

REPORT FOR TRAINING COURSE ON VERIFICATION OF FUEL DISPENSERS

Dates: 15/6/2015 to 19/6/2015

Venue: Holiday Inn Hotel Pattaya

Host: Central Bureau of Weights and Measurers - Department of Internal Trade

Trainers: Marian Haire and Brad Larter

1. Objective of the Training

This training provided participants with the knowledge and skills to:

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

Participants were provided with the resources to enable them to apply what they have learnt during training when they return to their respective economies.

The training is primarily focused on ensuring the verification of a fuel dispenser is carried out in accordance with the OIML R117 recommendation. The intent of this training is to help improve and harmonise metrology capability in the Asia-Pacific region and facilitate trade development through the removal of technical barriers.

2. Target Group

The target group for this training course was participants who:

- from developing economies within Asia
- have experience in the verification of fuel dispensers
- are willing to train others when they return to their economy or at future APLMF training courses

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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 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 Asia Pacific Legal Metrology Forum has responsibility for the project known as APLMF Work Plan 1. This consists of eleven training courses that will be provided over a three year period. The verification of fuel dispensers is one of these training courses.

The trainers arrived a day in advance of the first training session allowing the opportunity to meet members of the host economy providing logistical support. This ensured the meeting room was set up appropriately and that arrangements for the practical session on Thursday were satisfactory.

During registration each participant was provided with a course folder that included all relevant material required to deliver the course. See course program at Appendix 1.

The training course was formally opened by Santichai Santawanpas, Deputy Director General, from the Department of Internal Trade. The APLMF Secretariat GUO Su and Kristin Kiesow from PTB welcomed everyone and wished them a very successful week. A full list of participants can be found in Appendix 2. In addition to the 22 official participants Thailand had 9 observers present during the training.

Following introductions and an overview of the course each economy provided a report explaining how their economy regulates fuel dispensers. This information has been collated and is shown in Appendix 3. It is interesting to note that all economies are OIML compliant however many admit there is a lack of appropriate equipment and knowledge staff in the field. Everyone seemed to learn something new during the training.

The methodology adopted for this training is one where the course is delivered during day 1-2 and later the participants are expected to deliver it again to demonstrate they understand the materials. On day 3 participants were given the opportunity to answer an exam in groups and to prepare for their presentations on Friday. See Appendix 4 for the group members. Participants were also asked to present their action plans to the group in order to ensure they were fully committed to their plan. See Appendix 5 for collated Action Plans.

Throughout the 5 days participants were encouraged to ask questions to clarify their understandings. Many of these questions related to problems they had in the field. Many economies felt software control was an issue for them. Where software was not an issue

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there were controls in place or only large oil companies managed the software and there was a degree of confidence there was no fraud.

On day 4 all participants were taken to Junpen PTT Sriracha Co. Ltd petrol service station in Sriracha, Chonburi province to gain practical experience in the verification of fuel dispensers using the test procedures presented. Four senior inspectors from Thailand assisted in the demonstrations and supervision of the participants at the service station. They were very competent and experienced in training. They were:

- Pisakom Pisankul*
- Nopporn Choopal
- Phitsanurach Yoopum*
- Kittisak Ngamsanga

The inspectors from Thailand demonstrated the correct method for testing a fuel dispenser to each group in turn. Then everyone was given the opportunity to test the fuel dispenser individually. Some video footage was taken to record how successful some participants were in demonstrating their skills. Names with * indicate they were competent in speaking English.

On the last day each group presented ¼ of the course. Each presentation was 1 hour in length followed by a 30 minute feedback session. Feedback was provided by the whole group outlining what was good and what could be improved. All groups contributed and many made up excellent slides to explain the section they had chosen to present.

On day 5 there was a request for the trainers to explain measurement uncertainty as it applies to the verification of fuel dispensers. Brad Larter explained this succinctly to everyone's satisfaction by using the NMI regulations and the NITP 5.1 to support his explanation.

4. Highlights/ Lessons Learned

All the objectives of the training were met. All planned activities shown in the program were successfully completed and participants demonstrated they understood the test procedures. All candidates participated well and were very willing to be involved in the group exercises.

