THE AUSTRALIAN METROLOGIST

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MSA97

"Conference Brochures included with this Issue"

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"Melbourne in the Spring" - Too good to miss!

26th - 28th November '97

In This Issue:

FROM THE PRESIDENT

Thirteen ways of looking at the Metrology Society of Australia

The MSA was founded in 1993 and incorporated in the State of Victoria. At the time of writing, it has 370 members from many diverse fields of measurement from Australia and overseas.

The MSA is one of thousands of professional societies and institutes in Australia.

The MSA is its constitution. The national committee consists of a President, Vice President, Secretary, Treasurer and eight ordinary committee members. There are national sub-committees, State committees, conference committees and technical groups.

The MSA is a small but relatively independent component of Australia's measurement system, consisting primarily of the National Measurement Laboratory, the National Association of Testing Authorities, the National Standards Commission and Standards Australia. The MSA membership contains people from each of these organisations and therefore does not represent the interests of any of them in particular.

The MSA is a club for people with an interest or involvement in the science and practice of measurement. There are grades of membership and entry requirements, both academic and experience. It is another example of that inherently human activity, definition by separation. Who are we? Well, we're not them, that's for sure! Metrologists and non-metrologists, Muslim and Christian, trade and profession, boss and worker, them and us.

The MSA is the message; The Australian Metrologist, the website, the biennial conference, the meetings, the one-to-one exchanges.

The MSA is a richly diverse and powerful social and technical network, extending nationally and internationally. The MSA is its members and the links between them.

The MSA is a service, promoting the professional status of metrologists and providing the opportunity for formal recognition of qualifications and expertise. It gives very real, practical support for members in seeking employment or improved conditions.

The MSA is a focus for metrology activities in Australia, including training, conferences, seminars, discussions and meetings. The MSA is the continual development of knowledge and its exchange. The MSA is the administrative support for the biennial conference, considered by some to be the most important activity of the MSA!

The MSA is an opportunity to be a major player in the game, giving the power to really do something important, to contribute. It separates action from reaction, optimism from cynicism. It provides a positive focus for its members.

The MSA is tradition, purpose, stability and loyalty at a time when many employers, governments and institutions are retreating from these values.

The MSA began as a group of friends sitting in a pub thinking what a good idea the MSA would be. The MSA continues to be warmth and laughter at committee meetings, sharing a bottle of wine or a joke with friends, working together and accomplishing the impossible. A reaffirmation of the importance of people, their hopes, desires and dreams.

The MSA is what it was and what it is becoming. It is a concept in the act of creation. It is different for each of us, a process, not an end in itself. The MSA, like all human endeavour, is a sandcastle built between tides.

John Miles

IMEKO Membership

I am delighted to announce that the MSA has now formally applied for membership in the International Measurement Organisation (IMEKO) as Australia's official Member Organisation. We have had a very positive response to our application and I am confident that our application, to be considered at the next session of the IMEKO General Council in Vienna in 1998, will be successful.

John Miles

Editors Column

It has been very pleasing to hear the comments from many members on their opinions of the last edition of TAM.

I must say that the info for this edition has been filtering through at a reasonable rate, mostly via email, so I now feel that we are really on the way.

Talking about keeping up with technology, how many of you have had a look at our Web sight. It has come a really long way in a very short time, thanks to our Web-master Adrian Ward with help from Mark Thomas.

Homepage:
http://www.ozemail.com.au/~ausmet/

Email: ausmet@ozemail.com.au

We have had enquiries from USA, Asia and some three or four European countries. So the MSA is becoming known around the world.

Being editor must have some benefits, so, I wish to put a question to members that has concerned me over many years as a NATA assessor. The question is:

Why, when a NATA laboratory is accredited for particular tests does it choose to not issue a NATA endorsed certificate for measurements performed which are covered by its accreditation?

My reasoning has been that NATA requirements specify only the minimum readings/checks/ systems/reporting etc. which all equate to Traceability , necessary to ensure the report gives the client a correct result with a certificate that is understandable. So, why offer a report without putting the NATA stamp on it?

After all, the client surely would want to be able to place confidence in the report. It would be much more convincing if that report had evidence that the standards used were traceable to the National Standard and the measurements had been performed in accordance with the requirements of ISO Guide 25. (ie NATA endorsement).
How about your thoughts!

Jack Deller

Letter to the Editor

From:
Nick Yates National Product Manager - Instruments
GEC ALSTHOM

Sir,
Further to the correspondence in your February issue regarding the difficulty in describing the perfect measurand.

I suspect that the difficulty lies not in the measurand but in the language associated with its description. Anything that can be presented as a mathematical expression usually leaves no doubt of it's intention, this is after all the reason for the existence of mathematical and logical notation, but the same expression presented in the English language (in particular) usually becomes either ambiguous or enormously long and detailed (please refer to any legal document), and therefore generally incomprehensible, however elegant the mathematical version may be.

So, the English instruction to count the number of apples requires endless riders detailing what exactly constitutes an apple and whether we have one available to count, whereas a mathematical version requires only an exclusive symbol for an apple, leaving the definition of an apple as a statement of fact.

Mathematics assumes a prior knowledge and a number of standard accepted definitions in order to understand anything. For example we could use the symbol π, but without pre-qualification this would require knowledge of the definition of a circle, its interrelated quantities, the definition of a number system etc.

Essentially, language is not exact, never has been, and never will be. It even changes periodically such that English is not Australian and is not American. All measurands can in actual fact be described in very simple terms, so long as the person reading the description has the same definition set as the person who wrote the description, and even with all the endeavours of scientists over the last couple of centuries, our language is not this refined.

So if we are prepared to accept a definition set within a tolerance, such that the colour green does not need an exhaustive electromagnetic frequency related definition, but simply the word "green", implying an accepted definition, then we can make headway and an answer can be envisaged. The uncertainty is in the eye of the beholder as it were, but one has to be comparing apples with apples.

NEWS FROM THE STATES

I must apologise to some States who had given the State coordinator info for the last edition but somehow it was lost in transit between him and me. It could be floating around with the Russian Spacestation in the Optus network. This technology does have its limitations.

QLD.
The branch is currently running a series of three training sessions on the subject of "Methods of the Calculation of Uncertainties of Measurement" and Max Purss is the Moderator and Lecturer. The final session will be held on August 19th at the Queensland Manufacturing Institute. The MSA thanks the Queensland Manufacturing Institute for their assistance.

