[7590-01-P]

NUCLEAR REGULATORY COMMISSION

[NRC-2012-0222]

Japan Lessons-Learned Project Directorate Interim Staff Guidance JLD-ISG-2012-05; Performance of an Integrated Assessment for External Flooding

AGENCY: Nuclear Regulatory Commission.

ACTION: Japan Lessons-Learned Project Directorate Interim Staff Guidance; issuance.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is issuing the Final Japan Lessons-Learned Project Directorate Interim Staff Guidance (JLD-ISG), JLD-ISG-2012-05, "Performance of an Integrated Assessment" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12311A214). This JLD-ISG provides guidance and clarification to assist nuclear power reactors applicants and licensees with performing an integrated assessment for external flooding in response to Enclosure 2 of a March 12, 2012, information request (ADAMS Accession No. ML12053A340).

ADDRESSES: You may access information and comment submissions related to this document, which the NRC possesses and are publically available, by searching on *http://www.regulations.gov* under Docket ID **NRC-2012-0222**.

- **Federal Rulemaking Web site:** Go to *http://www.regulations.gov* and search for Docket ID **NRC-2012-0222**. Address questions about NRC dockets to Carol Gallagher; telephone: 301-492-3668; e-mail: *Carol.Gallagher@nrc.gov*.

- **NRC's Agencywide Documents Access and Management System (ADAMS):**

You may access publicly-available documents online in the NRC Library at *http://www.nrc.gov/reading-rm/adams.html*. To begin the search, select "*ADAMS Public Documents*" and then select "*Begin Web-based ADAMS Search*." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to *pdr.resource@nrc.gov*. The JLD-ISG-2012-05 is available under ADAMS Accession No. ML12311A214.

- **NRC's PDR:** You may examine and purchase copies of public documents at the NRC's PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, MD 20852

- **NRC's Interim Staff Guidance Web Site:** Go to *http://www.nrc.gov/reading-rm/doc-collections/isg/japan-lessons-learned.html* and refer to JLD-ISG-2012-05.

FOR FURTHER INFORMATION CONTACT: Mr. G. Edward Miller, Japan Lessons-Learned Project Directorate, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; telephone: 301-415-2481; e-mail: *ed.miller@nrc.gov*.

SUPPLEMENTARY INFORMATION:

Background Information

On March 11, 2011, a magnitude 9.0 earthquake struck off the coast of the Japanese island of Honshu. The earthquake resulted in a large tsunami, estimated to have exceeded 14 meters (45 feet) in height that inundated the Fukushima Dai-ichi nuclear power plant site. The earthquake and tsunami produced widespread devastation across northeastern Japan and significantly affected the infrastructure and industry in the northeastern coastal areas of Japan.

When the earthquake occurred, Fukushima Dai-ichi Units 1, 2, and 3 were in operation and Units 4, 5, and 6 were shut down for routine refueling and maintenance activities. The Unit 4 reactor fuel was offloaded to the Unit 4 spent fuel pool. Following the earthquake, the three operating units automatically shut down and offsite power was lost to the entire facility. The emergency diesel generators (EDGs) started at all six units providing alternating current (ac) electrical power to critical systems at each unit. The facility response to the earthquake appears to have been normal. Approximately 40 minutes following the earthquake and shutdown of the operating units, however, the first large tsunami wave inundated the site, followed by additional waves. The tsunami caused extensive damage to site facilities and resulted in a complete loss of all ac electrical power at Units 1 through 5, a condition known as station blackout. In addition, all direct current electrical power was lost early in the event on Units 1 and 2 and after some period of time at the other units. Unit 6 retained the function of one air-cooled EDG. Despite their actions, the operators lost the ability to cool the fuel in the Unit 1 reactor after several hours, in the Unit 2 reactor after about 70 hours, and in the Unit 3 reactor after about 36 hours, resulting in damage to the nuclear fuel shortly after the loss of cooling capabilities.

Following the events at the Fukushima Dai-ichi nuclear power plant, the NRC established a senior-level agency task force referred to as the Near-Term Task Force (NTTF). The NTTF was tasked with conducting a systematic and methodical review of the NRC's regulations and processes, and determining if the agency should make additional improvements to these programs in light of the events at Fukushima Dai-ichi. As a result of this review, the NTTF developed a comprehensive set of recommendations, documented in SECY-11-0093, "Near-Term Report and Recommendations for Agency Actions Following the Events in Japan," dated July 12, 2011 (ADAMS Accession No. ML11186A950). These recommendations were

enhanced by the NRC staff following interactions with stakeholders. Documentation of the staff's efforts is contained in SECY-11-0124, "Recommended Actions to be Taken Without Delay from the Near-Term Task Force Report," dated September 9, 2011 (ADAMS Accession No. ML11245A158) and SECY-11-0137, "Prioritization of Recommended Actions to be Taken in Response to Fukushima Lessons Learned," dated October 3, 2011 (ADAMS Accession No. ML11272A111).