The target group for the program was generally correct however some candidates were already overly qualified. The group consisted of a variety of positions and levels of experience and understanding. Many of the candidates were young enthusiastic participants who learnt quickly. However there were some older participants who had high level positions within their institutes. The criteria for nomination should ensure we do not accept people who are directors or senior managers who are not involved with the practical testing and verification of fuel dispensers. The ideal candidate for the MEDEA program is a "new generation" or next cohort managers. In other words, the ideal candidate would be a young person with potential to learn and develop new skills and knowledge.

The participant from India started the training by delivering a very lengthy economy report despite the time limit of 10 minutes then when the trainer started he yelled out that there was a mistake in the notes. Several times throughout the program he interrupted inappropriately and generally was a difficult participant. He is a professor who trains other economies yet his

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knowledge was lacking in several areas. By the end of the course he apologized for his behavior and he contributed well to the training.

Another area of concern was some candidates did not work in the field and have never handled petroleum products. Some were administrative staff. They should not be accepted as suitable participants. We should ask nominees to indicate the number of instruments they have verified in the past 6 -12 months.

Spoken English language was a problem for the Mongolian participants who appeared to understand very little spoken English. One of the Mongolian participants was very capable when it came to answering the test questions. Some other participants had poor verbal skills but did appear to be able to follow written English.

Feedback from the participants indicated we achieved all our targets. The evaluation score was 4.3 out of 5 so we were entirely satisfied with this result. The following comments are a sample of the comments received:

What was liked:

- Slides provided by trainers, Action monitoring by trainers, Additional explanations by trainers, Question & Answer Rounds, Venue, Group presentations and group discussion
- Course organization and warm welcome
- Practical experience on-site
- Economy reports
- Step-by-step explanation of testing procedure

What could be improved:

- Include potential trainers from DE as trainers
- Include calibration and pattern approval of fuel dispensers
- Include videos

Highlights of the training were:

- Participants were willing to share and be involved. Initially we were concerned that participants would already know what was in the course. Judging by the many questions asked and the level of engagement during the exam it was clear they did not understand everything but did learn a lot during the training. Many participants said they would return to their economy and make a report comparing their current practice with the procedures presented and seeks ways to introduce the missing procedures.
- Getting attendance from ICCC in PNG. They are the body who verifies fuel dispensers in PNG. It turns out they have no reference measures. Their only concern is to ensure the price per volume is correct.
- The opportunity for participants to tell the group about their action plans. They seemed very keen and requested that PTB follow up every 3 months to see what

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progress they make. They seemed highly committed to reporting back and analyzing their current practice and then to see how they could implement change to make them more compliant with OIML recommendations.

- The competence of the Thailand inspectors as demonstrators and trainers. Thailand is open to the consideration of hosting a second course using their staff as trainers. The 4 Thai demonstrators has reasonable English and Sakchai said he would be willing to allow them to deliver another MEDEA program in Thailand as long as they had support from the Australian trainer
- The logistics for the course were meticulously provided by the Sakchai Hasamin and Kemsai Rahannok. Everything was perfect.
- The following participants were identified as excellent teachers:
 - Kila Tau from PNG
 - Prakesh Sharma from Butan
 - Jose Marco Lactosa from Pilippines
 - Adam Azman from Malaysia
 - Agnar Reyhan or Eko Heri Prasetyo from Indonesia
 - Samrach Muy from Cambodia?
 - Nopporn Choopal and Pisakom Pisankul from Thailand

Recommendations to the MEDEA Coordination Committee and other trainers

- Modify nomination form to describe target audience as 'new generation' potential future managers or future leaders. Add question: What number of measuring instruments have you verified (instrument should be defined as the type relating to the course) in the last 6 months?
- Ask for a contact number for participant and say they need to be able to conduct a conversation in English over the telephone.
- Conduct a follow-up training 3 day course on the verification of fuel dispensers in 2016 using Thailand trainers and a trainer from a developing economy and. Brad Larter to support the delivery.