December 2nd is the date for a social event with a visit to XXXX Brewery. Shane Brann is the contact for details and bookings. (07) 3893 0399

WA
Western Australian has no events planned for the near future. Suggestions from members are welcome. Contact Paul Edwards with your ideas. (09) 415 0833

NSW

The NSW branch visited the RAAF NDI facility on May 28th. Over 30 people attended the afternoon which was spent with Sgt. Peter Solomons. (Picture) Peter showed and explained different types of tests performed at the Laboratory including Dye penetrating, Ultrasonics and X-ray. The highlight of the afternoon was a visit to view an aircraft undergoing substantial repairs following a routine inspection.

An Astronomy night was held at the Nepean Astronomy Centre, University of Western Sydney on July 23rd. Associate Professor Graeme White gave an excellent talk backed by a selection of his favourite space photographs, followed by a tour of the facility.

The next visit is planned for 20th August to AGAL.

A visit to Westmead Hospital is scheduled for Oct.14th between 5 & 7pm.

Other events such as a general meeting, and a visit to the airport control are planned for later in the year.
For more details contact your state coordinators.

SA
The SA branch has had two workshop meetings:

A discussion on the Evaluation of CMM's presented by Tony Adams was very interesting and enjoyed by all in attendance.

The next meeting is planned for 19th August at "The Public Schools Club" and will be a talk by Jeff Tapping on "The Electromagnetic Compatability Framework".

NT
The President of the MSA, Dr John Miles, and the Secretary, Mr Colin Wagg took the opportunity while in Darwin on business in July to meet with a number of Northern Territory MSA members and their partners. The evening, held at the Beaufort Brasserie where crocodile and buffalo steaks are on the menu, was very successful. Our thanks to the State Coordinators, Les Anderson (NT Trade Measurement) and Will Deusien (ADI Darwin) for organising the night. MSA membership in the NT is small at present but the members are very enthusiastic and we will undoubtedly see a rise in NT MSA membership in the near future. *John Miles*

VIC
The visit to *PowerNet* scheduled for 18th July unfortunately was cancelled due to some building works at the laboratory not being completed.
The visit has been re-scheduled for Friday 10th Oct.
Address: 308 Hyde Street. Yarraville
Contact Ron McBain (03) 9852 0466
or (03) 9850 3919

The U of M forum planned for 10th September at NML Clayton at 7pm is proving very popular so please notify Ron McBain if you haven't already done so and you would like to attend.

On the Social Side!
In the last TAM we asked for ideas from members re the social activities they would prefer. To date no response has been received. Come on get those thinking caps working and let Ron McBain know .

MSA and CMM Group

Discussions between the MSA and CMM Group are proceeding with the aim of the formation of a mutual arrangement to benifit both organisations.
Whether it will be as a "CMM Technical Working Group" within the MSA or some other combination of both parties is being negotiated.

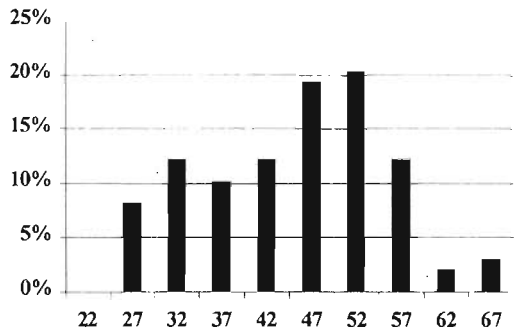
MSA Salary Survey 95-96 Part 2

This article is the second of the two-part analysis and discussion of the MSA Salary survey 95-96. It will include a look at remuneration by level of responsibility and brief discussion of the comparability of pay rates to other industries. It will also include a brief look at the age and seniority profile of the MSA. The first article in this series, which gave an overview of the typical MSA member and gave a basic discussion of the remuneration by qualification and area of responsibility, can be found in the last issue of TAM.

How old is the MSA?

The age distribution of the respondents to the survey is given in Figure 1. It is bi-modal having maxima at both the ages of 32 and 52. Interesting the range of ages of respondents was 27-67. Given this is a true reflection of the age distribution of the MSA then it may reflect some disturbing trends in the Metrology industry. Firstly that young technicians, science and engineering graduates are not being attracted to careers in Metrology. Secondly it may be an indicator of a contradiction in the number of Metrology positions within the manufacturing and public service sectors. Either of these explanations is not good news for the discipline of metrology for this country.

Figure 1. The age profile of respondents to the survey



Remuneration by Level of Responsibility

To obtain an indication of remuneration by responsibility of the respondents the information on job title, supervisor's job title and subordinate's job titles was correlated against the APESMA ranking for responsibilities. These ranking divide all positions into one of six levels, starting with base or entry level positions at level 1 through to heads of large corporations and government departments at level 6. In between are experienced operators without supervisory responsibilities at level 2, shift or laboratory supervisors at level 3, laboratory managers and small company operators at level 4 and senior managers, executives and medium size company owners at level 5.

From Figure 2 it can be seen that the distribution of respondent as a function of responsibility level is near normal with the majority being at the supervisory level. This correlates with the age and qualification profiles of the MSA membership where 69% of the membership are over the age of 40 and 65% have certificate or diploma qualifications.

Table 1 Comparison of median remuneration for MSA and APESMA[1] survey respondents.

Level		MSA		APESMA
1	10	$33,803	105	$33,111
2	16	$37,500	137	$40,585
3	39	$42,000	386	$46,438
4	26	$53,000	488	$59,568
5	4	$64,139	270	$72,519
6			74	$105,162
Total	95	$42,000	1460	$54,000

From the comparison of remuneration level for levels of responsibility from the MSA and APESMA (chemical industry) surveys (Table 10, it can be seen that in general MSA members lag their counter parts by between $3,000 and $8,000 per annum. However some caution needs to be applied when interpreting this data since the MSA sample for each level is small. From Figure 2 it can be seen that the median remunerations for the APESMA survey are within the range of remunerations received by MSA members.

Remuneration by Type of Employment

The other interesting observation was the difference in remuneration between the self-employed respondents and full-time employees. The former on average received $9,400 less than a full-time employee. This is likely to be a result of the number of small contractors and one or two person laboratories that can be found in the metrology industry.

P. Scheelings; Chemistry in Australia, Nov 1996, p504 - 509. [1] M. Lambert, G. Langford, E Mocellin and

Survey forms covering 1996-97 are on page 13-16 of this TAM. Please take the time to complete the survey and forward to The MSA Secretary.

