US-APWR Fukushima Action Item Matrix
Based on SECY-12-0025, SECY-11-0137, EA-12-049, EA-12-051

1. **Items US-APWR takes actions**
2. **Items US-APWR takes no action**
3. **Items for future considerations**

July 16, 2012

MHI/MNES/Luminant/Dominion

1. Items US-APWR takes actions

NTTF Rec. No	Action items in SECY-11-0137, SECY-12-0025, EA-12-049, EA-12-051	US-APWR Action	Affected DCD Section	Affected COLA Section	Note
General					
_	**New reactor designs** The staff intends to begin interactions with new reactor stakeholders in the near term to allow sufficient opportunity for design certification applicants and design certification renewal applicants to address recommended design-related safety enhancements prior to completion of the staff's review. The staff will encourage reactor vendors to provide enhanced safety features and safety margins consistent with the Commission policy on advanced reactors.	See following pages	See following pages.	See following pages.	SECY-11-0137, p.6
_	**Design Certifications and Combined Licenses** For design certifications and combined license applications submitted under 10 CFR Part 52 that are currently under active staff review, the staff plans to assure that the Commission-approved Fukushima actions are addressed prior to certification or licensing. To date, the staff has met with AREVA and MHI to understand their plans for incorporating changes into their respective designs to effectively address the design-related Fukushima items. The staff will also request all COL applicants to provide the information required by the orders and request for information letters described in this paper, as applicable, through the review process. New reactor and operating reactor staff are coordinating their regulatory positions to assure that the resolutions proposed by new reactor design certification and combined license applicants are not in conflict with those proposed and accepted by the staff for operating reactors.	See following pages	See following pages	See following pages	SECY-12-0025, p.10

NTTF Rec. No	Action items in SECY-11-0137, SECY-12-0025, EA-12-049, EA-12-051	US-APWR Action	Affected DCD Section	Affected COLA Section	Note
Tier 1 (Actions to be taken without delay)					
2.1	**Seismic Reevaluation** a) Evaluate the potential impacts of the newly released CEUS-SSC model, with potential local and regional refinements as identified in the CEUS-SSC model, on the seismic hazard curves and the site-specific ground motion response spectra (GMRS)/foundation input response spectra (FIRS). For re-calculation of the PSHA, please follow either the cumulative absolute velocity (CAV) filter or minimum magnitude specifications outlined in Attachment 1 to Seismic Enclosure 1 of the March 12, 2012 letter " Request for information pursuant to Title 10 of the C*ode of Federal Regulations* 50.54(f) regarding Recommendations 2.1, 2.3, and 9.3, of the near-term task force review of insights from the Fukushima Dai-Ichi accident." (ML12053A340). b) In your response, please identify the method you selected from the above choices to perform the evaluation. Modify and submit the site-specific GMRS and FIRS changes, as necessary, given the evaluation performed in part (a) above. Provide the basis supporting your position.	COL applicants will conduct evaluation of CEUS-SSC	N/A	Chapter 3	R-COLA RAI 261-6527
4.1	**Station blackout (SBO)** Engage stakeholders in support of rulemaking activities to enhance the capability to maintain safety through a prolonged SBO. These activities will include the development of the regulatory basis, a proposed rule, and implementing guidance consistent with the rulemaking process and schedule established in SECY-11-0032, “Consideration of Cumulative Effects of Regulation in the Rulemaking Process.”	See 4.2	See 4.2	See 4.2	ANPR issued SECY-11-0137

NTTF Rec. No	Action items in SECY-11-0137, SECY-12-0025, EA-12-049, EA-12-051	US-APWR Action	Affected DCD Section	Affected COLA Section	Note
4.2	**Mitigation Strategies for Beyond-Design-Basis External Events** (1) Licensees shall develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment and SFP cooling capabilities following a beyond-design-basis external event. (2) These strategies must be capable of mitigating a simultaneous loss of all alternating current (ac) power and loss of normal access to the ultimate heat sink and have adequate capacity to address challenges to core cooling, containment, and SFP cooling capabilities at all units on a site subject to this Order. (3) Licensees must provide reasonable protection for the associated equipment from external events. Such protection must demonstrate that there is adequate capacity to address challenges to core cooling, containment, and SFP cooling capabilities at all units on a site subject to this Order. (4) Licensees must be capable of implementing the strategies in all modes. (5) Full compliance shall include procedures, guidance, training, and acquisition, staging, or installing of equipment needed for the strategies.	Design enhancements: 1) AAC GTG seismic test	8.4.1.3	IBR	EA-12-049
		2) Building water-tightness design enhancement	3.4.1.2 Tier 1 Fig 2.2-14 to17	IBR FSAR 3.4.1.2	
		3) RCP No2 seal test	8.4.2.1.2	IBR	
		4) Alternative UHS - Connection of Non-essential Chiller C/T to ESWS and CCWS - Connection of Alternate UHS equipment to AAC Load Center - Non-essential Chiller C/T seismic analysis - Connections for portable water source to Non-essential Chiller C/T	8.3.1 Fig 8.3.1-1 (4/7) 9.2.7 Fig. 9.2.1-1 Fig. 9.2.2-1 Fig. 9.2.7-1 Fig. 9.2.7-2 Tier 1 Fig 2.7.3.1-1 Fig 2.7.3.3-1 Fig 2.7.3.6-1	IBR	

