ed 279, 1 SCt 495.

[17]/2 Williston, Contracts, 3d. ed. Sec. 347.

[18]/Id.

[19]/Id. at Sec. 356.

[20]/Johnson Farm Equipment Co. vs Cook, 230 F.2d 119 (CA8).

[21]/2 Williston, Contracts, 3d. ed. Sec. 356A.

[22]/17 Am Jur 2d Contracts Sec. 304. It should be noted that a third party beneficiary's rights are dependent upon, and limited by, the validity and terms of the contract. In other words, not only must the formal requirements for a valid contract (including consideration) be met by the contracting parties, but the beneficiary's rights are also subject to the proper performance of all conditions affecting the promise of which he is the beneficiary. 2 Williston, Contracts, 3d. ed., Sec. 364A.

[23]/In contract law, the courts under appropriate circumstances will order "specific performance" of contract obligations. In franchise situations, the courts may entertain an information in the nature of quo warranto or mandamus. In addition, private parties may be able to obtain an injunction to prevent injuries from the misuse of a franchise. Madison vs Madison Gas & Electric Co., 129 Wis 249 108 NW 65.

[24]/Schubach vs McDonald, 179 Mo 163, 78 SW 1020, cert dismd, 196 US 644, 49 L Ed 632, 25 SCt 797.

[25]/Matthews vs Rodgers, 284 US 521, 76 L Ed 447, 52 SCt 217; Bartles Northern Oil Co. vs Jackman, 29 ND 236, 150 NW 576.

[26]/Washington A & G Steam Packet Co. vs Sickles (US) 10 How 419, 13 L Ed 479.

[27]/21 USC Sec. 372 and 21 USC Sec. 455, 457, 467a, 467b, 672 and 673.

[28]/21 USC Sec. 374 (a)(1)(B).

[29]/21 USC Sec. 372 as to FDA; 21 USC Sec. 451, 554, 602 and 661 as to USDA.

[30]/21 USC Sec. 372.

[31]/15 USC Sec. 273.

[32]/15 CFR Sec. 200.100 (4) and (5).

APPENDIX D
SUMMARY SURVEY RESULTS

Responding States

Arizona	Louisiana	Oklahoma
Arkansas	Maryland	Oregon
California	Massachusetts	Pennsylvania
Colorado	Michigan	South Carolina
District of Columbia	Missouri	South Dakota
Florida	Montana	Texas
Georgia	Nebraska	Vermont
Hawaii	Nevada	Virginia
Idaho	New Mexico	West Virginia
Indiana	New York	Wisconsin
Kansas	North Carolina	District of Columbia
Kentucky	Ohio	

Other Jurisdictional Respondents

Los Angeles County, Seattle, Chicago, and Jim Bird (NJ Ret.)

The final compilation is shown below.

GENERAL REMARKS

1.(a) What is your overall opinion of Handbook 133?

POSITIVE	NEGATIVE	NO COMMENT
18	3	17

(b) What is it you like or dislike about Handbook 133?

LIKE

concreteness, explicitness	5
good for in-plant inspection	2

NO COMMENT

5

DISLIKE

complexity	16
time consuming	5
not good for retail package testing	4
lack of concise wording	1
format of handbook	2
need for examples of instore weighing	1
a change in the standard (from average of sample having to meet the label)	1
the amount of training (and space) needed for inspection	2
confusion on which plan to use	1
positive deviations not controlled by the marketplace	1
need more information on moisture loss	1

2. Are the procedures easy or difficult to follow for:

(a) determining sample sizes and drawing samples?

EASY	DIFFICULT	TOO TIME CONSUMING	NOT PRACTICAL
10	8	3	1

EASY TO FOLLOW INSTRUCTIONS BUT HARD TO ACTUALLY SELECT THE SAMPLE	NO COMMENT	COMPLEX BUT HELPED WITH TRAINING
5	6	1

NEITHER EASY NOR DIFFICULT
1

(b) measuring tare and net contents?

EASY	DIFFICULT	TOO TIME CONSUMING	NEITHER EASY NOR DIFFICULT
14	8	1	2

INCLUDE WOLSKI'S DISPLACEMENT METHOD FOR VOLUME	NO COMMENT	COMPLEX ALLEVIATED WITH TRAINING
1	8	1

(c) determining net content compliance?

EASY	DIFFICULT	TOO TIME CONSUMING	EAST TO FOLLOW INSTRUCTIONS BUT TOO CUMBERSOME FOR PRACTICALITY
15	5 (1 when following Cat. A plans)	2	1

NO COMMENT	COMPLEX, ALLEVIATED WITH TRAINING
6	1

3. Do you like having two categories of sampling plans (A&B) or would you prefer to have only one? If one, which one?

PREFER A	PREFER B	LIKE HAVING BOTH
4	8	16

WANT ONLY ONE (no indication of which one)	NO COMMENT
2	5

4. Are the Maximum Allowable Variations (MAV) adequate, too large, or too small?

ADEQUATE	TOO LARGE	TOO SMALL	NO COMMENT	CUMBERSOME
15	7	2	6	1

Other:

- too large between one- and 10-lb labeled weight
- too small for small package sizes
- should be listed as a percent of the label
- sometimes too large, sometimes too small, sometimes adequate. This whole area should be deliberated by the NCWM Committee on Laws and Regulations for specific commodities
- adequate to too large (2 respondents)
- should be two percent MAV for packages greater than 50 lb
- harmonize MAV's with USDA Meat and Poultry Inspection's Manual
- some too small; some too large
- adequate if procedures do not challenge it
- too large judging from random weight experience under 3 lb

5. (a) Has the issue of moisture loss allowances been handled adequately? If not what do you recommend be done?