5. Next Steps/ Follow-up

- Participants to complete the points detailed on their action plans.
- CC to discuss possibility of having identified trainers run a second course under guidance of expert trainer. If PTB and CC agree then a proposal could be put to APLMF to obtain a host. Or a non-member developing economy may wish to be a host.
- PTB to follow-up within 3, 6, 9 and 12 months to record the progress against the action plans
- Trainers to be available to answer questions
- Marian to invite ICCG to attend APLMF meetings
- Consider hosting 1-2 attachment programs for exemplary candidates with lots of potential. Could target an economy who is demonstrating they will implement what is learnt. Examples of such economies are Butan and Cambodia. Part of the criteria to apply could be to show what they have achieved in the past 5 years and what the

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plan is for the future. Could offer this opportunity to the directors program and have them nominate their staff and then have staff also prepare a nomination.

- Consider including legal metrology in the instrument bank. Some economies do not have any reference measures so it is impossible for them to do verification. Australia has reference measures they do not use.

6. Photographs from the training

See Appendix 6

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Appendix 1 Program

Train the Trainer Course on the Verification of Fuel Dispensers

15-19 June 2015, Pattaya, Thailand

Monday 15 June

Venue: Holiday Inn Pattaya

Time	Details	Presenter
08:30 – 09:00	Registration	
09:00 – 09:40	Welcoming address Santichai Santawanpas, Deputy Director General, from the Department of Internal Trade Opening ceremony GUO Su and Kristin Kiesow Group photo	APLMF, PTB and Host
09:40 – 10:00	Introduction	GUO Su and Kristin Kiesow
10:00 – 10:45	Overview of the course Presentation skills Economy reports - explains how fuel dispensers are verified in each economy	Marian Haire and a trainee from each economy
10:45 – 11:15	Coffee Break	
11:15 – 12:30	Economy reports continue	Marian Haire and a participant from each economy
12:30 – 2:00	Lunch break	
02:00 – 15:30	Economy reports continue Working safely with petroleum products Construction of a fuel dispenser	Marian Haire Brad Larter
15:30 – 16:00	Coffee break	
16:00 – 17:00	Traceability	Brad Larter

Tuesday 16 June

Venue: Holiday Inn Pattaya

Time	Details	Presenter
9:00 – 10:30	Preparation for testing Equipment for testing petrol and diesel	Brad Larter
10:30 – 11:00	Coffee Break	
11:00 – 12:30	Visual Inspection Functional Tests	Brad Larter
12:30 – 2:00	Lunch	
02:00 – 3:30	Performance Tests Question and answer session	Brad Larter
03:30 – 4:00	Coffee Break	
4:00 – 17:00	Question and answer session	Brad Larter and Marian Haire

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Wednesday 17 June

Venue: Holiday Inn Pattaya

Time	Details	Presenter
9:00 – 10:30	Participants work together to answer test questions	Brad Larter and Marian Haire
10:30 – 11:00	<i>Coffee Break</i>	
11:00 – 12:30	Group discussion of answers to test questions Action Plans	Brad Larter and Marian Haire Participants
12:30 – 14:00	<i>Lunch</i>	
14:00 – 17:00	FREE TIME	

Thursday 18 June

Venue: A Petrol Station

Time	Details	Presenter
8:00	Travel to the training venue	
9:00 – 10:30	Observe demonstration of individual tests Group discussion of procedure	Brad Larter and Marian Haire
10:30 – 11:00	<i>Coffee Break</i>	
11:00 – 12:30	Students practice technique in small groups	Brad Larter and Marian Haire
12:30 – 14:00	<i>Lunch</i>	
14:00 – 15:30	Each student demonstrates the procedure of testing a fuel dispenser.	Brad Larter and Marian Haire
15:30 – 16:00	<i>Coffee Break</i>	
16:00 – 17:00	Each student demonstrates the procedure of testing a fuel dispenser.	Brad Larter and Marian Haire
18:00 – 20:00	Dinner sponsored by Host	

