[7590-01-P]

NUCLEAR REGULATORY COMMISSION

[NRC-2013-0136]

Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor

AGENCY: Nuclear Regulatory Commission.

ACTION: Draft report; request for comment.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is issuing a draft report for public comment, titled Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor (also referred to as the Spent Fuel Pool Study). The purpose of this study was to examine if faster removal of older, colder spent reactor fuel from pools to dry cask storage significantly reduces risks to public health and safety. Based on previous research showing earthquakes present the dominant risk for spent fuel pools, the draft study evaluated how a potential pool leakage from an unlikely severe earthquake might cause the used fuel to overheat and release radioactive material to the environment. This study provides publicly available consequence estimates of a hypothetical spent fuel pool accident initiated by a low likelihood seismic event at a specific reference plant. The study compares high-density and low-density spent fuel pool loading conditions and assesses the benefits of post-9/11 mitigation measures. Past risk studies have shown that storage of spent fuel in a high-

density configuration is safe and risk of a large release due to an accident is very low. This draft study's results are consistent with earlier research conclusions that spent fuel pools are robust structures that are likely to withstand severe earthquakes without leaking. The NRC continues to believe, based on this study and previous studies that spent fuel pools provide adequate protection of public health and safety. The study's results will help inform the Commission's evaluation of whether expedited movement of spent fuel from spent fuel pools to dry storage sooner than current practice provides a substantial increase in safety. The insights from this analysis will inform a broader regulatory analysis of the spent fuel pools at all U.S. operating nuclear reactors as part of the NRC's Japan Lessons-learned Tier 3 plan.

DATES: Submit comments by **[INSERT DATE 30 DAYS AFTER PUBLICATION]**. Comments received after this date will be considered if it is practical to do so, but the NRC staff is able to ensure consideration only for comments received on or before this date.

ADDRESSES: You may submit comments by any of the following methods (unless this document describes a different method for submitting comments on a specific subject):

- **Federal Rulemaking Web site:** Go to http://www.regulations.gov and search for Docket ID **NRC-2013-0136**. Address questions about NRC dockets to Carol Gallagher; telephone: 301-492-3668; e-mail: Carol.Gallagher@nrc.gov. For technical questions, contact the individual listed in the FOR FURTHER INFORMATION CONTACT section of this document.
- **Mail comments to:** Cindy Bladey, Chief, Rules, Announcements, and Directives Branch (RADB), Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

For additional direction on accessing information and submitting comments, see "Accessing Information and Submitting Comments" in the SUPPLEMENTARY INFORMATION

section of this document.

FOR FURTHER INFORMATION CONTACT: Don Algama, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC, 20555-0001; telephone: 301-251-7940; e-mail: *Don.Algama@nrc.gov*.

SUPPLEMENTARY INFORMATION:

I. Accessing Information and Submitting Comments

A. Accessing Information

Please refer to Docket ID NRC-2013-0136 when contacting the NRC about the availability of information regarding this document. You may access information related to this document, which the NRC possesses and is publicly available, by any of the following methods:

- **Federal Rulemaking Web site:** Go to *http://www.regulations.gov* and search for Docket ID NRC-2013-0136.
- **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 ADAMS accession number for each document referenced in this notice (if that document is available in ADAMS) is provided the first

time that a document is referenced. The draft report is available electronically in ADAMS under Accession No. ML13133A132.

- **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, Maryland 20852.

B. Submitting Comments

Please include Docket ID NRC-2013-0136 in the subject line of your comment submission, in order to ensure that the NRC is able to make your comment submission available to the public in this docket.

The NRC cautions you not to include identifying or contact information that you do not want to be publicly disclosed in your comment submission. The NRC will post all comment submissions at *http://www.regulations.gov* as well as enter the comment submissions into ADAMS. The NRC does not routinely edit comment submissions to remove identifying or contact information.

If you are requesting or aggregating comments from other persons for submission to the NRC, then you should inform those persons not to include identifying or contact information that they do not want to be publicly disclosed in their comment submission. Your request should state that the NRC does not routinely edit comment submissions to remove such information before making the comment submissions available to the public or entering the comment submissions into ADAMS.

II. Discussion

The draft report documents a consequence study that continues the Nuclear Regulatory Commission's examination of the risks and consequences of postulated spent fuel pool accidents. The purpose of this study is to examine if faster removal of spent reactor fuel from pools to dry cask storage significantly reduces risks to public health and safety. Based on previous research showing earthquakes present the dominant risk for spent fuel pools, the draft study evaluated how a potential pool leakage from an unlikely severe earthquake might cause the used fuel to overheat and release radioactive material to the environment. A spent fuel pool's robust concrete structure and stainless steel liner keep more than 20 feet of water above the spent fuel stored within it ensuring ample cooling for the spent fuel and adequate radiation shielding for plant personnel. This study compared potential accident consequences from a pool nearly filled with spent fuel and a pool in which fuel that has cooled sufficiently has been removed at a selected U.S. Mark I boiling-water reactor spent fuel pool.

The staff first evaluated whether a severe, though unlikely, earthquake would damage the spent fuel pool to the point of leaking. In order to assess the consequences that might result from a spent fuel pool leak, the study assumed seismic forces greater than the maximum earthquake reasonably expected to occur at the reference plant location. The NRC expects that the ground motion used in this study is more challenging for the spent fuel pool structure than that experienced at the Fukushima Dai-ichi nuclear power plant from the earthquake that occurred off the coast of Japan on March 11, 2011. That earthquake did not result in any spent fuel pool leaks. In the small likelihood that such an extreme earthquake caused a leak, the staff then analyzed how the spent fuel could overheat and potentially release radioactive material into the environment. Finally, the staff analyzed what the public health and environmental effects of a radiological release would be in the area surrounding the plant.

This draft study's results for the specific reference plant and earthquake analyzed are

consistent with past studies' conclusions that spent fuel pools are likely to withstand severe earthquakes without leaking. The draft study shows the likelihood of a radiological release from the spent fuel after the analyzed severe earthquake at the reference plant to be very low. The regulatory analysis for this study indicates that expediting movement of spent fuel from the pool does not provide a substantial safety enhancement for the reference plant. The NRC will use this study in a broader regulatory analysis of the spent fuel pools at all U.S. operating nuclear reactors as part of its Japan Lessons-Learned activities. The NRC continues to believe, based on this study and previous studies that spent fuel pools provide adequate protection of public health and safety.

Dated at Rockville, Maryland, this 24th day of June, 2013.

For the Nuclear Regulatory Commission.

Richard Lee, Chief,
Fuel and Source Term Code Development Branch,
Division of Systems Analysis,
Office of Nuclear Regulatory Research.

[FR Doc. 2013-15840 Filed 07/01/2013 at 8:45 am;

Publication Date: 07/02/2013]