Marcano, Damaris

From: Marcano, Damaris
Sent: Tuesday, October 08, 2019 9:30 PM
To: ggchappykale@yahoo.com
Cc: Kock, Andrea; Regan, Christopher; Layton, Michael
Subject: Response to Email to NRC regarding San Onofre and Holtec

Ms. Walker,

Thank you for your email to the U.S. Nuclear Regulatory Commission on September 6, 2019. Please find below the responses to your questions. Please contact me or visit our Frequent Asked Questions website at https://www.nrc.gov/waste/spent-fuel-storage.html if you have any additional questions.

LACK OF FUEL RETRIEVABILITY

1. Why is the NRC allowing loading of canisters to continue when Edison admits they cannot meet Condition 8 of their license to retrieve the fuel and put it back in the pool?

   Response: CoC Condition 8 is, as titled, a preoperational testing and training exercise that must be completed prior to the first use of the UMAX system. All systems approved for storage of spent fuel have a similar condition in the CoC. The purpose of CoC Condition 8-g, which addresses MPC unloading including flooding the MPC cavity, is to assure that unloading could be performed if operational issues are encountered during MPC loading, drying and placement operations.

   NRC inspectors observed the preoperational testing conducted at SONGS with the Holtec UMAX system. The NRC inspection report is publicly available in the NRC Agencywide Documents Access and Management System (ADAMS) under Accession No. ML18200A400.

2. How and where would Edison retrieve and repackage damaged fuel from a welded-shut canister?

   Response: NRC licensees are required to maintain systems to comply with NRC regulations, system technical specifications, and NRC license conditions. If safety issues are identified with a spent fuel storage system, the licensee must pursue corrective actions to ensure that the spent fuel is safely stored. These actions would not necessarily involve replacement of major dry storage system components (e.g., canister or cask) or repackaging the spent fuel in a new system. Corrective actions would more likely include further assessment and inspection, in-place repairs to components like those that have been used on components in commercial nuclear power reactors such as the application of remote repair welding techniques or creating a secondary confinement boundary for the spent fuel if needed (e.g., using an overpack canister to provide containment).

   Licensees initiate corrective actions after a thorough evaluation of the potential non-compliance and the appropriate repair or mitigative actions that are needed to bring the component back into compliance. The NRC does not prescribe the corrective action that a licensee will take to re-establish compliance for a specific spent fuel canister design. The NRC evaluates whether the licensee's corrective action is effective and sufficient to maintain the intended functions of the important-to-safety structures, systems, and components, and remain compliant with the requirements in 10 CFR Part 72. Proposed repair methods require demonstration and compliance with an NRC-approved quality assurance program.

   In the event that a storage canister must be unloaded, procedures for removing fuel from welded stainless-steel canisters are included in operational procedures of licensed designs. These procedures are included in the dry storage system Safety Analysis Report. These procedures have been reviewed and approved by the NRC. Per the regulatory requirements in 10 CFR 72.236(h), spent

fuel storage systems must be compatible with wet or dry spent fuel loading and unloading facilities. Performing such an activity should not be undertaken unless there is a specific safety need, based on indications that the canister is not performing adequately and only after evaluating other measures to remedy the circumstance with the canister along with the potential risks such activities, including opening the canister, could present.

3. Have any license requests for a DTS hot cell, designed to replace canisters, been submitted since this 2014 report?

   Response: The NRC has not received requests for a dry transfer system hot cell.

4. When the NRC approved higher heat levels for the canisters, did they reevaluate the ability to return the hot fuel to the pool (without causing a steam explosion and ensuing major radiological events)?

   Response: As identified in the response to Question 1, Condition 8 is only applicable during transfer operations (loading, drying, transfer) of the spent fuel to the storage cask on the ISFSI pad. The Holtec HI-STORM FW system (CoC 72-1032) FSAR contains procedures for unloading the MPC into a spent fuel pool in section 9.4 (ML17179A444). The procedure includes precautions to ensure personnel safety during the unloading operations, and to prevent the risk of MPC over pressurization and damage to the fuel assemblies. The procedure also addresses prevention of flammable gas concentrations as a result of the molecular breakdown of water.

