



**APEC/APLMF Seminars and Training Courses in Legal Metrology  
(CTI-10/2005T)**

**Training Course on Electricity Meters**

February 28 - March 3, 2006

at Rex Hotel in Ho Chi Minh City, Viet Nam

**Program**

**Organizers:**

1. Asia-Pacific Economic Cooperation (APEC)
2. Asia-Pacific Legal Metrology Forum (APLMF)

**Supporting Organizations:**

1. Directorate for Standards and Quality (STAMEQ)
2. Measurement Canada, Government of Canada
3. National Metrology Institute of Japan (NMIJ)
4. Japan Electric Meters Inspection Corporation (JEMIC)

**Trainers:**

1. Mr. George Smith, Measurement Canada, Government of Canada
2. Mr. Paul Rivers, Measurement Canada, Government of Canada
3. Mr. Takao Oki, Director, Technical Research Laboratory, Japan Electric Meters Inspection Corporation (JEMIC)
4. Mr. Masatoshi Tetsuka: Senior Staff of Verification Management Division, Japan Electric Meters Inspection Corporation (JEMIC)

**Registration:**

Fill the attached "Registration Form" and send it to the APLMF secretariat by **January 23, 2006**.

**Visa assistance:**

If you need visa to enter Vietnam, please fill the attached "Visa Assistance Form" and send it to the host by **January 31, 2006**. On your request, the host will send an official letter of invitation for visa application.

**Venue and Accommodation:**

**Rex Hotel**

141 Nguyen Hue, District 1, Ho Chi Minh City, Vietnam

Tel: (84-8)8292185, Fax: (84-8)8296536

Contact person: Mr. Ho Ngoc Trung, Assistant Director of Sales

Email: [trunghn.rex@sgtourist.com.vn](mailto:trunghn.rex@sgtourist.com.vn)

<http://www.rexhotelvietnam.com/>

The accommodation will be prepared at the Rex Hotel with the rates below. Please use the registration form to reserve a room at the hotel.

Superior: USD60.00/single – USD 70.00/double  
Deluxe: USD65.00/single – USD 75.00/double  
Rex Suite: USD80.00/single – USD 90.00/double  
(Above rates include breakfast, 10% VAT and 5% service charge)

**Contact Persons for the Training Course:**

**1. APLMF Secretariat (registration, travel support and lectures by JEMIC)**

Tsuyoshi Matsumoto and Ms. Ayako Murata  
NMIJ/AIST Tsukuba Central 3-9, 1-1-1 Umezono, Tsukuba, Ibaraki 305-8563, Japan  
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E-mail: e.sec@aplmf.org, sec@aplmf.org

**2. Working Group on Utility Meters of APLMF (lectures by Measurement Canada)**

Mr. Gilles Vinet  
Vice-President, Program Development Directorate, Measurement Canada  
Holland Avenue, Tunney's Pasture, Ottawa, Ontario, K1A 0C9 Canada  
Tel: +1-613-941-8918, Fax: +1-613-952-1736  
E-mail: vinet.gilles@ic.gc.ca

**3. Host in Vietnam (visa assistance, accommodation and venue)**

Mr. Bui Quy Long  
Project Manager, Planning and Cooperation Department,  
Directorate for Standards & Quality  
Tran Hung Dao Street, Hanoi, Vietnam  
Tel: +84-4-7911633, Fax: +84-4-7911605  
E-mail: qhqt1@hn.vnn.vn

# Final Program<sup>\*1</sup>

## Day 1 - Tuesday, February 28

- 09:30 - 10:00 Opening Ceremony  
- Welcome Address by the Mr. Dinh Van Tru, Vice Director of QUATEST 3  
- Opening Address by the APLMF Executive Secretary  
- Introductions by the Trainers  
- Roll Call  
- Take an Assembled Photo
- 10:00 - 10:30 *Coffee Break*
- 10:30 - 12:00 Overview of the Measurement System and Current Situation about Electricity Meters in Each Economy Presented by the Trainees<sup>\*2</sup>
- 12:00 - 13:30 *Lunch*
- 13:30 - 14:30 Overview of the Electricity Meters in Japan – Legislation / Type Approval<sup>\*3</sup>
- 14:30 - 15:00 *Coffee Break*
- 15:00 - 16:00 Verification / Verification Standards<sup>\*3</sup>
- 16:00 - 16:30 Overview of Standards Relative to the Electricity Meters (TC13)<sup>\*3</sup>
- 16:30 - 17:00 Current Situation of the Revision of OIML Recommendations<sup>\*3</sup>
- 19:00 - 21:00 *Welcome Dinner Invited by APLMF at the Rooftop Garden on the 5<sup>th</sup> Floor of Rex Hotel*