Figure 2 A plot of the remuneration for level of responsibility where the responsibility level corresponds to the standard APESMA ratings.

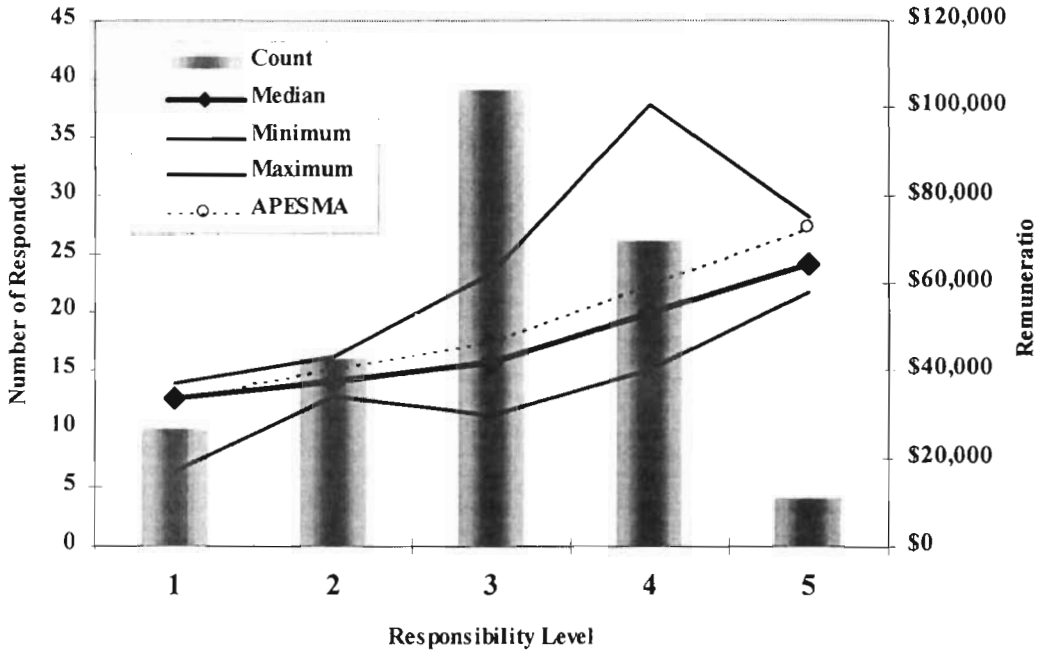
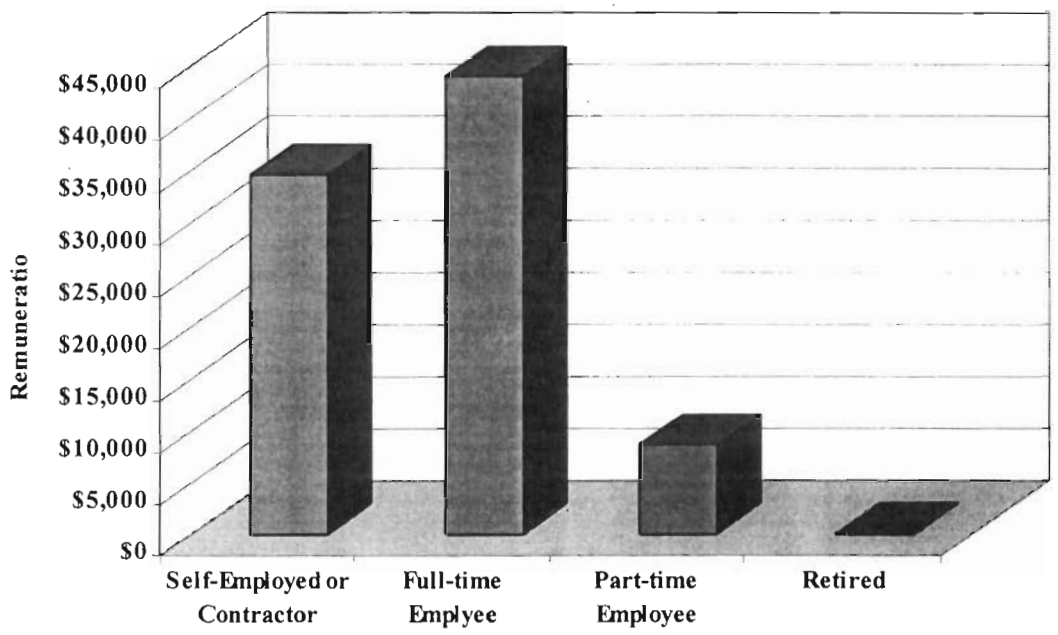


Figure 3 Remuneration as function of type of employment.



NEWS FROM NATIONAL STANDARDS COMMISSION

Conference report: chemists contemplate metrology and their future

The Analytical Division of the Royal Australian Chemical Institute (RACI) held its 14th biennial symposium on analytical chemistry (14AC) in Adelaide on 6-9 July 1997. The theme, "A broader view of the world" was an explicit invitation from the organisers to analysts to "take time away from their laboratories and consider how their work affects the world...A major challenge to chemists is to redefine their role in industry, education and the community and face, head-on, the demands brought about by free trade, economic rationalism and the environment." Part of this challenge, as reflected in invited plenary and keynote speakers as well as the cut and thrust of debate on the conference floor, is to address the important role of chemical measurement and confidence in the domestic and international systems of measurement.

Plenary speakers included Claude Lucchesi (Northwestern University, USA), Brynn Hibbert (University of NSW, Australia), Raymond Dessy (Virginia Tech, USA), George Guilbault (University College, Cork, Ireland), Maria Luque De Castro (University of Cordoba, Spain), Paul Worsfold (University of Plymouth, USA) and Reinhard Niessner (Technical University of Munich, Germany).

Lucchesi's survey of the forces impacting future chemical analysis enterprises introduced themes and dilemmas that resonated throughout the conference. These included the "hollowing out of the middle" - like the rest of the workforce, chemical analysis is bifurcating into levels of higher and lower knowledge and training, bringing new professional imperatives to add value and solve problems with the measurement process itself as the connecting link through all aspects of what is rapidly becoming analytical *science*. These themes were taken up by for example Dessy in a thought provoking address on people, instruments, computers: a retrospective future view of analytical chemistry, "the central, useful, creative science" and by Doreen Clark (Analchem Bioassay Pty Ltd, and Chair, National Standards Commission) in her somewhat chilling evaluation of the commercial professional environment and needs in education, training and skills. However, Australia is fortunate in having a well-developed national measurement system including the largest and most experienced laboratory accreditation system in the world.

