POLICY ISSUE
NOTATION VOTE

October 3, 2011 SECY-11-0137

FOR: The Commissioners

FROM: R. W. Borchardt
Executive Director for Operations

SUBJECT: PRIORITIZATION OF RECOMMENDED ACTIONS TO BE TAKEN IN RESPONSE TO FUKUSHIMA LESSONS LEARNED

PURPOSE:

The purpose of this paper is to provide, for Commission consideration, the staff's proposed prioritization of the Fukushima Near-Term Task Force (NTTF) recommendations to (1) reflect regulatory actions to be taken by the staff in response to the Fukushima lessons learned; (2) identify implementation challenges; (3) include the technical and regulatory bases for the prioritization; (4) identify additional recommendations, if any; and (5) include a schedule and milestones with recommendations for appropriate stakeholder engagement and involvement of the Advisory Committee on Reactor Safeguards (ACRS). The enclosure provides detailed information to address these points.

BACKGROUND:

The NTTF was established to complete the near-term review required by the Chairman's tasking memorandum of March 23, 2011 (COMGBJ-11-0002). In SECY-11-0093, "Near-Term Report and Recommendations for Agency Actions Following the Events in Japan," dated July 12, 2011, the NTTF provided its recommendations to the Commission. The staff requirements memorandum (SRM) for SECY-11-0093, dated August 19, 2011, directed the staff to recommend a prioritization of the Task Force recommendations by October 3, 2011.

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DISCUSSION:

As directed by SRM-SECY-11-0093, the staff reviewed the NTTF recommendations within the context of the NRC's existing regulatory framework and considered the various regulatory vehicles available to the NRC to implement the recommendations. This review was conducted by a team consisting of NRC senior management representatives and technical experts.

Prioritization and Assessment

The staff initially prioritized the recommendations based on its judgment of the potential and relative safety enhancement which could be realized by each. First, the staff considered whether any of the NTTF findings identified an imminent hazard to public health and safety. As was previously discussed in SECY-11-0124, "Recommended Actions to be Taken Without Delay from the Near-Term Task Force Report," the staff agrees with the NTTF that none of the findings rise to this level. Additionally, in SECY-11-0124, the staff identified a subset of the NTTF recommendations which should be undertaken without unnecessary delay. These are the recommendations that the staff previously concluded have the greatest potential for safety improvement in the near term, recognizing that the staff does not have sufficient resources to initiate action on all recommendations at this time.

The staff then performed an assessment of each NTTF recommendation to determine the required regulatory activities, an estimated schedule, and associated resource impacts. An important element of this assessment was the objective of not unnecessarily diverting the NRC's or nuclear industry's focus from other important, ongoing safety-significant activities in the course of addressing the NTTF recommendations. This should not, however, be interpreted as a lack of urgency on the part of the staff in addressing those NTTF recommendations identified as being initiated without unnecessary delay.

To further inform this process, the staff conducted a public meeting with representatives of the nuclear industry on September 21, 2011, to better understand their current plans and actions to address the lessons learned from the Fukushima Daiichi event. The meeting minutes and transcript are available in the Agencywide Documents Access and Management System (ADAMS) at ML11271A122.

As a result of the staff's prioritization and assessment process, the NTTF recommendations were prioritized into three tiers:

Tier 1. The first tier consists of those NTTF recommendations which the staff determined should be started without unnecessary delay and for which sufficient resource flexibility, including availability of critical skill sets, exists. This tier includes all the actions identified in SECY-11-0124 and two additional items. The additional items are the following: (1) the inclusion of Mark II containments in the staff's recommendation for reliable hardened vents associated with NTTF Recommendation 5.1, and (2) the implementation of spent fuel pool (SFP) instrumentation proposed in Recommendation 7.1. After submitting SECY-11-0124, the staff continued its review of these recommendations. This review led the staff to conclude that resolution of the reliable hardened vents issues for Mark I and II containments should be undertaken concurrently. The

staff also concluded that installation of SFP instrumentation should be initiated without delay. Hence, the Tier 1 recommendations are the following:

