

March 8, 2002

John M. McKenzie
Acting Director of Regulatory Affairs
Naval Nuclear Propulsion Program
Naval Sea Systems Command, Code 08 U
1333 Isaac Hull Avenue, SE
Washington Navy Yard, D.C. 20376

SUBJECT: REVISION 1 OF THE DRAFT SAFETY EVALUATION REPORT FOR THE
NAVAL NUCLEAR PROPULSION PROGRAM ADDENDUM TO THE DISPOSAL
CRITICALITY ANALYSIS METHODOLOGY TOPICAL REPORT

Dear Mr. McKenzie:

By letter dated October 29, 1999, the Department of the Navy (DON) requested that the U.S. Nuclear Regulatory Commission (NRC) review the Naval Nuclear Propulsion Program (NNPP) Addendum to the Disposal Criticality Analysis Methodology Topical Report, Addendum to YMP/TR-004Q, Revision 0. The NRC staff has completed its review and has prepared the enclosed draft safety evaluation report (SER) documenting the results of the staff evaluation of the Addendum.

The scope of this draft SER is based on the eleven specific items for which the NNPP requested NRC acceptance. Subsequent meetings between the NRC, the NNPP, and the U.S. Department of Energy (DOE) resulted in revisions to three of the eleven items, which were documented in a letter from the NNPP to the NRC dated December 7, 1999. Further revision to three items for acceptance are documented in a supplement to the Addendum, transmitted in a letter from the NNPP to the NRC dated January 8, 2002. However, the NRC has not received the modified item for acceptance 2. The scope of the draft SER also considered the NNPP's December 1, 2000, responses to the NRC's May 9, 2000, request for additional information (RAI) and the supplement to the Addendum identified above, which addresses most of the concerns identified in revision 0 of this SER.

The draft SER documents the staff acceptance of the overall methodology except where identified as incomplete for the two open items and as clarified in the fourteen acceptance conditions. The two open items identify technical areas where the methodology is incomplete. The acceptance conditions primarily clarify the information needed by the NRC or identify limitations for the methodology the NRC was asked to accept. An important part of the basis for the NRC acceptance of the methodology is the commitments made in features, events, and processes (FEP) paper 11 of the supplement to the Addendum. In FEP paper 11, the NNPP agreed to provide the necessary data, analyses, and methods development needed to have a complete disposal criticality analysis methodology for naval spent nuclear fuel except as noted. While several of the commitments would benefit from greater specificity as the Office of Civilian Radioactive Waste Management (OCRWM) addresses technical exchange agreements, the

commitments as written allowed the NRC to compile the draft SER with a limited number of open items and acceptance conditions.

A summary of the number of Open Items and Acceptance Conditions along with a brief description of each item for acceptance is provided in the table below.

NNPP Item for Acceptance #	Description	NRC Open Items	NRC Acceptance Conditions
1	Criticality Limit Acceptance Criterion	0	0
2	Methodology Acceptance Criterion (includes material related acceptance conditions)	0	3
1-2	Acceptance Criterion Items for Acceptance Subtotal	0	3
3	Identification of FEPs	0	0
4	Evaluation of FEPs	1	1
5	Inclusion or Exclusion of FEPs	0	1
4, and/or 5	Related to Multiple FEPs' Items for Acceptance	1	2
3-5	FEPs Items for Acceptance Subtotal	2	4
6	Depletion Modeling	0	3
7	Principal Isotope List	0	1*
8	Biases and Uncertainties	0	2
9	Reactivity Codes and Cross Section Data	0	0
10	Trending Parameters	0	1
11	Benchmarks Used for Validation	0	0
6-11	Neutronic Items for Acceptance Subtotal	0	7
1-11	Total Open Items and Acceptance Conditions	2	14

* One acceptance condition to Item for Acceptance 6 also applies to Item for Acceptance 7.

As can be seen from the table, the NRC accepted items 1, 3, 9, and 11 with no open items or acceptance conditions. Three acceptance conditions were identified for the second item for acceptance. All three acceptance conditions applied to the methodology criterion part of item for acceptance two. No acceptance conditions were identified for the NNPP methodology to determine the performance of naval fuel in the repository, the other part of item for acceptance two.

Two open items and four acceptance conditions were identified for the third through fifth items for acceptance that involve the identification, evaluation, and the inclusion or exclusion of FEPs that may increase the reactivity of naval fuel in the repository. The two open items deal with the methodology to determine the likelihood of criticality in the repository and the approach for evaluating igneous events. The acceptance conditions address the status of the FEPs approaches and conclusions. The FEPs approaches and conclusions were developed using preliminary information and were augmented with significant commitments to provide additional data, analyses, and methods development. The acceptance conditions account for the possibility that as new information is developed by the NNPP and the OCRWM, the approaches and conclusions may require modification.

Seven acceptance conditions were identified for the sixth through eleventh items for acceptance that involve the neutronic modeling of naval fuel. The acceptance conditions deal mainly with demonstrating that the isotopic biases developed using naval ship cores bound the isotopic biases that can be ascertained from measurements included in the Data Book submitted to the NRC as part of the RAI. The acceptance conditions also address consideration of different aspects in determining the most reactive time in life of an assembly and identification of trending parameters.

In accordance with the NRC's topical report review plan, we will contact you to schedule a meeting to present the conclusions in the draft SER. As the draft SER contains classified information, the meeting on the draft SER will not be open to the public and the draft SER cannot be publicly released.

Sincerely,

/RA/

Janet R. Schlueter, Chief
High-Level Waste Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: Revision 1 of the Draft Safety Evaluation Report for the Naval Nuclear Propulsion Program Addendum to the Disposal Criticality Analysis Methodology Topical Report

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Letter to J. M. McKenzie from J. R. Schlueter dated: March 8, 2002

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J. Egan, Egan & Associates, PLLC

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Two open items and four acceptance conditions were identified for the third through fifth items for acceptance that involve the identification, evaluation, and the inclusion or exclusion of FEPs that may increase the reactivity of naval fuel in the repository. The two open items deal with the methodology to determine the likelihood of criticality in the repository and the approach for evaluating igneous events. The acceptance conditions primarily deal with the preliminary information used in evaluating the items for acceptance and the significant commitments made in FEP paper 11.

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Janet R. Schlueter, Chief
High-Level Waste Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: Draft Safety Evaluation Report for the Naval Nuclear Propulsion Program Addendum to the Disposal Criticality Analysis Methodology Topical Report, Rev. 1

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