5. Since the ability to return fuel to the pool is a requirement in Condition 8 of the license, please provide the NRC approved thermal analysis and canister reflooding analysis that justifies these higher heat loads in the canisters.

   Response: As identified in the response to Question 1, Condition 8 is not a perpetual license condition and the requirement for the availability of a spent fuel pool is only applicable during transfer operations (loading, drying, transfer) of the spent fuel to the storage cask on the ISFSI pad. Once the fuel is loaded in the spent fuel cask, Condition 8 is no longer applicable. The performance measure that indicates the adequacy of the transfer operations with respect to component heat rejection, is the duration of each specific transfer operation. These durations, or time limits, for each component of transfer operations are determined with thermal evaluations, performed by the CoC holder or licensee, and are generally in the form of supporting calculations typically provided for review. The NRC reviews these proprietary supporting calculations as necessary and makes a safety determination, based on the information provided.

6. Is there an NRC thermal analysis that determines storing and/or transporting a cracking/ leaking or dropped canister in a sealed cask is feasible?
   a. Has any vendor submitted an application for an overpack cask to be used for this purpose?
   b. What is the status?

      Response: The NRC evaluates the safety analysis report (SAR) for storage cask systems which consider normal, off-normal, and accident conditions for several technical issues, including thermal performance. The analyses provided in the SAR consider relevant credible events that may occur during the initial licensing period and the results of those analyses are compared against performance-based acceptance criteria in support of regulatory requirements. If acceptance criteria and regulatory requirements are satisfied, then the NRC will generally make an affirmative safety finding and issue a Safety Evaluation Report (SER). If during this initial licensing period, the cask system cannot meet required performance measures, then a corrective action must be implemented to restore the system or component. Cracking that could affect the containment or confinement boundary of a dry storage canister during an initial licensing term has not been presented as a credible event, nor has there been evidence of this type of event occurring and

requiring corrective action. Drop events are generally considered across normal, off-normal, and accident conditions as appropriate and compared against relevant acceptance criteria.

For transportation, prior to first transport, the user must verify that the transported package and packaging meets the requirements set forth in the CoC. If a canister-based system can be shown to meet CoC requirements at the time of transport, then it may be shipped. No transport overpack has been specifically certified for the purposes of storing and/or transporting a cracking/ leaking or dropped canister.

7. Where is the NRC's Defense in Depth for Dry Storage?'

   Response: Defense-in-depth has long been a key element of the NRC's safety philosophy. It is intended to ensure that the accomplishment of key safety functions is not dependent upon a single element of design, construction, maintenance or operation. In effect, defense-in-depth is used to provide one or more additional measures to back up the front line safety measures, to provide additional assurance that key safety functions will be accomplished. For dry cask storage systems, examples of measures associated with defense-in-depth are as follows:

   - Confinement System (2nd barrier to fuel clad integrity);
   - Operating Controls and Monitoring
   - Non-mechanistic and bounding event analyses (to mitigate site-specific uncertainties).

8. When will the NRC require a (DTS) fuel handling hot cell facility be built in the U.S?

   Response: NRC has no specific requirement for such a facility

HOLTEC - SCRAPED AND GOUGED CANISTERS

1. Why is the NRC allowing Holtec canisters to be loaded when Holtec's Final Safety Analysis Report (FSAR) guarantees no 'metal to metal contact?

   Response: The NRC conducted multiple inspections of the Independent Spent Fuel Storage Installation (ISFSI) at the decommissioning San Onofre Nuclear Generating Station (SONGS) in San Clemente, California. The NRC issued a Notice of Violation on March 25, 2019 (ML19080A208) based on the findings of a special inspection conducted on September 10-14, 2018. The results of supplemental inspection conducted over multiple dates is documented in an NRC Supplemental Inspection Report dated July 9, 2019 (ML19190A217). The NRC concluded that the evaluations and corrective actions taken in the areas of oversight, procedures, training, equipment, corrective action program, and reportability were appropriate to prevent recurrence of prior inspection findings at the SONGS ISFSI. In addition, the NRC inspectors concluded that corrective actions in the areas of training, corrective action program, and procedures were adequate to restore compliance and prevent recurrence for the relevant violations.

