

Nuclear Safety and NEA Perspectives post-Fukushima

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Presentation Outline

- NEA Activities to Enhance Safety
- NEA Summary Report on Activities after the Fukushima Daiichi NPP Accident
- Nuclear Safety post-Fukushima
- Conclusions

NEA Activities to Enhance Safety post-Fukushima (1/2)

- **Committee on Nuclear Regulatory Activities (CNRA)**
 - ✓ Accident management
 - ✓ Defence-in-depth
 - ✓ Precursor events
 - ✓ Site selection and preparation
 - ✓ Crisis communications
- **Committee on the Safety of Nuclear Installations (CSNI)**
 - ✓ Filtered containment venting
 - ✓ Hydrogen generation, transport and management
 - ✓ Spent fuel pools under loss-of-coolant accident conditions
 - ✓ Metallic component margins under high seismic loads
 - ✓ Human performance under extreme conditions
 - ✓ Workshop on natural external events including earthquakes
 - ✓ Workshop on the robustness of electrical systems
 - ✓ Fast-running software tools for the estimation of fission product releases during accidents at nuclear power plants

NEA Activities to Enhance Safety post-Fukushima (2/2)

- Benchmark Study of the Accident at the Fukushima Daiichi Nuclear Power Station (**BSAF**) Project
- **Committee on Radiation Protection and Public Health (CRPPH)**
 - ✓ Criteria for international trade in food and goods
 - ✓ Policies on returning to evacuated areas, clean-up, waste management
 - ✓ Workshops on decontamination and stakeholder involvement
 - ✓ Emergency management communications and ICRP recommendations
 - ✓ Collecting information on occupational exposure management in high radiation areas and for severe accident management

NEA Summary Report on Fukushima Activities

- Prepared with input from:
 - ✓ Results of a survey of NEA members and associated countries,
 - ✓ Co-ordinated by the CNRA Senior-level Task Group on Fukushima,
 - ✓ CNRA, CSNI, CRPPH and NEA technical secretariat.
- Report is with the CNRA, the CSNI and the CRPPH for final review.
- Seeking CNRA approval in June 2013.
- To be published for public release shortly thereafter.
- To be provided to the IAEA as an input to its Fukushima report to be issued late 2014.

Nuclear Safety after Fukushima (1/4)

- **Assurance of safety**

- ✓ Regulatory authorities have provided assurance that existing plants are safe.
- ✓ Safety enhancements are being developed and implemented to respond to extreme initiating events – beyond design basis.
- ✓ Increased capabilities are being developed and implemented to provide electrical power and cooling water to prevent escalation into a severe accident.



Nuclear Safety after Fukushima (2/4)

- **Shared responsibilities**

- ✓ Primary responsibility for safety remains with the operator.
- ✓ The role of national regulators is essential in establishing and ensuring compliance with safety regulations.
- ✓ All nuclear safety professionals share the responsibility to ensure that the public and environment are protected.

- **Human and organisational factors**

- ✓ There is no room for complacency.
- ✓ Safety culture is fundamental.
- ✓ Existing concepts do not require significant changes.
- ✓ Existing national and international requirements provide a framework that, if effectively implemented, could have prevented the accident.

Nuclear Safety after Fukushima (3/4)

- **Defence-in-Depth (DiD)**

(NEA workshop held 5 June 2013).

- ✓ Fundamental concept is valid and shared.
- ✓ Prevention remains the main goal at each level, but both prevention and mitigation should be considered within all levels.
- ✓ Independence of actions and resources between DiD levels.
- ✓ DiD should be applied to both the design and siting of NPPs.

Nuclear Safety after Fukushima (4/4)

- **Crisis communication**
 - ✓ Must balance sharing timely information with reliability.
 - ✓ Information shared by one country should not be detrimental to the affected country.
- **Research and development**
 - ✓ Ongoing accident recovery will affect long-term R&D.
 - ✓ Significant information is being collected.
 - ✓ Research is ongoing to enhance methods of analysis for areas not as mature (i.e., earthquakes and tsunami hazards).
 - ✓ Benchmarking accident analysis codes building on information being collected.

Conclusions

- ✓ The safety level is sufficient, and no immediate shutdowns are required.
- ✓ An accident can never be completely ruled out.
- ✓ The robustness to face extreme situations needs to be increased.
- ✓ Operators have the prime responsibility for safety.
- ✓ The role of national regulators is essential.
- ✓ International efforts are necessary to address the lessons learnt from the accident.
- ✓ Actions plans should be implemented with priority given to installations that have the largest risk to the public, should an accident occur.
- ✓ In-depth experience feedback will be gained over the long term.
- ✓ Large societal impacts need to be taken into account.

Thank you for your attention

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