YES	NO	NO COMMENT
12	14	12

Recommendations:

- Establish tables for moisture loss (6)
- Change to correct weight at time of sale (2)
- Use different language
- Give more guidance on specific products
- Standardize tare
- If we are not challenged in court, it is ok

(b) Is wet tare part of the moisture loss issue?

YES	NO	NO COMMENT
18	12	8

Comments:

- Use the term "actual" tare rather than wet tare
- Recommend dry tare (3)
- I support wet tare since it is more in line with how a consumer would receive product

6. What changes to the handbook would you suggest before adopting Handbook 133 for your jurisdiction or recommending it for Conference endorsement?

OK AS IS	NO COMMENT (at this time)
9	10

Suggestions:

- go to a single sampling plan (A-2; B-1; between A&B-1)
- simplify (8)
- format the handbook differently (4)
- update Handbook 67 (2)

- eliminate decision charts
- give more explanations
- remove audit language from Category B and reduce MAV's to approximate Handbook 67
- have legally adopted Handbook 133 in a fit of desperation; procedures are still those of Handbook 67
- find out what bothers some jurisdictions and resolve them
- provide MAV's for overpack, moisture loss information, and one set of sample plans
- make manual practical for field use

7. Does the field manual version of the handbook facilitate field usage?

YES	NO	NO COMMENT
19	5	7

YES, WITH RESERVATIONS

7 ("better than the handbook"; "step in right direction"; "still too large"; more simplification still needed.)

8. Would you be interested in having a training program on Handbook 133 presented to your inspectors?

YES	NO	NOT AT THIS TIME
19	5	4

POSSIBLY	YES (want more after having had one)
1	5

ALREADY RECEIVED	NOT APPLICABLE
2	1

The results of this survey along with the comments received by the NBS and summarized on July 1, 1983, are being considered in preparing the second edition of Handbook 133.

REPORT OF THE NOMINATING COMMITTEE

Charles H. Greene, Chairman
Director of General Services
New Mexico Department of Agriculture

REFERENCE KEY

800

The Nominating Committee met during the interim meetings at Gaithersburg in January and selected the listed persons to be nominated for officers of the Conference. In the selection of nominees from the active membership, consideration was given to professional experience, qualification of individuals, attendance, Conference participation, regional representation, and other factors considered to be important.

Each of the persons named has been contacted and has agreed to serve if elected.

CHAIRMAN-ELECT	George E. Mattimoe, Hawaii
VICE-CHAIRMEN	James H. Akey, Kansas Sidney A. Colbrook, Illinois Steven A. Malone, Nebraska Edison J. Stephens, Utah
EXECUTIVE COMMITTEE (3-year terms)	Charles E. Forester, Texas Frank Nagele, Michigan
TREASURER	Allan M. Nelson, Connecticut
CHAPLAIN	Francis W. Daniels, Wayne County, IN

Respectfully submitted:

Charles H. Greene, New Mexico, Chairman
Sydney D. Andrews, Florida
Edward C. Heffron, Michigan
James F. Lyles, Virginia
John L. O'Neill, Kansas
Kendrick J. Simila, Oregon
Richard L. Thompson, Maryland

NOMINATING COMMITTEE

(On motion of the Committee Chairman the report of the Resolutions Committee, voting key item 800, was adopted in its entirety by the Conference.)

REPORT OF THE RESOLUTIONS COMMITTEE

Thomas W. Kelly, Superintendent
Office of Weights and Measures
State of New Jersey

REFERENCE KEY

701 GENERAL

The Resolutions Committee whishes to express the appreciation of the members of the National Conference on Weights and Measures to those who contributed their time and talents toward the arrangements for, the conduct of, and the success of this 69th Annual Meeting. Special votes of thanks go:

(1) To Ms. Paula Gold, Secretary of Consumer Affairs and Business Regulations, State of Massachussets for her warm welcome and description of regulation of commerce in Massachusetts.

(2) To Dr. Ernest Ambler, Director of the National Bureau of Standards, for his description of relevant research programs of the National Bureau of Standards.

(3) To Dr. Stanley I. Warshaw, Director, Office of Product Standards Policy, National Bureau of Standards, for his remarks concerning Conference study of use of data processing and computers, and his recommendations regarding future planning.

(4) To Mr. John A. Goodman, President, Technical Assistance Research Programs, Inc., for his informative talk on complaint handling and his recommendations for Conference action.

(5) To Mr. Ross Andersen, Metrologist, State of New York for his talk on the perceptions and reality of the role of State metrology laboratories.

