



STATUS OF LESSONS LEARNED FROM THE FUKUSHIMA DAI-ICHI ACCIDENT

Commission Meeting
February 16, 2017



Safety has been significantly improved

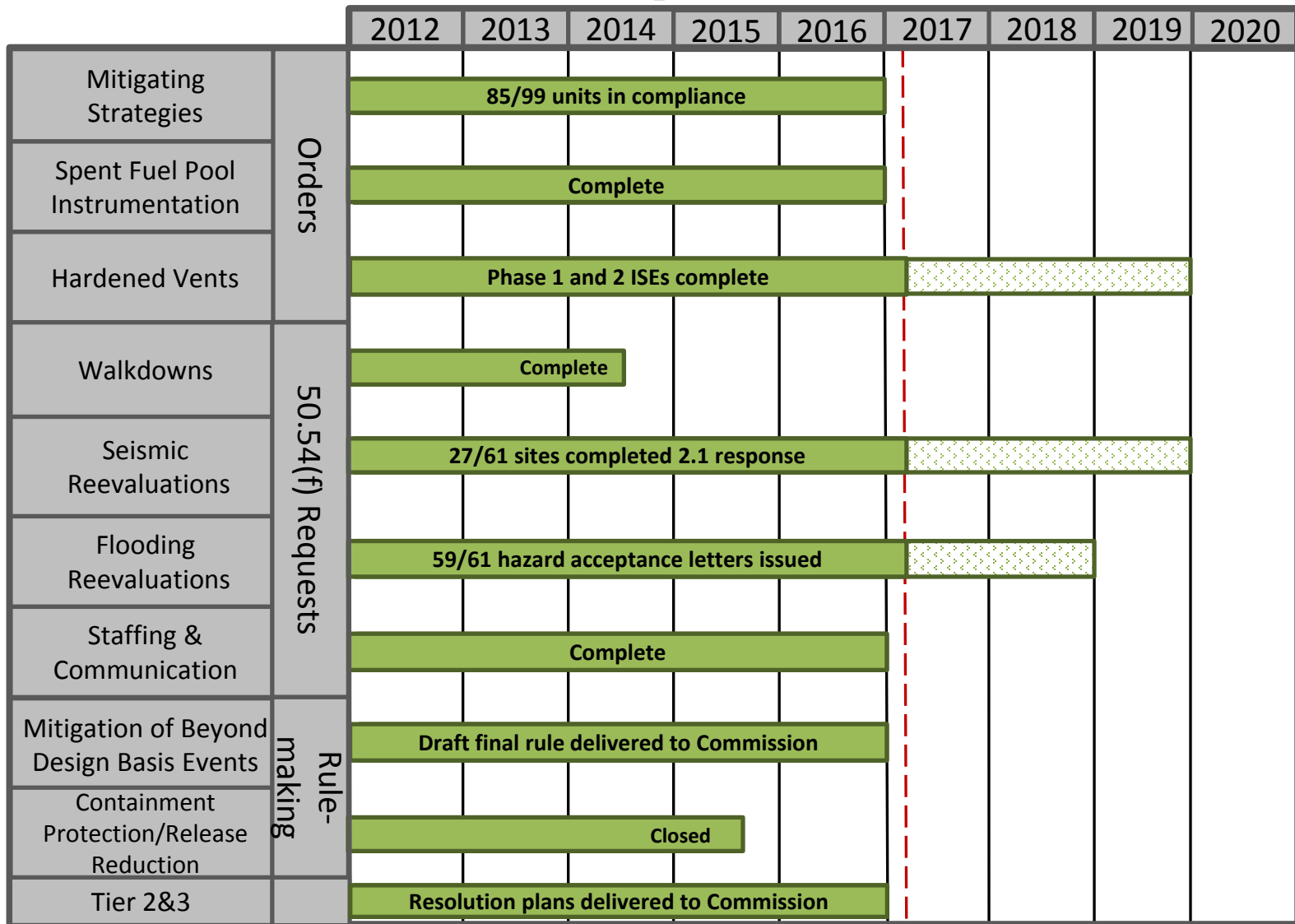
	Recommendation	Status
✓ Ensuring Protection from External Events	2.1 – Reevaluation of seismic & flooding hazards	Ongoing
	2.2 – Periodic reconfirmation of hazards	Assessment Complete
	2.3 – Seismic & flooding hazard walkdowns	Closed
	Other – Reevaluate other external hazards	Assessment Complete
✓ Enhancing Mitigation of Beyond-Design-Basis Events	4.1 – Mitigation of beyond design basis events rulemaking*	Draft Final Rule Complete
	4.2 – Mitigation of beyond design basis events order	Ongoing
	5.1 – Severe accident capable hardened vents order	Ongoing
	5.2 – Vents for other containment designs	Closed
	6 – Hydrogen control and mitigation	Closed
	7.1 – Reliable spent fuel pool instrumentation	Closed
	7.2- 7.5 – Spent fuel pool water makeup capability*	Draft Final Rule Complete
✓ Strengthening Emergency Preparedness for Multi-Unit Events	8.1-8.4 – Onsite emergency response capabilities*	Draft Final Rule Complete
	9.1-9.4 – Rulemaking to enhance emergency plans*	Draft Final Rule Complete
	10.1-10.2 – Analyze and evaluate other EP considerations*	Draft Final Rule Complete
	10.3 – Evaluate ERDS capabilities	Closed
	11.2&11.4 – Decision-making and public education	Closed
✓ Regulatory Philosophy	1 – Reassess regulatory framework	Closed
	12.1 – Include defense in depth requirements within ROP	Closed
	12.2 – Enhance staff training on severe accidents & SAMGs	Closed
✓ Radiological Consequences	11.3 – Real time radiation monitoring within EPZ	Assessment Complete
	Other – Containment vent filters/filtering strategies	Closed
	Other – Expand EPZ size beyond 10 miles	Closed
	Other – Pre-stage KI to residents beyond 10 miles	Closed
	Other – Expedited transfer of spent fuel to dry storage	Closed