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		5) DC Load shedding switch	8.3.2	IBR	
		6) Install CHP alternate suction line from RWSP	9.3.4 Fig. 9.3.4-1 (4/7) Tier 1 Fig 2.4.6-1 (2/2)	IBR	
		7) Deletion of CHP alternate suction line from SFP	9.3.4 Fig. 9.3.4-1 (4/7) Tier 1 Fig 2.4.6-1 (2/2)	IBR	
		8) Seismic cat I SFP makeup line and spray line	9.1.3 Fig 9.1.3-1	IBR	
		9) Automatic opening of EFWS header tie-line valves	10.4.9	IBR	
		10) Automatic stop of T/D EFW Pump Emergency Oil Pump	10.4.9	IBR	

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		11) Connections for portable water source to EFW Pit	10.4.9 Fig.10.4.9-2	IBR	
		Program: 12) Integration of EOP/SAMG/ EDMG	13.5.2	FSAR 13.5.2	
		13) Training for mitigation of BDB events	13.5.2	FSAR 8.4 13.2	
7.1	**SFP Instrumentation** Licensee requires reliable indication of the water level in associated spent fuel storage pools capable of supporting identification of the following pool water level conditions by trained personnel: (1) level that is adequate to support operation of the normal fuel pool cooling system, (2) level that is adequate to provide substantial radiation shielding for a person standing on the spent fuel pool operating deck, and (3) level where fuel remains covered and actions to implement make-up water addition should no longer be deferred. 1. The spent fuel pool level instrumentation shall include the following design features: 1.1 Arrangement: The spent fuel pool level instrument channels shall be arranged in a manner that provides reasonable protection of the level indication function against missiles that may result from damage to the structure over the spent fuel pool. This protection may be provided by locating the safety-related instruments to maintain instrument channel separation within the spent fuel pool area, and to utilize	SFP level instrumentation enhancement - Two wide range and narrow range safety-grade level instrumentation - Comply with requirements on arrangement, qualification, power supply, accuracy and display	9.1.3 Fig 9.1.3-1 7.5 Table 7.5-3	IBR	EA-12-051 to COL Holders

NTTF Rec. No	Action items in SECY-11-0137, SECY-12-0025, EA-12-049, EA-12-051	US-APWR Action	Affected DCD Section	Affected COLA Section	Note
	inherent shielding from missiles provided by existing recesses and corners in the spent fuel pool structure. 1.2 Qualification: The level instrument channels shall be reliable at temperature, humidity, and radiation levels consistent with the spent fuel pool water at saturation conditions for an extended period. 1.3 Power supplies: Instrumentation channels shall provide for power connections from sources independent of the plant alternating current (ac) and direct current (dc) power distribution systems, such as portable generators or replaceable batteries. Power supply designs should provide for quick and accessible connection of sources independent of the plant ac and dc power distribution systems. Onsite generators used as an alternate power source and replaceable batteries used for instrument channel power shall have sufficient capacity to maintain the level indication function until offsite resource availability is reasonably assured. 1.4 Accuracy: The instrument shall maintain its designed accuracy following a power interruption or change in power source without recalibration. 1.5 Display: The display shall provide on-demand or continuous indication of spent fuel pool water level.				
	2. The spent fuel pool instrumentation shall be maintained available and reliable through appropriate development and implementation of a training program. Personnel shall be trained in the use and the provision of alternate power to the safety-related level instrument channels.	Training program for plant personnel on SFP instrumentation	NA	FSAR 13.5.2	

NTTF Rec. No	Action items in SECY-11-0137, SECY-12-0025, EA-12-049, EA-12-051	US-APWR Action	Affected DCD Section	Affected COLA Section	Note
8	**Strengthening and integration of emergency operating procedures, severe accident management guidelines (SAMGs), and extensive damage mitigation guidelines** 1. Issue an advanced notice of proposed rulemaking (ANPR) to engage stakeholders in rulemaking activities associated with the methodology for integration of onsite emergency response processes, procedures, training and exercises.	Strengthen and integration of EOP/SAMG/EDMG	13.5.2	FSAR 13.5.2	SECY-11-0137 ANPR issued
	2. Interact with stakeholders to inform the modification of EOP generic technical guidelines to include guidance for SAMGs and EDMGs in an integrated manner and to clarify command and control issues as appropriate.				

