

January 25, 2013

MEMORANDUM TO: Chairman Macfarlane  
Commissioner Svinicki  
Commissioner Apostolakis  
Commissioner Magwood  
Commissioner Ostendorff

FROM: Michael R. Johnson */RA/*  
Deputy Executive Director for Reactors  
and Preparedness Programs  
Office of the Executive Director for Operations

SUBJECT: CONSOLIDATION OF JAPAN LESSONS LEARNED  
NEAR-TERM TASK FORCE RECOMMENDATIONS 4 AND 7  
REGULATORY ACTIVITIES

This memorandum requests approval to consolidate regulatory activities associated with Near-Term Task Force (NTTF) Recommendation 4 and 7 into a single rulemaking. The request includes a schedule adjustment to enable the rulemaking activity to be informed by the implementation of the mitigating strategies order (EA-12-049 "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events") which stemmed from NTTF Recommendation 4.2. As discussed below, the scope of the order envelops the scope of both Recommendations 4 (in its entirety) and 7 regulatory actions. Accordingly, the feedback and lessons-learned from the mitigating strategies order implementation will be essential input to a successful rulemaking.

NTTF Recommendation 4 Regulatory Actions

In SECY-11-0093, "Near-Term Report and Recommendations for Agency Actions Following the Events in Japan," dated July 12, 2011, the NTTF recommended that the U.S. Nuclear Regulatory Commission (NRC) strengthen station blackout (SBO) mitigation capability at all operating nuclear power plants and new reactors for design-basis and beyond-design-basis external events. This recommendation further defined the necessary regulatory actions as summarized below:

- (1) Recommendation 4.1, a rulemaking to revise Title 10 of the *Code of Federal Regulations* (10 CFR) 50.63, "Loss of All Alternating Current Power"
- (2) Recommendation 4.2, an Order to procure additional 10 CFR 50.54(hh)(2) equipment and protect the equipment from external events

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The staff provided its assessment of NTTF Recommendation 4 in SECY-11-0124, "Recommended Actions To Be Taken Without Delay from the Near-Term Task Force Report," dated September 9, 2011. Specifically, the staff recommended beginning rulemaking activities to develop a rule that would maintain safety during a prolonged SBO, and that immediate action be taken to develop and issue an Order that would require licensees to procure additional 10 CFR 50.54(hh)(2) equipment and protect it against external events to ensure plants were protected from prolonged SBO events until the rulemaking is completed.

#### Commission Direction Related to Recommendation 4 Rulemaking Activities

In the staff requirements memorandum (SRM) for SECY-11-0124, dated October 18, 2011, the Commission provided the following direction for Recommendation 4 regulatory activities:

- Initiate a rulemaking for Recommendation 4.1, "Station Blackout Regulatory Actions," as an ANPR rather than a proposed rule.
- Designate the SBO rulemaking associated with NTTF Recommendation 4.1 as a high-priority rulemaking with a goal of completion within 24 to 30 months of the date of the SRM for this SECY paper.
- Craft recommendations that continue to realize the strengths of a performance-based system as a guiding principle. The Commission urged the staff to consider approaches that are flexible and able to accommodate a diverse range of circumstances and conditions.
- Monitor nuclear industry efforts underway to strengthen SBO coping times and consider whether any interim regulatory controls (e.g., commitment letters or confirmatory action letters) for coping strategies for SBO events would be appropriate while rulemaking activities are in progress.
- For NTTF Recommendations 4.2 and 5.1, provide the Commission with notation vote papers for its approval of the Orders once the staff has engaged stakeholders and established the requisite technical bases and acceptance criteria.

Following a Commission briefing on August 7, 2012, the Commission further directed that, in developing the proposed rule on mitigating strategies, the staff should ensure that potential failures or challenges to the implementation of these strategies are identified and resolved appropriately (SRM, M120807B).

#### Scope of the Mitigating Strategies Order (EA-12-049)

The NRC issued the mitigating strategies Order on March 12, 2012, as the Commission directed in the SRM on 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." The mitigating strategies Order imposed new requirements to implement mitigating strategies for beyond-design-basis external events as defense-in-depth measures, to address the large uncertainties associated with those events as evidenced by the Fukushima event. The Order was a significant expansion of the regulatory action both as envisioned in NTTF

Recommendation 4.2, and as recommended by the staff in SECY-11-0124 and went well beyond simply procuring additional 10 CFR 50.54(hh)(2) equipment and protecting it from external events. The expansion in regulatory scope of the order was the result of external stakeholder feedback from public meetings held in December 2011 and January 2012 and included the following:

- Requirement that the strategies should be capable of mitigating a simultaneous loss of all alternating current (ac) power (SBO) and loss of normal access to the ultimate heat sink;
- Assumption that ac power will not be restored;
- Requirement that the strategies have adequate capacity to address challenges to core cooling, containment, and spent fuel pool cooling at all units on site;
- Requirement that associated equipment has reasonable protection from external events;
- Requirement that licensees are able to implement the strategies in any mode of operation;
- Requirement to implement a three-phase approach that enables mitigation for an indefinite time period: the first phase uses installed equipment, the second phase uses portable and onsite equipment, and the final phase allows for offsite assistance.

The above requirements go well beyond the initial regulatory concept of procuring additional portable equipment and using existing 50.54(hh)(2) strategies, which were not designed to handle a site-wide external event for which offsite ac power is lost indefinitely. The order requirements largely encompass NTTF Recommendation 4, including NTTF Recommendations 4.1 and 4.2.

