

Working Group on Training Coordination

Report – November 2014

This report provides a summary of the work completed against the work plan shown below which was developed during the 20th APLMF meeting held in Yogyakarta, Indonesia, in November 2013.

Working Group on Training Coordination seeks to:	
1	Support WG on Goods Packed by Measure to develop a Guide document containing suggested test procedures to provide practical advice on the implementation R79 and R87.
2	Work with Secretariat to develop an appropriate evaluation form for each training activity. Secretariat will then manage the completion of the evaluation form during each training activity. The results will be collated and distributed to the trainer/s and WG 1 Chair.
3	Carry out training courses on: <ul style="list-style-type: none"> ● self-funded training course on verification of weighbridges in Indonesia (trainers provided by Australia and New Zealand) ● self-funded training course on CNG dispensers in Malaysia ● self-funded training program on rice-moisture meters in an economy to be identified ● self-funded training course on verification of bulk flowmetering systems using a master meter in PNG in March 2014 (Trainers Australia and ?)
4	Work with Chair of WG on Utility Meters to disseminate information regarding the new version of R 49 Water meters. Suggestions are a seminar by an expert who is on the OIML Technical Committee or a series of webinars.
5	Work with Steering committee to manage the development and dissemination of a regional project to improve the capability of developing economies within the region.

Item 1: This item will be more fully reported on by WG on Goods Packed by Measure

Item 2: Evaluation of training courses is much improved this past year. Appendix A and B shows collated feedback from participants and trainers of the rice moisture measurement training. Appendix C and D shows feedback from participants and trainers of NAWI.

Item 3: Not all planned training courses were delivered. The following training courses were delivered:

Course/Seminar Title	Date & Venue	Supported by	Numbers attending/economies represented
Traceability in Rice Moisture Measurement	25–29 November, 2013, Chiang Mai, Thailand	Central Bureau of Weights and Measures (CBWM), Thailand Kett Electric Laboratory National Metrology Institute of Japan (NMIJ), AIST	32/7
Non-Automatic Weighing Instruments	1–5 September 2014 in Bandung, Indonesia	Directorate of Metrology, Ministry of Trade, Indonesia National Institute of Metrology (NIM), China	40/6

Item 4: A brief discussion was held with WG for utility meters who agreed as a first step it would be appropriate to report back to the forum regarding progress and request the forum to suggest the most appropriate next step.

Item 5: This item occupied a great deal of time and energy. Many on-line meetings were held to develop the project further. The project is now referred to as MEDEA: Metrology Enhancing Developing Economies in Asia. A planning meeting was held in Jakarta which was attended by APLMF and APMP representatives. As a result of this meeting a comprehensive work program

was developed and volunteers agreed to work in smaller groups to implement the work program and deliver support to the developing economies. The APLMF team developed a concept for our major project. Concept 1, attached at Appendix E, outlines a program of training courses to be delivered over the next 3 years. This was disseminated to all members prior to this meeting requesting nomination of both hosts and trainers. Before this project can move to the next phase the APLMF membership needs to agree on who will deliver these training courses and who will act as hosts.

APLMF Test Procedures

The concept of gaining agreement of which tests are mandatory for verification is still a valid one and has been incorporated into Concept 1. All trainers are expected to draw up a list of test procedures they believe are required to carry out the verification of the instrument involved in the training they are delivering. This list will be distributed to all member economies as a survey and the results collated and presented for discussion at the following years forum meeting. Further discussion needs to be had about whether these test procedures should be called Guide documents. See Appendix F for an example of a survey for verification of NAWI.

Appendix A

APLMF Training Course on Traceability in Rice Moisture Measurement

Feedback from participants

(a) How have you or your economy benefited from the project?

Thailand:

1. Learned calibration of rice moisture measurement according to international standards (2)
2. Useful for my office to developing on traceability in rice moisture measurement
3. Gained knowledge about moisture determination, chance to exchange technique, more understanding in this subject
4. Got more experience in testing, having new friends (2)
5. Fair dealing in agriculture products from grain moisture meter
6. Help farmers not being exploited (4)
7. The calibration of standards and moisture meter following OIML R59

Malaysia:

1. Increase knowledge in the field of legal metrology.
To exchange information on the project attend.
The technology is capable revealed increasing production capacity and export of agricultural commodities, especially rice, cocoa and corn in our economy.
2. Economic transactions, especially those involves goods could proceed without fraud and the loss of any party.
3. All the knowledge and skill will help us to develop new moisture measurement system in our economy
4. Help my economy to develop and establish the traceability system for rice moisture measurement.

Viet Nam:

1. Help learn the skill of calibration grain moisture meter in field, which give more accurate results. Helping for control quality rice/paddy and other grains to a more closely create credibility in export and import.

Cambodia:

1. Very important to me and my economy because our economy based on agriculture. (3)

Chinese Taipei:

1. Understand ISO 712 and experimental to understand the theory
2. Understand ISO regulation and via the actual learning to know the reason of regulation

China:

1. Lectures and demonstration
2. Got more attention on testing procedure, especially the operation details.

(b) What new skills, knowledge, or value have you gained?