Australian Government Analyst, Sandra Hart announced the formation of a very significant new element of the national measurement infrastructure - the National Analytical Reference Laboratory (NARL). The NARL will comprise an integrated national chemical reference laboratory interconnected with Australia's physical and engineering measurement system and be the core institutional element for the national analytical measurement system[1] enabling, in collaboration with the National Measurement Laboratory, analytical traceability to fundamental SI measurement units (including most especially the mole). Its primary objective is to improve the overall quality of analytical measurements in areas of national and economic importance such as food safety, environmental management and industrial innovation. The NARL is responsible for the collaborative management and supply of key reference measurements, substances and materials and for the development, validation and promotion of nationally significant analytical methods and procedures. In pursuit of its broad goals to promote the value of analytical chemistry and accurate, fit-for-purpose chemical measurement in Australia and its region, the NARL will encourage liaison and collaboration with researchers, teachers, academia and industry to give a focus and centre of excellence for the analytical industry. The laboratory is of international significance, affecting Australia's ability to protect trade with other countries.

Hibbert, in introducing a keynote theme of "Quality and Integrity of Data", gave a frank and stimulating assessment of the implications and lessons from the International Measurement Evaluation Program run by the European Union's Institute for Reference Materials and Measurements[2]. He argued that in the analytical community, the plethora of quality measures and definitions are poorly understood and implemented, there is over-reliance on precision and insufficient attention to accuracy, incorrect estimation of uncertainty and lack of concern for sources of bias. He gave examples of how common assumptions of linearity in calibration procedures can yield statistically acceptable data which is nonetheless biased and containing considerable errors.

Bob Wells (Australian Government Laboratories, or AGAL) complemented the latter point with his discussion of principles of method validation and the degree to which they must be implemented to achieve the necessary confidence in an analytical outcome which is fit for purpose. Gary Price (National Standards Commission) outlined some basic principles of practical metrology for chemistry and argued that the (re)development of a metrological perspective depends on the systematic linkage of modern instrumental and sensor techniques with primary methods of measurement and better understanding of the validation and calibration processes by which this may be achieved. Such linkages, it was suggested, constitute traceability in analysis. Alan Squirrell

(NATA and Chair, CITAC) supplied an international perspective with an informative (and entertaining) account of the role of CITAC (Cooperation in International Traceability in Analytical Chemistry) in developing metrology and quality practices in analytical chemistry.

Ian Juniper (NATA) outlined another significant new element to the national measurement system, this time in the field of accreditation practices. Reference materials are widely used for practical calibration and evaluation or validation of measurement procedures and with an increasing number of reference material producers throughout the world, demonstration of their scientific and technical competence is now a basic requirement for ensuring the quality of reference materials. NATA has developed an accreditation scheme for the certifiers of reference materials (the first in the world) based on existing relevant ISO Guides. In part, NATA's initiative was prompted by the Australian National Measurement Act which requires traceability to national standards of measurement of measurements used for any legal purposes, so traceability of reference materials is an important aspect of the technical requirements of the accreditation process. In this respect, NATA's scheme is complementary to the creation of the NARL that the Australian Government Analyst announced.

There were wide ranging discussions of the role of expert systems in evaluation of data, trends in quality assurance studies at AGAL's Australian Chemical Standards Laboratory, environmental data management and the most recent drafts of the next edition of ISO Guide 25 which is the basis of accreditation by the National Association of Testing Authorities (NATA).

Other features of the conference were lively discussions on chemometrics and developments in bio-sensor technologies. A sub-text to the whole proceedings was considerable debate and defence of electrochemical techniques following a mischievous aside by Lucchesi casting doubt on their future relevance. It sometimes seemed that there was not a branch of science in general (let alone chemistry specifically) which could not be viewed as a sub-branch of electrochemistry!

However the overwhelming impression left by the symposium was that analytical chemists are taking the considerable challenges of the next century very seriously and that metrology is an essential part of that future. In particular, just as measurements must be fit for purpose, so too must measurement systems evolve to meet in principled, rigorous but practical ways, the needs of the societies and economies they serve.

Gary Price
National Standards Commission

The Uncertainty Calculator

A windows compatible software program called the Uncertainty Calculator, which calculates the measurement uncertainty as required by ISO Tag4/WG3 and NIST Technical Note 1297, (originally developed for inhouse use at Compaq Computer Corporation) is now available as freeware. A software program previously developed called the Tolerance Calculator is also available.
The Uncertainty Calculator was developed to address the majority of common measurements performed in commercial/in-house calibration laboratories and centred on three major themes: Guide to the Expression of Uncertainty in Measurement (GUM) requirements, common-sense ergonomics and the ability to import/export data from other software platforms. The Uncertainty calculator operates both in windows 3.1 and windows 95 environments, and is just one 3.5 inch floppy disk. The uncertainty results and the online users manual can be transferred to the Windows Write application for editing and printing, and the uncertainty can also be displayed graphically.
Give it a try, using the Uncertainty Calculator and the Tolerance Calculator could save you some time !
Copies of Uncertainty Calculator and Tolerance Calculator may be obtained through Norfox Software Inc at (206) 774-9118, Fax (206) 774-9118.

Kimberlee Brown
National Standards Commission

Metrology Training

Thankyou to those who replied to the questionnaire on metrology training in the last issue of TAM. It was good to find out that there is a need to access the Metrology Modules. This kind of feedback greatly increases the chances of delivering the modules in a more flexible manner. Work will continue to look for ways to have this material available in a mode that is useful to industry. It is not too late to reply if you wish. It would be useful also to hear from individuals or groups that have training needs that are not being currently addressed.

Measurements made in the workplace contribute to increased quality and profitability of an enterprise. The reason measurement is important to industry is because it produces information which adds value to goods. It has been estimated in the US and the UK that measurement contributes between 3.5% and 5% of GNP in advanced industrial economies. That would be about $13.5 billion per annum for Australia. We also know from US studies over the last three decades that there is good correlation between measurement intensity and growth in value added across industry sectors and measurement intensive industries tend overall to grow more rapidly, add more value to inputs

and are more innovative. What is very interesting however is that more than 70% of the contribution measurement makes to added value comes from the human factor - the skills of the labour force in measurement. A workforce that understands the importance of making accurate and reproducible measurements can provide a competitive edge in a very competitive marketplace.

