INSPECTION OF THE LICENSEE'S PROPOSED INTERIM ACTIONS AS A RESULT OF THE NEAR-TERM TASK FORCE RECOMMENDATION 2.1 FLOODING REEVALUATION

CORNERSTONE: INITIATING EVENTS AND MITIGATING SYSTEMS

APPLICABILITY: This Temporary Instruction (TI) applies to the holders of operating licenses for nuclear power reactors who submitted interim actions associated with the section 2.1 flooding reevaluation.

2515/190-01 OBJECTIVES

The objective of this TI is to independently verify that the licensee's proposed interim actions will perform their intended function for flooding protection and mitigation, at all sites that provided an interim actions as a response to a letter from the NRC to licensees, entitled "Request for Information Pursuant to Title 10 of the *Code of Federal Regulations* 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident," dated March 12, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12053A340)." Enclosure 2 of the March 12, 2012, letter, entitled "Flooding", requested licensees to reevaluate flood hazards at their sites using present-day guidance and methodologies consistent with those used for licensing of new reactors. In addition, the enclosure requested that licensees provide documentation of interim actions planned or taken to address the reevaluated hazard where the reevaluated hazard exceeds the design basis.

2515/190-02 BACKGROUND

Following the accident at the Fukushima Dai-ichi nuclear power plant resulting from the March 11, 2011, Great Tohoku Earthquake and subsequent tsunami, the NRC established the Near-Term Task Force (NTTF) in response to Commission direction. The NTTF Charter, dated March 30, 2011, tasked the NTTF with conducting a systematic and methodical review of NRC processes and regulations and determining if the agency should make additional improvements to its regulatory system. Ultimately, a comprehensive set of recommendations contained in a report to the Commission (dated July 12, 2011, SECY-11-0093 ADAMS Accession No. ML111861807) was developed using a decision rationale built around the defense-in-depth concept in which each level of defense-in-depth (namely prevention, mitigation, and emergency preparedness (EP)) is critically evaluated for its completeness and effectiveness in performing its safety function.

Specifically, the NRC requested interim actions be submitted with the Hazard Reevaluation Report as Item 1.d of Enclosure 2 of the 50.54(f) letter. The letter states that:

- For the sites where the reevaluated flood elevation exceeds the design basis, addressees were requested to submit an interim evaluation and actions taken or planned to address any higher flooding hazards relative to the design basis prior to completion of the integrated assessment.

On August 19, 2011, following issuance of the NTTF report, the Commission directed the NRC staff in staff requirements memorandum (SRM) for SECY-11-0093 (ADAMS Accession No. ML112310021), to determine which of the NTTF recommendations could and should be implemented without unnecessary delay.

On September 9, 2011, the NRC staff provided SECY-11-0124 to the Commission (ADAMS Accession No. ML11245A158). The document identified those actions from the NTTF report that should be taken without unnecessary delay. As part of the October 18, 2011, SRM for SECY-11-0124 (ADAMS Accession No. ML112911571), the Commission approved the staff's proposed actions, including the development of three information requests under 10 CFR 50.54(f). The information collected would be used to support the NRC staff's evaluation of whether further regulatory action was needed in the areas of seismic and flooding design, and EP. NTTF Recommendations 2.1 and 2.3 that pertain to flooding:

- NTTF Recommendation 2.1 stated: "Order licensees to reevaluate the seismic and flooding hazards at their sites against current NRC requirements and guidance, and if necessary, update the design basis and Structures, Systems and Components (SSCs) important to safety to protect against the updated hazards." This recommendation was implemented as Enclosure 2 to the information requests issued under 10 CFR 50.54(f), as described above.

- NTTF Recommendation 2.3 stated: "Order licensees to perform seismic and flood protection walkdowns to identify and address plant-specific vulnerabilities and verify the adequacy of monitoring and maintenance for protection features such as watertight barriers and seals in the interim period until longer term actions are completed to update the design basis for external events." This recommendation was implemented as Enclosure 4, entitled "Flooding", to the information requests issued under 10 CFR 50.54(f), as described above.

