Design of Reactor Containment Systems for Nuclear Power Plant (DS482)

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Background Information

• The document (NS-G 1.10) was published in 2004

• The current revision (DS 482) was initiated to provide design recommendations and guidance to fulfil SSR-2/1 requirements and the latest IAEA requirements (SSR-2/1, Rev.1):
  • Extension of the plant design envelope (either DBAs and design extensions conditions w/wo core melting)
  • Prevention and minimization of radiological releases in accident conditions
  • Avoiding early radioactive releases or radioactive releases large enough to require long term protective measures and actions
  • Practical implementation of defence in depth strategy
Fukushima Implications

• Fukushima IAEA Draft Action Plan
  • IAEA Secretariat is requested to review and revise as necessary the relevant Safety Standards in a prioritised sequence
  • Revision of Safety Guide NS-G-1.10 was considered of high priority once SSR-2/1 requirements updated

• 2015 Vienna Declaration

• CNS 6th Review meeting (Recommended action n0 35/6)
Status of the Document (1/2)

- Review of Safety Guide NS-G-1.10 and decision to revise recommendations DS482
- Draft DPP approved at 36th NUSSC and NSCG meetings (2013/11)
- Draft DPP approved at 35th CSS meeting (2014/04)
- Internal Review of draft DS482 by Coordination Committee (2016/04)
- Approved by NUSSC and NSGC committees for submission to Member States (June 2016)
Overview of the Document (1/4)

• The scope of remains essentially unchanged

• Section 3: Design Basis of Structures, Systems and Components provides more detailed
  • Guidance to identify additional needs in the event of DECs
  • Recommendations with regard to protection of systems against the effects of hazards and required operability
  • Recommendations to achieve required reliability
  • Guidance for independence between systems
  • Guidance for safety classification
Overview of the Document (2/4)

- Section 4: Design of Containment Structure and Associated Systems
  - Recommendations for instrumentation is more detailed and the former Appendix of NS-G-1.10 is no longer useful

- Annex 1: Examples of Containment Systems
- Annex 2: Illustrations of Categories of Isolation Features
  - Deleted: Obsolescence or schematic information not always appropriate
Overview of the Document (3/4)

• Annex 3: Severe Accident Phenomena
  • Content merged within the body of the text

• Appendix 1: Plants Designed with Earlier Standards
  • CNS 6th Review meeting Report/Article 2 of Vienna Declaration
  • General guidance to conduct an evaluation of the existing capabilities of the containment structure and systems to perform their intended function under conditions not postulated in the licensing basis
Thank you!