Metrologists are an important group in Australiais continued success in a competitive global market industrial nations. Ensuring that the equipment that measures is doing the best job possible is only one step in the formula. We need to also ensure that those using the equipment are aware of the importance of their job and the value of making every sound measurement first time. Including adequate measurement skills training and standards in all levels of industry will help to develop this culture.

M Haire
National Standards Commission

[1] Price G; On practical metrology and chemical analysis: legal, institutional and technical evolutions in the Australian national measurement system, *Accred Qual Assur* (1996) 1:150-159
[2]Lamberty A, Van Nevel L, Moody JR, De Bievre P; The IRMM - International Measurement Evaluation Program, IMEP 3. *Accred Qual Assur* (1996) 1:71-82
Van Nevel L, Taylor P, Ornemark U, De Bievre P; IMEP 6 trace elements in water. Report to participants. European Commission, 1996

METROLOGY SOCIETY MEMBER PROFILES

Carol Sieker is the gatherer of the "Member Profile" data and it is Carol's intention to have three or four members' outlined in each issue. Carol would be most grateful if you would give her some information on yourself or a colleague (with his or her permission) for upcoming issues. (Photos are welcome.)

Ed.

HELMI SALEM comes to Metrology from the education sector where he has been a senior educator for twenty seven years, most recently at Swinburne University of Technology. His qualifications are extensive and include a Masters in Engineering as well as a Bachelor of Science. He is a foundation director, and current executive director of the Pacific Congress on Manufacturing and Management, an organisation providing a focus for the development of manufacturing and management within the Pacific rim countries. Helmi is on several committees including the MSA Conference Committee and the regional chair Committee of the Society of Manufacturing Engineers. Although he has left Swinburne he is maintaining his profile in the Quality Management, Metrology and Continuing Professional Education areas with his involvement in a group called Australian Quality Training Services.

RON MCBAIN who by his own admission from the last issue of TAM is a "brilliant omnipotent genius with great empirical knowledge" has been practising the art and science of dimensional metrology for a "few" (30+) years now. His expertise was instrumental in setting up the impressive metrology facilities at ADI in Footscray and he managed this laboratory for 10 years before setting up his own company, Quality Calibration Services. Ron is also very knowledgable in the area of Coordinate Measuring Machines (CMMs), and with the CSIRO was involved in setting up the CMM group in Australia. If this wasn't enough to keep him busy he is a NATA signatory, a member of the NATA Registration Advisory Committee on Metrology, a foundation member and Committee member of the Metrology Society of Australia and has written many papers on Metrology.

RANDALL ANDERSON likes to work under pressure - so to speak. He is the able owner and NATA signatory for what is believed to be the only mudbrick NATA accredited laboratory, Australian Pressure Laboratory. Randall graduated in Mechanical Engineering from Melbourne University, before working in the project installation, maintenance and steam turbine control areas at Australian Paper Manufacturers. Budenberg Gauges were then the recipients of his expertise, where he established the first commercial laboratory accredited for the calibration of pressure balances. While there he also worked in production management and the development of computer dial printing software. Australian Pressure Laboratory was set up in 1994 to specialise in all aspects of pressure calibration, and this, his family and membership of the MSA Conference Committee "probably" keep him rather busy.

NEW MEMBERS

We welcome the following people who have been accepted into the MSA since the May issue of TAM.

NSW		
Wilson	Julian	A
NT		
Osborne	Francis	M
QLD		
Mitchell	Jeffrey	M
Ward	Stephen	A
Cusack	Patrick	M
SA		
Felix	Leslie	M
Crawford	Shane	M
Moros	James	A
VIC		
Lim	Eldred	A
Duenzl	Ulrich	M
Stirkul	Andrew	A
Mauer	Ricardo	A
Hanson	Christopher	M
Huysmans	Jeffrey	A
SINGAPORE		
Serino	Alan	M

(M = Full Member; A = Associate Member)

Membership as at 20 August 1997

ACT 2;NSW 103; NT 5;

QLD 42; SA 37; TAS 6;

VIC 148; WA 18; Overseas 7;

Total 368

MSA ON THE WEB

by Adrian Ward, MSA Webmaster
(award@alphalink.com.au)

Have you looked at our Home Page yet? Yes, I know, the World Wide Web is everywhere. I was listening to the footy the other day and there was an advertisement that concluded with a web address. You know the kind of stuff you hear all the time ... http://www.blah.blah.blah.com.au

Our web site is something special however. Special because it is our web site, belonging to the members of the MSA.

The MSA97 Conference is getting closer as we all know. With the very capable assistance of Mark Thomas and his MSA97 updates, I have been able to keep our site up to date with all the latest conference news.

Mark has also been active in publishing other events of interest to MSA members. This is another reason to "get on-line" If you have anything that you would like Mark to add, he can be contacted at mthomas@netspace.net.au.

I have added a new section recently. It's called the "MSA Happy Snaps" page. I would like to have a photo album of MSA members and events. That last meeting or seminar with lots of smiling faces would be very interesting to others. Photographs of members' workplaces would also be of interest. Get the idea? Anything that other MSA members would find interesting or amusing can be sent to me.

Please send your photographs by snail-mail to the editor (we can scan them for you), or better still, email them directly to me at the address below. Any graphic format would suffice - BMP, JPG, GIF etc.

On another note, don't forget that if you have an email address you would like posted to our "Contacts" page, let me know. Also, if you have a home page of your own I may be able to provide a link to it as well.

Please take the time to look at our home page and let me know what you think, good or bad.

Until next time ... *See you on the Net*

award@alphalink.com.au

News from the National Measurement Laboratory

International Metrology

The international metrology system is coordinated through the International Bureau of Weights and Measures in Paris and a range of Consultative Committees. One of the responsibilities of the National Measurement Laboratory is to ensure that Australia's primary standards of measurement are comparable with those of other nations and, to that end, NML scientists represent Australia on the Consultative Committees. Recent meetings have been held by the Consultative Committee on Electricity (attended by Mr Greig Small), the Consultative Committee on Photometry and Radiometry (attended by Dr Jim Gardner) and the Consultative Committee on the Metre (attended by Dr Nick Brown).

In all cases, the meetings emphasised the commitment by the BIPM to expanding the program of international intercomparisons of standards held by national laboratories. While the BIPM has a long history of coordinating intercomparisons of SI base units, the expanded program is expected to include both additional SI derived units and a greater range of values (e.g. resistance intercomparisons will be conducted at megohm and milliohm levels as well as the traditional value of 1 ohm).