*Integrated into MBDDBE rulemaking

Agenda

- William Dean, Director, Office of Nuclear Reactor Regulation
 - Tier 1 implementation
- Michael Franovich, Director (A), Japan Lessons-Learned Division
 - Remaining Tier 1 work and Tier 2&3 final assessments
- Timothy Reed & Eric Bowman
 - Mitigation of Beyond-Design-Basis Events (MBDBE) Rulemaking

Tier 1 activities substantially complete



Today



*For illustrative purposes only

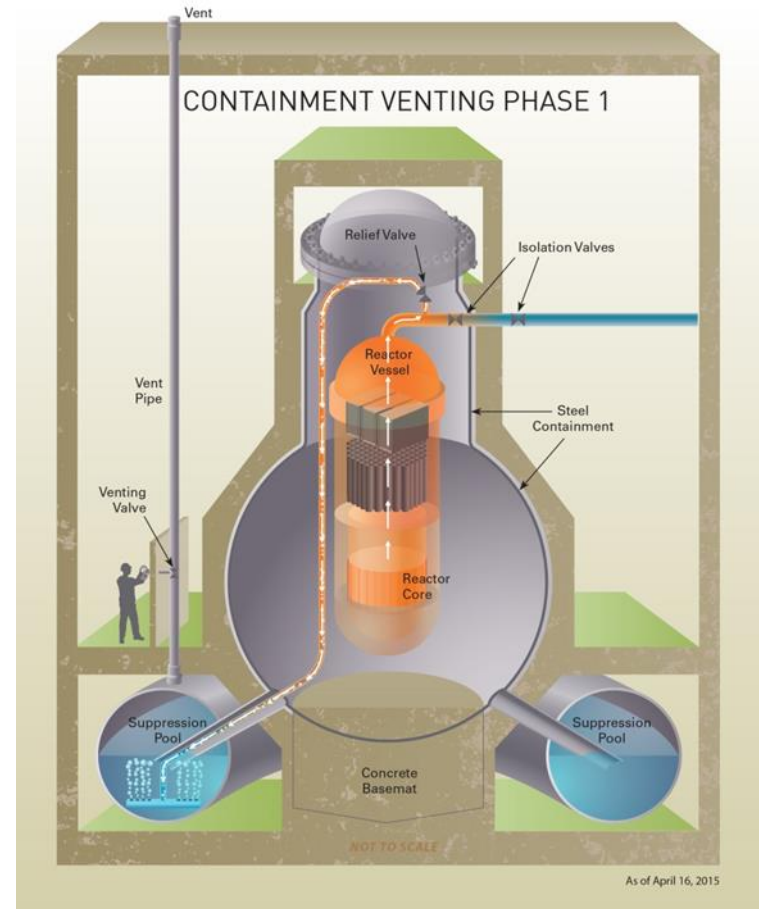
Mitigating strategies implementation is nearing completion

