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## **POLICY ISSUE**

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### **(Information)**

April 9, 2015

SECY-15-0059

FOR: The Commissioners

FROM: Mark A. Satorius  
Executive Director for Operations

SUBJECT: SEVENTH 6-MONTH STATUS UPDATE ON RESPONSE TO LESSONS  
LEARNED FROM JAPAN'S MARCH 11, 2011, GREAT TÔHOKU  
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 does not address any new commitments or resource implications.

BACKGROUND:

In the staff requirements memorandum (SRM) to SECY-11-0117, "Proposed Charter for the Longer-Term Review of Lessons Learned from the March 11, 2011, Japanese Earthquake and Tsunami," dated October 19, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML112920034), the Commission approved a charter that established the structure, scope, and expectations for the NRC's longer-term review of the events in Japan. The charter required, among other things, status updates every six months for two years on the work conducted under the charter.

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In SRM-SECY-13-0095, "Fourth 6-Month Status Update on Response to Lessons Learned from Japan's March 11, 2011, Great Tōhoku Earthquake and Subsequent Tsunami," dated November 13, 2013 (ADAMS Accession No. ML13317A271), the Commission directed the NRC staff to continue to provide the Commission a status report every six months until completion of the implementation of Tier 1 actions.

The NRC 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," dated February 17, 2012 (ADAMS Accession No. ML12039A103). Subsequent updates were provided as:

- Second update: SECY-12-0095 (ADAMS Accession No. ML12165A092), Enclosure 1;
- Third update: SECY-13-0020 (ADAMS Accession No. ML13031A512);
- Fourth update: SECY-13-0095 (ADAMS Accession No. ML13213A304);
- Fifth update: SECY-14-0046 (ADAMS Accession No. ML14064A523); and
- Sixth update: SECY-14-0114 (ADAMS Accession No. ML14234A496).

This is the staff's seventh 6-month status update, which covers September 2014 through February 2015. Occasionally, as noted, the staff provides an update on activities in March 2015 if it was thought to be of particular interest to the Commission.

In SECY-11-0137, the NRC 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," dated July 12, 2011 (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. SECY-12-0095 provided assessments and program plans for the Tier 3 items, along with six other recommendations listed in SECY-11-0137.

On March 12, 2012, the NRC issued Orders EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," EA-12-050, "Issuance of Order to Modify Licenses with Regard to Reliable Hardened Containment Vents," and EA-12-051, "Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation," and a request for information under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Section 50.54(f) (hereafter referred to as the 50.54(f) letter) to licensees (ADAMS Accession Nos. ML12054A735, ML12054A694, ML12054A679, and ML12053A340, respectively). These regulatory actions addressed the majority of the Tier 1 items. On June 6, 2013, the NRC issued Order EA-13-109, "Issuance of Order to Modify Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions," (ADAMS Accession No. ML13143A321), which modified and superseded Order EA-12-050. Putting these regulatory actions into place, along with other 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 NRC staff has made progress on the Tier 2 and Tier 3 recommendations.

DISCUSSION:

This update covers the period from September 2014 through February 2015. Changes from the previous update are noted by change bars in the side margins. Status updates specific to each lessons learned activity are contained within the enclosures. 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.

The NRC and the industry have made substantial progress in implementing the lessons learned from the accident, and nearly all of the lessons learned activities are on or ahead of established schedules. Highlights of the progress made to date include:

- For the Mitigation Strategies and Spent Fuel Pool Instrumentation orders, audits of both plant documentation and onsite activities to review closeout of items identified in the interim staff evaluations are ongoing. As of the end of reporting period, the NRC staff had completed audits of 29 sites.
- The first 5 units are in compliance with the Mitigating Strategies order, and an additional 18 units are expected to come into compliance at the conclusion of refueling outages in spring 2015.
- 18 units are in compliance with the Spent Fuel Pool Instrumentation order.
- NRC staff developed a temporary instruction for performing post-compliance inspections of the Mitigating Strategies and Spent Fuel Pool Instrumentation orders, along with emergency preparedness staffing and communication enhancements, and a pilot inspection was performed at Watts Bar during the week of March 30, 2015.
- Both National SAFER Response Centers are operational.
- Information Notice 2015-01, "Degraded Ability to Mitigate Flooding Events," was issued to discuss findings discovered during the licensee flooding walkdowns.
- Shortly after this reporting period ended, licensees for plants in the Western U.S. submitted their seismic hazard reevaluations on schedule.
- Licensees for 33 of 34 Central and Eastern U.S. sites submitted Interim seismic evaluation (expedited seismic evaluation process (ESEP)) reports. The final site ESEP is due May 1, 2015. NRC staff review of the reports is in progress.
- The Mitigation of Beyond-Design-Basis Event (MBDBE) and Containment Protection and Release Reduction (CPRR) rulemaking activities are continuing on schedule. The MBDBE proposed draft rule is due to the Commission at the end of April.
- All sites (except one) have implemented automated multiunit dose assessment capabilities. The final site, which has manual capabilities, will have automated capabilities this summer.

- The staff completed the evaluation of the need to implement lessons learned for other regulated facilities with limited scope follow-up identified. The results will be presented to the Commission in the near future.
- The staff completed the follow up actions directed by SRM-COMSECY-13-0030 concerning expedited transfer of spent fuel to dry casks. As part of those activities, the NRC staff concluded that an appropriate seismic evaluation should be conducted for plants that screen in.

