

measureUP

THE MEASUREMENT AND PRODUCT SAFETY SERVICE NEWSLETTER FOR ACCREDITED PERSONS



Editorial: Stephen O'Brien

2007 was a busy year for MAPSS and 2008 is shaping up to be just as challenging. Responding to changes in a number of functional areas over the last year has tested the capability and capacity of the team and resulted in several changes to the MAPSS 'line up.'

I am pleased to report that since the last issue of Measure Up; Brian Waltham and I have been confirmed in our respective acting roles, Martin Rushton has joined MAPSS as a Principal Advisor, David Morris has returned to MAPSS and taken on supervision of our Fuel Quality Monitoring programme and Ben Aitken has joined MAPSS as a Trainee MAPSS Officer in our Christchurch Office.

As we work on legal Metrology in New Zealand we need to keep an eye on what is happening internationally. This is firstly to analyse international trends in administration, enforcement and trade practice for potential improvements and threats to the New Zealand measurement Infrastructure. Secondly we seek to offer our unique New Zealand perspectives and experiences to other economies through collaboration and training.

With these goals in mind we have highlighted in this issue MAPSS recent hosting of a delegation from the Shanghai Academy of Public Measurement and we bring to your attention the *Measuring Our World* symposium on metrology.

I hope you find the latest issue of MeasureUP useful and informative.

I look forward to facing and overcoming the challenges that 2008 will bring.

Stephen O'Brien
Manager MAPSS

Welcome to measureUP

This is the fourth edition of measureUP, the Measurement and Product Safety Service's (MAPSS) newsletter for Accredited Persons (AP's).

In this edition of measureUP we highlight MAPSS responsibility monitoring the quality of the New Zealand retail fuel supply and discuss issues surrounding 'Hot Fuel'. We also clarify requirements for verification, Certificates of Accuracy and Notices of Non Compliance. Further information is also given on the training requirements for applicants seeking accreditation status.

The aim of this publication is to keep AP's and stakeholders up to date with the latest issues within legal metrology and provide some clarification on technical matters.

We'd appreciate your feedback on the types of stories you would like us to feature. If there's anything you'd like us to clarify or feature in future editions of this newsletter please let us know.

We are also looking at setting up a Questions and Answers section, so if you have any questions about trade measurement and legal metrology, then give us a shout.

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MAPSS Assumes Extra Responsibilities

In addition to the MAPSS traditional roles of administering the Weights and Measure Act and the product safety elements of the Consumer Guarantees Act, and the Fair Trading Act, MAPSS has recently assumed the responsibility of administering the Fuel Quality Monitoring (FQM) program within NZ.

Fuel quality monitoring program

When New Zealand's oil industry was deregulated in 1988, regulations governing important properties of petrol and diesel were introduced to protect consumers and the environment.

The Petroleum Products Specification Regulations 2002 outline the most important performance properties of fuel, such as the octane number. They also specify limits for components that could harm persons, their vehicle or the environment. These components include aromatics, lead and sulphur.

Within the national fuel quality monitoring scheme, MAPSS organises testing of petrol and diesel samples to ensure oil companies are complying with the regulations, approximately 120 samples are tested each month. The testing scheme concentrates on the fuel's most critical properties, such as octane number, cetane index, benzene level, total aromatics and sulphur content. Using a statistical sampling plan, the scheme takes account of the fuel's previous 'pass' or 'fail' rate, the market share of each oil company and the volume of sales for each region.

Most fuel samples that are tested meet the quality regulations. Some samples can fall outside the specifications by only an inconsequential amount. If this happens, the oil company that supplied the fuel has to investigate why it happened and prevent it from happening again by taking appropriate action, depending on the circumstances, such as removing the fuel from sale. These findings and resulting actions are then communicated to MAPSS for appraisal. The max fine for non compliance is \$10 000.

Motorists fund the fuel quality monitoring scheme through the petroleum fuels monitoring levy. A small percentage of the levy, 0.025 cents per litre, is used to fund the scheme.

In practice, SGS are contracted to collect the samples and will pay for any samples procured.