2.1 Seismic and flood hazard reevaluations

2.3 Seismic and flood walkdowns

4.1 Station blackout (SBO) regulatory actions

4.2 Equipment covered under Title 10 of the *Code of Federal Regulations* (10 CFR) 50.54(hh)(2)

5.1 Reliable hardened vents for Mark I and Mark II containments

7.1 SFP instrumentation

8 Strengthening and integration of emergency operating procedures, severe accident management guidelines (SAMGs), and extensive damage mitigation guidelines

9.3 Emergency preparedness regulatory actions (staffing and communications)

Tier 2. The second tier consists of those NTTF recommendations which could not be initiated in the near term due to factors that include the need for further technical assessment and alignment, dependence on Tier 1 issues, or availability of critical skill sets. These actions do not require long-term study and can be initiated when sufficient technical information and applicable resources become available. The Tier 2 recommendations are the following:

7 SFP makeup capability (7.2, 7.3, 7.4, and 7.5)

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)

Tier 3. The third tier consists of those NTTF recommendations that require further staff study to support a regulatory action, have an associated shorter-term action that needs to be completed to inform the longer-term action, are dependent on the availability of critical skill sets, or are dependent on the resolution of NTTF Recommendation 1. The staff has focused its initial efforts on developing the schedules, milestones, and resources associated with Tier 1 and Tier 2 activities. Hence, information regarding the Tier 3 recommendations is not included in the enclosure. Once the staff has completed its evaluation of the resource impacts of the Tier 1 and Tier 2 recommendations, it will be able to more accurately address the Tier 3 recommendations.

The Tier 3 recommendations include all of the items identified for long-term evaluation in the NTTF report. In addition, the staff prioritized NTTF Recommendations 2.2, 9.1, 9.2, 9.3 (ERDS capability), and 12 into Tier 3. The Tier 3 recommendations and associated prioritization logic are as follows:

2.2 Ten-year confirmation of seismic and flooding hazards (dependent on Recommendation 2.1)

3 Potential enhancements to the capability to prevent or mitigate seismically-induced fires and floods (long-term evaluation)

5.2 Reliable hardened vents for other containment designs (long-term evaluation)

6 Hydrogen control and mitigation inside containment or in other buildings (long-term evaluation)

9.1/9.2 Emergency preparedness (EP) enhancements for prolonged SBO and multiunit events (dependent on availability of critical skill sets)

9.3 ERDS capability (related to long-term evaluation Recommendation 10)

10 Additional EP topics for prolonged SBO and multiunit events (long-term evaluation)

11 EP topics for decision-making, radiation monitoring, and public education (long-term evaluation)

12.1 Reactor Oversight Process modifications to reflect the recommended defense-in-depth framework (dependent on Recommendation 1)

12.2 Staff training on severe accidents and resident inspector training on SAMGs (dependent on Recommendation 8)

Additional Issues under Consideration

As directed by SRM-SECY-11-0093, the staff has sought to identify additional recommendations related to lessons learned from the Fukushima Daiichi event beyond those identified in the NTTF report. Many additional recommendations have been received both from NRC staff and external stakeholders, including the Office of Science and Technology Policy, Congress, international counterparts, other Federal and State agencies, non-governmental organizations, the public, and the nuclear industry. These issues have been raised in a variety of forums, including the staff's August 31, 2011, public meeting and the Commission's September 9, 2011, meeting. In the process of beginning to evaluate these additional recommendations, the staff has emphasized maintaining discipline with regard to which recommendations are associated with the staff's efforts to implement lessons learned from the Fukushima Daiichi event and which are more appropriately addressed through other existing NRC processes (e.g., 10 CFR 2.206, 10 CFR 2.802, etc.). Going forward, the staff will focus on ensuring that issues which

may, or may not, have a direct, clear nexus with the Fukushima Daiichi event are addressed through the appropriate regulatory process.

