Challenges and opportunities of training in support of embarking countries

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1. Examples of training for embarking countries in Japan
The Joint Japan-IAEA Nuclear Energy Management School

1st: 11-29 June 2012 in Tokai-mura

2nd: 27 May-10 June 2013 in Tokyo and Tokai-mura

IAEA/JICC/WERC Mentoring Course

- Introduce technologies and emergency preparedness in Japan
- 1st Course 9-20 July 2012  2nd Course 8-19 July 2013
- For near future decision makers
- One mentor per a few mentees
- 10 mentees from Asian countries
- NPPs, ERCs, Nuclear Fuel Cycle Facilities, Plant Vendors, Fuel Fabrication Facilities, Laboratories and Fukushima
- Lectures on Nuclear Policy, history of technology development and HRD in Japan
JICC Infrastructure Seminar

• 1\textsuperscript{st} Seminar “Emergency Response (SPEEDI)”
  – 27 Feb to 2 March 2012 in Japan
  – 23 attendee from 7 countries and a region

• 2\textsuperscript{nd} Seminar “Preparedness for Huge Natural Disaster (Earthquake and Tsunami)
  – 14–18 Jan 2013 in Japan
  – 21 attendee from 9 countries
  – 2 lecturers from IAEA

• “Emergency Response (SPEEDI)” Follow-up Seminar
  – 4–6 March 2013 in Indonesia
  – 13 attendee from 5 countries except from Indonesia
Seminar in embarking countries

- Seminars on the update of Fukushima Accident
  - Feb to March 2012
  - Brazil, Argentina, Poland, Thailand, Kazakhstan, Taiwan, Malaysia, Mongolia

- Seminar in Indonesia
  - Sep to Oct 2012

- Seminar in Mongolia
  - 5-6 February 2013
Japan Atomic Power Co Training Course

• Practical training by Utility based on in-house experience
• Flexible curriculum according to demands
• Course for Thailand and Indonesia
  – By request from recipient countries
  – First case of joint course for two countries
  – Construction Management Course:
    26 Nov. to 8 Dec. 2012
  – Radiation Protection Course:
    10 to 22 Dec. 2012
• Training Course for Kazakhstan
  – Introduction to Nuclear Energy Course:
    5 to 19 Nov. 2012
  – Sites Visits Course:
    3 to 13 Dec. 2012
HRD Activities for Embarking Countries out side of JICC Activities

- JAEA Nuclear HRD Center
  - Instructor Training Course (ITC) 5 courses
    - Reactor Engineering I, II, and III 54 Days
    - Environmental Radioactivity Monitoring 40 Days
    - Nuclear and Radiological Emergency Preparedness 40 Days
  - Follow up Training Course (FTC) 5 courses
- Integrated Support Center for Nuclear Nonproliferation and Nuclear Security (ISCN)
  - Training, Workshop, Seminar 2 Days to 2 Weeks
- JNES
  - Training Course for young staff and specialists of Regulatory Body 5 to 61 Days
- JEPIC
  - Training Course for Owner/Operator 5 to 28 Days
HRD Activities for Embarking Countries out side of JICC Activities

• **NSRA**
  – Nuclear Researchers Exchange Program  1 to 6 months

• **WERC**
  – Nuclear Power Generation Safety Infrastructure Course  2 weeks
  – Reactor Plant Safety Course  2 weeks
  – Public Acceptance Course  1 week

• **TIT**
  – Endow Courses at Universities in Vietnam  10 to 21 days
2. Demands and Challenges for the training
Demands for HRD from emerging countries

- Long and Mass Education to fulfil HRD plan of the country
- Practical education
- Stakeholder involvement
- New training topics;
  - Project management, Finance, Bidding, Legal Framework, Security, Waste management
- Consecutive training course
- Mentoring for lecture (Tutoring?)
Challenges

• Selection of participants
  – Too old, too young, not related to position
  – Job hopping after training
  – Training surfing?

