

## Update on Tier 1 Activities

### Mitigation Strategies Order EA-12-049

#### *Status Update*

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12056A045). The order requires a three-phase approach for mitigating beyond-design-basis external events. The initial phase requires the use of installed equipment and resources to maintain or restore core cooling, containment, and spent fuel pool (SFP) cooling capabilities. The transition phase requires providing sufficient, portable, onsite equipment and consumables to maintain or restore these functions until they can be accomplished with resources brought from offsite. The final phase requires obtaining sufficient offsite resources to sustain those functions indefinitely.

As described in the last update, on August 29, 2012, the NRC staff issued interim staff guidance (ISG) JLD-ISG-2012-01, Revision 0, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML12229A174). This document assists nuclear power reactor applicants and licensees with the identification of measures needed to comply with requirements of the order. The ISG endorses, with clarifications, the methodologies described in the industry guidance document, Nuclear Energy Institute (NEI) 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0 (ADAMS Accession No. ML12242A378). This industry document outlines one possible approach that can be used by licensees, construction permit holders, and combined license holders to address the requirements of the Order. Both the ISG and NEI 12-06 support implementation of the order by the Commission-directed completion date of December 2016.

Subsequent to issuance of the order, NRC staff determined that the intent of some other lessons-learned activities could be addressed under the purview of the mitigation strategies order. In COMSECY-13-0002, dated January 25, 2013 (ADAMS Accession No. ML13011A037), the staff requested that the Commission approve its plan to address the Tier 2 activities related to spent fuel pool makeup capabilities (NTTF Recommendations 7.2 through 7.5) under this order. The Commission approved this request on March 4, 2013 (ADAMS Accession No. ML13063A548). In COMSECY-13-0010, "Schedule and Plans for Tier 2 Order on Emergency Preparedness for Japan Lessons-Learned," dated March 27, 2013 (ADAMS Accession No. 12339A262), the staff requested that the Commission approve its plan to address the intent of the Tier 2 emergency preparedness (EP) items related to training and exercises, and EP equipment and facilities, under this order as well. The Commission approved this request on April 30, 2013 (ADAMS Accession No. ML13120A339).

By February 28, 2013, all licensee integrated plans had been received by the NRC (except for Crystal River Unit 3 because of its plan to permanently cease operations). The integrated plans contain each licensee's site-specific implementation details for meeting the requirements of the

order. A technical contract was awarded in April 2013 to support NRC review of the integrated plan submittals. However, the technical complexity of the mitigation strategies order was unforeseen and multiple points of contention arose between the staff and licensees. The points of contention are:

- The use of the Modular Accident Analysis Program (MAAP) codes and the applicability during beyond design basis accidents;
- The use of Combustion Engineering Nuclear Transient (CENTS) code in comparison to CE FLASH codes associated with reactor coolant system (RCS) natural circulation;
- The evaluation of leakage past reactor coolant pump (RCP) seals during an extended SBO event;
- The applicability of the cited boron mixing model and the documented testing of this model across PWR designs;
- Licensee capability to implement FLEX procedures in shutdown and refueling modes;
- The technical bases (i.e., methodology, assumptions, and prerequisites) used to establish the duty cycle for a vented lead-acid battery;
- FLEX procedural reliance on early containment venting for BWRs with Mark I and Mark II containments; and
- Identification of maintenance and testing programs for related equipment and procedures.

Because of these additional issues, the integrated plan reviews will take longer than expected with the original resources. To permit this review to meet the original deadlines, a temporary organization, called the Mitigation Strategies Directorate and consisting of an SES manager and three branches, was created to support these reviews in a timely manner. The new directorate will overcome the new challenges through discussions with the industry in public meetings, many of which have already been held on the new issues. The next steps for the Directorate consist of sending out requests for additional information (RAIs) to licensees to address staff questions, concerns, and incomplete details. The review of the integrated plans is on a staggered basis, with draft safety evaluations (SEs) with open items to be issued to each licensee by February 2014. The open items will need to be addressed by the licensees before full implementation is completed. Once all draft safety evaluations with open items are complete, the Mitigation Strategies Directorate's staff will be reabsorbed back into their line organization.

The first group of licensees is scheduled to complete full implementation by the fall of 2014. In the fall and winter of 2014, NRC staff expects to commence inspections to verify implementation at those sites. All licensees are required to achieve full implementation no later than December 2016.

#### *Transition to Line Organization Oversight*

On June 11, 2013, an evaluation of the readiness for the mitigation strategies order to be fully transitioned to line organization oversight was presented to the Steering Committee. The Steering Committee determined that the activity is ready for transition.

The line organization ownership will reside within both the Office of Nuclear Reactor Regulation (NRR) and the Office of New Reactors (NRO), with lead responsibility split between issues related to operating reactors and new reactors, respectively. Champions have been designated in both offices.

