International Conference on Topical Issues in Nuclear Installation Safety

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Defence in Depth: Advances and Challenges for Nuclear Installation Safety

Topical Session 1 Report
Topical Session Number 1

List of Presentations

1. Japan, H. Yamagata, *The Defence in Depth Concept Applied to the New Regulatory Requirements in Japan*

2. Belgium, G.L. Fiorini, et al. *The Design Options and Provision File and the Role of Defence in Depth within the Prelicensing of the MYRRHA Project*

3. China, Y. Wang, et al. *Reinforcement of Defence in Depth: Modification Practice after the Fukushima Nuclear Accident*

4. IAEA, B. Poulat *Successive Evolutions of the Defence in Depth Concept*


• Conclusions and Recommendations

• **Important of Defence in Depth**
  • The concept is and should remain the basic strategy for both existing and new reactors
  • Robustness of DID as a concept should be further enhanced

• **Consideration to be given to development of more specific IAEA guidance documents on**
  • Comprehensiveness of DID provisions
  • Way of addressing in SAR the adequacy of implementation of DID for each level by means as appropriate using deterministic and probabilistic approaches
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• Conclusions and Recommendations
  • **Areas to be considered for international harmonization of objectives and approaches**
    • Definition of design basis hazards and design extension hazards
    • Consistency of large release frequency $10^{-6}/y$ for new reactors with the requirement on practical elimination of large releases
    • Ways of implementation of DID for innovative reactors.
    • Understanding the different levels of defence established in IAEA SSR-2/1 and WENRA guidance documents and the implications
  • **Strengthening of IAEA services relevant for DID**
    • Promoting wider use of the siting and design safety review service
    • Include in the OSART a module on processes for design re-evaluation of the NPP
Conclusions and Recommendations

Clarification of specific issues in connection with strengthening DID
  - Practical elimination of fault sequence leading to large releases
  - Independence of individual levels of DID and its benefits for safety - avoiding conditional failure between levels
  - Demonstration of adequate reliability of individual levels of DID – deterministic and probabilistic approaches