Thailand:

1. I can find moisture contain of rice, grain etc. learn from expert
2. preparation reference sample and oven method process, calibration moisture meters, measurement rice moisture
3. Moisture adjustment of reference samples for the development of calibration curves and evaluation of grain moisture meters. Equilibrium moisture content on weighing and drying process. (2)

4. Oven method following ISO712 (2)
5. Finding different ways moisture grain
6. Find the correct moisture (2)
7. Use electronic grain moisture tester and oven method (2)
8. New skill in rice moisture measurement and research data to use in working

Malaysia:

1. Use the high-tech work standards in measuring grain moisture. So far I have not been exposed to the equipment. This is an experience and knowledge is very useful for me.
2. Able to learn new knowledge and clarify the measurement of grain moisture.
3. Learn how to handle oven measurement method, handle rice/paddy/corn meter, skills in hand-on measurement.
4. Adjustment of moisture, verification of meter to meter.

Viet Nam:

1. Determine the moisture content of grains. Use models of kett. Realize in time the mistake or wrong way.

Cambodia:

1. This is new skill for us, I gained knowledge on how to verify grain moisture, use tester.(3)

Chinese Taipei:

1. Sample preparing, cleanup and test procedure.(2)

China:

1. Knowing ISO 712-2009 and ISO 6540
2. Further known ISO 712-2009. Impressed by Japan company about every single action and detail.

(c) What, if any, changes do you plan to pursue in your home economy as a result of the project?

Thailand:

1. I think this project is very well
2. Finding present mature for trading
3. Fair happening
4. Learn English speaking for contact Asian friends
5. A problem of moisture meter on grain, especially in Thailand, it will be correction accuracy

Malaysia:

1. Associated with this project, I will explain the advantage of this technology to my employer. It is very useful to be used to increase enforcement in the area of legal metrology in Malaysia, especially in measuring grain moisture.
2. Inform our superiors on the benefits of grain moisture measurement enforced in legal aspects in our economy.
3. Will develop the moisture meter system in term of how to test the meter refer to MPE in OIML R59
4. Preparation of master calibration curve, collecting paddy varieties at different state of Malaysia

Viet Nam:

1. Quality control of cereal products on trade and the accuracy of the grain moisture meters. This should be done close. Must be coordinated among the department or agencies or government to protect the interest of farmers.

Cambodia:

1. Rice export system and standard are currently the changes. I plan to pursue since Cambodia need a better system to improve our rice quality and compete with other rice exporting economy.(3)

Chinese Taipei:

1. Learning the principle of instrument, then make the regulation.
2. Learning how to use the tools to get the right and precise result.

China:

1. Complete relevant analysis on uncertainty according to international and national standard, develop related operating and working testing procedure, and then will conduct training.

(d) What needs to be done next? How should the project be built upon?

Thailand:

1. I will developing oven method in Thailand
2. Calculating uncertainty
3. Development of the commodity
4. Do ISO 17025
5. Check moisture of wood
6. Training, CBWM/Thailand. Calibration of moisture content.

Malaysia:

1. Suggest each economy in the region Asia emphasized legal aspects metrology in their economic affairs.
2. Will discuss further about the measurement in legal metrology, or join for the next training that held in other economy for new experience.
3. Prepare the master calibration curve

Viet Nam:

1. Meet my needs. Next course should meet the Kett user, they will help you better understand what they need than we check this moisture meter.

Cambodia:

1. Cover everything I want to know, but probably if the technology advance in future we will need a update.(3)

Chinese Taipei:

1. ISO 712 maybe exist one problem.
2. We don't use ISO 712 method before, but after we will suggest this method. It should be able to effective improve the accuracy of the moisture meter.

China:

1. Will operate more accurately.
2. Will conduct serial test from the view on how will temperature and drying time affect moisture.

(e) Is there any plan to link the project's outcomes to subsequent collective actions by APLMF

Thailand:

1. I will developing oven method in Thailand

Malaysia:

1. Yes, will have further network with APLMF
2. Rice moisture measurement workshop

Viet Nam:

1. Should link to few organizations such as Farmers Union, Ministry of Agriculture of the economy where you intend to have the course in order to have more useful information about the current situation of their economy, help them to get close with you more.

Chinese Taipei:

1. To have a uncertainty course of moisture meter and testing(2)

China:

1. Will link if there is a chance.
2. Will provide request service for APLMF work.

(f) **Please use the same scale to rate the project on an overall basis.**

[5]
(Good)
21 3 _____ _____ _____

(g) **What is your assessment of the overall effectiveness of the project?**

Thailand:

1. Very good with me and my colleague
2. Effective, achieved the target.
Gained knowledge and exchanged information in this field.
All trainees had a chance to practice both drying method and using moisture tester.
3. Very good (2)
4. Pather
5. Skill
6. Training, expertise and skill to do in the laboratory
7. Expertise and skill

Malaysia:

1. Overall the program is very good and helpful to us, should continue in future.
2. Good
3. The time is not enough because we missed the rice moisture measurement.
4. Very effective and informative

Viet Nam:

1. Very good, the course help me review what we learned, a mixture of theory and practice, learn receptive, long memory.
Content of lectures are easy to understand.