Friday 19 June

Venue: Holiday Inn Pattaya

Time	Details	Presenter
9:00 – 10:30	Group 1 presentations Discussion and feedback	Participants
10:30 – 11:00	<i>Coffee Break</i>	
11:00 – 12:30	Group 2 presentations Discussion and feedback	Participants
12:30 – 13:30	<i>Lunch</i>	
13:30 – 15:00	Group 3 presentations Discussion and feedback	Participants
15:00 – 15:30	<i>Coffee Break</i>	
15:30 – 17:00	Group 4 presentations Discussion and feedback	Participants
17:00 – 17:30	Closing Ceremony	APLMF and Host

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Appendix 2 List of Participants

First Name	Last Name	Institute	Economy
Monnaf	Hoassain	Bangladesh Standards and Testing Institution	Bangladesh
Mohammad	Ali	Bangladesh Standards and Testing Institution	Bangladesh
Wangda	Jamtsho	Bhutan Standards Bureau	Bhutan
Prakash	Sharma	Bhutan Standards Bureau	Bhutan
JianJun	You	Hubei Insitute of Measurement and Testing Technology	China
Hu	Di Xin	Zhejiang Province Institute of Metrology	China
Banshi Dhar	Konar	IILM	India
Kila	Tau	Independent Consumer and Competition Commission (ICCC)	Papua-New Guinea
Agnar	Reyhan	Ministry of Trade	Indonesia
Eko Heri	Prasetiyo	Directorate of Metrology	Indonesia
Ruslan	Shamsudin	Ministry Of Domestic Trade, Cooperative and Consumerism	Malaysia
Adam	Azman	Ministry Of Domestic Trade, Cooperative and Consumerism	Malaysia
Tuvshin	Khaivjunai	Mongolian Agency for Standardization and Metrology	Mongolia
Javzanpagma	Surenkhorloo	Mongolian Agency for Standardization and Metrology	Mongolia
Jose Marco	Latosa	Industrial Technology Development Institute – Department of Science and Technology	Phillippines
Mahinda Bandara	Ranasinghe	Measurement Units, Standards and Services	Sri Lanka
Upul	Bambarandage	Measurement Units, Standards and Services	Sri Lanka
Ha	Tran Thi Thuy	Directorate for Standards and Quality (STAMEQ)	Viet Nam
Samrach	Muy	Metrological Instrument Verification Officer	Cambodia
Engseak	Phe	Metrology Offense Control Officer	Cambodia
Wannisa	Soptomat	Eastern Verification center (Chonburi)	Thailand
Penpak	Boonchum	Bureau of Weights and Measuresm Department of Internal Trade	Thailand

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Appendix 3 Economy Reports

Economy	Legislation	SI	MPE used	Inspector of 3 rd pty	Verification periods	OIML compliant	Type approval	Issues	Other
Bangladesh	YES	YES	0.6% (-0.3 + 1.2)	inspectors	1 Y	YES	YES	HR Education, old equipment, budget	
Bhutan	YES	YES	±0.5%	inspectors	1Y	YES	NO		
Cambodia	YES	YES	±0.5% initial, ±1% subsequent	minicipal and provical staff	1Y	YES	Manufacturer	HR, equipment, working standards, WB unit, Public awareness, Law enforcement, software, budget	
China	YES	YES	±0.3% (0.15% repeatability)	Inspectors	6 month	YES	YES	Software for cheating, compulsory	
India	YES	YES		Inspectors	1Y	YES	YES	Software, OIML Toll free #	
Indonesia	YES	YES	±0.5%	Inspectors	1Y	YES	YES (not all tests)	electronic disturbance, influence factors, need facilities	
Malaysia	YES	YES	±0.5%	Private company Metrology Corporation of Malaysia Verification officers	1Y	YES	YES		
Mongolia	YES	YES	±0.025%	Inspectors	6 months	YES	NO		
Papua-New Guinea	YES	YES	±0.5%	Inspectors	6 month	YES	NO		Do not calibrate
Phillippines	YES	YES	±0.5%	3rd PARTY with inspetors observing and marking	2 months	only accuracy test	NO	LGU lack knowledge to verify, equipment not compliant	
Sri Lanka	YES	YES	±0.5%	inspectors	1 Y	YES	NO		
Thailand	YES	YES		inspectors/manufacturers with license	2 Y (inspector) 60 days (repairer)	YES	NO	Low # weights and measures oficers	
Viet Nam	YES	YES	±0.3%	verifiers who are certified and licensed	1Y	YES	YES	absence of regulation for repairers	
Australia	yes	yes	±0.3%	3RD PARTY	None	YES	YES		