(6) To officiers and appointed officials of the National Conference on Weights and Measures for their assistance and service toward progress on National issues.

(7) To committee members for their efforts throughout the past year preparing and presenting their reports; to the sub-committees of the Executive Committee for their discerning and appropriate recommendations of reorganization.

(8) To governing officials of State and local jurisdictions for their advice, interest, and support in weights and measures administration in the United States; to Charles Carroll and his staff for their assistance throughout the year and at this meeting.

(9) To representatives of business and industry for their cooperation and assistance in committee and Conference work; to the Associate Membership organization for its hosting functions.

(10) To the staff of Westin Hotel for their assistance and courtesies, which contributed to the enjoyment and comfort of the delegates in their fine facilities.

(11) To the National Bureau of Standards and the Office of Weights and Measures for their outstanding assistance in planning and conducting the work and program of the National Conference on Weights and Measures.

(12) To the Office of Weights and Measures staff:
Ann Heffernan
Karen Barkley
Nancy Chapwick
Dawn Alger

for expert and hospitable operation of the administrative opperations of the Meeting.

(13) To the Massachusetts Division of Standards staff:
Mary DeYoung
Theresa Albano
Susan Mahoney

for ever-present support and hard work for the Conference and its delegates.

T. Kelly, New Jersey, Chairman
S. Abercrombie, Georgia
S. Malone, Nebraska
C. Pittman, Tennessee
E. Stevens, Utah
C. Tandy, Jr., Alaska
F. Thomas, Pennsylvania
R. Smith, Technical Advisor, NBS

RESOLUTIONS COMMITTEE

(On motion of the Committee Chairman the report of the Resolutions Committee, voting key item 701, was adopted in its entirety by the Conference.)

REPORT OF THE AUDITING COMMITTEE

William C. Sullivan, Superintendent
Office of Weights and Measures
City of Seatle, Washington

REFERENCE KEY

900

The Auditing Committee met on Wednesday morning, August 1 for the purpose of reviewing the financial reports of the Conference Treasurer, Mr. Allan M. Nelson. The Committee finds these records to be in accordance with Conference procedure and correct.

W. Sullivan, Washington, Chairman
J. Berguist, Minnosota
R. Williams, Tennessee
R. Smith, Technical Advisor, NBS

AUDITING COMMITTEE

(On motion of Mr. Sullivan, the report of the Auditing Committee, Reference Key Item 900, was adopted by the Conference.)

REPORT OF THE CONFERENCE TREASURER

Allan M. Nelson, Chief
Weights and Measures Division
Department of Consumer Protection
State of Connecticut

REFERENCE KEY

1000 INTRODUCTION

It is my pleasure to report to you on the financial status of the Conference Treasury as follows:

Cash on Hand - June 30, 1983	$ 40,742.00*
RECEIPTS	
Account No. 1.1 Registration - 68th Conference	$ 13,230.00
" " 1.1 Registration - 69th Conference	950.00
" " 1.2 Membership F. Y. 68	19,145.00
" " 1.2 Membership F. Y. 69	28,280.00
" " 1.3 Publications	89.75
" " 1.4 Interest	3,281.02
TOTAL RECEIPTS	$ 64,975.77
TOTAL CASH BALANCE AND RECEIPTS	$105,717.77
DISBURSEMENTS	
Account No. 2.0 Annual Meeting	$ 14,049.91
" " 3.0 Interim Meeting	19,624.61
" " 5.0 Special Program	3,853.93
" " 6.0 Chairman's Expenses	6,891.71
" " 7.0 Membership	4,623.34
" " 8.0 Printing & Publications	522.72
" " 9.0 Administration	7,336.46
TOTAL DISBURSEMENTS	$ 56,902.68
Cash on Hand - June 30, 1984	
N.O.W. Account-	
Conn. Bank & Trust Co., Southington, CT.	$ 16,777.84
Money Market Check Book Account-	
Conn. Bank & Trust Co., Southington, CT.	31,723.01
Checking Account-	
Union Trust Co., Gaithersburg, MD	314.24
TOTAL ASSETS	$ 48,815.09
TOTAL DISBURSEMENTS AND ASSETS	$105,717.77

* $77,843.00 shown as an asset on last year's Treasurer's Report contained $37,101.00 of grant money.

NATIONAL CONFERENCE ON WEIGHTS AND MEASURES

GRANT ACCOUNT

Cash on Hand, June 30, 1983	$ 37,101.00
RECEIPTS	
Grant Payments	$111,304.00
Interest	4,941.21
TOTAL RECEIPTS	$116,245.21
TOTAL CASH BALANCE & RECEIPTS	$153,346.21
DISBURSEMENTS	
Equipment	$ 18,412.00
Contracts	50,882.29
TOTAL DISBURSEMENTS	$ 69,294.29
Cash Balance, Money Market Account- Connecticut Bank & Trust Co.	$ 84,051.92
TOTAL DISBURSEMENTS AND CASH BALANCE	$153,346.21

(signed) Allan M. Nelson, Treasurer

(On motion of Mr. Nelson, the report of the Conference Treasurer, Reference Key Item 1000, was adopted by the Conference.)