Cambodia:

1. Overall effectiveness, excellent and comprehensive.

Chinese Taipei:

1. The principle of moisture meter to understand

China:

1. Vigorous and thoughtful.
2. Excellent training, very thoughtful. Inspire for future work. Many thanks.

(h) **Was the project content: (Check One)**

(i) **Please provide any additional comments. How to improve the project, if any?**

Thailand:

1. Time too short

Malaysia:

1. Organizers should be aware of the international participants' Muslim example of Malaysia, Indonesia and Brunei. Provide guaranteed Halal food, particularly when a project has been implemented in other economies except Malaysia, Indonesia and Brunei, organizers must also inform the hotel concerning the matter. Distance of from accommodation to laboratory needs to be near to save time consuming between accommodation and training venues.
2. Organizers to provide information on shops that provide Halal food for Muslim facilitate feeding.
3. Overall training course is very comprehensive, thank you to all the trainer and secretariat.
4. Add a lecture of calculation of uncertainty for the rice moisture measurement including the practice of MU calculation.

Viet Nam:

1. The control button of moisture meter type rice L,J,M,F is very easy to damage caused by they are often used outside. You can improve it. Currently in Viet Nam, people wishing to use the cashew nut moisture meter too, you can produce such. Lecture on the measurement uncertainties are poor, not deep while this is a lot of interest. Hopefully next course will teach how to calculate uncertainty.

Cambodia:

1. Thailand is a good place to host this training project but they don't manufacture rice moisture tester. We should conduct such training in Japan to see more advanced technology and agricultural system. Lastly, it's easier to practice with a big lab. (3)

Chinese Taipei:

1. Encourage other economy to take place and exchange information of grain moisture meter.
2. Moisture adjustment from the grain of the field. The host economy could introduce their management and testing, calibration and verification for others metrology instrument.

China:

1. Whether ISO 712 could provide uncertainty report in detail. Whether could indicate relevant probability and degree of freedom on the result statement of primary standard. Whether add judgment on abnormal value of testing data. How the repeatability (Component A) in the testing result affect uncertainty. Request of uncertainty of traceability system standard and the terms need to meet. The corresponding probability in ISO 712-2.77 and 2.8.

Appendix B

APLMF Training Course on Traceability in Rice Moisture Measurement Feedback from trainers

(b) What were your roles before, during, and after the activity?

I was in charge of WG chair of APLMF Working Group on Quality Measurements of Agricultural Products. My role did not change before, during and after the activity.

My role itself has not changed, but my sense of responsibility toward the role has become strong in a good way. For example, I strongly feel that we'd like to produce better products and devote myself more to this area in a global point of view.

My role did not change.

(c) Do you think the project achieved its objectives? What were the project's results/achievements?

The project almost achieved the objectives. The trainees obtained knowledge and skill in regard to usage, testing/calibration procedures, provision of standard samples, use of the reference method with an oven, and establishment of a uniform traceability system for grain moisture measurement. The project also facilitated international communication between the participated economies.

I had two objectives in my mind for this training, both as a trainer and a trainee. The first one as a trainer was to cooperate with other trainers and to make my lecture a success. Regarding this objective, I felt regret that I should have taken more effort to live up to trainees' expectation. Another objective as a trainee was to acquire the skill and knowledge, and to gather information on other countries. I believe I could achieve this objective sufficiently. Motivation and eagerness of the foreign trainees for the training encouraged me significantly, and made me feel more responsible for my original job.

We managed to achieve the objective to some degree according to the comments in feedback forms submitted by the trainees. There were some differences in knowledge and experiences among the trainees from different countries, however, both experienced and inexperienced trainees submitted positive comments. My individual achievement was a fact that I could make new friends.

I had been hoping that trainees from many countries would join the training, share a common understanding on moisture meters, and make use of the outcomes of the training for the metrological control system of grain moisture in their countries. In this year, we had more trainees than the course in last year and they had better understanding of the field. For me, it was a pleasant experience to know information on countries we usually cannot come across.

(d) Were the attendees the most appropriate target group?

The selection of trainees was almost correct. However, there was a large variety in the background of them. Some of them were engaged in technical and practical procedures in grain moisture measurements while others were responsible of establishment / improvement of the national metrological control system. There was accordingly a large difference in their knowledge. Some of them understood scientific and mathematical backgrounds of the lectures.

Some of the others had a little in science but had deep understanding about legal metrological control system including legislation.

Some of trainees were familiar with moisture meters more than I expected.

I had an impression about the trainees that both of their intelligence and ability of comprehension were excellent. Most of all, they behaved politely like real ladies and gentlemen. Though they could not use their native languages, they participated in the training course actively and patiently.

