NRC Actions Related to Fukushima Lessons Learned

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Brief History

- **July 2011**
  - Issued Near-Term Task Force (NTTF) report
- **September/October 2011**
  - NTTF recommendations prioritized into three tiers
- **March 2012**
  - Issued regulatory orders and requests for information
- **July 2012**
  - Issued Tier 3 program plans (SECY-12-0095)
- **August 2012**
  - Issued implementation guidance for orders
- **November 2012**
  - Issued additional seismic/flooding guidance
  - Received licensee reports on seismic/flooding inspections

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NTTF Recommendations

Licensee Safety Enhancements

- Seismic/flooding protection
- Prolonged loss of AC power
- Containment venting
- Spent fuel pool cooling
- Severe accident procedures
- Emergency preparedness (EP)

NRC Program Enhancements

- Regulatory framework for low-probability, high consequence events
- Greater attention to defense-in-depth to cope with low probability events

Longer-Term Study

- Seismically induced fires and floods
- Hydrogen control mitigation inside buildings
- EP topics for multiunit events and prolonged SBO
- EP topics on decision making, radiation monitoring, and public education

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Categorization of NTTF Recommendations

- The Commission directed the staff to prioritize the NTTF recommendations:
  - Tier 1 - To be implemented without unnecessary delay
  - Tier 2 - Could not be initiated in the near term due to resource or critical skill set limitations
  - Tier 3 - Require further staff study to support a regulatory action

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Tier 1 Activities

- **Orders**
  - EA-12-049 – Mitigating strategies for beyond design basis events
  - EA-12-050 – Hardened vents for Mark I and II containments
  - EA-12-051 – Spent fuel pool level instrumentation
- **Request for Information**
  - Seismic and flooding walkdowns
  - Seismic and flooding reevaluations
  - Enhanced Emergency Preparedness staffing and communications
- **Rulemaking Initiation**
  - Station blackout (SBO)
  - Integration of emergency procedures

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Tier 2 Recommendations

- Spent fuel pool makeup capability – Require licensees to:
  - Provide safety-related AC electrical power for SFP makeup
  - Revise TS to require one train of onsite emergency electrical power be operable for SFP makeup and SFP instrumentation whenever irradiated fuel is in the SFP
  - Have an installed means to spray water into the SFP, including an easily accessible connection to supply the water.
- Emergency preparedness – Require licensees to:
  - Have guidance for multiunit dose assessment capability
  - Hold training and exercises for multi unit and prolonged SBO scenarios
  - Practice the identification and acquisition of offsite resources
  - Ensure that sufficient EP equipment and facilities exist to deal with multiunit and prolonged SBO scenarios
- Reevaluation of other external hazards
  - Request licensees reevaluate external hazards (other than seismic and flooding)

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Tier 3 Recommendations

2.2	Ten-year confirmation of seismic and flooding hazards
3	Enhanced capability to prevent /mitigate seismically induced fires and floods
5.2	Reliable hardened vents for other containment designs
6	Hydrogen control and mitigation inside containment or in other buildings
9.1/9.2	Emergency preparedness (EP) enhancements for prolonged SBO and multiunit events
9.3	Improve ERDS capability
10	Additional EP topics for prolonged SBO and multiunit events
11	EP topics for decision-making, radiation monitoring, and public education
12.1	Reactor Oversight Process modifications to reflect the recommended defense-in-depth framework
12.2	Staff training on severe accidents and resident inspector training on SAMGs
—	Revisit Emergency Planning Zone Size
—	Prestage potassium iodide beyond 10 miles
—	Transfer of spent fuel to dry cask storage
—	Reactor and Containment Instrumentation

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NTTF Recommendation 1

- The Task Force recommended establishing a logical, systematic, and coherent regulatory framework for adequate protection that appropriately balances defense-in-depth and risk considerations.
  - *Risk-informed defense-in-depth framework that includes extended design-basis requirements*
  - *Modify the Regulatory Analysis Guidelines to more effectively implement the risk-informed defense-in-depth philosophy*
  - *Evaluate risk insights to identify potential generic regulations or plant-specific regulatory requirements.*
- Chairman tasking to NRC staff to also consider Risk Management Task Force recommendations for power reactors (NUREG-2150)
- Paper due to Commission in February 2013

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Conclusions

- NRC is moving forward to implement safety enhancements for external events at U.S. plants
- Significant progress achieved because of open collaboration between NRC, industry, and public
  - More than 80 public meetings held in FY2012
- NRC is engaged in development of lessons learned with the international community
- NRC continues to evaluate additional lessons learned for applicability to U.S. plants and will take appropriate action as we learn more

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More Information

- Public website

  From www.nrc.gov, find link under “Spotlight” section called “Japan Nuclear Accident – NRC Actions”

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