

February 28, 2011

Ms. Debbie Grinnell  
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44 Merrimac St  
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SUBJECT: RESPONSE TO QUESTIONS REGARDING SEABROOK STATION  
INDEPENDENT SPENT FUEL STORAGE INSTALLATION

Dear Ms. Grinnell:

By e-mail dated December 8, 2010, you asked several questions related to the Seabrook Station Independent Spent Fuel Storage Installation (ISFSI) and the dry cask storage system in use at the ISFSI. The U.S. Nuclear Regulatory Commission staff responses to your questions are included in the enclosure to this letter.

If you have any questions regarding this matter, please contact me at 301-492-3371.

Sincerely,

**/RA/**

B. Jennifer Davis, Senior Project Manager  
Licensing Branch  
Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety  
and Safeguards

Docket Nos.: 50-443, 72-63

Enclosure: Responses to Questions  
Regarding Seabrook Station Independent  
Spent Fuel Storage Installation

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## Responses to Questions Regarding Seabrook Station Independent Spent Fuel Storage Installation

### Background

The following questions were asked by Ms. Debbie Grinnell, via e-mail dated December 8, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML110530140). The questions are related to the Seabrook Station Independent Spent Fuel Storage Installation (ISFSI) and the dry cask storage system (DCSS) used to store spent fuel at the ISFSI. The DCSS in use at the Seabrook Station ISFSI is the Transnuclear, Inc. NUHOMS® HD-32PTH (Certificate of Compliance (CoC) 72-1030, Amendment No. 0).

On July 19, 2010, NextEra Energy Seabrook, LLC (NextEra) requested an exemption from parts of 10 CFR Part 72 for the Seabrook Station ISFSI (ADAMS Accession No. ML102080256). The exemption would allow NextEra to use a daily temperature measurement program as an alternate method of monitoring the thermal performance of the horizontal storage modules (HSMs) (as proposed in Amendment No. 1 to CoC 72-1030, Technical Specification (TS) 5.2.5.c), instead of the daily visual inspection of the HSM air vents to ensure they are not blocked (as required by CoC 72-1030, Amendment No. 0, TS 5.2.5.b). In its exemption request, NextEra noted that it uses cameras to perform the inspections of the HSM air vents remotely, to meet TS 5.2.5.b. During adverse winter weather conditions, snow and ice can obstruct the camera lenses and prevent remote viewing of the HSM air vents, which requires personnel to conduct a local inspection of the HSM air vents to meet TS 5.2.5.b. Personnel must use a ladder to access the top air vents for inspections, which can pose a safety hazard to the personnel conducting these inspections during adverse winter weather conditions. NextEra stated that it requested the exemption to eliminate the potential for injuries that could occur to personnel when accessing the HSM vents to perform visual inspections under adverse winter weather conditions. The U.S. Nuclear Regulatory Commission (NRC) granted the exemption, subject to certain conditions, on December 2, 2010 (ADAMS Accession No. ML103360340).

Ms. Grinnell's specific questions are repeated in quotations below, and NRC responses follow each question.

**“Has the NRC required NextEra to provide periodic testing to confirm their sensors respond to temperature change?”**

### **Response:**

10 CFR Part 72, Subpart G, provides quality assurance requirements for storage of spent fuel. Licensees are required to establish, maintain, and execute a quality assurance program that includes all of the actions (e.g., inspection, testing, operation, maintenance, and repair) necessary to provide adequate confidence that a structure, system, or component that is important to safety will perform satisfactorily in service. Per 10 CFR 72.140(d), NextEra applies its previously NRC-approved 10 CFR Part 50, Appendix B, quality assurance (QA) program for the Seabrook Station to ISFSI activities. NextEra applies certain elements of the QA Program to quality related equipment and activities that are not safety related, but that support safe and reliable plant operations. NextEra considers the temperature measurement system (TMS) quality related equipment in which testing, inspection, operation, maintenance, modification, adjustment, and replacement of the TMS is performed in accordance with station programs and procedures.

Enclosure

NextEra expects the TMS to be operational in May of 2011. NextEra is currently developing and modifying station procedures to address the TMS, including testing and calibration of the TMS. NextEra is also updating its procedure for Quality Assurance Requirements for Dry Fuel Storage to clearly state that maintenance, operation, modification, replacement, adjustment, inspection, and testing of non safety related components (like the TMS) will be performed in accordance with station programs and procedures.

Therefore, NextEra, by application of certain aspects of the QA Program to the TMS, controls activities that affect the quality of the TMS to provide adequate confidence that the TMS is functional and capable of measuring temperatures as specified in TS 5.2.5.c in the proposed CoC 72-1030, Amendment No. 1.

**“What is the time-frame for those tests and reports to the NRC?”**

**Response:**

There is no specific requirement for the time frame for a licensee’s periodic testing of the TMS, and there is no specific requirement for reporting the results of such testing to the NRC. However, as discussed in the above response, NextEra applies certain elements of the QA Program to the TMS, including that testing, inspection, and maintenance of the TMS will be performed in accordance with station programs and procedures. Thus, NextEra must develop procedures for testing and maintenance of the TMS and specify the frequency of such testing. The QA Program also includes requirements for NextEra to maintain records and results of any such testing or maintenance. In addition, 10 CFR 72.174 requires licensees to maintain sufficient records to furnish evidence of activities affecting quality; such records include results of inspections and tests.

NRC conducts periodic inspections related to ISFSI operation to determine whether the licensee is operating the ISFSI in conformance with NRC regulations and the requirements in the CoC and TS for the DCSS being used, and NRC also conducts periodic inspections related to the QA program. Procedures for and records and results of testing, calibration, and maintenance of the TMS would be subject to NRC inspection.

