Agenda item 2.6

DS452 Draft Safety Guide on Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities

- for approval for submission to the CSS -

Vladan Ljubenov, WES - NSRW
Content of the presentation

• Background – drafting process
• Finalized draft DS452 – status, structure
• Comments by the Member States
• Comments by the SSCs – second review
• Summary of the comments
• Discussions in the WASSC and NSGC meetings
• Decision expected
  • Approval for submission to the CSS
Background

- In 2007 the CSS approved the DPPs for DS402 (NPP&RR), DS403 (MIRF) and DS404 (NFCF) as updates of the three facility specific decommissioning Safety Guides published in 1999 and 2001.
- In 2008-2010 the Secretariat held several consultancies to revise these documents.
- DS402 and DS404 were sent out separately for comments from WASSC and NUSSC.
- In June 2010, based on feedback from WASSC and NUSSC, a decision was made to retain DS403 (MIR facilities) as a separate guide, and to combine DS402 (NPP&RR) and DS404 (NFCF) into a single Safety Guide, DS452.
- A DPP for DS452 was approved at the CSS29 meeting, May 2011 (together with the DPP for DS450 – revision of SR WS-R-5).
- From June 2011 to June 2013 focus was on DS450.
Activities on DS452

- TM 30 January – 1 February 2012 (focus on DS450)
- 5 CS meetings on DS452
  - 27-31 August 2012
  - 2-6 September 2013
  - 31 March – 4 April 2014
  - 14-18 July 2014
  - 4-7 August 2014
- Progress reports – WASSC34 (Nov 2012), WASSC37 (Jun 2014)
- WASSC38, NUSSC 38, NSGC6 – approval for submission to the MS for comments
- WASSC40 and NSGC8 – approval / clearance for submission to the CSS
Status of DS452

• Revision of two existing Safety Guides (WS-G-2.1 and WS-G-2.4) and their consolidation into a single guide
• STEP 11 - Second review of the draft publication by the review Committees
• Committees involved: WASSC, NUSSC, NSGC
• Since the last report to the WASSC38 (Nov 2014):
  • MS comments (Jan-Apr 2015)
  • Internal review – Coordination Committee (August 2015)
  • Second review by the SSCs (October 2015)
• Decision expected: Approval for submission to the CSS
Challenges with DS452

- Scope - accommodate widely varying types of facilities, site configuration, safety, technological and radiological conditions:
  - Fuel cycle facilities, research reactors, power reactors
  - Single facilities vs. large scale multi-facility sites
  - Different decommissioning strategies
  - Criticality concerns for some fuel cycle facilities
  - Type and extent of contamination in and around facilities
    - Activation products, alpha contamination, airborne or ground water contamination
  - Aspects of decommissioning after accident
Structure of DS452

1. Introduction
2. Protection of People and Protection of the Environment
3. Responsibilities Associated with Decommissioning
4. Management of Decommissioning
5. Decommissioning Strategy
6. Financing of Decommissioning
7. Planning of Decommissioning during the Lifetime of the Installation
8. Conduct of Decommissioning Actions
9. Completion of Decommissioning Actions and Termination of Authorization for Decommissioning
Structure of the draft

**Appendix:** Considerations for Safety Assessment for Decommissioning of Facilities

**Annex I:** Suggested Structure of the Content of a Final Decommissioning Plan and Supporting Documents

**Annex II:** Suggested Structure of the Content of the Final Decommissioning Report

**Annex III:** Suggested Structure of the Content of the Final Radiological Survey Report

**Annex IV:** Suggested Structure of Decommissioning Related Documents

**Annex V:** Relevant Literature
## Comments by the Member States

### Nature of the MS comments

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Comments by the Member States

Resolution of the MS comments

- 439 comments from 14 MS and international organizations
- Accepted: 301 (68.56%)
- Accepted with modification: 44 (10.02%)
- Rejected: 94 (21.41%)
## MS comments’ disposition

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<td><strong>301</strong></td>
<td><strong>44</strong></td>
<td><strong>94</strong></td>
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**Total (%)**: 100% 68.56% 10.02% 21.41%
### Comments by the SSCs – second review

#### Nature of the SSCs’ comments

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Comments by the SSCs – second review

Resolution of the SSCs’ comments

- 79 comments from 6 MS and international organizations
  - Including 2 comments from the NSGC (France)

- Accepted: 56 (70.89%)
- Accepted with modification: 14 (17.72%)
- Rejected: 9 (11.39%)
## Disposition of the SSCs’ comments

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<tr>
<th>Country / Organization</th>
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<td><strong>Total (%)</strong></td>
<td><strong>100%</strong></td>
<td><strong>70.89%</strong></td>
<td><strong>17.72%</strong></td>
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</tbody>
</table>
Comments’ disposition

- The revised draft and the resolution tables available on the WASSC web page “Drafts for comment\DS452”
- Large majority of the comments were clear and well justified, based on the practices in the Member States
- The resolution of most of the comments was easy and straightforward

