



REPORT FOR TRAINING COURSE ON Train the Trainer Course on the Verification of Non-automatic Weighing Instruments

Dates: 28 November - 01 December 2016

Venue: Hotel Istana, 73 Jalan Raja Chulan, 50200 Kuala Lumpur, Malaysia

Host: Ministry of Domestic Trade, Cooperatives and Consumerism (MDTCC), and National Metrology Institute, Malaysia (NMIM), Malaysia

Mr	Azman	Adam	Organizer	Malaysia	mzulkifli@kpdnkk.gov.my
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Trainers:

Mr	Matthew	Lux	Trainer	Australia	Matthew.lux@measurement.gov.au
Mrs	Marian	Haire	Trainer	Australia	Marian.haire@measurement.gov.au
Mrs	Suliana	Ghazalli	Trainer	Malaysia	suliana@sirim.my

1. Objective of the Training

This training is composed of lectures and practical activities. The lectures outline the test procedures and the reference standards of measurement used to ensure they are operating correctly within the maximum permissible error. The practical component will provide an opportunity for participants to demonstrate their ability to test a NAWI in accordance with OIML recommendations.

This course provides participants with the knowledge and skills to:

- understand the role of trade measurement within an economy
- identify the major components of a NAWI
- analyse the NAWI operating environment to determine how it could impact on its performance
- identify sources of any possible operational error
- verify a NAWI in accordance with the test procedures and workplace health and safety guidelines
- train others to verify NAWI

2. Target Group

This program is designed for participants who verify NAWI with a capacity less than 3 t such as shop scales or who have a responsibility for ensuring that these instruments are verified in accordance with OIML recommendations. All participants were expected to have some practical experience in the field. They are from developing economies and have a responsibility for training others within their economy.

3. Description of the Training Course

MEDEA is a four year project managed by Physikalisch Technische Bundesanstalt (PTB) and funded by the German Federal Ministry for Economic Cooperation and Development (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 APLMF has responsibility for the work package APLMF 1. This consists of eleven training courses that will be provided over a three year period. The Verification of Non-automatic Weighing Instruments (NAWI) is one of these training courses. This course described the test procedure required to verify NAWI in accordance with OIML R 76. The complete program is shown in Annex 1.

Prior to the commencement of the training course, the trainers and participants were provided access to Google Drive. The trainers uploaded the training materials to the drive to enable the participants to view and print materials before the course. Most participants were able to preview the training materials prior to the course. However at least 5 participants arrived with no training materials. Fortunately the trainers and organisers had some copies they could share.

Marian Haire and Matthew Lux met with Suliana Ghazalli from National Metrology Institute of Malaysia on the day prior to the four day training course commencing to ensure the meeting room was set up appropriately. The training room and facilities were both of a high standard.

The training course was formally opened by Mr. Mohd Roslan Mahayudin, Enforcement Director from the Ministry of Domestic Trade, Cooperation and Consumerism Malaysia. Marian Haire welcomed everyone on behalf of APLMF and wished them a very successful week. A full list of participants can be found in Annex 2. In addition to the official participants, Malaysia had an additional 10 observers present during the training. These observers represented inspectors from the ministry, Metrologist from National Metrology Institute of Malaysia (Custodian) and verifiers from the Metrology Cooperation Malaysia organisation. It is interesting to note all verifications in Malaysia are managed by a private company which was appointed by the government.

Following introductions and an overview of the course, each economy provided a report explaining how their economy regulates NAWI. This information has been collated and is shown in Annex 3. Not all economies are OIML compliant and many admit there is a lack of appropriate resources to maintain an effective legal metrology framework. Some economies also highlighted a lack of appropriate regulation to ensure a successful system of legal metrology. Everyone seemed to learn something new during the training.