- Regions conducting inspections confirming order compliance
- No substantive findings to date
- Transition to long-term oversight plan

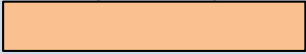
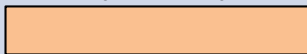


Staff working to expedite vent order closure

- Interim staff evaluations complete
- Implementing enhanced closure process
- Developing inspection procedure



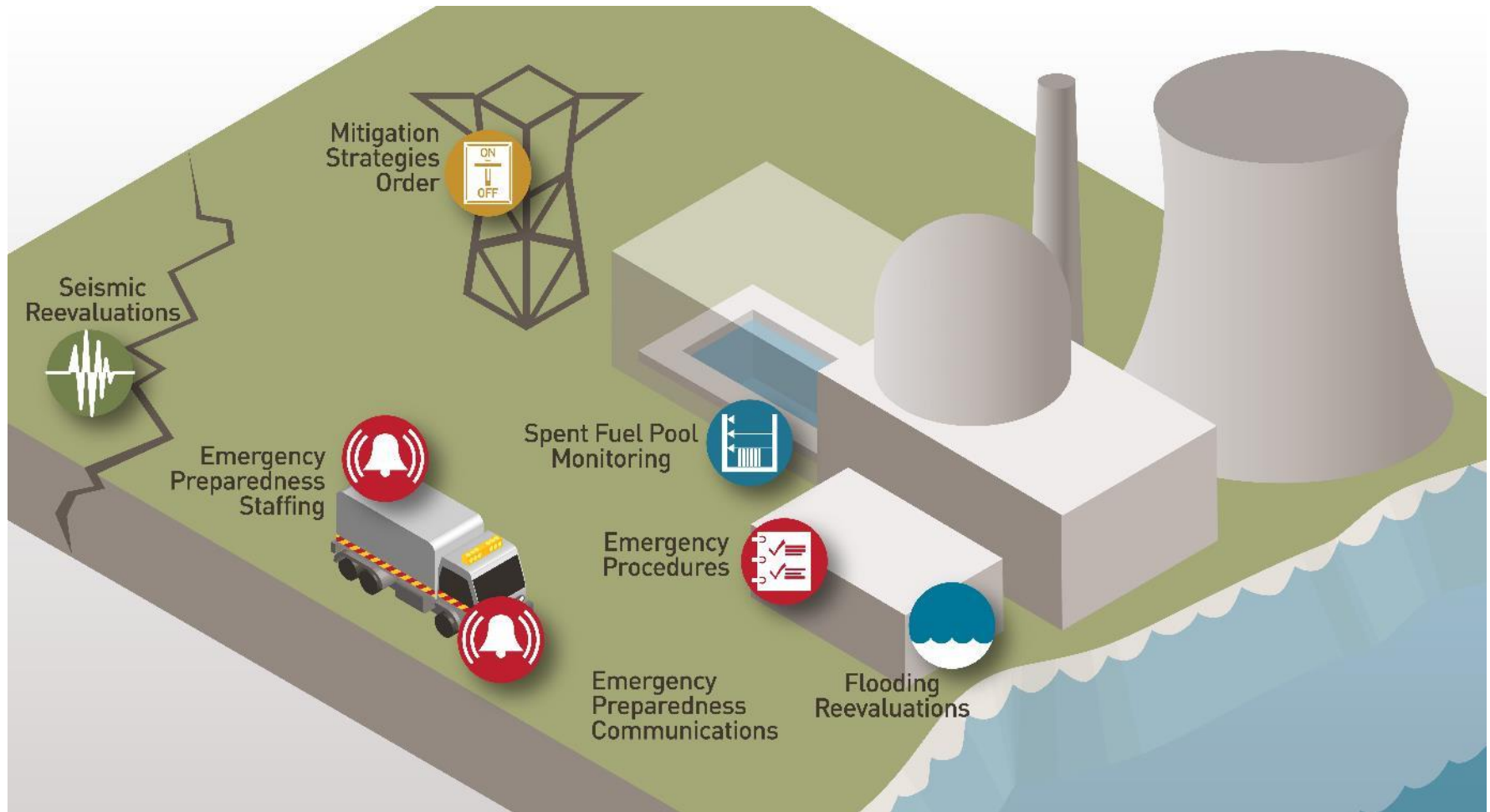
Significant progress in hazard reevaluations