The samples are then delivered to Independent Petroleum Laboratories (IPL) in Ruakaka for testing, some of the samples are then sent onto Industrial Research Limited (IRL) for aromatics testing.

Bio fuels

The Bio fuel Bill introduces a new part to the Energy (Fuels, Levies, and References) Act 1989 – Part 3A. This states that, from next year, suppliers of petrol or diesel must also supply a proportion of bio fuels, beginning at 0.53%, of a liable person's petrol and diesel in 2008. This will increase to 3.40% by 2012.

When Part 3A comes into force, MAPSS will be required to carry out fuel quality testing of bio fuels and develop a new statistical sampling regime to monitor the fuels that will be introduced.

These extra responsibilities have resulted in some changes in the way MAPSS operates in relation to the sale of fuel in New Zealand. A new senior position has been created within MAPSS that will now manage and develop its FQM responsibilities. The position will also coordinate the legal metrology functions and surveillance of Accredited Persons (AP's) that verify and issue certificates of accuracy for driveway flow meters. These surveillance visits from MAPSS officers will form part of the compliance audit of each individual AP. The results will be taken into consideration upon the renewal of letters of accreditation and may form the basis of any suspension process, should it be appropriate to do so.

As of October 2007 David Morris, a former Senior Advisor with MAPSS, has been appointed to take up this position. Existing MAPSS Client Managers will continue to be the first point of contact for AP's for both organisations and natural persons. That said, David can be contacted directly in connection with any issues, with regard to fuel or other issues that cannot be managed by the Client Manager.



MAPSS plays host to a Delegation from the Shanghai Academy of Public Measurement

During 11 and 12 January 2008, the Measurement and Product Safety Service (MAPSS) hosted a delegation from the Shanghai Academy of Public Measurement and other branches of the Shanghai Municipal People's Government.

The Delegation members were on a fact finding exercise, which took in visits to both New Zealand and Australia. They were particularly interested in the work of MAPSS and how the provisions of the Weights & Measures Act 1987 are enforced.

On Monday, the delegation visited the MED building in Bowen Street and Stephen O'Brien (MAPSS Manager) and Martin Rushton (Principal Adviser) gave them a presentation on the role and remit of MAPSS.

Although the delegation employed the services of a translator, Stephen and Martin were assisted by Lucy He, trainee MAPSS Officer. "Lucy is originally from China and her technical knowledge, as well as her fluency in Chinese was extremely helpful during these discussions, especially when we covered some of the more technical and complex issues," said Martin.

On the second day, the delegation visited the MAPSS office out at Petone. Martin and Lucy, along with Simon Barratt, also a MAPSS trainee officer, showed various pieces of equipment used by MAPSS Officers. He demonstrated a range of testing procedures that are undertaken for mass, volume and length. The delegation were also shown the 'CART' database which is the software system which MAPSS use to record their operational activities and which provides information to help target resources specifically to high risk areas.

The delegation members were particularly struck by the relatively small size of the MAPSS team. MAPSS has a narrower range of functions than the Shanghai Academy of Public Measurement.



Delegation from the Shanghai Academy of Public Measurement with MAPSS officials Lucy He (trainee officer, third from left), Stephen O'Brien (Manager, fifth from left) and Martin Rushton (Principal Advisor, sixth from left).

The focus for MAPSS is principally around legal metrology. A key part of this work relates to the regulation of the activities of approved persons of which there are 200 in New Zealand. In Shanghai all such activity is undertaken by the Academy's own officers.

The Shanghai Academy of Public Measurement serves a population of 20 million with a staff compliment of 4000. MAPSS have less than 16 staff for a population of 4 million in New Zealand, albeit they cover a narrower range of functions than the Shanghai Academy of Public Measurement.

Another area of interest to the Shanghai delegation was the age of some of the equipment (much of which is no longer in use) at Petone. They were shown mass and volume standards from the 19th Century and were keen to have photographs taken with them. They explained that their facility only opened in 2002 at a cost of US\$120 million and covers 150,000 square metres – a marked contrast to the more modest facility at Petone.

The delegation travelled onto Australia as a further part of their fact finding tour. They advised that they had learned a great deal from the visit to New Zealand on how legal metrology is regulated here. The delegation also felt that establishing these links with MAPSS in New Zealand would be of benefit in promoting cooperation in the future as trade between China and New Zealand develops.



