

**POLICY ISSUE**  
**Notation Vote**

December 29, 2016

SECY-16-0144

FOR: The Commissioners

FROM: Victor M. McCree  
Executive Director for Operations

SUBJECT: PROPOSED RESOLUTION OF REMAINING TIER 2 AND 3  
RECOMMENDATIONS RESULTING FROM THE FUKUSHIMA DAI-ICHI  
ACCIDENT

PURPOSE:

In this paper, the U.S. Nuclear Regulatory Commission (NRC) staff requests Commission approval of its proposals for resolution of the remaining open Tier 2 and 3 recommendations developed in response to the March 11, 2011, accident at the Fukushima Dai-ichi nuclear power plant.

SUMMARY:

This paper provides the staff's basis for closing the three remaining Tier 2 and 3 recommendations developed in response to the Fukushima Dai-ichi event. The evaluations documented in enclosures to this paper considered existing requirements, planned safety enhancements, and industry initiatives to confirm their adequacy and to determine if these recommendations would provide a substantial safety enhancement if imposed through new requirements.

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Based on its evaluation, the staff recommends that:

- The NRC not initiate additional regulatory actions to address natural hazards other than seismic and flooding.
- The ongoing assessment of natural hazard information be addressed through enhanced internal processes to establish a more routine, proactive, and systematic program for identifying and evaluating new information related to external hazards.
- The NRC not impose new requirements associated with real-time radiation monitoring onsite and within the emergency planning zones (EPZs).

#### BACKGROUND:

The NRC's Near-Term Task Force (NTTF) was established shortly after the Fukushima Dai-ichi accident. The Commission directed the NTTF to conduct a methodical and systematic review of NRC processes and regulations and provide recommendations to the Commission on whether the agency should make changes to its regulatory program in response to the accident. In SECY-11-0093, "Near-Term Report and Recommendations for Agency Actions Following the Events in Japan," dated July 12, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML11186A950), the NTTF's recommendations were provided to the Commission. The staff requirements memorandum (SRM) for SECY-11-0093 (ADAMS Accession No. ML112310021), dated August 19, 2011, directed the staff to recommend a prioritization of the NTTF's recommendations.

In SECY-11-0137, "Prioritization of Recommended Actions to be Taken in Response to Fukushima Lessons Learned," dated October 5, 2011 (ADAMS Accession No. ML11272A111), the staff provided the Commission with its proposed prioritization of the NTTF's recommendations. In SECY-11-0137 and during subsequent interactions with stakeholders, the staff identified a number of additional issues with a clear connection to the Fukushima Dai-ichi accident that may warrant regulatory action, but that were not included in the NTTF's report. These additional recommendations were prioritized either in SECY-11-0137 or as part of later evaluations.

The staff's prioritization approach grouped the recommendations in three tiers. Tier 1 consisted of those recommendations that the staff determined would result in the greatest potential safety improvement in the near term, which should be started without delay, and for which sufficient resources and critical skill sets were available. Tier 2 consisted of those recommendations that could not be initiated in the near term given the need for further technical assessment and alignment, dependence on Tier 1 issues, or availability of critical skill sets. Tier 3 consisted of those recommendations that required further staff study to support a regulatory action, had an associated shorter-term action that needed to be completed to inform the longer-term action, were dependent on the availability of critical skill sets, or were dependent on the resolution of NTTF Recommendation 1. Most of the Tier 3 items involved studies and evaluations.

In SECY-15-0137, "Proposed Plans for Resolving Open Fukushima Tier 2 and Tier 3 Recommendations," dated October 29, 2015 (ADAMS Accession No. ML15254A008), the NRC staff provided the Commission with a grouping of the remaining open Tier 2 and Tier 3 recommendations. The three groups were defined in the paper as:

- (1) recommendations that could be closed based on the staff's assessment;
- (2) recommendations that the staff's initial assessment concluded could be closed, but for which additional stakeholder interaction was warranted prior to finalizing the staff's assessment; and
- (3) recommendations for which the staff had not completed assessments, stakeholder interactions, and/or documentation.

In SECY-15-0137, the staff committed to completing its evaluation of the Group 2 and 3 recommendations by March 31 and December 31, 2016, respectively.

In the SRM associated with SECY-15-0137, dated February 8, 2016 (ADAMS Accession No. ML16039A175), the Commission:

- approved the staff's recommendation to close the Group 1 recommendations;
- directed the staff to document the final results of the Group 2 evaluations after interactions with external stakeholders and the Advisory Committee on Reactor Safeguards (ACRS); and
- directed the staff to provide an interim status update of the Group 3 activity associated with natural hazards other than seismic and flooding by mid-calendar year 2016.

