May 18, 2005

Ms. Elizabeth D. Sellers
Manager, Idaho Operations Office
Department of Energy
Idaho Operations Office
1955 Fremont Avenue
Idaho Falls, ID 83401

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING THE THREE MILE ISLAND 2 (TMI-2) INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI) (TAC. NO. L23812)

Dear Ms. Sellers:

By letter dated January 31, 2005, the Department of Energy (DOE) submitted a request regarding the TMI-2 ISFSI, License No. SNM-2508. The request proposes to change the technical specification corrective actions if the 5 year leak test of the dry shielded canisters fails. In my letter to you dated March 15, 2005, I acknowledged receipt of your amendment request and provided a proposed schedule for our review.

In connection with the staff's review, we need the information identified in the enclosure to this letter. We request that you provide this information by June 10, 2005. Inform us at your earliest convenience, but no later than May 27, 2005, if you are not able to provide the information by that date. To assist us in re-scheduling your review, you should include a new proposed submittal date and the reasons for the delay.

Please reference Docket No. 72-20 and TAC No. L23812 in future correspondence related to this request. The staff is available to meet to discuss your proposed responses. If you have any questions regarding this matter, I may be contacted at (301) 415-1132.

Sincerely,

/RA/

Joseph M. Sebrosky, Senior Project Manager
Licensing Section
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Docket No.: 72-20
TAC No. L23812

Enclosure: Request for Additional Information

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DATE	5/12/05		5/16/05		5/12/05		5/12/05		5/13/05		5/18/05	

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REQUEST FOR ADDITIONAL INFORMATION
DEPARTMENT OF ENERGY
DOCKET NUMBER 72-20

By application dated January 31, 2005, the Department of Energy (DOE) requested approval for a change to the TMI-2 ISFSI, License No. SNM-2508. The request proposed to change the technical specification corrective actions if the 5 year leak test of the dry shielded canisters fails. This request for additional information (RAI) identifies additional information needed by the U. S. Nuclear Regulatory Commission (NRC) staff in connection with its review of the application. The requested information is listed by chapter number and title used in the applicant's safety analysis report (SAR). NUREG-1536, "Standard Review Plan for Dry Cask Storage Systems (SRP)," was used by the staff in its review of the application.

Each individual RAI describes information needed by the staff for it to complete its review of the application and/or the SAR and to determine whether the applicant has demonstrated compliance with the regulatory requirements.

Chapter 4 Installation Design

4-1 Justify the apparent inconsistency in the safety analysis report (SAR) regarding the filter housing bolt properties or correct the inconsistency. The yield stress data for the filter housing bolts (SA193 Grade B8) under accident conditions in SAR Table 8.1-3 do not appear to be consistent with footnote (7) for Table 8.1-3. Footnote 7 states S_y is 75 ksi at all temperatures of interest.

The requested information is used to show fulfilment of the requirements of 10 CFR 72.126(d).

4-2 Justify that the new polymeric o-rings can withstand the same torque as the metal seals without damaging the polymeric o-ring. The license amendment request states that the same amount of torque (82 +- 5 ft-lb) used for the old metal seals will be applied to the new replacement of elastomeric o-rings.

The requested information is used to show fulfilment of the requirements of 10 CFR 72.126(d).

4-3 Justify why a 0.090 inch diameter o-ring is considered as an alternative for replacement of a failed metal c-seal or remove this o-ring as an alternative. On page 12 of EDF-5003 (Attachment 7 to the license amendment request dated January 31, 2005), it is stated that the standard size o-ring with a 0.103 inch cross section diameter is recommended as a replacement for a failed metal c-seal. However, on page 9 of the EDF-5003, there is a discussion of an o-ring with a cross section diameter of 0.090 inches as an alternative. The staff does not understand why the 0.090 inch o-ring is considered as an alternative given that: 1) the groove size is 0.113 inch by 0.074 inch (area = 8.32E-3 sq. inches), and 2) the 0.090 inch o-ring cross-sectional area of 6.36E-3 sq. inches appears to be much less than the groove area.

The requested information is used to show fulfilment of the requirements of 10 CFR 72.126(d).

4-4 Justify the 5 year period for replacement of the elastomeric seals and the 1 year surveillance requirement for leak checking the elastomeric seals. The staff has a concern regarding the service life of the elastomeric o-ring. EDF-5003 provides a basis for a recommendation that the elastomeric o-rings substituted for metal seals should be leak-tested every 5 years to verify their performance. Proposed technical specification 3.1.1.C.2 would require that the elastomeric seals be replaced every 5 years. Proposed technical specification surveillance requirement 3.1.1.2 would require a leak check of the vent housing double elastomeric seals on each dry shielded canister every year during storage operation. The staff is concerned about the justification for replacement of the elastomeric seals every 5 years given that the elastomeric o-ring will be subjected to the following:

- "Compression set" induced by the applied torques. The pressure differentials considered by the applicant are relatively minor (EDF-5003, Page 7 of 28)
- Thermal aging due to temperature changes (EDF-5003, Page 8 of 28)
- Chemical effects, if any, between EPDM material and vacuum grease (EDF-5003, Page 5 of 28).