Measuring Our World: symposium on metrology 2008

In late April the Measurement Standards Laboratory of New Zealand is holding a symposium aiming to identify New Zealand's measurement needs required to meet the challenges presented by trade globalisation, health-care improvements, managing environmental risks and future technologies for industry.

The morning session will include an overview of the international situation from two of the world's leading metrologists representing the Metre Convention. This will be followed by presentations from local experts, both providers and users of essential measurement services.

The scope of this symposium is broad, but it is focused on directing the development of national measurement standards to meet New Zealand's measurement needs. The output of each workshop will be an action plan for further engagement to set priorities for addressing future needs identified by participants.

The symposium will be held on 30 April at the Duxton Hotel, Wellington.

See <http://msl.irl.cri.nz/> for latest information and registration

Approval Certificates and General Rules

Familiarise yourself with Equipment and its Approval Status prior carrying out testing

When an Accredited Person (AP) is asked to certify/verify weighing or measuring equipment they must first examine the equipment to make sure it complies with its approval certificate. Only when they are satisfied that the equipment fully complies with the approval certificate, including any conditions set out in the approval, should the test begin. This is particularly important if the AP is requested to test an instrument with which they are unfamiliar. In all cases if the AP is unsure they should refer to the approval certificate and any variants to the original approval certificate.

In one particular instance an inspector came across a situation where; a front end loader with a Load-rite weighing system installed had been issued with a certificate of accuracy. However the equipment had been tested by the AP as a class III instrument, with a maximum of 3000 counts. When in fact the approval certificate for the instrument stated that it was approved as class Y (b), with a maximum of 300 counts. The AP also failed to test the instrument in accordance with the tests prescribed in the approval certificate.

The AP had also failed to read the approval certificate and as a result was unaware of the correct test criteria and the verification scale interval that the instrument was approved for.

Variants to Approval Certificates

In the past 12 months there have been instances where some suppliers of equipment and AP's have failed to apply for variants to approval certificates where the instrument differs from the original certificate. In some cases companies have tried to apply for the variant retrospectively, after the equipment has been modified or sold to the trader and is being used for trade.

In all situations where equipment intended for 'trade use' has been modified, sold to traders or installed with the intention of immediate use, then the submission of that equipment to MAPSS for a variant should have been done prior.

The golden rule is that if the equipment does not match the Approval certificate or a change to a component, or structure is required, then a MAPSS Approval officer should be contacted and the requirements discussed with them.

If the equipment does not match the conditions of approval, or is not approved, it cannot be stamped with the 'mark verification' or issued with a 'certificate of accuracy'.

Section 20 and 21 of the Weights and Measure Act clearly states:

Approval of appliances

Subject to section 22 of this Act, no weight or measure and no weighing or measuring instrument shall be stamped with a mark of verification under this Act unless it is of a type approved by the [Secretary] in accordance with regulations made under this Act.

21 Weights and measures to be stamped with mark of verification

(1) Subject to any regulations made under this Act, no person shall use for trade, or have in that person's possession for use for trade, any weight or measure or any weighing or measuring instrument which has not been stamped with a mark of verification in accordance with regulations made under this Act.

(2) Subject to section 22 of this Act, every person commits an offence who uses for trade, or has in that person's possession for use for trade, any weight, measure, or weighing or measuring instrument which is not stamped with a mark of verification as required by this Act.



Hot Fuel

In 2007 MAPSS received a complaint from an independent service station retailer. The complaint related to an industry term known as 'hot fuel,' whereby a retailer can suffer losses due to the fact that when they take delivery of fuel from the road tankers, it is at a higher temperature than it ends up being once it has settled in their underground storage tanks (UST's).

Evidence provided suggests that on occasions the complainant had been receiving fuel at higher temperatures than those in the UST's. In one example of a delivery, they recorded an observed UST temperature of 16 °C. On the same day they recorded the ambient air temperature as being 21 °C. The fuel temperature recorded at the road tanker was 22 °C for 91 octane and 23 °C for 96 octane.

