

**POLICY ISSUE**  
**(Notation Vote)**

September 6, 2013

SECY-13-0095

FOR: The Commissioners

FROM: Mark A. Satorius  
Executive Director for Operations

SUBJECT: FOURTH 6-MONTH STATUS UPDATE ON RESPONSE TO LESSONS  
LEARNED FROM JAPAN'S MARCH 11, 2011, GREAT TOHOKU  
EARTHQUAKE AND SUBSEQUENT TSUNAMI

PURPOSE:

The purpose of this paper is to provide a status update on the U.S. Nuclear Regulatory Commission (NRC) staff's activities related to lessons learned from the March 2011 accident at Japan's Fukushima Dai-ichi facility. This paper also provides a description of the plans and status of transitioning oversight of lessons-learned activities from the Steering Committee to the appropriate line organizations, the plan to document closure of lessons-learned activities as they are completed, and requests Commission approval to dissolve the charter to facilitate transfer of lessons learned to the line organizations. This paper does not address any new commitments or resource implications.

SUMMARY:

The staff continues to work on the Tier 1, Tier 2, and Tier 3 activities related to lessons learned from Fukushima consistent with the schedules established in SECY-11-0137, "Prioritization of Recommended Actions to Be Taken in Response to Fukushima Lessons Learned," (Agencywide Documents Access and Management System (ADAMS) Accession No. ML11272A111), Staff Requirements Memorandum (SRM) SECY-11-0124, "Recommended Actions to Be Taken Without Delay from the Near-Term Task Force Report," (ADAMS Accession No. ML112911571), SRM-SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tōhoku Earthquake and Tsunami," (ADAMS Accession No. ML120690347), and SECY-12-0095, "Tier 3 Program Plans and 6-Month Status Update in Response to Lessons Learned from Japan's March 11, 2011, Great Tōhoku Earthquake and Subsequent Tsunami," (ADAMS Accession No. ML12165A092). The staff's principal effort since the last 6-month status update continues to

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focus on the high priority Tier 1 actions, but work on the Tier 2 and Tier 3 activities continues to progress in accordance with established schedules. The staff has also established a process for transitioning oversight of lessons-learned activities from the Steering Committee to the appropriate line organizations. All of the activities have been reviewed by the Steering Committee and it determined that most of the activities are ready for transition to line organization oversight.

#### BACKGROUND:

In SRM-SECY-11-0117, "Proposed Charter for the Longer-Term Review of Lessons Learned from the March 11, 2011, Japanese Earthquake and Tsunami," (ADAMS Accession No. ML112920034), the Commission approved, with modifications, the staff's proposed charter that established the structure, scope and expectations for NRC's longer-term review of the events in Japan.

The charter requires, among other things, status updates every 6 months for two years on the work conducted under the charter. The staff provided its first 6-month status update in SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tōhoku Earthquake and Tsunami," (ADAMS Accession No. ML12039A103). The second 6-month update was provided as Enclosure 1 to SECY-12-0095. The third update was presented in SECY-13-0020 (ADAMS Accession No. ML13031A512). This is the staff's fourth 6-month status update, which covers February 2013 to August 2013.

In SECY-11-0137, the staff prioritized the Near-Term Task Force (NTTF) recommendations provided in SECY-11-0093, "Near-Term Report and Recommendations for Agency Actions Following the Events in Japan" (ADAMS Accession No. ML11186A950), into three tiers. SECY-11-0137 also provided the staff's assessment of the Tier 1 and Tier 2 items, including recommendations for regulatory action on Tier 1 items. Assessments and program plans for the Tier 3 items, along with six additional recommendations identified in SECY-11-0137, were provided in SECY-12-0095.

On March 12, 2012, the NRC issued three orders and a request for information (RFI) letter to licensees (ADAMS Accession Nos. ML12054A735, ML12054A694, ML12054A679, and ML12053A340). These regulatory actions covered most of the Tier 1 items. On June 6, 2013, the NRC issued an order that modified and superseded one of the March 12, 2012, orders (ADAMS Accession No. ML13143A321); this will be discussed further in the section on reliable hardened containment vents in Enclosure 1. Implementation of these regulatory actions, along with additional efforts to employ the rulemaking process for the remaining Tier 1 activities, has remained the primary focus of the staff's effort since the last 6-month update. In addition, the staff has made progress on Tier 2 and Tier 3 recommendations. The status update for each lessons-learned activity is contained in the enclosures, which are organized by tier. Enclosure 1 addresses Tier 1 activities; Enclosure 2 addresses Tier 2 activities; Enclosure 3 addresses Tier 3 activities; and Enclosure 4 addresses activities that are not contained within a tier.