The requested information is used to show fulfilment of the requirements of 10 CFR 72.126(d).

Chapter 7.0 Confinement

General Discussion

The NRC staff held a phone call with the staff of DOE on May 5, 2005, to discuss the application and seek clarification regarding statements that were made in the application. In most cases DOE supplied clarification and pointed to other parts of the application to address the staff's concern. In two cases it was decided that the staff would issue a formal RAI so that DOE could more fully answer the question. Below are the two RAIs followed by a summary of the May 5, 2005, phone call discussion topics.

7-1 Revise Technical Specification 3.1.1B to report to the NRC the corrective actions that have been taken to ensure that offsite dose limits are met. Corresponding changes should also be made to the Tech Spec bases.

The cover letter states "If the leak test fails, the seal must be replaced and/or reseated and then retested." It is not clear that the technical specification requires that corrective actions be taken to restore the required leak rate, but only requires that the NRC is informed of the actions taken within 90 days.

This information is needed to fulfill the requirements of 10 CFR 72.26.

7-2 It is not clear that the resuspension factor (RF) used to calculate the loose surface contamination on page 13 of EDF-4728 is appropriate. Clearly justify the RF of 10^{-4} cm^{-1}

is appropriate considering a lower RF will lead to more contamination on the surface of interest.

The applicant states that a conservative RF has been chosen and uses NUREG-1720, "Re-evaluation of the Indoor Resuspension Factor for the Screening Analysis of the Building Occupancy Scenario for NRC's License Termination Rule," as a base document for specifying the RF. In NUREG-1720, the NRC staff reevaluated the RF in order to determine the appropriate value for use in the DandD code to determine the default concentration or surface activity screening limits after decontamination has occurred. In NUREG-1720, the NRC staff recommended using an RF of 10^{-6} m^{-1} (10^{-8} cm^{-1}), which would be clearly conservative for back-calculating the surface concentration limits, but the applicant used an RF of 10^{-4} cm^{-1}. The RF varies depending on how tightly the contamination is bounded to the surface and the behavior conditions leading to resuspension. Note that while 10^{-4} cm^{-1} might be the appropriate value to use in this calculation, the applicant has not shown that the value is appropriate based on the surface contamination and the driving force for resuspension.

The information is needed to show fulfilment of the requirements of 10 CFR 72.126(d).

Summary of May 5, 2005, Phone Call

The following issues were discussed during a phone call with DOE on May 5, 2005:

1) A general discussion of the proposed Technical Specification 3.1.1 required action B and why this proposed technical specification is sufficient.

   Disposition: This concern resulted in RAI 7-1 above.

2) The staff would like a better understanding of how the calculation included as Attachment 8, "Engineering Design File 4728, Rev. 1 Radiological Evaluation of TMI-2 ISFSI Technical Specification," is used to support the license amendment request.

   Disposition: DOE addressed this concern during the phone call by referring to other parts of the January 31, 2005, submittal, which provided the staff with a better understanding of the use of this calculation. Specifically, the dose calculation contained in Attachment 8 will be referenced in the safety analysis report and serves as a basis to support the action times for the proposed technical specifications.

3) The staff has the following specific questions regarding the calculation included in Attachment 8 of DOE's application dated January 31, 2005.

   a) The basis for the assumption of 0.01 filtered release fraction and how this assumption is applied to the calculation on page 10 of the attachment

      Disposition: DOE addressed this issue during the phone call by referring to information in Attachment 8 that provided the basis for the assumption of the 0.01 filtered release fraction.

   b) The justification for the resuspension factor used on page 13 of the attachment

Disposition: This concern resulted in RAI 7-2 above.

c) The basis for not including the dose from shine in Table 6 of the calculation.

Disposition: DOE addressed this concern by referring the staff to page 11 of Attachment 8, which states that the dose contribution from cloud gamma exposure is ignored because it is primarily attributed to noble gas.

d) The basis for not including the contribution from gamma dose and neutron dose in the rule of thumb calculation that appears on page 14 of the calculation.

Disposition: DOE addressed this concern by stating that the rule of thumb is based on the detection capabilities for the meter that is used to measure the surface dose rate. The meter reading is then converted into a surface contamination limit using the rule of thumb. The surface contamination is the parameter of concern and gamma doses and neutron doses are not used to determine the surface contamination.