

Decommissioning of Nuclear Facilities - Conclusions and Recommendations -



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- IAEA -

**R²D²Project: Workshop on 'Cost Estimates'
Manila; 30 March-03 April 2008**

Comments on the workshop (I)

- The topic was very good and the workshop just in time.
- Costing is an important planning element in decommissioning.
- The preparatory mission before the workshop to prepare the exercise was very valuable.
- Presentations on mistakes that occurred in cost calculation would have been appreciated. It has to be acknowledged that a presentation on lessons learned (ASTRA) was included.

Comments on the workshop (II)

- A cost comparison for the decommissioning of research reactors was found to be useful.
- Some references were found to be very useful:
 - A proposed standardised list of items for costing purposes ...
<http://www.nea.fr/html/rwm/reports/1999/costlist.pdf>
 - Decommissioning of RR: Evolution, state of the art, open issues
http://www-pub.iaea.org/MTCD/publications/PDF/TRS446_web.pdf
 - Financial aspects of decommissioning
http://www-pub.iaea.org/MTCD/publications/PDF/te_1476_web.pdf
 - Decommissioning funding: Ethics, implementation, uncertainties
<http://www.nea.fr/html/rwm/reports/2006/nea5996-decommissioning.pdf>
 - Decommissioning NPPs: Policies, strategies and costs
<http://213.253.134.43/oecd/pdfs/browseit/6603221E.PDF>

Comments on the workshop (III)

- Be very cautious in generic / overall cost comparisons / 'black box' approaches.
- To improve quality of future exercises a pre-workshop mission should be carried out.
- The information provided was very useful.
- The workshop was very suitable and very well organised.

Practical exercise (I)

- The practical exercise was excellent.
- More time should have been allocated to the exercise.
- It was an eye opener for the planning needs, the costing details and the integration of information.
- It was great to work with the simplified version of the costing methodology prepared for the workshop, which is based on the “Proposed

Practical exercise (II)

Standardised List of Items for Costing Purposes” (IAEA, OECD, EC, 1999).

- The simplified methodology was derived from the OMEGA costing code.
- Although the exercise was distributed before the workshop it was believed that it should have been introduced at the very beginning of the workshop.
- Finishing the exercise needed evening work.

Recommendations to participating Countries

- Work on the update of the national legal framework to bring it into compliance with international recommendations and the preparation of decommissioning plans for the respective nuclear facilities.
- Use the momentum of the costing workshop to prepare cost calculations for national facilities in parallel with the decommissioning plans.
- Report on progress of these three activities at the next workshop.

Suggestions to the IAEA

- The duration of workshops should be extended to more than 5 days depending on the needs and complexity of the subject to be covered.
- Future exercises should be prepared in a preparatory mission before the workshop.
- The exercise should be introduced very early.
- The lump sum calculations should be checked as the costs of the cheapest available airline tickets are not covered, e.g. in Libya.
- Invitations were mailed at least 6 weeks in advance. This was still found to be too late.



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How to proceed (I)

Topics for the next workshop: Technologies

Karlsruhe, Germany: 06-10 July 2009

- **Clearance:** How to ensure clearance levels / Techniques for achieving clearance levels, e.g. decontamination / Minimisation of secondary waste / Minimisation of RW
- **Dismantling techniques:** Concrete cutting / cutting of pipes, tanks, large objects, hot cells, diamond drilling, and measures to prevent spread of contamination
- Draining and cleaning of (primary) circuit



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How to proceed (II)

- **Management** of waste (conditioning, storage, disposal , incl. low level liquid waste / resins / filters / graphite)
- **Transfer of spent fuel** and hot equipment from the core to a dedicated location / minimisation (Heidelberg: Core removal)
- **Traceability / records + documentation**
- **Entrance / exit procedures** for the controlled area (people and materials)

How to proceed (III)

Future workshops

- End of 2009 (October?): Safety assessment
 - Outline: Presentations on how to carry out SA and practical exercises on three cases e.g. of PRR-1.
- Early 2010: Decommissioning Plan
 - Potential volunteers for providing decommissioning plans: Indonesia, Philippines, Egypt (Official IAEA request), China? (Vietnam end 2010?)