   The NRC Inspection report dated July 9, 2019 describes actions taken by SONGS to evaluate the canisters that were scratched during downloading operations. SONGS performed a change under the 10 CFR 72.48 process to evaluate and accept scratches from incidental contact during insertion and withdrawal operations on previously loaded and future canisters placed in the UMAX independent spent fuel storage installation. The subsequent written evaluation provided by SONGS, based on inspections and statistical analyses of eight loaded canisters, was adequate to demonstrate that the proposed change would not affect the canisters' ability to meet the confinement design function and structural functions as specified in the Holtec Final Safety Analysis Report. The detailed assessment of the scratch evaluation is provided in section 2.2.5 of the July 9, 2019 inspection report.

2. When will the NRC required Holtec to submit a license amendment request for the UMAX system?

Response: The regulations of 10 CFR 72.48 describe the changes that can be made without an amendment request. The rules of 10 CFR 72.48 apply to Licensees and Certificate of Compliance holders.

The NRC conducts inspections of 10 CFR 72.48 evaluations. The NRC issued a Notice of Violation to Holtec International on August 15, 2019 (ML19228A016). Section 1.5.2 of the August 15, 2019 inspection report describes the 10 CFR 72.48 violation regarding the Holtec International scratch evaluation.

3. When will the NRC do the technical analysis of the 'metal to metal' damage to canisters, the resulting pit corrosion and galvanic corrosion, and the shortened life span of the canisters?
   Response: The licensee, SONGS, conducted an evaluation which was submitted to the NRC. The NRC's review of the evaluation provided by SONGS is included in section 2.2.5 of the July 9, 2019 inspection report. \
4. When will the NRC require Defense in Depth for nuclear waste storage?
   Response: See the previous response on Defense in Depth.

3. RADIATION READINGS

1. Please make available to the public the radiation readings from all 51 aging Areva NU HOMS canisters' outlet air vents, include Gamma, Counts per Minute (CPM) and past readings.
   Response: The 2017 San Onofre Nuclear Generating Station Annual Radiological Environmental Operating Report is also publicly available in ADAMS under Accession Nos. ML18054A213 (Transmittal Letter) and ML18134A043 (2017 Report).
2. Why are the outlet air vents' readings of these aging NUHOMS canisters excluded?
   Response: The technical specifications for CoC 1029 do not requires outlet air vents' readings. The ISFSI at SONGS uses the original 72-1029 CoC approved on February 2, 2003 and Amendment 1 approved May 31, 2005. The CoC 1029 Technical Specifications are publicly available in ADAMS under Accession No. ML030100468 (Amendment 0) and ML051520131 (Amendment 1).

   Any general licensee using the CoC 1029 system must comply with the CoC Technical Specification Section 5.2.3 Radiological Environmental Monitoring Program, which requires (a) the implementation of a program to ensure that the annual dose equivalent to an individual located outside the ISFSI controlled area does not exceed the annual dose limits specified in 10 CFR 72.104(a); and (b) operation of the ISFSI will not create any radioactive materials or result in any credible liquid or gaseous effluent release.

   Also, a general license using the CoC 1029 system must comply with the CoC Technical Specification Section 5.2.4 Radiation Protection Program and establish administrative controls to limit personnel exposure to As Low As Reasonably Achievable (ALARA) levels in accordance with 10 CFR Part 20 and Part 72. Pursuant to 10 CFR 72.212, the general licensee must perform an analysis to confirm that the limits of 10 CFR Part 20 and 10 CFR 72.104 will be satisfied under the actual site conditions and configurations considering the planned number of DSCs to be used and the planned fuel loading conditions. In addition, the general licensee must have a monitoring program to ensure the annual dose equivalent to any real individual located outside the ISFSI controlled area does not exceed regulatory limits. The Radiological Environmental Monitoring Program is included in CoC Technical Specification Section 5.2.3.

Thanks,

Damaris Marcano
Pronouns: She, Her, Hers
Technical Assistant
Division of Spent Fuel Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Tel. 301-415-7328

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