They had a higher level than I had expected.

(e) What is your assessment of the overall effectiveness of the project?

Regardless the limited source of fund, equipment and time, the project covered a wide area of training and it was conducted effectively.

It was very effective as it gave me a productive and precious experience.

The present experience, including understanding and befriending each other while learning together, was an invaluable experience. Moreover, I think quality of agricultural products is a very important topic for the trainees as the agricultural industry is an important method to earn foreign currencies.

The training was effective as we could see from comments submitted by the trainees.

(f) Was there any room for improving the project? If so, how?

More time is needed (ideally, two weeks). If we organize it in one week, accommodation should be provided closer from the venue for training. In this project, the venue was away from the hotel about 40 minutes by car. However, the host staffs provided a good transportation on time regardless the distance.

In the summary discussion during the course and in the feedback forms from the trainees, some trainees requested more practical procedures how to estimate uncertainty in grain moisture measurement. Some of the others requested to add more contents how to protect moisture meters from illegal usage or fraud. Some of the participants requested more care for foods provided by the host economy in regard to the dietary or religious requirements.

Nothing particular.

Many of the trainees were from the governmental organization(s) of each country. If we had announced also to relevant research institutions and universities, we could have attracted more trainees from those as well.

I understood there was a need for evaluating uncertainty in moisture measurement. We need to prepare more specifically for this subject next time.

(g) Any other suggestions:

Selection of target participants is the most difficult subject in designing a training course or a seminar. We need to make a compromise between the three kinds of forms, i.e., (1) a purely technical training for the offices in field inspections participated from one or more economies, (2) a train-the-trainers course for the instructors (or the executive) in the future participated from several economies, and (3) a seminar (or workshop) with an open discussion among the experts from many economies. I think APLMF should seek the forms (2) or (3).

Rice moisture training courses have been conducted in 2012 and 2013 with a self-funded scheme. This method worked well to some extent. However, there are several issues to be noted in the future. The present scheme requests much financial burden to the host economy and participating economies. Some developing economies still needed a travel support even if the project was conducted at a neighboring economy. It is also difficult to find trainers who will support such a training program with a self-fund. In order to improve even a part of such issues, additional fund other than the APEC fund should be sought.

As an organizer, I greatly appreciated the dedicated and heartfelt support provided by staffs of the Central Bureau of Weights and Measures (CBWM) and the Northern Weights and Measures Center (NWMC) in Thailand. I also appreciate the APLMF secretariat for their support in preparing and organizing the present course. Last but not least, tremendous support by the Kett Electric Laboratory, which provided four trainers and necessary equipment, must be respected. The trainers led the training course earnestly and devotedly.

I am so thankful to the Thai people who hosted us.

I cannot thank more to Dr. Matsumoto who plays various roles for the training and trainees along with Mr. Su from APLMF. Also, hospitality and smiles provided by the people in Thailand definitely played important roles to finish this training course successfully.

Moreover, without ardent participation by the trainees, we were not able to bring the success of the training.

Appendix C

APLMF Training Course on Non-Automatic Weighing Instruments

Feedback from participants

(a) *How have you or your economy benefited from the project?*

Indonesia:

1. I got better knowledge and how to do the NAWI verification and type approval based on R76 (**16 times**)
2. We get a new knowledge about testing procedure in other economies, and we are trying to be harmonizing.
3. I got knowledge of NAWI, and I could be the trainer form my company (**3 times**)
4. This project is benefit for my work in our organization

Chinese Taipei

1. I got better knowledge and how to do the NAWI verification and type approval based on R76 (**3 times**)

Viet Nam

1. I got better knowledge and how to do the NAWI verification and type approval based on R76 (**2 times**)

Malaysia

1. I got knowledge of NAWI, and I could be the trainer form my company (**3 times**)
2. We could harmonize with other economies.
3. We adapt the knowledge in daily work

Singapore

1. Benefited from sharing ideas and knowledge with other economies (**2 times**)

(b) *What new skills, knowledge, or value have you gained?*

Indonesia:

1. We know about applying the procedure of NAWI, and we can do it more correctly. Knowing how to do accuracy of zero setting and tare balancing according to R76, knowing facilities needed in the lab to conduct type approval. I know more clearly about type of NAWI, eccentricity test, repeatability, initial zero setting range and supplementary weighing test (**13 times**)
2. Verification of NAWI (**8 times**)
3. Type approval of NAWI (**4 times**)
4. I can trainer the person in my company about all testing

Chinese Taipei

1. Verification of NAWI (**2 times**)
2. Type approval of NAWI
3. I know more clearly about initial zero setting range tare balancing

Viet Nam

1. Verification of NAWI (**2 times**)

Malaysia

1. Verification of NAWI (**3 times**)

Singapore

1. Verification of NAWI (**2 times**)

(c) What, if any, changes do you plan to pursue in your home economy as a result of the project?