The staff considers this activity mature; regulatory action has already been taken, implementation is underway, and a clear path forward has been established. Communication with stakeholders is expected to continue at a high level using existing processes. The staff believes that issues that might arise can be effectively resolved within the line organizations. Furthermore, the staff recognizes the close relationship of this activity to the Station Blackout Mitigation Strategies (SBOMS) rulemaking activity. In its coordination role, the Japan Lessons Learned Project Directorate (JLD) will help ensure that the working groups and champions for each of these activities exchange information and effectively coordinate actions that might impact one another.

#### Spent Fuel Pool Instrumentation Order EA-12-051

##### *Status Update*

On March 12, 2012, the NRC issued Order EA-12-051, "Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation" (ADAMS Accession No. ML12056A044), requiring all United States nuclear power plants to install water level instrumentation in their spent fuel pools. The instrumentation must remotely report at least three distinct water levels: 1) normal level, 2) low level but still high enough to shield workers above the pools from radiation, and 3) a very low level near the top of the spent fuel rods where more water should be added without delay.

On August 29, 2012, the NRC staff issued ISG JLD-ISG-2012-03, Revision 0, "Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation" (ADAMS Accession No. ML12221A339). This document provides an acceptable approach for satisfying the requirements of Order EA-12-051. At the end of February 2013, all Spent Fuel Pool Instrumentation Order integrated plans were received. Currently, the staff is reviewing the integrated plans and completed transmitting the first round of RAIs at the end of August 2013.

The NRC staff is currently developing draft SEs with open items and plans to issue the draft SEs with open items for the integrated plans by the end of November 2013. The open items, when closed, will address the actions required to be completed by the reactor's implementation date. Once a licensee has closed out all open items from its SE, the staff will update the draft SE to indicate its approval of that licensee's actions as providing assurance that the order requirements are being met. The licensees for the first affected units are scheduled to complete the required actions by the end of each unit's fall 2014 refueling outage. All plants will complete the order's requirements by December 2016 and the staff currently does not foresee any major technical issues that could extend the final implementation date. Onsite inspections, if needed, will be completed by the appropriate regional or resident inspectors for each facility.

##### *Transition to Line Organization Oversight*

On June 11, 2013, an evaluation of the readiness of the Spent Fuel Pool Instrumentation Order to be fully transitioned to line organization oversight was presented to the Steering Committee. The Steering Committee determined that the activity is ready for transition.

The line organization ownership will reside within both NRR and NRO, with responsibilities split between issues related to operating reactors and new reactors, respectively. Champions have been designated in both offices.

The staff considers this activity mature; regulatory action has already been taken, implementation is underway, and a clear path forward has been established. Communication with stakeholders is expected to continue at a high level using existing processes. The staff believes that issues that might arise can be effectively resolved within the line organizations. In its coordination role, the JLD will help ensure that NRR, NRO, and the regions exchange information and effectively coordinate actions that might impact one another.

Reliable Hardened Containment Vents for BWR Mark I and II Designs (Order EA-12-050 and Order EA-13-109)

*Status Update*

The NRC issued Order EA-12-050, "Order Modifying Licenses with Regard to Reliable Hardened Containment Vents," on March 12, 2012 (ADAMS Accession No. ML12054A696), requiring all operating boiling-water reactors (BWRs) in the United States with Mark I and II containments to install a reliable, hardened vent. After issuing the order, additional NRC evaluations examined the benefits of venting *after* reactor core damage occurs. SECY-12-0157, "Consideration of Additional Requirements for Containment Venting Systems" (ADAMS Accession No. ML12345A030), was submitted to the Commission on November 26, 2012. In the staff requirements memorandum (SRM) for SECY-12-0157 on March 19, 2013 (ADAMS Accession No. ML13078A017), the staff was directed to require licensees with Mark I and Mark II containments to "upgrade or replace the reliable hardened vents required by Order EA-12-050 with a containment venting system designed and installed to remain functional during severe accident conditions." On June 6, 2013, the staff issued the modified Order EA-13-109, "Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions" (ADAMS Accession No. ML13130A067), to ensure that those vents will remain functional in the conditions following reactor core damage.

The revised order contains two distinct phases of implementation. Phase 1, which all licensees are required to implement by June 2018, requires licensees to upgrade the venting capabilities from the containment wetwell to provide reliable, severe accident capable hardened vents to assist in preventing core damage and, if necessary, to provide venting capability during severe accident conditions. The licensees are also required to submit an integrated plan by June 30, 2014. Phase 2, which all licensees are required to implement by June 2019, requires licensees to provide additional protections for severe accident conditions through installation of a reliable, severe accident capable drywell vent system or develop a reliable containment venting strategy that makes it unlikely to need to vent from the containment drywell during severe accident conditions, and submit an integrated plan submitted by December 31, 2015.

Currently, the revised order is on schedule; however, the staff foresees a few technical and contracting challenges with notable impacts. These challenges are:

- Initial staff review of the Phase 1 ISG highlighted issues requiring further discussions with the industry. These include:
  - Interactions between Orders EA-12-049 and EA-13-109; and
  - Temperature conditions in the drywell during severe accident conditions.