Enclosure 5 explains the overall NRC response and how the various lessons learned activities work together as part of the NRC's defense-in-depth approach to nuclear reactor safety. Table 1 in Enclosure 5 provides information on the status of activities in terms of the various steps in the regulatory process (e.g., assessment, decisionmaking, regulatory action, implementation, and inspection). The table also organizes the activities by outcome instead of only by the numbering system used by the NTTF for its recommendations.

In the Energy and Water Development Appropriations Act of 2012, Congress mandated that the NRC provide funding to the National Academy of Science (NAS) to study the lessons learned from the events at the Fukushima Dai-ichi nuclear plant. NAS published a report on the first phase of their study, "Lessons Learned from the Fukushima Nuclear Accident for Improving Safety of U.S. Nuclear Plants", on October 29, 2014. The NAS report documents nine findings and 10 recommendations. The findings and recommendations, along with staff's assessment of them, are contained in Enclosure 6. The staff's overall conclusion is that ongoing or planned NRC and industry activities are adequately addressing NAS's recommendations. NRC staff continues to work with NAS on the second phase of their study, which involves a reevaluation of previous NAS conclusions related to the safety and security of spent fuel (see Enclosure 4). NAS will hold more meetings in the coming months and plans to complete Phase 2 of the study by September 2015.

### Decommissioning Reactors

Five reactor units, at four sites, have ceased operations permanently and begun the decommissioning process since the Fukushima lessons learned orders and 50.54(f) letter were issued in March 2012. They are:

- Crystal River Unit 3 Nuclear Generating Plant (Crystal River);
- Kewaunee Power Station (Kewaunee);
- San Onofre Nuclear Generating Station (SONGS), Units 2 and 3; and
- Vermont Yankee Nuclear Power Station (Vermont Yankee).

The licensees have submitted the certifications required by 10 CFR 50.82(a)(1)(i) and (ii) and are no longer authorized to operate the reactor or place or retain fuel in the reactor vessel. The Oyster Creek Nuclear Generating Station (Oyster Creek) has also announced plans publicly to shut down permanently in 2019. The NRC staff has received requests from the four shutdown

sites to relax or rescind the applicable orders and relieve them from the obligations of the 50.54(f) letter.

NRC staff has rescinded Orders EA-12-049 (for mitigation strategies) and EA-12-051 (for spent fuel pool instrumentation) for Crystal River, Kewaunee, SONGS, and Vermont Yankee, and has rescinded Order EA-13-109 for Vermont Yankee (the requirements of the orders are not needed when no fuel is in the reactor pressure vessel). Additionally, NRC staff confirms that Order EA-13-109 (severe-accident-capable hardened vents for boiling water reactors) does not apply to Crystal River, Kewaunee, or SONGS since they are pressurized water reactors.

Crystal River, Kewaunee and Vermont Yankee responded to the 50.54(f) letter and staff assessments were issued. SONGS responded to the 50.54(f) letter, but the decision to decommission the units was made before NRC staff completed its review and the review was terminated. Since they have certified permanent removal of fuel from the reactor pressure vessel, Crystal River, Kewaunee, SONGS, and Vermont Yankee have been relieved of the obligations of the 50.54(f) letter.

Oyster Creek submitted a request for an extension to comply with Order EA-13-109 until January 31, 2020. The plant is expected to be shut down permanently at that time. Oyster Creek is currently required to be in compliance with Phase 1 (wetwell venting system) of the order by startup after the fall 2016 refueling outage and Phase 2 (drywell venting system) of the order by startup after the fall 2018 refueling outage. NRC staff expects to make a decision on the extension request in the near future.

#### Relief for a Construction Site in Deferred Status

In December 2014, the NRC staff received all expected interim evaluations associated with the ESEP for those sites that screened-in to conduct a seismic risk evaluation, except for Bellefonte Nuclear Power Station, Units 1 and 2 (Bellefonte). By letter dated October 21, 2014 (ADAMS Accession No. ML14295A290), Tennessee Valley Authority (TVA) (the licensee for Bellefonte) notified the NRC staff of a schedule change to defer the completion of a seismic interim evaluation and seismic risk evaluation until TVA submits a letter with a schedule to reactivate construction at Bellefonte. By letter dated February 13, 2015 (ADAMS Accession No. ML15023A259) the staff approved TVA's schedule relief request.

#### Office of Nuclear Reactor Regulation's Japan Lessons-Learned Division

On June 15, 2014, the Office of Nuclear Reactor Regulation (NRR) reorganized to centralize the day-to-day activities associated with carrying out the lessons learned from the Fukushima Dai-ichi nuclear power plant accident in the new Japan Lessons-Learned Division (JLD). The functions of the Japan Lessons-Learned Directorate and the Mitigating Strategies Directorate have been incorporated into the new division.

The JLD is tasked with executing the NTF Recommendations, as approved by the Commission, providing sufficient management oversight to support these agency high-priority activities, and promote the flexible use of agency resources to most efficiently accomplish specific key milestones. The JLD provides a baseline capability on Tier 1 activities and other Fukushima support activities to accomplish its day-to-day mission and reaches out to other divisions in NRR as additional resources are needed to handle workload peaks.

At this time, a decision on when to sunset the JLD has not been made. NRC staff anticipates being in a better position to determine the timing for this organizational change in early 2016.

COORDINATION:

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

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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
5. Overview of Fukushima-Related  
Recommendations and Related Activities
6. Staff Conclusion and Recommendations  
Regarding the NAS Lessons Learned Report