At this time the staff has identified a number of additional issues with a clear nexus to the Fukushima Daiichi event that may warrant regulatory action but which were not included with the NTTF recommendations. Although the staff's assessment of these issues is incomplete at this time, several of these issues have already been judged to warrant further consideration and potential prioritization based on relative safety significance, nexus to NTTF recommendations, and other ongoing staff activities. A determination of whether any regulatory action is necessary will be made after the completion of this consideration. If the consideration determines that regulatory action is required, the staff will prioritize these additional recommendations consistent with the approach taken with the NTTF recommendations. The additional recommendations warranting further consideration and potential prioritization are:

Filtration of containment vents

Instrumentation for seismic monitoring

Basis of emergency planning zone size

Prestaging of potassium iodide beyond 10 miles

Transfer of spent fuel to dry cask storage

Loss of ultimate heat sink

There are additional potential recommendations that have been raised, but for which there has been insufficient time to consider in significant depth. In addition, the staff expects the list of potential additional recommendations to continue to increase as we receive feedback from our external stakeholders, through our interactions with the international regulatory community, and through the mining of the Fukushima Daiichi event for additional lessons learned by the nuclear industry and NRC. There are also numerous reports, either already issued or in preparation, including the official Government of Japan report, which the staff will continue to review to enhance our understanding of the event at Fukushima Daiichi.

Overview of Implementation, Schedule, and Resource Challenges

The overriding challenge the staff will face when implementing actions to address the NTTF recommendations will be redefining agency priorities while ensuring that this process does not displace ongoing work that has greater safety benefit, work that is necessary for continued safe operation, or other existing high priority work. The staff has identified some examples of work, including National Fire Protection Association 805 reviews; resolution of Generic Safety Issue 191, "Assessment of Debris Accumulation on PWR [pressurized water reactor] Sump Performance;" implementation of the recently updated emergency preparedness rule; materials, fuel facility, and reactor oversight program activities; and near-term combined license reviews, which the staff does not intend to delay to work on the NTTF recommendations. This will be a continuous process as new operating reactor issues emerge which, because of their potential

impact on safety, may take priority over action on some lower priority NTTF recommendations. The staff will make use of available risk information and experience when performing these periodic re-evaluations.

The enclosed assessments provide an initial evaluation of the critical skill sets necessary to develop and complete the regulatory actions associated with each NTTF recommendation. However, the staff has not had sufficient time to fully integrate the actions assessed in the enclosures with the balance of the staff's ongoing work. Consequently, the enclosed schedules and milestones qualitatively reflect nominal schedules and any known interdependencies with other efforts.

Additionally, the staff proposes to initiate actions on the NTTF recommendations under the premise of assuring or redefining the level of protection of public health and safety that should be regarded as adequate in accordance with the backfit rule. The staff will engage stakeholders to inform its development of technical and regulatory bases for the imposition of new requirements associated with each of the recommendations in support of Commission decision-making.

The staff also recognizes that there are resource and implementation challenges that licensees and federal and state agencies may experience particularly with regard to skill sets in high demand (e.g., probabilistic risk assessment, seismic, and flooding expertise). Ultimately these resource and skill set constraints may impact the rate at which the Fukushima Daiichi lessons learned can be implemented by licensees.

For new reactor designs currently under review, safety issues should be resolved at the design stage, to the extent practical. Consistent with the Commission policy encouraging standardization, it would be prudent to implement safety enhancements prior to certification or design certification renewal. As such, 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. It should be noted that imposition of new requirements as part of a design certification renewal is governed by 10 CFR 52.59. The staff will encourage reactor vendors to provide enhanced safety features and safety margins consistent with the Commission policy on advanced reactors. With regard to near-term combined license reviews, the staff discusses options in SECY-11-0110, "Staff Statement In Support of the Uncontested Hearing for Issuance of Combined Licenses and Limited Work Authorizations for Vogtle Electric Generating Plant, Units 3 and 4 (Docket Nos. 52-025 and 52-026), dated August 9, 2011, and SECY-11-0115, "Staff Statement in Support of the Uncontested Hearing for Issuance of Combined Licenses for the Virgil C. Summer Nuclear Station, Units 2 and 3 (Docket Nos. 52-027 and 52-028)," dated August 19, 2011.