As part of Enclosure 4 to the 50.54(f) information request, licensees were required to perform walkdowns using an NRC-endorsed walkdown methodology to verify that plant features credited in the current licensing basis (CLB) for protection and mitigation from external flood events are available, functional, and properly maintained. Nuclear Energy Industry (NEI) document 12-07 titled, "Guidelines for Performing Verification Walkdowns of Plant Protection Features," (ADAMS Accession No. ML12173A215) provides NRC-endorsed walkdown guidance to be used for assessing external flood protection and mitigation capabilities. Licensees submitted the reports documenting the walkdowns to NRC by November 30, 2012.

As part of Enclosure 2 to the 50.54(f) information request, licensees were requested to reevaluate all external flooding hazards using present-day guidance and methodologies. For those sites where the reevaluated flood exceeded the design basis, licensees will perform an integrated assessment to evaluate the capability of the plant to withstand the reevaluated hazard. Integrated assessments must be submitted to the NRC within two years of the licensee submittals of the hazard reevaluation reports. In addition, licensees were requested to submit interim actions, planned or taken, to address the reevaluated hazard and provide assurance of the licensee's ability to maintain the plant in a safe condition under the reevaluated flooding conditions during the longer-term performance and evaluation of the integrated assessment.

2515/190-03 INSPECTION REQUIREMENTS AND GUIDANCE

This TI may be completed all at once or in phases as the licensee completes the implementation of the associated interim actions submitted for the NRC's letter of March 12, 2012, related to Title 10 of the Code of Federal Regulations (10 CFR) 50.54(f). The inspector(s) should coordinate the inspection effort with the licensee in accordance with the licensee's schedule.

03.01 General Guidance

Inspectors will conduct an independent evaluation of the licensee's submitted interim actions to verify that the proposed actions will perform their intended function for flooding mitigation.

In particular, the evaluation should confirm that:

- The procedures or activities can be executed as specified/written, and within the available time, if time-dependent.
- Water levels and associated effects (e.g., waves/run-up, debris) and severe weather conditions would not impair support functions and would not impede performing necessary interim actions.
- Other factors at single or multi-unit sites (e.g., equipment availability and staffing) would not prevent implementation of the interim actions.
- The proposed interim actions do not result in adverse consequences. (e.g., interim actions do not impair or negatively affect other safety or security functions (e.g., installing temporary flood covers over vents needed for air cooling that could potentially impair cooling of equipment in the building).
- The procedures or activities should include a discussion on warning time & notification that a flood event is coming.
- The procedure should include a discussion regarding how long the site could be flooded (e.g., Sufficient consumables are available for the duration).

During the evaluation of the interim actions, inspectors should be aware of the licensees 2.1 flooding hazard reevaluation report.

Inspectors should also be familiar with the following:

- A review of the reevaluated flooding hazard level(s), review of any flood protection and pertinent flood mitigation features, such as exterior barriers, incorporated barriers, and temporary flood barriers.
- Licensee programs which are in place that periodically verify the status and adequacy of flood mitigation strategies and equipment.
- NUREG-1852, "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire," provides criteria and associated technical bases for evaluating the feasibility and reliability of post-fire operator manual actions implemented in nuclear power plants. Although the guidance on operator manual actions the licensee should follow is contained in the NEI Flooding Walkdown Guidance document, some useful information with respect to feasibility and reliability of operator manual actions may also be found in NUREG-1852.
- In addition to NUREG-1852, guidance for evaluation of external flood-related manual actions can be found in Appendix C of JLD-ISG-2012-05, "Guidance for Performing an Integrated Assessment for External Flooding."

Inspectors should also verify that deficiencies identified with the licensee's interim actions have been entered into the licensee's Corrective Action Program (CAP) for resolution.