NML will be participating to the fullest extent possible in the expanded program of intercomparisons in order to maintain international acceptance of the Australian standards. It is expected that NML and several other laboratories in the Asia-Pacific region will be in a position to participate in the BIPM intercomparisons and then to act as reference (or nodal) laboratories for regional intercomparisons conducted through the Asia-Pacific Metrology Programme.

cont on page 17

MSA97 Conference Up-date

The MSA biennial conference is now only 3 months away and you should be now committing your time and booking your passage to Melbourne for November 26th to 28th.

All the elements that make up a conference are now in place and it looks like being a real boomer for Metrologists throughout Australia and Internationally.

Included with this issue of TAM you would have found the conference brochure which details fully the activities which will be available to members and visitors together with the conference program, site visits and most importantly your registration form.

The conference committee also welcomes on board some new sponsors who are generously supporting our conference, these are:
Budenberg (Australia) Pty. Ltd.
John Hart Pty. Ltd.
MB & KJ Davidson Pty.Ltd./Ruska Instrument Corp.
National Association of Testing Authorities.
W & G Australia Pty. Ltd.

Adding to the International flavour of the conference is the knowledge that the Chinese Metrology Society are sending a representative to present a paper on their conference that is being held two weeks prior to MSA97.

It is also pleasing to note that the conference has the backing and support of the Victorian Government via the following departments: Tourism Victoria and the Melbourne Convention and Marketing Bureau.

Help Required.
The MSA is sponsoring a stand at the conference, the theme being: **"Special retrospective on Australian Metrology".** To assist in the set up of this stand, MSA members are asked to offer any old equipment of historical significance that we could place on the stand. From a personal point of view I know of many companies who have beautiful old measuring equipment that would help to enhance the MSA stand. Please contact Ron McBain on (03) 9852 0466 if you can assist in this matter.

Finally to all members I would suggest that you respond with your registration form ASAP. The feeling is that with the International flavour we are likely to be inundated with overseas attendees.

It is also important that you book for the Conference Dinner at the time of registration. The numbers are limited, and we would not like you to miss out on this great evening.

Looking forward to seeing you all at MSA97

Melbourne in the Spring Too good to miss.

Conference Committee

Metrology Society of Australia Award 1997

The Metrology Society of Australia Award recognises achievement and excellence in Australian metrology and the contribution metrologists make to the Australian community. Metrology is the science of measurement. Membership of the MSA includes scientists, engineers and technicians working in government and industry from all fields of measurement in Australia and overseas.

The MSA Award is presented biennially at the MSA conference dinner. In 1997 this will take place in Melbourne, Victoria on the 27th November.

Nominations are now invited for this award. Only members of the Metrology Society of Australia are eligible. Members may self nominate or nominate another member using the nomination form opposite.

The award is for work completed, or that has gained scientific or industrial recognition, in the past five years and which has contributed to the Australian economy. The work must fall into **one or more** of the following categories:

Basic research: Original research directed towards the significant improvement of fundamental measurements, the accuracy of derived units or fundamental constants. Solutions to difficult measurement problems, work that has fundamental importance to the development of measurement, the application of new or existing science and mathematics to new measurement applications, including the development of new instruments, techniques or methods for reducing uncertainty.

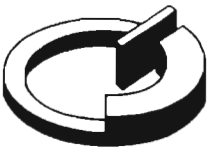
Development: The development of new instruments, measuring techniques or systems for Australian industry, including the design of prototypes, testing, characterisation and product manufacturing. For example, the development of a new thermometer or an in-line automatic inspection system.

Application to industry: The use of new or improved measurement science and technology in Australian industry to increase quality, productivity and competitiveness. For example, the use of new sensors to control production processes or the application of statistics for scheduling recalibration systems.

Selection Process: The Award judges will be a sub-committee of the MSA National Management Committee. The judges will use criteria such as; degree of innovation, significance of the work, potential or real cost savings, stage of development, potential for application in other fields or industries; quality of the supporting material and testimonial evidence supplied.

The Award judges are bound by confidentiality agreements, ensuring complete confidentiality of submitted material.

The Metrology Society of Australia Award 1997



To nominate, please fill in the entry form below and send it along with all supporting documentation.

The Secretary
Metrology Society of Australia
71-73 Flemington Road
North Melbourne VIC 3051

The closing date for entries is 25 October 1997

Name of Nomination: _____

Address: _____

Telephone: _____ Fax: _____

Email: _____

Concise description of work on which the nomination is based:

_____

_____

_____

_____

_____

_____

_____

_____

_____

Nominated by: _____

If not self nomination, please provide contact information below.

_____

_____

Signed: _____ Printed Name: _____
(If different from nomination)

Date: _____

Do you wish the submitted material to remain confidential? Y/N

MSA PRESSURE MEASUREMENT TECHNICAL GROUP UPDATE

The past year has been very busy for all of us, but progress has been made in a couple of our working groups. In WG#1 looking at the recalibration intervals for pressure balances, broad agreement has been reached about intervals for different levels of instruments, and we are planning to deal with outstanding matters and finalise this before the end of this year.

Most progress has been made by WG#3 (AS1349 on Pressure Gauges) which has held a number of detailed meetings in both Sydney and Melbourne - a short summary report on their work to date and upcoming plans follows below.

Walter Giardini

MSA - PMTG, Working Group #3
Australian Standard AS1349:
"Bourdon Tube Pressure & Vacuum Gauges"

Working Group 3 has met on four occasions thus far.

Current members are as follows:

John Sumner	Beacon/Dobbie
Brian Plose	JA Floyd
Graham Brown	Ross Brown Sales
Steven Cato	Austral .Engineering
Ken Wrighton	Ambit Instruments
Walter Giardini	CSIRO/NML
Colin Wagg	NATA
Bob Britton	Budenberg Gauges

The significant feature of the working group, apart from its collective knowledge, is its willingness to work, and in a harmonious manner.

It was mutually agreed that the current standard AS1349-1986 was, at 10 years of age, in need of review. Further to that, many changes had occurred in the market place to such an extent that the standard was probably not fully representative of the market needs. As a basis, the new European standard EN 472 was chosen as a platform that could be edited and modified to suit local conditions given that a suitable ISO standard did not exist.

The greatest influence on our market no doubt comes from Europe, although American sources do have an influence, especially in the petroleum area.