Indonesia:

1. I will recommend legal metrology authorities to do some review on the regulation related to the verification of NAWI (**10 times**)
2. I have learn the OIML Recommendation
3. I can train the team in my company about verification of NAWI
4. Basically our regulation is followed R76, but we don't test zero setting range.
5. We should meet R76 about identification on balance
6. To apply R76 in more detail
7. According to lecture, NAWI in my economy should be more discipline and have good quality as the reference
8. Improving and developing type approval testing items based on OIML R76
9. I will go through the R76

Chinese Taipei

1. I can train the team in my company about verification of NAWI (**2 times**)
2. To review whether regulation in our economy is harmonized with OIML R76:2006

Viet Nam

1. Review the difference of our regulation and OIML R76 (**2 times**)

Malaysia

1. We need to further discuss to our national lab

Singapore

1. Review the difference of our regulation and OIML R76 (**2 times**)

(d) What needs to be done next? How should the project be built upon?

Indonesia:

1. To do all the test as the teachers explained (**3 times**)
2. More practice
3. Proposing changes on the working instruction in the lab
4. To push metrologist to study and develop skill (**2 times**)
5. This project must continue, especially for training on type evaluation procedure.
6. We should plan such project every two month
7. Type approval for weigh bridge (**4 times**)
8. Information should be shared also with other economies.
9. Administrative and physical checks of NAWI should be monitored.
10. This project need to developed and explained worldwide rather than Asia-Pacific region.
11. Suggest our organization to have next project on NAWI
12. Invite more participant
13. Continue other topic if new OIML recommendation updated, then do the project

Chinese Taipei

1. This project will be built on the efforts of government body and cooperation with our designed lab.

Malaysia

1. To do all the test as the teachers explained (**3 times**)
2. Visit verification office to watch what they have done, try to educate the right way to perform test

Singapore

1. To follow the latest development with regard to NAWI testing procedure (**2 times**)

(e) Is there any plan to link the project’s outcomes to subsequent actions by your organization?

Indonesia:

1. Yes (**14 times**)
2. I will share all the knowledge with my boss and staff , and train others (**8 times**)
3. I will suggest my organization to review this project and develop our lab and facility for type evaluation.
4. It will be used to develop type approval test in our organization
5. Probably some changes on our test method of NAWI

Chinese Taipei

1. We will consider about to modify our regulation and laws related to NAWI to more harmonize with OIML recommendation.(**2 times**)

Viet Nam

1. I will share all the knowledge with my boss and staff , and train others

Malaysia

1. We will organize training to respective dept.

(f) Please use the same scale to rate the project on an overall basis.

[5]	[4]	[3]	[2]	[1]
(Good)				
<u>18</u>	<u>15</u>	<u> </u>	<u> </u>	<u> </u>

(g) What is your assessment of the overall effectiveness of the project?

Indonesia:

1. The project is very good , useful and effective, give the example for participants to try though sometimes it exceeds the time limit (**14 times**)
2. We need more time to discuss, need more practice (**3 times**)
3. The hardcopy need to be updated follow the softcopy. (**3 times**)
4. Very positive to improve competency
5. Very good since it give details information concerning type approval (**2 times**)

Chinese Taipei

1. The project is very good , useful and effective (**2 times**)

Viet Nam

1. The project is very good , useful and effective (**2 times**)

Malaysia

1. The project is very good , useful and effective (**2 times**)

Singapore

1. The project is very good , useful and effective (**2 times**)

(h) Was the project content: (Check One)

Just Right (24)

Normal (8)

Not Right

(i) Please provide any additional comments. How to improve the project, if any?

Indonesia:

1. Video recording of all practice suggests to be documented (**7 times**)
2. Language barrier becomes problem for transfer knowledge, different understanding of lectures. Need more time for communication (**5 times**)
3. The teachers are good and can explain the procedure clearly
4. Providing case study on problem solving and difficulties (**2 times**)
5. More participants from other economies best to share this lecture.
6. APLMF is a good forum for sharing the experience with different economies.
7. Add more information on type approval.
8. Prepared enough equipment such like tweezers.

Chinese Taipei

1. Very exhausted
2. Venue is little bit far from city.

Malaysia

1. Table in the content is too detailed, other is good and satisfactory.
2. Need more time for testing
3. Language barrier becomes problem for transfer knowledge, different understanding of lectures. Need more time for communication

Appendix D

APLMF Training Course on Non-Automatic Weighing Instruments Feedback from trainers

(b) What were your roles before, during, and after the activity?

Before the activity, I have carefully prepared the training materials for the activity.

During the activity, I have given some presentations during the training course and answered the questions the trainees asked.

After the activity, I have written a summary report of the whole activity.

I am a metrologist in mass and weighing instruments fields, both in research metrology and legal metrology. Research fields likes: mass dissemination, micro-gram and surface sorption of mass standard. In the legal metrology, it includes weights and weighting instrument verification and calibration as well as type evaluation of both NAWI and AWI.

(c) Do you think the project achieved its objectives? What were the project's results/achievements?

I think that the project achieved the established goals.