If these issues are not resolved in a timely manner, a delay could occur in issuing the ISG after the planned October 2013 date, but this would not be expected to impact the implementation schedule; and

- Phase 2 of the Order provides an option to develop a venting strategy to obviate the need of a drywell venting system. This strategy most likely will require additional technical analysis to evaluate its feasibility and acceptability. The completion and staff review of this alternative will provide an additional challenge to timely completion of Phase 2.

Since the issuance of the revised order, the NRC has been holding (and will continue to hold) public meetings frequently with the industry to develop both the industry's and the NRC's guidance document for implementation of the new requirements. The staff plans to issue the ISG for Phase 1 of Order EA-13-109 by October 2013 and issue the ISG for Phase 2 by April 2015, barring any technical issues detailed above.

The NRC staff expects to issue draft SEs for the Phase 1 integrated plans by December 31, 2014, and for the Phase 2 integrated plans by June 30, 2016.

#### *Transition to Line Organization Oversight*

On June 25, 2013, an evaluation of the readiness for the Severe Accident Capable Vents Order to be fully transitioned to line organization oversight was presented to the Steering Committee. The Steering Committee determined that the activity is ready for transition.

The line organization ownership will reside within NRR, and the Director of NRR's Division of Safety Systems has been designated as champion. Any interoffice issues can be coordinated using existing processes.

The staff considers this activity mature; regulatory action has already been taken and a clear path forward has been established. While technical issues for implementation might arise during ongoing guidance development, the staff believes that such issues can be effectively resolved within the line organizations. Communication with stakeholders is expected to continue at a high level. In its coordination role, the JLD will help ensure that information is effectively exchanged and that actions that might impact other offices are coordinated appropriately.

## Accident Management and Filtering Strategies Rulemaking

### *Status Update*

After issuing Order EA-12-050, "Order Modifying Licenses with Regard to Reliable Hardened Containment Vents" on March 12, 2012, additional NRC evaluations examined the benefits of venting *after* reactor core damage occurs. SECY-12-0157, "Consideration of Additional Requirements for Containment Venting Systems," was submitted to the Commission on November 26, 2012. In the SRM for SECY-12-0157, dated March 19, 2013, the Commission directed staff to develop the technical basis and proceed with a rulemaking for filtering strategies with drywell filtration and severe accident management of BWRs with Mark I and II containments. The Commission directed the staff to provide to the Commission the technical basis for the rulemaking on March 19, 2014, the proposed rule and draft staff guidance to on March 19, 2015, and the final rule and guidance on March 19, 2017.

Since the issuance of the SRM for SECY-12-0157, the NRC has held several public meetings to discuss the Commission's decision and the technical basis for the rulemaking. The public meetings included interaction with the public on potential performance measures and accident progression event trees for the technical basis.

Currently, the progress of the rulemaking is in accordance with the schedule provided in SRM-SECY-12-0157. The staff continues to work through normal rulemaking activities and will keep the Commission apprised of any challenges that could impact the schedule.

The staff established a Division Director steering committee (DDSC) to guide this activity; this is a normal step taken for complex rulemakings, done in accordance with agency rulemaking procedures. The working group and DDSC will keep senior management informed of progress on this activity.

### *Transition to Line Organization Oversight*

On June 25, 2013, an evaluation of the readiness for the filtering strategies rulemaking to be fully transitioned to line organization oversight was presented to the Steering Committee. The Steering Committee determined that the activity is ready for transition.

The line organization ownership will reside within both NRR and the Office of Nuclear Regulatory Research (RES), and champions have been designated in both offices. As described above, this activity has also established a DDSC to provide guidance and oversight. Any additional interoffice issues can be coordinated using existing processes.

While this activity is in the early stages of development, the staff considers this activity mature enough for transition to the line organizations because the rulemaking process uses well-established procedures and it provides clear roles and responsibilities, including decisions by the Commission. The staff expects that technical issues might arise during development of the regulatory basis, but that these issues can be effectively resolved within the line organizations and through the DDSC. Also, the rulemaking process will provide for significant stakeholder interaction.

## Seismic Hazard Walkdowns

### *Status Update*

On March 12, 2012, the NRC asked United States nuclear power plants to perform a detailed inspection, or “walkdown,” of their currently installed seismic and flooding protection features. The plants had to ensure that the features met current requirements, and also identify, correct, and report any degraded conditions. The plants completed their walkdowns by November 2012. NRC resident inspectors utilized temporary instruction (TI-2515/188) to independently verify, using a sampling process, that each licensee’s seismic walkdown activities were conducted using walkdown methodology endorsed by the NRC. Resident inspectors completed the inspection requirements set forth in TI-2515/188 concurrent with the licensee’s walkdown activities and documented the inspection results in their quarterly reports.

Since the last 6-month update paper, the staff performed six onsite audits to check the adequacy of their walkdowns at the following plants: Point Beach, Comanche Peak, DC Cook, Beaver Valley, Seabrook, and Sequoyah. The audits were informative to the staff and helped to clarify the actions taken at the plants during the walkdown activities. For example, the common findings from the audits include: housekeeping issues, such as temporary equipment not tied down; spatial interaction issues; missing or loose bolts; and potential degraded conditions such as the accumulation of rust. These findings were referred to the licensee to be included in their corrective action programs. The walkdown reports submitted by several plants did not completely follow the reporting guidelines in the endorsed guidance document or accurately reflect the plant activities. The self-assessment conducted by several licensees as a pre-audit activity also identified similar information gaps. As a result, these plants have decided to update the information in their reports.