Europe's standard took some 8 years in the preparation and with such a large input source it was seen as predominant and most of all current.

Three meetings have been held in Melbourne and one in Sydney, with the next meeting scheduled for the last week in September 1997. To date, we have debated the European standard clause by clause, making changes as we have felt appropriate.

The next step will be to put together an outline paper that will be circulated to get input from the MSA pressure group. Hopefully, all of your thoughts will be conveyed to Working Group 3 and wherever possible be incorporated in our draft.

The next step will be the most telling - to prepare a "draft standard" so that the MSA can prepare a submission to Standards Australia. Informal discussions have been held with Standards Australia who appear to be receptive to such an approach.

Working Group 3 would welcome input or enquiries for information from any interested parties, to ensure that what we propose will have the widest support possible.

Bob Britton

TRAINING COURSES

Australian Quality Training Services is running a number of courses in both Melbourne and Sydney which would be of interest to MSA members and those courses are as follows.

Management of a Calibration System to Satisfy AS/NZ-ISO9000 and QS9000
Two day program 28th & 29th August (Melbourne
4th&5th November (Sydney)

Uncertainty of Measurement
One day program 30th August (Melbourne)

Precision Electrical Measurements & Analysis of Measurements
Two day program 23th & 24th October (Melbourne)

The Use and Calibration of Coordinate Measuring Machines
Two day program 6th & 7th November (Sydney)

Essentials for Working with Quality
Two day program November (Melbourne)

Service Excellence and Managing with Quality
26 Hour program Nov/Dec (Melbourne)

Measurement Systems Analysis / Repeatability and Reproduceability for QS 9000
One day program 22nd November (Melbourne)

For further information fax your Name, Organization, address, Phone/Fax No. to Australian Quality Training Services
Facsimile: (03) 9897 1147

The MSA recommends the above training courses to members.

1997 MSA Salary Survey

Background

1. What is your age?

☐	1	18 - 24
	2	25 - 29
	3	30 - 34
	4	35 - 39
	5	40 - 44
	6	45 - 49
	7	50 - 54
	8	55 - 59
	9	60 - 64
	10	65 and over

2. What is your gender?

☐	1	Male
	2	Female

3. Where are you employed?

☐	1	NSW	2	Vic
	3	Qld	4	SA
	5	WA	6	Tas
	7	ACT	8	NT
	9	Overseas		

4. Where are you located?

☐	1.	Capital city/Suburban
	2	Regional
	3	Remote

5. MSA membership category

☐	1	Member
	2	Associate

Metrology

6. How many years of experience in a metrology related position have you had in total?

..... yr

7. How did you become involved in metrology?

☐
1 A deliberate move to a metrology career
2 Metrology formed a part of the duties of the job.
3 Other .....

8. Has your training in metrology been?

☐
1 Solely on the job
2 On the job and formal training
3 Predominantly formal training

Education

9. What is your highest qualification in an engineering, scientific or technical discipline?

☐
1 Year 10 or Form 4
2 Year 11 or Form 5
3 Year 12 or Form 6
4 Certificate of Technology or equivalent
5 Associate Diploma
6 Associateship Diploma
7 Bachelor Degree
8 Post Graduate Diploma
9 masters Degree
10 Doctorate/PhD/DSc
11 Other (specify) .....

10. What is your highest non-engineering, scientific or technical qualification?

☐
1 None
2 Certificate of Technology or equivalent
3 Associate Diploma
4 Bachelor Degree
5 Post Graduate Diploma
6 Masters Degree
7 Doctorate/PhD/DSc
8 Other (specify) .....

11. What formal study are you currently engaged in?

☐
1 None
2 Year 12 or Form 6
3 Certificate of Technology or equivalent
4 Associate Diploma
5 Bachelor Degree (Sci/Eng)
6 Bachelor Degree (Other)
7 Post Graduate Diploma (Sci/Eng)
8 Post Graduate Diploma (Mgmt/Bus)
9 Post Graduate Diploma (Other)
10 Masters Degree (Sci/Eng)
11 Masters Degree (Mgmt/Bus)
12 Masters Degree (Other)
13 Doctorate/PhD/DSc
14 Other (specify) .....

12. Is this course being take part time or full time?

☐ 1 Full time
2 Full time

Employment

13. What is your current employment status?

☐ 1 Self employed or contractor
2 Employee
3 Unemployed *(Go to Q 18)*
4 Retired *(Go to Q 18)*

14. If employed full or part time, are you?

☐ 1 Employed in metrology in an engineering or scientific position.
2 Employed in metrology in a technical officer or technical position
3 Employed outside of metrology in an engineering or scientific position.
4 Employed outside of metrology in a technical officer or technical position

15. If you are in employed, do you work?

☐ 1 Full time permanent
2 Full time contract
3 Part time permanent
4 Part time contract

16. How many hours per week do you work including paid or unpaid overtime?

..... hours/week

17. Compared to last year, is this?

☐ 1 More
2 About the same
3 Less

(Go to Q 19)

18. If you are not employed, are you seeking work?

☐ 1 Full time
2 Part time
3 Contract

[If you are not currently employed do not continue. Thank you for your help]

Responsibility

19. What is your level of responsibility?

☐ 1 Level 1 -

Under supervision you carry out tasks of limited scope and complexity and perform routine work with limited guidance. However you require supervision as to the methods of approach and requirements for a task.

2 Level 2 -

You are experienced and carry out work without detailed supervision. You may require guidance on unusual aspects of a task.

3 Level 3 -

You are a professional technician scientist or engineer requiring guidance only on matters of soundness of judgement, not on the technical aspects of your work. You may supervise staff including review and allocation of tasks.

4 Level 4 -

You are a professional in a role which requires originality, ingenuity, sound judgement and either highly specialised knowledge or knowledge of a number of fields. You initiate or participate in short to medium term planing, provide technical advice, co-ordinate programs, take responsibility for outcomes and have limited budgetary control.

5 Level 5 -

Usually you will be in a professional administrative role providing long term planning and direction or a specialist scientific consultant. You will have significant input into policy development and responsibility for a number of scientific work groups including budgetary issues

6 Above Level 6

20. Your general job title

.....

21. General job title of your immediate superior

.....

22. General job title of your immediate subordinate

.....

23. How many years have you been in your current position?

..... yrs

24. Of the following, chose up to five which best describe your job responsibilities and indicate the percentage of time it accounts for?

