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Retrievability, Cladding Integrity and Safe Handling of Spent Fuel at an Independent Spent Fuel Storage Installation and During Transportation

Comment On: NRC-2013-0004-0001
Retrievability, Cladding Integrity and Safe Handling of Spent Fuel at an Independent Spent Fuel Storage Installation and During Transportation

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General Comment

See attached file(s)

Attachments

MY Response to NRC Request for Comments

Maine Yankee
321 OLD FERRY RD • WISCASSET, ME 04578-4922

March 18, 2013
OMY-13-025

Cindy Bladey, Chief
Rules, Announcements, and Directives Branch (RADB)
Office of Administration, Mail Stop: TWB-05-B01M
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001.

Maine Yankee Atomic Power Company
Maine Yankee Independent Spent Fuel Storage Installation
NRC License No. DPR-36 (NRC Docket Nos. 50-309 and 72-30)

Subject: Maine Yankee Atomic Power Company's Response to the NRC's Request for Comments Regarding Retrievability, Cladding Integrity and Safe Handling of Spent Fuel at an Independent Spent Fuel Storage Installation and During Transportation (Docket ID NRC-2013-0004)

Dear Ms. Bladey:

Maine Yankee Atomic Power Company (Maine Yankee) appreciates the opportunity to provide comments in response to the subject request for comments regarding retrievability, cladding integrity and safe handling of spent fuel at an Independent Spent Fuel Storage Installation and during transportation. Maine Yankee's responses to each of the subject section questions are provided in the attachment.

If you have any questions regarding this information, please do not hesitate to contact me.

Sincerely,

James Connell
VP and ISFSI Manager

Attachment
Maine Yankee's Response to the NRC's Request for Comment

C: Mr. William Dean, Administrator, USNRC Region 1
Mr. John Goshen P.E., Project Manager, USNRC NMSS
Mr. Marc Ferdas, Decommissioning Branch Chief, USNRC Region 1
Mr. P.J. Dostie, State of Maine
Mr. J. Hyland, State of Maine
Mr. Gerald C. Poulin, Chairman and President, Maine Yankee
Mr. Wayne Norton, Vice President, CNO, Maine Yankee
Mr. Joe Fay Esquire, General Counsel, Maine Yankee
Mr. Bob Capstick, Maine Yankee

ATTACHMENT TO OMY-13-025
Maine Yankee's Response to the NRC's Request for Comments

A. Acceptance of Spent Fuel by a Future Disposal or Reprocessing Facility

1. Should an enhanced regulatory framework assume the licensee receiving spent fuel for disposal will be able to site and design a repository for direct disposal of these high capacity canisters without repackaging?

   Response:

   An as yet to be constructed federal nuclear waste repository or repositories will need to be designed to address the current and future inventory of commercial and defense spent nuclear fuel and Greater than Class C (GTCC) waste (SNF/HLW). Currently, there are over 1,700 dry storage systems with SNF/HLW deployed in the United States. At Maine Yankee, there are 60 NRC licensed, NAC International UMS system, dual-purpose (storage/transportation) canisters in dry casks storing spent nuclear fuel and 4 canisters in dry casks storing GTCC waste.

   The enhanced regulatory framework should not assume anything beyond the fact that the U.S. Department of Energy (DOE) has the obligation to take possession and remove all the SNF/HLW stored in the existing canister systems at the Maine Yankee site under the Nuclear Waste Policy Act and the associated Standard Contract, and that the nation's nuclear waste management program and federal repository facility will need to address a broad spectrum of existing and future dry cask canister systems. Maine Yankee will pursue re-licensing of the existing dual-purpose systems to ensure that the canisters storing the SNF and HLW can be safely stored and transported during the Certificate of Compliance renewal period. Accordingly, any rulemaking initiative to define specific assumptions associated with the design of a waste repository would place unnecessary limitations and preconditions on the back end of the fuel cycle.

2. Should an enhanced regulatory framework assume the repository licensee will be able to handle and repackage potentially degraded/damaged fuel on large production scales?

   Response:

   See Maine Yankee's responses to Questions A.1 and A.4.

3. What effects, if any, would a canister-based retrievability policy have on a future reprocessing facility?

   Response:

   Maine Yankee does not believe that a canister-based retrievability policy would have any impact on a potential future reprocessing facility. Any such facilities would be licensed and designed to have the appropriate engineering and quality controls in place to safely handle canistered spent fuel.

4. What other factors, such as cost, dose, should be considered?

   Response:

   Recent policy recommendations in the Blue Ribbon Commission on America's Nuclear Future Final Report (January 2012) and the DOE's report, "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste" (January 2013) propose that the spent nuclear fuel and GTCC waste stranded at stand-alone decommissioned reactor sites such as Maine Yankee be removed and transported on a priority basis to a pilot consolidated storage facility. This consolidated

storage facility should be designed and licensed to handle and repackage potentially degraded/damaged fuel and address any retrievability, cladding integrity, and safe handling capability for spent fuel assemblies. Accordingly, it would be more cost effective and a more efficient location to repackage spent fuel assemblies, if that was required, than the stand-alone ISFSI sites, such as Maine Yankee, that no longer possess either the capability or the licensing basis to retrieve spent fuel assemblies by normal means.