APPOINTMENTS BY CHAIRMAN

Chairman Ezio Delfino announced the following appointments or reappointments at the General Session on Thursday, August 2, 1984:

STANDING COMMITTEES

Education, Administration, and Consumer Affairs Committee

Charles Greene, State of New Mexico

Laws and Regulations Committee

Leo Letey, State of Colorado

Liaison Committee

John McCutcheon, United States Department of Agriculture

Specifications and Tolerances Committee

Ross Andersen, State of New York

OTHER APPOINTMENTS

Parliamentarian - Sydney Andrews, State of Florida

Assistant Treasurer - James Akey, State of Kansas

Associate Membership Committee

Art Kroll, Gilbaraco, Inc., Chairman
Harvey Lodge, Dunbar, Vice Chairman
Kenneth Appel, Colgate-Palmolive, Treasurer
Richard Davis, James River/Dixie Northern, Inc.
Chip Kloos, Hunt Wesson Foods
Walter Kupper, Mettler Instrument
Anthony Ladd, A. J. Ladd Weighing & Packaging Systems
Andrew Moore, Grocery Manufacturers of America
Robert Nelson, General Mills
Neal Peterson, Legal Council for General Mills

Auditing Committee

Robert Williams, State of Tennessee, Chairman
John Berquist, City of Minneapolis, MN
Edward Romano, Glenn County, CA

Budget Review Committee

Charles Greene, State of New Mexico
Thomas Kelly, State of New Jersey
William Perry, Cardinal Scale Company

Credentials Committee

John Chohamin, New Jersey, Chairman
Arthur Hershbein, Dade County, FL
Gilbert Allen, City of Spokane, WA

Resolutions Committee

Charles Tandy, Jr., State of Alaska, Chairman
Sharon Abercrombie, State of Georgia
William Eldridge, State of Mississippi
Donald Lynch, Kansas City, KS
Earl Maxwell, District of Columbia
Catherine Pittman, State of Tennessee
Fred Thomas, State of Pennsylvania

Technical Committee on National Type Evaluation

John Elengo, Jr., Revere Company, has been appointed as Chairman replacing Harry Lockery, Hottinger Baldwin Measurements.

All incumbents are reappointed.

Task Force on Motor Fuels

No changes were made in the activities or membership of this Task Force. All incumbents are reappointed.

Task Force on Belt Conveyor Scales

No changes were made in the activities or membership of this Task Force. All incumbents are reappointed.

Task Force on Commodity Requirements

This new Task Force will report to the Executive Committee. The members are:

Richard Thompson, State of Maryland, Chairman
Mahlon Burnette, American Meat Institute
Kenneth Butcher, State of West Virginia
Charles Cavagnaro, U.S. Office of Consumer Affairs
Paul Engler, Los Angeles, CA
Edward Heffron, State of Michigan
Tom Klevay, Miller's National Federation
Kenneth N. May, Holly Farms
John McCutcheon, U.S. Department of Agriculture
Allan Nelson, State of Connecticut
John Taylor, Food and Drug Administration

Subcommittee on Commodity Standards

This new subcomittee will report to the Task Force on Commodity Requirements. The members are:

Don Stagg, State of Alabama, Chairman
Robert Belliveau, Procter and Gamble Company
Bruce Litzenberg, State of Ohio
Peggy Adams, Bucks County, PA
Chip Kloos, Hunt Wesson Foods

Task Force on Information Systems

This new task force will report to the Executive Committee. The members are:

Joseph Swanson, State of Alaska, Chairman
James Lyles, State of Virginia
Joseph Rothleder, State of California

Technical Committee on Dynamic Weighing

A new committee was established. Appointments will be announced at a later date.

Advisory Committee on Grain Moisture Measurement

The Grain Moisture Meters Code was adopted by the Membership. Accordingly, the work of the Advisory Committee is completed. With appreciation of significant accomplishment, the Committee is not being continued.

Task Force on Package Control

With the decision to focus resources on the more technical aspects of package control (moisture loss, HB 133, etc.), this Task Force will phase out its activities prior to the Interim Meeting in January 1985.

REPORT ON STATE LABORATORY METROLOGY WORKSHOPS

Henry V. Oppermann
National Bureau of Standards

The workshops met on Monday, July 30, 1984 and Wednesday, August 1, 1984 and addressed several subjects directly affecting laboratory operations. Harry B. Haymes of Sanders Associates, Inc., Nashua, New Hampshire, discussed Military Standard 45662, the information required from State laboratories when they perform work for private industry laboratories, and the requirements placed upon private laboratories performing work under MILSTD45662. He provided an interesting overview of the operation of a large private laboratory.

Ms. Jacquelyn A. Wise of the Temperature and Pressure Measurements and Standards Division, National Bureau of Standards, discussed the environmental requirements and equipment needed to establish a laboratory to calibrate liquid-in-glass thermometers. This was a timely presentation because several States are planning to establish temperature calibration laboratories. Ms. Wise answered numerous questions from the metrologists regarding their particular laboratory conditions and programs.