The staff continues to assess each plant’s seismic walkdown reports. The purpose of the staff assessment of the plant’s seismic walkdown reports is to determine if the plant conducted their walkdown in accordance with the endorsed guidance, thereby verifying that the walkdown met the objectives of the Request for Information letter. Based on the results of the staff’s seismic walkdown audits and review to date of the seismic walkdown reports, the staff is interacting with the industry to communicate potential areas where the staff may need additional information to complete its seismic walkdown report reviews and to determine the most effective way for the industry to provide that information. If a performance deficiency is identified during these reviews, it will be dispositioned through the ROP process.

Some of the plants indicated a long timeframe to complete walkdowns on items that were delayed because they were inaccessible. Improving the timeliness of delayed item closeouts is an ongoing area of discussion between NRC staff and licensees. Several plants submitted information related to using substitute items or approaches to close out delayed walkdown items faster. These submittals are also currently under review by staff.

Additionally, the staff will be developing a lessons-learned report to document insights from the seismic walkdowns. Moreover, any significant generic issues identified during the review of the

walkdown reports and audits will be evaluated to determine the appropriate regulatory course of action.

#### *Transition to Line Organization Oversight*

On July 2, 2013, an evaluation of the readiness for the seismic walkdown activities to be fully transitioned to line organization oversight was presented to the Steering Committee. The Steering Committee agreed that the activity is ready for transition.

The line organization ownership will reside within NRR and the technical ownership will reside within NRO. The Director of NRO's Division of Site Safety and Environmental Analysis has been designated as the champion. Any interoffice issues can be coordinated using existing processes.

The staff considers this activity mature and ready for transition to line organization management because regulatory action has already been taken, implementation is underway, and a clear path forward has been established. Communication with stakeholders is expected to continue at a high level using existing processes. The staff believes that issues that might arise can be effectively resolved within the line organizations. In its coordination role, the JLD will help ensure that NRR and NRO exchange information and effectively coordinate actions that might impact one another.

#### Flooding Hazard Walkdowns

##### *Status Update*

On March 12, 2012, the NRC asked United States nuclear power plants to perform a detailed inspection, or "walkdown," of their currently installed flooding protection and mitigation features, including a review of associated manual actions. The plants had to ensure the features met current requirements, and also identify, correct, and report any degraded conditions. The plants completed their walkdowns by November 2012 and the NRC resident staff completed their inspections in parallel with the performance of the walkdowns. Inspection reports for the staff walkdowns were issued by February 2013.

If the licensees discovered deficiencies during their walkdowns, the issues were entered into the licensee's corrective action program. These corrective actions are being followed up upon by the NRC residents as with normal NRC processes. After the walkdowns, many corrective actions have been completed and some of the highlighted findings are:

- Licensee identification of degraded seals to prevent water intrusion into safety significant areas of the plant;
- Licensee identification of feasibility concerns related to operator manual actions described in flooding mitigation procedures; and
- Licensee determination of plant available physical flooding margin being potentially not consistent with flooding walkdown guidance.



Since the last 6-month update paper, the staff performed seven site audits to evaluate whether the walkdowns were performed in accordance with NRC-endorsed guidance. Audits were performed at the following plants: Brunswick, Salem, Hope Creek, Quad Cities, Millstone, Vermont Yankee, and Oyster Creek. The audits were informative to the staff. For example, the audits revealed that some licensees might not have:

- clearly understood the site's current licensing-basis flood protection and design-basis flood elevation;
- appropriately evaluated available physical margin;
- comprehensively evaluated timing and feasibility of manual actions; or
- rigorously documented the walkdown process.

Most plants have entered NRC audit team observations in the corrective action program and are working on the appropriate corrective actions. All observations that raised current licensing basis compliance questions were transitioned to the ROP process for significance determination and resolution.

The staff is in the process of assessing each plant's walkdown report. Based on the results of the staff's flooding walkdown audits and review to date of the flooding walkdown reports, the staff is interacting with the industry to communicate potential areas where the staff may need additional information to complete its flooding walkdown report reviews and to determine the most effective way for the industry to provide that information. The staff expects all staff assessments to be completed by November 2013 and doesn't foresee any technical challenges that could delay the review schedule.

Additionally, the staff will be developing a lessons-learned report to document insights from the flooding walkdowns. Moreover, any significant generic issues identified during the review of the walkdown reports and audits will be evaluated to determine the appropriate regulatory course of action.

#### *Transition to Line Organization Oversight*

On July 2, 2013, an evaluation of the readiness for the flooding walkdown activities to be fully transitioned to line organization oversight was presented to the Steering Committee. The Steering Committee agreed that the activity is ready for transition.

The line organization ownership will reside within NRR and the technical support from NRO. The Director of NRO's Division of Site Safety and Environmental Analysis has been designated as the champion. Any interoffice issues will be coordinated using existing processes.