The methodology adopted for this training course is one where the theory component of the course is delivered during day one and on the second day the course participants are provided an

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opportunity to gain practical experience in the verification of NAWI. Throughout the four day training course participants were encouraged to ask questions to clarify their understanding. Many of these questions related to practical problems they had in the field. A number of the participants communicated throughout the training course that software control and a lack of type approval system were causes of concern for their economy. Participants were also asking questions about truck scales. The trainers incorporated as much as possible into the course.

On day three, the participants worked in groups and answered a short test designed to stimulate more discussion. Each participant was asked to commit to their action plans which are shown in Annex 4. They also had to decide how they would deliver an important component of the course allocated to each group. Group allocation is shown at Annex 5. In the afternoon of day three all participants were taken to on a technical visit to Metrology Corporation and also to the National Metrology Institute.

On day four, each group gave a presentation where they explained how they would train others to carry out a series of tests required to test a NAWI instruments. The topics they were allocated were: Maximum Permissible errors, Repeatability, Eccentricity and discrimination and Accuracy. Despite some issues with English all participants were able to contribute.

4. Highlights/ Lessons Learned

All the objectives of the training were met, with all planned activities detailed in the program being successfully completed. The trainer from Malaysia was very competent and did an excellent job of delivering the section on traceability. During the course, the participants practically demonstrated that they understood the test procedures. When the practical component started on day 2 there was a much higher degree of interaction amongst participants. All participants were very willing to be involved in the group exercises.

The target group for the program was generally correct and many of the candidates were young enthusiastic participants who learnt quickly. However, there were some senior participants and some participants who had high level positions within their institutes. Previous experience has highlighted that the ideal candidate for the MEDEA program is a new generation or next cohort of managers. As previously identified, the ideal candidate would be a young person with potential to learn and develop new skills and knowledge. English language is still an impediment for some participants.

While several of the participants had a good understanding of the materials, the following participants demonstrated they could deliver this training on behalf of APLMF in the future. They were:

- Suliana Binti Ghazalli ,Malaysia as lead trainer
- Kiveen Suycano, Philippines
- Jeffrey Gabriel, PNG
- MD.Abdullah Al Mamun, Bangladesh
- Mohd Zulkifli Saidi, Malaysia

The 2 Malaysian trainers and 1 Philippine trainer could deliver this course with support from Matthew Lux initially. Thereafter they would be able to deliver it themselves within the region.



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At the conclusion of the training course, the course participants were asked to provide feedback by submitting responses to a survey monkey questionnaire. Overall 95% of participants rated the course as perfect or good.

The logistics for the course were meticulously provided by the Mr. Azman Adam and his team of inspectors. The evaluations showed participants were happy with the preparation in advance, logistics and the information provided prior to the course. The course materials were also rated as highly of participants. No one gave a rating of average or poor.

Several of the participants thought the courses should be longer to allow more time for practice. All participants agreed they had learnt some useful skills and they all agreed they would be following their action plans when they return to their economies. Some of these actions involved revising their regulations and harmonization with OIML recommendations. Most participants action plans include training colleagues in their own economies.

The course participants highlighted the group work and practical field work as being the most effective part of the training.

Economy reports presented by participants were in several cases too long and took up too much time. Instructions for economy reports need to be reviewed so participants stick to time allocated. Suggest they are restricted to 5 slides.

All participants were eager to learn and were involved throughout the course. The icebreaker activity worked well but also took up a lot of time. However the trainers were able to adjust the program and managed to complete all activities they had planned.