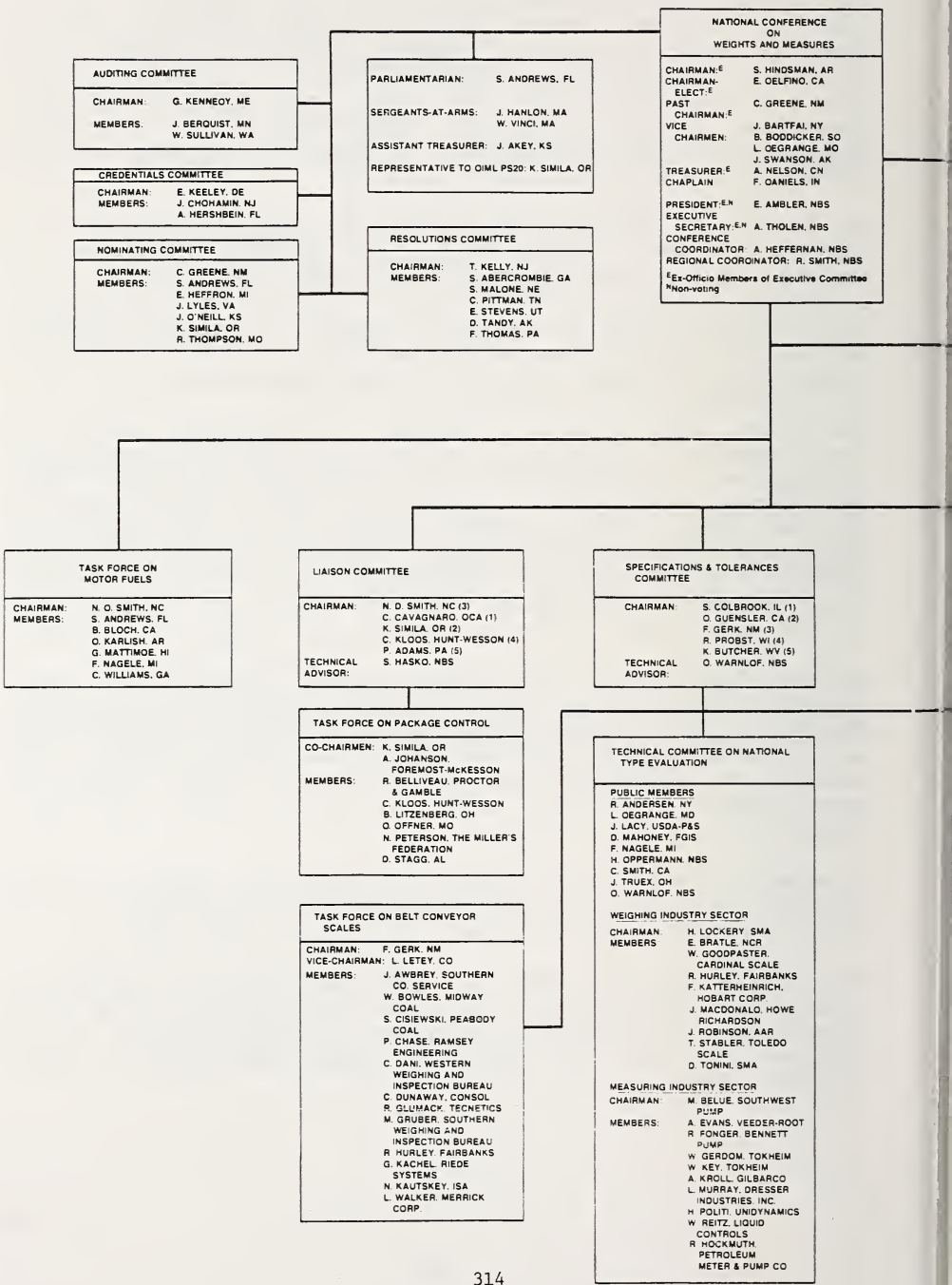
Tom Scott, North Carolina Department of Agriculture, reported on measurement problems they had encountered using their bottom-fill prover in comparison to industry provers of a slightly different design. Their tests revealed a discrepancy in measurement results on gasoline between the State and the industry provers but fairly consistent results were obtained on diesel fuel and kerosene. The cause of this effect was believed to be the increased vaporization of gasoline when the State prover was used to test meters. He also showed how North Carolina modified their prover to address the problem.

Raymond Wells, Seraphin Test Measure Company, reported on the trends that exist in the design of large and small provers. The demands by industry for higher precision volume measurement are increasing. This has resulted in changes in the design of provers, which he showed to and discussed with metrologists. These changes and the increased demand for higher precision measurement may place greater demands upon State laboratories.