Countermeasures:
• Data base of participants training history tracking
• Recommendation by immediate boss
Challenges

- Systematic education
  - Consecutive training program
  - Certification
  - Within multiple countries
  - Softcoordination
  - Database

- Personal merit and organizational needs
  - Degree

- Language
  - Study advance in homeland
  - Earlier selection
  - Twinning
3. Examples to address emerging demand
Examples to address emerging demand (1)

• Demand:
  Long and Mass Education to fulfil HRD plan of the country

• Example:
  “Tokai University Vietnam Nuclear Power Project Personnel Development Program”
  – 15 Trainees 2 Years
  – Not for degree, but for personnel actually working at plant sites
  – To grow Leaders on site
  – First education of Japanese for 6 months
  – Later in parallel with engineering education
  – Lectures by both professors and veterans from industries
Examples to address emerging demand (2)

• Demand:
  Long and Mass Education to fulfil HRD plan of the country

• Example:
  “Instructor Training Course (ITC) at JAPC HRD Center”
  – Train the trainer Concept
  – 5 courses
    • Reactor Engineering I, II, and III
    • Environmental Radioactivity Monitoring
    • Nuclear and Radiological Emergency Preparedness
    • Follow up Training Course (FTC) 5 courses
Instructor Training Program (ITC)

**Purpose:**
ITP is a training course to level up teaching ability of instructors from Asian countries, who will be instructors of Follow-up Training Course (FTC) in their own countries.

**Asian countries:**
- Vietnam
- Bangladesh
- Kazakhstan
- Malaysia
- Philippines
- Indonesia
- Thailand
- (Mongolia)

**Set-up FTC**
(Main instructors)

**① Go to Japan**
(Trainees)

**② Training for 6~9 weeks**
- Reactor Engineering I II III
- Environmental monitoring
- Emergency preparedness

**③ Go home**
(instructors)

**④ FTC training**

**⑤ Dispatch**

Dispatch Japanese experts (For 2 weeks)

(NuHRDeC, JAEA)

**ITC training course**
Instructor Training Program (ITP) (since 1998)

- Training courses: 
  Radiation Protection, Reactor Engineering, Emergency Preparedness, etc

- Totally about 100 lecturer-candidates trained 
- Totally about 1700 participants in each country’s training course (FTC)
Examples to address emerging demand(3)

• Demand
  – Long and Mass Education to fulfil HRD plan

• Challenge
  – Language barrier

• Example
  – Nagaoka Univ. of Technology Twining program

http://ciee.nagaokaut.ac.jp/eng/int_program.html
Examples to address emerging demand (3)

• Demand
  – Practical Training

• Example
  – JAPC (Utility) training course
Training Courses by Electric Power Company
The Japan Atomic Power Company (JAPC)  (1/2)

1. JICA Group Training Course

- Lectures concerning introduction of nuclear power generation,
- Visit of nuclear power plants and plant manufacturers

Implementing partners: JEPIC and JAPC
Countries: 5 Countries mainly from Asia

2. Vietnam EVN Training Course

- Lectures concerning nuclear power construction project,
- Visit of NPPs and plant of manufacturers

Implementing partners: JEPIC and JAPC etc.
Training Courses by Electric Power Company
The Japan Atomic Power Company (JAPC) (2/2)

3. Kazakhstan Training Course

- Lectures concerning LWR systems by using JAPC compact simulator
- Visit of NPP and plant manufacturers

Implementing partners: JICC and JAPC
Target Organization: Nuclear-related organization members of Kazakhstan

4. Mongolia Training Course

- Lectures concerning LWR systems by using JAPC compact simulator
- Visit of NPP and plant manufacturers

Implementing partners: JICC and JAPC
Target Organization: NEA of Mongolia

Japanese Electric Power Companies with related organizations provide practical training courses for future owner/operators
Examples to address emerging demand(4)

• Demand
  – Stake Holder Involvement

• Example
  – WERC PA course
Examples of Future Operator Training  
- Public Information -

- Public Information training course is being carried at Wakasa Wan Energy Research Center (WERC).

- PA Facility Visits mission was also done.
Examples to address emerging demand(5)

- Demand
  - Security Safeguard
- Example
  - JAEA Course
Examples of Future Operator Training - Safeguards -

• International cooperation program in JAEA provides courses as below
  – Regular Safeguards Training Course (Cooperation with IAEA)
  – Special Safeguards Training Course according to requests
    ← Attended mainly by future operator

Expectation to IAEA

• Standard
• Certificate
• Public Acceptance
  – Especially Local Government & Local Communities
• Soft coordination
  – Regulation
  – HRD
Thank you very much!