



**Ensuring Gasoline Pump
Accuracy and Consumer
Confidence in a Changing
Market**

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Acknowledgments

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EXECUTIVE SUMMARY

The purpose of this policy paper is to express the position of Option consommateurs on the strategic direction of Measurement Canada in conjunction with the Retail Petroleum Trade Sector Review (RPTSR). In this sector review, Option consommateurs's concern is to ensure that gas pump accuracy and consumer confidence are preserved through suitable regulation of the industry by Measurement Canada.

In 1999, Measurement Canada embarked on a process of reviewing the scope of its intervention in trade measurement. In all, 39 trade sectors will be reviewed by 2013 to establish a level of intervention that allows for optimal use of the agency's resources, adaptation to technological and market changes, and consumer protection. The trade sector reviews will consult industry and consumer stakeholders as well as other interest groups in determining the changes to be made to the agency's intervention. Some of these reviews directly affect consumers, since they concern sectors in which a measured quantity of a product is sold directly to them. Option consommateurs has an interest in these reviews; it participated in the Electricity Trade Sector Review in 2001 and in the Natural Gas Trade Sector Review and the Retail Food Trade Sector Review in 2002. This year, Option consommateurs is participating in the Water Trade Sector Review and the RPTSR.

Measurement Canada's involvement in the retail petroleum sector is multifaceted, and changes are in the offing with a view to making its intervention more effective and filling certain gaps. Measurement Canada is considering certain possibilities and wants to consult stakeholders on them. First, Measurement Canada plans to expand the delegation of certain of its activities to third parties through its Accreditation Program. In particular, Measurement Canada intends to use this program for maintenance and calibration of measurement standards, approval of new pump types, initial pump inspection and periodic re-inspection. Second, this trade sector review is designed to fill gaps in the agency's intervention; specifically, the unregulated status of pump service companies and the significant decline in its periodic inspection activities.

A comparison between Canadian and U.S. regulatory practices for retail gasoline trade measurement leads us to make certain observations. First, U.S. regulations differ from those of Canada in their decentralized jurisdictionality. While in Canada, a central national agency is responsible for developing and enforcing regulations, this responsibility is shared in the United States among the federal, state and, in some cases, county levels. This situation leads to a sharing of the resources necessary to the enforcement of metrological standards. In Canada, resource sharing is accomplished through the Accreditation Program, under which private

entities carry out some tasks of the federal agency. In the United States, the sharing of responsibilities with the states and counties greatly diminishes the need to contract out to the private sector, though this is done for aspects such as traceability and manufacturing of measurement standards. At first sight, decentralization might seem like an attractive solution to Measurement Canada's problems of resource cutbacks, since it keeps responsibility for weights and measures regulation in the hands of the government. But another effect of decentralization in the United States is to cause disparities among the states, a problem the federal government tries to alleviate by adopting national standards (NIST Handbook 44, Weights and Measures Law, Registration of Service Agencies, National Type Evaluation Program, Handbook 130) and encouraging states to adopt them as well. This problem has not been completely resolved because some states have not adopted the current, or any, NIST standards — some are up to eight years behind — while others adopt their own versions of these standards. Our study of California and Florida clearly illustrates these interstate differences.

Another important difference between the two countries has to do with their policies on contracting to the private sector. Measurement Canada, through the Accreditation Program, makes considerable use of private entities to handle some of its workload and responsibilities. In the United States, this practice is not used for initial and periodic inspection. The states we studied carry out these tasks themselves, and reports from previous years (electricity and natural gas) do not indicate that a situation like the one existing in Canada has ever existed there. However, the National Conference on Weights and Measures (NCWM) is allowed to certify private laboratories to conduct type approvals.

Apart from their different regulatory frameworks and Measurement Canada's broader use of accreditation, our comparison between the United States and Canada reveals similarities in the areas of type approvals, development of metrological standards, traceability of measurement standards, initial inspection and complaint handling. However, there are further important differences between the two countries in the area of periodic inspection and supervision of pump service companies. The two states we studied inspect pumps regularly, and California goes as far as to require annual inspection. In terms of supervision of service companies (including those servicing gas pumps), the United States has adopted a national standard (NIST Handbook 130) and 40 states have relevant requirements (which may differ from NIST). The two states studied have laid down clear requirements for gas pump service companies as regards the use of certified measurement standards, knowledge of state requirements, and the obligation to report work done to the competent weights and measures authority.

Our focus group participants stated their belief that weights and measures accuracy is regulated in Canada, but very few of them could name the regulatory body responsible. When they learned

that Measurement Canada is the body in question, most of the participants felt reassured, though some doubted Measurement Canada's capacity to fulfil these functions.

On the whole, the participants trusted the accuracy of gas pumps, particularly those owned by the large oil companies which, they assumed, want to protect their reputation. On the other hand, they feared that small independent stations might attempt to commit fraud, or that they might skimp on pump inspections to save money. The participants did not know whether or not gas pumps are currently regulated and inspected; they would like them to be inspected at random so as to detect foul play and negligence. The participants were concerned by the 20% rate of non-compliance, which they see as justifying Measurement Canada's intervention. They did find it reassuring that errors detected were generally less than 1% and were not skewed in favour of the vendors or the consumers, though a few participants remained concerned. The participants also expressed their opinion that all pump types be approved by Measurement Canada, that all new pumps be inspected before being put into service, that Measurement Canada continue to conduct spot inspections of pumps, and that the agency establish regulations requiring service stations to inspect and recalibrate their pumps regularly. Most participants were quite open to the idea of Measurement Canada's accrediting other entities to perform mandatory initial and periodic pump inspection. In that case, Measurement Canada's role would be to make random inspections in order to verify that the periodic inspections are being carried out. Finally, the participants agreed that there should be an accreditation process for companies and technicians maintaining and calibrating gas pumps.

The results of the Canada-wide survey led to the following observations. Initially, consumers had high confidence in gas pump accuracy, but this was more intuitive than based on facts, since a non-negligible proportion did not believe that a government agency regulates these devices. When they learned that periodic inspection of gas pumps is not mandatory, the majority stated that this situation diminished their confidence in the pumps' accuracy. Finally, consumers clearly expressed the need for companies selling, repairing, maintaining and calibrating gas pumps to be regulated by Measurement Canada.

On the basis of the prevailing situation in Canada, our documentary research on practices in the United States, consumer opinions expressed through the survey and the focus groups, our experience of previous trade sector reviews, and the standard positions of Option consommateurs on regulatory affairs, we hereby put forward the following recommendations:

Recommendation 1: That Measurement Canada remain the final authority over gas pump accuracy.

Recommendation 2: That Measurement Canada remain responsible for developing metrological standards for gas pump accuracy.

Recommendation 3: That if Measurement Canada uses external laboratories for certification of measurement standards, the agency should implement a rigorous accreditation and surveillance program for these laboratories, whose standards could be based on those of NIST.

Recommendation 4: That Measurement Canada consider recognizing standards traceable to those of internationally recognized laboratories such as NIST or IOLM.

Recommendation 5: That where Measurement Canada contracts out gas pump type approvals to external organizations, Measurement Canada should remain accountable to the public by retaining final authority over approvals.

Recommendation 6: That where Measurement Canada contracts out gas pump type approval to external organizations, it authorize only organizations accredited under standard S-A-01:2002 to conduct approval testing.

Recommendation 7: That where Measurement Canada contracts out gas pump type approval to external organizations, these organizations have no financial interest in the approval or non-approval of pump types.

Recommendation 8: That initial inspection of gas pumps remain mandatory and that it be contracted out to external organizations, as necessary, through Measurement Canada's Accreditation Program based on standard S-A-01:2002.

Recommendation 9: That annual inspection of gas pumps become mandatory.

Recommendation 10: That periodic inspection of gas pumps be carried out by accredited organizations under the Measurement Canada Accreditation Program based on S-A-01:2002.

Recommendation 11: That Measurement Canada enforce compliance with the obligation of service stations to have their gas pumps inspected annually through random audits of seals of approval as well as surveillance audits under the Measurement Canada Accreditation Program.

Recommendation 12: That Measurement Canada continue to be involved in net quantity verification and that it gather data to ascertain compliance rates in this area.

Recommendation 13: That Measurement Canada retain its role as final arbiter of conflicts surrounding gasoline measurement between consumers and service stations.

Recommendation 14: That Measurement Canada's existence and consumers' right to appeal to this agency in case of gasoline measurement disputes be better publicized through the participation of accredited organizations and service station owners.

Recommendation 15: That Measurement Canada pursue the development of the Accreditation Program based on S-A-01:2002, in order to respond to the new periodic inspection needs.

Recommendation 16: That Measurement Canada regulate gas pump service technicians and companies. This regulation should include mandatory registration, the obligation to keep records of work performed, the obligation to use Measurement Canada-approved measurement standards and procedures, and revocation of registration in the event of serious or repeated violations.

Recommendation 17: That Measurement Canada ensure that follow-up to the Retail Petroleum Trade Sector Review take place in collaboration with consumer representatives.

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INTRODUCTION

Measurement Canada is an agency of the Ministry of Industry of Canada whose mission is to guarantee the accuracy of trade measurement through various means of intervention. Specifically, Measurement Canada is responsible for approving device types intended to be used in trade, performing initial inspection of devices before they are placed in service, periodically reinspecting and monitoring devices in service, verifying the net quantity content of products sold based on their measurement, and resolving measurement-related disputes and complaints.¹ The foundation for these activities is provided by two laws, the *Electricity and Gas Inspection Act* for the electricity and natural gas sectors and the *Weights and Measures Act* for all other sectors regulated by the agency. Measurement Canada intervenes in various trade sectors, some of which affect consumers directly, such as electricity, natural gas, retail food, and gasoline. For these sectors, Measurement Canada aims to preserve consumer confidence by guaranteeing consumers that the products they purchase are measured accurately and that the quantity sold is exactly the same as the quantity delivered.

In 1999, Measurement Canada adopted a new strategic direction aiming to optimize its resources and respond to new trade measurement market demands caused by the implementation of new technologies and the growing numbers of measuring devices. For this purpose, it embarked on a process of reviewing thirty-nine (39) trade sectors over a period extending up to 2013. The purpose of each trade sector review is to reassess Measurement Canada's level of intervention in each sector and to determine whether the current level of intervention should be adjusted to keep current with market conditions and the need for consumer protection.

In carrying out the reviews, Measurement Canada will strive to focus "on those areas where return to the Canadian taxpayer is greatest."² To do this, Measurement Canada established a method to "periodically assess measurement in all trade sectors, intervening only where necessary to ensure accuracy and equity in the marketplace, and developing criteria for determining its level of intervention in trade measurement. Stakeholders' informed views will be a key element in these decisions."³

¹ MEASUREMENT CANADA, *Services*, online at http://strategis.ic.gc.ca/epic/internet/inmc-mc.nsf/vwGeneratedInterE/h_lm02084e.html .

² MEASUREMENT CANADA, *Measurement Canada's Assessment and Intervention Strategy for Canada's Marketplace*, online at <http://strategis.ic.gc.ca/epic/internet/inmc-mc.nsf/vwGeneratedInterE/lm01563e.html>.

³ Ibid.

Each trade sector review is conducted separately and consists of a consultation of the relevant stakeholders. Generally, the teams responsible for the trade sector reviews bring together consumer and industry representatives as well as various public interest groups. The form of these consultations may vary from one review to another: in some cases, the team holds one or more meetings where the stakeholders attempt to reach consensus on the desirable changes to Measurement Canada's level of intervention; in others, the team meets with the interested groups individually and produces a synopsis of the opinions expressed. Following these consultations, the team submits recommendations to the Measurement Canada senior management team, which makes the final decision on them. Finally, Measurement Canada implements the changes approved by the senior management team.

As a consumer protection organization, Option consommateurs is involved in those trade sector reviews that involve the sale of products to individuals. In commercial transactions involving consumers, the latter are the vulnerable party. When purchasing a product whose price is established by measurement (e.g. gasoline sold by the litre, natural gas by the cubic metre, or cheese by the kilogram), consumers do not have the financial, legal and technical resources to verify that the quantity paid for is the quantity actually delivered. Likewise, they cannot defend their rights without assistance when they have reason to believe that a measurement is inaccurate. Therefore, consumers need a neutral and impartial body with no interest in the transaction to make and enforce trade measurement regulations. Measurement Canada plays this role in Canada, and Option consommateurs intends to participate in the trade sector reviews with the goal of preserving it.

Option consommateurs participated in three trade sector reviews in 2001 and 2002: Electricity, Natural Gas and Retail Food. This participation has enabled our organization to acquire substantial knowledge and experience in the field of trade measurement as it concerns consumer protection. This enabled us to express our views authoritatively on the industry's demands for self-regulation in the electricity sector, the proposed changes for the establishment of requirements in the natural gas sector, and the problems created by the lack of regulation of scale service companies in the retail food sector.

This year Measurement Canada will conduct two trade sector reviews having a direct impact on consumers: Water and Retail Petroleum. Option consommateurs is taking part in the consultations for both reviews. This policy paper constitutes the position of Option consommateurs on the Retail Petroleum Trade Sector Review (RPTSR). Our position, developed in the body of this report, is a composite of our established stance on regulatory affairs in general; our assessment of the Measurement Canada consultation documents; the results of a study on U.S. regulatory practices for gas pumps; and the results of six focus groups held in Toronto,

Edmonton and Montreal on May 29, May 31 and June 5, 2003 by Environics as well as the results of a Canada-wide survey conducted by this specialized polling firm. The last section of the document summarizes Option Consommateurs's arguments and recommendations.

It is important to mention that the RPTSR covers all retail petroleum products, including home heating oil, which is also a matter of concern for individual consumers. However, our research, focus groups and survey focused on gasoline in order to keep the work manageable. This does not mean that Option consommateurs is leaving home heating oil consumers to fend for themselves. Rather, we think that the desirable regulatory changes will have similar effects for consumers of both heating oil and gasoline.

1- MISSION OF OPTION CONSOMMATEURS

1.1 Purpose, Objectives and Scope of Intervention

The mission of Option consommateurs is to advocate on behalf of consumers and promote their rights and interests. The purpose of these activities is to minimize or eliminate the injustices of which consumers are victims. To carry out this mission, the organization has a staff of about twenty employees assigned to five departments:

1. Budget Department
2. Legal Department
3. Media Relations Department
4. Research and Representation Department
5. Call and Support Centre.

The association was founded in 1983. In 1999, it merged with the Association des Consommateurs du Québec, a fifty-year-old organization with a mission similar to that of Option consommateurs. The goal of the merger was to increase work efficiency while cutting operating costs.

Option consommateurs is a cooperative formed under the Quebec provincial *Cooperatives Act*. It is directed by an annual assembly which votes on general strategy and orientation. This assembly is sovereign for certain decisions concerning the organization. The general assembly elects a board of directors whose principal mandate is to implement and develop these strategies. It is not responsible for routine management, a task that falls to the management team composed of six (6) employees.

1.2 Principal Regular Activities

Over the years, Option consommateurs has developed expertise in numerous fields, and is now acknowledged as an authoritative stakeholder in the area of consumer affairs. Each year, we reach between 7,000 and 10,000 consumers directly; we conduct more than 400 interviews with

the media; we sit on various working committees and boards of directors; we carry out large-scale intervention projects with major partners; we produce research reports, policy papers, consumer guides and a consumer information and action magazine called *Consommation*.

1.3 Research and Representation Department

The Research and Representation Department (RRD) is responsible for Option consommateurs' relations with the agencies and crown corporations of the Quebec and federal governments. The RRD is responsible for representing Option consommateurs before the Régie de l'énergie du Québec, the regulatory authority on matters of electricity, natural gas and retail gasoline sales in our province. The RRD is also responsible for representing Option consommateurs on committees relating to industries such as agri-food, financial services, energy, and property and personal insurance.

The RRD is responsible for the organization's research studies that are funded by government agencies, including Industry Canada's Office of Consumer Affairs. This research aims to develop Option consommateurs's expertise in various fields as well as to channel consumers' arguments to the governmental authorities so as to ensure that these are taken into account when public policy decisions are made. This paper is part of the research funded by this agency; its purpose is to advocate on behalf of consumers' interests in the context of the RPTSR.

2- MEASUREMENT CANADA'S INTERVENTION IN THE RETAIL GASOLINE SECTOR/OPTIONS FOR CHANGE

The obligations and powers of the Ministry of Industry relating to trade measurement in the retail gasoline industry are established by the *Weights and Measures Act*. In enforcing this law and its regulations, Measurement Canada performs various tasks to ensure the accuracy of gasoline and diesel pump measurements. Before detailing Measurement Canada's intervention in this sector for each sphere of activity, we will consider two specific aspects of it.

2.1 Aspects of Intervention in the Retail Gasoline Sector

2.1.1 Accreditation Program

Currently, Measurement Canada intervenes directly in the market for some but not all of its activities. By means of Alternate Service Delivery (ASD) mechanisms, the agency has established partnerships with the private sector, contracting certain tasks to it through the Accreditation Program.

Accreditation has existed since 1979, when the Electricity and Gas discipline of the Legal Metrology Branch (now Measurement Canada) decided to resort to this service delivery mechanism as a means of coping with resource cutbacks. In March 1988, the Legal Metrology Branch accredited its first organization for the verification of single-phase electricity meters. The Weights and Measures component of the accreditation program came about as a result of the formation of an accreditation working group in 1994. The group was comprised of members from the scale and fuel dispenser industries as well as the Legal Metrology Branch. The group was tasked with developing a strategy to implement and administer a private industry accreditation program for factory initial inspections. In May of 1995, *Accreditation of Organizations to Perform Factory Initial Inspections Pursuant to the Weights and Measures Act* was issued. In January of 1999, Measurement Canada accredited its first client to perform factory initial inspections of gasoline and diesel fuel dispensers. In July 1999, Measurement Canada harmonized the existing accreditation programs with the international standard ISO 9002:1994 in order to increase

efficiency and effectiveness in the delivery of the program. S–A–01, *Criteria for Accreditation of Organizations to Perform Inspections Pursuant to the Electricity and Gas Inspection Act and the Weights and Measures Act*, was issued on 27 July 1999 as the result of a review of the Measurement Canada accreditation programs, the integration of the two existing accreditation standards and the harmonization with international standards. In the preparation of S–A–01, Measurement Canada made extensive use of existing quality assurance standards issued by the International Organization for Standardization (ISO) and the Canadian Standards Association. The first revision to S–A–01 further expands the use of international standards by including references to ISO 9001:2000 and ISO/IEC 17025:1999. The revised standard is numbered S–A–01:2002.⁴

Organizations seeking accreditation must implement a complete quality assurance program in compliance with S–A–01. The organization must specify the operation type (initial inspection or periodic inspection) and device type for which it seeks accreditation.⁵ In the application process, the organization must develop a quality manual describing the procedures it intends to use to perform the tasks for which it seeks accreditation. The application is studied by Measurement Canada, which audits the applicant. After reviewing the quality manual, Measurement Canada's auditors make an accreditation decision which is valid for a three-year period. If accreditation is granted, the accredited organization inspects the weighing and measuring devices for which it is accredited in accordance with Measurement Canada's requirements. Thereafter, Measurement Canada no longer plays an inspection role for these devices but, rather, a surveillance role, which it fulfils through surveillance and product audits. Surveillance audits take place annually. They consist of an audit of the quality manual and field operations of the accredited organization. Product audits consist of verification of measuring devices approved by the accredited organization. Their frequency varies according to the type of device and the problems detected previously. Where there are problems relating to the work performed by the accredited organization, Measurement Canada's auditors may take action ranging up to suspension or revocation of accreditation. When accreditation expires, the organization must file a renewal application, and Measurement Canada then conducts audits to determine whether renewal should be granted.⁶

⁴ MEASUREMENT CANADA, *S–A–01:2002 Authorization*, online at <http://strategis.ic.gc.ca/epic/internet/inmc-mc.nsf/vwGeneratedInterE/Im02496e.html>.

⁵ MEASUREMENT CANADA, *Accreditation Program*, online at <http://strategis.ic.gc.ca/epic/internet/inmc-mc.nsf/vwGeneratedInterE/Im01807e.html>.

⁶ Benoît MONTPETIT, MEASUREMENT CANADA auditor, interview conducted 29 July 2002 in Montreal.

2.1.2 Regulatory Framework for the Gasoline Pump Service Industry

Since gas pumps are situated outdoors, they must be able to withstand the rigours of the Canadian climate, which necessitates regular maintenance. This maintenance is performed by gas pump service companies that also calibrate these devices.

Currently, gas pump service companies are unregulated, nor are they registered with Measurement Canada. The agency does not monitor the procedures and equipment used by these companies and does not subject them to the accreditation process, since they do not conduct inspections for Measurement Canada. Furthermore, during their maintenance operations, gas pump service companies are often called upon to recalibrate devices, and they are not required to use measurement standards that meet Measurement Canada's accuracy and durability standards; nor are these companies required to use test procedures recognized by Measurement Canada. The agency's inspectors use the procedures described in its *Standard Test Procedures*, which describes all tests to be performed for a given device type as well as all operating procedures. This document is not currently distributed to gas pump service companies. Finally, Measurement Canada does not conduct a periodic review of the gas pump service industry.⁷

2.2 Measurement Canada's Scope of Intervention

Measurement Canada currently intervenes in various fields in order to fulfil its trade measurement surveillance mission. The description of these fields applies to all trade sectors covered by the agency, i.e., those covered by the *Electricity and Gas Inspection Act* and the *Weights and Measures Act*. As this report went to press, the RPTSR team had not yet published its consultation document containing a description of Measurement Canada's areas of intervention. We therefore used the consultation document of the Retail Food Trade Sector Review published in 2002, as well as the information provided that same year by that sector review team to describe the areas of intervention, which remain the same for all sectors and have not changed since last year. However, we did use the available documentation on the possible changes in this sector.

⁷ Gilles PELLETIER, member, Measurement Canada Retail Petroleum Trade Sector review team, e-mail received 23 April, 2003.

2.2.1 Development of Metrological Standards

Measurement Canada's Program Development Division is responsible for the development of standards, regulatory changes, policies and procedures governing weighing and measuring devices. When a new metrological technology appears on the market, it is approved and inspected with reference to applicable regulatory standards and test procedures. The standards are developed in consultation with industry representatives.⁸

Measurement Canada intends to pursue its direct intervention in this sector and will not be using ASD mechanisms.⁹

2.2.2 Maintenance and Calibration of Measurement Standards

Measurement Canada, through its Calibration Services Laboratory, owns and maintains measurement (reference) standards that are traceable to the National Research Council primary base units of measurement. Standards of mass, length, volume, temperature, pressure, and electricity are calibrated and certified. These measurement standards are used by government inspectors and recalibrated annually.¹⁰ As mentioned previously, gas pump service companies are not required to possess standards approved by Measurement Canada.

Measurement Canada is willing to assess the possibility of using ASD mechanisms for verification of industry standards used to inspect and certify measuring devices.¹¹ This means that Measurement Canada is set to withdraw from direct intervention in this area and to contract the relevant tasks out to external organizations. This could be done through the accreditation program used for initial gas pump inspection.

2.2.3 Pattern Approval of New Measuring Devices

Measurement Canada, through its Approval Services Laboratory, must approve all weighing and measuring devices intended for trade use in Canada. All new and modified devices are examined

⁸ MEASUREMENT CANADA, *Retail Food Sector Review: a Discussion Paper on Measurement Issues in the Retail Food Industry of Canada*, Ottawa, September 2002, 49.

⁹ MEASUREMENT CANADA, *Background Information*, online at <http://strategis.ic.gc.ca/epic/internet/inmc-mc.nsf/vwGeneratedInterE/Im02773e.html>.

¹⁰ Luciano BURTINI, Team Manager, Measurement Canada Retail Food Sector Review, e-mail received 7 June 2002; MEASUREMENT CANADA, *Retail Food Sector Review: a Discussion Paper on Measurement Issues in the Retail Food Industry of Canada*, Ottawa, September 2002, 49.

¹¹ MEASUREMENT CANADA, *Background Information*, online at <http://strategis.ic.gc.ca/epic/internet/inmc-mc.nsf/vwGeneratedInterE/Im02773e.html>.

and tested with respect to legislative requirements for design, composition, construction, and performance. When a device type is approved, it receives an approval number, and the documentation regarding the approval is available to inspectors. Measurement Canada is a partner in a Mutual Recognition Program with its U.S. counterparts in order to harmonize requirements for the approval of measuring devices in both countries. Thus, Measurement Canada recognizes the results of tests performed by four government laboratories under the National Type Evaluation Program (NTEP) for a certain class of devices. Based on the evaluation and results of the NTEP tests, Measurement Canada may approve a device if it complies with Canadian regulations, which differ from those of the United States.¹²

As part of its strategic direction, Measurement Canada raises the possibility of contracting this task out to external laboratories through an ASD mechanism.¹³ This could be done through the use of the Accreditation Program using S–A–01:2002 or by extension of recognition of test results performed by external laboratories.

2.2.4 Initial Inspection of New Devices

Measurement Canada, through its regional inspection staff and its accredited inspectors, inspects weighing and measuring devices before they are used in trade (initial inspection), except where an exemption exists under the Act and the Regulation. This measure is designed to ensure that devices meet the approval criteria, that they are correctly installed, and that they operate within the prescribed tolerances before they are put into service. Gas pumps are covered by these provisions. The inspection may be performed at the factory or on the site where the device is used, if installation has an effect on how it operates.¹⁴

Initial inspection is the area in which ASD is used most extensively, and Measurement Canada is considering this type of intervention in the retail gasoline sector.¹⁵

¹² MEASUREMENT CANADA, *Retail Food Sector Review: a Discussion Paper on Measurement Issues in the Retail Food Industry of Canada*, Ottawa, September 2002; Jean-Gilles POIRIER, member, Measurement Canada Retail Food Sector Review team, e-mail received 5 September 2002; Luciano BURTINI, Team Manager, Measurement Canada Retail Food Sector Review, e-mail received 7 June 2002.

¹³ MEASUREMENT CANADA, *Background Information*, online at <http://strategis.ic.gc.ca/epic/internet/inmc-mc.nsf/vwGeneratedInterE/Im02773e.html>.

¹⁴ Gilles PELLETIER, member, MEASUREMENT CANADA Retail Petroleum Trade Sector review team, e-mail received 23 April 2003; MEASUREMENT CANADA, *Retail Food Sector Review: A Questionnaire for the Retail Food Industry of Canada*, Ottawa, 2002, 49–50.

¹⁵ MEASUREMENT CANADA, *Background Information*, online at <http://strategis.ic.gc.ca/epic/internet/inmc-mc.nsf/vwGeneratedInterE/Im02773e.html>.