The staff considers this activity mature and ready for transition to line organization management because regulatory action has already been taken, implementation is underway, and a clear path forward has been established. Communication with stakeholders is expected to continue at a high level using existing processes. The staff believes that issues that might arise can be effectively resolved within the line organizations. In its coordination role, the JLD will help ensure that NRR and NRO exchange information and effectively coordinate actions that might impact one another.

## Seismic Hazard Reevaluations

### *Status Update*

On March 12, 2012, the NRC asked nuclear power plant licensees to reevaluate the seismic hazards that could impact their site using current regulations and guidance. These newly reevaluated hazards, if they are higher than the plant is designed for, will be analyzed by licensees to determine whether plant structures, systems, and components need to be modified to protect against the updated hazard.

Since the last 6-month update paper, a significant amount of work has been done on seismic reevaluations. The NRC has held several public meetings on seismic reevaluations since the last status update paper in mid-February. On February 15, 2013, the staff endorsed the Electric Power Research Institute (EPRI) document, "Seismic Evaluation Guidance: Screening, Prioritization and Implementation Details (SPID) for the Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic" (ADAMS Accession No. ML123330282). This EPRI report provided detailed guidance on both the initial seismic hazard reevaluations and subsequent seismic plant risk evaluations, if needed.

On May 7, 2013, the staff endorsed the EPRI report, "Seismic Evaluation Guidance: Augmented Approach for the Resolution of Fukushima Near-Term Task Force Recommendation 2.1: Seismic" (ADAMS Accession No. ML13107B387). This document provided guidance on an expedited seismic evaluation and potential upgrade of key plant systems and components needed to cope with the SBO conditions when the systems and components are subjected to the updated seismic hazard. This activity will take place while licensees are performing their more detailed and comprehensive seismic plant risk evaluations. Thus, the expedited approach will provide opportunities for early upgrade of some key components, if necessary.

On August 28, 2013, the staff completed its review and issued its endorsement (ADAMS Accession No. ML13233A102) of the seismic ground motion model update for the central and eastern United States (CEUS), which was performed by EPRI and submitted to the NRC in June 2013. As part of the review process, the staff provided written questions to industry at the beginning of July 2013. At the end of July 2013, industry submitted written responses to the NRC staff questions, as well as an errata sheet with corrections to the report resulting from NRC staff comments. In addition, two public meetings were conducted during the review period to facilitate discussions. The staff had been involved in the ground motion modeling update by industry since the project began in early 2012.

The seismic hazard reevaluation submittals from licensees whose plants are located in the CEUS are due in March 2014. Originally, the hazard submittals from CEUS licensees were due in September 2013, but the staff accepted industry's proposal to extend the deadline by six months in order to complete the update of the seismic ground motion models for the CEUS as this effort incorporates a significant amount of new information and data for CEUS seismic hazards. Industry's proposal stated that meeting the March 2014 deadline is contingent upon NRC endorsement of the updated model by the end of August 2013, which the staff has achieved. No other challenges have been expressed during the public meetings on seismic hazard reevaluation efforts that have been conducted since the industry's proposal. The

seismic hazard reevaluation submittals from licensees whose plants are located in the western United States (WUS) are still due on their original due date of March 2015.

The staff will review the seismic hazard reevaluation submittals and issue an assessment for each plant. The staff continues to interact with industry, through public meetings, to address questions that industry has developed as they prepare their seismic hazard reevaluation submittals. In addition, staff has prepared a working example of a seismic hazard reevaluation submittal, discussed at a public meeting at the end of August 2013, which will be a valuable tool to communicate staff expectations on the format and structure of the submittals.

If the reevaluated seismic hazard level is higher than the plant's licensing basis, licensees will perform an expedited seismic plant evaluation and potential plant modifications as well as more detailed and comprehensive seismic probabilistic risk assessment (PRA). The expedited seismic plant evaluations are due in December 2014 for CEUS plants and January 2016 for WUS plants. Plant modifications arising from the expedited seismic evaluations are due in December 2016 for CEUS plants and June 2018 for WUS plants, unless plant outages are required for any of these modifications. The full seismic plant PRAs will be divided into two or more priority groups. The higher priority group of seismic PRAs is due in June 2017 for both CEUS and WUS plants and the second group of seismic PRAs is due in December 2019. On completion of its review of the plant seismic PRAs, the staff will use existing NRR processes to determine whether plant upgrades might be necessary.

#### *Transition to Line Organization Oversight*

On July 2, 2013, an evaluation of the readiness for the seismic reevaluations to be fully transitioned to line organization oversight was presented to the Steering Committee. The Steering Committee determined that the activity is ready for transition. The line organization ownership will reside within NRR and the technical ownership will reside within NRO. Champions have been designated in both offices.

The staff considers this activity mature; regulatory action has already been taken, licensees are taking action, and a clear path forward has been established. Communication with stakeholders is expected to continue at a high level using existing processes. The staff believes that issues that might arise can be effectively resolved within the line organizations. In its coordination role, the JLD will help ensure that the working groups and champions for each of these activities exchange information and effectively coordinate actions that might impact one another.