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Appendix 4

Groups	Members	Topic for Day 5 presentation
Group 1	Monnaf Hoassain Jian Jun You Agha Reyhan Tuvshin Khaivjunai Upul Bambarandage Wannisa Soptomat	Working safely with petroleum products Construction of a fuel dispenser
Group 2	Mohammad Ali Hu Di Xin Eko Heri Prasetyo Javzanpagma Surenkhorloo Ha Tran Thi Thuy Penpak Boonchum	Preparation for testing Equipment for testing petrol and diesel
Group 3	Wangda Jamtsho Banshi Dhar Konar Ruslan Shamsudin Jose Marco Latosa Samrach Muy	Visual Inspection Functional Tests
Group 4	Prakash Sharma Kila Tau Adam Azman Mahinda Bandara Ranasinghe Engseak Phe	Performance Tests

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Appendix 5 Action Plans

Mr.	Ali	Mohammad	Bangladesh	<ol style="list-style-type: none"> 1. Modify procedures with newly gained knowledge 2. Disseminate knowledge to 60 inspectors of BSTI (training/workshop programme starting 15 July, in 4 groups)
Mr.	Hossain	Monnaf	Bangladesh	<ol style="list-style-type: none"> 1. Modify procedures with newly gained knowledge 2. Disseminate knowledge to 60 inspectors of BSTI (training/workshop programme starting 15 July, in 4 groups)
Mr.	Jamtsho	Wangda	Bhutan	<ol style="list-style-type: none"> 1. In-house training to NML staff 2. One-day training for 20 regional trainee inspectors 3. Verify all dispensing pumps in the region according to newly learned procedures
Mr.	Sharma	Prakash	Bhutan	<ol style="list-style-type: none"> 1. Give training to other trade inspectors in the country 2. Give practical demonstrations to consumers to increase awareness 3. Verify all dispensing pumps in the region according to newly learned procedures
Mr.	Muy	Samrach	Cambodia	<ol style="list-style-type: none"> 1. Deliver training documents to the director of the department of legal metrology and office of the minister of industry and handicraft. 2. Training to 15 NMC staff inspectors in July 2015 (request to National Metrology Center) 3. Series of trainings for staff in 24 provinces and the municipal from August to December 2015 (request to Ministry).
Mr.	Phe	Engseak	Cambodia	<ol style="list-style-type: none"> 1. Compile training material for inhouse training. 2. Extract and share best experience from the oversea trainers 3. 2-to-3-days Training to all municipal and provincial officials under NMC's authorization
Mr.	You	JianJun	China	<ol style="list-style-type: none"> 1. Needs assessment for training to design a suitable training (needs assessment: company's strategy, employees) 2. Determine training location 3. Acquire novel teaching skills 4. Evaluate improval of trainees (by trainer after workshop and supervisor) 5. Following the catalytic studies. Supervisor or leader supervise trainees.