2.2.5 Periodic Inspection

Measuring devices used to measure quantities of mass or volume pursuant to the requirements of the Weights and Measures Act are verified, on an ad hoc basis, throughout their lifetime to ensure that they are properly maintained, continue to measure accurately, and are not used in a fraudulent manner.¹⁶

Previously, in the retail gasoline sector, Measurement Canada conducted surprise inspections at service stations. Inspectors based at about 20 offices managed to inspect all pumps in the market approximately every two years (more often in urban areas and less often in remote areas). Recently, with the significant drop in the number of inspectors, this coverage is no longer adequately assured and in certain regions, gas pumps are no longer inspected after the initial inspection. Periodic inspection is done only by Measurement Canada and only if the agency has reasons to believe that the pumps are non-compliant.¹⁷

Measurement Canada is considering the use of ASD in this area of intervention.¹⁸ This could be problematic, since periodic inspection is not mandatory in this sector, which is covered by the *Weights and Measures Act*, and it will be difficult to create the market conditions for companies to offer periodic inspection services.

2.2.6 Net Quantity Verification

In the trade sectors under the jurisdiction of the *Weights and Measures Act*, which include the retail gasoline sector, Measurement Canada verifies the net quantities of products sold, in addition to its inspection of measuring devices. The agency's inspectors make visits to service stations in order to verify that the quantity of gasoline charged for corresponds to the real quantity delivered. Such inspections are usually conducted only where the agency believes that there is a problem with net quantities sold in a given service station.¹⁹

¹⁶ MEASUREMENT CANADA, *Retail Food Sector Review: a Discussion Paper on Measurement Issues in the Retail Food Industry of Canada*, Ottawa, September 2002, 49.

¹⁷ Gilles PELLETIER, member, MEASUREMENT CANADA Retail Petroleum Trade Sector Review team, e-mail received 23 April 2003.

¹⁸ MEASUREMENT CANADA, *Background Information*, online at <http://strategis.ic.gc.ca/epic/internet/inmc-mc.nsf/vwGeneratedInterE/Im02773e.html>.

¹⁹ Gilles PELLETIER, member, MEASUREMENT CANADA Retail Petroleum Trade Sector Review team, e-mail received 23 April 2003; MEASUREMENT CANADA, *Retail Food Sector Review: A Questionnaire for the Retail Food Industry of Canada*, Ottawa, 2002, 23.

Measurement Canada is considering the possibility of using ASD in this area of intervention, in particular through the Accreditation Program based on S–A–01:2002.²⁰

2.2.7 Complaint Investigation and Dispute Resolution

Measurement Canada, through its field inspection staff, investigates complaints and advises affected parties of the result of the investigation, including any corrective action instituted where warranted.²¹ Measurement Canada is and will remain the ultimate authority in resolving disputes and investigating complaints, and the agency considers this role to be non-negotiable in all the trade sector reviews.²²

2.2.8 Accreditation of Organizations to Inspect Approved Devices

An organization may be invested with the power to perform initial inspection, periodic inspection and certification of trade weighing and measuring devices on behalf of Measurement Canada if it meets the program's requirements.²³ A description of the accreditation program is given in section 2.1.1. Measurement Canada has not put any proposals on the table to modify the accreditation program.

This summarizes the scope of Measurement Canada's surveillance of trade measurement. Of course, this description is merely a summary; it does not describe the agency's strategic directions, nor does it present a complete listing of the regulations for which it is responsible. In the next section, we shall describe the trade measurement regulations of the United States using the same descriptive framework.

²⁰ MEASUREMENT CANADA, *Background Information*, online at <http://strategis.ic.gc.ca/epic/internet/inmc-mc.nsf/vwGeneratedInterE/Im02773e.html>.

²¹ MEASUREMENT CANADA, *Retail Food Sector Review: a Discussion Paper on Measurement Issues in the Retail Food Industry of Canada*, Ottawa, September 2002, 50.

²² MEASUREMENT CANADA, *Background Information*, online at <http://strategis.ic.gc.ca/epic/internet/inmc-mc.nsf/vwGeneratedInterE/Im02773e.html>.

²³ MEASUREMENT CANADA, *Retail Food Sector Review: a Discussion Paper on Measurement Issues in the Retail Food Industry of Canada*, Ottawa, September 2002, 50.

3- REGULATION IN THE UNITED STATES

A comparison between the Canadian regulatory framework and that of other countries enables us to put our practices in the area of gas pump inspection into perspective. We have chosen to illustrate this comparison with the example of the United States, Canada's principal trading partner. Despite its reputation for a laissez-faire economic approach, the United States is acknowledged for its long-standing tradition of regulating the accuracy of trade measuring devices. The United States has created both public and non-profit standardization bodies of international renown, including the National Institute of Standards and Technology (NIST) and the National Conference on Weights and Measures (NCWM).

One peculiarity of the US regulatory system for weights and measures is that responsibilities are shared between the federal and state governments. The United States has no central regulatory agency analogous to Measurement Canada. National standards on specifications, traceability of measurement standards, type or pattern approval, and supervision of external service companies are established by the above-mentioned federal and non-profit bodies. The states are free to adopt the national standards for gas pump accuracy or set their own standards. This situation is due to the fact that the national agencies do not play the same role as Measurement Canada. They are not regulatory bodies as such but, rather, advisory bodies to the states, which are sovereign in this area.

Due to this sharing of trade measurement responsibilities, the situation in the United States is complex, with attempts at standardization and aspects particular to each state. To illustrate this complexity, Option consommateurs researched the regulatory practices for gas pump accuracy of both the national agencies and those of two states, California and Florida. Before turning to these findings, we shall provide some background on the U.S. national trade measurement standards bodies, the public NIST and the private, non-profit NCWM.

3.1 National Standards Bodies

3.1.1 National Institute of Standards and Technology (NIST)

Founded in 1901, NIST is a non-regulatory federal agency within the U.S. Commerce Department's Technology Administration. NIST's mission is to develop and promote

measurement, standards, and technology to enhance productivity, facilitate trade, and improve the quality of life. With an annual budget of US \$864 million, NIST employs 3,000 scientists, technologists, and administrators, as well as 1,600 guest researchers. In addition, NIST partners with 2,000 manufacturing specialists and staff at affiliated centres around the country.²⁴

Trade measurement standardization is only part of NIST's mandate. It is also involved in various spheres of the economy and technology through a cooperative approach embodied in four programs:

- the Baldrige National Quality Program, which promotes performance excellence among manufacturers, service companies, educational institutions, and health care providers;
- the Manufacturing Extension Partnership, offering technical and business assistance to small manufacturers;
- the Advanced Technology Program, which accelerates technological development by co-financing R&D initiatives with the private sector;
- the NIST Laboratories Program, whose mandate is to meet the measurement, data, and technology needs of industry and state governments.²⁵

The weights and measures role of the NIST Laboratories Program is to provide trade measurement services through the Measurement Services Division, which ensures the traceability of measurement standards.²⁶ We shall delve further into the role of NIST in the sections on development of metrological standards (3.2.1) and traceability of measurement standards (3.2.2).

The NIST also provides technical assistance to the states, including one- to two-week metrology seminars for their weights and measures experts. The service is offered by the NIST Laboratories' Technology Services lab.²⁷

3.1.2 National Conference on Weights and Measures (NCWM)

The NCWM is a private non-profit organization supported by NIST for partial fulfillment of its statutory responsibility to cooperate with the states on standardization of their weights and measures laws and inspection procedures. Its membership consists of representatives of

²⁴ NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, *General Information*, online at http://www.nist.gov/public_affairs/general2.htm.

²⁵ Ibid.

²⁶ NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, *Measurement Services Division*, online at <http://ts.nist.gov/ts/htdocs/230.htm>.

²⁷ NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, *Laboratory Metrology Training and Schedule*, online at <http://ts.nist.gov/ts/htdocs/230/235/labtraining/TRAIN503.htm>.

regulatory and industry bodies. The NCWM plays an active role in the area of gas pump accuracy by setting standards. It accomplishes its mission through four committees:

- Specifications & Tolerances Committee: this committee addresses specifications, tolerances and technical requirements for commercial weighing and measuring devices, which are published in Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices" (Appendix 3).
- Laws and Regulations (L&R) Committee: this committee develops and interprets uniform laws and regulations and commodity inspection and regulation standards. Results are published in NCWM Handbook 130, *Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality* (see Appendix 1), which includes recommendations for state adoption on legal metrology.
- Administration and Public Affairs (A&P) Committee: this committee addresses consumer affairs and safety issues and promotes awareness of weights and measures activities among the general public.
- National Type Evaluation Committee: this committee oversees the operation of the National Type Evaluation Program (NTEP) and establishes the *Uniform Regulation for National Type Evaluation* (see Appendix 2), a national type approval standard. This program will be explained in more detail in the section on measuring device type approval. This committee sets the goals and objectives as well as operating policies and procedures of this program. In addition, it authorizes the participating laboratories' and sponsors' technical subcommittees to develop technical test procedures and evaluation criteria.²⁸

The NCWM makes decisions by consensus of its members. Generally, the subjects on the committees' agendas are brought forward by the regional NCWM associations, although individual parties may also do so.²⁹

3.2 Involvement in Regulation of Gasoline Pump Accuracy

Whereas the United States is characterized by shared federal-state jurisdiction over weights and measures, and the states adopt their own laws in this area, there are efforts toward standardization. In 1906, the NCWM adopted a model state legal metrology act for use by the states in drafting their own legislation. This document, renewed yearly by the Laws and Regulations Committee, is titled NIST Handbook 130, *Uniform Laws and Regulations in the Areas of Legal Metrology and Engine Fuel Quality*. This handbook contains sections on a *Uniform Weights and Measures Law* (Appendix 1), type evaluations, *Uniform Regulation for National Type Evaluation* (Appendix 2), and voluntary registration of measurement service companies, *Uniform*

²⁸ NATIONAL CONFERENCE ON WEIGHTS AND MEASURES, *NCWM: The Organization*, online at <http://www.ncwm.net/organization.html>.

²⁹ NATIONAL CONFERENCE ON WEIGHTS AND MEASURES, *NCWM: The Decision-Making Process*, online at <http://www.ncwm.net/process.html>.

Regulation for the Voluntary Registration of Servicepersons and Service Agencies for Commercial Weighing and Measuring Devices (Appendix 4). These NCWM-developed standards are adopted by the Weights and Measures Division of the Technology Services portion of the NIST Laboratories Program.³⁰

The voluntary, non-mandatory nature of standardization means that the states have no obligation to enact the laws suggested by the NCWM. The *Uniform Weights and Measures Law* is observed by most states, though not all of them are up to date on its various amendments:

- 2 states have incorporated the law along, as amended annually, into their own legislation;
- 43 states (including Florida and California) have adopted their own laws based on the *Uniform Weights and Measures Law* from a previous year;
- 7 states have enacted their own law without reference to the *Uniform Weights and Measures Law*;
- 1 state has no law but uses the NCWM suggestions as a guide.³¹

In Florida, general regulation of trade measurement is the purview of the Bureau of Weights and Measures, while specific rules applicable to gas pumps are developed and enforced by the Bureau of Petroleum Inspection. These two agencies are under the responsibility of the Florida Department of Agriculture and Consumer Services.

In California, weights and measures regulations are developed and enforced by the Division of Measurement Standards under the responsibility of the California Department of Food and Agriculture. Aspects of this regulatory framework are applied by each of the 56 counties, under the supervision of the Division of Measurement Standards. The state itself does not employ inspectors for initial and periodic pump inspection, this being a county responsibility. The number of inspectors for each county varies according to its population; Del Norte County has only one inspector, for example, while Los Angeles County has 122.³²

³⁰ NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, *Weights and Measures*, online at <http://ts.nist.gov/ts/htdocs/230/235/owmhome.htm>.

³¹ NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, *Uniformity of Laws and Regulations*, Gaithersburg, National Institute of Science and Technology, 2003, 13.

³² CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE, *Measurement Standards*, online at <http://www.cdffa.ca.gov/dms/>; CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE, *Staffing List of County Agricultural Commissioners and County Sealers of Weights and Measures*, online at <http://www.cdffa.ca.gov/exec/cl/Documents/Staffing%202003.pdf>.

3.2.1 Development of Metrological Standards

NIST publishes an annual metrological standard on mandatory specifications for trade measuring devices. This standard, titled Handbook 44, *Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices*, contains a section (3.30) on “Liquid-Measuring Devices,” which deals with gas pumps (Appendix 3). Though published by NIST, this standard is drafted and adopted annually by the NCWM’s Specifications & Tolerances Committee. This standard covers:

- measurement units;
- return to zero;
- money value variations;
- vapour or air elimination from the device;
- sealing of measuring units;
- temperature compensation mechanisms;
- testing procedures for pump meters;
- accuracy tolerances;
- computerized cash registers.³³

The section 3.30 standards are suggested for incorporation into state regulations on measuring device specifications. As with the NCWM’s *Uniform Weights and Measures Law* and *Uniform Regulation for National Type Evaluation*, the states have discretionary power, but most states have indeed adopted this standard:

- 39 states have adopted the standard as amended annually;
- 13 states have their own standard based on a previous year’s Handbook 44;
- 1 state has adopted its own standards without reference to this standard.³⁴

³³ NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, section 3.30, “Liquid-Measuring Devices,” Technology Handbook 44, *Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices*, Gaithersburg, National Institute of Science and Technology, 2003, 3-3 – 3-20.

³⁴ NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, *Uniformity of Laws and Regulations*, Gaithersburg, National Institute of Science and Technology, 2003, 13.

Florida uses the 2000 version of Handbook 44 in establishing metrological requirements for all trade measuring devices, including gas pumps. This requirement is established by the Bureau of Weights and Measures.³⁵ As to California, its Division of Measurement Standards requires all measuring devices to comply with the federal agency's latest standards. This means that the standards in force are those of the 2003 edition of Handbook 44.³⁶

3.2.2 Traceability of Measurement Standards

The interdependence between states and the federal government is well illustrated by the aspect of traceability. Though each state is responsible for testing gas pumps, the tests have to be based on true measurement standards. To guarantee their accuracy, the states use standards traceable to national and international standards. The traceability of these standards is guaranteed by NIST for the whole of the United States.

The NIST Laboratories Program provides a complete range of traceability services to states and private entities. It offers calibrations, standard reference materials, proficiency evaluation materials, test methods for measuring devices, measurement quality assurance programs, and laboratory accreditation services.³⁷

The Office of Measurement Services (OMS), part of the NIST Laboratories Program's Technological Services Laboratory, is responsible for applying NIST policy on traceability. This policy consists of the following points:

- develops, maintains and disseminates national standards for basic measurement quantities and for many derived measurement quantities.
- assesses the uncertainties associated with the values assigned to these measurement standards
- provides its customers with the tools they need to establish traceability of their measurement results, and
- provides its customers with the tools they need to assess the claims of traceability made by others.³⁸

³⁵ BUREAU OF WEIGHTS AND MEASURES FOR THE STATE OF FLORIDA, *Rules*, online at <http://www.doacs.state.fl.us/~standard/weight/rules.htm>.

³⁶ STATE OF CALIFORNIA, *California Code of Regulations. Title 4 – Business Regulations. Division 9 – Division of Measurement Standards, Department of Food and Agriculture*, online at http://www.calregs.com/cgi-bin/om_isapi.dll?clientID=183566&infobase=ccr&softpage=Browse_Frame_Pg42.

³⁷ NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, *NIST Policy on Traceability*, online at <http://www.nist.gov/traceability/nist%20traceability%20policy-external.htm>.

³⁸ NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, *Traceability – NIST Policy and Supplementary Materials*, online at <http://www.nist.gov/traceability/>.

This traceability policy is applied through three programs: the Standard Reference Materials program, the Calibrations program and the Standard Reference Data program. According to NIST, the first two programs are the largest and most successful measurement traceability programs in the world. These programs aim to meet the measurement standard traceability needs of NIST clients, i.e., local and state governments, federal agencies, companies, and members of the scientific community.³⁹

In Florida, traceability is under the responsibility of the Florida Metrology Laboratory, which is accredited annually by NIST. In this way, NIST recognizes the traceability of the laboratory's standards to its own national standards. This laboratory can also verify the traceability of standards used by industry. For these services, the laboratory charges fees ranging from US \$25 for standards of less than 5 US gallons (19 l) to US \$228 for standards of 1,000 US gallons (3,800 l) or more.⁴⁰

The California Division of Measurement Standards has a measurement standard traceability program that serves to verify the accuracy of measuring devices, including gas pumps. The Metrology Program, through the State Metrology Laboratory, guarantees traceability by offering the following services:

- certification of state, county and service company standards;
- maintenance of recognized certification standards traceable to NIST standards;
- providing calibration services for industry for a fee of US \$75 for standards of five US gallons.⁴¹

The State Metrology Laboratory also recognizes external calibration agencies whose standards are traceable to its own. Among these agencies are nine counties and four private businesses that have metrology laboratories. These laboratories ensure the traceability of standards to those of the State Metrology Laboratory, meaning that they can calibrate the standards used to verify gas pump accuracy. It is important to note, however, that only the county laboratories the have standards for liquid volumetric measurement necessary to verify gas pump accuracy.⁴²

³⁹ NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY OFFICE OF MEASUREMENT SERVICES, *Office of Measurement Services*, online at <http://ts.nist.gov/ts/htdocs/230.htm>.

⁴⁰ BUREAU OF WEIGHTS AND MEASURES FOR THE STATE OF FLORIDA, *Rules*, online at <http://www.doacs.state.fl.us/~standard/weight/rules.htm>.

⁴¹ CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE. DIVISION OF MEASUREMENT STANDARDS, *Metrology Program*, Sacramento, California Department of Food and Agriculture, 2003, 2.

⁴² CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE. DIVISION OF MEASUREMENT STANDARDS, *Service Agency Standard Certification Sources*, online at <http://www.cdffa.ca.gov/dms/pdfs/Servagtlst.pdf>.

3.2.3 Approval of Pump Types

The approval of pump types is a state responsibility, but the NCWM offers a type approval service for all measuring devices, including gas pumps. This service is offered through twelve laboratories under the National Type Evaluation Program (NTEP). States can use these laboratories for approval of pump types in use on their territory. Types passing the approval tests receive a certificate of conformance issued by the NCWM. This certificate indicates that the type meets the trade measurement requirements for the whole country, and any certified pump type can be used in all NTEP-participating states.⁴³

The NCWM encourages all states to follow NTEP and adopt the *Uniform Regulation for National Type Evaluation*. As mentioned, the purpose of NTEP is to accredit laboratories to approve measuring devices in conformance to NIST Handbook 44 standards. The following list shows the status of state adoption of this regulatory framework:

- 12 states have adopted the standard as amended annually;
- 28 states have their own standard based on a previous year's *Uniform Regulation for National Type Evaluation*;
- 4 states have their own standard unrelated to this standard;
- 6 states have no laws or regulations;
- 3 states have no standards but use the NCWM's suggestions as a guide.⁴⁴

Florida has no regulations for approval of pump types.⁴⁵ California requires all pump types to be approved by the Division of Measurement Standards, which has a type evaluation program based on that of the *Uniform Regulation for National Type Evaluation*. To have a new gas pump type approved, the manufacturer must have it tested by the Department of Food and Agriculture, which reviews the following main parameters:

- design;
- technical characteristics;
- accuracy;

⁴³ NATIONAL CONFERENCE ON WEIGHTS AND MEASURES, *NTEP for National Standards*, online at <http://www.ncwm.net/standards.html>.

⁴⁴ NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, *Uniformity of Laws and Regulations*, Gaithersburg, National Institute of Science and Technology, 2003, 13.

- reliability;
- resistance to fraudulent use.⁴⁶

For pump types passing the evaluation, the State of California issues a Certificate of Approval allowing the device to be used throughout the state. The state also authorizes the use of uncertified pumps if they possess a NTEP certificate of conformance. As a participant in NTEP, California recognizes all gas pump types certified in other states under the program, and other participating states do likewise, so that California's Division of Measurement Services can certify device types for use in other states.⁴⁷

The type approval process normally takes three to six months between the approval application and the issuance of the Certificate of Approval. If no problems occur during the process, it may take as little as two to three months.⁴⁸

3.2.4 Initial Pump Inspection

Initial inspection of pumps when they are put into service is under the individual responsibility of the states, which establish obligations and accuracy levels. However, the states can choose to adopt the specifications of section 3.30, "Liquid-Measuring Devices," of NIST Handbook 44. The NIST standard sets the initial error tolerance for gas pump accuracy at $\pm 0.3\%$.⁴⁹

This standard is observed by nearly all the states, with only North Dakota having its own error tolerances.⁵⁰

In Florida, the Bureau of Petroleum Inspection, an agency under the Florida Department of Agriculture and Consumer Services, is responsible for initial pump inspection. This agency is also responsible for inspection of the quality and chemical composition of gasoline and related products, such as antifreeze and brake fluid. The Bureau of Petroleum Inspection inspects all

⁴⁵ Ibid.

⁴⁶ CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE. DIVISION OF MEASUREMENT STANDARDS, *California Type Evaluation Program*, Sacramento, California Department of Food and Agriculture, 2003, 2.

⁴⁷ CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE. DIVISION OF MEASUREMENT STANDARDS, *California Type Evaluation Program*, Sacramento, California Department of Food and Agriculture, 2003, 3 ; NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, *Uniformity of Laws and Regulations*, Gaithersburg, National Institute of Science and Technology, 2003, 10.

⁴⁸ CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE. DIVISION OF MEASUREMENT STANDARDS, *California Type Evaluation Program*, Sacramento, California Department of Food and Agriculture, 2003, 5.

⁴⁹ NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, section 3.30, "Liquid-Measuring Devices," *Technology Handbook 44, Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices*, Gaithersburg, National Institute of Science and Technology, 2003, 3–16.

⁵⁰ NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, *Uniformity of Laws and Regulations*, Gaithersburg, National Institute of Science and Technology, 2003, 11, 13.

pumps before they are put into service and affixes a seal of approval. The Bureau uses the standards of Handbook 44 for 2000, in which the tolerances are the same as in the 2003 version. Inspections are performed by Bureau staff and all pumps must receive a seal of approval before being used in trade.⁵¹

In California, mandatory initial inspection of all gas pumps is under the responsibility of the Division of Measurement Standards. However, the inspections are not performed directly by this agency since it does not employ any inspectors. As mentioned, initial inspection of gas pumps is delegated to the competent weights and measures authorities of the state's 58 counties. The required initial pump accuracy is $\pm 0.3\%$ as per Handbook 44, version 2003.⁵²

3.2.5 Periodic Pump Inspection

Periodic inspection is under the individual responsibility of the states, which establish obligations and precision levels. However, the states can choose to adopt the specifications of section 3.30, "Liquid-Measuring Devices," of NIST Handbook 44. The NIST standard sets the error tolerance for periodic gas pump inspection accuracy at $\pm 0.5\%$.⁵³

In Florida, the Bureau of Petroleum Inspection is responsible for periodic pump inspection. This inspection is not periodic and the state does not prescribe a period of validity of the initial seal nor of seals affixed during subsequent pump inspections. Inspection of pumps is random and/or in response to consumer complaints. This does not mean that the state conducts few inspections, as is true in Canada. The number of inspections is high: more than 175,000 pumps were inspected in 1997–98 (last data available). Among these, 4% did not meet the state's tolerances ($\pm 0.5\%$). This tolerance remained constant throughout the 1990s. Moreover, 12% of pumps were found non-compliant for reasons other than inaccuracy.⁵⁴

⁵¹ NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, *Uniformity of Laws and Regulations*, Gaithersburg, National Institute of Science and Technology, 2003, 13; STATE OF FLORIDA, *The 2000 Florida Statutes. Chapter 525, Gasoline and Oil Inspection*, online at http://www.flsenate.gov/Statutes/index.cfm?App_mode=Display_Statute&URL=Ch0525/ch0525.htm.

⁵² CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE, *Measurement Standards*, online at <http://www.cdffa.ca.gov/dms/>; STATE OF CALIFORNIA, *California Code of Regulations. Title 4 – Business Regulations. Division 9 – Division of Measurement Standards, Department of Food and Agriculture*, online at http://www.calregs.com/cgi-bin/om_isapi.dll?clientID=183566&infobase=ccr&softpage=Browse_Frame_Pg42; NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, *Uniformity of Laws and Regulations*, Gaithersburg, National Institute of Science and Technology, 2003, 10, 13.

⁵³ NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, section 3.30, "Liquid-Measuring Devices," Technology Handbook 44, *Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices*, Gaithersburg, National Institute of Science and Technology, 2003, 3–16.

⁵⁴ BUREAU OF PETROLEUM INSPECTION FOR THE STATE OF FLORIDA, *Profile*, online at <http://www.doacs.state.fl.us/~standard/petrol/>; BUREAU OF PETROLEUM INSPECTION FOR THE STATE OF FLORIDA, *Bureau Statistics*, online at <http://www.doacs.state.fl.us/~standard/petrol/Statistics.html>.

In California, the *California Code of Regulation* calls for annual inspection of pumps. This is done by county inspectors working under the supervision of the Division of Measurement Standards. However, counties can change the frequency of their inspection plans by having the changes approved by the director of the Division of Measurement Standards. Following the inspection, the inspectors affix a seal of validity to each pump meeting the error tolerance standards, which are those of NIST Handbook 44, $\pm 0.5\%$. There is no program for accrediting external organizations to perform inspections. We did not find any statistics on the number of inspections performed annually nor the compliance rate of service stations.⁵⁵

3.2.6 Complaint and Dispute Investigation

Complaint investigation is a state responsibility. In Florida, the Bureau of Petroleum Inspection handles complaints. The investigation service is very active, with the Bureau receiving and processing nearly 1,750 complaints annually and performing inspections within 24 hours of a complaint. The Bureau has a fleet of unmarked vehicles equipped with special calibrated tanks so that the inspectors can do their work without being identified.⁵⁶

In California, the complaint investigation process is under the responsibility of the Division of Measurement Standards but consumer complaints are usually processed locally by the county weights and measures authorities. Consumers can file complaints against the gasoline vendor by telephone or mail. In larger counties such as Los Angeles County, the Internet is another complaint channel available.⁵⁷

3.2.7 Supervision of Gasoline Pump Service Companies

In the United States, companies servicing trade measuring devices such as gas pumps can take advantage of a registration program. This program was created by a national voluntary registration standard for agencies and employees providing measuring device services. This standard, the *Uniform Regulation for the Voluntary Registration of Servicepersons and Service Agencies for Commercial Weighing and Measuring Devices*, is included in NIST Handbook 130,

⁵⁵ CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE, *Measurement Standards*, online at <http://www.cdffa.ca.gov/dms/>; STATE OF CALIFORNIA, *California Code of Regulations. Title 4 – Business Regulations. Division 9 – Division of Measurement Standards, Department of Food and Agriculture*, online at http://www.calregs.com/cgi-bin/om_isapi.dll?clientID=183566&infobase=ccr&softpage=Browse_Frame_Pg42.