**DISCUSSION:*****General Status Update***

The staff continues its work on Tier 1, Tier 2, and Tier 3 activities consistent with the schedules established in SECY-11-0137, SRM-SECY-11-0124, SRM-SECY-12-0025, SECY-12-0095, and SRM-SECY-12-0157, "Consideration of Additional Requirements for Containment Venting Systems for Boiling Water Reactors with Mark I and Mark II Containments," (ADAMS Accession No. ML13078A017). A status update specific to each lessons-learned activity is contained within the enclosures; however, a general status update on the most significant staff activities is provided here.

***Orders***

In February 2013, the staff received licensees' integrated plans for implementation of the orders issued on March 12, 2012. These plans detail the actions and milestones each licensee will take to achieve full implementation of the orders within two refueling cycles of the submittal. Because a modified order for reliable hardened vent systems was issued subsequent to receipt of licensee integrated plans for the original order, licensees will be preparing revised integrated plans that will supersede their original submittals. The NRC staff is currently reviewing the integrated plan submittals for mitigation strategies and spent fuel pool instrumentation and is preparing draft safety evaluations (SEs) for each site. Any potential staff concerns with the submittals will be documented as open items in the draft SEs, and these open items are expected to eventually be closed through revision of the integrated plan, or through an NRC audit. Once the open items are closed, the staff will issue the final SEs. This process of closing out open items from the draft SEs will occur during the implementation phase and the final SEs are expected to be issued approximately 6 months before each licensee achieves full implementation of the orders. A final SE will document the site-specific regulatory decision that the NRC staff has found the licensees' planned actions acceptable for meeting the requirements of the orders. Following full implementation, the NRC staff will inspect each site to verify that they have met the requirements of the orders. Because the implementation deadlines for each site depend on refueling outage schedules, the NRC staff is preparing the draft SEs on a staggered basis commensurate with the site-specific outage schedules, with the aim to issue draft SEs for the spent fuel pool instrumentation order by November 2013, and for the mitigation strategies order by February 2014.

For the June 6, 2013, modified order related to severe accident capable reliable hardened containment vents for boiling water reactors (BWRs) with Mark I and II containments, implementation will be in phases. Phase 1 will include installation of a wetwell vent by the second refueling outage after June 2014. Phase 2 will include installation of a drywell vent, or a strategy obviating the need for a drywell vent, by the first refueling outage after June 2017.

Guidance for implementation of the modified order is currently under development and on track for issuance by October 2013. Licensees will provide their revised integrated plans for Phase 1 by June 2014 and Phase 2 by December 2015. The NRC staff will follow a similar process for preparing SEs for this modified order.

*Requests for Information*

During the summer and fall of 2012, licensees conducted seismic and flooding hazard walkdowns and submitted the final walkdown reports to the NRC in November 2012. Degraded, nonconforming, or unanalyzed conditions identified during the walkdowns were entered into the licensee's corrective action program, and NRC inspectors are monitoring the resolution under the Reactor Oversight Process. The NRC staff is conducting assessments of the walkdown submittals. During June and July 2013, staff conducted audits of selected plants to gain a better understanding of licensee methods and procedures used to conduct the walkdowns, their consistency with the walkdown guidance, and to assist in the review of the walkdown reports.

For flooding hazard reevaluations, the majority of the first set of plants provided the results of their hazard reevaluations by March 12, 2013. Six sites requested and were approved for extensions, primarily to facilitate use of more accurate models. Several sites stated that the results of their reevaluated hazards indicate they will need to take interim actions (e.g., having standby sandbags in place before a permanent barrier can be constructed), and several sites indicated that they will be performing an integrated assessment to determine if permanent changes are needed. The NRC staff is also reviewing the reevaluated hazards and will issue a safety assessment for each site.

