



Status of the Lessons Learned from the Fukushima Dai-ichi Accident

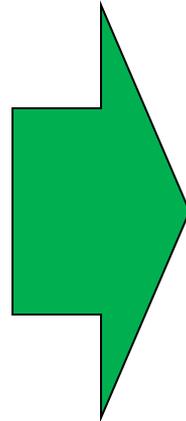
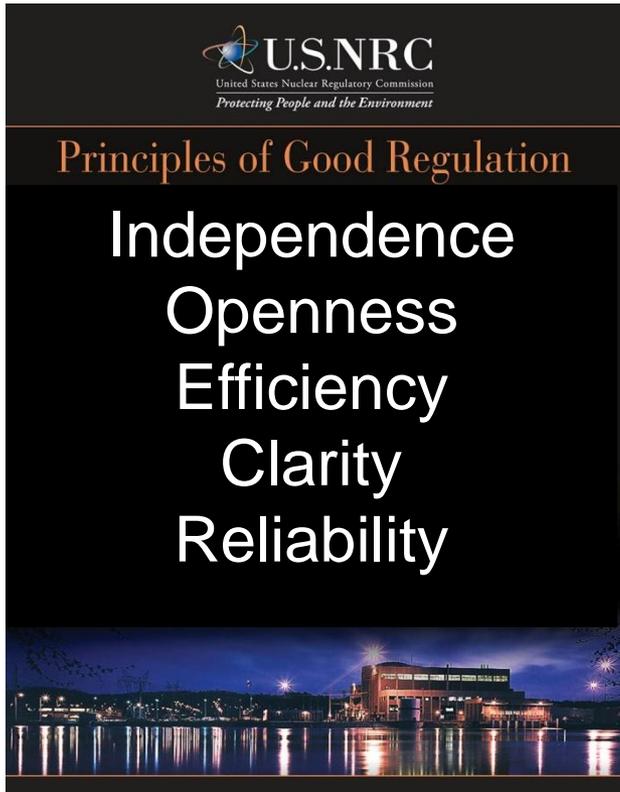
Bill Borchardt
Executive Director for Operations

April 23, 2013

Agenda

- Overview
 - Status Update
 - Orders
 - Requests for Information
 - Rulemakings
 - Tier 2 and 3
- Mike Johnson
Mike Johnson
Dave Skeen
Scott Flanders
Eric Leeds
Eric Leeds

NRC Guiding Principles



- Five Guiding Principles:
 - Do not distract from safety
 - Disciplined screening of additional issues
 - Do not displace more safety significant work
 - Do it right the first time
 - Sound basis for decisions

Safety Enhancements

- Considerable progress has been made
 - Walkdowns complete
 - FLEX equipment arriving at sites
- Substantial safety enhancements by 2016
 - Mitigation Strategies fully in place
 - SFP level instrumentation installed
 - Flooding and Seismic interim actions
 - Enhanced EP Communications and Staffing in place
- Some enhancements will extend beyond 2016
 - Final flooding and seismic safety enhancements
 - Filtration strategies implementation
 - Rulemakings implementation

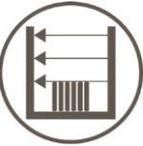
Related Efforts

- Recommendation 1
- Risk Management Regulatory Framework
- Actions from Economic Consequences SRM
- Risk Informed Prioritization (Integrated Schedules)
- Application of lessons learned to other regulated facilities

Summary of Regulatory Actions

- **Orders (issued March 2012)**
 - EA-12-049 – Mitigating strategies for beyond design basis events
 - EA-12-050 – Hardened vents for Mark I and II containments
 - To be modified to include severe accident capability by May 2013
 - EA-12-051 – Spent fuel pool water level instrumentation
- **Request for Information (issued March 2012)**
 - Seismic and flooding walkdowns
 - Seismic and flooding reevaluations
 - Emergency Preparedness staffing and communications
- **Rulemakings**
 - Station Blackout Mitigating Strategies (SBOMS)
 - Onsite Emergency Response Capabilities

Tier 1 Orders Status



- Mitigating Strategies and SFP Instruments
 - ✓ March 2012 – Issued Orders
 - ✓ August 2012 – Issued Guidance
 - ✓ October 2012 – Received Status Reports
 - ✓ February 2013 – Received Integrated Plans
 - ❑ November 2013 – Issue Safety Evaluations
 - ❑ December 2016 – Full Implementation Complete

Containment Venting System



- In accordance with March 2013 Staff Requirements Memorandum, the staff will:
 - 1) Modify March 2012 order for reliable hardened vents
 - 2) Initiate rulemaking on filtering strategies

Seismic and Flooding Walkdowns



- Licensee plant walkdowns complete (November 2012)
- Issues are being addressed through licensee Corrective Action Programs and the NRC's Reactor Oversight Process. Potential issues identified include:
 - For Flooding:
 - procedures that may not be feasible
 - temporary flood protection that may not perform as planned
 - degraded or missing protection features (e.g., seals)
 - For Seismic:
 - Minor anchorage issues
- NRC to conduct audits at some sites to gather additional information to complete assessment of the walkdowns (Summer 2013)

