

## **STAFF'S PRIORITIZATION OF ACRS RECOMMENDATIONS FOR NRC ACTIONS TO BE TAKEN IN RESPONSE TO FUKUSHIMA LESSONS-LEARNED**

The purpose of this enclosure is to provide the results of the U.S. Nuclear Regulatory Commission staff's (NRC or the staff) analysis of recommendations made by the Advisory Committee on Reactor Safeguards (ACRS) by letters dated October 13, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML11284A136), and November 8, 2011 (ADAMS Accession No. ML11311A264). This enclosure also briefly describes the staff's process for resolving the ACRS's recommendations, as well as any other Fukushima-related issues that arise from the staff's ongoing lessons-learned deliberations, stakeholder interactions, and international outreach activities.

### Process for Addressing Additional Issues

The staff of the Japan Lessons Learned Project Directorate in the Office of Nuclear Reactor Regulation developed a process to disposition all additional issues, including recommendations by the ACRS. All issues submitted as potential Fukushima-related recommendations are reviewed by a panel of senior-level advisors from different NRC program offices. The panel determines whether each issue represents a valid safety concern and whether there is a clear nexus to the Fukushima Dai-ichi accident. If both criterion are not met, the panel chooses to either disposition the issue with no action or direct it to one of the NRC's existing regulatory processes (e.g., generic issue process). If both criteria are met, the issue is forwarded for further consideration by the cognizant technical staff in the appropriate NRC line organization. Should the issue go forward, the cognizant technical staff is tasked with developing a proposal for disposition by the Steering Committee (SC), which is responsible for assessing and prioritizing Fukushima lessons learned. The SC may elect to take no further action; disposition the issue using an existing NRC process; or prioritize the issue as a Tier 1, 2, or 3 item, to be resolved under the Japan Lessons-Learned Program.

This process will be used to disposition recommendations and issues that continue to be brought to the NRC's attention by various stakeholders. The SC is presented with a list of issues screened by the panel of senior-level advisors for review on a periodic basis, and it ultimately determines the final prioritization and disposition of each issue. The staff documents the SC's findings, in detail, and will publish the results on the NRC's public Web site.

### ACRS Recommendations

The SC has evaluated the recommendations included in the ACRS letters dated October 13, 2011, and November 8, 2011. The staff documented the SC's disposition of each ACRS recommendation and has ensured that the cognizant technical staff working groups have used them to enhance the Tier 1, 2, and 3 actions that will be taken as a result of the events at the Fukushima Dai-ichi Nuclear Power Plant. A summary of the staff's disposition of the ACRS recommendations is provided in the table below. The staff addressed ACRS Recommendations 1(a)-1(g), 2(a)-2(f), and 3 from the letter dated October 13, 2011; as well as ACRS Conclusions 1-5 from the letter dated November 8, 2011.

Enclosure

<b>ACRS Recommendations Incorporated into Tier 1 Activities</b>	
<b>ACRS Recommendation</b>	<b>Staff Response</b>
<ul style="list-style-type: none"><li>• ACRS Recommendation 1(b)—“Actions related to NTTF Recommendation 2.3 should be expanded to assure that the walkdowns address the integrated effects of severe storms as well as seismic and flooding events.”</li><li>• ACRS Conclusion 2—“Tier 1 recommendations should be expanded to include the additional immediate actions recommended in our October 13, 2011, report, regarding flooding hazard reevaluations, integrated walkdowns, station blackout, boiling water reactor (BWR) hardened vents, shared ventilation systems, hydrogen control and mitigation, spent fuel pools (SFPs) and integration of onsite emergency actions.”</li></ul>	<p>The NRC staff expanded the Near-Term Task Force Report (NTTF) Recommendation 2.3 to ensure that the walkdowns address the integrated effects of severe storms as well as seismic and flooding events, in light of the ACRS recommendations.</p>
<ul style="list-style-type: none"><li>• ACRS Recommendation 1(c)—“Actions related to NTTF Recommendation 4.1 should be expanded to include issuance of an advanced notice of proposed rulemaking and requiring licensee to provide an assessment of capabilities to cope with an extended station blackout (SBO).”</li><li>• ACRS Recommendation 2(a)—“Performance-based criteria to mitigate and manage an extended SBO should be considered as an alternative to the specific coping times proposed in Recommendation 4.1.”</li></ul>	<p>The NRC staff expanded NTTF Recommendation 4.1 to include an advanced notice of proposed rulemaking and performance-based criteria for an extended SBO, in light of the ACRS recommendations and Commission direction in Staff Requirements Memorandum (SRM)-SECY-11-0124.</p> <p>Additionally, the Order associated with NTTF Recommendation 4.2 does include performance-based criteria for SBO coping times.</p>