Talking about the projects' results, I believe that all participants including the trainees coming from many economies of APEC, secretary and trainers from NIM P.R. China and organizers from Indonesia have got a harvest and pleasant experience of the 4 days training project.

Firstly based on the feedback of the trainees, most of them got better knowledge and how to do the NAWI verification and type approval based on R76. Secondly, I think that both the trainers and trainees have got a better mutual understanding of each other's economies based on the friendly mutual communication through the activities of the project.

Yes , I think this project have already achieved its original objectives. We give detailed knowledge on initial verification based on R76 and demo all the procedures

Hand by hand during the training class.

(d) Were the attendees the most appropriate target group?

Yes. I think that the topics of the project are selected properly based on the good communication between the secretary of APLMF and the organizers from Indonesia. The participators have feedback that they benefited from the project.

And also I think that the procedures of verification and sub-verification of NON-automatic weighing instruments are detailed showed and practiced during the training course by using digital camera and projectors kindly provided by the organizer.

Yes, of course. All the attendees have some basic knowledge on the initial verification and weighting instruments. So we need not to waste time on some basic definition. We can focus on test procedure and some confused definition and special weighting instrument.

(e) What is your assessment of the overall effectiveness of the project?

First of all, it is much appreciated that the APLMF have given me this opportunity as a trainer. As a trainer, I am very glad to learn that the trainees have feedback they benefited from the project and have got better knowledge on how to do the NAWI verification and type approval based on R76. Through the project, I not only have practiced my communication ability in English based on the 4 days training course, and also have got a better understanding status and needs from by the economies of participants.

(f) Was there any room for improving the project? If so, how?

I think the project was nice organized. The topics of project were selected properly based on the good communications of all the participants including secretaries of APLMF, trainers, trainees and the organizers. The participants and the organizers were very cooperated with the practices of verification procedures of non-automatic weighing instruments during the project. The project mainly focused on initial verification which is very good, useful and effective, give the example and test procedures for all the participants to try. After the project, we think all participants from different economies will shall the lectures and experiences to their colleagues. It will enhance all the legal metrological capabilities of Asia & Pacific Area.

(g) Any other suggestions:

None.

The sponsor and organizer have already prepared well for this training course, like the venue, equipment and even each banquet. It's very good that they provided the training sample (different kinds of NAWIs and mass standards) during the courses. There is only one thing that they need to prepare enough equipment such like tweezers and groves.

Besides, four days is enough to teach all the procedures to the attendees but there is not enough times left for them to do more practices. If there is any chances that the organizer can lead all the participants to visit their laboratory and working place. That will be a better experience.

(g) Any other suggestions

Explain all the training course to all the participants before. Some attendees may focus on other knowledge (like type evaluation of NAWI, otherwise verification), so if they come to attend the training course, they may feel like wasting time.

Appendix E



Asia-Pacific Legal Metrology Forum

MEDEA: Metrology Enabling Developing Economies in Asia

APLMF Work Package 1 – Concept

This paper provides a context for this work package and sets out how it will be delivered over the next 4 years.

Background

The Asia-Pacific region is characterised by rapid economic growth of certain economies and the development of new economic zones. At the same time, developing economies face challenges which reduce their competitiveness because they do not have access to an internationally recognised conformity assessment system. This results in new non-tariff barriers to trade for the developing economies. Supporting developing economies to adopt a ‘quality infrastructure’ will remove technical barriers to trade and contribute to the creation of a common regulatory framework within the region.

MEDEA Project

MEDEA is a four year project managed by Physikalisch Technische Bundesanstalt (PTB) and funded by the German Federal Ministry for Economic Development and Cooperation (BMZ) which aims to foster and further develop the capabilities of the Asia Pacific Metrology Programme (APMP) and the Asia Pacific Legal Metrology Forum (APLMF) to support developing economies in the Asia-Pacific region.

The project aims to improve the ability of the regional metrology specialist networks in Asia to:

- promote metrology systems within developing economies; and
- strengthen the metrology systems/infrastructure of their respective members from developing economies.

The project objectives and the expected outputs were developed together with the APMP and APLMF and are binding.

Outputs	Output Statements
Output A	APMP and APLMF have developed and implemented capacity development instruments geared to the needs of developing economies.
Output B	NMIs and LMAs (Legal Metrology Authorities) from developing economies are able to meet the criteria for international recognition and to implement international good practices.

Output C	The mutual support and cooperation between the members of APMP and APLMF for the development of metrology systems in developing economies has been strengthened.
Output D	The cooperation between APMP and APLMF as well as the cooperation with other regional networks has increased.

A Coordination Committee consisting of three APLMF and three APMP members plus the PTB project coordinator oversees the planning and the implementation of the MEDEA project.

Taking into account the project objectives and expected outputs an operational plan was developed. This plan is based on the outcome of a joint APMP and APLMF planning workshop that took place in Jakarta in May 2014. The operational plan was further revised by the Coordination Committee of the project. It now includes ten different work packages. The Coordination Committee agreed that the first step in delivering a work package was to develop a clear concept which could be shared with all member economies.