The first submittals for seismic hazard reevaluations will be from plants in the central and eastern United States. These reevaluations were originally due to the NRC by September 2013. During public meetings in the spring of 2013, the industry proposed to update the ground motion model that will be used to perform the reevaluations, which should ultimately yield more accurate results. Furthermore, the industry proposed to apply screening criteria that will require some plants to perform an expedited evaluation and implementation of safety enhancements earlier than the NRC's original schedule. To allow the time needed to develop the updated ground motion model, the staff approved an extension for the model to be developed and for the staff to review and approve it by the end of August 2013. The staff met this deadline by issuing its endorsement on August 28, 2013 (ADAMS Accession No. ML13233A102). Licensees will have until March 2014 to provide their updated seismic hazard reevaluation. The staff will review the seismic reevaluation submittals and issue a safety assessment for each plant. Seismic reevaluations from plants in the western United States are still due in March 2015.

On October 31, 2012, the licensees supplied their responses regarding the assessment of their communications capability for a multiunit prolonged station blackout (SBO) event. The NRC staff has completed its review of the communications assessments and determined that proposed interim actions combined with long-term enhancements will help to ensure that licensees can effectively communicate during a station blackout (SBO) event affecting multiple units. On April 30, 2013, the licensees provided the first part of their staffing assessments regarding the plant personnel needed to respond to a multiunit prolonged SBO. The remaining portions of the staffing and communications request is expected to be impacted by the licensees' mitigation strategies being developed to address Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," (ADAMS Accession No. ML12056A045). As such, licensees will submit the remaining portions of their response to the Request for Information letter regarding staffing and communications (if needed) four months before the second refueling outage at each site (i.e., 4 months before each site completes full implementation of the mitigation strategies order).

### *Rulemaking Activities*

On March 4, 2013, the Commission issued SRM-COMSECY-13-0002, “Consolidation of Japan Lessons Learned Near-Term Task Force Recommendations 4 and 7 Regulatory Activities,” (ADAMS Accession No. ML13063A548), approving the staff’s proposal to consolidate regulatory activities associated with NTTF Recommendations 4 (SBO mitigation capability) and 7 (spent fuel pool makeup capability) into a single rulemaking referred to as “Station Blackout Mitigation Strategies” (SBOMS). This rulemaking is expected to codify the requirements of Order EA-12-049. The Commission’s SRM also approved a schedule adjustment to enable the rulemaking to be informed by implementation of the mitigation strategies order (EA-12-049); the final rule is now scheduled for completion by December 2016. The final regulatory basis, which supports preparation of a proposed rule, was published in the *Federal Register* on July 23, 2013 (78 FR 44035).

For the Emergency Onsite Response Capabilities rulemaking, initiated as a result of NTTF Recommendation 8, the NRC issued a draft regulatory basis for public comment on January 8, 2013. The staff is currently considering both internal and external feedback and modifying the document. The final rule, when complete, is expected to establish standards that ensure plants can smoothly transition between various emergency procedures, keeping overall strategies coherent and comprehensive. The final rule is scheduled for completion in March 2016.

In SRM-SECY-12-0157, the Commission instructed the staff to initiate rulemaking that considers filtering and confinement strategies for limiting the release of radiological material in the event of a severe accident at BWRs with Mark I and II containments. These strategies would consider, but not be limited to, installation of an external engineered filter. Public meetings are continuing to discuss development of a regulatory basis to support the rulemaking. A final rule, if adequately supported by a regulatory basis and associated rulemaking analyses, is expected in 2017.

While not technically a rulemaking activity, NTTF Recommendation 1 is to establish “a logical, systematic, and coherent regulatory framework for adequate protection that appropriately balances defense-in-depth and risk considerations” to encompass beyond-design-basis events. The NRC staff continues to engage with stakeholders, including the Advisory Committee on Reactor Safeguards (ACRS), to inform the development of options for Commission consideration. To date, the staff has released three white papers for public comment describing the working group’s proposed regulatory framework improvement activities. The staff plans to provide a discussion of these potential improvement activities, along with options for the Commission’s consideration, in a December 2013 paper.