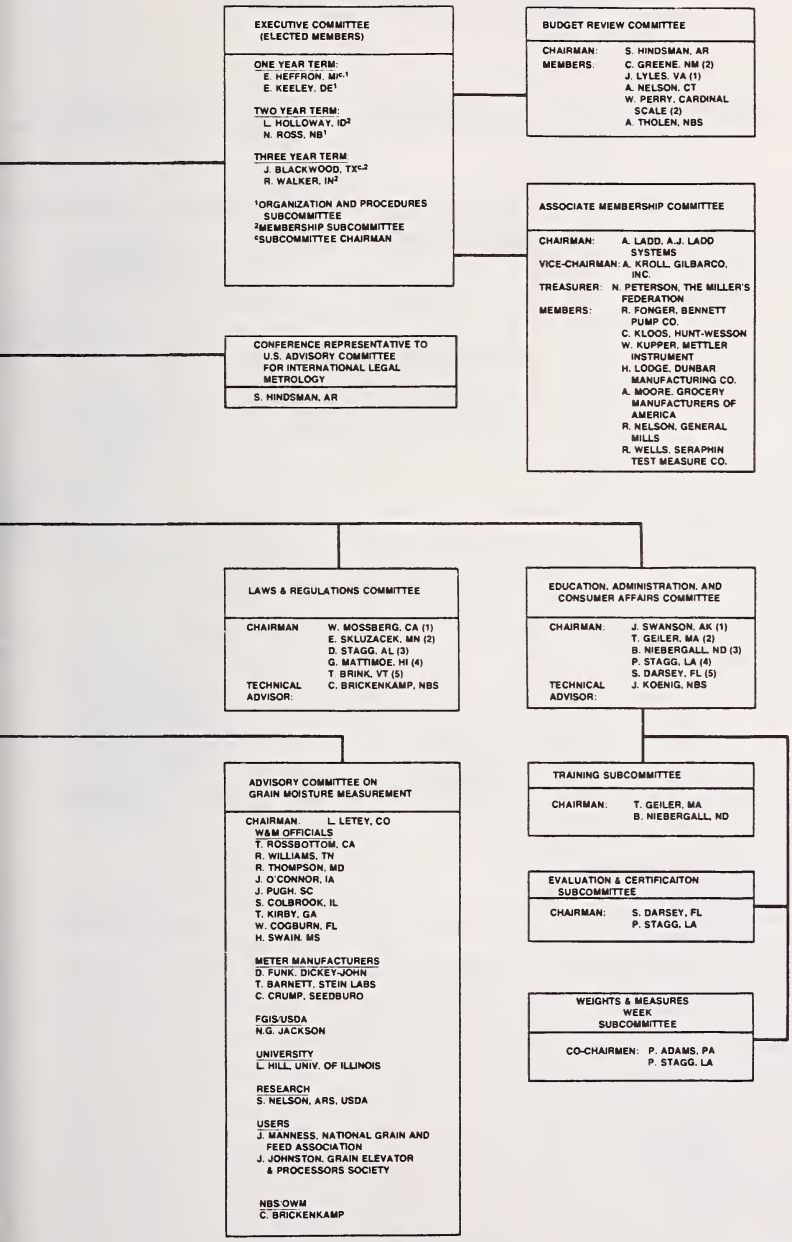
A representative from each regional metrology group reported on their activities and round robin results. This provided an opportunity for the groups to interact at a national level and learn from each other.

Henry Oppermann, NBS Office of Weights and Measures, discussed the measurement control program for glass flasks assigned to the State laboratories. He also lead a discussion on possible changes to NBS Handbook 105-1 and issues related to weight specifications for other classes of weights.