The Coordination Committee developed the following criteria to select activities:

Essential criteria:

1. Comply with the project framework (Objective and Expected Outputs).
2. Target Group: Developing Economies from South Asia, Southeast Asia, East Asia and Pacific Islands
3. Focus on regional cooperation (no direct support to one economy, e.g. equipment)

Desirable criteria:

1. Focus on long-lasting systems and schemes
2. Activities integrated into national strategies
3. Focus on progressive training programs (no stand-alone activities)
4. Activity covers more than one indicator in the overall project
5. Relevance according to regional capability survey

Concept for APLMF Work Package 1 - Basic and Advanced Courses in Legal Metrology

Work Package committee members: Marian Haire (Chair), Stephen O'Brien, Tsuoyoshi Matsumoto and Guo Su.

This work package will deliver 11 training courses over 4 years to developing economies participating in the MEDEA program who have provided the required data towards the Regional capability Survey. The budget to deliver 11 training courses will be approximately \$500,000 US. The first phase will be to deliver the basic course and towards the end of the program the advanced course will be offered. All training will be conducted in English.

Basic Courses	Advanced Courses
Verification of NAWI : supermarket scales	Verification of weighbridges
Verification of Standards: mass, volume, length	Software examination
Prepackaged goods	Verification of CNG using coriolis meters (bulk)

Verification of Fuel dispensers for petroleum products (petrol and diesel)	Verification of Bulk Flow Meters for petrol and diesel
Verification of Rice Moisture	Verification of Fuel dispensers for LPG
	Verification of Taxi meter

Approximately 20 participants will attend each training course that contains a practical component. More participants can be accepted for training with no practical component. Host economies will be allowed to have up to 10 additional people attend as observers. For safety reasons the number should never exceed 30 people during practical sessions. Host economies need to have access to the equipment required for the practical component of the training course.

APLMF will distribute an invitation to all member economies at least 3 months before each scheduled training course. PTB will also distribute the same invitation to non APLMF economies that could benefit from attendance at each training course. Participants from developing economies will receive an economy return flight, free accommodation and a daily allowance from PTB.

To be accepted into the program participants will complete an application form and demonstrate their ability against the following selection criteria:

- practical recent experience related to the topic;
- ability to to implement the training in their economy within 3 months;
- willingness to provide a written report signed by the head of their organisation to APLMF Secretariat at 6 months and 12 months intervals after the training explaining how their implementation plan is progressing willingness to report against the Metrology Capacity Survey distributed by the APLMF Secretariat for the topic in question; and
- they are supported by the head of their organisation

Generally a maximum of 2 participants will be accepted from any one economy. Acceptance will be based on the ranking of participants by the Secretariat, and the Chair of the Working Group on training coordination. Advice will also be sought from the chair of the responsible Working Group if necessary.

The target group for all courses are - trade measurement officers who are involved in the testing of measuring instruments or prepackaged goods in the market place. They need to be in a position to implement change.

APLMF will invite member economies to nominate as hosts for each training program. Ideally events will be hosted by developing economies; however, there may be times when it is best to hold a course in a developed economy. Host economies will be reimbursed all expenses at the training event including venue, food, technical equipment, transportation, materials etc. by PTB.

APLMF member economies will be invited to volunteer as trainers to deliver the training courses within this program. Two is maximum number of trainers that will be funded. Trainers will be selected from both developed and emerging economies within the region. If no trainer is available within APLMF a trainer can be sourced from outside APLMF. PTB will provide trainers

with an economy return flight ticket, free accommodation and a daily allowance. No compensation or honorarium will be paid.

The APLMF Secretariat will be represented at all training courses and will have the following responsibilities:

- lead the opening session where a representative from each economy will present a report using the Metrology Capacity Survey to demonstrate their economies capacity for the topic under discussion. They will be there to ask pertinent questions that allow validation of the Metrology Capacity Survey.
- lead the closing session where participants will use the Metrology Capacity Survey to develop implementation plans (for the topic) that they will use when they return to their own economy
- carry out a formal written evaluation where all participants provide a return and the comments are collated
- support trainers to develop final report on the training activity
- develop a resource that records the key points of the training that will be available on the APLMF website

Trainers will be required to:

- provide a list of test procedure they feel are essential and desirable for the verification of particular instruments. These will be validated through a survey and the APLMF meetings over time. They will become the approved APLMF test procedures.
- include a section on traceability in the training program
- include a list of relevant resources available within the region
- provide a report on each activity to the Secretariat of APLMF who will collate all reports and use them to validate the Metrology Capability Survey. Each report should include:
 - A brief description of the program
 - The list of participants
 - Highlights/ Success Stories
 - Lessons Learned/ what should be improved in the future
 - Follow-up actions



Asia-Pacific Legal Metrology Forum

MEDEA: Metrology Enabling Developing Economies in Asia

Please complete this form and return it to the APLMF Secretariat by 10 October 2014.