⁵⁶ BUREAU OF PETROLEUM INSPECTION FOR THE STATE OF FLORIDA, *Profile*, online at <http://www.doacs.state.fl.us/~standard/petrol/>.

⁵⁷ CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE. DIVISION OF MEASUREMENT STANDARDS, *Frequently Asked Questions*, online at <http://www.cdffa.ca.gov/dms/FAQ.htm>; COUNTY OF LOS ANGELES, *Consumer Concerns*, online at <http://acwm.co.la.ca.us/scripts/consumer.htm>.

which was adopted by the NCWM. This standard is found in Appendix 4. In capsule, this standard describes the equipment necessary for maintenance and calibration of measuring devices, the privileges of those holding a registration certificate, and their obligations in terms of accountability.⁵⁸

As for other NIST Handbook 130 standards, the states have discretion as to whether or not to apply them. The breakdown of state practices in this regard is as follows:

- 4 states have adopted the standard as amended annually;
- 27 states have their own standard based on the *Uniform Regulation for the Voluntary Registration of Servicepersons and Service Agencies for Commercial Weighing and Measuring Devices*;
- 12 states have adopted their own unrelated standards;
- 10 states have no standards.⁵⁹

Florida has its own standard based on the 1995 version of NIST Handbook 130 but including some more details on certain aspects. Registration is free of charge and valid for two years. The standard requires each technician and service agency to be registered individually. Testing equipment and standards must be retested and recertified by the Bureau of Weights and Measures every two years and must be traceable to NIST. Only registered technicians of the state Department of Agriculture and Consumer Services can break the seal of approval to perform pump maintenance. When a technician installs a new pump or performs maintenance work requiring the breaking of a seal on a measurement unit, he or she must notify the Bureau of Petroleum Products. Following the maintenance work, the technician must affix a new seal indicating the name of the service company. If the technician is unregistered, a Bureau of Petroleum Inspection inspector must be present during the work to break the seal, inspect the pump, and affix a new seal. In addition, technicians performing calibration must use NIST-approved measurement standards.⁶⁰ These requirements are a considerable incentive for gas pump service companies to register with the state and used approved materials.

⁵⁸ BUREAU OF PETROLEUM INSPECTION FOR THE STATE OF FLORIDA, *Rules Chapter 5F-2*, online at http://www.doacs.state.fl.us/~standard/petrol/chapter_5f-2.html; NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, *Uniform Regulation for the Voluntary Registration of Servicepersons and Service Agencies for Commercial Weighing and Measuring Devices*, Gaithersburg, National Institute of Science and Technology, 2003, 126–128.

⁵⁹ NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, *Uniformity of Laws and Regulations*, Gaithersburg, National Institute of Science and Technology, 2003, 13.

⁶⁰ BUREAU OF WEIGHTS AND MEASURES FOR THE STATE OF FLORIDA, *Rules*, online at <http://www.doacs.state.fl.us/~standard/weight/rules.htm>; STATE OF FLORIDA, *The 2000 Florida Statutes. Chapter 525, Gasoline and Oil Inspection*, online at http://www.flsenate.gov/Statutes/index.cfm?App_mode=Display_Statute&URL=Ch0525/ch0525.htm.

In California, gas pump service companies are governed by a special regulation. In other words, this state did not adopt the NIST *Uniform Regulation for the Voluntary Registration of Servicepersons and Service Agencies for Commercial Weighing and Measuring Devices*.⁶¹

California's Division of Measurement Standards supervises trade measurement device (including gas pump) services companies through its Registered Service Agency Program. In this state, any company or employee installing, maintaining, repairing, or reconditioning a trade measurement device must obtain authorization and register with the Division. Business registration costs US \$200 for the principal place of business and US \$100 for other branch offices, and must be renewed annually. Technicians performing repair and maintenance must take an examination (US \$35) to obtain their licence (US \$25), which must be renewed every five years. Companies and technicians must have in their possession a copy of the state trade measurement regulations (*California Code of Regulation*, Title 4, Division 9, "Field Reference Manual"), use standards traceable to those of the State Metrology Laboratory, and report all installations and repairs to the competent county weights and measures authorities by completing the appropriate form.⁶²

3.2.8 Comparison of US and Canadian Practices

Our study of US regulatory practices on retail gasoline trade measurement yields several observations. First, US regulations differ from Canada's in their decentralized jurisdictionality. While in Canada, a central national agency is alone responsible for drafting and enforcing the regulations, these roles are shared between the federal, state, and even county levels in the United States. This situation leads to a sharing of the resources necessary for enforcing metrological standards. In Canada, resource sharing takes place through the Accreditation Program, in which private agencies carry out some of the federal agency's tasks. In the United States, the sharing of responsibilities with the states and, in some cases, the counties, greatly reduces the need to contract with private agencies, although these do play a role in areas such as traceability and manufacturing of measurement standards. At first sight, decentralization may seem an attractive solution to Measurement Canada's problems of shrinking resources, since it would keep enforcement in the hands of the government. However, decentralization has led to a problem of uniformity among the US states, which the central government has attempted to alleviate by adopting national standards (NIST Handbook 44, *Weights and Measures Law*, Registration of Service Agencies, National Type Evaluation Program, Handbook 130) and

⁶¹ NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY, *Uniformity of Laws and Regulations*, Gaithersburg, National Institute of Science and Technology, 2003, 10.

⁶² CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE. DIVISION OF MEASUREMENT STANDARDS, *Registered Service Agency Program*, Sacramento, California Department of Food and Agriculture, 2003, 2-6.

encouraging states to follow them. This problem has not been completely resolved because some states have not adopted the current, or any, NIST standards — some are up to eight years behind — while others adopt amended versions of these standards. Our study of California and Florida clearly illustrates these interstate differences.

Another important difference between the two countries has to do with their policies on contracting to the private sector. Measurement Canada, through the Accreditation Program, makes considerable use of private entities to handle some of its workload and responsibilities. In the United States, this practice is not used for initial and periodic inspection. The states we studied carry out these tasks themselves, and reports from previous years (electricity and natural gas) do not indicate that a situation like the one existing in Canada has ever existed there. However, the NCWM is allowed to certify private laboratories to conduct type approvals.

Apart from their different regulatory frameworks and Measurement Canada's broader use of accreditation, our comparison between the United States and Canada reveals similarities in the areas of type approvals, development of metrological standards, traceability of measurement standards, initial inspection and complaint handling. However, there are further important differences between the two countries in the area of periodic gas pump inspection and supervision of pump service companies. The two states we studied inspect pumps in service regularly, and California goes as far as to require annual inspection. In terms of supervision of service companies (including those servicing gas pumps), the United States has adopted a national standard (NIST Handbook 130) and 40 states have relevant requirements (which may differ from NIST). The two states studied have laid down clear requirements for gas pump service companies as regards the use of certified measurement standards, knowledge of state requirements, and the obligation to report work done to the competent weights and measures authority.

In the next section, we shall analyze the opinions expressed by consumers on regulation of gas pump accuracy.

4- ANALYSIS OF FOCUS GROUP COMMENTS

Option consommateurs commissioned the polling firm Environics to conduct a Canada-wide survey and six focus groups. The groups were held in three Canadian cities, Toronto, Edmonton and Montreal, on May 29 and 31 and June 5, 2003, respectively. The focus group participants were all purchasers of gasoline or diesel at service stations and are interested in public policy issues.

4.1 Regulation of Weights and Measures in Canada

4.1.1 How Weights and Measures are Currently Regulated

As has been observed in previous focus group studies dealing with the electricity, natural gas and retail food trade sector reviews for Measurement Canada, a vast majority of participants assumed that the accuracy of weights and measures in Canada was regulated in some way. In Toronto, it was assumed that this was done by some federal government agency with some people specifically mentioning “Weights and Measures Canada” or “Trade and Commerce” or “Consumer and Corporate Affairs.” In Montreal and Edmonton, most people also assumed that this must be regulated by some federal agency, though some people also wondered whether measurement devices might be regulated at the local or provincial level. Some participants mentioned that they had seen certification stickers on pumps at gas stations. Most added that this was not something that they had ever thought about. They took for granted that weights and measures were accurate.

Only a couple of participants spontaneously identified Measurement Canada as being the name of the agency that is charged with this responsibility. Some of those who did know about Measurement Canada knew about it because they had worked in places where they had dealt with measuring devices and had been exposed first hand to Measurement Canada inspection activities. To the extent that Measurement Canada has any awareness, it is largely due to people having seen stickers on pumps at gas stations. There were also a number of participants who thought that gas stations and parent companies and retail food outlets and utilities probably did their own inspections of these devices. Some people thought that companies serving the public

would self-regulate in order to make sure that no measuring devices erred against them, and also for the sake of having a good public reputation.

Participants generally felt that if a regulatory role was to be performed, it should be done by some national governmental agency that is able to impose national standards of reliability and quality on measuring devices. There were some participants who did not think that it was necessary to have a governmental agency regulating this. They felt that it was in the interest of water utilities and gas stations to have accurate devices, and that it might not be necessary to have these regulated by the federal government. It was notable that, in Toronto and Edmonton in particular, there were some references to Walkerton as an example of what can happen when there is insufficient regulation.

4.1.2 Reaction to the Role of Measurement Canada

When participants were told that Measurement Canada was responsible for regulating weights and measures in Canada, a couple of people mentioned that they vaguely recalled having heard of Measurement Canada before. A couple of participants had some awareness of Measurement Canada as a result of having worked in construction or in retail outlets where they had seen scales and meters get inspected, and therefore had direct dealings with Measurement Canada inspectors. A couple of people also recalled having seen a sticker or logo marked Measurement Canada – typically at a gas station – at some point in the past. It was clear that there was little top-of-mind identification of Measurement Canada with the regulation of weights and measures in Canada.

Participants read some background material explaining the role of Measurement Canada with regard to meters and scales. For most people, the extent of Measurement Canada's role in this area came as a pleasant surprise. Some had assumed that "someone" was performing these functions, but the consensus was that it was good to know that some arm of government was keeping "an eye on things." Most participants said that knowing all of this made them feel more comfortable about the accuracy of weights and measures that they deal with in their everyday lives, and that it was good to have some kind of a watchdog over industry. Participants were most concerned about the idea of stores, gas stations and utilities trying to cheat consumers, and they were happy to know that there was some kind of mechanism whereby they could be spot-checked.

The only discordant reaction was from a couple of participants in each city who were skeptical as to whether Measurement Canada actually performed all these functions. Since these people had

never heard of Measurement Canada, and they had never seen any Measurement Canada inspectors with their own eyes, they wondered whether all this regulation was actually happening. Some wanted to know whether they as consumers could phone Measurement Canada if they had questions or complaints about measurement devices. Also, some participants mentioned that since they had always taken it for granted in the first place – that scales and meters were accurate – there was no way that they could feel any more confident than they had felt in the first place.

4.1.3 Understanding of the Trade Sector Review

The level of understanding of the Trade Sector Review (TSR) was mixed. Many participants clearly had problems grasping the meaning of the Trade Sector Review. Some confused the TSR with Measurement Canada's standard role reviewing the accuracy of measuring devices. Others saw the TRS as an internal bureaucratic process of the sort that probably happens frequently without the public having to be informed.

4.2 Retail Petroleum Trade Sector Review

4.2.1 Initial Attitudes Toward the Accuracy of Gasoline Pump Meters

All participants reported having extensive personal experience with buying gasoline at service stations. This was usually accompanied by comments on the high price of gasoline.

For the most part participants tended to be quite confident in the accuracy of the meters measuring the volume of gasoline being pumped. It was notable that participants tended to be much less skeptical about the accuracy of measuring devices in gas stations than they were when the issue of retail food scales was raised in 2002. Much of the reason for this is that participants tend to associate gas pumps with large respected chains such as Shell or Petrocan. Also, in the vast majority of cases, the customer is pumping their own gas at a self-serve station so they feel much more in control of the situation. Nonetheless, many participants reported having, at least fleetingly, wondered if the pumps used in retail food outlets are accurate, and whether they were regulated or re-checked in any way. For the most part, the attitude was that one has to believe in something, and that you can't go through questioning absolutely everything. Some people also commented that if there were any imperfections in measuring gasoline it would

probably all even out in the end. A few participants also mentioned that they had seen a sticker on gas pumps attesting to their having been approved.

There was some discussion of the fact that gas stations belonging to large chains with reputations to uphold probably did their own accuracy checks on a regular basis. They felt that big service station chains would not want the bad publicity that would come from having inaccurate pumps and, as a result, were more likely to be regularly checking their pumps and making sure that they were accurate. Also, it was often assumed that a major chain like Shell or Texaco would be more likely to use the most “state of the art” measuring technology.

Participants in all three cities expressed more concern about the accuracy and trustworthiness of pumps at small independent gas stations that may be “cutting corners.” The perception was that these kinds of enterprises operate on very narrow profit margins, and that proprietors would be more motivated to try to “cheat.” Or to save money by not bothering to have the accuracy of measuring devices rechecked.

Ultimately, most participants did not worry too much about pump inaccuracy when buying gas as long as the price seemed fair. Unlike food or household utility meters, many participants feel that they know their cars gasoline capacity well enough to know if they were “getting ripped off.” They mention that they know what their gas tank can hold and so if there were a major discrepancy they would notice.

4.2.2 Personal Experience with Gas Pump Inaccuracy

A couple of participants reported having bought gas and suspecting that the meter on the pump was inaccurate. In each case it was more likely to have been a malfunction in the pumping mechanism as opposed to a flaw in the metering device itself. For example, some people reported having pumped gas from a pump that was close to empty, and also about how they were starting to pump air into their car that they were paying for. It was not clear whether these kinds of incidents were metering accuracy issues or not. A couple of participants reported incidents in which they thought that they were not getting enough gas because of the reading on the fuel gauge in their car. In every case, it was the fuel gauge in the car that was incorrect.

When participants were asked to focus on the issue of whether or not gas pumps were accurate, they zeroed in on the possibility of service station proprietors trying to cheat them. This was a far greater concern than the possibility that the pumps might be incorrect through mechanical malfunction.

4.2.3 Awareness of Current Regulatory Framework for Retail Petroleum Service Stations

Participants were unsure of whether retail gas pumps were currently regulated or inspected. They assumed that most service stations verify their pumps at certain intervals, but they were unsure of whether these inspections were mandated by Measurement Canada. Once again, they were confident that the big chains probably do this routinely, but they were concerned that smaller independent operators might try to avoid the expense of getting their pumps inspected, and therefore don't bother.

Participants were asked about how they thought gas pumps should be regulated. They said that they would feel better about the accuracy of meters if they knew that random, unannounced spot checks of gas pumps were carried out, and that it was clear from the Measurement Canada sticker on the pumps when they had last been inspected. They wanted to know that proprietors who might want to "fix" their pumps would always have to worry about the possibility of spot checks. Some suggested that service stations could be mandated by Measurement Canada to verify their pumps at intervals, and those spot checks would be done to make sure that this actually took place and that the inspections were being done a high standard. In other words, Measurement Canada should impose some minimum standards for getting scales verified. Most people did not think that it was essential for Measurement Canada to actually do the inspections, as long as Measurement Canada did take responsibility for spot checks and publicized the fines that could be imposed for non-compliance.

4.2.4 Reaction to Regulatory Framework for Gas Pumps

Participants were given some material to read that described what MC currently does with regard to regulating gas pumps. It was explained that, while Measurement Canada still approves all gas pumps at initial installation, at one time MC also regularly re-inspected gas pumps to a much greater extent than is done now, but that this had been phased out due to the great expense. It was noted in this material that:

When fuel dispensers (gasoline and diesel pumps) are inspected at gasoline station outlets, about 20% are found to be "non-compliant." Most of these errors are quite small (i.e.: less than 1%). Of these errors, you may have some measurement errors that are in favour of the consumer while others are in favour of the vendor. Other types of errors include such things as burnt segments on the display, indicators off zero (i.e., installation issues).

Participants had mixed reactions to the above statistics. Initially, there were a lot of concerns raised about the fact that as many as 20 percent of gas pumps were found to have some inaccuracies when inspected. This was seen to be a very high level of inaccuracy. However, it was also noted that the vast majority of inaccuracies were very slight (i.e., less than one percent), or had nothing to do with the actual measurement process. What most reassured participants was the fact that most gas pump meter inaccuracies were in all likelihood evenly split between those that favour the consumer and those that favour the merchant. This reassured people that, in the end, any inaccuracies probably even out, with the consumer rarely paying significantly more due to inaccurate pumps.

Nonetheless the level of non-compliance was seen to be evidence that there was a need for some sort of a regulatory framework from Measurement Canada. There were also concerns raised that if the role of Measurement Canada were scaled back any further, these levels of inaccuracy could go up. Many participants believed that the threat of spot checks by Measurement Canada acted as a catalyst to make service stations self-regulate. Participants felt that these statistics showed that there was enough potential inaccuracy in retail gasoline measuring devices that there was clearly a role for MC as a regulator and inspector.

Despite the statistics about the inaccuracies going in both directions, there was an underlying concern that, when all is said and done, inaccuracies will usually be against the consumer and that there must be enough spot-check inspections to act as a deterrent against this. With regard to what Measurement Canada's role should be in the retail gasoline sector, participants formed a strong consensus on the following points:

- It must continue to be mandatory that Measurement Canada approves all gas pump measuring device types used in the retail gasoline sector. Participants want to be reassured that any prototypes of meters used for commercial purposes be approved by MC, either directly or indirectly.
- Participants also universally felt that it must be continue to be mandatory approval of all new individual gas pumps be approved by Measurement Canada and that the gas pumps be sealed before they are installed and put into service. This is seen as an essential step in quality control of measuring devices.
- There was also a very strong consensus that, even if Measurement Canada were to do less systematic inspections of gas pumps, they must at the very least continue to do some spot checks of the accuracy of gas pumps. This was seen as being far preferable to doing inspections at set intervals. Participants worry about retailers who cheat on the

readings; those participants want to know that such retailers can be "caught off-guard" by the possibility of being spot-checked.

- There was also a strong consensus that Measurement Canada should set firm regulations requiring service stations to have their gas pumps' accuracy checked and recalibrated at set intervals (i.e. once a year). This periodic inspection would not have to be done by Measurement Canada itself. It could simply be a regulation that it be done by certified approved technicians who could work for other companies. Measurement Canada's role would be to check on whether these periodic inspections were, in fact, taking place. In other words, Measurement Canada has a role to inspect the inspectors.

4.2.5 Accreditation of Other Organizations

Most participants were very open to the idea of Measurement Canada accrediting other organizations to do some of the "hands-on" tasks associated with the inspection and verification of gas pumps. Most people felt that if this could render the process more efficient, then so much the better. Most agreed that this was not an area where a direct role for a government agency was essential. It was suggested that as long as Measurement Canada was still going to be auditing the work of any accredited organizations, this would be acceptable. Several participants were concerned about not setting too many cumbersome regulations that would needlessly increase costs for Measurement Canada and increase bureaucracy. There was some resistance to the idea of Measurement Canada having a much larger staff of inspectors doing all the re-inspections itself. The idea of simply mandating service stations to get their pumps checked periodically was seen to be a good compromise. Some concerns were raised about the consequences of too much downloading of government responsibilities onto the private sector, but, for the most part, people felt that this was one area where it was perfectly acceptable for some third party to do the actual inspections.

As mentioned previously, the idea of making it mandatory for service stations to get their gas pump meters inspected at set intervals was very well received. Some participants were surprised that this was not already compulsory. It was often noted that the big chains such as Shell or Petrocan probably already get their pumps checked regularly for their own protection from the possibility of losing money from pumps being inaccurate in the customers' favour. There was much more concern that smaller independent gasoline retailers might have older, more faulty equipment and might never bother having it serviced. If this were done, Measurement Canada could still drop in on gas stations unannounced to see if they were complying with these rules and to provide proof that these pumps had been checked. This was seen as a good way of

toughening the regulation of gas pumps without causing too much extra work for Measurement Canada. Many participants wanted to know that retailers who are caught not following these regulations would be fined.

There was also a virtually unanimous sentiment that the companies/technicians that are used by retailers for potentially compulsory subsequent re-inspections should be accredited by Measurement Canada, just as the companies that do approval of types and initial inspections of pumps must be accredited. It was envisioned that Measurement Canada would create a “roster” of approved and accredited organizations that gasoline retailers could use for the compulsory re-inspections and that pumps would have to have a seal showing when they had last been re-inspected.

The issue of cost was also raised. Most, if not all, participants felt that the cost to a gas station of having a compulsory annual inspection of pumps would be a negligible cost to the service station and that even if this cost were passed on to the consumer, it would add up to an infinitesimal amount per litre.

In regard to the service industry that sells meters and dispensers, participants in all three cities were in agreement that companies/technicians undergo an approval and certification process before they be allowed to perform service work on meters. This is especially true if Measurement Canada moves to make inspections mandatory. Ultimately, no participants could think of any reason as to why the service industry should not be made to undergo an approval and certification process.

5- ANALYSIS OF CANADA-WIDE SURVEY

Following the focus groups which provided some answers to various aspects of this trade sector review, we verified certain key factors mentioned by the participants that constitute important issues. In order to do this, we commissioned the same firm, Environics, to conduct a Canada-wide survey. This survey contacted 2,018 Canadians throughout Canada, with proportional representation from each region (Atlantic, Quebec, Ontario, West). The results of a survey of this size are correct to within 2.2%, 19 times out of 20.

Before going any further, it is important to specify that we participated in an omnibus survey rather than conducting a survey with our questions only. In an omnibus survey, the respondents answer a series of questions on various subjects, depending on the clients of the firm at any give time. The methodological validity of this type of survey is inferior to that of a specialized survey, since the respondents may not answer certain questions that do not concern them. This reduces the sample size and increases the uncertainty. Thus, of 2,018 respondents to this survey, only 1,711 answered questions concerning gas pump accuracy, since not all of them were gasoline consumers. This methodological compromise was necessitated by the much higher costs of a specialized survey and our budgetary constraints.

Again due to budgetary issues, the survey consisted of only five questions. Moreover, Option consommateurs ensured that the questions were relevant to issues relating to this sector review. The first question established the sample for the purposes of the following questions; only respondents who purchase gasoline were asked the following questions. The second question sought to establish consumers' level of confidence in gas pump accuracy. For the third question, respondents were asked whether they believe gas pump accuracy to be regulated by the government, service station owners, large oil companies, or no one at all. Consumers were then informed that periodic inspection of gas pumps is not mandatory and were asked what effect that had on their level of confidence. Finally, the respondents were informed that the companies and technicians maintaining, repairing, and calibrating gas pumps are unregulated. The pollers asked the respondents whether they would like Measurement Canada to regulate these activities.

The detailed survey results are given in Appendix 8. The survey results are given in aggregate form for all of Canada, but they are also broken down by population characteristics such as sex, age, profession, religion, and political affiliation. For purposes of our analysis, we considered the following criteria with a view to detecting differences among population groups: sex, age,

employment status, family income, level of education, and region of residence (Atlantic, Quebec, Ontario, West).

5.1- Level of Confidence in Gasoline Pump Accuracy

We asked the respondents whether they are very confident, somewhat confident, not very confident, or not at all confident in gas pump accuracy. The majority were somewhat or very confident, corroborating the focus group comments. Among our respondents, 36% were very confident, 46% somewhat confident, 10% not very confident and 6% not at all confident. If we divide the respondents into confident (very and somewhat) and unconfident (not very and not at all confident) groups, we can see that 82% of gasoline consumers are confident and 16% are unconfident in gas pump accuracy.

Table 1 – Consumer Confidence in Gasoline Pump Accuracy

Level of confidence	Proportion (%)
Very confident	36
Somewhat confident	46
Not very confident	10
Not at all confident	6

The results do not reveal significant variations by consumer sex or age. However, we did note that unemployed individuals were overall less confident in pump accuracy, since only 21% of them were very confident while 23% were not very confident.

We also found a strong positive correlation between income and education levels on the one hand and confidence on the other. For income, only 74% of people with annual income under \$20,000 were very or somewhat confident in gas pump accuracy, while this proportion is 91% for people in the \$60,000–\$80,000 bracket. Concerning education, persons lacking a high school diploma were less likely to be confident (71%) than those holding a university diploma (89%).

Differences of opinion between regions were small, with only a slightly lower level of confidence in the Atlantic Provinces (23% in the unconfident group).

5.2- Knowledge of Gasoline Pump Regulation

During the focus groups, most participants were uncertain as to whether gas pump accuracy is regulated. This uncertainty was confirmed in the survey results, with only 53% of consumers believing that a governmental agency regulates this sector, while 38% responded that this sector is self-regulated (19% thought this was by individual service station owners and 19% thought it was by large oil companies such as Petro-Canada or Shell). Finally, 3% stated that this sector is completely unregulated. This data indicates a relative public lack of awareness about regulation in this sector. It should also be noted that the survey does not indicate the extent of public awareness of Measurement Canada, while the focus groups did indicate that this federal agency is essentially unknown.

Table 2 – Consumer Beliefs about Agencies Responsible for Gasoline Pump Accuracy Regulation

Type of agency	Proportion (%)
Government agency	53
Service station owners	19
Large oil companies	19
No regulation	3

For this question, men and women gave significantly different responses. Men (65%) were much more likely than women (41%) to believe that this sector is regulated by a government agency; the latter were more inclined to believe that this sector is self-regulated by service station owners (25%). Differences were also notable for young people aged 18–29, who were less likely (41%) to state that a government agency regulates this sector. Like women, young people were more likely (27%) to state that service station owners regulate their own gas pumps. Other groups less likely to believe that a governmental agency regulates this sector were part-time workers (40%) and homemakers (39%).

Factors producing the inverse effect were annual salary and level of education; these are positively correlated with selection of a governmental agency as the regulatory body. Only 38% of consumers with family incomes under \$20,000 made this choice, while this proportion rose to

62% for those earning \$60,000–80,000 and 58% for those earning more than \$80,000. The proportion is 57% sign for university degree holders but only 41% for consumers who have not completed high school.

There were no significant differences between Canadian regions.

5.3 Reactions to the Lack of Regulation of Gasoline Pump Inspection

In the first survey question, consumers expressed their confidence in gas pump accuracy. This response was largely intuitive since, as we have seen with the second question, they were not generally aware of the status of regulation in this sector. In the third question, we asked for their reaction after informing them that inspection, though mandatory when a pump is installed, is voluntary afterward. This awareness decreased consumer confidence for 63% of consumers, did not affect it for 30%, and increased it for 7%. These results show that consumers find worrisome the absence of regulation of periodic device inspection.

