42nd Meeting of the Waste Safety Standards Committee

28 November – 1 December 2016

Agenda item W 4.3

Ovidiu Coman
External Events Safety Section / NSNI
External Events Excluding Earthquakes in the Design of Nuclear Installation

• The document (NS-G-1.5) was first published in 2003

• The current revision (DS 498) was initiated to
  – Ensure consistency with applicable requirements for site evaluation and design of nuclear installations (SSR-1/DS498, SSR-2/1, SS-R-3 and SSR-4/DS478)
  – Ensure coherency and consistency with the other relevant IAEA Safety Standards (e.g. SF-1 and GSRs),
  – Incorporate the lessons learned and address challenges highlighted IAEA Report on Fukushima-Daiichi NPP Accident.
Overview of the Document

- The scope of the safety guide will be extended to all nuclear installations.
- This safety guide considers design protection measures of nuclear installations against external hazards covered by the existing IAEA Safety Standards.

- The new information in DS478 includes:
  - Will address hazards induced Common Cause Failures.
  - Will address design basis for external hazards including combination of hazards.
  - DEC against external hazards (when applicable).
  - Recommendations for achieving adequate safety margins to avoid cliff edge effects consistent with applicable safety requirements.

- Other Changes:
  - The terminology will be made consistent with the new definitions in the safety requirements and the safety glossary.
  - References will be updated.
Fukushima Implications

- Importance of adequate design basis
- Appropriate considerations of uncertainties
- Common-cause effects of external events can compromise several layers of defense in depth at the same time
- Combined effects of natural events need to be considered
NUSSC Member Comments: Summary

- Thirty-nine (39) comments from EC-JRC, Japan, Germany, USA, France, Russia Federation, Pakistan and Czech Republic.

- All comments have been addressed and resolutions published on NUSSC/WASS web page:
  - 21 accepted or accepted with modifications
  - Rejected 18 (reference to out of scope elements: e.g. Beyond Design Basis, Site Protection, Safety Assessment)
## NUSSC Member Comments: Example of Resolutions

<table>
<thead>
<tr>
<th>Comment No.</th>
<th>Para/Line No.</th>
<th>Proposed new text</th>
<th>Reason</th>
<th>Accepted</th>
<th>Accepted, but modified as follows</th>
<th>Rejected</th>
<th>Reason for modification/rejection</th>
</tr>
</thead>
</table>
| 1.          | p.3, section 7| Insert additional bullets:  
- Landslides and avalanches  
- Sandstorms and dust storms | These are potentially hazardous phenomena that should also be included in DS498 (e.g., TECDOC-1341) | x        | Landslides and avalanches are dealing with site protection – out of scope (covered by SSG-18 and NS-G-3.6). Sand storms and dust storms are included in “Other Meteorological Events” (Same in SSG-18) | x        |                                  |
| General     |               | The document should indicate that this safety guide is applicable to all phases of facilities lifecycle, from licensing, commissioning, to operation, through decommissioning of facilities. | Clarity:  
It is unclear if the guidance is applicable all phases of facilities lifecycle. | x        | This document is applicable for Design Phase only as stated in Objective and Scope. Operation and Decommissioning are out of scope. | x        |                                  |
| General     |               | Operational software design and cyberattack protection. | It is unclear if operational software design and its protection from external event such as cyberattack is considered in this guide. | x        | This safety guide is limited to external hazards. Cyberattack are malicious acts and are out of scope. | x        |                                  |
Requested Action

Approval by WASSC to send the DPP to CSS for approval.
Thank you!