### *Tier 2 Activities*

Tier 2 activities fall into three main areas: spent fuel pool (SFP) makeup capabilities, emergency preparedness (EP), and reevaluation of other external hazards (that is, hazards other than seismic and flooding, which are being reevaluated under Tier 1). For the first two areas—SFP makeup capabilities and EP—the staff has found that the intent of these recommendations are being accomplished through implementation of mitigation strategies order EA-12-049, with the exception of the multiunit dose assessment capability. These items have thus been consolidated into the mitigation strategies activities, as approved by the Commission in SRM-

COMSECY-13-0002 and SRM-COMSECY-13-0010, "Schedule and Plans for Tier 2 Order on Emergency Preparedness for Japan Lessons-Learned," (ADAMS Accession No. ML13120A339). The remaining Tier 2 EP item, multiunit dose assessment, is being addressed through each licensee documenting their commitments to obtain multiunit dose assessment capability by the end of 2014. The staff intends to include it in the rulemaking planned for Tier 3 EP-related topics. The final Tier 2 activity, reevaluation of other external hazards, will be informed by the insights gained from implementation of the seismic and flooding reevaluation efforts. The staff primarily focused its resources on seismic and flooding reevaluations due to their potential risk significance. As progress is made and resources become available, staff will commence work on this recommendation by following a similar process as the seismic and flooding reevaluations.

### *Tier 3 Activities*

While much of the staff's effort to date has focused on the high priority Tier 1 actions, work on the Tier 3 activities is progressing in accordance with the longer-term schedules established in the program plans that were issued in July 2012 as part of SECY-12-0095, with two exceptions. The Tier 3 work associated with evaluating the merits of expediting the transfer of spent fuel from pools to dry cask storage has been accelerated to allow coordination with the waste confidence rulemaking activities. The staff intends to deliver a Commission paper on this activity in October 2013. The Tier 3 work associated with EP will be initiated in 2015 and will include the issuance of an advanced notice of proposed rulemaking in 2016. Each Tier 3 activity generally: (A) requires further evaluation before it can be determined if additional regulatory action is necessary, and/or (B) depends on the outcome of another activity before it can be determined what, if any, action should be taken. To date, no determinations for regulatory action have been completed on any of the Tier 3 activities.

### ***Transition of the Longer-Term Review Organization***

In the "Charter for the Nuclear Regulatory Commission Steering Committee to Conduct a Longer-Term Review of the Events in Japan," an attachment to SRM-SECY-11-0117, the structure, scope, and expectations were established for the longer-term review of lessons learned from the Fukushima accident. The charter recognized that a transition away from the crafted organizational structure would eventually become appropriate as the lessons-learned activities matured. Specifically, the charter states that the staff's updates to the Commission should "...provide recommendations regarding the sunset of the Steering Committee, Advisory Committee, and the Project Directorate." The staff has established a plan and process to transition lessons-learned activities back to the line organizations.

The first step toward integrating post-Fukushima activities into the normal agency structure is to start with the transition of oversight from the Steering Committee to the line organizations. As detailed in the charter, the Steering Committee is composed of the Directors of the NRC offices most directly affected by one or more of the lessons-learned activities; two of the four Regional Administrators are also members. The Steering Committee is chaired by the Deputy Executive Director for Reactor and Preparedness Programs (DEDR). According to the charter, the Steering Committee's primary responsibility is to assess and prioritize the Near-Term Task Force's recommendations. This has been accomplished for the Tier 1 activities. Similarly, the Tier 2 and Tier 3 activities have plans in place for further evaluation to determine what, if any, regulatory action should be taken. Given the progress achieved to date, the staff determined it

is an appropriate time to transition oversight to the line organizations for most Fukushima-related activities, but to maintain a reduced scope of activities under Steering Committee oversight.

To make the determinations on whether a lessons-learned activity was ready for transition to the line organization, the Steering Committee developed a methodology for reviewing each activity. This methodology consisted of performing an evaluation of each activity to determine: (A) whether the activity was sufficiently mature and/or had a clear path for completion and (B) whether ownership had been properly established within the line organization(s). The evaluations were performed by staff in the line organization(s) that will assume full ownership. Each evaluation was then presented to and reviewed by the Steering Committee. The Steering Committee discussed each activity, and as described in the enclosures, determined whether or not the activity was ready for transition to line organization oversight. Details on the justifications for these determinations are described within the enclosures in a section that follows each activity's status update. In summary, the Steering Committee determined that all lessons-learned activities, except for four items, are ready for transition to the line organizations. These items are:

- periodic re-confirmation of external hazards (Tier 3);
- reliable hardened vents for containment designs other than BWR Mark I and II (Tier 3);
- hydrogen control and mitigation (Tier 3); and
- applicability of lessons learned to other NRC-regulated facilities (not within a Tier).