Table 3 – Effect of the Absence of Rules for Periodic Inspection of Gasoline Pumps on Consumer Confidence

Effect	Proportion (%)
Decreases confidence	63
Does not change confidence	30
Increases confidence	7

These results did not vary significantly by sex, age, family income, or level of education. However, there was a slight variation by employment status; part-time employees and the unemployed were more likely to lose confidence (71% and 69%, respectively). The region of residents also had an effect. Results are significantly different in Quebec, where the proportion of those whose confidence declined was much lower (47%) and the proportion of those whose confidence did not change (37%) or increased (16%) was higher. Quebec was the only region to differ significantly in this way.

5.4 Consumer Reaction to the Lack of Regulation of Gasoline Pump Service Companies

During the Retail Food Trade Sector Review of 2002, Measurement Canada put an emphasis on the problems surrounding the lack of regulation of scale service companies. Option consommateurs was concerned about this situation, but the survey conducted in the context of that trade sector review did not include a question on the subject. For this reason, it was difficult for Option consommateurs to legitimate a demand for regulation of service companies. In the context of the RPTSR, this question arose again. This time, Option consommateurs asked consumers if they would like the companies maintaining, repairing, and calibrating gas pumps to be regulated by Measurement Canada. The results are unequivocal: 93% of respondents would like to see such regulation, while only 6% are opposed. These results are the same across all consumer categories.

Table 4 – Consumer Opinion on Regulation of Gasoline Pump Service Companies by Measurement Canada

Opinion	Proportion (%)
Favours	93
Opposes	6

5.5 Summary

In general, consumers started out with a high level of confidence in gas pump accuracy, but this confidence was more intuitive than based on facts, since a non-negligible proportion of them did not believe that this sector is regulated by a government agency. Worse, when they learned that periodic inspection of gas pumps is not mandatory, the majority affirmed that this situation decreased their confidence in the accuracy of these devices. Finally, consumers very clearly expressed the need for the companies selling, repairing, maintaining, and calibrating gas pumps to be regulated by Measurement Canada.

6- POSITION OF OPTION CONSOMMATEURS

From the information in the preceding sections of this report, we proceed to put forward a set of proposals to protect consumers' interests in the area of gas pump accuracy. In doing so, Option consommateurs drew upon the current regulatory context and the objectives of Measurement Canada's RPTSR, prevailing practices in the United States, and Canadian consumers' opinion as expressed in the context of our focus groups and Canada-wide survey. We shall also take account of Option consommateurs' past experience with trade sector reviews from which we have drawn various lessons. Finally, we shall base our arguments on certain established positions of Option consommateurs on regulatory affairs. It is important to stress that this report takes account of the resources and strategic direction of the federal agency, meaning that we shall not formulate demands that would entail a significant increase in the necessary resources or challenge the legitimacy of certain practices implemented in the past, such as accreditation. In any event this limit was raised by the focus groups, whose participants did not express any demand to increase the number of inspectors or multiply the number of new regulations.

We shall divide our arguments into groups relating to Measurement Canada's various spheres of intervention as described in Chapter 2. We shall also include the aspects of accreditation and supervision of the gas pump service industry, an important concern of Option consommateurs.

Before continuing, it is important to stress that Option consommateurs is satisfied with the level of consumer confidence in gas pump accuracy. This confidence was expressed in both the focus groups and the survey and is largely due to the fact that the media have never mentioned cases of inaccuracy or deficiencies in the regulations governing this sector. It is our opinion that this confidence attests to adequate surveillance of the market by a neutral and impartial agency. This surveillance, assured by Measurement Canada, must continue. We accept a sharing of tasks between this agency and external partners, provided Measurement Canada remains the final authority on regulation of this trade sector.

Recommendation 1: That Measurement Canada remain the final authority over gas pump accuracy.

6.1 Development of Metrological Standards

As mentioned in Chapter 2, Measurement Canada intends to continue developing metrological standards for trade measuring devices. This issue was not discussed in the focus groups or the survey, but Option consommateurs supports this decision since it is in keeping with our established positions. For Option consommateurs, it is important that a public agency with no commercial interests sets standards based on objective criteria. For this reason, we support Measurement Canada's decision to continue being the only body responsible for developing metrological standards on gas pump accuracy.

Recommendation 2: That Measurement Canada remain responsible for developing metrological standards for gas pump accuracy.

6.2 Maintenance and Certification of Measurement Standards

Maintenance and certification of measurement standards is key to measurement accuracy, since it is these that serve to verify the accuracy of trade measuring devices such as gas pumps. It is important that standards be rigorously traceable and that the laboratories ensuring this traceability use scientifically tested procedures and advanced equipment so as to minimize error. This rather technical question was not discussed in the focus groups or the survey, but the experience of previous trade sector reviews and our documentary research on U.S. practices enable us to express an opinion on this subject.

In the context of the RPTSR, Measurement Canada intends to contract out part of the work that guarantees the traceability of measurement standards to external organizations. Option consommateurs considers this issue to be highly sensitive and would prefer that Measurement Canada continue to be the only body certifying standards. Measurement Canada has high-tech laboratories and enviable experience in this technically complex field. However, Option consommateurs would be willing to consider the use of external laboratories to certify measurement standards under certain conditions.

In the United States, traceability and certification of measurement standards is guaranteed by NIST, a public agency whose strict standards are internationally renowned. The standards used by the competent weights and measures authorities are traceable to those of NIST, and the state

laboratories are accredited by NIST. This example could offer a useful solution to Measurement Canada. If the agency does contract out certification of measurement standards to third-party organizations, it is important that it guarantee their traceability and that the work performed by external laboratories be very rigorous. In this case, Option consommateurs stresses that the agency should implement an accreditation program similar to the one used by NIST for state laboratories. This program should use highly strict standards and a rigorous follow-up procedure.

Measurement Canada could also recognize standards traceable to internationally recognized laboratories such as those of NIST or the International Organization for Legal Metrology (IOLM). Such a solution would be acceptable to Option consommateurs, since NIST and IOLM are internationally recognized.

Recommendation 3: That if Measurement Canada uses external laboratories for certification of measurement standards, the agency should implement a rigorous accreditation and surveillance program for these laboratories, whose standards could be based on those of NIST.

Recommendation 4: That Measurement Canada consider recognizing standards traceable to those of internationally recognized laboratories such as NIST or IOLM.

6.3 Approval of Gasoline Pump Types

As part of its strategic direction for all the sector reviews, Measurement Canada is studying the possibility of using Alternative Service Delivery (ASD) mechanisms for approval of device types, such as gas pumps, which occurs when a new type is placed on the market. This means that Measurement Canada would contract out some aspects of the approval of measuring device types to external organizations including, possibly, the device manufacturers themselves. Both in the context of the previous trade sector reviews and as part of its established stance, Option consommateurs has always been reticent to such an approach, since it is likely to generate conflicts of interest, particularly where the manufacturers perform tests for approval of their own devices.

Our study of U.S. practices shows that type approval, which is mandatory in the majority of states (except nine, including Florida), is generally carried out by the states, and that the laboratories responsible for approving pump types largely participate in the NCWM program NTEP. Type approval, then, remains under the responsibility of the public authorities in the United States.

The question of approval of gas pump types was raised in the focus groups. The participants clearly indicated that Measurement Canada should approve all new pump types before they are placed on the market. They wanted assurance that Measurement Canada will directly or indirectly approve all new device types used to measure gasoline sold at service stations. The participants did not indicate what they meant by indirect approval.

Option consommateurs' view is that Measurement Canada should always approve new pump types, and that the involvement of manufacturers in this process would be likely to engender conflicts of interest. This said, Option consommateurs is not categorically opposed to the use of ASD mechanisms in this connection. Option consommateurs does stress that Measurement Canada must rigorously supervise the type approvals where external organizations perform the tests. In the first place, final approval should remain under the responsibility of Measurement Canada, so that the agency remains accountable to the public. In other words, Measurement Canada should have the last word on gas pump types approved, after consideration of the results of tests performed by external organizations. Second, Measurement Canada should use the Accreditation Program using standard S-A-01:2002, based on ISO 9001:2000 and ISO/CEI 17025:1999. By this means, only organizations accredited by Measurement Canada would perform tests and these tests would be governed by standards, and the federal agency could monitor these through surveillance audits. Finally, in order to avoid conflicts of interest, Option consommateurs stresses that the accredited organizations must have no financial interest in the approval or non-approval of gas pump types. This condition, which aims to eliminate conflicts of interest in the type approval process, means that manufacturers should be excluded from the process, for approval of both their own prototypes and their competitors'.

Recommendation 5: That where Measurement Canada contracts out gas pump type approvals to external organizations, Measurement Canada should remain accountable to the public by retaining final authority over approvals.

Recommendation 6: That where Measurement Canada contracts out gas pump type approval to external organizations, it authorize only organizations accredited under standard S-A-01:2002 to conduct approval testing.

Recommendation 7: That where Measurement Canada contracts out gas pump type approval to external organizations, these organizations have no financial interest in the approval or non-approval of pump types.

6.4 Initial Gasoline Pump Inspection

The focus group participants stressed the importance of the status quo, i.e., that all gas pumps be inspected before being put into service. The *Weights and Measures Act*, which governs gas pumps, requires all devices used for trade measurement to undergo initial inspection. This is also mandatory in the U.S. states studied in this report.

Option consommateurs recommends that initial inspection of gas pumps remain mandatory. As emphasized by the focus group participants, Option consommateurs does not object to this inspection being performed by organizations accredited by Measurement Canada in accordance with the Accreditation Program based on standard S-A-01:2002. We are of the view that standards and surveillance audits would constitute a sufficient guarantee of the rigour of the inspections performed by the accredited organizations.

Recommendation 8: That initial inspection of gas pumps remain mandatory and that it be contracted out to external organizations, as necessary, through Measurement Canada's Accreditation Program based on standard S-A-01:2002.

6.5 Periodic Inspection

Option consommateurs is greatly concerned by the fact that periodic inspection of gas pumps is not mandatory, that these inspections, previously performed regularly, have greatly decreased in number, and that the non-compliance rate is 20%. We are of the opinion that this situation is problematic and must be corrected without delay. This problem is real, as shown by the high rates of non-compliance revealed when Measurement Canada does conduct the occasional inspection. Though most errors are small and they apparently balance out in terms of those favouring the businesses and those favouring the consumers, we feel that it is important for gasoline measurement to be accurate.

The focus group participants expressed their concerns about this situation, particularly with respect to small independent service stations whose owners might attempt to economize by neglecting to have their pumps' accuracy inspected. The participants also stressed the risk that

stations, cognizant of the minimal probability of a surprise inspection, might be tempted to commit fraud by altering the meters on their pumps. Given the risks related to the near absence of periodic pump inspection, the participants stressed the importance of Measurement Canada's intervening to remedy the situation. The survey respondents shared this opinion, since for the majority of them, this situation decreases their confidence in gas pump accuracy. Finally, the U.S. states we studied require frequent pump inspections.

In view of these facts, Option consommateurs recommends that Measurement Canada change its policy on periodic inspection. The current situation is untenable and solutions must be found. We are aware that Measurement Canada has undergone a significant downsizing, with fewer inspectors than before, and this has greatly contributed to the current situation. We are also aware that it is unrealistic to propose taking a step backward, with mass hiring of inspectors, and that alternative solutions must be found.

The focus group participants proposed interesting potential solutions for better market surveillance that would not require significant efforts or resources on the part of Measurement Canada. Our proposal is inspired by these suggestions. First, it is important that gas pumps be inspected regularly. Being situated outdoors, these devices are exposed to the elements, and we believe that a period of one year is reasonable (this is the period used in California, where weather conditions are less extreme). Second, these inspections should be performed by organizations accredited by the Measurement Canada Accreditation Program (based on S-A-01:2002). Service station owners would be responsible for arranging with these organizations to perform the mandatory annual inspection. Since these organizations would be accredited by Measurement Canada, they would be authorized to affix a dated seal of approval if the pump meets Measurement Canada standards. Some might object that the resulting cost increase incurred by service stations would be passed along to the consumer. However, a quick calculation based on a cost of \$500 per inspection and the average annual volume of gas sold (3 million liters) yields an impact of 0.0166 cents per liter, which is perfectly acceptable to Option consommateurs. Finally, there is no way to guarantee fulfilment of this obligation without ongoing surveillance by Measurement Canada. This role might be fulfilled by Measurement Canada inspectors conducting random checks of seals of approval on gas pumps, as well as by surveillance audits under the Accreditation Program.

Recommendation 9: That annual inspection of gas pumps become mandatory.

Recommendation 10: That periodic inspection of gas pumps be carried out by accredited organizations under the Measurement Canada Accreditation Program based on S-A-01:2002.

Recommendation 11: That Measurement Canada enforce compliance with the obligation of service stations to have their gas pumps inspected annually through random audits of seals of approval as well as surveillance audits under the Measurement Canada Accreditation Program.

6.6 Net Quantity Verification

This aspect was not covered by the survey or the focus groups, and U.S. regulations do not make any provisions for it. Net quantity verification is currently under the direct responsibility of Measurement Canada, and past experience with the Retail Food Trade Sector Review shows that the agency does not intend to make changes in this area.

Option consommateurs considers this situation to be acceptable, but we are concerned about the lack of relevant data on compliance rates. The compliance data provided by Measurement Canada concerns relates to periodic pump inspection only. We would like Measurement Canada to conduct random inspections so as to ascertain these levels of compliance. This could be done through sampling of inspections over the coming years. A similar recommendation was made for the Retail Food Trade Sector Review.

Recommendation 12: That Measurement Canada continue to be involved in net quantity verification and that it gather data to ascertain compliance rates in this area.

6.7 Complaint and Dispute Investigation

In its strategic direction, Measurement Canada intends to retain its responsibility for investigation of complaints and disputes between consumers and service stations. Option consommateurs supports this decision since, according to our standard position, we think that a neutral and impartial agency must oversee the market as the final arbiter of conflicts. We do not oppose the idea of service stations and oil companies attempting to resolve their disputes with consumers, but we think they should not have the last word in the case of a conflict. For this reason, we

support Measurement Canada's decision to retain its role as final arbiter of conflicts surrounding gasoline measurement at service stations.

In order for consumers to benefit from a neutral and impartial arbiter in these instances, they must be aware of Measurement Canada's existence and their right to lodge an appeal. We have noted that very few consumers are aware of Measurement Canada (as determined by the focus groups) and that nearly half of them (according to the survey) think that gas pump accuracy is not regulated by a government agency. We also noted this problem in previous trade sector reviews and we think that the situation must be remedied. Furthermore, our study of U.S. regulations shows that consumers are better informed of their remedies in that country. Indeed, the seals of approval on gas pumps indicate a telephone number that consumers can call if they doubt the pump's accuracy.

Option consommateurs is aware of Measurement Canada's limited resources and its inability to handle the thousands of calls from consumers that might ensue from a mass information campaign. However, we are of the opinion that the agency would profit by being better known to the public and by making people aware of these remedies. Measurement Canada lags behind the weights and measures authorities of the United States in terms of visibility and this diminishes the effectiveness of its role as final arbiter of conflicts. Some might respond that there are no problems with gas pump accuracy and that increasing Measurement Canada's visibility could create spurious problems. But we think consumers have the right to be informed of their rights, and moreover, the low rates of compliance tell us that there are indeed problems with gas pump accuracy.

In the opinion of Option consommateurs, the accredited organizations performing periodic pump inspections and the service station owners could do their part to enhance the visibility of Measurement Canada. One way would be for them to affix seals of approval bearing the telephone number of the nearest Measurement Canada office. Such a solution would avoid the costs of a large-scale publicity campaign and would enhance consumer confidence in service stations. We think that if consumers find about their rights from the service station itself, they will be more inclined to believe that the latter has nothing to hide.

Recommendation 13: That Measurement Canada retain its role as final arbiter of conflicts surrounding gasoline measurement between consumers and service stations.

Recommendation 14: That Measurement Canada's existence and consumers' right to appeal to this agency in case of gasoline measurement disputes be better publicized through the participation of accredited organizations and service station owners.

6.8 The Accreditation Program

A majority of the focus group participants were in favour of using external organizations, under the supervision of Measurement Canada, to carry out the inspections that the agency is increasingly unable to perform. The Accreditation Program meets this need and Option consommateurs thinks that Measurement Canada should pursue this direction so as to fulfil the need to conduct periodic inspections, as recommended above.

Recommendation 15: That Measurement Canada pursue the development of the Accreditation Program based on S-A-01:2002, in order to respond to the new periodic inspection needs.

6.9 Supervision of Gasoline Pump Service Technicians and Companies

The companies and technicians selling, installing, maintaining and calibrating gas pumps are not currently supervised on aspects relating to measurement accuracy by Measurement Canada or any other governmental regulatory body. They are not required to hold metrology qualifications, use Measurement Canada-approved measurement standards to calibrate pump meters, or use test procedures approved by the agency. This situation is all the more surprising in that the U.S. states studied do have accreditation programs for all trade measuring devices. When we raised this issue in the survey and the focus groups, a large majority of consumers said that gas pump service technicians and companies should be regulated by Measurement Canada.

Technicians who work on gas pumps could affect their metering accurately and it is important that they possess suitable qualifications and tools. The current unregulated situation is all the more worrisome in that periodic pump inspection is not mandatory and, for all intents and purposes, no longer practiced. If an ill-qualified technician using the wrong tools performs work that affects pump accuracy and the pumps are not inspected subsequently, the impact on pump accuracy could be significant. Moreover, if periodic inspection becomes mandatory and technicians and companies remain unregulated, service station owners would be more subject to non-compliance.

Option consommateurs considers the situation to be problematic and recommends that gas pump service technicians and companies be supervised by Measurement Canada. This recommendation is all the more important in that they are performing work on regulated measuring devices. Supervision would guarantee service station owners that they are receiving

quality maintenance services and getting better gas pump accuracy — something that consumers would also like to see. In order for these technicians and companies to be adequately supervised, Option consommateurs would like the following five aspects to be included:

- 1- Mandatory renewable registration of all technicians and companies selling, maintaining, repairing, and/or calibrating gas pumps.
- 2- The obligation for technicians and companies selling, maintaining, repairing and/or calibrating gas pumps to keep records of work performed on pumps.
- 3- The obligation for technicians and companies to use procedures approved by Measurement Canada for all work affecting gas pump accuracy.
- 4- The obligation for technicians and companies to use measurement standards approved by Measurement Canada to calibrate gas pumps.
- 5- Revocation of technicians' and companies' registration in case of serious or repeated violations.

Recommendation 16: That Measurement Canada regulate gas pump service technicians and companies. This regulation should include mandatory registration, the obligation to keep records of work performed, the obligation to use Measurement Canada-approved measurement standards and procedures, and revocation of registration in the event of serious or repeated violations.

6.10 Consumer Representatives' Participation in Follow-up to the RPTSR

The recommendations put forward by Option consommateurs should be given a hearing during negotiations to establish future changes in regulation of the retail gasoline sector by Measurement Canada. Our past experience has shown that without the participation of consumer associations in meetings with stakeholders, consumer interests cannot be adequately represented.

To enable consumer representatives to assert their views, it is essential for Measurement Canada to ensure that consumer representatives have the means to participate actively in all negotiations leading to a consensus on future strategies in this trade sector.

Recommendation 17: That Measurement Canada ensure that follow-up to the Retail Petroleum Trade Sector Review take place in collaboration with consumer representatives.

CONCLUSION AND RECOMMENDATIONS

The purpose of this research has been to develop a set of arguments and recommendations enabling us to advocate on behalf of consumers' interests at meetings to be held by Measurement Canada between various stakeholders in the retail gasoline market. These stakeholders are the large oil companies, the independent service station representatives, and individual and commercial consumers. It is certain that the stakeholders will put forward divergent positions and it is in the interest of individual consumers for Option consommateurs to present a set of arguments based on solid evidence.

Thanks to the financial contribution of Industry Canada, Option consommateurs was able to carry out this mandate by conducting research on the issues surrounding gas pump accuracy and by submitting this report. This report will support the participation of Option consommateurs at meetings organized by Measurement Canada. Thanks to our factual data, including the opinions of survey and focus group participants, we will be in a position to negotiate on an equal footing with the other market stakeholders.

The research conducted in the context of this report and the arguments ensuing from it cover all areas of Measurement Canada's involvement in the retail gasoline sector. Some areas of intervention demand few changes and we are satisfied with Measurement Canada's involvement in these areas. This is true for metrological standards, initial inspection, net quantity verification, and the Accreditation Program. In the area of maintenance and certification of measurement standards, we agree with the changes that Measurement Canada is proposing. For approval of gas pump types, we recommend that Measurement Canada proceed with caution in contracting out this work to external organizations in order to avoid conflicts of interest, and that the agency make sure to retain its decision-making power. Regarding investigation of complaints and disputes, we recommend that Measurement Canada ensure that consumers are better informed of their rights.

Two areas of intervention are problematic and require major changes. First, we think that the number of periodic pump inspections being performed presently is highly insufficient and that the lack of requirements on periodic inspection constitutes a problem given the high rate of non-compliance revealed by the occasional inspections performed. In this area, we recommend that periodic inspections become mandatory and be carried out by accredited organizations under the supervision of Measurement Canada.

Second, the lack of regulation and supervision of gas pump service technicians and companies constitutes a major problem. This problem is worsened by the near-absence of periodic inspections, so that there is no subsequent verification of the quality of the work performed by these technicians. Given this problem, we recommend that these technicians and companies be regulated and supervised by Measurement Canada.

We therefore put forward the following recommendations, which we shall present at the Measurement Canada consensus meetings.

Recommendation 1: That Measurement Canada remain the final authority over gas pump accuracy.

Recommendation 2: That Measurement Canada remain responsible for developing metrological standards for gas pump accuracy.

Recommendation 3: That if Measurement Canada uses external laboratories for certification of measurement standards, the agency should implement a rigorous accreditation and surveillance program for these laboratories, whose standards could be based on those of NIST.

Recommendation 4: That Measurement Canada consider recognizing standards traceable to those of internationally recognized laboratories such as NIST or IOLM.

Recommendation 5: That where Measurement Canada contracts out gas pump type approvals to external organizations, Measurement Canada should remain accountable to the public by retaining final authority over approvals.

Recommendation 6: That where Measurement Canada contracts out gas pump type approval to external organizations, it authorize only organizations accredited under standard S-A-01:2002 to conduct approval testing.

Recommendation 7: That where Measurement Canada contracts out gas pump type approval to external organizations, these organizations be at arm's length, in financial terms, from the approval or non-approval of pump types.

Recommendation 8: That initial inspection of gas pumps remain mandatory and that it be contracted out to external organizations, as necessary, through Measurement Canada's Accreditation Program based on standard S-A-01:2002.

Recommendation 9: That annual inspection of gas pumps become mandatory.

Recommendation 10: That periodic inspection of gas pumps be carried out by accredited organizations under the Measurement Canada Accreditation Program based on S-A-01:2002.

Recommendation 11: That Measurement Canada enforce compliance with the obligation of service stations to have their gas pumps inspected annually through random audits of seals of approval as well as surveillance audits under the Measurement Canada Accreditation Program.

Recommendation 12: That Measurement Canada continue to be involved in net quantity verification and that it gather data to ascertain compliance rates in this area.

Recommendation 13: That Measurement Canada retain its role as final arbiter of conflicts surrounding gasoline measurement between consumers and service stations.

Recommendation 14: That Measurement Canada's existence and consumers' right to appeal to this agency in case of gasoline measurement disputes be better publicized through the participation of accredited organizations and service station owners.

Recommendation 15: That Measurement Canada pursue the development of the Accreditation Program based on S-A-01:2002, in order to respond to the new periodic inspection needs.

Recommendation 16: That Measurement Canada regulate gas pump service technicians and companies. This regulation should include mandatory registration, the obligation to keep records of work performed, the obligation to use Measurement Canada-approved measurement standards and procedures, and revocation of registration in the event of serious or repeated violations.

Recommendation 17: That Measurement Canada ensure that follow-up to the Retail Petroleum Trade Sector Review take place in collaboration with consumer representatives.

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APPENDIX 1 – NIST HANDBOOK 130 – 2003 EDITION – UNIFORM WEIGHTS AND MEASURES LAW

1. Background

Recognition of the need for uniformity in weights and measures laws and regulations among the states was first noted at the Second Annual Meeting of the National Conference on Weights and Measures in April 1906. In the following year, basic outlines of a "Type State Weights and Measures Law" were developed. The first "Type Law," as such, was formally adopted by the Conference in 1911.

Through the years, almost without exception, each State has relied upon the NCWM Weights and Measures Law when the State first enacted comprehensive weights and measures legislation. This has led to a greater degree of uniformity in the basic weights and measures requirements throughout the country.

The original Law was regularly amended to provide for new developments in commercial practices and technology. This resulted in a lengthy and cumbersome document and in the need for a simplification of the basic weights and measures provisions. The 1971 National Conference on Weights and Measures adopted a thoroughly revised, simplified, modernized version of the "Type State Weights and Measures Law." This Law now can serve as a framework for all the many concerns in weights and measures administration and enforcement.

The title of the Law was changed by the 1983 NCWM. Amendments or revisions to the Law since 1971 are noted at the end of each section.

Sections 4 through 10 of the Uniform Weights and Measures Law adopt NIST Handbook 44 and the Uniform Regulations in NIST Handbook 130 by citation. In addition, these sections adopt supplements to and revisions of Handbook 44 and the Uniform Regulations "except insofar as modified or rejected by regulation." Some State laws may not permit enacting a statute that provides for automatic adoption of future supplements to or revisions of a Uniform Regulation covered by that statute. If this should be the case in a given State, two alternatives are available:

- a. Sections 4 through 10 may be enacted without the phrase "... and supplements thereto or revisions thereof..."
- b. Sections 4 through 10 may be enacted by replacing "... except insofar as modified or rejected by regulation..." with the phrase "...as adopted, or amended and adopted, by rule of the director."

Either alternative requires action on the part of the director to adopt a current version of Handbook 44 and each Uniform Regulation each time a supplement or revision is made by the National Conference on Weights and Measures.

Section 1. Definitions

When used in this Act:

1.1. Weight(s) and (or) Measure(s). -- The term "weight(s) and (or) measure(s) " means all weights and measures of every kind, instruments and devices for weighing and measuring, and any appliance and accessories associated with any or all such instruments and devices.

1.2. Weight. -- The term "weight " as used in connection with any commodity or service means net weight. When a commodity is sold by drained weight , the term means net drained weight.

(Amended 1974, 1990)

1.3. Correct. -- The term "correct " as used in connection with weights and measures means conformance to all applicable requirements of this Act.