03.02 Inspection Requirement/Guidance

Inspectors should evaluate the license's interim actions, and verify the following attributes associated with the flood protection feature(s) that are part of the interim actions were appropriately evaluated, specifically:

a) Incorporated or Exterior Passive Flood Protection Features

1) A visual inspection of the flood protection feature was performed if the flood protection feature was relevant. External visual inspection was performed for indications of degradation that would prevent its credited function from being performed.
2) Critical SSC dimensions were measured and capacity was evaluated (or confirmed through review of documents) to confirm the feature is capable of withstanding the reevaluated flood (see NEI 12-07 for additional guidance on critical SSC dimensions).
3) Flood protection feature functionality was determined using either visual observation or by review of other documents.

b) Incorporated or Exterior Active Flood Protection Features

1) Manual actions required to operate the flood protection features were assessed to ensure they can be performed within the required time considering the conditions expected during the reevaluated flood.
2) Critical SSC parameters were evaluated (or confirmed through review of documents) to confirm the feature is capable of performing its function (see NEI 12-07 for additional guidance on critical SSC parameters).

3) Adequate consumables were verified to exist to support the flood protection feature during the entire time its function is credited.
4) Procedures used to operate credited equipment (e.g., dewatering equipment) can be performed as written

c) Temporary Passive Flood Protection Features

1) Equipment is properly staged and in a condition that would allow its use should it be needed for its intended purpose, or that sufficient time is available after a flood warning is issued to move the equipment to an appropriate location. Consider whether the warning time has decreased relative to the design basis and how long the feature must be available (i.e., for the duration of the event as specified in the hazard reevaluation report)
2) Critical SSC dimensions were measured and capacity was evaluated (or confirmed through review of documents) to confirm the feature is capable of withstanding the reevaluated flood (see NEI 12-07 for additional guidance on critical SSC dimensions).
3) All connections necessary to hook up the temporary equipment to allow performance of its flood protection function will work in their intended application and that any supplies, seals, fasteners, etc., are of sufficient quantity, in good condition, properly staged, inventoried regularly, and subject to periodic condition assessment.
4) Guidance or procedures are available to support the installation or construction of temporary features (e.g., guidance on the appropriate configuration of a sandbag barrier).
5) Manual actions required to install the feature within the required time can be performed considering the conditions expected during the reevaluated flood (i.e., concurrent adverse weather conditions). Reasonable simulations (see below) can be used to demonstrate adequacy of manual actions.

Inspectors should review the licensee's procedures that incorporate manual actions associated with interim actions and verify that they were demonstrated through reasonable simulation or similar activities (see paragraph 5.5.6 of NEI 12-07 Flooding Walkdown Guidance document).

d) Reasonable Simulation

Reasonable simulation is a walk-through of a procedure or activity to verify the procedure or activity can be executed as specified/written. It requires:
1) all resources (e.g., consumables, staff) needed to complete the actions will be available.
2) any credited time dependent activities can be completed in the time required. Time-dependent activities include detection (some signal that the event will occur, has occurred, or is occurring), recognition (by someone who will notify the plant), communication (to the control room), and action (by plant staff).
3) specified equipment/tools are properly staged and in good working condition, verification that connection/installation points are accessible.
4) execution of the activity will not be impeded by the event it is intended to mitigate (e.g., the floodwaters do not prevent required movement of equipment around the site) or adverse weather.

Reasonable simulation does not require actual performance of activities if it has been previously demonstrated that the procedure or activity can be performed in the credited time.

2515/190-04 REPORTING AND DOCUMENTATION REQUIREMENTS

The inspection results of this TI should be included in the integrated quarterly report. NRC-identified or self-revealing findings should receive a four part write-up in Section 4OA5, titled "Other Activities" of the report. Enclosure 1 provides a documentation template.

The inspection report containing the results should be forwarded to NRR/JLD/PMB, Attention: Ed Miller, via e-mail at Ed.Miller@nrc.gov. Mr. Miller can also be reached at (301) 415-2481. The inspection results from this TI will be used to evaluate the licensee's readiness for the newly evaluated flood hazard. Inspectors should contact Reactor Inspection Branch, NRR with any questions related to the scope of this TI, or with questions related to other inspector concerns identified while implementing this TI.

2515/190-05 COMPLETION SCHEDULE

This TI is to be initiated in accordance with the licensee's schedule for implementing the interim actions. The TI is considered closed when the interim actions have been independently reviewed and noted deficiencies resolved and entered into the CAP. The Group 2 and 3 plants will not be submitting their 2.1 hazard assessments until March 2014 and March 2015 respectively (The schedule for submission for individual plants can be found under ADAMS Accession No. ML12097A509).