#### Flooding Hazard Reevaluations

##### *Status Update*

On March 12, 2012, the NRC asked all power reactor licensees and holders of construction permits in active or deferred status to reevaluate the flooding effects—or hazards—that could impact their site. If the reevaluated flood hazard at a site is not bounded by the current design basis, respondents are requested to perform an assessment of the plant's collective ability to cope with the reevaluated flood hazard. The NRC staff will review the responses to the request

for information and determine whether regulatory actions are necessary to provide additional protection against flooding.

Since the last 6-month update SECY paper, many steps have been taken in the flooding reevaluations. The NRC has held 10 public meetings on flooding reevaluations since the last status update paper in mid-January. On March 12, 2013, the first set of plants submitted their flooding hazard reports. Six sites requested and were approved for extensions, primarily to allow usage of a different model that will yield more accurate results. The second set of flooding hazard reports is due on March 12, 2014, the third (final) set of reports is due on March 12, 2015, and due date extensions are not expected for either set. The staff is currently reviewing the first set of submittals and will be issuing staff assessments for the respective plants by March 2014. From the first set of hazard submittals, several sites indicated that they are taking interim actions (e.g., having standby sandbags in place before a permanent barrier can be constructed), and the staff plans to issue a temporary instruction to facilitate inspection of those actions. The majority of sites indicated that they will be performing an integrated assessment. The staff will coordinate with the industry on a lead plant for the integrated assessment and the public will have multiple opportunities for participation in the process through public meetings. After the integrated assessments are received from the required plants, the staff will use existing NRR processes to document, review, and act on the information received.

On March 1, 2013, the staff transmitted a supplemental information letter to licensees (ADAMS Accession No. ML13044A561) to clarify operability, reportability, interim actions and extension requests. This letter was in response to concerns discussed at the February 11, 2013, public meeting. Additionally, on July 29, 2013, the staff transmitted JLD-ISG-13-01, "Guidance for Assessment of Flooding Hazards Due to Dam Failure" (ADAMS Accession No. ML13151A153), which described methods acceptable to the staff for reevaluating flooding hazards caused by dam failure for the purpose of responding to the March 2012 request for information letter (ADAMS Accession No. ML12053A340).

#### *Transition to Line Organization Oversight*

On July 2, 2013, an evaluation of the readiness for the flooding reevaluations to be fully transitioned to line organization oversight was presented to the Steering Committee. The Steering Committee agreed that the activity is ready for transition.

The line organization ownership will reside within both NRR and NRO, with responsibilities split between issues related to operating reactors and new reactors, respectively, with NRO serving as the technical lead for both operating and new reactors. The Director of NRO's Division of Site Safety and Environmental Analysis has been designated as the champion. Any interoffice issues can be coordinated using existing processes.

The staff considers this activity mature and ready for transition to line organization management because regulatory action has already been taken, licensees are taking action, and a clear path forward has been established. Communication with stakeholders is expected to continue at a high level using existing processes. The staff believes that issues that might arise can be effectively resolved within the line organizations. In its coordination role, the JLD will help ensure that NRR and NRO exchange information and effectively coordinate actions that might impact one another.

## Emergency Preparedness (EP) Staffing and Communications

### *Status Update*

The March 12, 2012, request for information letter asked licensees to assess the staff needed to respond to a large-scale event that causes the loss of all ac power and might affect multiple reactors at their site, and also to assess and implement enhancements to help ensure that communications can be maintained during such an event.

As described in the last update, licensees submitted their communications assessments on October 31, 2012, and the staff subsequently identified eight items generic to those submittals that needed clarification. These items were discussed at public meetings and licensees provided supplements to clarify the issues. The NRC staff has since completed its review of the communications assessments and determined that proposed interim actions (e.g., portable satellite phones), combined with long-term enhancements (e.g., new radio systems, utilizing sound powered telephones, battery-powered radio repeaters, and satellite phone systems) will help to ensure that licensees can effectively communicate during a station blackout (SBO) event affecting multiple units. All safety assessments were issued documenting these determinations to each licensee by July 2013, with the exception of San Onofre (ceased operation). In coordination with the mitigation strategies, the staff plans on following up with licensees to confirm that the enhancements to the site's communication systems are completed.

On April 30, 2013, licensees submitted their staffing assessments based on existing SBO coping strategies with an assumption of multiple reactors being affected concurrently. The staff is currently reviewing these submittals and expects to issue the results of the staff's review no later than December 2013.

Additionally, the staff coordinated the remaining portions of the staffing assessment with the order for mitigation strategies (EA-12-049). In accordance with EA-12-049, each licensee must develop strategies for mitigating the effects of beyond-design-basis external events. To ensure accurate assessment results, the staffing assessment for response functions must include those related to the mitigation strategies. The staff determined that given the need to assess potential mitigation strategies staffing during the first refueling outage and time required to develop subsequent procedures, training, and guidelines, licensees could provide the staffing assessments 4 months prior to the beginning of their second refueling outage. The staff will review and determine whether licensees have identified the staff needed to respond to a large-scale event that causes the loss of all A/C power and might affect multiple reactors at their site.

