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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

Attached please find the comments of the Prairie Island Indian Community regarding Docket ID NRC-2013-0004.

Attachments

PIIC Comments on Docket ID NRC-2013-0004 3-18-13

SUNSI Review Complete

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Add= B. White (bhw)



PRAIRIE ISLAND INDIAN COMMUNITY
LEGAL DEPARTMENT

March 18, 2013

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

RE: Docket ID NRC-2013-0004 – Request for Comments for Potential Rulemaking:
Retrievability, Cladding Integrity and Safe Handling of Spent Fuel at an Independent
Spent Fuel Storage Installation and During Transportation

Greetings:

The Prairie Island Indian Community ("PIIC" or "Tribe") offers the following comments to the Nuclear Regulatory Commission regarding the Potential Rulemaking on Retrievability, Cladding Integrity and safe Handling of Spent Fuel at an Independent Spent Fuel Storage Installation and During Transportation, published in the Federal Register on January 17, 2013 (78 Fed. Reg. 3853).

Community Background

The Prairie Island Indian Community is a federally-recognized Indian tribe organized under the Indian Reorganization Act of 1934. The Tribe is governed under the terms and conditions of the Prairie Island Indian Community's Constitution and By-Laws adopted by tribal members on May 23, 1936, and approved by the Secretary of the Interior on June 20, 1936, as amended.

The Tribe's Reservation is located on the ancestral homeland of the Mdewakanton Dakota on Prairie Island, which is formed at the confluence of the Vermillion and Mississippi Rivers in southeastern Minnesota (approximately 35 miles southeast of the Twin Cities of Minneapolis and St. Paul, Minnesota). The Mdewakanton, "those who were born of the waters," have lived on Prairie Island for countless generations. The size of the Tribe's current land base (including both trust and fee lands) has grown through several federal acts and direct purchases by the Tribal Council, and now totals over 3,000 acres (including both land and water).

The Prairie Island Nuclear Generating Plant ("PINGP") and its independent spent fuel storage installation ("ISFSI") are located immediately adjacent to the Prairie Island Reservation. Several Tribal member residences and other Tribal facilities are located within a one-mile radius of the PINGP ISFSI, with the nearest residences approximately 600 yards away.

The Tribe's comments are as follows:

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

The NRC would like external stakeholders to respond to the following questions regarding potential repackaging needs for storage casks that will be loaded and placed in storage prior to development of a repository 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?

No. Based on current knowledge it is unlikely that siting and design of a repository for direct disposal is feasible.

Assuming direct burial is unrealistic and could be a barrier to expediting the removal of such spent fuel from current sites. If necessary high burn-up fuel (HBU fuel) can be placed in failed fuel cans and transported to either a central storage location or repository where any necessary repackaging can take place. Repackaging at power plant sites is a public health and safety risk that should be avoided. A number of cask designs are already using failed fuel cans to assure that the HBU fuel can be transported off site, when a centralized storage facility is available.

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?

A repository or centralized storage licensee will have to handle damaged fuel as there is an inventory of such fuel on hand now. However, such an assumption should not relieve the owner of HBU fuel from the requirement that "Storage systems must be designed to allow ready retrieval of spent fuel or high-level radioactive waste for further processing or disposal," in 10 CFR 72.122(l).

If necessary, HBU fuel can be placed in failed fuel cans and transported to either a central storage location or repository.

B. Spent Fuel Retrievability During Storage

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. External stakeholders are encouraged to provide as

much explanatory information as is available and pertinent for the Commission to consider when evaluating whether to revise its retrievability policy.

Ready-retrieval of individual spent fuel assemblies during storage should be maintained. There is no data supporting canister-based retrievability for HBU fuel. The Department of Energy (DOE) program that opened a storage cask at the Idaho National Laboratory after 15 years of storage and found no degradation only contained low burnup fuel. For HBU fuel assemblies, data is not currently available to confirm that these fuel assemblies would retain their structural integrity during storage periods longer than 20 years.