- MS: Editorial + Clarification + Terminology = 276/439 (63%)
- SSCs: Editorial + Clarification + Terminology = 51/79 (75%)
Summary of the comments

- Most of the general comments were very positive
- Specific comments helped to improve the clarity, to eliminate duplications, and to ensure consistency with the other Standards
- Several general comments pointed out redundancies and duplications - many duplications have been eliminated by addressing specific comments (parts of the text deleted or moved to other sections), some other have been resolved during the in-house review
- Several comments on lack of balance, to detailed guidance in some parts - consequence of the requests to include examples
Summary of the comments

- Improvements were made in the following parts:
  - Scope (consistency with DS403)
  - Interfaces between decommissioning and off-site remediation in case of post-accident situation
  - Factors influencing selection of a strategy
  - Regulatory oversight of decommissioning actions
  - Release of sites with restrictions
  - Referencing the specific requirements of the GSR Part 6 improved
  - Former Annex on safety assessment considerations is now an Appendix

- Japan (SSCs): Consolidation with DS403 should be considered for next time revision. There are so many similar paragraphs in DS452 and DS403. Any aspects that depend on specific facilities may be described in appendices if necessary.
Discussion in WASSC

- Germany: justification for removal of the examples of multi-phase approach (para 7.29 and 7.39 in the version submitted to the MS)?
  - Examples removed during the in-house review after addressing MS comments
  - Concerns expressed about the strong promotion of the multi-phase approach in the Safety Standards
  - Examples not fully in line with the requirements and with the guidance
  - Consensus was not achieved about their adequacy of the examples
  - Justification provided by the Secretariat and accepted by Germany

- Preferred option/strategy when developing initial decommissioning plan
- National policy and strategy on decommissioning vs. national policy and strategy on radioactive waste management
- Consideration of an accidental aircraft crash within the safety assessment for decommissioning
Aircraft crash considerations

• Issue relevant during operation of facilities:
  • Ensure cooling of the reactor is provided after the impact
  • Ensure containment remains intact
  • Spent fuel cooling is ensured
  • Integrity of the spent fuel pool is preserved

• During decommissioning:
  • For reactors: fuel removed
  • For NFC facilities: process materials removed, only remainings in the systems; for waste storage facilities: waste moved to a disposal

• Relevance of aircraft crash for decommissioning:
  • Not included in the WS-G-2.1 and WS-G-2.4
  • Included in the GSR Part 4 on SA for Facilities and Activities an external event to be considered
  • Included in WS-G-5.2
  • Included in SRS 77 (2013)
  • Included in the WENRA Safety Reference Levels
Aircraft crash considerations

- **MS Practices**
  - Consideration required in some MS
  - For RRs: VVR-S Magurele (Romania), MOATA ANSTO (Australia)
    - Aircraft destroys the reactor building, aircraft fuel ignites thermal column graphite, conservative assessment of doses to the public – negligible!
  - NRC 2002 - for existing NPPs no additional protection against crash (large steel structure around the reactor), but mitigation of consequences (large fire, large explosion, releases of radioactivity)
- **DS452**
  - Version sent to the MS did not include aircraft crash
  - MS comments: Germany proposed to add consideration of an aircraft crash in the decommissioning SA – comment accepted
  - Second review by the SSCs: ENISS proposed to exclude aircraft crash
  - “A protection against aircraft crash for a decommissioning project is simply impossible and on the other hand unnecessary” - comment accepted
  - Now - strong objection by Germany
Aircraft crash considerations

- Related text is in the Appendix, it is part of the Standard
- Usual approach by the Secretariat when consensus does not exist:
  - The position of the Secretariat is included - in this case the Secretariat does not have a strong position, as DS452 covers wide range of facilities and site configurations
  - Alternative approach – avoid to mention (no recommendation provided) in case the problematic text is an example or an item in a list, which is not exhaustive – **basis for the decision to accept ENISS comment**!

- Proposal by the Secretariat
  - Go back to the version after the MS comments - **reject the ENISS comment** and keep the aircraft crash as one of the external events to be considered in the decommissioning safety assessment
Appendix, paragraph 7:

- “The likelihood and consequences of external events should be assessed, taking into account the decommissioning strategy and the site characteristics (e.g., seismic hazards, flooding, extreme temperatures, influence from or dependence on any neighbouring facilities, and accidental aircraft crash) …”

- This paragraph does not recommend protection against aircraft crash, it just recommends consideration of such an external event. Such consideration in the initial assessment (hazard screening) may show that for particular facility an aircraft crash is not relevant for further detailed assessment.
Discussion in NSGC

- Security aspects as one of the main factors to be considered when selecting a decommissioning strategy
- Improved wording in the paragraph 1.23 (Scope) where security aspects are mentioned - add “aspects related to physical protection of sensitive targets”
- Up to date references to the IAEA Nuclear Security Series publications

- After the discussion, 2 initially rejected comments have been accepted
Decision expected

- NUSSC approval for submission to the CSS
- Approval by the WASSC (leading Committee) and clearance by the NSGC obtained in early November 2015
Thank you for your attention!