### *Transition to Line Organization Oversight*

On June 18, 2013, an evaluation of the readiness for the EP staffing and communications activity to be fully transitioned to line organization oversight was presented to the Steering Committee. The Steering Committee agreed that the activity is ready for transition.

The line organization ownership will reside within NSIR, and the Director of NSIR's Division of Preparedness and Response has been designated as the champion. Any interoffice issues can be coordinated using existing processes.

The staff considers this activity mature and ready for transition to line organization management because regulatory action has been taken, licensees are taking action, and a clear path forward has been established. Communication with stakeholders is expected to continue at a high level using existing processes. The staff believes that issues that might arise can be effectively resolved within the line organization. In its coordination role, the JLD will help ensure that outcomes from the mitigation strategies order, to the extent that they impact EP staffing and communications, are effectively communicated and coordinated with NSIR.

### Station Blackout Mitigation Strategies (SBOMS) Rulemaking

#### *Status Update*

The principal objective of the NRC's SBOMS rulemaking effort would be to establish requirements, in the form of mitigation strategies, guidance, and relied on equipment that provide additional mitigation capability (i.e., beyond the current capabilities that stem principally from implementation of requirements in GDC 17 and 10 CFR 50.63) for extreme external events that lead to extended loss of alternating current (ac) power that might also include loss of normal access to the ultimate heat sink. These requirements will reflect the requirements imposed in Order EA-12-049, issued on March 12, 2012, along with insights gleaned from implementation of the order as well as information on external hazards from the ongoing seismic and flooding reevaluations and stakeholder feedback solicited throughout the rulemaking process.

In SRM-SECY-11-0137, "Prioritization of Recommended Actions to be Taken in Response to Fukushima Lessons Learned," dated October 3, 2011 (ADAMS Accession No. ML11272A111), the Commission approved the staff's proposed prioritization of NTTF Recommendation 4.1 on strengthening SBO mitigation capability. The advanced notice of proposed rulemaking (ANPR) was published in the *Federal Register* (FR) on March 20, 2012 (77 FR 16175), and the comment period on the ANPR closed on May 4, 2012. On January 25, 2013, the staff submitted COMSECY-13-0002, "Consolidation of Japan Lessons Learned Near-Term Task Force Recommendations 4 and 7 Regulatory Activities" (ADAMS Accession No. ML13011A034), to engage the Commission in several aspects of the rulemaking, which included combining NTTF Recommendations 4 and 7 and revising the rulemaking schedule to accommodate Commission direction to incorporate the lessons learned from the mitigation strategies order. The Commission approved the COMSECY-13-0002 proposal on March 4, 2013 (ADAMS Accession No. ML13063A548).

On April 10, 2013, the staff issued the draft SBOMS regulatory basis for public comment. The public comment period closed on May 28, 2013. The staff received 15 comment letters, considered the comments, and finalized the regulatory basis. The final SBOMS regulatory basis was issued on July 23, 2013 (78 FR 44035). The Commission's approval of COMSECY-13-0002 resulted in a revised schedule for the rulemaking activity. The revised due date for the proposed rule and the supporting draft guidance is June 30, 2014. Correspondingly, the revised due date for the final rule and supporting guidance is December 27, 2016. At present this rulemaking activity continues to be on track with no identified issues or challenges to the schedule.

### *Transition to Line Organization Oversight*

On June 11, 2013, an evaluation of the readiness for the SBOMS rulemaking to be fully transitioned to line organization oversight was presented to the Steering Committee. The Steering Committee determined that the activity is ready for transition.

The line organization ownership will reside within both NRR and NRO, and champions have been designated in both offices. Any additional interoffice issues can be coordinated using existing processes.

The staff considers this activity mature and ready for transition to line organization oversight because the rulemaking process uses well-established procedures and it provides clear roles and responsibilities. Furthermore, the rulemaking process will provide for significant stakeholder interaction. The staff recognizes that the SBOMS rulemaking is closely related to mitigation strategies order EA-12-049, specifically with regard for the need to consider insights from the implementation of EA-12-049 in the SBOMS rulemaking, but it believes that these insights can be effectively coordinated within the line organizations. In its coordination role, the JLD will help ensure that information is exchanged and actions that might impact this activity are effectively coordinated.

### Emergency Onsite Response Capabilities Rulemaking

#### *Status Update*

The NRC's Emergency Onsite Response Capabilities rulemaking effort is expected to strengthen and integrate the various emergency response capabilities at nuclear power plants. The new rule is expected to require plants to improve strategies for large-scale events to promote effective decision making at all levels. The new rule is also expected to include training, qualification, and evaluation requirements for the key personnel expected to implement the procedures and strategies.

This lessons-learned activity originated from NTTF Recommendation 8. As described in the last update, an ANPR was published for this rulemaking in the FR on April 18, 2012 (77 FR 23161), and the public comment period closed on June 18, 2012. There were 18 comment letters received for the ANPR. On January 8, 2013, the staff issued a draft regulatory basis for public comment. The public comment period closed on February 22, 2013, and seven comment letters were received. To provide additional time to address issues raised by staff members, the staff requested and received Office of the Executive Director for Operations (EDO)/Office of the Secretary (SECY) approval to extend the regulatory basis completion date to October 4, 2013.