B. Spent Fuel Retrievability During Storage

Given the uncertainty with the material properties of high burn-up spent fuel, it is unclear whether some spent fuel may degrade during storage periods longer than 20 years and subsequent transportation. The NRC would like external stakeholders to provide an assessment of:

1. Whether ready-retrieval of individual spent fuel assemblies during storage should be maintained, or

2. Whether retrievability should be canister-based.

Response:

In Maine Yankee's case, all high burn-up spent fuel assemblies (greater than 45,000 Megawatt-Days per Metric Ton of Uranium (MWd/MTU) average assembly burn-up) have been placed in damaged fuel cans. Therefore, the uncertainty identified above does not impact assembly based retrieval of Maine Yankee assemblies at a future DOE consolidated storage facility/reprocessing facility/or disposal site. Maine Yankee has conservatively addressed high burn-up and damaged spent fuel assemblies to ensure assembly-based ready retrieval for storage purposes longer than the initial 20 year license period and during subsequent removal and transportation from the site by the DOE.

Maine Yankee believes that retrievability can and should be canister based and that any necessary retrieval of SNF assemblies should be performed at a future DOE facility(ies). Spent fuel assembly retrieval or repackaging at sites designed for these tasks is safer than repackaging the material at the Maine Yankee site, because the Maine Yankee site no longer possesses either the capability or the licensing basis to retrieve spent fuel assemblies by normal means. The level of effort to establish such a capability at a stand-alone decommissioned site such as Maine Yankee would be substantial and consolidating that capability at a DOE facility(ies) would be clearly more cost effective from a national waste management perspective.

C. Cladding Integrity

1. Should the spent fuel cladding continue to be protected from degradation that leads to gross rupture, or otherwise confine the spent fuel, during storage such that it will not pose operational safety problems with respect to its removal from storage? In particular, provide any explanatory information discussing the additional cost, dose, and effort required to repackage potentially damaged fuel over canned spent fuel, if the prohibition against gross deformation to the cladding were removed and the spent fuel required repackaging (whether by DOE or storage licensees).

Response:

Maine Yankee believes that spent fuel cladding should be protected from degradation to the maximum extent practical during dry storage. However, because of the inherent design of the welded canisters stored at the site, Maine Yankee does not believe that the canisters should be opened to inspect the spent fuel assemblies for damage or otherwise address concerns with the contents of the canister, except at a licensed DOE facility(ies) that is designed to do so. At stand-alone decommissioned reactor sites, such as Maine Yankee, the infrastructure and licensing basis for opening and/or repackaging a welded dry storage canister no longer exists.

2. Should each high burn-up spent fuel assembly be canned to ensure individual fuel assembly retrievability? Additionally, should spent fuel assemblies classified as damaged prior to loading continue to be individually canned prior to placement in a storage cask? In particular, NRC is interested in gathering input on the additional cost, dose, and effort required to place individual fuel assemblies in a damaged fuel can during storage cask loading. Comparison of the upfront cost, dose, and effort to can all high burn-up fuel assemblies against the cost, dose, and effort to repackage potentially damaged fuel at a repository or prior to transport to a repository, may factor into NRC's retrievability policy decision making process.

Response:

At Maine Yankee, the high burn-up spent fuel assemblies (greater than 45,000 MWd/MTU average assembly burn-up) were placed in damaged fuel cans. The spent fuel assemblies were transferred to dry cask storage over a decade ago. At that time, there was considerable uncertainty regarding the status of the integrity of high burn-up spent fuel. In Maine Yankee's case, the 90 canned high burn-up spent fuel assemblies were accommodated in the 60 SNF canisters, without requiring the acquisition of additional canisters. The extra cost for performing this activity was approximately $800,000 in 2002 dollars (i.e., essentially the cost of the 90 damaged fuel cans).

See the Maine Yankee response to question B above for a discussion of repackaging spent fuel assemblies.

D. Transportation Retrievability

1. The NRC would like external stakeholders to comment on (a) whether retrievability should be extended to transportation packages after normal conditions of transportation (similar to the storage requirements), or (b) is it acceptable for high burn-up spent fuel to degrade such that damaged fuel may have to be handled when the package is opened? Extending retrievability to transportation may be important if the U.S. were to move to consolidated interim storage, and if the NRC were to maintain its current definition of assembly-based retrievability during storage.

Response:

Retrievability should be at the canister level after normal conditions of transportation. This will ensure that repackaging remains an option, not a requirement, when the DOE transports the SNF/HLW canisters to a DOE facility(ies).

2. If it is acceptable for the fuel to degrade, should the package application for a certificate of compliance provide a description of the design and operations of any facilities and methods necessary to handle the damaged fuel (at the facility that will open the package)?

   Response:

   The design and operation of the receiving DOE facility(ies) receiving both spent nuclear fuel and GTCC waste, including the capability for handling and repackaging SNF/HLW, should be addressed in that facilities' license application and approval. The inclusion of these design details in the Certificate of Compliance for the transportation casks would unnecessarily restrict the design of the facility or facilities that receives the SNF/HLW.