<b>ACRS Recommendations Incorporated into Tier 1 Activities</b>	
<b>ACRS Recommendation</b>	<b>Staff Response</b>
<ul style="list-style-type: none"> <li>ACRS Conclusion 1—“Rulemaking activities related to strengthening of SBO mitigation capability should be expedited.”</li> </ul>	<p>The NRC staff accelerated NTTF Recommendation 4.1 as a result of the Commission’s decision in SRM-SECY-11-0124, “Recommended Actions To Be Taken Without Delay from the Near-Term Task Force Report,” dated October 18, 2011. The staff has designated the SBO rulemaking as a high-priority rulemaking with a completion goal of 24 to 30 months.</p>
<ul style="list-style-type: none"> <li>ACRS Recommendation 1(d)—“Actions related to NTTF Recommendation 5.1 should also be applied to BWR plants with Mark II containments.”</li> </ul>	<p>The NRC staff expanded NTTF Recommendation 5.1 to include boiling water-reactor (BWR) Mark II containments, in light of the ACRS recommendations.</p>
<ul style="list-style-type: none"> <li>ACRS Recommendation 1(f)—“Information should be requested from licensees regarding current plant-specific spent fuel pool (SFP) instrumentation, power supplies, and sources of makeup and cooling water.”</li> <li>ACRS Conclusion 5—“Staff Tier 1 Recommendation 7.1-2, ‘Develop and issue order to licensees to provide reliable SFP instrumentation,’ should be reconsidered. Schedules for SFP instrumentation improvements and other modifications to the SFP should be informed by quantification of the contribution made by SFPs to the overall plant risk.”</li> </ul>	<p>The NRC staff enhanced NTTF Recommendation 7.1 and the associated SFP instrumentation Order in light of the ACRS recommendations. The staff used information gathered from all available resources regarding current plant-specific SFP instrumentation to inform the associated Order.</p>

<b>ACRS Recommendations Incorporated into Tier 2 Activities</b>	
<b>ACRS Recommendation</b>	<b>Staff Response</b>
<ul style="list-style-type: none"><li>• ACRS Recommendation 1(a)—“Actions related to NTTF Recommendation 2.1 should be expanded to include an expedited update of the applicable regulatory guidance, methods, and data for external flooding to ensure that outdated guidance and acceptance criteria are not used in the reevaluations.”</li></ul>	<p>The NRC staff will expand its actions related to NTTF Recommendation 2.1 to include “other external hazards” in light of Section 402 of the Consolidated Appropriations Act, 2012 (Public Law 112-74) and the ACRS recommendations. This is a new Tier 2 activity. However, in the Tier 1 actions associated with reevaluating seismic and flooding hazards, licensees will use the present-day regulatory guidance and methodologies that are currently being applied to ongoing reviews of early site permit and combined operating license applications.</p>
<ul style="list-style-type: none"><li>• ACRS Recommendation 1(f)—“Information should be requested from licensee regarding current plant-specific SFP instrumentation, power supplies, and sources of makeup and cooling water.”</li><li>• ACRS Conclusion 5—“Staff Tier 1 Recommendation 7.1-2, “Develop and issue order to licensees to provide reliable SFP instrumentation,” should be reconsidered. Schedules for SFP instrumentation improvements and other modifications to the SFP should be informed by quantification of the contribution made by SFPs to the overall plant risk.”</li></ul>	<p>The NRC staff will enhance NTTF Recommendations 7.2–7.5 in light of the ACRS recommendations. The staff will use information gathered from all available resources regarding current plant-specific SFP power supplies, and sources of makeup and cooling water, to inform the associated rulemakings on an overall plant risk-informed approach.</p>