The results of the staff's evaluation of the Group 2 recommendations are documented in SECY-16-0041, "Closure of Fukushima Tier 3 Recommendations Related to Containment Vents, Hydrogen Control, and Enhanced Instrumentation," dated March 31, 2016 (ADAMS Accession No. ML16049A079). SECY-16-0074, "Assessment of Fukushima Tier 2 Recommendation Related to Evaluation of Natural Hazards other than Seismic and Flooding," dated June 2, 2016 (ADAMS Accession No. ML16102A297), provides the staff's interim status update on the evaluation of natural hazards other than seismic and flooding.

DISCUSSION:Staff Assessment of Natural Hazards Other than Seismic and Flooding

In SECY-11-0093, the staff considered additional recommendations related to the lessons learned from the Fukushima Dai-ichi event, beyond those identified in the NTTF report. As part of that initiative and in response to comments from the ACRS, as well as specific language included in the Consolidated Appropriations Act, 2012 (Pub. L. 112-74), the NRC staff identified an action regarding evaluation of natural external hazards other than seismic and flooding. In SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami," dated February 17, 2012 (ADAMS Accession No. ML12039A103), the NRC prioritized this action as a Tier 2 activity because of the lack of availability of the critical skill sets for both the NRC staff and licensees, and because the NRC staff considered the seismic and flooding reevaluations to be of higher priority.

In SECY-15-0137, the NRC staff outlined a four-step process for reviewing natural hazards other than seismic and flooding:

1. Define natural hazards other than seismic and flooding to determine those hazards that could potentially pose a threat to nuclear power plants and perform a screening to determine which of those should be reviewed generically.
2. Determine and apply screening criteria to appropriately exclude certain natural hazards from further generic evaluations, or exclude some licensees from considering certain hazards.
3. Perform a technical evaluation to assess the need for additional actions if the hazard or licensee was not screened out generically in Task 2.
4. Based on the results of Task 3, determine if additional regulatory actions are needed.

In SECY-16-0074, the staff informed the Commission that it had completed Tasks 1 and 2 of the process described in SECY-15-0137. The staff concluded that other than seismic and flooding, only those natural hazards associated with high winds and snow loads warranted further assessments and stakeholder interactions to address the Tier 2 recommendation. Enclosure 1 of this paper provides the staff's evaluation of high winds and snow loads in accordance with Task 3 of the process outlined above.

Based on the evaluation found in Enclosure 1, the staff concludes that regulatory action to provide additional protection against high winds and snow loads is not warranted.

### Recommendation 2.2: Plan to Ensure Ongoing Assessment of Natural Hazards Information

NTTF Recommendation 2.2 suggested that the NRC initiate a rulemaking to require licensees to confirm seismic and flooding hazards every 10 years and address any new and significant information including, if necessary, updating the design basis for structures, systems, and components important to safety to protect against the updated hazards. In SECY-12-0095, the staff discussed that other external hazards, such as those caused by meteorological effects, should be included in the licensees' periodic updates that the NRC would require once the agency implemented Recommendation 2.2.

In SECY-15-0137, the staff stated that the use of rulemaking to address Recommendation 2.2 was not necessary. Rather, the staff proposed to develop a method to leverage and enhance existing NRC processes and programs to ensure that information related to external hazards is proactively and routinely evaluated in a systematic manner. In response to the SRM to SECY-15-0137, NRC staff developed a framework that expands upon the concepts described in SECY-15-0137. The framework provides a graded approach that will allow NRC to proactively, routinely, and systematically seek, evaluate, and respond to new information on natural hazards. Enclosure 2 to this paper describes the proposed framework.

### Real-Time Radiation Monitoring

In its evaluation, the NTTF concluded that "as long as field teams are adequately staffed, equipped, and capable of transit given the nature of the natural disaster, field monitoring remains an effective method to acquire radiation data." Nevertheless, NTTF Recommendation 11.3 recommended that the NRC staff study the efficacy of real-time radiation monitoring onsite and within the EPZs (including consideration of alternating current power independence and real-time availability on the Internet). There is extensive regulatory history associated with the evaluation of real-time radiation monitoring onsite and within the EPZs, in which the NRC has previously made policy decisions regarding their efficacy.

In Enclosure 3 of this paper, the staff completed the study recommended by the NTTF. The staff concludes that imposing a new requirement for real-time radiation monitoring is not warranted.

### Stakeholder Interactions

As documented in SECY-15-0137, the staff held several public meetings during the development of that paper to solicit input from stakeholders. This included a meeting held on October 6, 2015, in which the NRC staff provided the ACRS Fukushima Subcommittee with an overview of the staff's plans to resolve all the open Tier 2 and 3 recommendations. The staff also discussed these plans with the ACRS Full Committee on November 5, 2015. In addition, the staff provided an overview of its proposed resolution plans for all the open Tier 2 and 3 recommendations during a Category 2 public meeting held on October 20, 2015. The staff also briefed the Commission on the status of Tier 2 and 3 activities in public meetings held on November 17, 2015, and May 17, 2016.