2515/190-06 EXPIRATION

The TI will expire on December 31, 2015.

2515/190-07 CONTACT

Any technical questions regarding this TI should be addressed to Chris Regan at (301) 415-2768, Stephen Campbell at (301) 415-3353, or Jim Isom at (301) 415-1109. Questions can also be sent electronically to either Christopher.Regan@nrc.gov, or Stephen.Campbell@nrc.gov.

2515/190-08 STATISTICAL DATA REPORTING

All direct inspection effort expended on this TI is to be charged to 2515/190 with an IPE code of TI. All indirect inspection effort expended on this TI for preparation and documentation should be attributed to activity codes TIP and TID respectively.

2515/190-09 RESOURCE ESTIMATE

The estimated average time to complete the TI inspection requirements is 24 hours per site. Inspectors can take credit, as appropriate, for baseline inspection program samples (e.g., Flooding sample associated with the "Adverse Weather Protection" inspection procedure, IP 71111.01 or partial walkdown sample associated with "Equipment Alignment" inspection procedure, IP 71111.04) reviewed during this TI assessment.

2515/190-10 TRAINING

To be determined.

2515/190-11 REFERENCES

NEI 12-07 (Rev. 0-A), May 2012, "Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features" (ADAMS Accession No. ML12173A215)

U.S. Nuclear Regulatory Commission, "Endorsement of Nuclear Energy Institute (NEI) 12-07, Guidelines for Performing Verification Walkdowns of Plant Flood Protection Features." (ADAMS Accession No. ML12144A142)

U.S. Nuclear Regulatory Commission, "Recommendations for Enhancing Reactor Safety in the 21st Century - The Near-Term Task Force Review of Insights from the Fukushima Dai-ichi Accident," July 12, 2011 (ADAMS Accession No. ML112510271)

U.S. Nuclear Regulatory Commission, "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3, of the Near-Term Task Force Review of Insights From the Fukushima Dai-ichi Accident," Enclosure 4, Recommendation 2.3: Flooding (ADAMS Accession No. ML12056A050)

U.S. Nuclear Regulatory Commission, Regulatory Issue Summary 2005-20, Revision 1, "Revision to NRC Inspection Manual Part 9900 Technical Guidance, Operability Determinations & Functionality Assessments for Resolution of Degraded or Nonconforming Conditions Adverse to Quality or Safety," April 16, 2008 (ADAMS Accession No. ML0735313460)

U.S. Nuclear Regulatory Commission, NUREG-1852, "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire," October 2007 (ADAMS Accession No. ML073020676)

Integrated Assessment JLD-ISG-2012-05 (ADAMS Accession No. ML12311A214)

END

Enclosure 1 – Documentation Template

Temporary Instruction 2515/190 – Inspection of the Proposed Interim Actions Associated with Near-Term Task Force Recommendation 2.1 Flooding Hazard Evaluations.

Completion of this TI is to be documented in a quarterly inspection report by including the following statements:

“Inspector(s) verified that licensee’s interim actions will perform their intended function for flooding mitigation.

The inspectors independently verified that the licensee’s proposed interim actions would perform their intended function for flooding mitigation.

- Visual inspection of the flood protection feature was performed if the flood protection feature was relevant. External visual inspection for indications of degradation that would prevent its credited function from being performed was performed.
- Reasonable simulation, if applicable to the site
- Flood protection feature functionality was determined using either visual observation or by review of other documents.

The inspectors verified that issues identified were entered into the licensee's corrective action program.”

Attachment 1 – Revision History for TI 2515/190
Inspection of Interim Actions of Near-Term Task Force Recommendation 2.1 Flooding Reevaluations

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment and Feedback Resolution Accession Number
N/A	ML13217A436 08/30/13 CN 13-019	This is a new document issued for inspections related to the industry response to the Fukushima Near-Term Task Force (NTTF) recommended actions associated with flooding.	Webinar training to be held	