1.4. Primary Standards. -- The term "primary standards " means the physical standards of the State that serve as the legal reference from which all other standards for weights and measures are derived.

1.5. Secondary Standards. -- The term "secondary standards " means the physical standards that are traceable to the primary standards through comparisons, using acceptable laboratory procedures, and used in the enforcement of weights and measures laws and regulations.

1.6. Director. -- The term "director " means the___ of the Department of_____.

1.7. Person. -- The term "person " means both plural and the singular, as the case demands, and includes individuals, partnerships, corporations, companies, societies, and associations.

1.8. Sale from Bulk. -- The term "sale from bulk " means the sale of commodities when the quantity is determined at the time of sale.

1.9. Package. -- Except as modified by § 1. Application of the Uniform Packaging and Labeling Regulation, the term "package," whether standard package or random package, means any commodity:

- a. enclosed in a container or wrapped in any manner in advance of wholesale or retail sale or
- b. whose weight or measure has been determined in advance of wholesale or retail sale.

An individual item or lot of any commodity on which there is marked a selling price based on an established price per unit of weight or of measure shall be considered a package (or packages).

(Amended 1991)

1.10. Net "Mass" or Net "Weight." -- The term "net mass" or "net weight" means the weight^[NOTE 1, see page 70] of a commodity excluding any materials, substances, or items not considered to be part of the commodity. Materials, substances, or items not considered to be part of the commodity include, but are not limited to, containers, conveyances, bags, wrappers, packaging materials, labels, individual piece coverings, decorative accompaniments, and coupons, except that, depending on the type of service rendered, packaging materials may be considered to be part of the service. For example, the service of shipping includes the weight of packing materials.

(Added 1988; Amended 1989, 1991, 1993)

NOTE 1: *When used in this law, the term "weight" means "mass." (See paragraph V. and W. in Section I., Introduction, of NIST Handbook 130 for an explanation of these terms.)*

(Note added 1993)

1.11. Random Weight Package. -- A package that is one of a lot, shipment, or delivery of packages of the same commodity with no fixed pattern of weights.

(Added 1990)

1.12. Standard Package. -- A package that is one of a lot, shipment, or delivery of packages of the same commodity with identical net contents declarations; for example, 1 L bottles or 12 fl oz cans of carbonated soda; 500 g or 5 lb bags of sugar; 100 m or 300 ft packages of rope.

(Added 1991; Amended 1993)

1.13. Commercial Weighing and Measuring Equipment. -- The term "commercial weighing and measuring equipment" means weights and measures and weighing and measuring devices 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.

(Added 1995)

Section 2. Systems of Weights and Measures

The International System of Units (SI)^[NOTE 2, see page 71] and the system of weights and measures in customary use in the United States are jointly recognized, and either one or both of these systems shall be used for all commercial purposes in the State. The definitions of basic units of weight and measure, the tables of weight and measure, and weights and measures equivalents as published by the National Institute of Standards and Technology are recognized and shall govern weighing and measuring equipment and transactions in the State.

(Amended 1993)

NOTE 2: *The "International System of Units" means the modernized metric system as established in 1960 by the General Conference on Weights and Measures and interpreted or modified for the United States by the Secretary of Commerce. [See Metric Conversion Act of 1975 (Public Law 94-168, § 3(1) and § 4(4), and NIST Special Publication 814 - Metric System of Measurement; Interpretation of the International System of Units for the United States, or the Federal Register of December 20, 1990, (FR 90-21913).] (Added 1993)*

Section 3. Physical Standards

Weights and measures that are traceable to the U.S. prototype standards supplied by the Federal Government, or approved as being satisfactory by the National Institute of Standards and Technology, shall be the State primary standards of weights and measures, and shall be maintained in such calibration as prescribed by the National Institute of Standards and Technology. All secondary standards may be prescribed by the director and shall be verified upon their initial receipt, and as often thereafter as deemed necessary by the director.

Section 4. Technical Requirements for Weighing and Measuring Devices

[NOTE 3, see page 72]

The specifications, tolerances, and other technical requirements for commercial, law enforcement, data gathering, and other weighing and measuring devices as adopted by the National Conference on Weights and Measures, published in the National Institute of Standards and Technology Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices," and supplements thereto or revisions thereof, shall apply to weighing and measuring devices in the State, except insofar as modified or rejected by regulation.

(Amended 1975)

NOTE 3: Sections 4 through 10 of the Uniform Weights and Measures Law adopt NIST Handbook 44 and Uniform Regulations in NIST Handbook 130 by citation. In addition, these sections adopt supplements to and revisions of NIST Handbook 44 and the Uniform Regulations "except insofar as modified or rejected by regulation." Some State laws may not permit enacting a statute that provides for automatic adoption of future supplements to or revisions of a regulation covered by that statute. If this should be the case in a given State, two alternatives are available:

- a. Sections 4 through 10 may be enacted without the phrase "...and supplements thereto or revisions thereof..."
- b. Sections 4 through 10 may be enacted by replacing "...except insofar as modified or rejected by regulation ..." with the phrase "...as adopted, or amended and adopted, by rule of the director."

Either alternative requires action on the part of the director to adopt a current version of the Handbook 44 and each Uniform Regulation each time a supplement is added or revision is made by the National Conference on Weights and Measures.]

Section 5. Requirements for Packaging and Labeling [NOTE 3, see page 72]

The Uniform Packaging and Labeling Regulation as adopted by the National Conference on Weights and Measures and published in the National Institute of Standards and Technology Handbook 130, "Uniform Laws and Regulations," and supplements thereto or revisions thereof, shall apply to packaging and labeling in the State, except insofar as modified or rejected by regulation.

(Added 1983)

Section 6. Requirements for the Method of Sale of Commodities [NOTE 3, see page 72]

The Uniform Regulation for the Method of Sale of Commodities as adopted by the National Conference on Weights and Measures and published in National Institute of Standards and Technology Handbook 130, "Uniform Laws and Regulations," and supplements thereto or revisions thereof, shall apply to the method of sale of commodities in the State, except insofar as modified or rejected by regulation.

(Added 1983)

Section 7. Requirements for Unit Pricing [NOTE 3, see page 72]

The Uniform Unit Pricing Regulation as adopted by the National Conference on Weights and Measures and published in the National Institute of Standards and Technology Handbook 130,

"Uniform Laws and Regulations," and supplements thereto or revisions thereof, shall apply to unit pricing in the State, except insofar as modified or rejected by regulation.

(Added 1983)

Section 8. Requirements for the Registration of Servicepersons and Service Agencies for Commercial Weighing and Measuring Devices ^[NOTE 3 , see page 72]

The Uniform Regulation for the Voluntary Registration of Servicepersons and Service Agencies for Commercial Weighing and Measuring Devices as adopted by the National Conference on Weights and Measures and published in the National Institute of Standards and Technology Handbook 130 , "Uniform Laws and Regulations," and supplements thereto or revisions thereof, shall apply to the registration of servicepersons and service agencies in the State, except insofar as modified or rejected by regulation.

(Added 1983)

Section 9. Requirements for Open Dating ^[NOTE 3 , see page 72]

The Uniform Open Dating Regulation as adopted by the National Conference on Weights and Measures and published in the National Institute of Standards and Technology Handbook 130, "Uniform Laws and Regulations," and supplements thereto or revisions thereof, shall apply to open dating in the State, except insofar as modified or rejected by regulation.

(Added 1983)

Section 10. Requirements for Type Evaluation ^[NOTE 3 , see page 72]

The Uniform Regulation for National Type Evaluation as adopted by the National Conference on Weights and Measures and published in National Institute of Standards and Technology Handbook 130, "Uniform Laws and Regulations," and supplements thereto or revisions thereof, shall apply to type evaluation in the State, except insofar as modified or rejected by regulation.

(Added 1985)

Section 11. State Weights and Measures Division

There shall be a State Division of Weights and Measures located for administrative purposes within the Department of (agency, etc.). The Division is charged with, but not limited to, performing the following functions on behalf of the citizens of the State:

- a. Assuring that weights and measures in commercial services within the State are suitable for their intended use, properly installed, and accurate, and are so maintained by their owner or user.
- b. Preventing unfair or deceptive dealing by weight or measure in any commodity or service advertised, packaged, sold, or purchased within the State.
- c. Making available to all users of physical standards or weighing and measuring equipment the precision calibration and related metrological certification capabilities of the weights and measures facilities of the Division.
- d. Promoting uniformity , to the extent practicable and desirable, between weights and measures requirements of this State and those of other States and Federal agencies.
- e. Encouraging desirable economic growth while protecting the consumer through the adoption by rule of weights and measures requirements as necessary to assure equity among buyers and sellers.

(Added 1976)

Section 12. Powers and duties of the Director

The director shall:

- a. maintain traceability of the State standards to the national standards in the possession of the National Institute of Standards and Technology;
- b. enforce the provisions of this Act;
- c. issue reasonable regulations for the enforcement of this Act, which regulations shall have the force and effect of law;
- d. establish labeling requirements , establish requirements for the presentation of cost-per-unit information , establish standards of weight , measure , or count , and reasonable standards of fill for any packaged commodity; and establish requirements for open dating information;

(Added 1973)

- e. grant any exemptions from the provisions of this Act or any regulations promulgated pursuant thereto when appropriate to the maintenance of good commercial practices within the State;
- f. conduct investigations to ensure compliance with this Act;
- g. delegate to appropriate personnel any of these responsibilities for the proper administration of this office;
- h. test annually the standards for weights and measures used by any city or county within the State, and approve the same when found to be correct;
- i. have the authority to inspect and test commercial weights and measures kept, offered, or exposed for sale;

(Amended 1995)

- j. inspect and test, to ascertain if they are correct, weights and measures commercially used:
 - 1) in determining the weight, measure, or count of commodities or things sold, or offered or exposed for sale, on the basis of weight, measure, or count, or
 - 2) in computing the basic charge or payment for services rendered on the basis of weight, measure, or count;
- k. test all weights and measures used in checking the receipt or disbursement of supplies in every institution, the maintenance of which funds are appropriated by the legislature of the State;
- l. approve for use, and may mark, such commercial weights and measures as are found to be correct, and shall reject and order to be corrected, replaced, or removed such

commercial weights and measures as are found to be incorrect. Weights and measures that have been rejected may be seized if not corrected within the time specified or if used or disposed of in a manner not specifically authorized. The director shall remove from service and may seize the weights and measures found to be incorrect that are not capable of being made correct;

(Amended 1995)

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

(Amended 1984, 1988, 2000)

- n. prescribe, by regulation, the appropriate term or unit of weight or measure to be used, whenever the director determines that an existing practice of declaring the quantity of a commodity or setting charges for a service by weight, measure, numerical count, time, or combination thereof, does not facilitate value comparisons by consumers, or offers an opportunity for consumer confusion;

(Amended 1991)

- o. 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;
- p. provide for the training of weights and measures personnel, and may establish minimum training and performance requirements which shall then be met by all weights and measures personnel, whether county, municipal, or State. The director may adopt the training standards of the National Conference on Weights and Measures' National Training Program; and

(Added 1991)

- q. verify advertised prices, price representations, and point-of-sale systems, as deemed necessary, to determine: (1) the accuracy of prices and computations and the correct use of the equipment, and (2) if such system utilizes scanning or coding means in lieu of manual entry, the accuracy of prices printed or recalled from a database. In carrying out the provisions of this section, the director shall: (i) employ recognized procedures, such as are designated in National Institute of Standards and Technology Handbook 130, Uniform Laws and Regulations, "Examination Procedures for Price Verification," (ii) issue necessary rules and regulations regarding the accuracy of advertised prices and automated systems for retail price charging (referred to as "point-of-sale systems") for the enforcement of this section, which rules shall have the force and effect of law; and (iii) conduct investigations to ensure compliance.

(Added 1995)

Section 13. Special Police Powers

When necessary for the enforcement of this Act or regulations promulgated pursuant thereto, the director is:

- a. Authorized to enter any commercial premises during normal business hours, except that in the event such premises are not open to the public, he/she shall first present his/her credentials and obtain consent before making entry thereto, unless a search warrant has previously been obtained.
- b. Empowered to issue stop-use, hold, and removal orders with respect to any weights and measures commercially used, stop-sale, hold, and removal orders with respect to any packaged commodities or bulk commodities kept, offered, or exposed for sale.
- c. Empowered to seize, for use as evidence, without formal warrant, any incorrect or unapproved weight, measure, package, or commodity found to be used, retained, offered, or exposed for sale or sold in violation of the provisions of this Act or regulations promulgated pursuant thereto.
- d. Empowered to stop any commercial vehicle and, after presentation of his credentials, inspect the contents, require the person in charge of that vehicle produce any documents in his possession concerning the contents, and require him to proceed with the vehicle to some specified place for inspection.
- e. With respect to the enforcement of this Act, the director is hereby vested with special police powers, and is authorized to arrest, without formal warrant, any violator of this Act.

Section 14. 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. 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 conflict with the requirements of the State.

(Amended 1984)

Section 15. Misrepresentation of Quantity

No person shall:

- a. sell, offer, or expose for sale a quantity less than the quantity represented, nor
- b. take more than the represented quantity when, as buyer, he/she furnishes the weight or measure by means of which the quantity is determined, nor
- c. represent the quantity in any manner calculated or tending to mislead or in any way deceive another person.

(Amended 1975, 1990)

Section 16. Misrepresentation of Pricing

No person shall misrepresent the price of any commodity or service sold, offered, exposed, or advertised for sale by weight, measure, or count, nor represent the price in any manner calculated or tending to mislead or in any way deceive a person.

Section 17. Method of Sale

Except as otherwise provided by the director or by firmly established trade custom and practice,

- a. commodities in liquid form shall be sold by liquid measure or by weight, and
- b. commodities not in liquid form shall be sold by weight, by measure, or by count.

The method of sale shall provide accurate and adequate quantity information that permits the buyer to make price and quantity comparisons.

(Amended 1989)

Section 18. Sale from Bulk

All bulk sales in which the buyer and seller are not both present to witness the measurement, all bulk deliveries of heating fuel, and all other bulk sales specified by rule or regulation of the director shall be accompanied by a delivery ticket containing the following information:

- a. the name and address of the buyer and seller;
- b. the date delivered;
- c. the quantity delivered and the quantity upon which the price is based, if this differs from the delivered quantity for example, when temperature compensated sales are made;

(Amended 1991)

- d. the unit price, unless otherwise agreed upon by both buyer and seller;

(Added 1991)

- e. the identity in the most descriptive terms commercially practicable, including any quality representation made in connection with the sale; and
- f. the count of individually wrapped packages, if more than one, in the instance of commodities bought from bulk but delivered in packages.

(Amended 1983, 1991)

Section 19. Information Required on Packages

Except as otherwise provided in this Act or by regulations promulgated pursuant thereto, any package, whether a random package or a standard package, kept for the purpose of sale, or offered or exposed for sale, shall bear on the outside of the package a definite, plain, and conspicuous declaration of:

- a. the identity of the commodity in the package, unless the commodity is a food, other than meat or poultry, that was repackaged in a retail establishment and the food is displayed to the purchaser under either of the following circumstances: (1) its interstate labeling is clearly in view or with a counter card, sign or other appropriate device bearing prominently and conspicuously the common or usual name of the food, or (2) the common or usual name of the food is clearly revealed by its appearance;

(Amended 2001)

- b. the quantity of contents in terms of weight, measure, or count; and,

- c. the name and place of business of the manufacturer, packer, or distributor, in the case of any package kept, offered, or exposed for sale, or sold in any place other than on the premises where packed.

(Amended 1991)

Section 20. Declarations of Unit Price on Random Weight Packages

In addition to the declarations required by § 19 of this Act, any package being one of a lot containing random weights of the same commodity, at the time it is offered or exposed for sale at retail, shall bear on the outside of the package a plain and conspicuous declaration of the price per kilogram or pound and the total selling price of the package.

(Amended 1986)

Section 21. Advertising Packages for Sale

Whenever a packaged commodity is advertised in any manner with the retail price stated, there shall be closely and conspicuously associated with the retail price a declaration of quantity as is required by law or regulation to appear on the package.

(Amended 1993)

Section 22. Prohibited Acts

No person shall:

- a. use or have in possession for use in commerce any incorrect weight or measure ;
- b. sell or offer for sale for use in commerce any incorrect weight or measure;
- c. remove any tag, seal, or mark from any weight or measure without specific written authorization from the proper authority;
- d. hinder or obstruct any weights and measures official in the performance of his or her duties; or
- e. violate any provisions of this Act or regulations promulgated under it.

Section 23. Civil Penalties

23.1. Assessment of Penalties. -- Any person who by himself or herself, by his or her servant or agent, or as the servant or agent of another person, commits any of the acts enumerated in § 22 may be assessed by the _____ a civil penalty of:

- a. not less than \$__ nor more than \$__ for a first violation,
- b. not less than \$__ nor more than \$__ for a second violation within __ from the date of the first violation, and

c. not less than \$__ nor more than \$__ for a third violation within __ from the date of the first violation.

23.2. Administrative Hearing. -- Any person subject to a civil penalty shall have a right to request an administrative hearing within __ days of receipt of the notice of the penalty. The director or his/her designee shall be authorized to conduct the hearing after giving appropriate notice to the respondent. The decision of the director shall be subject to appropriate judicial review.

23.3. Collection of Penalties. -- If the respondent has exhausted his or her administrative appeals and the civil penalty has been upheld, he or she shall pay the civil penalty within __ days after the effective date of the final decision. If the respondent fails to pay the penalty, a civil action may be brought by the director in any court of competent jurisdiction to recover the penalty. Any civil penalty collected under this Act shall be transmitted to _____.

(Added 1989) (Amended 1995)

Section 24. Criminal Penalties

24.1. Misdemeanors. -- Any person who commits any of the acts enumerated in § 22 shall be guilty of a class ____ misdemeanor and upon a first conviction thereof shall be punished by a fine of not less than \$____ nor more than \$____ or by imprisonment for not more than ____ months, or both. Upon a subsequent conviction thereof, he or she shall be punished by a fine of not less than \$____ nor more than \$____ or by imprisonment for up to _____, or both.

24.2. Felonies. -- Any person who:

- a. intentionally violates any provisions of this Act or regulations under it;
- b. is convicted under the misdemeanor provisions of § 24 (a) more than three times in a 2-year period;
- c. uses or has in his or her possession a device which has been altered to facilitate fraud shall be guilty of a class ____ felony and upon a first offense shall be punished by a fine of not less than \$__, or by imprisonment for not more than _____, or both.

(Added 1989)

Section 25. Restraining Order and Injunction

The director is authorized to apply to any court of competent jurisdiction for a restraining order, or a temporary or permanent injunction, restraining any person from violating any provision of this Act.

(Retitled 1989)

Section 26. Presumptive Evidence

Whenever there shall exist a weight or measure or weighing or measuring device in or about any place in which or from which buying or selling is commonly carried on, there shall be a rebuttable presumption that such weight or measure or weighing or measuring device is regularly used for the business purposes of that place.

Section 27. Separability Provision

If any provision of this Act is declared unconstitutional, or the applicability thereof to any person or circumstance is held invalid, the constitutionality of the remainder of the Act and the applicability thereof to other persons and circumstances shall not be affected thereby.

Section 28. Repeal of Conflicting Laws

All laws and parts of laws contrary to or inconsistent with the provisions of this Act are repealed except as to offenses committed, liabilities incurred, and claims made thereunder prior to the effective date of this Act.

Section 29. Regulations to be Unaffected by Repeal of Prior Enabling Statute

The adoption of this Act or any of its provisions shall not affect any regulations promulgated pursuant to the authority of any earlier enabling statute unless inconsistent with this Act or modified or revoked by the director.

Section 30. Effective Date

This Act shall become effective on_____.

APPENDIX 2 – NIST HANDBOOK 130 2003 EDITION – UNIFORM REGULATION FOR NATIONAL TYPE EVALUATION

Background

The Uniform Regulation for National Type Evaluation was adopted by the NCWM at the 68th Annual Meeting in 1983 and is a necessary adjunct to recognize and enable participation in the National Type Evaluation Program administered by the National Conference on Weights and Measures. The Regulation specifically authorizes: type evaluation; recognition of a National Conference on Weights and Measures "Certificate of Conformance" of type; the State Measurement Laboratory to operate as a Participating Laboratory, if authorized by the National Institute of Standards and Technology under its program of recognition of State Measurement Laboratories; and, the State to charge fees to those persons who seek type evaluation of weighing and measuring devices.

(Amended 2000)

At the 81st Annual Meeting in 1996, the NCWM adopted major revisions to the Uniform Regulation for National Type Evaluation. These revisions were made to clarify the requirements and incorporate the policies and guidelines adopted by the Executive Committee as published in NCWM Publication 14, Technical Policy, Checklists, and Test Procedures.

(Amended 1997)

Intent

It is the intent of this regulation to have all States use the National Type Evaluation Program, as approved by the National Conference on Weights and Measures, as their examining procedure. If a State does not wish to establish a Participating Laboratory, § 2.4. Participating Laboratory and § 4. Participating Laboratory may be deleted.

Section 1. Application.

This regulation shall apply to [Erreur ! Source du renvoi introuvable., see page Erreur ! Signet non défini.] any type of device and/or equipment covered in National Institute of Standards and Technology Handbook

44 for which evaluation procedures have been published in National Conference on Weights and Measures, Publication 14, "National Type Evaluation Program, Technical Policy, Checklists, and Test Procedures."

NOTE 1: *This section can be amended to include a list of devices or device types to which NTEP evaluation criteria does not apply. Additionally, a State can amend this section to allow it to conduct a type evaluation and issue a "Certificate of Approval." This approach should be limited to occasions where formal NTEP Type Evaluation criteria does not apply and to new technologies or device applications where the development of criteria is deemed necessary by the Director.*

Section 2. Definitions

2.1. Active Certificate of Conformance. -- A document issued based on testing by a Participating Laboratory, which the certificate owner maintains in active status under the National Type Evaluation Program (NTEP). The document constitutes evidence of conformance of a type with the requirements of this document and NIST Handbooks 44, 105-1, 105-2, or 105-3. By maintaining the Certificate in active status, the Certificate owner declares the intent to continue to manufacture or remanufacture the device consistent with the type and in conformance with the applicable requirements. For manufacturers of grain moisture meters, maintenance of active status also involves annual participation in the NTEP Laboratory On-going Calibration Program, OCP (Phase II). A device is traceable to an active Certificate of Conformance if it was manufactured during the period that the Certificate was maintained in active status.

(Amended 2000 and 2001)

2.2. Device.-- Device means any weighing and measuring device as defined in § 2.12. Commercial and Law Enforcement Equipment.

2.3. Director. -- Means the _____ of the department of _____.

2.4. Manufactured Device. -- Any commercial weighing or measuring device shipped as new from the original equipment manufacturer.

(Added 2001)

2.5. National Type Evaluation Program. -- A program of cooperation between the National Conference on Weights and Measures, the National Institute of Standards and Technology, other Federal agencies, the states, and the private sector for determining, on a uniform basis, conformance of a type with the relevant provisions of National Institute of Standards and Technology Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and

Measuring Devices," and National Conference on Weights and Measures, Publication 14, "National Type Evaluation Program, Technical Policy, Checklists, and Test Procedures."

(Amended 2000)

2.6. One-of-a-Kind Device. -- A (non-NTEP) device designed to meet unique demands for a specific installation and of a specific *design* which is not commercially available elsewhere (one such device per manufacturer). If a device manufactured for sale by a company has been categorized and tested as a "one-of-a-kind" device and the manufacturer then decides to manufacture an additional device or devices of that same type, the device will no longer be considered a "one-of-a-kind." This also applies to a device that has been determined to be a "one-of-a-kind" device by a weights and measures jurisdiction in one State and the manufacturer decides to manufacture and install another device of that same type in another State. In this case, the manufacturer of the device must request an NTEP evaluation on the device through the normal application process unless NTEP has already deemed that such evaluation will not be conducted.

(Amended 1998)

2.7. Participating Laboratory. -- Any State Measurement Laboratory or State Weights and Measures Agency or other laboratory that has been authorized to conduct a type evaluation under the National Type Evaluation Program.

(Amended 2001)

2.8. Person. -- The term "person " means both singular and plural, as the case demands, and includes individuals, partnerships, corporations, companies, societies, and associations.

2.9. Remanufactured Device. -- A device that is disassembled, checked for wear, parts replaced or fixed, reassembled and made to operate like a new device of the same type.

(Amended 2001)

2.10. Remanufactured Element. -- An element that is disassembled, checked for wear, parts replaced or fixed, reassembled and made to operate like a new element of the same type.

(Added 2001)

2.11. Repaired Device. -- A device on which work is performed that brings the device back into proper operating condition.

(Amended 2001)

2.12. Repaired Element. -- An element on which work is performed that brings the element back into proper operating condition.

(Added 2001)

2.13. Type. -- A type or types of a particular device, measurement system, instrument, or element 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.

2.14. Type Evaluation. -- The testing, examination, and/or evaluation of a type by a Participating Laboratory under the National Type Evaluation Program.

2.15. Commercial and Law Enforcement Equipment. -- (a) Weighing and measuring equipment 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. (b) Any accessory attached to or used in connection with a commercial weighing or measuring device when such accessory is so designed that its operation affects the accuracy of the device. (c) Weighing and measuring equipment in official use for the enforcement of law or for the collection of statistical information by government agencies. [¹, see page 30]

NOTE 2: *The section is identical to G-A.1., § 1.10, General Code, National Institute of Standards and Technology Handbook 44 for definition of "commercial" and "law enforcement equipment."*

Section 3. Certificate of Conformance

The Director shall require a device to be traceable to an active Certificate of Conformance prior to its installation or use for commercial or law enforcement purposes.

(Amended 2001)

Section 4. Prohibited Acts and Exemptions

(1) Except for a device exempted by this section, no person shall sell a device unless it is traceable to an active Certificate of Conformance.

(Amended 2001)

(2) Except for a device exempted by this section, no person shall use a device unless it is traceable to an active Certificate of Conformance.

(Amended 2001)

(3) A device in service in this State prior to _____, __, that meets the specifications, tolerances, and other technical requirements of National Institute of Standards and Technology Handbook 44 shall not be required to be traceable to an active Certificate of Conformance.

(Amended 2001)

(4) A device in service in this State prior to _____, __, removed from service by the owner or on which the department has issued a removal order after _____, __, and returned to service at a later date shall be modified to meet all specifications, tolerances, and other technical requirements of National Institute of Standards and Technology Handbook 44 effective on the date of the return to service. Such a device shall not be required to be traceable to an active Certificate of Conformance.