In addition to the meetings discussed above, the staff held a number of public meetings specific to the Group 3 recommendations. For example:

- On April 5, 2016, the staff held a Category 3 public meeting to solicit input on the results of Tasks 1 and 2 of its evaluation of natural hazards other than seismic and flooding (as documented in SECY-16-0074).
- On July 21, 2016, the staff held a public meeting to solicit specific stakeholder comments on its approach to addressing high winds and snow loads (ADAMS Accession No. ML16207A436).
- On August 25, 2016, the staff discussed the framework for ongoing assessment of natural hazard information, described in Enclosure 2 of this paper, with external stakeholders during a Fukushima Joint Steering Committee meeting (ADAMS Accession No. ML16252A221).
- As discussed in Enclosure 3, the staff held several stakeholder interactions as part of its evaluation of the need for real-time radiation monitoring. This included a public meeting held on May 25, 2015 (ADAMS Accession No. ML16165A249), and meetings with industry representatives and various Federal, State, and local stakeholders.

Finally, on September 22, 2016, the staff issued a document titled “White Paper for Staff Assessment of Fukushima Lessons Learned Associated with Other Natural Hazards, Periodic Confirmation of Natural Hazards, and Real-Time Radiation Monitoring” (ADAMS Accession No. ML16230A384). The white paper provided much of the staff’s assessment found in the enclosures to this paper. The staff briefed the ACRS Fukushima Subcommittee on October 19, 2016, on the staff’s assessment. The NRC staff briefed the ACRS Full Committee on its assessment of other natural hazards, ongoing assessment of natural hazards information, and real-time radiation monitoring on November 30, 2016.

#### RESOURCES:

Only the ongoing assessment of natural hazards information, found in Enclosure 2 to this paper, would have resource implications beyond fiscal year 2017. The resource estimates are discussed in detail in non-public Enclosure 4 to this paper.

#### RECOMMENDATION:

The staff’s evaluations of the open Tier 2 and 3 recommendations are summarized above, with further detail provided in the enclosures. Based on the results of its evaluations, the staff recommends that the Commission approve development of the process enhancements described in Enclosure 2 for ongoing assessment of natural hazard information and closure of the three Group 3 recommendations.

#### COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objections.

As noted above, the staff discussed its proposed resolutions of these Group 3 recommendations with the ACRS. The ACRS issued a letter on December 13, 2016 (ADAMS

Accession No. ML16341B333), providing its conclusions and recommendations associated with the staff's assessment. The staff considered its interactions with the ACRS, including the ACRS letter, in finalizing this paper. The staff expects to respond to the ACRS letter in January 2017.

***/RA Michael R. Johnson Acting for/***

Victor M. McCree  
Executive Director  
for Operations

Enclosures:

1. Evaluation of Natural Hazards Other than Seismic and Flooding
2. Recommendation 2.2: Plan to Ensure Ongoing Assessment of Natural Hazards Information
3. Evaluation of Real-Time Radiation Monitoring
4. Resource Estimates for Ongoing Assessment of Natural Hazards (non-public)

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**Enclosures:**

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3. Evaluation of Real-Time Radiation Monitoring
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**SRM-S15-0137-2, SRM-S15-0137-3 and SRM-S15-0137-4**

**Accession Nos.:** Package ML16286A586, **SECY** ML16286A552, **Enclosure 1** ML16286A561, **Enclosure 2** ML16286A569, **Enclosure 3** ML16286A583, **Enclosure 4 (NON-PUBLIC)** ML16341B863 **\*via email**

<b>OFFICE</b>	QTE*	NRR/JLD/JHMB/PM	NRR/JLD/JHMB/BC	RES/DE/D*	RES/DRA/D*
<b>NAME</b>	CHsu	JSebrosky	GBowman	BThomas	MThaggard
<b>DATE</b>	10/28/16	12/8/16	12/8/16	11/18/16	11/18/16
<b>OFFICE</b>	NRO/DSEA/DD*	NSIR/DPR/DD*	NRR/DRA/D*	NRR/DSS/D*	NRR/DE/D*
<b>NAME</b>	SHelton	SCoffin	JGitter	TMcGinty (JHickey for)	JLubinski
<b>DATE</b>	11/17/16	11/10/16	11/7/16	11/18/16	11/18/16
<b>OFFICE</b>	NRR/JLD/DD*	NRO/D*	NSIR/D*	RES/D*	OGC (NLO)*
<b>NAME</b>	MShams	VOrdaz (SFlanders for)	BHolian	BThomas (Acting)	SClark
<b>DATE</b>	11/18/16	12/6/16	12/1/16	12/5/16	12/8/16
<b>OFFICE</b>	CFO/DPB/DD	NRR/D	EDO		
<b>NAME</b>	RAllwein*	WDean	VMcCree (MJohnson for)		
<b>DATE</b>	12/7/16	12/8/16	12/29/16		

**OFFICIAL AGENCY RECORD**