

# ***Fukushima Lessons Learned Actions***

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# ***Identifying Lessons Learned***

- **July 2011**
  - Near-Term Task Force (NTTF) report issued
- **September/October 2011**
  - NTTF recommendations prioritized into three tiers

# ***Tier 1 Activities***

## **Orders**

- EA-12-049 – Mitigating strategies beyond design basis events**
- EA-12-050 – Hardened vents for Mark I and II containments**
- EA-12-051 – Spent fuel pool instrumentation**

## **Request for Information under 50.54(f)**

- Seismic and flooding walkdowns**
- Seismic and flooding reevaluations**
- Enhanced EP staffing and communications**

## **Rulemakings**

- Station blackout (SBO)**
- Integration of emergency procedures (Integration of EOPs, SAMGs, and EDMGs)**

# ***Tier 2 Recommendations***

- **Spent fuel pool makeup capability – Order 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)

# ***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 (Additional Issue)
  - Prestage potassium iodide (KI) beyond 10 miles (Additional Issue)
  - Transfer of spent fuel to dry cask storage (Additional Issue)
  - Reactor and Containment Instrumentation (Additional Issue)

# ***Tier 1 Orders***

- **The NRC ordered licensees to:**
  - **Develop strategies and procure additional equipment to address beyond-design-basis external events and multiunit events**
  - **Include reliable hardened vents in BWR Mark I and Mark II containments**
  - **Install spent fuel pool water level instrumentation for beyond design basis accidents**

# *Schedule Overview – Tier 1 Orders*

<b>Milestone</b>	<b>Operating Reactors</b>	<b>Combined License Holders</b>	<b>Construction Permit Holders</b>
<b>Guidance Issued</b>	<b>August 31, 2012</b>	<b>August 31, 2012</b>	<b>August 31, 2012</b>
<b>1<sup>st</sup> Update</b>	<b>October 31, 2012</b>	<b>October 31, 2012</b>	<b>October 31, 2012</b>
<b>Plan Submitted</b>	<b>February 28, 2013</b>	<b>August 31, 2013</b>	<b>August 31, 2013</b>
<b>Periodic Updates</b>	<b>Every six months</b>	<b>Every six months</b>	<b>Every six months</b>
<b>Latest Completion</b>	<b>December 31, 2016</b>	<b>Prior to initial fuel load</b>	<b>Prior to receipt of operating license</b>

# ***Tier 1***

## ***50.54(f) Requests for Information***

- **The NRC requested licensees to:**
  - Confirm each plant is in compliance with its seismic and flooding design bases by performing walkdowns
  - Analyze each plant's seismic and flooding hazard using present-day requirements and guidance
  - Assess emergency communications equipment to ensure it would be available during a prolonged SBO event
  - Assess the staffing necessary to respond to a prolonged multiple unit SBO event



# ***Schedule Overview – 50.54(f) Letter Seismic/Flooding Walkdowns***

<b>Milestone</b>	<b>Operating Reactors</b>
<b>Guidance Issued or Endorsed</b>	<b>May 31, 2012</b>
<b>Licensees Provide Results of Walkdowns</b>	<b>November 27, 2012</b>

# ***Schedule Overview – 50.54(f) Letter Seismic/Flooding Reevaluations***

<b>Milestone</b>	<b>Operating Reactors and Construction Permit Holders</b>
<b>Guidance Issued</b>	<b>November 30, 2012</b>
<b>Initial Response</b>	<b>January 30, 2013</b>
<b>Licensee Seismic Hazard Evaluations Due</b>	<b>September 9, 2013 (CEUS) / March 9, 2015 (WUS)</b>
<b>Licensee Flooding Hazard Evaluations Due</b>	<b>March 9, 2013 (Bin 1) / March 9, 2014 (Bin 2) / March 9, 2015 (Bin 3) (based on prioritization)</b>
<b>Future Steps</b>	<b>Pending NRC evaluation and prioritization, with completion of evaluations for all facilities between October 2016 and April 2019</b>

# ***Schedule Overview – 50.54(f) Letter E.P. – Staffing and Communications***

<b>Milestone</b>	<b>Operating Reactors, Combined License Holders, and Construction Permit Holders</b>
<p><b>Mitigating Strategies Order – Guidance Issued or Endorsed</b></p> <p><b>Licensee Responses</b></p>	<p><b>August 31, 2012</b></p> <p><b>June 9, 2012 (communications)</b></p> <p><b>June 9, 2012 (staffing items 3 through 6)</b></p> <p><b>October 31, 2012 (staffing items 1 and 2)*</b></p> <p><small>* 60 days after issuance of guidance associated with mitigating strategies order</small></p>

# ***Schedule – Emergency Preparedness Staffing and Communications***

- **Alternative schedule proposed by industry**
  - Based on EP Rule implementation deadlines and milestones associated with Mitigating Strategies Order
  - Uses phased approach, with dates ranging from June 2012 to 2015 for each of the various staffing and communications requests.
  - Found reasonable and acceptable by NRC staff

# ***Tier 1***

## ***Rulemaking Activities***

- **Station Blackout (SBO) Rulemaking**
  - Modify the SBO rule to require enhanced capability to mitigate a prolonged SBO
  - Advance Notice of Proposed Rulemaking issued on March 20<sup>th</sup>
  - Comment period related to Advance Notice of Proposed Rulemaking (ANPR) closed May 4; staff reviewing feedback
  - Staff continues work to develop regulatory basis
  - Final rule due April 2014

# ***Tier 1***

## ***Rulemaking Activities***

- **Emergency Procedures Integration  
(Integration of EOPs, SAMGs, and EDMGs)**
  - Create a new rule requiring the integration of emergency procedures
  - Advance Notice of Proposed Rulemaking issued on April 18<sup>th</sup>
  - Comment period related to ANPR closed June 18; staff reviewing feedback
  - Staff continues work to develop regulatory basis
  - Final rule due May 2016

# ***Next Steps***

- **Develop implementation guidance for the orders and requests for information**
- **Complete seismic and flooding walkdowns at each nuclear power plant**
- **Continue rulemaking process**
- **Begin implementation of Tier 3 recommendations**

# ***More Information***

- **Public website**

From [www.nrc.gov](http://www.nrc.gov), find link under  
“Spotlight” section on left side

- **Email box: for questions or comments**

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