UNITED STATES
NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS
WASHINGTON, DC 20555-0001

May 16, 2014

NRC INFORMATION NOTICE 2014-08: NEED FOR CONTINUOUS MONITORING OF ACTIVE SYSTEMS IN LOADED SPENT FUEL STORAGE CANISTERS (INCLUDING VACUUM DRYING PROCESS)

ADDRESSEES

All holders of and applicants for an independent spent fuel storage installation license under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste", 10 CFR Part 72 Certificate of Compliance holders, and all 10 CFR Part 72 general licensees.

PURPOSE

The U.S. Nuclear Regulatory Commission (NRC) is issuing this information notice (IN) to supplement IN 2011-10 "Thermal Issues Identified during Loading of Spent Fuel Storage Casks" to inform addressees of additional information and lessons learned pertaining to the incident that occurred during the loading of spent fuel storage canisters at the Byron Generating Station. NRC expects that recipients will review the information for applicability to their facilities and take actions, as appropriate, to avoid similar problems. Suggestions contained in this IN are not NRC requirements; therefore, no specific action or written response is required.

DESCRIPTION OF CIRCUMSTANCES

On August 28–29, 2010, a Holtec HI-STORM 100 spent fuel storage system multipurpose canister containing fuel assemblies and located within a transfer cask was left unattended for the evening. A cooling system, which circulated water in the annulus between the canister and transfer cask to keep cladding temperatures below allowable limits, was found to be inoperable the next morning. The NRC conducted a reactive team inspection at the Byron Generating Station in September 2010, and issued Inspection Report Nos. 05000454/2010007, 05000455/2010007, and 07200068/2010002 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML103140226). Issues that arose as a result of the reactive team inspection were also addressed during a scheduled design and quality assurance inspection at Holtec International, who holds the HI-STORM 100 Certificate of Compliance, from October 25 -29, 2010 (Inspection Report No. 72-1014/10-201, ADAMS Accession No. ML110450157).

ML14121A089

On May 2, 2011, the NRC issued Information Notice 2011-10 (ADAMS Accession No. ML111090200) to inform addressees of the incident that occurred during the loading of spent fuel storage canisters at the Byron Generating Station. In this information notice the NRC expected that recipients would review the information for applicability to their facilities and take actions, as appropriate, to avoid similar problems.

However, after issuing IN 2011-10, the NRC continued to have technical discussions regarding the vulnerability of unattended vacuum drying process. On February 6, 2014, the NRC held a public meeting at NRC headquarters to discuss potential safety issues associated with the vacuum drying process during spent nuclear fuel cask loading operations (ADAMS Accession No. ML14065A014). During the public meeting the NRC provided an overview of potential issues associated with the Byron Generating Station event and a representative from the utility provided an overview of the event and actions taken at the Byron Generating Station. A representative from the Nuclear Energy Institute provided an overview related to the safety significance of the event and actions taken by industry in response to IN 2011-10. In general these actions meet NRC's expectations that the vacuum drying process should be continuously monitored during all phases. As a result of the public meeting, the NRC learned what actions have been taken by industry in response to IN 2011-10 and what type of additional information need to be provided in this supplement, as described below.

DISCUSSION

The inspection reports referenced above provide detailed summaries of the incident as well as findings and observations, underlying implications, and other information. As a result of the inspections, subsequent reviews and technical analyses, IN 2011-10, and discussions during the public meeting held on February 6, 2014, the NRC identified unresolved potential safety issues related to the incident:

(1) A loaded spent fuel storage cask was left unattended with an inoperable cooling system. Even though vacuum drying was secured when the cooling system failure occurred, the entire process was put at risk because the cooling system failure went undetected for an entire night, which resulted in an uncontrolled temperature increase inside the canister.

(2) Subsequent failure of the cooling system resulted in the licensee not being in compliance with the cask technical specifications of ensuring that the peak cladding temperature is maintained below recommended limits and that the spent fuel is maintained under flooded or inert conditions if a failure of the vacuum drying system occurred.

In summary, cask vendors and licensees should review their operating procedures to ensure they are adequate to maintain peak cladding temperature below recommended limits during vacuum drying. To achieve these objectives, the cask operating procedures should also be reviewed to determine if they adequately address the need for continuous monitoring of the vacuum drying process. Cask vendors and licensees should consider the need for continuous monitoring of the vacuum drying process such that operators are available to take any necessary actions to put the system into compliance with technical specifications, if a system failure occurred. The monitoring can be done by means other than direct observation.

CONTACT

This IN requires no specific action or written response. Please direct any questions about this matter to the technical contact listed below.

/RA/ A. Hsia for

Mark Lombard, Director
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Technical Contact: Jorge Solis, NMSS/SFST/TCB
301-287-9094
E-mail: Jorge.Solis@nrc.gov

Note: NRC generic communications may be found on the NRC public Web site, http://www.nrc.gov, under Electronic Reading Room/Document Collections.

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