September 14, 2011

Mr. A. P. Cochran
Division of Naval Reactors
U.S. Department of Energy
Washington, DC 20585

SUBJECT: APPLICATION FOR REVISION NO. 6 TO THE 688–CLASS REACTOR COMPARTMENT DISPOSAL PACKAGE – REQUEST FOR ADDITIONAL INFORMATION

Dear Mr. Cochran:

By letter dated April 29, 2011, as supplemented June 30, 2011, Naval Reactors submitted an amendment request to the U.S. Nuclear Regulatory Commission for Certificate of Compliance No. 9788. The application proposes additional analysis to support disposal of 688–Class submarines operated with a D2W core. In my letter to you dated August 4, 2011, the application was accepted and a proposed schedule was provided for your information.

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 October 28, 2011. Inform us at your earliest convenience, but no later than October 14, 2011, 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. Discussion of the Request for Additional Information (RAI) and RAI response date occurred on September 8, 2011, with Michael Schultes of your staff.

Please reference Docket No. 71-9788 and TAC No. L24536 in future correspondence related to this request. The staff is available to clarify these questions, and if necessary to meet and discuss your proposed responses. If you have any questions regarding this matter, I may be contacted at (301) 492-3268.

Sincerely,

/RA/
Jennie Rankin, Project Manager
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-9788
TAC No. L24536

Enclosure: Request for Additional Information

September 14, 2011

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Docket No. 71-9788
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Enclosure: Request for Additional Information
Distribution: JPiotter DTarantino
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Request for Additional Information
Naval Reactors
Docket No. 71-9788
Certificate of Compliance No. 9788
Model No. 688–Class Reactor Compartment Disposal Package

By letter dated April 29, 2011, as supplemented June 30, 2011, Naval Reactors requested approval of the addition of a D2W core to the Model No. 688-Class Reactor Compartment Disposal Package. This request for additional information (RAI) identifies information needed by the U.S. Nuclear Regulatory Commission (NRC) staff in connection with its review of the amendment. The requested information is listed by chapter number and title in the applicant's Safety Analysis Report (SAR). NUREG-1609, “Standard Review Plan for Transportation Packages for Radioactive Material," 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 4.0 Containment

4-1 Provide a justification for the value of the coefficient relating pipe wall radiation level to Co-60 activity in Section 4.6.2.1.

The calculations to determine the projected activity of the components evaluated in Section 4.6.2.1 are based on a relationship developed to determine activity deposition on a material using a projected radiation level and a relating coefficient. A specific value is used for the coefficient relating pipe wall radiation level to Co-60 activity, without providing a thorough explanation of the basis for the usage of that value. Staff does not have reasonable assurance that the employed value is accurate or conservative, for the calculation purposes. The calculations of allowable release fractions are directly dependent of this value; therefore an explanation of its implementation is necessary to approve the containment evaluation.

This information is needed to satisfy 10 CFR 71.41(a) and 10 CFR 71.51.

Chapter 5.0 Shielding

5-1 Accurately describe the power history used to determine the activation strength that shows the package can meet the external dose rate limits of 10 CFR Part 71.

Sections 5.1.1 and 5.1.2 of the SAR state that a conservative power history is used to determine curie contents. Two of the last three paragraphs in Section 5.3.1.1 of the SAR states that a realistic power history was used instead. The discussion in Chapter 5 of the SAR and the summary in Table 5-4 are not supported by the supplemental information submitted June 30, 2011.

This information is required to determine compliance with 10 CFR 71.7, 71.33, and 71.47.

5-2 Clarify which conservative factors in Sections 5.3 and 5.4 were removed in the determination of external dose rate prior to the adjustments presented in the supplemental information submitted June 30, 2011.

The derivation of conservative assumptions, in particular regarding the levels from activated cobalt, is unclear. Staff was unable to determine whether the trace cobalt activation factor was a separate factor independent of the activation reduction as a result of reduced core EFPH and average power or simply a result of this effect.

This information is required to determine compliance with 10 CFR 71.7, 71.33, and 71.47.

5-3 Provide further justification of the TLD calculated-to-measured ratio.

The discussion on the calculated-to-measured ratio mentions three measurements, one of which is ignored and the other two summarily averaged without explanation. Justify the TLD calculated-to-measured ratio chosen to scale the source term.

This information is required to determine compliance with 10 CFR 71.33 and 71.47

5-4 Provide additional information regarding the dimensions and locations of the internal components.

The staff was unable to locate enough information to quantify the separation of the lower components of the core. Include more information so it is possible to determine the thickness, elevation, and separation of components that are important to calculate dose rate on the external surface of the hull, in particular the bottom.

This information is required to determine compliance with 10 CFR 71.7 and 71.47.

5-5 Revise the SAR to include, with justification, the assumptions, methods, and uncertainty used in the shielding analysis to show that the external dose rates, given the parameters of the contents, will meet the regulatory limits.

Analyses in Sections 5.3 and 5.4 should include both assumptions and the methodology used to determine that the dose rate will meet the Part 71 limit. All references to conservative assumptions not actually used in determining the final external dose rates that meet Part 71 requirements should be clarified in the application. The design, location, and material properties of any additional shielding or procedure required to meet regulatory limits should be included in all relevant sections of the application to be evaluated by NRC staff.

This information is required to determine compliance with 10 CFR 71.7 and 71.33.