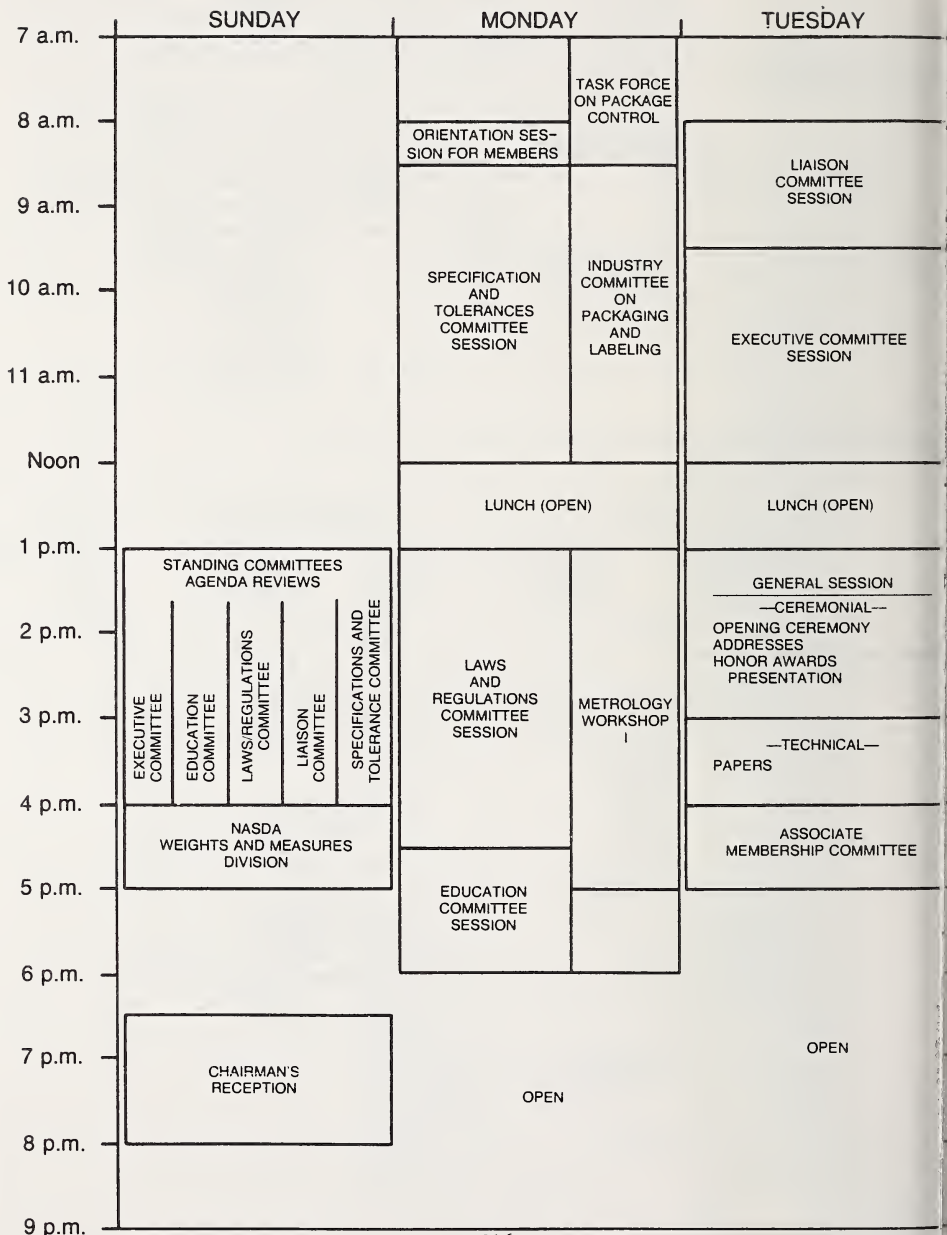
NATIONAL CONFERENCE ON WEIGHTS



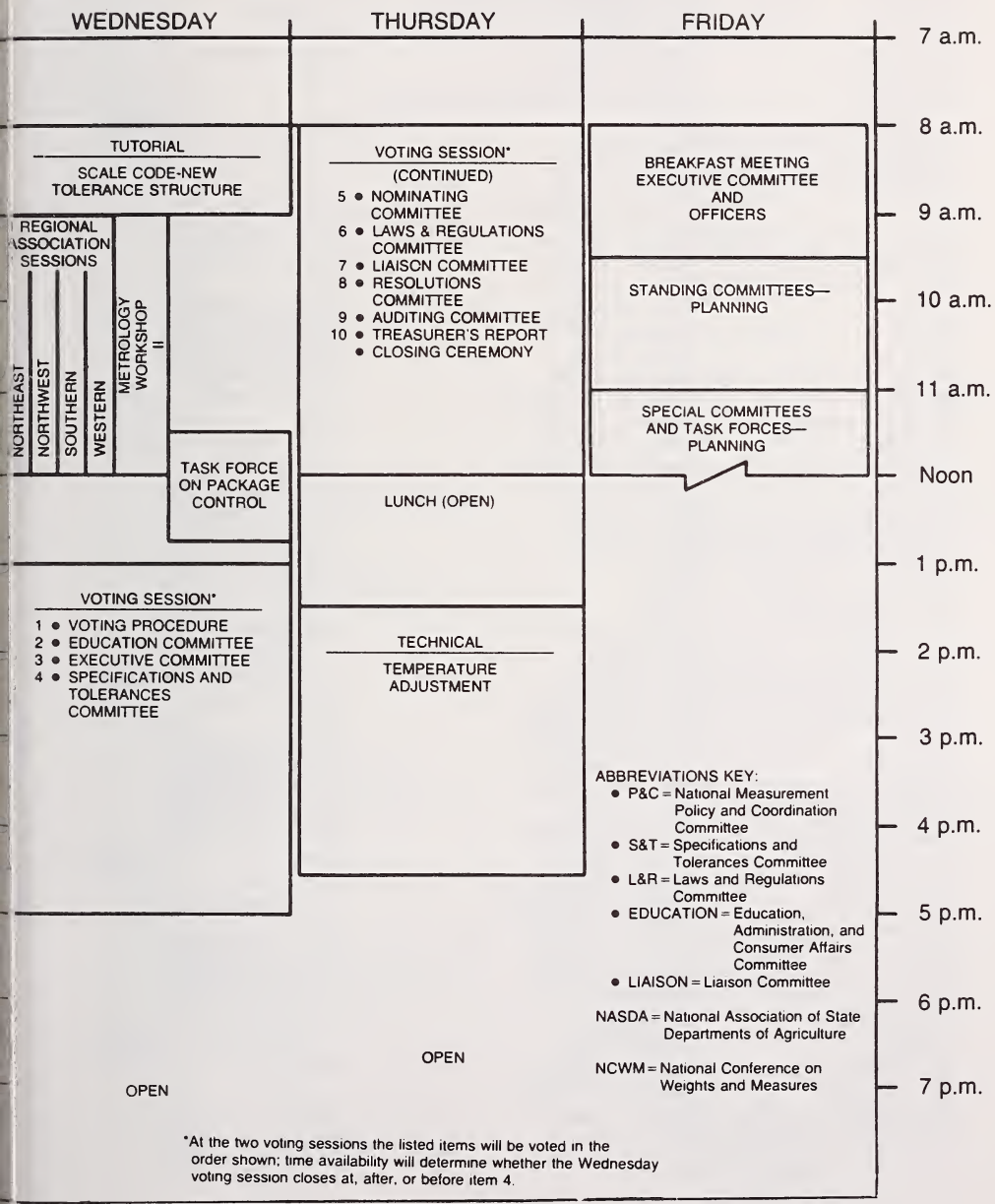
AND MEASURES



NCWM SCHEDULED EVENTS



69th ANNUAL MEETING



*At the two voting sessions the listed items will be voted in the order shown; time availability will determine whether the Wednesday voting session closes at, after, or before item 4.

STATE REPRESENTATIVES

The following is a list of designated State representatives who were present and voting on the reports presented by the Conference standing and annual committees.

State	Representative	Alternate
Alabama	Don Stagg	John Rabb
Alaska	Joseph Swanson	Charles Tandy,Jr.
Arizona	Patricia Fullinwider	D. L. Sorensen
Arkansas	Sam Hindsman	J. Mike Hile
California	Ezio Delfino	D. Guensler
Colorado	Leo Letey	None
Connecticut	Allan Nelson	R. Hutchinson
Delaware	Eugene Keeley	None
District of Columbia	None	None
Florida	Stan Darsey	S. Andrews
Georgia	Thomas Kirby	S. Abercrombie
Hawaii	George Mattimoe	None
Idaho	Lyman Holloway	Dale Hurd
Illinois	Sidney Colbrook	Steve McGuire
Indiana	Robert Walker	None
Iowa	James O'Connor	None
Kansas	John O'Neill	Donald Lynch
Kentucky	Charles Prebble	Tom Dowler
Louisiana	Philip Stagg	James Mahomes
Maine	Clayton Davis	Marshall White
Maryland	Richard Thompson	Lacy DeGrange
Massachusetts	Charles Carroll	None
Michigan	Edward Heffron	Frank Nagele
Minnesota	Edward Skluzacek	G. MacDonald
Mississippi	James Spencer	W. Eldridge
Missouri	Leslie Greiner	R. Wittenberger
Montana	Gary Delano	None
Nebraska	Steve Malone	M. Deisley
Nevada	None	None
New Hampshire	None	None
New Jersey	Thomas Kelly	J. Silvestro
New Mexico	Fred Gerk	C. Greene
New York	John Bartfai	R. Andersen
North Carolina	N. David Smith	Thomas Scott
North Dakota	Bruce Niebergal	None
Ohio	Bruce Litzenberg	James Truex
Oklahoma	O. Ray Elliott	R. Schoenecke
Oregon	Kendrick Simila	G. Shefcheck
Pennsylvania	Fred Thomas	Ronald Crust
Puerto Rico	Maria Maldonado	None
Rhode Island	Lynda Agresti	None
South Carolina	Charles Smith	John Pugh
South Dakota	Barbara Boddicker	R. Osterkamp
Tennessee	Robert Williams	None