5. Next Steps/ Follow-up

- Participants to complete the points detailed on their action plans.
- APLMF Secretariat to follow-up within 6, and 12 months to record the progress against the action plans
- Trainers to be available to answer questions
- Plan another NAWI courses using identified trainers

Annex 1: Workshop Program

Train-the-Trainer Course on Verification of NAWI, Kuala Lumpur, Malaysia

28 Nov to 1 Dec 2016

Monday 28 November

Venue: Hotel Istana, Kuala Lumpur

Time	Details	Presenter
08:30 – 09:00	Registration	Host
09:00 – 10:00	Welcoming address from the host economy. Opening ceremony (APLMF Secretariat). Group photo taking	APLMF and Host
10:00 – 10:45	Introduction and overview of the course. Economy reports - explains how NAWI are verified	Marian Haire Trainees
10:45 – 11:15	Coffee Break	
11:15 – 13:00	Economy reports continue	Marian Haire Trainees
13:00 – 14:00	Lunch break	
14:00 – 15:30	Construction of a NAWI	Matthew Lux
15:30 – 16:00	Coffee break	
16:00 – 17:00	Traceability	Suliana Ghazalli
19:00 – 21:00	Welcome dinner	Trainers and participants

Tuesday 29 November

Venue: Venue: Hotel Istana, Kuala Lumpur

9:00 – 10:30	Equipment for testing NAWI and Visual Inspection	Matthew Lux
10:30 – 11:00	Coffee Break	
11:00 – 12:30	Maximum Permissible Error	Matthew Lux
12:30 – 14:00	Lunch	
14:00 – 15:30	Test Procedures	Matthew Lux
15:30 – 16:00	Coffee Break	
16:00 – 17:00	Test Procedures Question and answer session	All participants

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Wednesday 30 November Venue: Venue: Hotel Istana, Kuala Lumpur

9:00 – 10:30	Students work in groups applying tests and getting feedback from their group.	All participants
10:30 – 11:00	Coffee Break	
11:00 – 12:30	Students work together to answer test questions	All participants
12:30 – 14:00	Lunch	
14:00 – 15:30	Technical Visit to Metrology Corporation (M) Sdn Bhd	Trainers and participants
15:30 – 16:00	Coffee Break	
16:00 – 17:00	Lab Visit to National Metrology Institute of Malaysia	Trainers and participants

Thursday 1 December Venue: Venue: Hotel Istana, Kuala Lumpur

9:00 – 10:30	Group 1 presentations – Discussion and feedback	Participants
10:30 – 11:00	Coffee Break	
11:00 – 12:30	Group 2 presentations – Discussion and feedback	Participants
12:30 – 13:30	Lunch	
13:30 – 15:00	Group 3 presentations – Discussion and feedback	Participants
15:00 – 15:30	Coffee Break	
15:30 – 17:00	Group 4 presentations – Discussion and feedback	Participants
17:00 – 17:30	Closing Ceremony	APLMF and Host
19:00 – 21:00	Farewell dinner	Trainers and participants

Annex 2: List of Participants

Title	First Name	Last Name	Institute	Position	Economy
Mr.	MD.Abdullah	MD.Abdullah Al Mamun	Bangladesh Standards and Testing Institution (BSTI)	Senior Examiner (Metrology), Stamping and Verification of NAWI	Bangladesh
Mr.	Mafiz Uddin	Ahmed	Bangladesh Standards and Testing Institution (BSTI)	Assistant Director (Metrology), Stamping and Verification of NAWI	Bangladesh
Mr.	Wangda	Jamtsho	National Metrology Laboratory, Bhutan Standards Bureau	Quality Manager	Bhutan
Mr.	Nidup	Dorji	National Metrology Laboratory, Bhutan Standards Bureau	Focal person for legal metrology in Bhutan, calibration and verification of weights and measures	Bhutan
Mr.	Chanrat	Vann	National Metrology Center (NMC), Cambodia	Draft technical regulation for verification of Metrological instruments	Cambodia
Mr.	Jitendra	Lal	National Trade Measurement and Standards (DNTMS), Ministry of Industry, Trade & Tourism	Assistant to the Division Inspector in the Northern Division	Fiji
Mr.	Ilimo Tara	Koroi	National Trade Measurement and Standards (DNTMS), Ministry of Industry, Trade & Tourism	Assistant to the Division Inspector	Fiji
Mr.	Mohd Yulkifli	Saidi	Ministry of Domestic Trade, Cooperative and Consumerism	Trainer for Malaysia	Malaysia
Mr.	Azman	Adam	Ministry of Domestic Trade, Cooperative and Consumerism	Head of unit	Malaysia
Mr.	Tserenochir	Purev	Standard and Metrology Agency	Inspector and Head of Verification Laboratory and Mechanic measuring instruments	Mongolia

