CAPACITY BUILDING IN INDONESIA

Technical Meeting to Prepare Guidance Documents for Capacity Building
February, 23 - 27, Vienna, AUSTRIA
Introduction

Center for Education and Training has responsibility to conduct education and training in nuclear science and technology.

Training Policy

“every personnel who works in nuclear research, development, and application should be provided adequate training in certain level of competence”
Introduction

Human Resource
- Engineer/Scientist: 30
- Technician: 18
- Administrative staff: 27
E&T Activity

Implementation of Education and Training

- Formal Education
- domestic university
- overseas university

Training
- in house training
- domestic/overseas training institute
E&T Activity

- In house training:
  - BATAN staff
  - Public
  - Regional/Interregional

In average 90 TC per year
Based on the role of the government and the role of organizations to support the capacity building efforts, BATAN has organized several activities related to capacity building for nuclear safety and nuclear security, which includes:

- IAEA Review Mission on Education and Training
- Follow up advisory review mission on education and training
- ETPRES Mission
- JAEA-Indonesia Working Meeting Capacity Building Cooperation on Nuclear Security
Conducted: in Jakarta, 26 - 30 September 2005

PURPOSE OF THE MISSION

To assist Indonesia to develop and to maintain a sustainable and adequate education and training program in nuclear safety consistent with IAEA safety standards and good international practices with due recognition to national conditions.
CONDUCT OF THE MISSION

In conducting the review, the team considered the current situation regarding nuclear safety in Indonesia with three operating research reactors and the option to construct a nuclear power plant.

It has conducted systematic TNA for Research Reactor staff of its three major centers of BATAN, using the four-quadrant competency model for research reactors according to the step-by-step guidelines provided by IAEA.
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IAEA Review Mission on Education and Training

The recommendations need to be followed up:

- Review and evaluate the method used for collecting data of personnel competency level.
- Validate the collected data of personnel competency level.
- Validate the available training courses and design new training courses that require bridging the gap of competency.
- Perform the similar analysis for the other facilities.
Follow up advisory review mission on education and training


PURPOSE OF THE MISSION

To assist CET in the validation of results and explore the future use of these training needs results in planning, developing and implementing the training programs by both the CET and the operating organisations.
Follow up advisory review mission on education and training

CONDUCT OF THE MISSION

Discussions were held with the senior management and staff of ETC and the operating organisations of the three research reactors. The mission was based on the IAEA guidance and questionnaires for systematic TNA as well as on relevant IAEA Safety Standards. In conducting the review, the team considered and assessed the progress made on recommendations and suggestions made by earlier advisory review mission on education and training in 2005.
CONCLUSION

The mission analysed the detailed results of some of the questionnaires and concluded that the results are valid and useful for defining an action training plan by both CET and the operating organisations.

It seems beneficial to hold meetings, similar to those held with the senior staff, in future analysis of the overall results of the gaps and ensure global consistency amongst the different areas, safety operation and maintenance.
CONCLUSION

The TNA results are useful in a medium/long strategic planning of training activities.

A preliminary identification of courses within the ETC database in order to fulfill training in each of competencies considered in the analysis, has been already carried out by ETC.

Concerning the uses of the TNA results, it was concluded that they will be highly useful in prioritizing of the training for the operating organizations.
# BATAN’S TRAINING SCHEME

## Strategy and Implementation of HRD

### Technical Training Scheme

<table>
<thead>
<tr>
<th>Basic (&lt; 3 years)</th>
<th>Junior (3 ~ 8 years)</th>
<th>Senior (&gt; 8 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiation Protection Officer</td>
<td>Radiation Protection Supervisor</td>
<td></td>
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<tr>
<td>Reactor Operator</td>
<td>Reactor Supervisor</td>
<td></td>
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<tr>
<td>Reactor Maintenance Officer</td>
<td>Reactor Maintenance Supervisor</td>
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<tr>
<td>Nuclear Material Inventory Officer</td>
<td>Nuclear Material Inventory Supervisor</td>
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<tr>
<td>Nuclear Fuel Fabrication Officer</td>
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<td>Nuclear Waste Management Officer</td>
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<td>Nuclear Emergency preparedness</td>
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<tr>
<td>Other technical Training Courses</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Basic Professional Training Course on Nuclear Safety (level I and II)</th>
<th>Basic Professional Training Course on Nuclear Safety (level III and IV)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Radiation Protection Officer</td>
<td>Radiation Protection Supervisor</td>
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<tr>
<td>Operator Radiography</td>
<td>Supervisor Radiography</td>
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<tr>
<td>Irradiator/Accelerator Operator</td>
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<tr>
<td>Irradiator/Accelerator Maintenance Officer</td>
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<tr>
<td>Radiological Emergency preparedness</td>
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<tr>
<td>Radioisotope Production Officer</td>
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<tr>
<td>Other technical Training Courses</td>
<td></td>
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</tr>
</tbody>
</table>