Additional Actions Related to the Chairman's Tasking Memorandum COMGBJ-11-0002

In COMGBJ-11-0002, the Commission directed the staff to develop a sequence of events following the March 11, 2011, earthquake and tsunami at the Fukushima Daiichi and to consider the applicability of lessons learned from the event to licensed facilities other than power reactors.

In response to this direction, the NRC and the Department of Energy signed the "Addendum to the Memorandum of Understanding between U.S. Nuclear Regulatory Commission and U.S. Department of Energy on Cooperative Nuclear Safety Research Related to Fukushima Daiichi Accident Study," (ADAMS ML111930010) in June 2011. This Addendum describes a cooperative research program to conduct a study of the Fukushima Daiichi accident in order to develop a thorough understanding of the accident progression of each reactor and spent fuel pool. The purpose of the study is to reconstruct the sequence of events at Fukushima Daiichi in order to characterize and model events from the perspective of accident mitigation and response and validate severe accident modeling. In addition, the staff is working with Federal counterparts, industry, and the international community, including the Government of Japan, to establish cooperative efforts to share and integrate specific information into a common understanding of the sequence of events of the Fukushima Daiichi accident.

The staff is also considering the applicability of lessons learned to licensed facilities other than power reactors and taking appropriate actions. For example, the staff is issuing a temporary instruction (TI) to guide the staff's independent verification of fuel facility licensees' ability to prevent and/or mitigate the consequences of events which could challenge the safety or licensing bases of those facilities. The TI will also enable staff to evaluate the adequacy of licensee emergency preparedness programs for dealing with the consequences of events. The staff will also take into account insights from Generic Issue 199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants," in the evaluation of the inspection results. The staff also plans to evaluate the applicability of lessons learned to research and test reactors, independent spent fuel storage installations, and reactors that have permanently ceased operations but still maintain fuel in a SFP.

COMMITMENTS

The staff will provide an evaluation of the schedule and milestones, resources and critical skill sets, and implementation challenges related to addressing the Tier 3 recommendations to the Commission within 9 months. At the same time, the staff will also provide its prioritization of the additional recommendations identified in this paper to the Commission. Should the staff prioritize any of the additional recommendations as Tier 1, the staff will promptly inform the Commission of its determination.

RECOMMENDATIONS

The staff recommends that the Commission approve the prioritization of the NTTF recommendations provided above and direct the staff to take action on the Tier 1 and Tier 2 recommendations as described in the enclosure.

RESOURCES

The NRC's fiscal year 2012 (FY12) budget under Congressional review does not include resources for activities discussed in this paper. For FY13, the NRC's proposed budget was submitted to the Office of Management and Budget prior to the issuance of the NTTF report

and, as such, includes limited funding for activities discussed in this paper. The staff now anticipates that resource needs will exceed the current requests, as indicated in the enclosure.

The staff's estimate to undertake the Tier 1 and Tier 2 activities described in this paper is 30 FTE in FY12 and 90 FTE in FY13. However, the staff notes that these FTE values may change if funding for the use of contractors is allocated for these activities.

The enclosure provides, for each recommendation, the staff's resource estimate and the supporting schedules and milestones, including stakeholder engagement and, when appropriate, involvement of the ACRS. Additionally, within the enclosure the staff has identified the critical skill sets and potentially impacted organizations.

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 concurred.

/RA/

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Enclosure:
Staff Assessment and Prioritization
of NTTF Recommendations

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Enclosure:
Staff Assessment and Prioritization
of NTTF Recommendations

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