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Mr.	Shashi Bhushan Kumar	Yadav	Nepal Bureau of Standards and Metrology	Senior inspector in implementing weight and measures law	Nepal
Mr.	Mukunda prasad	Chouhan	Nepal Bureau of Standards and Metrology	Inspector	Nepal
Mr.	Jeffrey	Gabriel	National Institute of Standards and Industrial Technology	Senior Legal Metrologist and Inspector	Papua New Guinea
Mr.	Kiveen	Suycano	Industry Technology Development Institute (ITDI), DOST	Deputy Head of Mass Standards Section and Proficiency Testing Manager of the National Metrology Laboratory	Philippines
Mr.	Nimal Jayasinghe	Prathiraja Dewage	Measurement Unit, Standards and Services Department	Testing for verification of NAWIs	Sri-Lanka
Mrs.	Chandani Saroja	Wellage	Measurement Unit, Standards and Services Department	Testing for verification of NAWIs, responsible for awareness programmes for consumers	Sri-Lanka
Mr.	Jirayu	Chanchaeng	Department of internal trade, Northern Weights and Measures Center, Ministry of commerce	Legal Metrology and ministerial regulations	Thailand
Mr.	Khomphet	Samleetermsiri	Department of internal trade, Northern Weights and Measures Center, Ministry of commerce	Legal Metrology and ministerial regulations	Thailand
Mr.	Makhmud	Khayrullaev	The Khorezm Center for testing and certification	Head of the Department of the state metrological control over measuring instruments of weight	Uzbekistan
Mr.	Trung	Nguyen Van	Directorate for Standards, Metrology and Quality (STAMEQ)	Technical Manager of Weighing Inspector	Vietnam

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Annex 3: Summary of Economy reports

Verification of NAWI training 28 November to 1 December 2016

	Legislation	SI	MPE used %	Inspectors or 3 rd pty	Verification periods	OIML compliant	Type approval	Issues	Other
Bangladesh	√	√	Not set yet	Inspectors	Yes in legislation	Some what	No	More equipment and knowledge	
Bhutan	√	√	As per R76	Inspectors	Yes 6 m or 1 y	√	No		
Cambodia	√	√	As per R76	Inspectors	1 y	√	No	No facilities for PA Lack of experts Limited budget Limited standards	
Fiji	√	√	As per R76	Inspectors	?	√	Yes	Budget – standards Lack of investment Need technical assistance	
Malaysia	√	√	As per R76	3 rd Pty (Metrology Corporation)	1 y	√	Yes	Software verification	
Mongolia	√	√	As per R76	Inspectors			Yes		
Nepal	√	√	As per R76	Inspectors			Yes	Lack of trained manpower Act 40 y old Low penalty for fraud	
Papua New Guinea (NIST)	√	√	As per R76	Inspectors			No		
Philippines	√	√	As per R76	Inspectors		Yes	No	National Metrology Board not convened Lack of technical guidelines	No digital verification Lots of work
Sri Lanka	√	√	As per R76	Inspectors	1 y	Yes	Yes	District but no divisional inspectors Need more staff Consumer education	
Thailand	√	√	As per R76	Inspectors		Yes	No		
Uzbekistan	√	√	As per R76	Inspectors	1 y	Yes	Yes		
Vietnam	√	√	As per R76	Inspectors		Yes	No		

