48th Meeting of the Waste Safety Standards Committee

28 – 31 October 2019

Agenda Item W 5.6
Development of IAEA Training Materials on Decommissioning

– For information –

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Background (1/3)

- The IAEA has been providing training courses on decommissioning for over 20 years
  - typically through the preparation and delivery of national or regional decommissioning training sessions and workshops as part of TC Programme or in response to individual requests by Member States (MS)
- The latest revision of IAEA standardized basic training course on decommissioning safety was done in 2008
- Since 2006, there have been appreciable developments for decommissioning in terms of
  - IAEA safety standards and supporting publications
  - developments in MS programmes
- Significant growth in the number of nuclear decommissioning projects worldwide has increased the need for related education and training programmes
- MS have requested that the IAEA develop training materials on specific aspects of decommissioning of facilities
Background (2/3)

- **Self-directed learning courses** on:
  - Preparation for Decommissioning
  - Decommissioning Implementation

are developed by *Decommissioning and Environmental Remediation Section of Nuclear Energy Department* and are available in Cyber Learning Platform for Network Education and Training (CLP4NET) of IAEA

- 4 modules per course
- duration: 1 h per module
- languages: English and Japanese
- target audience: young professionals or new entrants to the area

http://clp4net.iaea.org/
Background (3/3)

• The Project on Development of *Training Materials for Safe Decommissioning*
  ✓ funded by extra budgetary contribution from Nuclear Regulation Authority of Japan
  ✓ implemented by *Decommissioning and Remediation Unit of Division of Radiation, Transport and Waste Safety*

• The objectives of this project are:
  ✓ to *revise the Basic Training Course on Safe Decommissioning* of Facilities
  ✓ to *develop* certain *Specialized Training Modules* on:
    ▪ *Regulatory Control of Decommissioning of Facilities*
    ▪ *Characterization to Support Decommissioning*
    ▪ *Safety Assessment for the Decommissioning of Facilities*
    ▪ *Decommissioning Planning and Project Management*
Training Modules: Objective

- to provide training material to support the needs of national organizations engaged with the planning, implementation or regulatory supervision of decommissioning of facilities
  - through the IAEA’s Technical Cooperation Programme for national or regional training courses
  - made available to MS for their own use if qualified personnel are available to present them
The Training Modules apply to all types of facilities that possess or use radioactive material such as:

- nuclear power plants
- research reactors
- other NFC facilities
- predisposal waste management facilities
- relevant medical facilities, industrial facilities, and research and development facilities
- facilities from former military or defence programmes that have been transferred permanently to and managed within exclusively civilian programmes
The Training Modules *do not*: 

- ✓ apply to radioactive waste disposal facilities
  - however it applies to above ground supporting facilities located at disposal sites for radioactive waste, which will ultimately require decommissioning

- ✓ apply to uranium production facilities or facilities where arisings of Naturally Occurring Radioactive Material residues are managed

- ✓ address either nuclear security or nuclear safeguards

- ✓ address restoration of sites
  - consider site end state only to the point at which the facility or site has been released from regulatory control

- ✓ consider legal aspects of decommissioning
Training Modules: Target Audience

• The Training Modules are targeted at staff of regulatory bodies, operating organizations (licensees), their TSOs and other interested parties in MS that are involved in the decommissioning or in the planning to decommission facilities

• Participants should have basic knowledge in the fundamentals of radiation protection, nuclear and industrial safety

• For the most part, it is assumed that course participants would come from a scientific, engineering or technical background.
Typical Training Programme

• These training materials *provide for application of the IAEA safety standards and safety publications* relevant to decommissioning of facilities

• The training package comprises of:
  
  ✓ lectures
  ✓ handbook
  ✓ practical exercises
  ✓ training effectiveness evaluation quiz

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome Opening remarks Introduction of all participants</td>
<td>Discussion on previous day’s lectures and TEE results</td>
<td>Discussion on previous day’s lectures and TEE results</td>
<td>Discussion on previous day’s lectures and TEE results</td>
<td>Discussion on previous day’s lectures and TEE results</td>
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<tr>
<td>Lectures</td>
<td>Lectures</td>
<td>Lectures</td>
<td>Lectures</td>
<td>Sum-up of PE results in the groups and preparation of group presentations</td>
</tr>
<tr>
<td>Training Effectiveness Evaluation (TEE)</td>
<td>TEE</td>
<td>TEE</td>
<td>TEE</td>
<td>Conclusions and closing remarks</td>
</tr>
<tr>
<td>Practical Exercise (PE)</td>
<td>Practical Exercise</td>
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<td></td>
</tr>
</tbody>
</table>

*TEE* denotes Training Effectiveness Evaluation.
Content of Training Packages (1/4)

• The set of lectures are organized in a way to ensure the involvement of attendees in the lecturing process, and, inter alia, incorporates a range of examples of actual practice from MS that:
  ✓ demonstrate the application of different aspects of decommissioning in different national contexts and provide attendees with a diverse view on how the safety requirements can be met
  ✓ share the lessons learned on potential safety issues in different phases of decommissioning and how to be prepared to address them
• Speaker notes that are embedded in the presentations provide extensive explanatory information and background/reference material for a lecturer.
Handbook / lecture notes consists of narrative discussions on the lecture topic and include detailed information of the lecture subject

✓ it is provided to trainees prior to the start of training course, so they have an opportunity to get familiarized with scope of training course
Content of Training Packages (3/4)

- The training programme envisages the evaluation of trainee’s comprehension of the presented material at the end of each day.
- Daily morning discussions are a good opportunity:
  - to raise or clarify issues from the previous day lectures
  - to discuss the results of training effectiveness evaluation
- The results of the training effectiveness evaluation will also provide feedback to the IAEA on the quality of the training material.
Content of Training Packages (4/4)

• The practical exercises (8–10h) provide trainees the opportunity to apply the contents of the lectures to a real example by performing specific tasks
  ✓ the case studies include sufficient guiding materials for trainees, such as drawings/plans/sketches, description of facility, realistic radiological data, a list of questions, etc.
  ✓ at the end of training the groups will sum-up the results of practical exercises and prepare group presentations, and it will culminate in a friendly competition.
Status of Project Activities (1/3)

• The revision of Basic Training Course on Safe Decommissioning of Facilities has been completed
  ✓ the activities were implemented by international experts from Canada, Denmark, Germany, Italy, Japan, UK, Ukraine and USA
  ✓ training materials were field-tested at events in Lisbon, Portugal (30 July - 3 August 2018) and in Athens, Greece (20 – 24 May 2019) with participation of 36 professionals
Status of Project Activities (2/3)

- The development of the Specialized Training Module on Regulatory Control of Decommissioning of Facilities has been completed
  - developed by international experts from Canada, Germany, UK, USA and Sweden
  - the field-test of training materials was done during the training event held in Lithuania (06 – 10 May 2019) with participation of 26 professionals from Bulgaria, Lithuania and Ukraine
Status of Project Activities (3/3)

• The activities on remaining Specialized Training Modules, namely:
  ✓ Characterization to Support Decommissioning
  ✓ Safety Assessment for the Decommissioning of Facilities
  ✓ Decommissioning Planning and Project Management

*will be completed in 2020*
Additional Training Modules

• The development of following specialized training modules is under consideration:
  ✓ Decommissioning Waste and Material Management
  ✓ Final Survey and Release of Sites

• This activity is *out of the scope of ongoing project and is subject to availability of funding.*
Thank you!