**Other technical Training Courses**
(Administrative, Quality Assurance, Informatics, Instrumentation, etc.)
## Training Scheme
### Research Reactor Personnel

<table>
<thead>
<tr>
<th>Specialization</th>
<th>Topic of Trainings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Basic</strong> ~ 3 years</td>
</tr>
<tr>
<td>Safety</td>
<td>Basic of Nuclear Safety Safety Culture</td>
</tr>
</tbody>
</table>
ETPRES MISSION

Conducted: in Jakarta, 26 - 29 June 2012

PURPOSE OF THE MISSION

To assist Indonesia to develop and to maintain a sustainable and adequate Education and Training programme in nuclear safety consistent with IAEA safety standards and international good practices, with due recognition to national conditions.
ETPRES MISSION

CONDUCT OF THE MISSION

The mission took place at the facilities of BATAN in Jakarta and at the research reactor in Serpong.

Representatives from Ministry of Energy and Mineral Resources, BAPETEN, Universities, Research Reactors BATAN participated in the discussion.

A total of around 100 questions were discussed with the Indonesian counterpart. These questions were divided in 4 sections and addressed education and training matters for the government, the regulator, the universities, the research reactors and preparation for nuclear power plants operations.
## ETPRES MISSION

<table>
<thead>
<tr>
<th>Facilities</th>
<th>Number in country</th>
<th>Number in country</th>
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<tbody>
<tr>
<td></td>
<td>Facilities</td>
<td>Approximate number of staff</td>
</tr>
<tr>
<td></td>
<td>Existing</td>
<td>Additional</td>
</tr>
<tr>
<td>RR</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Power reactors</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Fuel Cycle</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Waste management</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Universities and technical inst</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Training organizations</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Other (specify)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
FOLLOW UP OF ETPRES MISSION
Evaluation of Self Assessment for The Governmental Level

Due to the delay in taking a decision on further nuclear developments, the study on HRD and Training at a national level should be updated in order to strengthen current knowledge and capacity building.

It is recommended to revise the study in the light of the self-assessment of capacity building action plan of the Nuclear Safety Action Plan of the IAEA developed after the accident at TEPCO Fukushima Nuclear site.
ETPRES MISSION

FOLLOW UP OF ETPRES MISSION

Evaluation of Self Assessment for Universities, Professional Training Institutes, and other training organizations

Each of the Universities and Training Institutions which are part in the nuclear power programme should be a full member of the national team for HRD.

The institutions should strengthen connections with peer institutions abroad, participate in collaborative studies with them, and consider organizing external benchmarking visits and peer reviews.

Each institution should write down in a procedure its policies and practices to identify their knowledge.
FOLLOW UP OF ETPRES MISSION

Evaluation of Self Assessment for Regulatory Body and its Technical Support Organizations

A systematic training needs assessment of regulatory personnel should be conducted periodically. It is recommended using the free IAEA software tool SARCoN, which is an upgrading of the TECDOC 1254.

To finalise the management information system in Bapeten and provide for the procedures, responsibilities and keeping records of all the training received in house and abroad as well as their training materials.
ETPRES MISSION

FOLLOW UP OF ETPRES MISSION
Evaluation of Self Assessment for Regulatory Body and its Technical Support Organizations

To establish a process for train the trainers and use the personnel trained abroad for in house training.

To enlarge the training center with further seminar areas related to safety of nuclear installations, especially on regulatory approaches, leadership and safety culture, drafting regulations, management of training and reinforcing languages.
FOLLOW UP OF ETPRES MISSION

Evaluation of Self Assessment for Research Reactor Operating Organizations

For some jobs, only acquiring of knowledge is mentioned in the objective of training, not skills. It is recommended to revisit training programme descriptions, to review and revise them as necessary.