As noted in the NRC request for comments, challenges of assembly-based retrievability include: (1) the lack of reliable data for fuel cladding subjected to high burnups and extended storage periods; and (2) the need to extrapolate licensing parameters from limited existing data points for decades beyond current licensing terms.

Changes in HBU spent fuel integrity and cladding material needs to be evaluated through an experimental program, such as the Department of Energy (DOE) program that opened a storage cask of low burnup fuel at the Idaho National Laboratory. Such testing should be completed prior to approving new license renewal amendments beyond 20 years.

If utilities want to store and transport HBU fuel assemblies they should use damaged fuel cans to assure the configuration of assemblies can be maintained both during storage and future transportation activities.

Regulations for packaging and transport of spent nuclear fuel are set forth in Title 10 Part 71 and 10 CFR Part 72 should be harmonized. The requirements should indicate that licensed and loaded storage casks also meet the transportation requirements. A more predictable transition from storage to transport by potentially minimizing future handling of is needed.

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 repackaging 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).

Yes, spent fuel cladding should 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. Additional efforts to repackaging potentially damaged fuel leads to risks of offsite consequences. As noted above use of failed fuel cans can be used to address unresolved concerns regarding storage and transportation of HBU fuel.

2. Should each high burnup 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 burnup 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 decisionmaking process.

Yes, given the uncertainties with HBU fuel integrity, each high burnup spent fuel assembly should be canned to ensure individual fuel assembly retrievability and expedite removal from the Prairie Island Independent Spent Fuel Storage site and other sites around the country.

Yes, spent fuel assemblies classified as damaged prior to loading should continue to be individually canned prior to placement in a storage cask.

The current regulatory practice should continue to ensure fuel assembly retrievability by showing that there will not be significant spent fuel degradation during storage so that the assemblies can be handled by normal means. Alternatively spent fuel can be individually canned prior to placement in a storage cask.

As NRC noted in this request for comments, until such time that sufficient material properties of high burnup fuel are obtained, storage applicants and licensees may not be able to show that there will not be any gross degradation of the fuel during renewed storage license terms or license and certificate terms greater than 20 years.

All high burnup fuel assemblies should be canned prior to dry storage. Before additional storage licenses are granted for HBU fuel, research programs on high burnup spent fuel must be conducted to show whether the cladding will degrade significantly during storage.

The PIIC has no particular expertise regarding costs of handling damaged or high burnup fuel assemblies. However as the PIIC is directly affected by any risk incurred during any attempt to repackage HBU fuel prior to transportation, PIIC urges the Commission to expedite the safe removal of spent fuel from the PI ISFSI site regardless of the cost involved.

D. Transportation Retrievability

Unlike the ISFSI storage regulations in 10 CFR part 72, the transportation regulations in 10 CFR part 71 do not have an explicit regulatory requirement for spent fuel to be retrievable after normal conditions of transport (i.e., able to be unloaded after transport using normal means). Instead, the transport regulations at 10 CFR 71.89 (60 FR 50264, 50278, September 28, 1995) contain the requirement that any special instructions needed to safely open the

package have been provided to the consignee for its use in accordance with 10 CFR 20.1906(e) (56 FR 23403, May 21, 1991). The NRC considers that any procedures necessary to safely unload the package are part of the opening instructions.

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 burnup 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.

Retrievability requirements should be extended to transportation packages after normal conditions of transportation (similar to the storage requirements). It is not acceptable for high burnup spent fuel to degrade such that damaged fuel may have to be handled when the package is opened. Such degradation would lead to additional problems with transferring spent fuel from stranded sites and continue the unacceptable build up of spent fuel at sites that were never intended to store such spent fuel.

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)?

No, it is not acceptable for fuel to degrade during transportation. Utilities should package any suspect assemblies in failed fuel cans if needed to assure that assemblies can be handled by any facilities that need to receive them.

Thank you for this opportunity to provide comments on this important matter.

Respectfully submitted,

A handwritten signature in black ink, reading "Philip R. Mahowald". To the right of the signature is a circular stamp containing the initials "M.F." in a stylized font.

Philip R. Mahowald
General Counsel