<b><i>ACRS Recommendations Incorporated into Tier 3 Activities</i></b>	
<b>ACRS Recommendation</b>	<b>Staff Response</b>
<ul style="list-style-type: none"><li>• ACRS Recommendation 2(e)—“Selected reactor and containment instrumentation should be enhanced to withstand beyond-design-basis accident conditions.”</li><li>• Conclusion 4—“Tier 2 recommendations should be expanded to include the additional actions recommended in our October 13, 2011, report regarding enhancement of selected reactor and containment instrumentation, and the need to proactively engage in efforts to capture and analyze data from the Fukushima event.”</li></ul>	<p>The NRC staff will develop a new action on “reactor and containment instrumentation withstanding beyond-design-basis conditions” and add it to the Tier 3 actions that the NRC will take in response to the Fukushima lessons-learned.</p>
<ul style="list-style-type: none"><li>• ACRS Recommendation 1(e)—“Discussions with stakeholders should be initiated regarding near-term actions for additional hydrogen control and mitigation measures in reactor buildings for plants with Mark I and Mark II containments.”</li></ul>	<p>The NRC staff will include discussions with stakeholders in its Tier 3 actions associated with NTTF Recommendation 6.</p>
<ul style="list-style-type: none"><li>• ACRS Recommendation 2(b)—“Recommendation 6 should be expanded to include a requirement for BWR plants with Mark I and Mark II containments to implement combustible gas control measures in reactor buildings as a near-term defense-in-depth measure.”</li></ul>	<p>The NRC staff will enhance the Tier 3 actions associated with NTTF Recommendation 6 to include the consideration of combustible gas control measures in reactor buildings.</p>

<b>ACRS Recommendations Incorporated into Tier 3 Activities</b>	
<b>ACRS Recommendation</b>	<b>Staff Response</b>
<ul style="list-style-type: none"><li>• ACRS Recommendation 2(c)—“Recommendation 6 should be expanded to include an assessment of the vulnerabilities introduced by shared ventilation systems or shared stacks in multi-unit sites.”</li></ul>	The NRC staff will enhance the Tier 3 actions associated with NTTF Recommendation 6 to include vulnerabilities introduced by shared ventilation systems or shared stacks in multiunit sites.
<ul style="list-style-type: none"><li>• ACRS Recommendation 1(g)—“Actions related to NTTF Recommendation 8 should be expanded to included fire response procedures.”</li><li>• ACRS Recommendation 2(d)—“Integration of onsite emergency response capabilities envisioned by Recommendation 8 should be expanded to include fire response procedures.”</li></ul>	The NRC staff evaluated how to appropriately integrate the fire response procedure into a licensee’s onsite emergency response capabilities and determined that the fire response procedures would be best considered with the agency’s Tier 3 actions associated with NTTF Recommendation 3.
<ul style="list-style-type: none"><li>• ACRS Conclusion 3—“NTTF Recommendation 10.2 regarding evaluation of the command and control structure and qualifications of decision makers should be initiated in parallel with Tier 1 activities related to integration of onsite emergency actions.”</li></ul>	The NRC staff evaluated how to appropriately initiate the “evaluation of the command and control structure and qualifications of decision makers,” and determined that they would be best considered with the agency’s Tier 3 actions associated with NTTF Recommendation 10.

<b>ACRS Recommendations Addressed by Other NRC Processes or Programs</b>	
<b>ACRS Recommendation</b>	<b>Staff Response</b>
<ul style="list-style-type: none"><li>ACRS Recommendation 2(f)—“The NRC should proactively engage in efforts to define and participate in programs to capture and analyze data from the Fukushima event to enhance understanding of severe accident phenomena, including BWR melt progressions, seawater addition effects, hydrogen transport and combustion, and safety systems operability.”</li></ul>	The NRC staff in the Office of Nuclear Regulatory Research is currently working on capturing and analyzing Fukushima data to enhance the agency’s understanding of severe accident phenomena.
<ul style="list-style-type: none"><li>ACRS Recommendation 3—“Licensing actions requiring the granting of containment accident pressure (CAP) credit should be suspended until the implications of post-Fukushima containment pressure control measures are understood.”</li></ul>	The NRC staff determined that CAP credit will continue to be reviewed on a case-by-case basis.