The SECY due date for the proposed rule and supporting guidance is July 25, 2014. The due date for the final rule and guidance is March 11, 2016.

### *Transition to Line Organization Oversight*

On June 18, 2013, an evaluation of the readiness for the Emergency Onsite Response Capabilities rulemaking to be fully transitioned to line organization oversight was presented to the Steering Committee. The Steering Committee determined that the activity is ready for transition.

The line organization ownership will reside within NRR for both project management and technical expertise. Champions have been designated. An interoffice Division Director Steering Committee (DDSC) has been formed to provide direction and guidance to the rulemaking working group and facilitate the concurrence process; this is a common practice for complex rulemaking activities. Any interoffice issues can be coordinated using the DDSC and existing processes.

The staff considers this activity mature and ready for transition to line organization oversight because the rulemaking process uses well-established procedures and it provides clear roles and responsibilities. Furthermore, the rulemaking process will provide for significant stakeholder interaction. The staff believes that issues that might arise can be effectively resolved within the line organizations. In its coordination role, the JLD will help ensure that information is effectively exchanged and that actions that might impact other offices are coordinated appropriately.

### Enhancements to the Capability To Prevent or Mitigate Seismically Induced Fires and Floods

#### *Status Update*

This lessons-learned activity originated from NTF Recommendation 3. It is intended to evaluate potential enhancements to the capability to prevent or mitigate seismically induced fires and floods.

In SRM-SECY-11-0137, the Commission directed the staff to initiate development of a PRA methodology to evaluate potential enhancements to plants' capability to prevent or mitigate seismically induced fires and floods as part of Tier 1 activities. However, consistent with the program plan in SECY-12-0095, "Tier 3 Program Plans and 6-Month Status Update in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Subsequent Tsunami" (ADAMS Accession No. ML12165A092), for NTF Recommendation 3, carrying out the broader evaluation (i.e., beyond the PRA methodology) of potential enhancements to the capability to prevent or mitigate seismically induced fires and floods would remain a longer term Tier 3 activity. In SECY-12-0095, the staff supplied the following schedule and milestones to address Recommendation 3 for seismically induced fires and floods:

- Continue development of PRA methodology for seismically induced fires and floods. This will include two main subtasks:
  - (1) engagement with PRA standards development organizations to develop the technical elements and standards for the PRA method (ongoing); and



(2) completion of a feasibility scoping study to evaluate PRA approaches for assessing multiple concurrent events (December 2014); and

- Reevaluate Recommendation 3 based on information obtained from Tier 1 activities and PRA method development activities as well as recommend further activities (December 2016).

The staff continues to engage the American Society of Mechanical Engineers/American Nuclear Society (ASME/ANS) Joint Committee on Nuclear Risk Management (JCNRM) to support the working group considering future standards development activities associated with concurrent initiating events, such as seismically induced fires and floods. The decision to include concurrent initiating events in a future revision of the ASME/ANS PRA standard is currently under ballot with the JCNRM. If this issue passes the balloting process, the staff will continue engagement with ASME/ANS to support development of standards in this area and to effectively leverage stakeholders' expertise to better focus future method development efforts.

Although staff resources for conducting a feasibility study to investigate methods for addressing multiple concurrent events continue to be limited because of higher priority work (e.g., the level 3 PRA project directed by SRM-SECY-11-0089, "Options for Proceeding with Future Level 3 Probabilistic Risk Assessment (PRA) Activities," dated September 21, 2011 (ADAMS Accession No. ML112640419), and development of external hazard risk tools to support the reactor oversight process), the staff has obtained contractor assistance to support this effort. A preliminary technical work plan has been developed in collaboration with the contractor, and a workshop that will include both internal and external stakeholders is being planned for early fiscal year 2014. However, budget limitations associated with continued sequestration or other funding reductions might impact the continued progress of this work.

Finally, the staff continues to monitor the progress of other NTTF recommendations related to this issue to appropriately factor additional information related to seismic and flooding hazards and mitigation strategies into the eventual resolution of Recommendation 3.

#### *Transition to Line Organization Oversight*

On July 16, 2013, an evaluation of the readiness for this lessons-learned activity to be fully transitioned to line organization oversight was presented to the Steering Committee. The Steering Committee determined that the activity is ready for transition.

The line organization ownership will reside within RES, and the Director of the Division of Risk Assessment has been designated as the champion. The staff expects that any interoffice issues can be coordinated using existing processes.

The staff considers this activity mature. The Tier 1 portion of this lessons-learned activity—development of a PRA methodology to evaluate seismically-induced fires and floods—is technically complex. However, the staff has defined a clear path forward to accomplish this activity, and once complete, the staff intends to leverage the well-established Generic Issues Program to assess the broader implications for potential enhancements to mitigate seismically-induced fires and floods. Therefore, the staff believes any issues that arise can be effectively resolved by the line organization using existing processes.