## Day 2 - Wednesday March 1

- 09:00 - 10:20 Introduction to the Training Course on Electricity Meters / Electricity Distribution Systems / Sine Wave and Phasor Concepts / Electrical Metering Circuit<sup>\*4</sup>
- 10:20 - 10:50 *Coffee Break*
- 10:50 - 12:30 Single-Phase and Poly-Phase Load Analysis<sup>\*4</sup>
- 12:30 - 14:00 *Lunch*
- 14:00 - 15:20 Measurement Concepts / Watt-Hours / Reactive Volt-Ampere Hours and Volt-Ampere Hours<sup>\*4</sup>
- 15:20 - 15:50 *Coffee Break*
- 15:50 - 17:30 Electricity Metering: Demand Measurement / Volt-Ampere Demand Measurement / Basic Induction Meters<sup>\*4</sup>

## Day 3 - Thursday March 2

- 09:00 - 09:50 Electronic Metering<sup>\*4</sup>
- 09:50 - 10:30 Type Approval of Electricity Meters<sup>\*4</sup>
- 10:30 - 10:50 *Coffee Break*
- 10:50 - 12:00 Type Approval of Electricity Meters (continue)<sup>\*4</sup>
- 12:00 - 13:30 *Lunch*
- 13:30 - 17:00 Technical Tour to the Electro Testing Center of Power Company No. 2, 22 bis Phan Dang Luu st., District Phu Nhuan, Ho Chi Minh city

### Day 4 - Friday March 3

- 09:00 - 09:10 Overview of the Measurement System and Current Situation about Electricity Meters in Papua New Guinea by Mr. Victor Gabi<sup>\*2</sup>
- 09:10 - 10:20 Electricity Meter Verification and Test Methods / Reverification Intervals / In-service Compliance Programs<sup>\*4</sup>
- 10:20 - 10:50 *Coffee Break*
- 10:50 - 12:30 Electricity Metering: Measurement Standards and Test Equipment / Measurement Dispute Investigations<sup>\*4</sup>
- 12:30 - 14:00 *Lunch*
- 14:00 - 14:30 Review / Questions / Answers
- 14:30 - 14:40 Introduction of NMIJ with Video
- 14:40 - 14:50 Introduction of JEMIC with Video
- 14:50 - 15:00 Introduction of APLMF by Dr. Matsumoto
- 15:00 - 15:50 *Coffee Break*
- 15:50 - 16:30 Closing Ceremony
- Give a Certificate to All Trainees
  - Closing Address by the APLMF Executive Secretary.
  - Closing Address by the Dr. Ngo Quy Viet, Director General of STAMEQ
- 17:30 *Leave the Hotel for the Farewell Dinner*
- 18:00-20:00 *Farewell Dinner Invited by STAMEQ at the Tan Cang Resort, A 100 Ung Van Khiem, P. 25, Binh Thanh Dist., Ho Chi Minh city*

### Additional Comments:

**\*1 This proposed course outline is based on the trainee's having previous knowledge and experience with Electricity Metering.**

**\*2 This session will be presented by the Trainees**

A trainee from each economy provides a brief (3 minutes or less) overview of the measurement system and current situation about electricity meters in their economy. For example:

- What organization(s) regulate the measurement of electricity in your economy?
- What are the legal units of measure for the sale of electricity?
- Do electricity meters require approval of type?
- What organization performs approval of type testing?
- Is meter verification testing required?
- What organization performs the meter verification tests?
- Are tests performed on meters in service?
- Are meters given a reverification interval? (8 years? 12 years?)
- Is there as measurement complaint/dispute resolution process?

**\*3 These lectures will be given by Mr. Takao Oki and Mr. Masatoshi Tetsuka.**

**\*4 These lectures will be given by Mr. George Smith and Mr. Paul Rivers.**