The Steering Committee will meet as needed to address the items above, the status of ongoing activities, potential problems, or newly identified issues. It should be noted that for activities that are being transitioned to a line organization, neither their priority nor oversight is lost. The Steering Committee will stay apprised of the transitioned activities to ensure an adequate focus is maintained on their implementation, and because individual Steering Committee members are also the Directors of individual line organizations, each activity will continue to be directly overseen by at least one Steering Committee member. Furthermore, the Steering Committee will continue to interact with the industry's Steering Committee in regularly scheduled public meetings to resolve issues at an executive level. These interactions are mutually beneficial and the staff believes that even after an activity is transitioned, it will continue to be discussed in such a forum for the benefit of all stakeholders. The act of transitioning an activity, however, allows the staff to address that activity within normal agency processes.

The Japan Lessons-Learned Project Directorate (JLD) organization will remain in place for a period of time. The JLD organization will remain within the Office of Nuclear Reactor Regulation (NRR) and continue to serve in a program management and support role to ensure the holistic coordination and awareness of lessons-learned activities as they are implemented within the different line organizations. The JLD will serve as a central liaison for technical and programmatic consistency, especially as it relates to activities that might have ownership across multiple line organizations. This role will minimize any potential duplication of effort or inconsistent application of NRC processes. Once all lessons-learned activities are transitioned to the line organizations, show sufficient progress, and full project management responsibilities are established, the staff will disband the JLD. Once this occurs, the staff recognizes that there will still be a need to maintain holistic cognizance of the group of activities that make up

Fukushima lessons learned; therefore, the staff intends to establish responsibility for this broad awareness and support within one of the line organizations until all activities are completed.

To keep the Commission informed of lessons-learned activities, the JLD will continue to provide semi-annual status updates. These updates will be in addition to the activity-specific policy issues that will be brought to the Commission's attention during the normal course of evaluation or implementation.

### ***Documentation of Final Closeout of Lessons-Learned Activities***

The staff recognizes that as lessons-learned activities are completed, it must clearly and thoroughly document its basis for considering the activity to be complete. In some cases this might be clear; for example, the publication of the Station Blackout Mitigation Strategies (SBOMS) final rule in the FR should provide sufficient justification for a "complete" determination. However, the staff recognizes that some lessons-learned activities, particularly those in Tier 3 that are undergoing longer-term evaluations, might result in no regulatory action. Regardless of the final outcome of a given activity, the staff plans to document its clear and thorough justification when it determines that an activity should be considered complete, and that justification will be provided to the Commission for each activity as determinations are made. Additionally, the staff will include in its semi-annual updates to the Commission the status of items (including responsible line organization, completed work, future milestones, etc.) until they are completed. Furthermore, the staff intends to maintain a publicly available list or table that will cite the document containing the staff's justification for closure of each activity. This will help ensure traceability and consistency as each activity is closed.

### **RECOMMENDATION:**

The staff recommends that the Commission dissolve the Steering Committee charter provided in SRM-SECY-11-0117. The dissolution of the charter will support the transition of lessons-learned oversight from the Steering Committee to the line organizations, including transition of the activities the Steering Committee has already determined are ready for transition (as described in the enclosures).

### **COORDINATION:**

The Office of the General Counsel has reviewed this paper and has no legal objection

***/RA/***

Mark A. Satorius  
Executive Director  
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### **Enclosures:**

1. Update on Tier 1 Activities
2. Update on Tier 2 Activities
3. Update on Tier 3 Activities
4. Update on Activities Not Within a Tier



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COORDINATION:

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**/RA/**  
 Mark A. Satorius  
 Executive Director  
 for Operations

Enclosures:

1. Update on Tier 1 Activities
  2. Update on Tier 2 Activities
  3. Update on Tier 3 Activities
  4. Update on Activities Not Within a Tier
- 201100250, 201300076, 201300095 **Accession Nos.:** Package ML13213A304 \*via e-mail

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