The NRC completed guidance supporting the mitigating strategies Order in August 2012, when the agency issued interim staff guidance (ISG) in the form of JLD-ISG-2012-01, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond-Design-Basis External Events." The interim staff guidance document endorsed Nuclear Energy Institute (NEI) document 12-06 (NEI 12-06), Revision 0, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide." The staff has been continuing to publicly interact with licensees and industry concerning the development of the submittal template supporting the February 2013 integrated plans for the mitigating strategies Order.

As an added benefit, the expansive scope of the mitigating strategies Order also resulted in the NRC addressing a majority of the actions related to the spent fuel pool in NTTF Recommendation 7. Specifically, the Order requires mitigating strategies that maintain or restore spent fuel pool cooling capabilities. The resulting mitigating strategies provide increased capability to maintain or restore spent fuel pool cooling, independent of ac power. The spent fuel pool strategies include the use of self-powered, portable pumps through multiple connection points, including connections diverse from the spent fuel pool deck to provide makeup to the pool. These strategies make use of spent fuel pool level instrumentation required by EA-12-051. Accordingly, the staff concluded that it was most efficient to address Recommendation 7

within the Recommendation 4 rulemaking activities. The Japan Lessons Learned Project Directorate (JLD) Steering Committee approved this approach on November 8, 2012, as noted in Commission memorandum "Periodic Commission Update on the Status of Tier 1 and Tier 2 Near-Term Task Force Recommendations," dated January 4, 2013.

Table 1 (enclosed) describes how NTTF Recommendation 4 and Recommendation 7 are being addressed through implementation of the mitigating strategies Order and by a rulemaking (i.e., the consolidated rulemaking that this memo recommends) of similar regulatory scope. The rulemaking would make the Order requirements generically applicable, considering external stakeholder feedback and lessons learned from implementation of the mitigating strategies Order and this would include whether there are any potential failures or challenges associated with the implementation of the mitigating strategies per direction in the August 2012 SRM (M120808B).

Additionally, a rulemaking, rescheduled as suggested in this memorandum, would enable the staff to better consider alternative engineered approaches to the mitigating strategies Order for new and operating reactors, insights learned from NTTF 2.1 (revised hazard analysis for earthquake and flooding), and how beyond design basis external events should be addressed. For example, while the scope of the mitigating strategies order also included requirements to develop, implement, and maintain mitigating strategies designed to maintain or restore the key functional capabilities following beyond-design-basis external events (i.e., core cooling, containment, and spent fuel pool cooling), staff realizes that it will be challenging to implement this requirement until staff has insights from NTTF 2.1. Finally, the sections of the mitigating strategies requirements that deal with drills, exercises, and command and control issues should be treated in an integrated and consistent manner as part of the licensees' emergency operating plan, severe accident management guidelines, and extensive damage mitigation guidance procedures and training processes. Those requirements on the mitigating strategies should be contained in the Recommendation 8 rulemaking "Onsite Emergency Response Capabilities." Making the Recommendation 4 rulemaking schedule more aligned with the Recommendation 8 rulemaking will allow for better coordination between these activities.

### The Order Assures Safety

Requirements imposed on power reactor licensees on March 12, 2012 by the mitigating strategies Order address the most safety significant elements stemming from NTTF Recommendations 4 and 7. Licensees are implementing the Order at an expedited pace, with full compliance due two refueling outages following issuance of the implementation guidance in August 2012, but no later than December 31, 2016. When implementation is complete, the new mitigating strategies will extend the capability of current power reactor facilities to withstand SBO conditions, regardless of the set of events leading to the SBO condition. As a result, the safety issues associated with Recommendations 4 and 7 are already largely being addressed at an expedited pace by the implementation of the mitigating strategies Order, consistent with the Commission policy expressed in SRM-SECY-11-0124 for the rulemaking. In fact, the Order, representing a significant expansion of the regulatory scope of the original NTTF Recommendation 4.2, has resulted in mitigating strategy requirements for SBOs being established and implemented many years ahead of the schedule that could have been achieved by following the regulatory path originally proposed in SECY-11-0124. Given this fact, the staff believes the scheduled rulemaking should be better aligned with the Order implementation

enabling the rulemaking process benefits already described above, including the need to address the Commission SRM direction regarding feedback on any potential failures or challenges associated with the implementation of the mitigating strategies.

Staff Recommendation

Consistent with the above discussion, staff recommends the Commission:

1. Approve consolidation of the rulemaking activities stemming from NTTF Recommendations 4 and 7 into the "Station Blackout Mitigation Strategies Rulemaking," with a schedule revised to appropriately consider feedback from the NRC's review of licensee implementation of the mitigating strategies Order.
2. Approve a revised schedule to allow the staff to consider potential failures and challenges to implementation of the mitigation strategies consistent with SRM M120807B and to more closely align with the Recommendation 8 rulemaking.
3. Revise the WITS tickets associated with the rulemakings stemming from Recommendation 4 and 7 as follows:
  - a. Consolidate WITS 201200003 and 201200020, to track the Station Blackout Mitigating Strategies Regulatory Basis, with a requested due date to the EDO of June 30, 2013;
  - b. Consolidate WITS 201100263, WITS 201200021, and WITS 201200145 to track the Station Blackout Mitigating Strategies Proposed Rule, with a requested due date to the EDO of June 23, 2014;
  - c. Consolidate WITS 201100264 and WITS 201200022, to track the Station Blackout Mitigating Strategies Final Rule, with a requested due date to the EDO of December 20, 2016. (This due date coincides with the final implementation deadline for the mitigating strategies Order and is intended to avoid any potential conflicts that could arise between mitigating strategies Order implementation and the rulemaking, particularly for situations where the Commission grants relief or alternative approaches.)

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