NTTF Rec. No	Action items in SECY-11-0137, SECY-12-0025, EA-12-049, EA-12-051	US-APWR Action	Affected DCD Section	Affected COLA Section	Note
9.3	**Emergency Preparedness** **Communications** 1. Provide an assessment of the current communications systems and equipment used during an emergency event to identify any enhancements that may be needed to ensure communications are maintained during a large scale natural event meeting the conditions described above. The assessment should: • Identify any planned or potential improvements to existing onsite communications systems and their required normal and/or backup power supplies, • Identify any planned or potential improvements to existing offsite communications systems and their required normal and/or backup power supplies, • Provide a description of any new communications system(s) or technologies that will be deployed based upon the assumed conditions described above, and • Provide a description of how the new and/or improved systems and power supplies will be able to provide for communications during a loss of all AC power, 2. Describe any interim actions that have been taken or are planned to be taken to enhance existing communications systems power supplies until the communications assessment and the resulting actions are complete, 3. Provide an implementation schedule of the time needed to conduct and implement the results of the communications assessment.	Conduct assessment of the current design of the US-APWR	9.5.2	EP II. F.1	DCD RAI 644-6516 R-COLA RAI 261-6527

NTTF Rec. No	Action items in SECY-11-0137, SECY-12-0025, EA-12-049, EA-12-051	US-APWR Action	Affected DCD Section	Affected COLA Section	Note
9.3 (cont)	**Staffing** 1. Provide an assessment of the onsite and augmented staff needed to respond to a large scale natural event meeting the conditions described above. This assessment should include a discussion of the onsite and augmented staff available to implement the strategies as discussed in the emergency plan and/or described in plant operating procedures. The following functions are requested to be assessed: • How onsite staff will move back-up equipment (e.g., pumps, generators) from alternate onsite storage facilities to repair locations at each reactor as described in the order regarding the NTTF Recommendation 4.2. It is requested that consideration be given to the major functional areas of NUREG-0654, Table B-1 such as plant operations and assessment of operational aspects, emergency direction and control, notification/ communication, radiological accident assessment, and support of operational accident assessment, as appropriate. • New staff or functions identified as a result of the assessment. • Collateral duties (personnel not being prevented from timely performance of their assigned functions). 2. Provide an implementation schedule of the time needed to conduct the onsite and augmented staffing assessment. If any modifications are determined to be appropriate, please include in the schedule the time to implement the changes. 3. Identify how the augmented staff would be notified given degraded communications capabilities. 4. Identify the methods of access (e.g., roadways, navigable bodies of water and dockage, airlift, etc.) to the site that are expected to be available after a widespread large scale natural event. 5. Identify any interim actions that have been taken or are planned	Perform staffing assessment for a large scale natural event	N/A	EP II. B.5	DCD RAI 644-6516 R-COLA RAI 261-6527

NTTF Rec. No	Action items in SECY-11-0137, SECY-12-0025, EA-12-049, EA-12-051	US-APWR Action	Affected DCD Section	Affected COLA Section	Note
9.3 (cont)	prior to the completion of the staffing assessment. 6. Identify changes that have been made or will be made to your emergency plan regarding the on-shift or augmented staffing changes necessary to respond to a loss of all AC power, multi-unit event, including any new or revised agreements with offsite resource providers (e.g., staffing, equipment, transportation, etc.).				
_	**Loss of Ultimate Heat Sink** 1. Include UHS systems in the reevaluation and walkdowns of site-specific seismic and flooding hazards using the methodology described in SECY-11-0137, and identify actions that have been taken, or are planned, to address plant-specific issues associated with the updated seismic and flooding hazards in conjunction with the resolution of NTTF Recommendations 2.1 and 2.3.	N/A	N/A	N/A	Newly added as Tier 1 in SECY-12-0025
	2. Incorporate the loss of UHS as a design assumption in the resolution of station blackout rulemaking activities in conjunction with the resolution of NTTF Recommendation 4.1.	Same as for 4.2	Same as for 4.2	Same as for 4.2	
	3. Provide mitigating measures for beyond-design-basis external events to also include a loss of access to the normal UHS in conjunction with the resolution of NTTF Recommendation 4.2.	Same as for 4.2	Same as for 4.2	Same as for 4.2	
	4. Include UHS systems in the reevaluation of site-specific natural external hazards, and identify actions that have been taken, or are planned, to address plant-specific issues associated with the updated hazards in conjunction with the resolution of the new Tier 2 Recommendation 2.1 activity described in Enclosure 3, “Other Natural External Hazards.”	N/A	N/A	N/A	