Flood Reevaluations



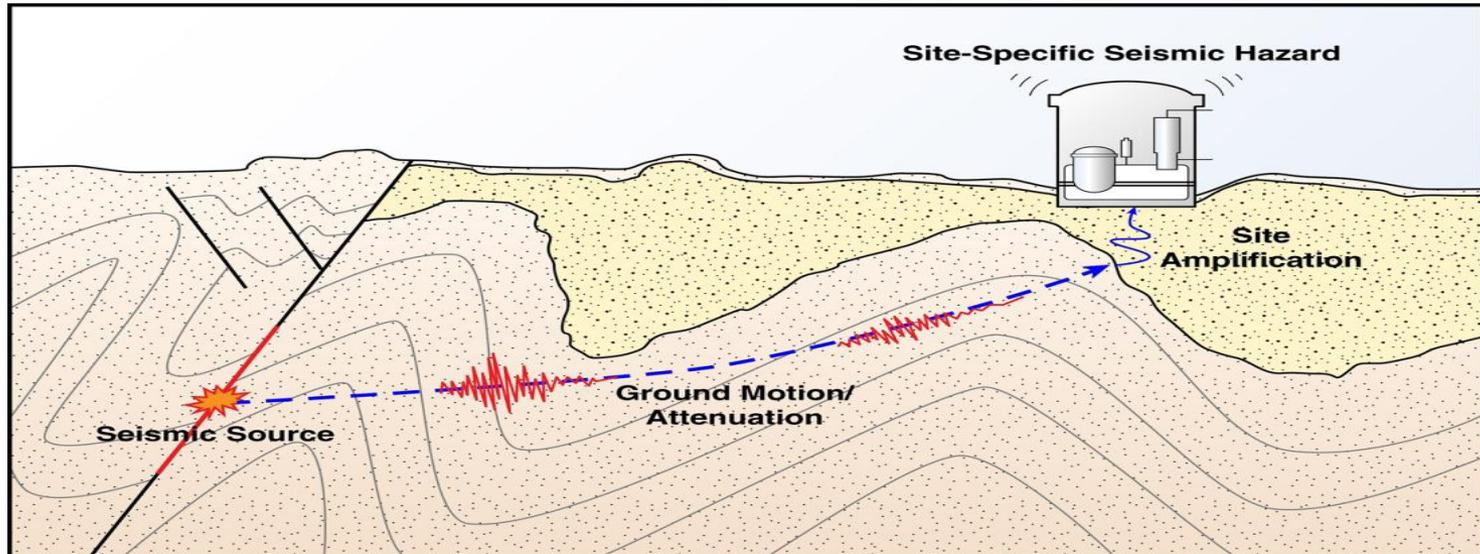
- Received the hazard evaluation submittals for Category 1 plants in March 2013
 - 6 sites requested extensions
 - 8 sites indicated interim actions
 - 10 sites indicated that they will perform an integrated assessment
- Currently evaluating extension requests and interim actions
- NRC is assessing appropriate regulatory footprint for any proposed interim actions
 - Using *Integrated Risk-Informed Decision-Making Process for Emergent Issues* (LIC-504) (ADAMS Accession No. ML100541776)
- Dam failure interim staff guidance planned for May 2013

Seismic Reevaluations



- Screening, Prioritization, and Implementation Details (SPID) Guidance endorsed - February 2013
- Industry proposed path forward – April 9, 2013
- Changes original schedule from 50.54(f) Letter
 - Submittal of complete hazard evaluation extended by 6 months for CEUS plants
 - Risk evaluations extended for CEUS plants
- Proposes interim actions that could result in plant modifications by 2016

