3rd Meeting of EPReSC
42nd Meeting of WASSC

30 November 2016

Agenda item EW 2.4
DS449 Step 7b - Draft Safety Guide on
“Format and Content of the Safety Analysis Report for Nuclear Power Plants”
- For Approval for submission to Member States

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Outline

• Background information
• Safety Guide Structure/Overview
• Fukushima implications
• Safety Guide status
• Summary of comments and resolutions
• Safety Guide enhancement
• Conclusions
• Requested action
Background information 1/2

Requirements applicable to GS-G-4.1 (published 2004)

- GS-R-1 (Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety, 2000)
- NS-R-1 (Safety of NPPs: Design, 2000)
- NS-R-2 (Safety of NPPs: Operation, 2000) and
- NS-R-3 (Site Evaluation for Nuclear Installations, 2003)

New framework of Safety Requirements (2009-2016)

- General Safety Requirements (all them applicable)
- NS-R-1, NS-R-2 and NS-R-3 superseded in 2016, respectively, by SSR-2/1 Rev.1 (Safety of NPPs: Design), SSR-2/2 Rev.1 (Safety of NPPs: Commissioning and Operation) and NS-R-3 Rev. 1 (same title)
Background information 2/2

Also taken into account

– Feedback experience and lessons from the Fukushima Daiichi NPP accident
– Feedback from the use of GS-G-4.1
– Practices in MSs regarding the Safety Analysis Report for current reactor designs → New structure and content
– Consistency with other relevant Safety Guides
– How to revise and to keep updated the SAR, reflecting licensing basis and status of the NPP
Safety Guide Structure/Overview

Section 1: INTRODUCTION
Section 2: GENERAL CONSIDERATIONS
Section 3: CONTENT AND STRUCTURE OF INDIVIDUAL CHAPTERS OF THE SAFETY ANALYSIS REPORT

• Chapter 1. Introduction and general considerations;
• Chapter 2. Site characteristics;
• Chapter 3. Safety objectives and design rules of structures, systems and components;
• Chapter 4. Reactor;
• Chapter 5. Reactor coolant system and associated systems;
• Chapter 6. Engineered safety features;
• Chapter 7. Instrumentation and control;
• Chapter 8. Electric power;
• Chapter 9. Auxiliary systems and civil structures;
• Chapter 10. Steam and power conversion systems;
• Chapter 11. Radioactive waste management;
• Chapter 12. Radiation protection;
• Chapter 13. Conduct of operations;
• Chapter 14. Plant construction and commissioning;
• Chapter 15. Safety analysis;
• Chapter 16. Operational limits and conditions for safe operation;
• Chapter 17. Management systems;
• Chapter 18. Human factors engineering;
• Chapter 19. Emergency preparedness;
• Chapter 20. Environmental aspects;
• Chapter 21. Decommissioning and end of life aspects.

Appendix I: DEVELOPMENT OF THE SAFETY ANALYSIS REPORT IN THE COURSE OF THE LICENSING STAGES
Appendix II: UNIFIED DESCRIPTION OF THE DESIGN OF PLANT STRUCTURES, SYSTEMS AND COMPONENTS
ANNEX - TYPICAL TABLE OF CONTENT OF A SAFETY ANALYSIS REPORT
Fukushima Implications

Feedback experience and lessons from the Fukushima Daiichi NPP accident covered by Safety Requirements

• Guidance and recommendations are provided in specific Safety Guides
  – Design robustness against extreme external hazards
  – Independence of safety systems /safety features for DEC
  – Safety margins for internal or external hazards
  – Identification of Design Extension Conditions
  – Identification of event sequences and accident scenarios to be ‘practically eliminated’
  – Safety analysis for DEC and to support ‘practical elimination’
Safety Guide status

• Draft DPP
  – Approved by NUSSC/RASSC/WASSC in June 2015
  – Approved by the CSS in November 2015 (Step 4)

• Preparation of the Draft Safety Guide
  – **Step 5**: Four Consultancy Meetings. External contributions mainly from Canada, Czech Republic, France, Germany, Hungary, Japan, Russia and USA
  – **Step 6**: Internal review performed in July-September
  – **Step 7**: Draft submitted to NUSSC, RASSC, WASSC, EPReSC and NSGC the 20th of September
    • Comments received. Result from resolutions incorporated
Comments/Resolutions summary

- **325 comments received:** Germany/RASSC (13), Japan (49), Czech Republic (2), Finland (33), South Africa (51), Canada (24), USA (3), Korea (35), Egypt (7), Pakistan (15), Brazil (3), France/NSGC (4), Germany/NUSSC (55). Russia (10). EC-JRC (17), ENISS (4)
  - Editorials and typographic: ~80 (most accepted)
  - Wording enhancement: ~245 (~160 accepted)
- All comments addressed, justifying rejected ones
- Resolutions to comments posted 15 November
- There are no unresolved comments/issues
Safety Guide Enhancement

Changes already incorporated to DS449

• Enhancement of a good number of paragraphs
  – Guidance completion and wording correctness
  – Further consideration of current practices in MSs
  – Further adaptation of Chapter 17 to GSR Part 2

• Relevant update of the Annex
Conclusions

- **DS449** takes into account, mainly
  - The new framework of Safety Requirements
  - Feedback and lessons from Fukushima Daiichi NPP accident
  - Current practices in MSs
  - Consistency among the Safety Standards

- 325 comments received from NUSSC, RASSC, WASSC, EPReSC and NSGC
  - ~230 accepted: wording enhancement of DS449

- Already approved by NSGC and RASSC
Requested Action

Approval by EPReSC & WASSC for soliciting comments by Member States (Step 8) would be appreciated
Thank you!