Economy: _____

The following table sets out the training courses to be delivered under the MEDEA project. Economies are invited to volunteer as hosts or to supply trainers.

All suggestions will be discussed at the APLMF 21 meeting in Wellington, N.Z. in November where the program will be confirmed. These courses will be delivered over the period 2015-17 with approximately 4 courses delivered each year.

Basic Courses	Host economy	Names of nominated trainers	Suggested Date
Verification of NAWI: supermarket scales			
Verification of Standards: mass, volume, length			
Prepackaged goods			
Verification of Fuel dispensers for petroleum products (petrol and diesel)			
Verification of Rice Moisture			
Advanced Courses			
Verification of weighbridges			
Soft ware examination			
Verification of CNG using coriolis meters (bulk)			
Verification of Bulk Flow Meters for petrol and diesel			
Verification of Fuel dispensers for LPG			
Verification of Taxi meter			

Appendix F

APLMF Survey of the test procedure for NAWI with digital indication.

Please complete this survey to indicate which tests your economy carries out when verifying a non-automatic weighing instrument. √ to indicate test is required, X to indicate test not required.

Send your completed survey back to the APLMF Secretariat by:

Economy Name: _____

Name of person completing the survey: _____

Organisation responsible for verification within your economy: _____

Test Name	Test Description	Essential Test	Desirable Test
VISUAL INSPECTION	<ul style="list-style-type: none"> • Visually inspect the instrument for compliance with the certificate of approval • Where applicable, check that the instrument is level. • Check for compliance with any relevant regulations/environmental factors/mode of use. 		
REPEATABILITY	<ul style="list-style-type: none"> • Determine the applied load (Approx. 2/3 capacity or just below 2nd MPE change point for instruments with only 2 MPE change points). • Zero the instrument. • Apply load and set the indication to centre 'e' (Add 0.5e, bring indication to just above next changeover point using change point masses of 0.1 e, remove 0.5e). • Remove all load, reset zero, then re-apply load (including change point masses, twice more ensuring instrument returns to zero between each weighing). • Where all indications are the same instrument passes. • Where any indications differ check to see if the instrument is within the MPE 		
ECCENTRICITY	<ul style="list-style-type: none"> • Determine the applied load (1/3 capacity except for instruments with more than 4 points of support, hopper weighers, instruments with minimal off-centre loading, and instruments used for rolling loads). • Determine the individual surface areas of the load receptor where the loads are to be applied. • For each surface area, zero instrument, apply the load and determine if the indication is within the MPE. 		
ZERO SETTING Only performed at initial verification, when system changes affect these functions (Non-automatic and semi-automatic only)	<ul style="list-style-type: none"> • Apply a load within the zero-setting range and bring the indication to just below the next changeover point using change point masses of 0.1 e. • Re-set the indication to zero using the zero-setting device. • Apply 10e to the load receptor. • Apply 0.25e and the indication shall remain the same. • Apply an additional 0.5e and the indication shall change up 1e. 		
ZERO TRACKING Only performed at initial verification, when system changes affect these	<ul style="list-style-type: none"> • Re-set the indication to zero using the zero-setting device. • Apply 1e to the load receptor. • After 5 seconds the indication shall change up 1e. 		

functions (Non-automatic and semi-automatic only)			
WEIGHING PERFORMANCE	<ul style="list-style-type: none"> • Zero the instrument • Apply at least 5 increasing loads at approximately equal steps, including minimum capacity, all MPE change points, any scale interval change points (minus 5e if weighing instrument has + error) and maximum capacity (minus 5e if over-range blanking occurs). • Check over-range blanking. • Remove load in a minimum of 3 steps from maximum to minimum capacity, in approximately equal steps. • Check instrument has returned to zero. 		
DISCRIMINATION	<ul style="list-style-type: none"> • At any load (usually the same load as repeatability) bring the indication to just over the change point. The addition of a further 1.4e shall cause an increase in the indication by 1 verification scale interval. • A supplementary test is required if the instrument has an initial zero-setting range greater than 20% 		
ACCURACY OF TARE SETTING Only performed at initial verification, when system changes affect these functions (Non-automatic and semi-automatic only)	<ul style="list-style-type: none"> • Load the instrument using a weight that exceeds the marked tare capacity to ensure the tare facility is not functional at this load. • Apply a load within the tare setting range and bring the indication to just below the next changeover point using change point masses of 0.1e. • Re-set the indication to zero using the tare-setting device. • Apply 10e to the load receptor. • Apply 0.25e and the indication shall remain the same. • Apply an additional 0.5e and the indication shall change up 1e. • Remove the additional 0.25e, 0.5e and 10e leaving the change point masses with the load. • Add a load equal to full remaining capacity and determine if the indication is within MPE for remaining applied load. 		
PRICE-COMPUTATION Only performed at initial verification, when system changes affect these functions (Non-automatic and semi-automatic only)	<ul style="list-style-type: none"> • Check at least 5 price computations over a range of different loads. 		
Others please add if required	<ul style="list-style-type: none"> • 		