Continuing training should be not limited only to repeating the parts of initial training. It is recommended to pay attention that the following items to be adequately addressed in the training programmes: Operating Experience; modifications to the facilities; Safety Culture; and Performance Improvement tools and techniques.
FOLLOW UP OF ETPRES MISSION

Evaluation of Self Assessment for Research Reactor Operating Organizations

It is recommended to pay attention to the process of identification of new training needs, and to improve this process.

It is recommended that all full-time instructors and training managers should complete thorough training on SAT.

It is recommended to the research reactor senior managers, to the BATAN senior managers, and to the Government, to consider the issue of ageing personnel at the research reactors and to provide Human Resources as needed.
FOLLOW UP OF ETPRES MISSION

Evaluation of Self Assessment for Nuclear Power Plant Operating Organizations

The Counterparts focus on training of operations and maintenance staff. It is recommended to pay attention to the categories of personnel other than operations and maintenance staff.

Discussing a Training Policy for an NPP, the Counterparts refer to the BAPETEN decrees. It should be highlighted that Training Policy should be developed and promulgated by the Operating Organization / NPP Senior Managers.
FOLLOW UP OF ETPRES MISSION
Evaluation of Self Assessment for Nuclear Power Plant Operating Organizations

It is recommended to consider that Objectives and Criteria to evaluate training effectiveness would be one of the first documents developed and approved by Operating Organization in training area, and would be used for training of personnel before start-up and also for the operation phase.

It is recommended to pay attention to the need of incorporating of Operating Experience into training programmes (both initial and continuing)
Conducted: in Jakarta, 4 February 2015

PURPOSE OF THE MISSION

Nuclear Energy Regulatory Agency of Indonesia (BAPETEN), National Nuclear Energy Agency of Indonesia (BATAN), and Integrated Support Center for Nuclear Non-proliferation and Nuclear Security (ISCN) of Japan Atomic Energy Agency (JAEA) gathered in Indonesia in order to discuss the possible areas of cooperation for human resource development in nuclear security.
ACTION PLAN
Based on the discussion, the meeting participants agreed to cooperate in the below identified areas:

A. Visiting Scholar to ISCN
B. Indonesian Participation to ISCN Courses
C. ISCN support for nuclear security training course in Indonesia
D. Support for PP Test Field
JAEA-INDONESIA WORKING MEETING CAPACITY
BUILDING COOPERATION ON NUCLEAR SECURITY

ACTION PLAN

E. Joint nuclear security culture self assessment project
F. Mutual dispatch of experts
G. Steering Committee Meeting
Nuclear Security Training Scheme

- **Introductory**
  - Awareness

- **Basic Training**
  - Fundamental/Principle
  - Regulation, Codes

- **Intermediate Training**
  - Specific
  - Technical aspects

- **Advanced Training**
  - Expertise
  - Trainer
# Nuclear Security Training Scheme

## Basic
1. Introduction to Nuclear Security; 2. Nuclear Security Culture
3. School on Nuclear Security
4. INFCIRC/225 Rev 5
5. Nuclear Material Accountancy and Control (Safeguard)

## Intermediate
1. PPSM of NM and facility; 2. PPSM of Radioactive Sources;
3. Nuclear Material Accountancy and Control (Safeguard)
4. INFCIRC/225 Rev 5
5. Nuclear Security MS
6. PPS equipment

## Advance
1. ITC on PPS Design and Evaluation; 2. ITC on PPS for Inspection
3. Vulnerability Analysis of PPS; 4. ToT for Self-Assessment Team on Security Culture; 5. ToT on PPSM; 6. ToT on Vulnerability Assessment

## Additional Topics
1. Protection and Prevention Measures against Sabotage
2. PP Measures against Insider Threat
3. Contingency Plan
5. PPS Performance Testing
6. Inspection of PPS
7. Evaluation of PPS
8. NMAC (Safeguards) For Supervisor
9. Computer Security
10. Intelligent Security
11. Nuclear Crime Scheme
12. Security Investigation
13. Nuclear Forensic
14. NS in Transport of NM and RS
15. PPS equipment

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**Notes:**
- ITC = Intertional Training Course
- PPSM = Physical Protection System Manual
- NM = Nuclear Materials
- RS = Radioactive Sources
- ToT = Training of Trainers
Thank You