(Amended 2001)

(5) A device in service in this State prior to _____, __, which is repaired after such date shall meet the specifications, tolerances, and other technical requirements of National Institute of Standards and Technology Handbook 44 and shall not be required to be traceable to an active Certificate of Conformance.

(Amended 2001)

(6) A device in service in this State prior to _____, __, that is still in use may be installed at another location in this State provided the device meets requirements in effect as of the date of installation in the new location; however, the device shall not be required to be traceable to an active Certificate of Conformance.

(Amended 2001)

(7) A device in service in another State prior to _____, __, may be installed in this State; however, the device shall meet the specifications, tolerances, and technical requirements for weighing and measuring devices in National Institute of Standards and Technology Handbook 44 and be traceable to an active Certificate of Conformance.

(Amended 2001)

(8) **One-of-a-kind Device.** -- The Director may accept the design of a one-of-a-kind device without an NTEP evaluation pending inspection and performance testing to satisfy that the device complies with Handbook 44 and is capable of performing within the Handbook 44 requirements for a reasonable period of time under normal conditions of use. Indicators and load cells in all "one-of-a-kind" scale installations must have an active NTEP CC as evidence that the system meets the influence factor requirements of Handbook 44.

(Amended 1998 and 2001)

(9) Repaired Device. -- If a person makes changes to a device to the extent that the metrological characteristics are changed, that specific device is no longer traceable to the active Certificate of Conformance.

(Amended 2001)

(10) Remanufactured Device. -- If a person repairs or remanufactures a device, they are obligated to repair or remanufacture it consistent with the manufacturer's original design; otherwise, that specific device is no longer traceable to an active Certificate of Conformance.

(Amended 2001)

(11) Copy of a Device. -- The manufacturer who copies the design of a device that is traceable to an active Certificate of Conformance, but which is made by another company, must obtain a separate Certificate of Conformance for the device. The Certificate of Conformance for the original device shall not apply to the copy.

(12) Device Components -- If a person buys a load cell(s) and an indicating element that are traceable to Certificates of Conformance and then manufactures a device from the parts, that person shall obtain an active Certificate of Conformance for the device.

(Amended 2001)

Section 5. Participating Laboratory and Agreements

The Director is authorized to:

(1) Operate a Participating Laboratory as part of the National Type Evaluation Program. In this regard, the Director is authorized to charge and collect fees for type evaluation services.

(2) Cooperate with and enter into agreements with any person in order to carry out the purposes of the act.

Section 6. Revocation of Conflicting Regulations

All provisions of all orders and regulations before issued on this same subject that are contrary to or inconsistent with the provisions of this regulation, are hereby revoked.

(Amended 2001)

Section 7. Effective Date

This regulation shall become effective on _____.

(Amended 2001)

APPENDIX 3 – NIST HANDBOOK 44 - SECTION 3.30 – LIQUID MEASURING DEVICES

Sec. 3.30. Liquid-Measuring Devices

A. Application

A.1. - This code applies to:

- (a) devices used for the measurement of liquids, including liquid fuels and lubricants, and
- (b) wholesale devices used for the measurement and delivery of agri-chemical liquids such as fertilizers, feeds, herbicides, pesticides, insecticides, fungicides, and defoliant.

(Added 1985)

A.2. - This code does not apply to:

- (a) meters mounted on vehicle tanks (see Sec. 3.31. Code for Vehicle-Tank Meters),
- (b) devices used for dispensing liquefied petroleum gases (see Sec. 3.32. Code for Liquefied Petroleum Gas and Anhydrous Ammonia Liquid-Measuring Devices),
- (c) devices used for dispensing other liquids that do not remain in a liquid state at atmospheric pressures and temperatures,
- (d) water meters,
- (e) devices used solely for dispensing a product in connection with operations in which the amount dispensed does not affect customer charges, or
- (f) mass flow meters (see Sec. 3.37. Code for Mass Flow Meters.)

(Added 1994)

A.3. - In addition to the requirements of this code, liquid-measuring devices shall meet the requirements of Section 1.10. General Code.

S. Specifications

S.1. Indicating and Recording Elements and Recorded Representations.

S.1.1. General. - A liquid-measuring device:

- (a) shall be equipped with a primary indicating element, and
- (b) may be equipped with a primary recording element.

S.1.2. Units. - A liquid-measuring device shall indicate, and record if the device is equipped to record, its deliveries in liters, gallons, quarts, pints, or binary-submultiples or decimal subdivisions of the liter or gallon.

(Amended 1987, 1994)

S.1.2.1. Retail Motor-Fuel Devices. - Deliveries shall be indicated and recorded, if the device is equipped to record, in liters or gallons and decimal subdivisions or fractional equivalents thereof.

(Added 1979)

S.1.2.2. Agri-Chemical Liquid Devices.

S.1.2.2.1. Liquid Measure. - Deliveries shall be indicated and recorded in liters or gallons and decimal subdivisions or fractional equivalents thereof.

S.1.2.3. Value of Smallest Unit. - The value of the smallest unit of indicated delivery, and recorded delivery if the device is equipped to record, shall not exceed the equivalent of:

- (a) 0.5 L (1 pt) on retail devices;
- (b) 5 L (1 gal) on wholesale devices.

This requirement does not apply to manually operated devices equipped with stops or stroke-limiting means.

(Amended 1983 and 1986)

S.1.3. Advancement of Indicating and Recording Elements. - It shall not be possible to advance primary indicating and recording elements except by the mechanical operation of the device. Clearing a device by advancing its elements to zero is permitted, but only if:

- (a) once started, the advancement movement cannot be stopped until zero is reached, and
- (b) in the case of indicating elements only, such elements are automatically obscured until the elements reach the correct zero position.

S.1.4. Graduations.

S.1.4.1. Length. - Graduations shall be varied in length so that they may be conveniently read.

S.1.4.2. Width. - In a series of graduations, the width of:

- (a) every graduation shall be at least 0.2 mm (0.008 in) but not greater than the minimum clear interval between graduations, and
- (b) main graduations shall be not more than 50 percent greater than the width of subordinate graduations.

S.1.4.3. Clear Interval Between Graduations. -The clear interval between graduations shall be not less than 1.0 mm (0.04 in). If the graduations are not parallel, the measurement shall be made:

- (a) along the line of movement of the tip of the index of the indicator as it passes over the graduations, or
- (b) if the indicator extends over the entire length of the graduations, at the point of widest separation of the graduations.

S.1.5. Indicators.

S.1.5.1. Symmetry. - The portion of the index of an indicator associated with the graduations shall be symmetrical with respect to the graduations.

S.1.5.2. Length.

- (a) If the indicator and the graduations are in different planes, the index of the indicator shall extend to each graduation with which it is to be used.
- (b) If the indicator is in the same plane as the graduations, the distance between the index of the indicator and the ends of the graduations, measured along the line of the graduations, shall be not more than 1.0 mm (0.04 in).

S.1.5.3. Width.

- (a) *The index of an indicator shall not be wider than the width of the narrowest graduation.*

[Nonretroactive as of January 1, 2002.]

(Amended 2000)

- (b) If the index of an indicator extends over the entire length of a graduation, it shall be of uniform width throughout the portion that coincides with the graduation.

S.1.5.4. Clearance. - If the indicator and the graduations are in different planes, the clearance between the index of an indicator and the plane of the graduations shall be no greater than 1.5 mm (0.06 in).

S.1.5.5. Parallax. - Parallax effects shall be reduced to the practical minimum.

S.1.6. Operating Requirements, Retail Devices (Except Slow Flow Meters).

S.1.6.1. Indication of Delivery. - The device shall automatically show on its face the initial zero condition and the quantity delivered (up to the nominal capacity).

However, the first 0.03 L (or 0.009 gal) of a delivery and its associated total sales price need not be indicated.

(Amended 1982)

S.1.6.2. Provisions for Power Loss.

S.1.6.2.1. Transaction Information. - *In the event of a power loss, the information needed to complete any transaction in progress at the time of the power loss (such as the quantity and unit price, or sales price) shall be determinable for at least 15 minutes at the dispenser or at the console if the console is accessible to the customer.*

[Nonretroactive as of January 1, 1983.]

S.1.6.2.2. User Information. - *The device memory shall retain information on the quantity of fuel dispensed and the sales price totals during power loss.*

[Nonretroactive as of January 1, 1983.]

S.1.6.3. Return to Zero.

- (a) The primary indicating elements, and primary recording elements if the device is equipped to record, shall be readily returnable to a definite zero indication. However, a key-lock operated or other self-operated device may be equipped with cumulative indicating or recording elements, provided that it is also equipped with a zero-return indicating element.
- (b) It shall not be possible to return primary indicating elements, or primary recording elements beyond the correct zero position.

(Amended 1972)

S.1.6.4. Display of Unit Price and Product Identity.

S.1.6.4.1. Unit Price.

- (a) A computing or money-operated device shall be able to display on each face the unit price at which the device is set to compute or to dispense.
- (b) *Whenever a grade, brand, blend, or mixture is offered for sale from a device at more than one unit price, then all of the unit prices at which that product is offered for sale shall be displayed or shall be capable of being displayed on the dispenser using controls available to the customer prior to the delivery of the product. It is not necessary that all of the unit prices for all grades, brands, blends, or mixtures be simultaneously displayed prior to the delivery of the product. This subsection shall not apply to fleet sales, other contract sales, or truck refueling sales (e.g., sales from dispensers used to refuel trucks).*

[Nonretroactive as of January 1, 1991.]

(Amended 1989 and 1997)

S.1.6.4.2. Product Identity.

- (a) A device shall be able to conspicuously display on each side the identity of the product being dispensed.
- (b) A device designed to dispense more than one grade, brand, blend, or mixture of product also shall be able to display on each side the identity of the grade, brand, blend, or mixture being dispensed.

S.1.6.5. Money-Value Computations.

- (a) A computing device shall compute the total sales price at any single-purchase unit price (i.e., excluding fleet sales, other price contract sales, and truck stop dispensers used only to refuel trucks) for which the product being measured is offered for sale at any delivery possible within either the measurement range of the device or the range of the computing elements, whichever is less.

[Nonretroactive as of January 1, 1991]

- (b) The analog sales price indicated for any delivered quantity shall not differ from a mathematically computed price (quantity x unit price = total sales price) by an amount greater than the value in Table 1.

(Amended 1984, 1989, and 1993)

S.1.6.5.1. Money-Value Divisions, Analog. - The values of the graduated intervals representing money values on a computing type device shall be no greater than those in Table 1.

(Amended 1991)

Table 1.
 Money-Value Divisions and
 Maximum Allowable Variations for Money-Value
 Computations on Mechanical Analog Computers

Unit Price		Money Value Division	Maximum Allowable Variation	
From	To and including		Design Test	Field Test
0	0.25/liter or \$1.00/gallon	1¢	± 1¢	± 1¢
0.25/liter or \$1.00/gallon	0.75/liter or \$3.00/gallon	1¢ or 2¢	± 1¢	± 2¢
0.75/liter or \$3.00/gallon	2.50/liter or \$10.00/gallon	1¢ or 2¢	± 1¢	± 2¢
0.75/liter or \$3.00/gallon	2.50/liter or \$10.00/gallon	5¢	± 2 1/2¢	± 5¢

S.1.6.5.2. Money-Value Divisions, Digital. - A computing type device with digital indications shall comply with the requirements of paragraph G.S.5.5. Money Values, Mathematical Agreement, and the total price computation shall be based on quantities not exceeding 0.05 L for devices indicating in metric units and 0.01-gal. intervals for devices indicating in inch-pound units.

(Added 1980)

S.1.6.5.3. Auxiliary Elements. - *If a system is equipped with auxiliary indications, all indicated money value divisions of the auxiliary element shall be identical with those of the primary element.*

[Nonretroactive as of January 1, 1985.]

S.1.6.5.4. Selection of Unit Price. - *Except for dispensers used exclusively for fleet sales, other price contract sales, and truck refueling (e.g., truck stop dispensers used only to refuel trucks), when a product or grade is offered for sale at more than one unit price through a computing device, the selection of the unit price shall be made prior to delivery using controls on the device or other customer-activated controls. A system shall not permit a change to the unit price during delivery of product.*

[Nonretroactive as of January 1, 1991.]

(Added 1989)(Amended 1991, 1992, 1993, and 1996)

S.1.6.5.5. Display of Quantity and Total Price. - *When a delivery is completed, the total price and quantity for that transaction shall be displayed on the face of the dispenser for at least 5 minutes or until the next transaction is initiated by using controls on the device or other customer-activated controls.*

[Nonretroactive as of January 1, 1994.]

(Added 1992)(Amended 1996)

S.1.6.6. Agreement Between Indications. - *When a quantity value indicated or recorded by an auxiliary element is a derived or computed value based on data received from a retail motor fuel dispenser, the value may differ from the quantity value displayed on the dispenser, provided the following conditions are met:*

- (a) *all total money values for an individual sale that are indicated or recorded by the system agree; and*
- (b) *within each element, the values indicated or recorded meet the formula (quantity x unit price = total sales price) to the closest cent.*

[Nonretroactive as of January 1, 1988.]

(Added 1985)(Amended 1987 and 1988)

S.1.6.7. Recorded Representations. - *Except for fleet sales and other price contract sales, a printed receipt providing the following information shall be available through a built-in or separate recording element for all transactions conducted with point-of-sale systems or devices activated by debit cards, credit cards, and/or cash:*

- (a) *the total volume of the delivery,*

- (b) the unit price,
- (c) the total computed price, and
- (d) the product identity by name, symbol, abbreviation, or code number.

[Nonretroactive as of January 1, 1986.]

(Added 1985) (Amended 1997)

S.1.6.8. Lubricant Devices, Travel of Indicator. -The indicator shall move at least 2.5 cm (1 in) in relation to the graduations, if provided, for a delivery of 0.5 L (1 pt).

S.1.7. Operating Requirements, Wholesale Devices Only.

S.1.7.1. Travel of Indicator. - A wholesale device shall be readily operable to deliver accurately any quantity from 200 L (50 gal) to the capacity of the device. If the most sensitive element of the indicating system utilizes an indicator and graduations, the relative movement of these parts corresponding to a delivery of 4 L (1 gal) shall be not less than 5 mm (0.20 in).

(Amended 1987)

S.1.7.2. Money Values-Mathematical Agreement. - Any digital money-value indication and any recorded money value on a computing-type device shall be in mathematical agreement with its associated quantity indication or representation to within one cent of money value.

S.2. Measuring Elements.

S.2.1. Vapor Elimination.

- (a) A liquid-measuring device shall be equipped with a vapor or air eliminator or other automatic means to prevent the passage of vapor and air through the meter.
- (b) Vent lines from the air or vapor eliminator shall be made of metal tubing or other rigid material.

(Amended 1975)

S.2.1.1. Vapor Elimination on Loading Rack Metering Systems.

- (a) A loading rack metering system shall be equipped with a vapor or air eliminator or other automatic means to prevent the passage of vapor and air through the meter unless the system is designed or operationally controlled by a method, approved by the weights and measures jurisdiction having control over the device, such that air and/or vapor cannot enter the system.
- (b) Vent lines from the air or vapor eliminator (if present) shall be made of metal tubing or other rigid material.

(Added 1994)

S.2.2. Provision for Sealing. - Adequate provision shall be made for an approved means of security (e.g., data change audit trail) or physically applying security seals in such a manner that no adjustment may be made of:

- (a) any measurement element, or
- (b) any adjustable element for controlling delivery rate when such rate tends to affect the accuracy of deliveries.

When applicable, the adjusting mechanism shall be readily accessible for purposes of affixing a security seal.

- (c) *Audit trails shall use the format set forth in Table S.2.2. [Nonretroactive as of January 1, 1995.]*

(Amended 1991, 1993, and 1995)

S.2.3. Directional Flow Valves. - Valves intended to prevent reversal of flow shall be automatic in operation.

S.2.4. Stop Mechanism.

S.2.4.1. Indication. - The delivery for which the device is set shall be conspicuously indicated.

(Amended 1983)

S.2.4.2. Stroke Limiting Elements. - Stops or other stroke limiting elements subject to direct pressure or impact shall be:

- (a) made secure by positive, nonfrictional engagement of these elements; and
- (b) adjustable to provide for deliveries within tolerances.

(Amended 1983)

S.2.4.3. Setting. - If two or more stops or other elements may be selectively brought into operation to permit predetermined quantities of deliveries,

- (a) the position for the proper setting of each such element shall be accurately defined; and
- (b) any inadvertent displacement from the proper setting shall be obstructed.

(Amended 1983)

Table S.2.2. Categories of Device and Methods of Sealing	
<i>Categories of Device</i>	<i>Method of Sealing</i>
<p><i>Category 1: No remote configuration capability.</i></p>	<p><i>Seal by physical seal or two event counters: one for calibration parameters and one for configuration parameters.</i></p>
<p><i>Category 2: Remote configuration capability, but access is controlled by physical hardware.</i></p> <p><i>Device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode.</i></p> <p><i>[Category 2 applies only to devices manufactured prior to January 1, 2005. Devices with remote configuration capability manufactured after that date must meet the sealing requirements outlined in Category 3. Devices without remote configuration capability manufactured after that date will be required to meet the minimum criteria outlined in Category 1.]</i></p>	<p><i>[The hardware enabling access for remote communication must be on-site. The hardware must be sealed using a physical seal or an event counter for calibration parameters and an event counter for configuration parameters. The event counters may be located either at the individual measuring device or at the system controller; however, an adequate number of counters must be provided to monitor the calibration and configuration parameters of the individual devices at a location. If the counters are located in the system controller rather than at the individual device, means must be provided to generate a hard copy of the information through an on-site device.]*</i></p> <p><i>[*Nonretroactive as of January 1, 1996]</i></p>
<p><i>Category 3: Remote configuration capability access may be unlimited or controlled through a software switch (e.g., password).</i></p> <p><i>The device shall clearly indicate that it is in the remote configuration mode and record such message if capable of printing in this mode or shall not operate while in this mode.</i></p> <p><i>[Nonretroactive as of January 1, 2001]</i></p> <p><i>Nonretroactive as of January 1, 2005, all devices with remote configuration capability must comply with the sealing requirements of Category 3.</i></p>	<p><i>An event logger is required in the device; it must include an event counter (000 to 999), the parameter ID, the date and time of the change, and the new value of the parameter. A printed copy of the information must be available through the device or through another on-site device. The event logger shall have a capacity to retain records equal to ten times the number of sealable parameters in the device, but not more than 1000 records are required. (Note: Does not require 1000 changes to be stored for each parameter.)</i></p>

[Nonretroactive as of January 1, 1995.] (Table Added 1993) (Amended 1995, 1998, and 1999)

S.2.5. Zero-Set-Back Interlock, Retail Motor-Fuel Devices. - A device shall be constructed so that:

- (a) after a delivery cycle has been completed by moving the starting lever to any position that shuts off the device, an automatic interlock prevents a subsequent delivery until the indicating elements, and recording elements if the device is equipped and activated to record, have been returned to their zero positions;

- (b) the discharge nozzle cannot be returned to its designed hanging position (that is, any position where the tip of the nozzle is placed in its designed receptacle and the lock can be inserted) until the starting lever is in its designed shut-off position and the zero-set-back interlock has been engaged; and
- (c) in a system with more than one dispenser supplied by a single pump, an effective automatic control valve in each dispenser prevents product from being delivered until the indicating elements on that dispenser are in a correct zero position.

(Amended 1981 and 1985)

S.2.6. Temperature Determination and Wholesale Devices. - 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) immediately adjacent to the meter in the meter inlet or discharge line.

[Nonretroactive as of January 1, 1985.]

(Added 1984)(Amended 1986)

S.2.7. Wholesale Devices Equipped with Automatic Temperature Compensators.

S.2.7.1. Automatic Temperature Compensation. - A device may be equipped with an automatic means for adjusting the indication and registration of the measured volume of product to the volume at 15 EC (60 EF).

S.2.7.2. Provision for Deactivating. - On a device equipped with an automatic temperature-compensating mechanism that will indicate or record only in terms of gallons compensated to 15 EC (60 EF), provision shall be made for deactivating the automatic temperature-compensating mechanism so that the meter can indicate, and record if it is equipped to record, in terms of the uncompensated volume. (Amended 1972)

S.2.7.3. Provision for Sealing Automatic Temperature Compensating Systems. - Provision shall be made for applying security seals in such a manner that an automatic temperature-compensating system cannot be disconnected and that no adjustment may be made to the system without breaking the seal.

S.2.7.4. Temperature Determination with Automatic Temperature Compensation. - For test purposes, means shall be provided (e.g., thermometer well) to determine the temperature of the liquid either:

- (a) in the liquid chamber of the meter, or
- (b) immediately adjacent to the meter in the meter inlet or discharge line.

(Amended 1987)

S.2.8. Exhaustion of Supply, Lubricant Devices Other than Meter Types. - When the level of the supply of lubricant becomes so low as to compromise the accuracy of measurement, the device shall:

- (a) become inoperable automatically, or
- (b) give a conspicuous and distinct warning.

S.3. Discharge Lines and Valves.

S.3.1. Diversion of Measured Liquid. - No means shall be provided by which any measured liquid can be diverted from the measuring chamber of the meter or its discharge line. Two or more delivery outlets may be installed only if automatic means are provided to ensure that:

- (a) liquid can flow from only one outlet at a time, and
- (b) the direction of flow for which the mechanism may be set at any time is clearly and conspicuously indicated.

A manually controlled outlet that may be opened for purging or draining the measuring system or for recirculating product in suspension shall be permitted only when the system is measuring food products or agri-chemicals. Effective means shall be provided to prevent passage of liquid through any such outlet during normal operation of the measuring system and to inhibit meter indications (or advancement of indications) and recorded representations while the outlet is in operation.

(Amended 1991, 1995, and 1996)

S.3.2. Exceptions. - The provisions of S.3.1. Diversion Prohibited shall not apply to truck refueling devices when diversion of flow to other than the receiving vehicle cannot readily be accomplished and is readily apparent. Allowable deterrents include, but are not limited to, physical barriers to adjacent driveways, visible valves, or lighting systems that indicate which outlets are in operation, and explanatory signs;

(Amended 1982, 1990, 1991, and 2002)

S.3.3. Pump-Discharge Unit. - A pump-discharge unit equipped with a flexible discharge hose shall be of the wet-hose type.

S.3.4. Gravity-Discharge Unit. - On a gravity-discharge unit:

- (a) the discharge hose or equivalent pipe shall be of the dry-hose type with no shutoff valve at its outlet end unless the hose or pipe drains to the same level under all conditions of use;
- (b) the dry hose shall be sufficiently stiff and only as long as necessary to facilitate drainage;
- (c) an automatic vacuum breaker, or equivalent mechanism, shall be incorporated to prevent siphoning and to ensure rapid and complete drainage; and

- (d) the inlet end of the hose or outlet pipe shall be high enough to ensure complete drainage.

S.3.5. Discharge Hose, Reinforcement. - A discharge hose shall be reinforced so that the performance of the device is not affected by the expansion or contraction of the hose.

S.3.6. Discharge Valve. - A discharge valve may be installed in the discharge line only if the device is of the wet-hose type. Any other shutoff valve on the discharge side of the meter shall be of the automatic or semiautomatic predetermined-stop type or shall be operable only:

- (a) by means of a tool (but not a pin) entirely separate from the device, or
- (b) by mutilation of a security seal with which the valve is sealed open.

S.3.7. Antidrain Means. - In a wet-hose pressure-type device, means shall be incorporated to prevent the drainage of the discharge hose.

(Amended 1990)

S.4. Marking Requirements.

S.4.1. Limitation on Use. - The limitations on its use shall be clearly and permanently marked on any device intended to measure accurately only:

- (a) products having particular properties; or
- (b) under specific installation or operating conditions; or
- (c) when used in conjunction with specific accessory equipment.

S.4.2. Air Pressure. - If a device is operated by air pressure, the air pressure gauge shall show by special graduations or other means the maximum and minimum working pressures recommended by the manufacturer.

S.4.3. Wholesale Devices.

S.4.3.1. Discharge Rates. - A wholesale device shall be marked to show its designed maximum and minimum discharge rates. However, the minimum discharge rate shall not exceed 20 percent of the maximum discharge rate.

S.4.3.2. Temperature Compensation. - If a device is equipped with an automatic temperature compensator, the primary indicating elements, recording elements, and recorded representation shall be clearly and conspicuously marked to show that the volume delivered has been adjusted to the volume at 15 EC (60 EF).

S.4.4. Retail Devices.

S.4.4.1. Discharge Rates. - *On a retail device with a designed maximum discharge rate of 115 L (30 gal) per minute or greater, the maximum and minimum discharge rates shall be marked on an exterior surface of the device and shall be visible after installation. The minimum discharge rate shall not exceed 20 percent of the maximum discharge rate.*

[Nonretroactive as of January 1, 1985.]

(Added 1984)(Amended 2002)

S.4.4.2. Location of Marking Information; Retail Motor-Fuel Dispensers. – *The required marking information in the General Code, Paragraph G-S.1. shall appear as follows:*

- (a) Placement of this information shall not be on a portion of the device that can be readily removed or interchanged without the use of a tool separate from the device.*
- (b) The information shall appear 24 inches to 60 inches from the base of the dispenser when placed on the outside of the device.*
- (c) When placed behind an access door or panel the information shall appear 24 inches to 60 inches from the base of the dispenser in a readily legible position. The use of a dispenser key shall not be considered a tool separate from the device.*

[Nonretroactive as of January 1, 2003]

(Added 2002)

S.5. Totalizers for Retail Motor-Fuel Dispensers. - *Retail motor-fuel dispensers shall be equipped with a nonresettable totalizer for the quantity delivered through the metering device.*

[Nonretroactive as of January 1, 1995.]

(Added 1993; Amended 1994)

N. Notes

N.1. Test Liquid.

N.1.1. Type of Liquid. - The liquid used for testing a liquid-measuring device shall be the type the device is used to measure, or another liquid with the same general physical characteristics.

N.1.2. Labeling. - Following the completion of a successful examination of a wholesale device, the weights and measures official should attach a label or tag indicating the type of liquid used during the test.

N.2. Volume Change. - Care shall be taken to minimize changes in volume of the test liquid due to temperature changes and evaporation losses.

N.3. Test Drafts.

N.3.1. Retail Piston-Type and Visible-Type Devices. - Test drafts shall include the full capacity delivery and each intermediate delivery for which the device is designed.

N.3.2. Slow Flow Meters. - Test drafts shall be equal to at least four times the minimum volume that can be measured and indicated through either a visible indication or an audible signal.

N.3.3. Lubricant Devices. - Test drafts shall be 1 L (1 qt). Additional test drafts may include 0.5 L (1 pt), 4 L (4 qt), and 6 L (6 qt).