☐	1 Development	.....%
	2 Research	.....%
	3 Calibration	.....%
	4 Testing	.....%
	5 Production	.....%
	6 Consulting	.....%
	7 Quality Assurance	.....%
	8 Quality Control	.....%
	9 Management	.....%
	10 Supervision	.....%
	11 Teaching	.....%
	12 Service	.....%
	13 Sales	.....%
	14 Computing	.....%
	15 Other (specify)	.....%

25. In which industry is your organisation mainly engaged?

☐
1 Consultancy or Technical services
2 Research and Development
3 Manufacturing
4 Mining
5 Agriculture/Forestry etc
6 Public Admin (Federal or State)
7 Service (including utilities)
8 Education
9 Health
10 Environment
11 Sales
12 Other (specify) .....

26. In which category is your organisation?

☐
1 Private Sector
2 Australian Public Service
3 Australian Gov. Instrumentality or Gov Business Enterprise (inc CSIRO)
4 State Public Service
5 State Gov. Instrumentality or Gov Business Enterprise.
6 University or tertiary institution
7 School (inc TAFE)
8 Independent organisation
9 Other (specify) .....

27. Have you changed employers in the last 12 months?

☐
1 Yes
2 No *(if no go to Q 29)*

28. What was the impact on your remuneration? (Note any percentage change)

☐	1 Increase	.....%
	2 Remain about the same	.....%
	3 Decrease	.....%

Remuneration

29. What is your base salary per annum excluding allowances?

$ .....pa

30. What was your base salary twelve months ago?

$ .....pa

31. If you are paid by the hour what is your hourly rate?

$ .....ph

32. Does your organisation have performance based pay incentives?

☐
1 Yes
2 No

33. What is the maximum performance pay incentive offered?

.....% or $.....

34. What is the typical performance pay incentive received?

.....% or $.....

35. Do you have an employment based superannuation scheme?

☐ 1 Yes
2 No *(if no go to Q38)*

36. What percentage of your salary does your employer contribute (including the 6% compulsory levy)?

.....%

37. What percentage of your salary do you contribute?

.....%

38. What other remuneration did you receive?

Car Allowance ..... p.a.
Entertainment Allowance..... p.a.
Award Allowances ..... p.a.
Annual Leave Loading ..... %
Paid Overtime ..... p.a.
Parking ..... p.a.
Travel ..... p.a.
Home Office ..... p.a.
Uniform ..... p.a.
Child Care subsidy ..... p.a.
Other (specify) .... p.a.

39. What other benefits does your employer provide?

☐ Jobshare
☐ Telecommuting
☐ Flexitime
☐ Training
☐ Mobile phone
☐ Portable or home computer
☐ Home office equipment
☐ On-site child care
☐ Off-site child care
☐ Parental leave
☐ Gymnasium
☐ Other

Thank-you for your help

Equipment for Sale

1 only WAVETEK 9000 DMM calibrator including 9010 software, PCIMCA cards and reader plus Transit Case **$12,000**

1 only HP5329A Frequency Counter to 512 Mhz and TCXO option **$300**

1 only Iwatsu SC340 Oscilloscope calibrator to 100mhz **$1,000**

1 only Yokogawa 7562-01 5.5 digit bench DMM including IEEE interface **$1,500**

Contact Peter Hunter:
Phone: (08) 8303 3161 Wk
(08) 865 5606 Home
Fax: (08) 8303 4360
email: phunter@franklin.eleceng.adelaide edu au

News from NML *(from page 9)*

This work is essential to underpin the growing pressure to enter into governmental mutual recognition agreements for trading purposes. The trade agreements rely on mutual acceptance of the test results which certify products or materials and, in turn, the acceptance of test results relies on countries having mutually acceptable measurement standards.

Asia-Pacific Metrology Programme

- *Memorandum of Understanding*

A Memorandum of Understanding has now been signed by most of the 24 members of the Asia-Pacific Metrology Programme. The MoU formalises the long-standing arrangements for cooperation in support of the objectives of APMP which are

1. advice, on measurement standards and capabilities;
2. development and establishment of new standards and calibration facilities;
3. to provide traceability of measurement throughout the region, through calibration of measurement standards;
4. traceability and competence as a basis for multilateral recognition;
5. to extend mutual recognition to other regions through close cooperation with other regional bodies such as EUROMET (European Collaboration in Measurement Standards) and NORAMET (North American Metrology Cooperation); and
6. to support the objectives of the Asia-Pacific Economic Cooperation (APEC).

- *APMP Symposium*

As part of the 1997 APMP Meeting of members, APMP will be hosting a public "Symposium on the Importance of International Traceability of Measurement" at the National Measurement Laboratory, Lindfield, NSW on 3 December 1997. Further details are available from Dr Angela Samuel, APMP Secretariat, ph: (02) 9413 7788; fax : (02) 9413 7383.

THE AUSTRALIAN METROLOGIST

The Australian Metrologist is published four times per year by the Metrology Society of Australia Inc., an Association representing the interests of metrologists of all disciplines throughout Australia. Membership is available to all appropriately qualified and experienced individuals. Associate membership is also available.

Membership Enquiries

Contact either your State Coordinators or the Secretary, Mr Colin Wagg on (03) 9329 1633 or fax (03) 9326 5148, or write c/o:

71-73 Flemington Road
North Melbourne VIC 3051

Membership Fees

Members	$30 Joining Fee
	$30 Annual Subscription
Associates	$25 Joining Fee
	$25 Annual Subscription

Contributions

Articles, news, papers and letters, either via email, disk or hard copy, should be sent to:

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WERRIBEE VIC 3030
Phone: (03) 9741 5446
Fax: (03) 9741 5446
Email: ausmet@ozemail.com.au

The deadline for the next issue is **20th October 1997**

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Write or fax the Editor if you are interested.

Positions Wanted/Vacant

Need a Position?
Write to or fax the editor with your details including years of experience and qualifications. This service is offered free of charge.

Need a Metrologist?
If you have a position vacant, write to or fax the editor with the details. A charge of $20 for up to 10 lines applies. The circulation may be small but it is well targeted!

The deadline for positions wanted/vacant is five days before publication.

Letters to the Editor

Letters should be limited to 200 words. Authors will be contacted should editorial changes be considered necessary.

Editorial Policy

The editor welcomes all material relevant to the practice of Metrology. Non-original material submitted must identify the source and contact details of the author and publisher. The editor reserves the right to refuse material which may compromise the Metrology Society of Australia. Contributors may by contacted regarding verification of material.

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