

USNRC RIC 2017

Severe Accident and Consequence Analyses Supporting Regulatory Decisions After the Fukushima Accident

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Session W18

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Outline

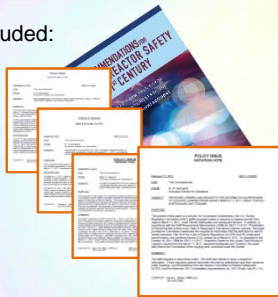
- Fukushima Recommendations
- Analyses Examples
 - Expedited Transfer of Spent Fuel from Pools to Dry Cask Storage
 - Containment Protection and Release Reduction (CPRR, Mark I/II)
 - Hydrogen Control and Mitigation

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Recommendations included:

- Evaluate possible expedited transfer of spent fuel
- Orders for Mark I/II containments and evaluate possible additional actions
- Evaluate insights related to hydrogen control and mitigation



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Evaluation of Possible Regulatory Actions

- NUREG/BR-0058
- 10 CFR 50.109 (Backfitting)
- Guidance from
 - Office of Management and Budget (OMB)
 - Government Accountability Office (GAO), and
 - Executive Orders

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Expedited Transfer COMSECY-13-0030 and NUREG-2161

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CPRR (Mark I/II) SECY-15-0085

Chronology

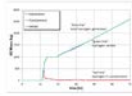
- SECY-11-0137
- SECY-12-0025
- Order EA-12-050
- SECY-12-0110
- SECY-12-0157
- Order EA-13-109
- SECY-15-0085

Figure 3-3: Uncertainty Bounds for Individual Latent Cancer Fatality Risk

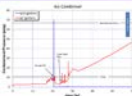
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Hydrogen Control SECY-16-0041



Mark I



Ice Condenser

	Core Cooling Functions	Venting/Not Removed for Containment Pressure Control		Other Containment Failure Modes/Con. Design Cooling	Release Reduction (P/Freq)	Hydrogen Control	
		Pre-Close Strategy	Severe Accident			Containment	Other
Mark I	EA-12-049 EA-13-103	EA-13-100 EA-12-048 EOPs, FSGs	EA-13-100 SAMGs	EA-13-100 (CFR)	NA (CFR)	10 CFR 50.44 EA-13-109 SAMGs	EA-13-109 SAMGs
Mark II	EA-12-049 EA-13-103	EA-13-100 EA-12-048 EOPs, FSGs	SAMGs	EA-13-100 (CFR)	NA (CFR)	10 CFR 50.44 EA-13-109 SAMGs	EA-13-109 SAMGs
Ice Condenser	NA	EOPs	SAMGs	SAMGs	NA (current assessment)	10 CFR 50.44 GDS-100 EA-12-049 SAMGs, FSGs	GDS-100 EA-12-049 SAMGs, FSGs
Large Dry	NA	EOPs	SAMGs	SAMGs	NA (current assessment)	10 CFR 50.44 GDS-100 EA-12-049 SAMGs, FSGs	NA (current assessment)

EA-12-049: Mitigation Strategies Order
EOP: Emergency Operating Procedures
SAMG: Severe accident management guidelines
Dashed area indicates scope of Order EA-13-100 and staff regulatory basis document for CFR rulemaking
10 CFR 50.44 defines generic and containment-specific features and analysis related to combustible gas control

Table 1, Enclosure 1, SECY-16-0041

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Summary

- NRC staff tasked to evaluate potential regulatory changes to address lessons learned from Fukushima accident
- Severe accident and consequence analyses provided key insights for evaluating safety improvements and costs/benefits of potential regulatory changes
- Findings and recommendations provided to Commission for consideration
- Regulatory actions taken (e.g., orders and rulemaking) to address some issues
- Insufficient justification to warrant additional regulatory requirements to address some issues (e.g., hydrogen control)

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