N.3.4. Other Retail Devices. - On devices with a designed maximum discharge rate of:

- (a) less than 80 L (20 gal) per minute, tests shall include drafts of one or more amounts, including a draft of at least 19 L (5 gal).
- (b) 80 L (20 gal) per minute or greater, tests shall include drafts of one or more amounts, including a draft of at least the amount delivered by the device in one minute at the maximum flow rate of the installation.

(Amended 1984)

N.3.5. Wholesale Devices. - The delivered quantity should be equal to at least the amount delivered by the device in one minute at its maximum discharge rate, and shall in no case be less than 200 L (50 gal).

(Amended 1987 and 1996)

N.4. Testing Procedures.

N.4.1. Normal Tests. - The "normal" test of a device shall be made at the maximum discharge flow rate developed under the conditions of installation. Any additional tests conducted at flow rates down to and including one-half of the sum of the maximum discharge flow rate and the rated minimum discharge flow rate shall be considered normal tests.

(Amended 1991)

N.4.1.1. Wholesale Devices Equipped with Automatic Temperature-Compensating Systems. - On wholesale devices equipped with automatic temperature compensating systems, normal tests shall be conducted:

- (a) by comparing the compensated volume indicated or recorded to the actual delivered volume corrected to 15 EC (60 EF); and

- (b) with the temperature compensating system deactivated, comparing the uncompensated volume indicated or recorded to the actual delivered volume.

The first test shall be performed with the automatic temperature-compensating system operating in the "as found" condition.

On devices that indicate or record both the compensated and uncompensated volume for each delivery, the tests in (a) and (b) may be performed as a single test.

(Amended 1987)

N.4.1.2. Repeatability Tests. - Tests for repeatability should include a minimum of three consecutive test drafts of approximately the same size and be conducted under controlled conditions where variations in factors, such as temperature, pressure, and flow rate are reduced to the extent that they will not affect the results obtained.

(Added 2001)

N.4.2. Special Tests. - "Special" tests, to develop the operating characteristics of a liquid-measuring device and any special elements and accessories attached to or associated with the device, shall be made as circumstances require. Any test except as set forth in N.4.1. shall be considered a special test.

N.4.2.1. Slow-Flow Meters. - A "special" test shall be made at a flow rate:

- (a) not larger than twice the actual minimum flow rate, and
- (b) not smaller than the actual minimum flow rate of the installation.

N.4.2.2. Retail Motor-Fuel Devices.

- (a) Devices with a flow-rate capacity less than 100 L (25 gal) per minute shall have a "special" test performed at the slower of the following rates:
 - (1) 19 L (5 gal) per minute, or
 - (2) the minimum discharge rate marked on the device, or
 - (3) the minimum discharge rate at which the device will deliver when equipped with an automatic discharge nozzle set at its slowest setting.
- (b) Devices marked with a flow-rate capacity 100 L (25 gal) or more per minute, shall have a "special" test performed at the slowest of the following rates:
 - (1) the minimum discharge rate marked on the device, or
 - (2) the minimum discharge rate at which the device will deliver when equipped with an automatic discharge nozzle set at its slowest setting.

(Added 1984)

N.4.2.3. Other Retail Devices. - "Special" tests of other retail devices shall be made at the slower of the following rates:

- (a) 50 percent of the maximum discharge rate developed under the conditions of installation, or
- (b) the minimum discharge rate marked on the device.

N.4.2.4. Wholesale Devices. - "Special" tests shall be made to develop the operating characteristics of a measuring system and any special associated or attached elements and accessories. "Special" tests shall include a test at the slower of the following rates:

- (a) 20 percent of the marked maximum discharge rate; or
- (b) the minimum discharge rate marked on the device.

N.4.3. Money-Value Computation Tests.

N.4.3.1. Laboratory Tests. - When testing the device in the laboratory:

- (a) compliance with paragraph S.1.6.5., Money Value Computations, shall be determined by using the cone gear as a reference for the total quantity delivered;
- (b) the indicated quantity shall agree with the cone gear representation with the index of the indicator within the width of the graduation; and
- (c) the maximum allowable variation of the indicated sales price shall be as shown in Table 1. (Amended 1984)

N.4.3.2. Field Tests. - In the conduct of field tests to determine compliance with paragraph S.1.6.5., the maximum allowable variation in the indicated sales price shall be as shown in Table 1.

(Added 1982; Amended 1984)

N.5. Temperature Correction on Wholesale Devices. - Corrections shall be made for any changes in volume resulting from the differences in liquid temperatures between time of passage through the meter and time of volumetric determination in the prover. When adjustments are necessary, appropriate petroleum measurement tables should be used.

(Amended 1974)

T. Tolerances

T.1. Application to Underregistration and to Overregistration. - The tolerances hereinafter prescribed shall be applied to errors of underregistration and errors of overregistration, whether or not a device is equipped with an automatic temperature compensator.

T.2. Tolerance Values. Maintenance, Acceptance, and Special Test Tolerances shall be as shown in Table T.2.

(i) Table T.2. Accuracy Classes for Liquid Measuring Devices Covered in (ii) NIST Handbook 44 section 3.30				
<u>Accuracy Class</u>	<u>Application</u>	<u>Acceptance Tolerance</u>	<u>Maintenance Tolerance</u>	<u>Special Test Tolerance</u>
<u>0.3</u>	<u>Petroleum products including large capacity motor fuel devices (flow rates over 115 L/min (30 gpm))**, heated products at or greater than 50 °C asphalt at or below temperatures 50 °C, all other liquids not shown where the typical delivery is over 200 L (50 gal)</u>	<u>0.2%</u>	<u>0.3%</u>	<u>0.5%</u>
<u>0.3A</u>	<u>Asphalt at temperatures greater than 50 °C</u>	<u>0.3%</u>	<u>0.3%</u>	<u>0.5%</u>
<u>0.5*</u>	<u>Petroleum products delivered from small capacity (at 4 L/min (1 gpm) through 115 L/min (30 gpm))** motor-fuel devices, agri-chemical liquids, and all other applications not shown.</u>	<u>0.3%</u>	<u>0.5%</u>	<u>0.5%</u>
<u>1.1</u>	<u>Petroleum products and other normal liquids from devices with flow rates** less than 1 gpm and devices designed to deliver less than one gallon.</u>	<u>0.75%</u>	<u>1.0%</u>	<u>1.25%</u>
<u>*The maintenance tolerances on normal and special tests for 5-gallon and 10-gallon test drafts are 6 cubic inches and 11 cubic inches, respectively. Acceptance tolerances on normal and special tests are 3 cubic inches and 5.5 cubic inches.</u>				
<u>** Flow rate refers to designed or marked maximum flow rate.</u>				

(Added 2002)

T.3 Repeatability. - When multiple tests are conducted at approximately the same flow rate and draft size, the range of the test results for the flow rate shall not exceed 40 percent of the absolute value of the maintenance tolerance and the results of each test shall be within the applicable tolerance. This tolerance does not apply to the test of the automatic temperature compensating system. See also N.4.1.2.

(Added 1992) (Amended 2001 and 2002)

T.4. Automatic Temperature Compensating Systems. - *The difference between the meter error (expressed as a percentage) for results determined with and without the automatic temperature compensating system activated shall not exceed:*

(a) *0.2 percent for mechanical automatic temperature compensating systems; and*

(b) *0.1 percent for electronic automatic temperature compensating systems.*

The delivered quantities for each test shall be approximately the same size. The results of each test shall be within the applicable acceptance or maintenance tolerance.

[Nonretroactive as of January 1, 1988.]

(Added 1987) (Amended 1992, 1996 and 2002)

UR. User Requirements

UR.1. Selection Requirements.

UR.1.1. Discharge Hose.

UR.1.1.1. Length. - The length of the discharge hose on a retail motor-fuel device:

- (a) shall be measured from its housing or outlet of the discharge line to the inlet of the discharge nozzle;
- (b) shall be measured with the hose fully extended if it is coiled or otherwise retained or connected inside a housing; and
- (c) shall not exceed 5.5 m (18 ft) unless it can be demonstrated that a longer hose is essential to permit deliveries to be made to receiving vehicles or vessels.

An unnecessarily remote location of a device shall not be accepted as justification for an abnormally long hose.

(Amended 1972 and 1987)

UR.1.1.2. Marinas and Airports.

UR.1.1.2.1. Length. - The length of the discharge hose shall be as short as practicable, and shall not exceed 15 m (50 ft) unless it can be demonstrated that a longer hose is essential.

UR.1.1.2.2. Protection. - Discharge hoses exceeding 8 m (26 ft) in length shall be adequately protected from weather and other environmental factors when not in use.

(Made retroactive 1974 and amended 1984)

UR.2. Installation Requirements.

UR.2.1. Manufacturer's Instructions. - A device shall be installed in accordance with the manufacturer's instructions, and the installation shall be sufficiently secure and rigid to maintain this condition.

(Added 1987)

UR.2.2. Discharge Rate. - A device shall be installed so that the actual maximum discharge rate will not exceed the rated maximum discharge rate. Automatic means for flow regulation shall be incorporated in the installation if necessary.

UR.2.3. Suction Head. - A piston-type device shall be installed so that the total effective suction head will not be great enough to cause vaporization of the liquid being dispensed under the highest temperature and lowest barometric pressure likely to occur.

UR.2.4. Diversion of Liquid Flow. - A motor-fuel device equipped with two delivery outlets used exclusively in the fueling of trucks shall be so installed that any diversion of flow to other than the receiving vehicle cannot be readily accomplished and is readily apparent. Allowable deterrents include, but are not limited to, physical barriers to adjacent driveways, visible valves, or lighting systems that indicate which outlets are in operation, and explanatory signs.

(Amended 1991)

UR.2.5. Product Storage Identification.

- (a) The fill connection for any petroleum product storage tank or vessel supplying motor-fuel devices shall be permanently, plainly, and visibly marked as to product contained.
- (b) When the fill connection device is marked by means of a color code, the color code key shall be conspicuously displayed at the place of business.

(Added 1975 and Amended 1976)

UR.3. Use of Device.

UR.3.1. Return of Indicating and Recording Elements to Zero. - On any dispenser used in making retail deliveries, the primary indicating element, and recording element if so equipped, shall be returned to zero before each delivery.

Exceptions to this requirement are totalizers on key-lock-operated or other self-operated dispensers and the primary recording element if the device is equipped to record.

UR.3.2. Unit Price and Product Identity.

- (a) The following information shall be conspicuously displayed or posted on the face of a retail dispenser used in direct sale:
- (1) except for dispensers used exclusively for fleet sales, other price contract sales, and truck refueling (e.g., truck stop dispensers used only to refuel trucks), all of the unit prices at which the product is offered for sale; and
 - (2) in the case of a computing type or money-operated type, the unit price at which the dispenser is set to compute.

Provided that the dispenser complies with S.1.6.4.1., it is not necessary that all the unit prices for all grades, brands, blends, or mixtures be simultaneously displayed or posted.

- (b) The following information shall be conspicuously displayed or posted on each side of a retail dispenser used in direct sale:
- (1) the identity of the product in descriptive commercial terms, and
 - (2) the identity of the grade, brand, blend, or mixture that a multi-product dispenser is set to deliver.

(Amended 1972, 1983, 1987, 1989, 1992, and 1993)

UR.3.3. Computing Device.

- (a) Any computing device used in an application where a product or grade is offered for sale at more than one unit price (excluding fleet sales and other price contract sales), shall be used only for sales for which the device computes and displays the sales price for the selected transaction.

(Added 1989) (Amended 1992)

(Became Retroactive 1999)

- (b) A truck stop dispenser used exclusively for refueling trucks is exempt from the requirements in (a) if all purchases of fuel are accompanied by a printed receipt of the transaction containing the applicable price per gallon, the total gallons delivered, and the total price of the sale.

(Added 1993)

- (c) Unless a truck stop dispenser used exclusively for refueling trucks complies with S.1.6.4.1. (Display of Unit Price), the price posted on the dispenser and the price at which the dispenser is set to compute shall be the highest price for any transaction which may be conducted.

(Added 1993)

UR.3.4. Printed Ticket. - The total price, the total volume of the delivery, and the price per gallon or liter shall be shown, either printed or in clear hand script, on any printed ticket issued by a device and containing any one of these values.

(Amended 2001)

UR.3.5. Steps After Dispensing. - After delivery to a customer from a retail motor-fuel device:

- (a) the starting lever shall be returned to its shutoff position and the zero-set-back interlock engaged; and
- (b) the discharge nozzle shall be returned to its designed hanging position unless the primary indicating elements, and recording elements, if the device is equipped and activated to record, have been returned to a definite zero indication.

UR.3.6. Temperature Compensation, Wholesale.

UR.3.6.1. Automatic.

UR.3.6.1.1. When to be Used. - If a device is equipped with a mechanical automatic temperature compensator, it shall be connected, operable, and in use at all times. An electronic or mechanical automatic temperature compensating system may not be removed, nor may a compensated device be replaced with an uncompensated device, without the written approval of the responsible weights and measures jurisdiction.

[Note: This requirement does not specify the method of sale for product measured through a meter.]

(Amended 1989)

UR.3.6.1.2. Invoices.

- (a) A written invoice based on a reading of a device that is equipped with an automatic temperature compensator shall show that the volume delivered has been adjusted to the volume at 15 EC (60 EF).
- (b) The invoice issued from an electronic wholesale device equipped with an automatic temperature compensating system shall also indicate: (1) the API gravity, specific gravity or coefficient of expansion for the product; (2) product temperature; and (3) gross reading.

(Amended 1987)

UR.3.6.2. Nonautomatic.

UR.3.6.2.1. Temperature Determination. - If the volume of the product delivered is adjusted to the volume at 15 EC (60 EF), the product temperature shall be taken during the delivery in:

- (a) the liquid chamber of the meter, or
- (b) the meter inlet or discharge line adjacent to the meter, or
- (c) the compartment of the receiving vehicle at the time it is loaded.

UR.3.6.2.2. Invoices. - The accompanying invoice shall indicate that the volume of the product has been adjusted for temperature variations to a volume at 15 EC (60 EF) and shall also state the product temperature used in making the adjustment.

**APPENDIX 4 – NIST HANDBOOK 130 – 2003
EDITION – UNIFORM REGULATION FOR THE
VOLUNTARY REGISTRATION OF
SERVICEPERSONS AND SERVICE AGENCIES
FOR COMMERCIAL WEIGHING AND MEASURING
DEVICES**

Background

The Uniform Regulation covering the registration of servicepersons and service agencies was developed and adopted by the National Conference on Weights and Measures in 1966, retitled in 1983, and substantially revised in 1984. It is designed to promote uniformity among those jurisdictions that provide for or are contemplating the establishment of some type of control over the servicing of commercial weighing and measuring devices. It offers to a serviceperson or to a service agency the opportunity to register and carries with it the privilege of restoring devices to service and of placing new or used devices in service.

Two unique features of the registration plan are its voluntary nature and the provision for reciprocity. Registration is not required; however, the privileges gained make it attractive. Also, in order to provide maximum effectiveness of the program and to reduce to a minimum legal obstacles to service across State lines, provision is made for reciprocity in certification of standards and testing equipment among States.

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 registration of (a) an individual and (b) an agency 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 has available for use, and will use calibrated weights and measures standards

and testing equipment appropriate in design and adequate in amount. (An employee of the 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 § 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 individual or agency not registered with the Director to install, service, repair, or recondition a commercial weighing or measuring device. (see § 7).

(Added 1966; Amended 1984)

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 applies for registration with the Director of Weights and Measures.

(Added 1966)

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 be required.

(Added 1966; Amended 1984)

2.3. Commercial and Law-Enforcement Weighing and Measuring Devices. -- 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 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 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.

(Added 1966; Amended 1984)

Section 3. Registration Fee

There shall be charged by the Director an annual fee of (\$) per Registered Serviceperson and (\$) per Registered Service Agency to cover costs at the time application for registration is made, and annually, thereafter.

(Added 1966; Amended 1984)

Section 4. 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 any application.

(Added 1966; Amended 1984)

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 NIST Handbook 44, "Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices." When applicable, this equipment will meet the specifications of National Institute of Standards and Technology Handbook 105-1, "Specifications and Tolerances for Reference Standards and Field Standard Weights and Measures, Specifications and Tolerances for Field Standard Weights (NIST Class F)," National Institute of Standards and Technology 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 Institute of Standards and Technology 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 § 9.

(Added 1984)

Section 6. Certificate of Registration

The Director will review and check the qualifications of each applicant. 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. The "Certificate of Registration" will expire 1 year from the date of issuance.

(Added 1966; Amended 1984)

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.

(Added 1966; Amended 1984)

Section 8. Placed in Service Report

The Director shall furnish each Registered Serviceperson 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 Serviceperson or by a serviceperson 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 Serviceperson or Registered Service Agency.

(Added 1966)

Section 9. Examination and Calibration or Certification of Standards and Testing Equipment

All standards that are used for servicing and testing weights and measures devices for which competence is registered shall be submitted to the Director for examination and certification at intervals determined by the director. A Registered Serviceperson or Registered Service Agency shall not use in servicing commercial weighing or measuring devices any standards or testing equipment that have not been certified by the Director. Equipment calibrated by another State weights and measures laboratory that can show evidence of measurement traceability to the National Institute of Standards and Technology will also be recognized as equipment that is suitable for use by Registered Servicepersons or Registered Service Agencies in this State.

(Added 1966; Amended 1984 and 1999)

Section 10. Revocation of Certificate of Registration

The Director is authorized to 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; or failure to adjust Commercial or Law-Enforcement Devices to comply with Handbook 44 subsequent to service or repair.

(Added 1966; Amended 1984)

Section 11. Publication of Lists of Registered Servicepersons 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.

(Added 1966)

Section 12. Effective Date

This regulation shall become effective on _____.

(Added 1966)

APPENDIX 5 – DISCUSSION GUIDE

MAY 29, 2003

DISCUSSION GUIDE

ENVIRONICS PN 5365

MEASUREMENT CANADA – RETAIL PETROLEUM TRADE SECTOR REVIEW

1.0 INTRODUCTION TO PROCEDURES (5 MINUTES)

Welcome to the group. We want to hear your opinions. Not what you think other people think – but what you think!

Feel free to agree or disagree. Even if you are just one person among ten that takes a certain point of view, you could represent hundreds of thousands of people in the country who feel the same way as you do.

You don't have to direct all your comments to me; you can exchange ideas and arguments with each other too.

You are being taped and observed to help me write my report.

I may take some notes during the group to remind myself of things also.

The hostess (I) will pay you your incentives at the end of the session.

Let's go around the table so that each of you can tell us your name and a little bit about yourself, such as what you do for a living, who lives in your house and what you like to do for fun.

2.0 INTRO. TO MEASUREMENT CANADA AND THE CURRENT REGULATORY FRAMEWORK FOR OF METERS (15 MINUTES)

Today we are going to be talking about issues relating to weights and measures. As far as you know, are weights and measures such as electricity, natural gas and water meters or gas pump meters etc...regulated in any way? Is there any level of government or industry that polices whether the meters and scales are sound and reliable and keep to any standards?

Who does this?

Who should be doing this? Should it be the utilities or retail outlets? Should it be the government? Some other agency?

In fact, the reliability of weights and measures is the responsibility of a federal government agency called Measurement Canada. Did anyone know this?

I am going to circulate a couple of pages that describe in greater detail how Measurement Canada works and what we are here to discuss.

Distribute “Backgrounder”

I want you all to read **Point 1.0** that describes what Measurement Canada does. Were any of you aware of any of this before?

How does it make you feel to know that MC does all these things? Does this make you feel more confident in your meter and in metering in general? Or does it have no impact?

Measurement Canada is conducting what is called a **Trade Sector Review**. If you read on to **Point 2.0** it will explain this in more detail.

Does everyone understand what this Trade Sector Review is all about? Any comments/questions on it?

3.0 RETAIL PETROLEUM TRADE SECTOR REVIEW – INITIAL EXPERIENCE WITH RETAIL SCALES (10 MINUTES)

Now, I want to turn to the issue of the weighing and measuring of petroleum or gasoline. When do you buy gas? How often?

I want you to think about the pumps at a gas station where you fill up your car. Have you ever wondered how these are regulated for accuracy?

Have any of you ever bought gas for your vehicle and suspected that the pump was inaccurate?

What happened?

Do you trust the pumps at gas stations in terms of how they measure the amount of gas you are filling your car with?

As far as you know, are these scales inspected for accuracy and usage?

How should they be regulated?

4.0 RETAIL PETROLEUM TRADE SECTOR REVIEW – REACTION TO PROPOSED NEW REGULATORY FRAMEWORK (30 MINUTES)

In fact, Measurement Canada has responsibility for all these areas also. When a new gasoline station opens, all the fuel dispensers and scales (i.e. propane scale, gasoline, diesel, propane, gas dispensers and card/key lock dispensers for tractor trailers etc.) are checked initially for accuracy and installation. Similarly, Measurement Canada must approve any new types of these dispensers and scales.

Please read **Point 3.0 on Page 2** about the Retail Petroleum Trade Sector Review.

At one time Measurement Canada regularly re-inspected and spot-checked scales and dispensers and meters in gas stations to make sure they were still compliant.

Now, the only regulatory requirement is that these devices are initially inspected before they are used in trade.

There is no regulatory requirement for any subsequent inspections.

Metering devices are further inspected when required through a consumer complaint or through enforcement due to manufacture defects, regional or national initiatives by Measurement Canada. Periodic inspections is seldom done now, due to the costs and huge resources involved.

“When fuel dispensers (gasoline and diesel pumps) are inspected at gasoline station outlets, about 20% are found to be non-compliance. Of these errors, you may have measurement errors that are in favour of the consumer while others in favour of the station and other errors are such things as burnt segments on the display, indicator off zero (i.e. installation issues).”

Does this information about accuracy reassure you? Or is this an area that needs to be regulated more aggressively?

What if I told you that these errors are almost always less than 1% and are as likely to favour the consumer as the vendor?

Should it be mandatory that Measurement Canada approve all measuring devices (scales, meters, dispensers, etc.) used in retail petroleum trade?

Should it still be mandatory that all new meters be tested before they are put to use?

Should Measurement Canada still do random inspections of meters? Would it be better if they did mandatory periodic inspections of all gas pump meters? How often should these be done?

NB: Currently, there is no obligation for devices that measure gasoline to be rechecked. Big gas station chains probably have their own verification processes.

PROBE: every few years? After x amount of usage? Based on past compliance?

Could Measurement Canada accredit other organizations to do this verification work since it is a very large and expensive task to be regularly inspecting every single weighing device in Canada?

What other organizations could be accredited to do the work?

Could repair organization technicians hired by the owners of gas stations and spot-checked by Measurement Canada do this work?

Cost might be a couple of \$100s per year for a gas station to do this. This might work out to .01 cents a litre. How would you feel about this? Is it a price worth paying?

Currently, there is a process by which companies that do the initial inspections of metering devices at gas stations get certified or accredited by Measurement Canada. This only applies to the initial inspection of metering devices. There is no regulation right now forcing gas stations to get their meters re-checked after the initial installation. Therefore, pump meter technicians require no accreditation to do this re-inspection work.

Right now, anyone can claim to be a meter technician and anyone can work on a measuring device in a gas station regardless of the procedures or equipment (including weights or a test measure) they use. Should companies that manufacture or repair measuring devices have to be accredited or somehow recognised by Measurement Canada?

There is now an industry built around servicing and selling meters and dispensers etc..., but the people who do this are often not the people who manufacture the devices. Should we have a

requirement to force companies/technicians to be accredited before being allowed to perform any work on a device [calibration] or should this accreditation only be required if the company/technician wishes to perform work on MC's behalf) ?

THANK YOU FOR YOUR PARTICIPATION

APPENDIX 6 – BACKGROUNDER DOCUMENT USED FOR FOCUS GROUPS

May 2003

Backgrounder Document

1. What is Measurement Canada ?

Have you ever stopped to think about why and how goods are weighed or measured before they are sold each day in Canada? Have you ever wondered about how these weights and measures are standardised and regulated?

In Canada, weights and measures are a responsibility of the federal government. Measurement Canada (MC) is a government agency that is part of Industry Canada. Its role is to ensure that a fair and accurate weights and measures system exists to protect both buyers and sellers.

- MC's mission is: *"to ensure equity and accuracy where goods and services are bought and sold on the basis of measurement, in order to contribute to a fair and competitive marketplace for Canadians."*
- MC administers and enforces the Electricity and Gas Inspection Act and the Weights and Measures Act
- There are 39 different business sectors where trade measurement is significant (examples of these are electricity, natural gas, retail food, gasoline, water, taxis etc...)
- MC periodically reviews the need for a role in each sector beyond active monitoring and solicits stakeholders' views as a key element in these decisions, particularly those of vulnerable parties.

2. What is a Trade Sector Review?

Measurement Canada is initiating what is called a Trade Sector Review (TSR). This is a comprehensive review process to determine the most appropriate role for Measurement Canada in a particular trade sector or marketplace. MC is consulting its clients to ensure fair and efficient measurement in all trade sectors. By clients we mean stakeholders who buy and sell a given commodity. This can include: consumers, retailers, utilities etc...

Measurement Canada is responsible for measurement issues in all sectors of the Canadian marketplace. With the increase in the number of devices and the increasingly sophisticated technology used it is becoming more difficult for Measurement Canada to have an effective presence in all areas of the marketplace. For these reasons, the department would like to ensure it focuses its resources in the most important areas and identifies other suitable methods of ensuring that the goal of Measurement Equity is maintained.

There are 39 different trade sectors that have weights or measures that Measurement Canada regulates. A phased approach is being used to review Measurement Canada's role in each of these sectors. The first trade sector reviews that have been completed have included the **electricity sector**, the **natural gas sector** and the **retail food sector**, etc. Currently, trade sector reviews are being conducted in the **retail petroleum** (ie: gasoline, propane, diesel etc...) and **household water metering** sectors. Later on many other sectors such as mining, forestry, fishing, taxi meters etc...) will be reviewed, with targeted completion by 2013.

3. Review of the Retail Gas Sector.

Retail petroleum includes the following: gasoline and diesel fuel sold at service stations, natural gas for automobiles, propane, aviation fuel for light aircraft etc...

Stakeholders are being called upon to give input into how Measurement Canada's future involvement in the retail petroleum trade sector might be changed. It is government policy to consult stakeholders. You as consumers are a part of this consultation process.

At present, Measurement Canada (MC) directly provides the following services with regard to retail petroleum measurement:

- Establishes measurement rules and requirements for measuring equipment.