Texas	Charles Forester	Herb Eskew
Utah	Edison Stephens	Harvey Crook
Vermont	Trafford Brink	R. Cioffi
Virgin Islands	Louis Penn	Howard Dyer
Virginia	James Lyles	G. Diggs, III
Washington	William Sullivan	Gilbert Allen
West Virginia	Kenneth Butcher	L. Barker
Wisconsin	Robert Probst	None
Wyoming	Victor Gerber	None

REGISTRATION LIST
69TH NATIONAL CONFERENCE ON WEIGHTS AND MEASURES
JULY 29 - AUGUST 2, 1984
WESTIN HOTEL COPLEY PLACE, BOSTON, MASSACHUSETTS

* * * * *

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11. ABSTRACT (A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here)

The 69th Annual Meeting of the National Conference on Weights and Measures was held at the Westin Hotel in Boston, Massachusetts, during the week of July 29, 1984. Attendance totaled 396 (341 paid registrants and 55 guests) from forty-six (46) States, Guam, and Puerto Rico. The theme of the meeting was "Transferring Technology for Trade: A Team Effort."

Adoption of a NCWM Constitution and By-laws and a new Scales Code were major actions taken by the membership. The new Scales Code, which will be effective January 1, 1986, represented a significant advancement for device control. Other items addressed included such issues as labeling of gasoline-alcohol blends and national type evaluation.

Special meetings included those of the Task Force on Package Control, Metrologists' Workshops, the Associate Membership Committee, the Scale Manufacturers Association, the Industry Committee on Packaging and Labeling, the State regional weights and measures associations, and OIML Pilot Secretariat 20 (Prepackaged Products).

Reports by the several standing and annual committees of the Conference comprise the major portion of the publication. Also included are the addresses and technical papers delivered by Conference officials and other authorities from Government and industry.

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legal metrology; specifications and tolerances; training; type evaluation; uniform laws and regulations; weights and measures.

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