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Mr.	Di Xin	Hu	China	<ol style="list-style-type: none"> 1. Training staff from fuel dispenser manufactures and legal metrological verification technical organizations in Zhejiang Province (July/Aug 2015) 2. Organize a measurement comparison among 4-5 legal metrological verification and organizations in Zhejiang Province by testing the same diesel dispenser (NMIA). 3. Inspect 2-3 gas stations in Zhejiang Province by testing fuel dispensers randomly in order to find and analyse more practical problems in using.
Mr.	Konar	Banshi Dhar	India	<ol style="list-style-type: none"> 1. Implement newly learned things and modify into existing training program of IILM as applicable 2. Teach all enforcement officers coming to IILM
Mr.	Reyhan	Agnar	Indonesia	<ol style="list-style-type: none"> 1. In-house seminar at DOM (within 3 months) 2. Extracting rules and procedures for verifying fuel dispensers based on new knowledge 3. Train others by legal metrology training center based on revised training program 4. Complete facilities and infrastructure for type approval of fuel dispenser at home institute
Mr.	Prasetyo	Eko Heri	Indonesia	<ol style="list-style-type: none"> 1. Sharing training material and knowledge in unit (Sub Directorate of Measuring Instruments and Standards) (Aug-Sept 2015) 2. Revise the current technical regulation of verification of fuel dispensers (Oct-Dec 2015)
Mr.	Ruslan	Shamsudin	Malaysia	<ol style="list-style-type: none"> 1. Training of inspectors until end 2015
Mr.	Azman	Adam	Malaysia	<ol style="list-style-type: none"> 1. Submit report to manager for clear directive. 2. Development of a new training module in cooperation with partners (SIRIM,...). 3. Share knowledge with oil companies (23 June) 3. Training of inspectors in 2015/2016
Mr.	Khaivjunai	Tuvshin	Mongolia	<ol style="list-style-type: none"> 1. Implement new methods and knowledge gained into Mongolian circumstances
Mrs.	Surenkhorloo	Javzanpagma	Mongolia	<ol style="list-style-type: none"> 1. Implement new methods and knowledge gained into Mongolian circumstances

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Mr.	Tau	Kila	Papua-New Guinea	<ol style="list-style-type: none"> 1. Implement new methods and ideas gained to improve and be able to comply with International Standards. Report to Management 2. Quarterly training program for 16 ICCC inspectors of the 4 Regional Offices of ICCC 3. Instruct regional inspectors to devise a program and train employers of the Fuel Stations within their respective regions. 4. Design of inhouse training program at ICCC in cooperation with International Institute of Standards and Technology of Papua New Guinea (NISIT) provided for Fuel Station employees 5. Awareness raising measure throughout the regions
Mr.	Latosa	Jose Marco	Philippines	<ol style="list-style-type: none"> 1. Design of training module on technical procedures for LGUs (July/Aug 2015), incl. manual. 2. Training announcement to Union of Local Authorities of the Philippines (UPALP) (Oct 2015) 3. Two Trainings for 20 LGU personnel from National Capital Region each (Dec 2015, Jan 2016) 4. Train at least 4 core personnel from ULAP to serve as co-trainers (Dec 2015). 5. Train LGU personnel (min. 1000) from different regions (in cooperation with ULAP) (Feb 2016) 6. Monitor LGU personnel's competence through periodic Proficiency Testing.
Mr.	Ranasinghe	Mahinda Bandara	Sri Lanka	<ol style="list-style-type: none"> 1. In-house Training for other inspectors in MUSSD (from Aug 2015 - 2024) 2. Awareness raising program to fuel dispenser owners and customers.
Mr.	Bambarandage	Upul	Sri Lanka	<ol style="list-style-type: none"> 1. In-house Training for other inspectors in MUSSD (from Aug 2015 - 2024) 2. Awareness raising program to fuel dispenser owners and customers.
Mrs.	Boonchum	Penpak	Thailand	<ol style="list-style-type: none"> 1. Writing handbook for verification of fuel dispensers (start 2016, budget for 2015 exhausted) 2. Train personnel in public (Mar/April 2016) 3. Train people in the province (June/July 2016) 4. Train manufacturer (optionally) 2. Change detection methods according to internationally recognized standards
Mrs.	Soptomat	Wannisa	Thailand	<ol style="list-style-type: none"> 1. Gathering all information and knowledge gained from the (Oct 2015) 2. Making training handbooks/instructions (Oct-Nov 2015) 3. Submitting draft of training course to Director of Southern Weights and Measures Center for approval (Dec 2015) 4. Arranging training course for weighing and measures officers in Southern part of Thailand (Dec 2015)

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Mrs.	Tran Thi Thuy	Ha	Vietnam	<ol style="list-style-type: none">1. Provide documentation to technical section2. Review current technical regulations, training curriculum for technical regulations and metrological control for improvement (until end 2015)3. Discuss with relevant personnel to draft document and search for sponsoring partners for equipment in (until end 2015)
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Appendix 6 Photographs



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