All liquids expand and contract, to some extent, with changes in temperature. However, changes are significant with some petroleum products. In the case of petrol, it expands and contracts at 0.0011 of its volume per °C variation. For example, a standard load of 30,000 litres of petrol measured at a terminal or refinery at 40 °C will shrink to 29,175 litres when cooled at 15 °C, a difference of 825 litres or 2.8% less product than is charged.

In the case of the complainant, they believed they had received fuel deliveries at 22°C and 23°C. If 30,000 litres of each product was delivered, the deficiency would equate to 231 and 264 litres respectively.

In 2003, Australia introduced legislation to regulate the sale of fuel by reference to measurement by volume:

"A person must not sell fuel by reference to the measurement of its volume unless the sale is at a price determined by reference to the volume of the fuel as measured by the litres the fuel occupies, or would occupy, at a temperature of 15 °C."

Australia's situation differs from New Zealand's in that the Australian fuel can be produced at refineries and have a more direct delivery time to retailers ('just in time production'), rather than it being stored and double handled before delivery. It is common for Australia to have fuel come from the refinery at 40 °C and delivered to a retailer where it cools to say 15 °C to 20 °C once in the UST.



Testing the temperature of an underground tank.

International trade transfers between domestic oil companies and excise duty payments are made on a volume-corrected basis to the international reference temperature of 15 °C.

So where to from here?

MAPSS have held initial meetings with the Motor Trade Association (MTA) and an Oil Company Bulk Storage, Load-out Facility to discuss the issues surrounding 'Hot Fuel'. The MTA represents around 1100 service stations throughout the country.

Over the coming months MAPSS will be carrying out testing in some of the main centres, from Auckland to Invercargill, to determine UST temperatures at some service station retail sites.

We will also be visiting some oil company bulk storage facilities to record temperatures at the load out gantry terminals.

In the initial phase, the primary aim of this project will be to collect data and evidence in order to make an initial assessment, and gauge whether the issue of 'hot fuel' is a problem in New Zealand.

Verification, Certificates of Accuracy and Notices of Non Compliance

Back in the early 1990s, when the current Accreditation Scheme was first drafted, a lot of thought and consultation was needed to come up with a workable system that would be transparent and meet the needs of consumers, traders, service industry representatives and regulators.

One main issue that needed considerable thought was how the verification and certification system could work using third party Accredited Persons (AP's). Another issue was how AP's could deal with non complying weighing/measuring equipment.

The current Accreditation Scheme we have is an optional system. Accredited Persons may offer their services to traders to verify and subsequently certify weighing and measuring equipment. They do not have any powers to force traders to get their equipment verified and certified. Likewise, where they find non complying equipment, AP's don't have powers to reject or stop traders using false or unjust equipment.

So how can AP's use the Legislation to promote the Accreditation Scheme?

Accredited Persons need to be transparent with traders and explain the full intention of their visit. In particular, they need to explain that the services they offer as an Accredited Person are **optional**.

That said, AP's are entitled to explain the obligations traders have under the Weights and Measures Act 1987 and regulations 1999, and explain the definitions relating to verification, certification, and the act of issuing notices of non compliance. In explaining the system to traders the following terminology and explanations can be given to convey the relevant information:

- **Verification**

All trade weighing / measuring equipment used for trade must be stamped with the mark of verification. In order to have equipment stamped with the 'mark of verification,' it must be approved for 'trade use.'

Equipment is deemed to remain verified until the equipment needs repair work or has a failure that affects its metrological characteristics. If verification seals are broken or the mark of verification has been removed or obliterated, then the equipment ceases to be verified.

The penalty for using un-verified weighing or measuring equipment for trade can range from the issue of a \$200 Infringement Offence Notice to prosecution, with a maximum penalty of \$5000 and, in the case of a continuing offence, a further fine not exceeding \$100 per day for every day, or part day, on which the offence has been committed.

- **Certificates of Accuracy**

Certificates of accuracy are optional and have an expiry date of 12 months from the date of issue. Certificates can be issued by an Accredited Person or an Inspector of Weights and Measures.