Annex 4: Summary of Participant’s Action Plans

Summary of Action Plans				
Title	Surname	First Name	Economy	Action Plans
Mr.	MD.Abdullah	MD.Abdullah Al Mamun	Bangladesh	Update regulations Train inspectors how to verify NAWI using OIML R76
Mr.	Mafiz Uddin	Ahmed	Bangladesh	Ensure I understand the tests effectively Assist staff to follow OIML process.
Mr.	Wangda	Jamtsho	Bhutan	Revise my notes to cement my knowledge Deliver training course to other government bodies Start to verify NAWI in the field
Mr.	Nidup	Dorji	Bhutan	Train technicians Work on developing inspectors plans to verify NAWI
Mr.	Channrat	Vann	Cambodia	Teach all staff NAWI test and about OIML R76
Mr.	Jitendra	Lal	Fiji	Train inspectors at our Divisional level of the correct test procedures for NAWI Train Technicians at Repairers level to identify the correct verification procedures and certification requirements of NAWI
Mr.	Ilimo Tara	Koroi	Fiji	Improve and update current test procedures
Mr.	Mohd Zulkifli	Saidi	Malaysia	Share and implement NAWI test procedures with staff Train inspectors next year
Mr.	Azman	Adam	Malaysia	Ensure Metrology Corporation are following NAWI procedures when they verify instruments

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Mr.	Tseren-ochir	Purev	Mongolia	Provide training courses on NAWI
Mr.	Shashi Bhushan Kumar	Yadav	Nepal	Encourage government to include NAWI procedures in regulations Amend Legal Metrology Law and Rules of Nepal.
Mr.	Mukunda prasad	Chouhan	Nepal	Amend Legal Metrology Law and Rules of Nepal.
Mr.	Jeffrey	Gabriel	Papua New Guinea	Write procedures for NAWI Train NISIT staff and ACCC staff
Mr.	Kiveen	Suycano	Philippines	Develop module and handbook for NAWI. Submit proposal to revise PNS 238 (verification procedure) to include digital NAWI.
Mr.	Nimal Jayasinghe	Prathiraja Dewage	Sri-Lanka	Encourage government to enact NAWI legislation Develop training course
Mrs.	Chandani Saroja	Wellage	Sri-Lanka	Present ideas to the director Train duty offices in NAWI procedures Start a consumer education program to educate them on their rights
Mr.	Jirayu	Chanchaeng	Thailand	Train inspectors in my region
Mr.	Khomphet	Samleetermsiri	Thailand	Train inspectors in my region
Mr.	Makhmud	Khayrullaev	Uzbekistan	Review governments certificates of approval



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Mr.	Trung	Nguyen Van	Vietnam	Train other in NAWI test procedures
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Annex 5: Groups for presentations on day 4

Group 1	Group 2	Group 3	Group 4
MPEs	Repeatability	Eccentricity and traceability	Weighing & discrimination
MD.Abdullah Al Mamun Channrat Vann Mohd Yulkifli Saidi Jeffrey Gabriel Jirayu Chanchaeng	Mafiz Uddin Ahmed Ochiroo Purev Kivs Suycano Khomphet Samleetermsiri Azman Adam	Wangda Jamtsho Jitendra Lal Shashi Bhushan Kumar Yadav Nimal Jayasinghe Prathiraja Dewage Makhmud Khayrullaev	Nidup Dorji Ilimo Tara Koroi Mukunda Prasad Chouhan Chandani Saroja Wellage Trung Nguyen Van

You have been randomly placed in a group in order to assist with the development of a 60 minute presentation to the group on Thursday. The person at the top of the list is being designated the group leader. The leader's job is to ensure the presentation is prepared and to see that everyone has a small task. You may include other information relevant to the verification of NAWIs in your presentation in order to fill up the time.

Your task is to demonstrate how you would train your colleagues in the topic assigned to your group. You can use any slides we have provided to you or you can make up new slides. Please have some questions ready you can use to test your audience to ensure they understand the topic you are presenting.

Have fun!

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Annex 5 Photographs



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