Seismic		Flooding	
Hazard Reevaluation Reports Received	(100%) 	Hazard Reevaluation Reports Received	(100%) 
Acknowledgement Letters Issued	(100%) 	Hazard Acceptability Letters Issued	(97%) 
Expedited Approach Received	(100%) 	Interim Actions Received	(100%) 
Expedited Approach Response	(100%) 	Interim Actions Inspected	(100%) 
Staff Assessments Issued	(100%) 	Staff Assessments Issued	(60%) 

Completed assessment of final Tier 2&3 recommendations

- Significant stakeholder interaction
- Natural hazards other than seismic and flooding
 - Recommend no further action
- Real-time radiation monitoring
 - Recommend no further action
- Ongoing confirmation of natural hazards
 - Enhancements to existing processes

MBDBE rule integrates the post-Fukushima efforts



Performance-based regulation enables innovative approaches

- Performance-based approach and broad view
- Phase-in/Phase-out
 - Specifically considers decommissioning
- Flexible scheduling option
- Rescission of orders and removal of license conditions

Rule establishes an integrated response capability

- Assists operators in executing strategies
- Includes:
 - Mitigation strategies
 - Reevaluated seismic and flooding hazards
 - Extensive damage mitigation guidelines (post-9/11 strategies)
- Integration with emergency operating procedures

Ensures equipment supports implementation of strategies

- Capacity and capability
- Reasonable protection
- Communications capability
- Maintenance



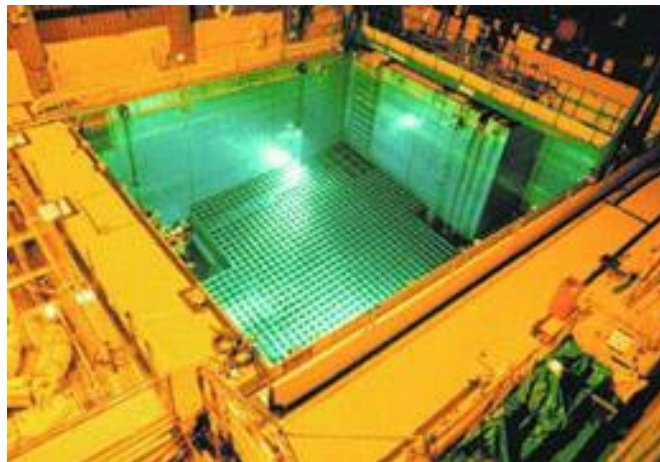
Comprehensive approach to organizational readiness/capability

- Sufficient staffing
- Systems approach to training
- Periodic drills or exercises



Remote monitoring of wide-range spent fuel pool level

- Prioritization of actions between reactor and pool
- May support SFP portions of integrated response capability



Regulatory guidance incorporates lessons learned

- Evolutionary from guidance used for Orders and RFI



DRAFT REGULATORY GUIDE DG-1301

(Proposed New Regulatory Guide 1.226)

DRAFT REGULATORY GUIDE DG-1317

(Proposed New Regulatory Guide 1.227)

DRAFT REGULATORY GUIDE DG-1319

(Proposed New Regulatory Guide 1.228)

Leveraging FLEX in safety and security decision making

- Significant investment in equipment and implementation
- Substantial risk benefits
- Developing guidance



Effective transition to ensure lasting benefit

- Considerable achievements to date
- Important work remains
- Sunset Japan Lessons-Learned Steering Committee
- Transition of work to line organization

Acronyms

- EP – Emergency preparedness
- EPZ – Emergency planning zone
- ERDS – Emergency response data system
- FLEX – Diverse and flexible coping strategies
- ISE – Interim staff evaluation
- KI – Potassium iodide
- MBDBE – Mitigation of beyond-design-basis events rulemaking
- RFI – Request for information
- ROP – Reactor oversight process
- SAMGs – Severe accident management guidelines
- SFP – Spent fuel pool