Having a Certificate of Accuracy in place provides traders with a defence for being found in possession of false or unjust weighing, or measuring equipment; where the trader can prove one of the following:

- At the time of the offence there was a certificate of accuracy in force for the equipment, and
- The trader neither knew, nor had any reason to suspect, that the equipment was false or unjust.

Penalties for using 'false' or 'unjust' weighing or measuring equipment for trade could result in the issue of a \$500 Infringement Offence Notice to prosecution, with a maximum penalty of \$5000. A further fine not exceeding \$100 per day for every day or part day can be issued for continuing to offend.

- **Notices of Non Compliance**

Power to reject non-complying weighing or measuring equipment and stop traders using such equipment is limited to Inspectors of Weights and Measures.

Notices of Non-Compliance were introduced so Accredited Persons could advise traders about the status of non-complying weighing or measuring equipment. They warn the trader that possession, or using trade equipment that does not comply with the Weights and Measures Act or regulations, may lead to prosecution. Penalties vary

Training Requirements for Applicants Seeking Accreditation Status

depending on the nature of the offence and will generally fall under the ones outlined above.

Where accredited persons decline to stamp with the mark of verification, or to issue a certificate of accuracy for any weighing or measuring equipment on the grounds that the equipment does not comply with the requirements of the Weights and Measures Act or regulations, the Accredited Person must:

- a) Give the person in charge of the weighing or measuring equipment a notice of non-compliance; and
- b) As soon as practicable, send to their local MAPSS office a copy of the notice.

Where it is not possible or practicable to give a notice of non-compliance in accordance with (a), then the notice should be attached to the weighing or measuring equipment in question.

Where an AP is invited by a trader to perform work on any weighing or measuring equipment and where, seals have been broken or verification marks have been removed, or when the AP is unable to verify the equipment, then the AP must issue a notice of non-compliance. This applies even if it means having to leave the traders premises and return later with replacement parts or for any other reason.

• *Non-Compliant Equipment, where not invited to test*

Where an AP is not being invited by the trader to test a particular piece of weighing or measuring equipment and the AP believes the equipment is being used for trade, and it does not comply with the requirements of the legislation, then the Accredited Person should notify their local MAPSS office so we can investigate further.

Even though the Weights and Measures Act and regulations are silent on this particular issue we believe that in the spirit of the scheme as an AP, you can not choose when you wear your 'AP hat.' The scheme relies on 'trade being conducted on a fair and accurate basis' and, for the system to work efficiently, AP's should notify MAPSS of instances of non-compliance when they are detected.

In the past 12 months MAPSS Officers have encountered a number of applicants who have been submitted for compliance audits without being given the appropriate or relevant training for the scope and categories applied for. In some cases this has resulted in compliance audits taking longer than normal and the need for repeated auditing of applicants for accreditation. The flow on effects of this has been increased costs for the submitting AP Company and the needless waste of MAPSS officers' time.

In some instances MAPSS auditors have had to re-strict the categories the applicant has applied for due to the lack of knowledge and level of training that the applicant has been given.

Applicant submissions for accreditation must be fully trained in all aspects of the test requirements for all categories of the application. This needs to include an understanding of the relevant sections of the Weights and Measures Act and Regulations as they relate to the categories sought. They also need to have good knowledge of the companies Quality Management System as it relates to Accredited Person. In particular the sections on:

Certification Work
Responsibility and Authority
Resources and Personnel
Working Standards and Test Equipment
Protection of Equipment

Where an individual is nominated as Management Representative for an Accredited Company, the training and knowledge levels of that individual need to be high. In particular, their knowledge of the Quality Management System needs to be comprehensive, as it relates to the categories and scope of accreditation applied for. Furthermore, they will need an in-depth knowledge of the Weights and Measures Act and Regulations, as they relate to the scope and categories sought.

In view of this, we have decided that future applications will need to include a signed pre-audit check sheet outlining the training that has been given to the applicant prior to the commencement of the compliance audit.

We will make these check sheets available by the end of February 2008. From this date, all applications for accreditation will be required to have a fully completed check sheet detailing the relevant training given, relating to the scope and categories of accreditation applied for.

Once we receive the check sheets, along with the application for accreditation, they will be assessed for completeness prior to the commencement of the compliance audit.



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