**“When the temperature sensors fail how do you know? Some sensors, when they fail can continue to send the value recorded just before they failed. Other sensors send no value when they fail, which can alert workers to fix the failed sensor. Have you required the use of sensors that have the capacity to transmit a no value to alert workers? The other is not an acceptable application for this use.”**

**Response:**

NRC regulations and the CoC conditions and TS for the DCSS do not dictate what type of temperature sensors must be used for the temperature measurement system for the DCSS. Rather, the DCSS TS (in the proposed Amendment No. 1 to CoC 72-1030, TS 5.2.5.c) provide the general requirement to monitor the temperature of the DCSS (direct measurement of either the HSM concrete temperature, dry shielded canister temperature, or inlet and outlet air temperatures) to detect any blockage in the HSM air vents. The licensee must comply with this requirement, but it has flexibility in how it will comply, including flexibility in the type of temperature detectors it will use. NextEra, by application of certain aspects of the QA Program to the TMS (including inspection, testing, maintenance, and modification), controls activities that affect the quality of the TMS to provide adequate confidence that the TMS is functional and

capable of measuring temperatures as specified in TS 5.2.5.c in the proposed CoC 72-1030, Amendment No. 1. The operation of the ISFSI and implementation of CoC conditions and TS for the DCSS are subject to NRC inspection, including verification that the licensee is using adequate equipment to measure the temperature of the DCSS, as required in the TS.

In addition, NextEra indicated that TMS temperature data will be trended, and any deviation from the normal indications (including if the sensor fails as-is and continues to send the value recorded just before it failed) will be investigated.

**“As the NRC allowed men on ladders as an alternative to the failed cameras for visual inspection, and now agrees with NextEra that this was not an acceptable alternative method. What is the plan for alternative methods if the temperature sensors fail?”**

**Response:**

The statement that “NRC allowed men on ladders as an alternative to the failed cameras for visual inspection, and [NRC] now agrees with NextEra that this was not an acceptable alternative method,” is not accurate. NRC provides in TS 5.2.5.b. (of CoC 72-1030, Amendment No. 0 and the proposed Amendment No. 1) a surveillance requirement for visual inspection of the HSM air vents to ensure the vents are unobstructed (allowing for natural convective cooling of the DCSS, as designed). The TS requirement does not specify how the daily visual inspection is to be performed. The licensee, taking various operational aspects under consideration (including safety of its personnel), must determine how it will implement this TS surveillance requirement, and the NRC will conduct inspections to determine whether the licensee has met the TS requirements. It is recognized that both a local visual inspection by personnel or a remote visual inspection with the use of video cameras (that are capable of transmitting a clear view of the HSM air vents) are appropriate methods of performing the daily visual inspection of the HSM air vents.

NextEra, by application of certain aspects of the QA Program to the TMS (including inspection, testing, maintenance, and modification), controls activities that affect the quality of the TMS to provide adequate confidence that the TMS will perform satisfactorily in service (i.e., will reliably measure the temperature of the DCSS, as specified in TS 5.2.5.c). If the temperature detectors were to fail or there was a functionality issue with the TMS, the licensee would be required to remedy the problem (or return to the alternative of the visual inspection of the air vents) to meet the TS requirement to monitor the thermal performance of the HSM, ensuring that the passive cooling of the DCSS continues as designed and the integrity of the concrete HSM and fuel cladding are maintained. NRC would inspect to verify that the licensee is meeting the DCSS TS requirements.

**“How many proven camera technologies for adequate and reliable visual inspection of inlet and outlet patency required under the CoC and NRC regulation exist and what are they?”**

**Response:**

Proven camera technologies, for adequate and reliable visual inspection of HSM air vents to ensure they are not blocked, are not specified in NRC regulation or in the CoC and TS for the DCSS. As stated in the above response, the CoC and TS requirements do not dictate that cameras must be used for the visual inspection. If a licensee relies upon cameras to conduct a remote inspection of the HSM air vents to meet the DCSS surveillance requirement in TS

5.2.5.b, it must ensure that the cameras are functional and capable of transmitting a clear view of the HSM air vents.

**“What technology is utilized at other reactor sites at their ISFSIs to confirm inlet and outlet patency in similar freezing cold regions of the country?”**

**Response:**

Other ISFSI sites in Region I (that use DCSSs that rely on natural convective cooling through air inlets and outlets) either conduct a visual inspection of the air inlet and outlets (by personnel or via camera), use a temperature measurement system, or a combination of the two, as the surveillance activity to detect any blockage of the air inlets and outlets. At the time of this letter, one of these sites uses a local visual inspection by personnel; one site uses a remote visual inspection via camera; seven sites use a temperature measurement system; and four sites use a combination of the visual inspection and the temperature measurement system.

**“As NextEra knew the cameras froze last Winter, why was this issue not request addressed until a year later?”**

**Response:**

NRC staff cannot speak to the timing of NextEra’s exemption request, as the timing of such a request is not within the scope of NRC regulated activities. Regardless of the timing or status of the exemption request, NextEra must comply with the DCSS TS for monitoring the thermal performance of the HSM. Before issuance and implementation of the exemption (which allows the use of a temperature measurement system as an alternative method to monitor the thermal performance of the HSM), NextEra is required to perform a daily visual inspection of the HSM air vents to ensure they are not blocked, which it performs via remote inspection using cameras and local inspections by personnel when the cameras are not able to transmit a clear view of the HSM air vents.