NTTF Rec. No	Action items in SECY-11-0137, SECY-12-0025, EA-12-049, EA-12-051	US-APWR Action	Affected DCD Section	Affected COLA Section	Note
Tier 2	**(Actions do not require long-term study and can be initiated when sufficient technical information and applicable resources become available.)**				
7	**SFP makeup capability (7.2, 7.3, 7.4, and 7.5)** Engage stakeholders in support of rulemaking activities to provide reliable SFP instrumentation and makeup capabilities. These activities will include the development of the regulatory basis, a proposed rule, and implementing guidance consistent with the rulemaking process and schedule established in SECY-11-0032.	Seismic Cat I SFP makeup lines and spray lines	9.1.3	IBR	SECY-11-0137
9.3	**Emergency preparedness regulatory actions (the remaining portions of Recommendation 9.3, with the exception of Emergency Response Data System (ERDS) capability addressed in Tier 3)** 1. Engage stakeholders to inform the development of acceptance criteria for the licensee examination of planning standard elements related to the recommendations, and 2. Develop and issue an order to address those changes necessary in emergency plans to ensure adequate response to SBO and multiunit events specific to (1) adding guidance to the emergency plan that documents how to perform a multiunit dose assessment, (2) conduct periodic training and exercises for multiunit and prolonged SBO scenarios, (3) practice (simulate) the identification and acquisition of offsite resources, to the extent possible, and (4) ensure that EP equipment and facilities are sufficient for dealing with multiunit and prolonged SBO scenarios.	Revise EP to ensure adequate response to SBO and multiunit events	N/A	EP	SECY-11-0137

2. Items US-APWR takes no action

NTTF Rec No	NRC Staff Recommendations in SECY-11-0137, SECY-12-0025, EA-12-049, EA-12-051	US-APWR Action	Affected DCD Section	Affected COLA Section	Note
Tier 1 (Actions to be taken without delay)					
2.1	**Flooding Reevaluation** • Perform a reevaluation of all appropriate external flooding sources, including the effects from local intense precipitation on the site, probable maximum flood (PMF) on stream and rivers, storm surges, seiches, tsunami, and dam failures. It is requested that the reevaluation apply present-day regulatory guidance and methodologies being used for ESP and COL reviews including current techniques, software, and methods used in present-day standard engineering practice to develop the flood hazard.	N/A	N/A	N/A	Request for information via 50.54 (f) letter This request is not applied to COL holders.
	Seismic Walkdowns • Perform seismic walkdowns in order to identify and address plant specific degraded, non-conforming, or unanalyzed conditions and verify the adequacy of strategies, monitoring, and maintenance programs such that the nuclear power plant can respond to external events. The walkdown will verify current plant configuration with the current licensing basis, verify the adequacy of current strategies, maintenance plans, and identify degraded, non-conforming, or unanalyzed conditions.	N/A	N/A	N/A	Request for information via 50.54 (f) letter This request is not applied to COL holders.
	Flooding walkdowns • Perform flood protection walkdowns using an NRC-endorsed walkdown methodology, • Identify and address plant-specific degraded, non-conforming, or unanalyzed conditions as well as cliff-edge effects through the corrective action program and consider these findings in the Recommendation 2.1 hazard evaluations, as appropriate, • Identify any other actions taken or planned to further enhance the	N/A	N/A	N/A	Request for information via 50.54 (f) letter This request is not applied to COL holders.