As directed by the Commission's staff requirement memorandum (SRM) for SECY-11-0093, dated August 19, 2011 (ADAMS Accession No. ML112310021), the NRC 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. SECY-11-0124 and SECY-11-0137 established the staff's prioritization of the recommendations based upon the potential for each recommendation to enhance safety.

As part of the SRM for SECY-11-0124, dated October 18, 2011, the Commission approved the staff's proposed actions, including the development of three information requests under section 50.54(f) of Title 10 of the *Code of Federal Regulations* (10 CFR). 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 emergency preparedness.

In addition to Commission direction, the Consolidated Appropriations Act, Public Law 112-074, was signed into law on December 23, 2011, which contains the Energy and Water Development Appropriations Act, 2012 (Act). Section 402 of the Act directs the NRC to require

licensees to reevaluate their design basis for seismic, tsunami, flooding, and other external hazards against current applicable Commission requirements and guidance.

In response to the aforementioned Commission and Congressional direction, the NRC issued a request for information to all power reactor licensees and holders of construction permits under 10 CFR Part 50 on March 12, 2012. The March 12, 2012, letter includes a request that licensees reevaluate flooding hazards at nuclear power plant sites using updated flooding hazard information and present day regulatory guidance and methodologies. The letter also requests the comparison of the reevaluated hazard to the current design basis at the site for each potential flood mechanism. If the reevaluated flood hazard at a site is not bounded by the current design basis, licensees are requested to perform an integrated assessment. The integrated assessment will evaluate the total plant response to the flood hazard, considering multiple and diverse capabilities such as physical barriers, temporary protective measures, and operational procedures. The NRC staff will review the licensees' responses to this request for information and determine whether regulatory actions are necessary to provide additional protection against flooding.

The NRC staff developed draft JLD-ISG-2012-05 to provide guidance and clarification to assist nuclear power reactor applicants and licensees and holders of construction permits in active or deferred status with the performance of an integrated assessment for external flooding.

Numerous public meetings were held to receive stakeholder input on the proposed guidance prior to its issuance formally for public comment. On September 28, 2012 (77 FR 65417), the NRC requested public comments on draft JLD-ISG-2012-05. The staff received

sixty-one (61) comments from four (4) stakeholders. Comments were received related to the following topical areas: (1) evaluation of mitigation capability, particularly the perceived limitations associated with use of the scenario-based evaluation method; (2) expectations and attributes of the peer review; (3) the availability of illustrative examples; (4) equipment redundancy and quantification of reliability; (5) the evaluation of manual actions associated with protective and mitgative actions; (6) the evaluation of flood protection and demonstration of reliability and margin using available performance criteria; and (7) general and miscellaneous other topics. In public meetings on October 24-25, 2012, and November 7, 2012, the NRC staff interacted extensively with external stakeholders to discuss and resolve public comments (including discussion of proposed modifications to the text of the ISG) related to the evaluation of mitigation capability, the expectations and attributes of peer review, and other topics. Significant modifications were made to text of the ISG in response to the public comments and the outcomes of the public meetings. In addition, to provide more detailed guidance, staff has augmented the ISG by providing additional references related to the evaluation of flood protection and significantly enhancing portions of the ISG related to the evaluation of manual actions. The comments were considered, evaluated, and resulted in modifications to the final JLD-ISG-2012-05. The comments, staff responses, and the staff's bases for changes to the ISG are contained in "NRC Responses to Public Comments," for JLD-ISG-2012-05, which can be found under ADAMS at Accession No. ML12311A216.

BACKFITTING AND ISSUE FINALITY:

This ISG does not constitute backfitting as defined in 10 CFR 50.109 (the Backfit Rule) and is not otherwise inconsistent with the issue finality provision in 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." This ISG provides guidance on an acceptable method for responding to a portion of an information request issued pursuant to 10 CFR 50.54(f). Neither the information request nor the ISG require the modification or addition to systems, structures, or components, or design of a facility. Applicants and licensees may voluntarily use the guidance in JLD-ISG-2012-06 to comply with the request for information. The information received by this request may, at a later date, be used in the basis for a backfit at a later date. In this case, the appropriate backfit review process would be followed at that time.

CONGRESSIONAL REVIEW ACT:

This interim staff guidance is a rule as designated in the Congressional Review Act (5 U.S.C. 801-808). OMB has found that this is not a major rule in accordance with the Congressional Review Act.

Dated at Rockville, Maryland, this 30th day of November 2012.

FOR THE NUCLEAR REGULATORY COMMISSION.

/RA/

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Office of Nuclear Reactor Regulation

[FR Doc. 2012-29619 Filed 12/06/2012 at 8:45 am; Publication Date: 12/07/2012]