- Calibrates and certifies measurement standards (test weights and test measures) and test equipment.
- Evaluates and approves new measuring apparatus (scales, meters, metering systems).
- Initial inspection and certification of measuring devices (scales, meters).
- Re-verification and monitoring of measuring devices.
- Verification of net quantity content and labeling of commodities.
- Investigates measurement complaints.
- Accredits 3rd parties (service companies) to conduct initial inspections of scales and meters on Measurement Canada's behalf.
- Monitors and enforces compliance e.g., inspections, audits, prosecutions.

When fuel dispensers (gasoline and diesel pumps) are inspected at gasoline station outlets, about 20% are found to be “non-compliant”. Most of these errors are quite small (i.e.: less than 1%). Of these errors, you may have some measurement errors that are in favour of the consumer while others are in favour of the vendor. Other types of errors include such things as burnt segments on the display, indicators off zero (i.e. installation issues).

APPENDIX 7 – QUESTIONS USED FOR THE SURVEY

June 9, 2003

Options Consommateurs

FC32 Omnibus

Measurement Canada Retail Gas Trade Sector Review Questions

69-B Do you often, sometimes, rarely or never buy gasoline at gas stations?

01 – Often

02 – Sometimes

03 – Rarely

04 – Never **SKIP TO Q. 6**

99 – DK/NA

ASK ALL WHO EVER BUY GAS AT GAS STATIONS

70-B Every gas pump at a service station has a meter that measures how much gas is being pumped when you fill up your car. Are you very, somewhat, not very or not at all confident that these meters **accurately** measure how much gas you fill your car with?

01 – Very confident

02 – Somewhat confident

03 – Not very confident

04 – Not at all confident

99 – DK/NA

71-B Who do you think is responsible for making sure that these gas pumps meters are accurate? Is it...? **READ AND ROTATE WITH “NO ONE” ALWAYS LAST**

01 – A government agency

02 – Individual gas station proprietors

03 – Major gas station companies (i.e.: Shell, Texaco etc...)

04 – No one at all

VOLUNTEERED

05 – Other (SPECIFY)_____

99 – DK/NA

In fact there is a federal government agency called Measurement Canada that is responsible for the accuracy of weights and measures, including gas pumps, in Canada.

72-B Measurement Canada inspects and certifies the accuracy of the meters on all gasoline pumps when they are **first installed**. After this initial inspection, Measurement Canada conducts some random inspections of gas pumps, but there is no rule that says that the meters on gas pumps **EVER** have to be re-inspected. Does this information make you **more** confident in the accuracy of the meters on gas pumps, **less** confident or does it have no impact?

01 – More confident

02 – Less confident

03 – Makes no difference

99 – DK/NA

73-B When gasoline pump meters need servicing, maintenance and calibration, gas stations hire service companies to do this work. Currently, Measurement Canada does **not** regulate or set standards for these companies that service gas pump meters. Would you favour or oppose having Measurement Canada regulate these companies by making them get certified before being allowed to do this work?

01 – Favour

02 – Oppose

99 – DK/NA

APPENDIX 8 – SURVEY RESULTS

Ensuring Gasoline Pump Accuracy and Consumer Confidence in a Changing Market

THE FOCUS CANADA REPORT 2003-2
Option Consumers - Gasoline Trade Sector Review

69. Do you often, sometimes, rarely or never buy gasoline at gas stations?

	GENDER		A G E				MARITAL STATUS			KIDS <18 AT HOME		LANGUAGE AT HOME		RELIGION		NON-BRIT IMMIGRANT			TENURE				UNION MEMBER	
	Male	Female	18 to 29	30 to 44	45 to 59	60 or more	Single	Married	Widowed	Yes	No	English	French	Catholic	Protestant	Ath/Ag	European	Other	Own	Rent	Yes	No	Private	Public
UNWEIGHTED SAMPLE	2018	994	1024	352	565	605	455	869	1145	658	1347	1424	490	800	618	474	83	122	1328	665	372	104	246	
WEIGHTED SAMPLE	2018	969	1049	395	613	514	455	903	1110	672	1335	1431	459	773	605	507	97	153	1302	694	360	100	237	
Often	70	76	65	58	76	77	66	59	79	77	67	73	64	71	72	69	72	55	80	51	76	72	78	
Sometimes	10	10	10	14	9	8	10	11	9	9	10	9	10	8	10	12	8	16	8	14	9	11	8	
Rarely	4	3	6	7	4	3	4	5	3	3	5	5	3	4	4	5	4	6	4	5	4	3	4	
Never	15	11	19	22	11	12	19	24	8	11	18	13	23	17	14	14	15	22	8	29	11	13	11	
DK/NA	*	*	*	-	*	-	1	*	*	-	*	*	-	*	*	*	-	-	*	*	*	-	*	

	EMPLOYMENT STATUS					OCCUPATION					HOUSEHOLD INCOME					EDUCATION							
	Full Time	Part Time	Make	Unempl	Retired	Home Wm.	Prof. Adm.	Tech. S.P.	Off. Sale	Sk./Semi	Unskil	Less than \$20K	\$20K to \$30K	\$30K to \$40K	\$40K to \$60K	\$60K to \$80K	Less than \$80K	Comm Coll	Some Univ	Univ Deg.			
UNWEIGHTED SAMPLE	2018	949	180	126	74	394	584	592	245	318	327	320	275	250	273	395	232	366	249	352	622	210	567
WEIGHTED SAMPLE	2018	961	175	120	77	377	600	601	246	334	317	306	262	243	263	395	243	399	221	346	617	215	602
Often	70	76	69	67	48	63	72	75	73	71	74	62	47	65	64	75	83	82	56	68	75	66	73
Sometimes	10	8	14	10	21	11	9	9	13	8	7	14	10	9	11	9	10	9	11	15	7	11	10
Rarely	4	4	4	3	3	5	5	4	4	7	4	5	4	4	5	5	3	4	2	3	5	7	4
Never	15	12	12	20	27	21	14	12	10	14	16	19	38	21	19	11	4	6	31	14	13	15	12
DK/NA	*	*	*	1	-	*	*	1	-	-	-	-	*	-	1	-	-	-	-	-	-	1	*

	REGION				SUB-REGIONS				COMMUNITY SIZE				FED. POLITICAL PREFERENCE										
	Atl. Prov	Quebec	Ontario	West Can.	West Ont.	Van. real	Man.	Sask.	Alb. erta	B.C.	Que.	100K +	100K to 500K	500K to 1M	Less than 1M	Lib.	P.C.	NDP	CA	Bloc	Que.	Und.	
UNWEIGHTED SAMPLE	2018	256	514	565	683	182	211	95	137	117	209	220	1504	488	514	503	513	715	286	231	261	139	246
WEIGHTED SAMPLE	2018	156	487	770	605	347	211	115	75	66	200	264	1531	673	457	457	431	737	271	231	262	132	232
Often	70	76	62	74	70	71	54	60	77	74	74	65	73	63	72	74	75	71	79	64	76	67	68
Sometimes	10	7	10	10	10	11	10	18	5	6	12	12	10	12	7	10	10	10	11	7	11	8	10
Rarely	4	4	3	4	6	5	3	6	4	5	5	7	5	5	5	3	5	4	3	7	5	3	4
Never	15	13	25	11	13	13	33	16	14	13	8	17	12	20	16	13	10	15	8	21	8	23	17
DK/NA	*	1	*	-	*	-	*	-	-	1	1	-	*	*	1	*	-	-	*	-	-	-	1

ENVIRONICS RESEARCH GROUP LIMITED

THE FOCUS CANADA REPORT 2003-2
Option Consumers - Gasoline Trade Sector Review

70. Every gas pump at a service station has a meter that measures how much gas is being pumped when you fill up your car. Are you very, somewhat, not very or not at all confident that these meters accurately measure how much gas you fill your car with?

Subsample: Those who ever buy gas at gas stations

	GENDER		A G E				MARITAL STATUS		KIDS <18 AT HOME		LANGUAGE AT HOME		RELIGION		NON-BRIT IMMIGRANT			TENURE		UNION MEMBER			
	Male	Female	18 to 29	30 to 44	45 to 59	60 or more	Single	Married	Yes	No	English	French	Catholic	Protestant	Ath/Ag	European	Other	Own	Rent	Yes	No		
	TOTAL	Male	Female	29	44	59	more	gle	ried	Yes	No	lish	nch	Cath	Prot	Ag	ope	er	Own	Rent	Yes	No	
UNWEIGHED SAMPLE	1711	882	829	273	503	538	362	658	1050	595	1106	1245	381	664	535	410	72	93	1223	468	334	92	221
WEIGHTED SAMPLE	1706	861	845	308	545	453	367	682	1020	601	1097	1247	353	641	522	436	83	120	1198	491	320	86	211
Very confident	36	39	34	30	38	38	39	32	39	35	37	36	38	38	36	36	41	32	38	33	41	49	38
Somewhat confident	46	44	48	50	46	44	44	49	44	46	46	48	42	45	47	46	41	40	46	46	43	30	47
Not very confident	10	10	10	12	10	10	10	11	10	11	10	9	12	10	9	12	16	13	10	12	10	15	8
Not at all confident	6	6	5	6	5	7	4	6	6	7	5	5	6	6	5	5	-	12	5	6	5	6	5
DK/NA	2	1	3	2	*	1	3	2	1	1	2	2	2	1	2	1	1	3	2	2	1	1	1

	EMPLOYMENT STATUS				OCCUPATION						HOUSEHOLD INCOME					EDUCATION							
	Full Time	Part Time	mak er	Un empl oyed	Home ing Wm.	Prof Adm. OLB	Tech S.P. OSB	Off. Sale Serv	Sk/ Semi Skil Work	Un- Less than \$20K	\$20K to \$30K	\$30K to \$40K	\$40K to \$60K	\$60K to \$80K	Less than H.S.	Comm Coll	Some Univ	Univ Deg.					
	TOTAL	Time	Time	er	oyed	ired	Wm.	OLB	OSB	Serv	Skil	Work	\$20K	\$30K	\$40K	\$60K	\$80K	More	H.S.	H.S.	Voca	Univ	Deg.
UNWEIGHED SAMPLE	1711	844	157	98	54	313	508	523	220	273	277	260	172	195	222	359	224	346	172	303	544	178	500
WEIGHTED SAMPLE	1706	847	152	95	56	298	517	528	221	287	267	247	161	191	212	353	234	375	152	298	537	181	526
Very confident	36	39	36	30	21	38	36	41	33	37	32	33	29	35	35	34	44	42	26	34	34	32	45
Somewhat confident	46	43	46	48	47	44	47	44	48	50	48	41	45	46	43	50	47	44	47	47	43	57	44
Not very confident	10	10	10	11	23	11	10	10	9	8	12	12	16	10	14	11	5	8	11	11	13	8	7
Not at all confident	6	6	7	9	6	4	5	4	9	2	6	10	7	7	7	4	2	5	12	6	7	2	3
DK/NA	2	1	2	2	3	4	2	1	1	2	2	3	3	2	1	2	1	*	4	2	2	1	1

Ensuring Gasoline Pump Accuracy and Consumer Confidence in a Changing Market

THE FOCUS CANADA REPORT 2003-2
Option Consumers - Gasoline Trade Sector Review

70. Every gas pump at a service station has a meter that measures how much gas is being pumped when you fill up your car. Are you very, somewhat, not very or not at all confident that these meters accurately measure how much gas you fill your car with?

Subsample: Those who ever buy gas at gas stations

	REGION				SUB-REGIONS						COMMUNITY SIZE				FED. POLITICAL PREFERENCE											
	Atl. Que	Ont	Man.	West	Tor	Onto	Man.	Van	Alb	Alb	Man.	Sask	Alb	B.C.	Que	100K +	100K - 5K	5K - 100K	Less than 5K	Lib.	P.C.	NDP	CA	Bloc	Que.	Und.
UNWEIGHTED SAMPLE	1711	223	391	504	593	158	142	80	118	101	191	183	1320	380	428	440	463	610	262	184	242	108	201			
WEIGHTED SAMPLE	1706	135	367	681	523	301	141	97	65	57	183	219	1340	539	382	398	387	629	250	182	241	102	189			
Very confident	36	28	40	37	35	39	40	39	38	37	35	33	35	39	40	34	31	36	39	38	37	41	32			
Somewhat confident	46	49	39	47	48	47	42	42	47	47	48	49	48	45	45	46	48	48	41	44	47	37	47			
Not very confident	10	13	12	9	10	9	13	10	7	8	11	11	10	10	7	12	12	8	13	11	9	16	12			
Not at all confident	6	10	6	5	5	4	5	6	5	8	5	5	5	5	6	6	6	6	5	6	5	4	6			
DK/NA	2	1	2	2	2	1	1	3	3	-	2	3	2	2	2	2	2	2	2	*	1	2	3			

71. Who do you think is responsible for making sure that these gas pumps meters are accurate? Is it ...

Subsample: Those who ever buy gas at gas stations

	GENDER		A G E				MARITAL STATUS		KIDS <18 AT HOME		LANGUAGE AT HOME		RELIGION		NON-BRIT IMMIGRANT			TENURE		UNION MEMBER			
	Male	Female	18 to 29	30 to 44	45 to 59	60 or more	Single	Married	Yes	No	English	French	Catholic	Protestant	Ath/Ag	Eur/Ope	Oth	Own	Rent	Yes	No	Pri vate	Pub lic
UNWEIGHTED SAMPLE	1711	882	829	273	503	538	362	658	1050	595	1106	1245	381	664	535	410	72	93	1223	468	334	92	221
WEIGHTED SAMPLE	1706	861	845	308	545	453	367	682	1020	601	1097	1247	353	641	522	436	83	120	1198	491	320	86	211
A government agency	53	65	41	41	53	58	57	47	57	51	54	54	52	51	54	53	48	52	55	48	56	56	56
Individual gas station proprietors	19	13	25	27	23	15	11	19	19	24	16	17	24	21	19	18	17	18	18	21	17	16	17
Major gas station companies (i.e. Shell, Texco etc.)	19	16	22	25	17	17	18	23	16	17	19	19	17	20	17	20	21	17	18	20	19	17	20
No one at all	3	3	4	4	2	4	3	5	2	3	3	3	3	3	3	4	-	7	3	4	3	4	3
Other	1	1	2	2	1	2	2	1	2	2	1	1	1	1	2	1	4	-	1	2	1	-	1
DK/NA	5	2	7	2	4	5	9	6	4	3	6	5	4	5	5	4	10	6	5	5	4	8	2

ENVIRONICS RESEARCH GROUP LIMITED

THE FOCUS CANADA REPORT 2003-2
Option Consumers - Gasoline Trade Sector Review

71. Who do you think is responsible for making sure that these gas pumps meters are accurate? Is it ...

Subsample: Those who ever buy gas at gas stations

	EMPLOYMENT STATUS					OCCUPATION					HOUSEHOLD INCOME					EDUCATION							
	Home	Un	Full	Part	mak	Work	Prof	Tech	Off.	Sk/	Un-	Less	\$20K	\$30K	\$40K	\$60K	\$80K	Less	Comm	Coll	Some	Univ	
	Time	empl	er	er	er	ing	Adm.	S.P.	Sale	Semi	skil	than	to	to	to	to	to	or	than	Voca	Univ	Deg.	
UNWEIGHTED SAMPLE	1711	844	157	98	54	313	508	523	220	273	277	260	172	195	222	359	224	346	172	303	544	178	500
WEIGHTED SAMPLE	1706	847	152	95	56	298	517	528	221	287	267	247	161	191	212	353	234	375	152	298	537	181	526
A government agency	53	57	40	39	44	58	40	55	56	50	60	46	38	47	53	53	62	58	41	46	56	54	57
Individual gas station proprietors	19	18	25	33	26	10	27	16	21	20	17	22	24	17	17	22	16	16	24	19	19	17	17
Major gas station companies (i.e. Shell, Texco etc.)	19	18	20	19	22	17	22	20	16	19	17	17	22	21	23	17	16	17	25	23	17	15	17
No one at all	3	3	7	1	2	3	4	2	4	5	2	6	6	4	4	2	1	4	4	5	3	4	3
Other	1	1	*	3	4	2	*	1	*	2	*	2	*	3	1	1	1	2	2	1	1	3	2
DK/NA	5	3	7	4	2	9	6	6	3	5	3	7	9	8	2	5	4	3	4	5	4	6	5

	REGION				SUB-REGIONS					COMMUNITY SIZE				FED. POLITICAL PREFERENCE									
	Atl.	Que	Ont	West	Tor	Mont	Van	Alb	Can.	1	100K	5K	Less	Lib.	P.C.	NDP	CA	Bloc	Que.	Und.			
	Prov	bec	ario	ern	onto	real	cou	Man.	Sask	excl	Mill	to	to	to	Lib.	P.C.	NDP	CA	Que.	Und.			
UNWEIGHTED SAMPLE	1711	223	391	504	593	158	142	80	118	101	191	183	1320	380	428	440	463	610	262	184	242	108	201
WEIGHTED SAMPLE	1706	135	367	681	523	301	141	97	65	57	183	219	1340	539	382	398	387	629	250	182	241	102	189
A government agency	53	52	53	54	53	48	51	55	56	53	54	50	53	50	58	56	50	56	56	53	53	49	46
Individual gas station proprietors	19	21	25	15	19	16	25	17	20	19	19	19	17	18	17	20	20	16	21	23	14	28	18
Major gas station companies (i.e. Shell, Texco etc.)	19	21	16	20	18	24	20	17	18	17	20	17	19	22	16	15	20	20	14	15	22	17	20
No one at all	3	1	2	5	2	4	1	3	2	3	2	3	4	3	3	3	4	3	3	3	5	2	4
Other	1	1	1	2	1	3	1	1	1	2	*	2	2	2	1	1	1	1	2	1	1	2	2
DK/NA	5	4	3	5	7	5	3	7	3	6	5	9	5	5	5	5	5	5	4	4	5	5	10

ENVIRONICS RESEARCH GROUP LIMITED

THE FOCUS CANADA REPORT 2003-2
Option Consumers - Gasoline Trade Sector Review

72. Measurement Canada inspects and certifies the accuracy of the meters on all gasoline pumps when they are first installed. After this initial inspection, Measurement Canada conducts some random inspections of gas pumps, but there is no rule that says that the meters on gas pumps ever have to be re-inspected. Does this information make you more confident in the accuracy of the meters on gas pumps, less confident or does it have no impact?

Subsample: Those who ever buy gas at gas stations

	GENDER		A G E				MARITAL STATUS		KIDS <18 AT HOME		LANGUAGE AT HOME		RELIGION		NON-BRIT IMMIGRANT			TENURE				UNION MEMBER	
	Male	Female	18 to 29	30 to 44	45 to 59	60 or more	Single	Married	Yes	No	English	French	Catholic	Protestant	Ath/Ag	Eur/Ope	Oth/er	Own	Rent	Yes	No	Private	Public
UNWEIGHTED SAMPLE	1711	882	829	273	503	538	362	658	1050	595	1106	1245	381	664	535	410	72	93	1223	468	334	92	221
WEIGHTED SAMPLE	1706	861	845	308	545	453	367	682	1020	601	1097	1247	353	641	522	436	83	120	1198	491	320	86	211
More confident	7	6	8	11	8	5	5	6	7	9	6	4	14	10	4	5	5	18	6	9	7	3	8
Less confident	63	60	66	55	64	66	65	61	65	65	62	68	48	57	70	65	71	59	64	62	62	64	62
Makes no difference	30	34	25	34	28	28	29	32	28	26	31	27	38	33	26	29	24	23	30	28	30	33	30
DK/NA	*	*	1	-	*	-	1	1	*	*	1	1	-	*	1	*	-	-	*	*	*	-	-

	EMPLOYMENT STATUS					OCCUPATION							HOUSEHOLD INCOME					EDUCATION					
	Full Time	Part Time	Make er	Home empl	Un empl	Ret ired	Work ing	Prof Adm.	Tech S.P.	Off. Sale	Sk/ Serv	Un- Skil	Un- Work	Less than \$20K	\$20K to \$30K	\$30K to \$40K	\$40K to \$60K	\$60K to \$80K	Less than H.S.	More H.S.	Comm Coll	Some Univ	Univ Deg.
UNWEIGHTED SAMPLE	1711	844	157	98	54	313	508	523	220	273	277	260	172	195	222	359	224	346	172	303	544	178	500
WEIGHTED SAMPLE	1706	847	152	95	56	298	517	528	221	287	267	247	161	191	212	353	234	375	152	298	537	181	526
More confident	7	6	8	9	10	5	8	6	7	5	5	9	9	9	8	6	8	3	11	7	7	5	6
Less confident	63	61	71	62	69	68	65	64	65	62	62	66	63	62	67	65	61	60	61	63	65	70	60
Makes no difference	30	33	21	28	21	26	27	30	28	32	33	23	26	29	24	29	32	36	26	30	27	25	34
DK/NA	*	*	*	2	-	1	*	*	-	1	*	1	2	1	*	*	-	-	2	*	*	1	-

ENVIRONICS RESEARCH GROUP LIMITED

THE FOCUS CANADA REPORT 2003-2
 Option Consommateurs - Water and Gasoline Trade Sector Reviews

72. Measurement Canada inspects and certifies the accuracy of the meters on all gasoline pumps when they are first installed. After this initial inspection, Measurement Canada conducts some random inspections of gas pumps, but there is no rule that says that the meters on gas pumps ever have to be re-inspected. Does this information make you more confident in the accuracy of the meters on gas pumps, less confident or does it have no impact?

Subsample: Those who ever buy gas at gas stations

	REGION				SUB-REGIONS						COMMUNITY SIZE				FED. POLITICAL PREFERENCE								
	Atl. Prov	Que bec	Ont ario	West Can.	Tor onto	Mon real	Van cou ver	Man.	Sask	Alb erta	B.C.	Que	1 +	100K Mill	5K 100K	Less than	Lib.	P.C.	NDP	CA	Bloc Que.	Urd.	
UNWEIGHTED SAMPLE	1711	223	391	504	593	158	142	80	118	101	191	183	1320	380	428	440	463	610	262	184	242	108	201
WEIGHTED SAMPLE	1706	135	367	681	523	301	141	97	65	57	183	219	1340	539	382	398	387	629	250	182	241	102	189
More confident	7	9	16	4	4	4	19	4	3	3	6	4	5	8	6	8	7	8	6	6	3	15	6
Less confident	63	66	47	68	68	66	49	72	66	68	69	67	68	63	66	58	66	62	68	67	67	48	60
Makes no difference	30	25	37	28	27	30	32	23	29	27	25	28	27	29	27	34	27	30	26	27	30	37	32
DK/NA	*	-	-	*	1	-	-	1	2	2	1	1	1	*	1	-	1	*	1	-	*	-	2

73. When gasoline pump meters need servicing, maintenance and calibration, gas stations hire service companies to do this work. Currently, Measurement Canada does not regulate or set standards for these companies that service gas pump meters. Would you favour or oppose having Measurement Canada regulate these companies by making them get certified before being allowed to do this work?

Subsample: Those who ever buy gas at gas stations

	GENDER		A G E				MARITAL STATUS		KIDS <18 AT HOME		LANGUAGE AT HOME		RELIGION		NON-BRIT IMMIGRANT			TENURE		UNION MEMBER			
	TOTAL	Male	18 to 29	30 to 44	45 to 59	60 or more	Single	Married	Yes	No	Eng lish	Fre nch	Cath	Prot	Ath/ Ag	Eur ope	Oth er	Own	Rent	Yes	Pub licate	Sec	
UNWEIGHTED SAMPLE	1711	882	829	273	503	538	362	658	1050	595	1106	1245	381	664	535	410	72	93	1223	468	334	92	221
WEIGHTED SAMPLE	1706	861	845	308	545	453	367	682	1020	601	1097	1247	353	641	522	436	83	120	1198	491	320	86	211
Favour	93	92	94	93	93	93	92	92	94	95	92	93	93	92	95	92	96	91	94	92	92	90	95
Oppose	6	7	4	7	6	6	6	6	6	5	6	6	6	7	4	6	4	6	5	7	6	9	4
DK/NA	1	1	2	1	*	1	2	2	1	1	2	1	1	1	1	2	-	3	1	1	2	1	2

ENVIRONICS RESEARCH GROUP LIMITED

THE FOCUS CANADA REPORT 2003-2
Option Consumers - Gasoline Trade Sector Review

73. When gasoline pump meters need servicing, maintenance and calibration, gas stations hire service companies to do this work. Currently, Measurement Canada does not regulate or set standards for these companies that service gas pump meters. Would you favour or oppose having Measurement Canada regulate these companies by making them get certified before being allowed to do this work?

Subsample: Those who ever buy gas at gas stations

	EMPLOYMENT STATUS					OCCUPATION							HOUSEHOLD INCOME					EDUCATION					
	Full Time	Part Time	mak er	Un empl oyed	Un Ret ired	Work ing Wom.	Prof Adm. OLB	Tech S.P. OSB	Off. Sale Serv	Sk/ Semi Skil	Un- Work	Less than \$20K	\$20K to \$30K	\$30K to \$40K	\$40K to \$60K	\$60K to \$80K	Less than H.S.	Coll H.S.	Some Voc	Univ Deg.			
UNWEIGHED SAMPLE	1711	844	157	98	54	313	508	523	220	273	277	260	172	195	222	359	224	346	172	303	544	178	500
WEIGHED SAMPLE	1706	847	152	95	56	298	517	528	221	287	267	247	161	191	212	353	234	375	152	298	537	181	526
Favour	93	93	91	93	93	93	94	93	94	93	95	94	89	90	96	93	93	94	87	94	94	95	92
Oppose	6	5	5	4	7	6	4	6	5	6	5	4	10	8	4	6	7	4	10	5	5	5	6
DK/NA	1	1	4	3	-	1	2	1	1	1	-	2	1	3	-	1	*	2	3	1	1	-	1

	REGION				SUB-REGIONS							COMMUNITY SIZE				FED. POLITICAL PREFERENCE							
	Atl. Prov	Que bec	Ont ario	West ern Can.	Van Tor onto	Man. real	Sask ver	Alb erta	B.C.	Can. excl	1 Mill +	100K Mill	5K 100K	Less than 5K	Lib.	P.C.	NDP	CA	Bloc Que.	Und.			
UNWEIGHED SAMPLE	1711	223	391	504	593	158	142	80	118	101	191	183	1320	380	428	440	463	610	262	184	242	108	201
WEIGHED SAMPLE	1706	135	367	681	523	301	141	97	65	57	183	219	1340	539	382	398	387	629	250	182	241	102	189
Favour	93	92	92	95	92	93	94	93	94	95	94	88	93	93	94	92	93	94	92	94	92	93	90
Oppose	6	7	7	4	6	5	6	5	5	5	3	10	6	5	5	7	7	4	6	6	7	7	9
DK/NA	1	1	1	1	2	2	-	3	1	-	3	2	1	1	1	1	1	2	2	1	1	-	2

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