Site-Specific Seismic Hazard Development

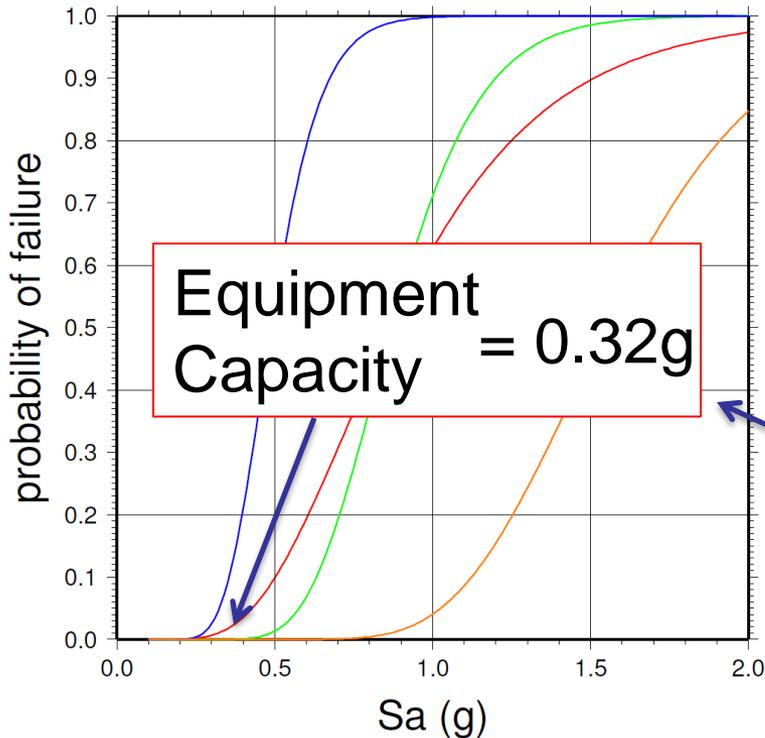
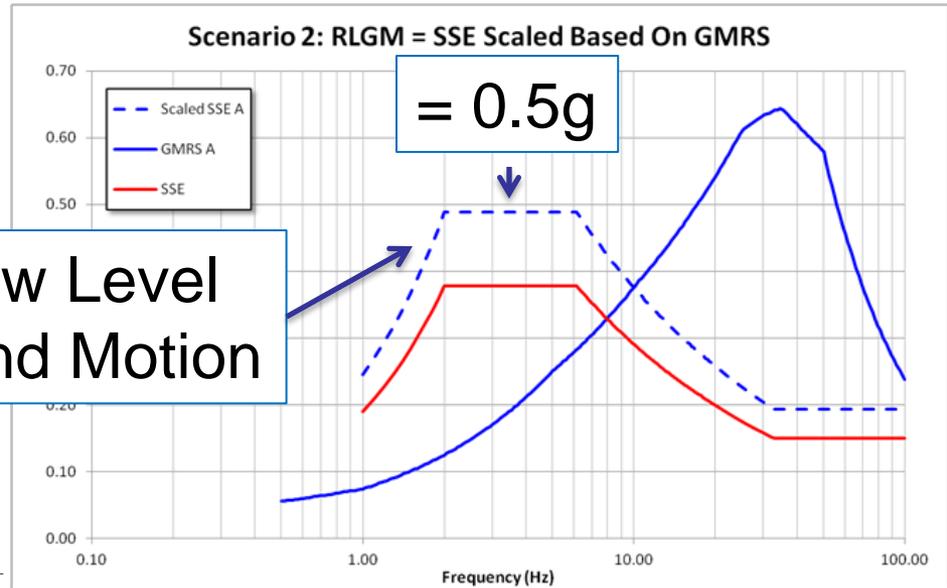


- Staff has endorsed EPRI (2004, 2006) CEUS GMM and specified its use in 50.54(f) letter
- Industry proposes update of EPRI GMM to account for new data and scientific knowledge
- Appropriate consideration of epistemic uncertainty and model documentation are key issues

Expedited Approach



Review Level Ground Motion



Equipment List (Phase 1 of Mitigating Strategies Order)

- RCIC pump and valves
- RCIC lube oil and gland condenser
- Safety relief valves (SRVs)
- **SRV accumulators**
- RPV injection valves
- Reliable hardened vent valves
- ...

Seismic Reevaluations



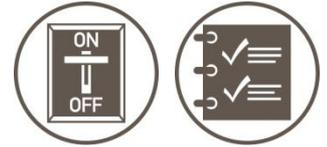
- General Agreement on industry proposal
- Focus areas going forward
 - Timely completion of the updated model and associated documentation
 - Endorsement of expedited evaluation guidance
- Staff preparing a response to industry proposal

Recommendation 1

Regulatory Framework

- Staff developing Options for potential changes to the regulatory framework
 - Substantial additional stakeholder interaction planned
 - Industry input/proposal expected April 2013
 - Commission paper under development (due Dec 2, 2013)

Rulemaking Activities



- **Station Blackout Mitigation Strategies (SBOMS)**
 - Rule will incorporate insights from implementation of Mitigation Strategies Order
 - Addresses spent fuel pool makeup capability (Tier 2)
 - Draft regulatory basis available for comment until May 28
- **Onsite Emergency Response Capabilities**
 - Rule will integrate emergency procedures
 - Final regulatory basis to be issued in May 2013

Tier 2

- Spent Fuel Pool Makeup Capability
 - Addressed under mitigation strategies*
- Emergency Preparedness
 - Addressed under mitigation strategies*
 - Multiunit dose assessment capability will be in place by end of 2014
- Reevaluation of “Other” External Hazards
 - Dependent on insights from seismic/flooding reevaluations and staff resources

***Items addressed under mitigation strategies are therefore being treated with Tier 1 priority**

Tier 3

- Require additional information or evaluation to support a regulatory decision
 - Example: Reactor and containment instrumentation that can withstand severe accident conditions
- Dependent on insights from implementation of Tier 1 actions
 - Example: Hydrogen control and mitigation

Oversight of Lessons Learned Going Forward

- Nature of the lessons learned effort has evolved from policy and decision-making to implementation
- Transition from Steering Committee to line organizations
- JLD organization likely to remain through FY 2015
- Maintain continued agency focus as well as stakeholder interaction

Summary

- Considerable progress has been made
- Substantial safety enhancements by 2016
- Some enhancements extend beyond 2016
- NRC is on a timeline consistent with many other countries
- Continuing international efforts