NTTF Rec No	NRC Staff Recommendations in SECY-11-0137, SECY-12-0025, EA-12-049, EA-12-051	US-APWR Action	Affected DCD Section	Affected COLA Section	Note
	site flood protection, • Verify the adequacy of programs, monitoring and maintenance for protection features, and, • Report to the NRC the results of the walkdowns and corrective actions taken or planned.				
5.1	**Reliable Hardened Vents for Mark I and Mark II containments** Boiling-Water Reactor (BWR) Mark I and Mark II containments shall have a reliable hardened vent to remove decay heat and maintain control of containment pressure within acceptable limits following events that result in the loss of active containment heat removal capability or prolonged Station Blackout (SBO). The hardened vent system shall be accessible and operable under a range of plant conditions, including a prolonged SBO and inadequate containment cooling.	N/A	N/A	N/A	
_	**Filtration of Containment Vents** The staff is considering requiring the filtration of containment vents to reduce the spread of radioactive contamination during a beyond-design-basis event. The staff plans to provide the Commission a notation vote paper on these policy issues in July 2012. At this time, the staff is proposing regulatory action to require that all operating BWR facilities with 5.2Mark I and Mark II containments have a reliable hardened venting capability, without filters, for events that can lead to core damage.	N/A	N/A	N/A	Newly added as Tier 1 in SECY-12-0025

NTTF Rec No	NRC Staff Recommendations in SECY-11-0137, SECY-12-0025, EA-12-049, EA-12-051	US-APWR Action	Affected DCD Section	Affected COLA Section	Note
Tier 2 (Actions do not require long-term study and can be initiated when sufficient technical information and applicable resources become available.)					
2.1	**Other External Events Protections** 1. Continue stakeholder interactions to discuss the technical basis and acceptance criteria for conducting a reevaluation of site-specific external natural hazards. These interactions will also help to define guidelines for the application of current regulatory guidance and methodologies being used for early site permit and combined license reviews to the reevaluation of hazards at operating reactors. 2. Develop and issue a request for information to licensees pursuant to 10 CFR 50.54(f) to (1) reevaluate site-specific external natural hazards using the methodology discussed in Item 1 above, and (2) identify actions that have been taken, or are planned, to address plant-specific issues associated with the updated natural external hazards (including potential changes to the licensing or design basis of a plant). 3. Evaluate licensee responses and take appropriate regulatory action to resolve issues associated with updated site-specific natural external hazards.	N/A	N/A	N/A	Newly added as Tier 2 in SECY-12-0025
Tier 3 (Those NTTF recommendations that require further staff study to support a regulatory action)					
2.2	**Ten-year confirmation of seismic and flooding hazards (dependent on Recommendation 2.1)**	N/A	N/A	N/A	SECY-11-0137
12.1	**Reactor Oversight Process modifications to reflect the recommended defense-in-depth framework (dependent on Recommendation 1)**	N/A	N/A	N/A	SECY-11-0137
12.2	**Staff training on severe accidents and resident inspector training on SAMGs (dependent on Recommendation 8)**	N/A	N/A	N/A	SECY-11-0137

NTTF Rec No	NRC Staff Recommendations in SECY-11-0137, SECY-12-0025, EA-12-049, EA-12-051	US-APWR Action	Affected DCD Section	Affected COLA Section	Note
Additional Issues under consideration					
_	**Basis of emergency planning zone size**	N/A	N/A	N/A	SECY-12-0025
_	**Prestaging of potassium iodide beyond 10 miles**	N/A	N/A	N/A	SECY-12-0025
_	**Transfer of spent fuel to dry cask storage**	N/A	N/A	N/A	SECY-12-0025

3. Items for future considerations

NTTF Rec No	NRC Staff Recommendations in SECY-11-0137, SECY-12-0025, EA-12-049, EA-12-051	US-APWR Action	Affected DCD Section	Affected COLA Section	Note
Tier 3 (Those NTTF recommendations that require further staff study to support a regulatory action)					
3	**Potential enhancements to the capability to prevent or mitigate seismically-induced fires and floods (long-term evaluation)**	Future consideration	3.4 9.5.1	Pt.2 IBR + 3.4.1.2	SECY-11-0137
5.2	**Reliable hardened vents for other containment designs (long-term evaluation)**	Future consideration	19.2.3	IBR	SECY-11-0137
6	**Hydrogen control and mitigation inside containment or in other buildings (long-term evaluation)**	Future consideration	6.2.5	IBR	SECY-11-0137
9.1 9.2	**Emergency preparedness (EP) enhancements for prolonged SBO and multiunit events (dependent on availability of critical skill sets)**	Future consideration	N/A	Pt 5 EP	SECY-11-0137
9.3	**ERDS capability (related to long-term evaluation Recommendation 10)**	Future consideration	N/A	Pt 5 EP	SECY-11-0137
10	**Additional EP topics for prolonged SBO and multiunit events (long-term evaluation)**	Future consideration	N/A	Pt 5 EP	SECY-11-0137
11	**EP topics for decision-making, radiation monitoring, and public education (long-term evaluation)**	Future consideration	N/A	Pt 5 EP	SECY-11-0137