September 26, 1996

MEMORANDUM TO: William D. Travers, Director
SPFO/NMSS

FROM: Margaret V. Federline, Acting Director (Original Signed By)
DWM/NMSS

SUBJECT: TECHNICAL ASSISTANCE REQUEST - REVIEW OF THE INDEPENDENT SPENT FUEL STORAGE INSTALLATION STANDARD REVIEW PLAN

In response to your technical assistance request of September 12, 1996, members of the Division of Waste Management have reviewed the Draft Standard Review Plan for Spent Fuel Dry Storage Facilities. Both general and specific comments are attached.

If you have any comments regarding this review, please contact Raj Nataraja at 415-6695.

Attachment

TICKET #: DWM-036

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REVIEW OF DRAFT STANDARD REVIEW PLAN FOR SPENT FUEL DRY STORAGE FACILITIES

GENERAL COMMENTS

I. INTRODUCTION - Spent Fuel Dry Storage Facilities Review Plan (FSRP) Organization

There are inconsistencies between the subsection titles and the descriptions provided under them. For example:

1) Subsection 1 is "Review Objective," but the description includes purpose and scope. It appears that scope should more appropriately be included under "Areas of Review." (See NUREG-0800.)

2) Subsection 2 is "Areas of Review," but the description talks about outlines for Subsections 4 and 5 and confuses the reader. This Subsection should clearly say what is being reviewed under a given review plan.

3) The description under Subsection 5, "Review Procedure," fails to clearly state that this section should discuss how the review is supposed to be carried out, essentially by providing a step-by-step procedure, if necessary. (Again, see NUREG-0800.) (It is noted that many of the review plans themselves seem to list the various steps involved in the review albeit with varying levels of detail and uniformity.)

It is recommended that all the descriptions be examined to insure that the contents are consistent with the titles of the subsections. It will also be necessary to revise the contents of the corresponding "Areas of Review" Subsections under all the review plans to clearly guide the reviewer as to what sections of the Safety Analysis Report (SAR) need to be reviewed and what technical disciplines are involved.

II. ACCEPTANCE CRITERIA

A. Many of the acceptance criteria are highly subjective and do not provide good guidance to reviewers. For example:

   1) Section 2.4.4.6, item 2 says, "conservative values of seismic characteristics...are used in the analysis" without providing any guidance on what constitutes "conservative" values.

   2) Section 2.4.4.8, item 2 says, "The design...must provide adequate protection...for the controlling flood conditions," without providing any guidance on what would be considered "adequate."

   3) Section 2.4.4.9, item 1 refers to meeting a "worst case release scenario" with respect to transport characteristics of existing and future use surface and groundwater users, with no explanation as to how one should select such a scenario, and without references to documents in which acceptable methodologies may be found.

While it is difficult to come up with totally quantitative criteria for many review topics (especially in earth sciences), nevertheless it is recommended that the use of subjective criteria be minimized to the extent practical and references be provided at the appropriate locations in the review plans so as to assist the reviewer in determining what would be considered acceptable. (For instance, a certain method of measurement or calculation documented in a NUREG or some other standard could be quoted as an acceptable level of conservatism, etc.) (It is also recommended that the use of the word "conservative" be checked in every location for its appropriateness.)

B. In several review plans, the acceptance criteria read like a format and content guide. For example:

   Section 7.4.4.1, second paragraph, "...SSC important to safety must be described in sufficient detail in the SAR...". It continues to list "...SAR documentation on the physical design of SSC...should include the following...".

   In several review plans, the acceptance criteria read like review procedures. For example:

   Section 8.4.1.1, while discussing required thermal analysis scenarios, says, "The following thermal scenarios should be analyzed to determine..." and lists the scenarios. This appears to be a procedural instruction to the reviewer rather than acceptance criteria.

It is recommended that the entire FSRP be reviewed to insure that the acceptance criteria are explicit statements of criteria that define the level of acceptability of the conclusions made in the SAR. The alternative would be to provide references where acceptable criteria can be found.

C. It is not clear why only a few of the criteria have been adopted from NUREG-0800 (almost verbatim) while others have been left out for identical review plans. For example:

   Probable Maximum Tsunami Flooding (Section 2.4.6 of NUREG-0800) lists seven specific criteria while the corresponding Section 2.4.4.6 in FSRP has only three (although it references two more from the previous section). Similarly, Section 2.4.4.7 of NUREG-0800 (Ice Effects) has five specific criteria while the corresponding Section 2.4.4.7 (Ice Flooding) in FSRP has only two. There are many such examples.

Admittedly, the cursory review performed by DWM has not gone into enough details to understand all the reasoning behind the apparent differences between the specific acceptance criteria listed in NUREG-0800 and the corresponding FSRP sections. However, because of extensive referencing of NUREG 0800 and generous adaptation of many criteria for technical topics that are essentially identical, it is not easy to see the need for the apparent differences. It is recommended that, for those technical areas for which no new regulatory guides have been developed by the Agency, similar, if not identical, acceptance criteria be used whenever possible.

III. CONSOLIDATED REFERENCES

The document is inconsistent in designating sections and in listing references in Chapter 18, "Consolidated References" (Reference Section) that have been identified in the document. For example, Chapter 16, Section 16.4.1.3 is referred to as Section 16.1.3.4, "Format and Content" (page 16-5), and Section 16.4.1.3, "Supplemental Guidance on Plan Comments" (page 16-6). I recommend that Section entitled "Supplemental Guidance on Plan Contents" (page 16-6) be designated as 16.1.4.4. to avoid confusion when referring to these Sections. Section 16.4.1.3 refers to RG 3.65 as guidance for contents of the decommissioning plan (DP); however, it is not listed in Chapter 18, Section 18.4, "NRC Documents Cited." Finally, Chapter 18, Section 18.4.3, "NUREG-CR" should be revised to include "NUREG/CR-5849."

SPECIFIC COMMENTS

I. Section 2.4.4.9, item 5 seems to use the word "verification" improperly. It appears that the intent of the criterion is model "validation" rather than verification. There may be other parts of the FSRP where these terms may have been used improperly.

II. Section 4.4.2, second bullet seems to give the impression that 'conceptual' design of structures, systems, and components important to safety would be sufficient. Does not the SAR require a level of design much more advanced than a conceptual design?

III. Section 7.4.2.2, discussions under general structural requirements, states..."The cask...must not deform...". Does this mean that there is zero tolerance against deformation? Under the same section, there is a requirement that "the cask must not tip over or drop...under credible natural phenomenon event." What about under human-induced events and accidents?

IV. Chapter 16, "Decommissioning" has identified all of the major areas that need to be addressed in a decommissioning plan. Section 16.4.1.3, "Content" provides an acceptable outline for an independent spent fuel storage installation or a monitored retrievable storage DP related to all of the areas that would need to be addressed. Section 16.4.1.3 "Contents" refers to RG 3.65 for contents of most of the sections of the DP, including DP Chapter 4, "Final Radiation Survey." Because RG 3.65 does not refer to NUREG/CR-5849, "Manual for Conducting Radiological Surveys in Support of License Termination," or current NRC guidance on Termination Surveys, I recommend that section 16.4.1.3, "Supplemental Guidance on Plan Comments; Removal of Stored Radioactive Components, and Radioactive Materials" include a reference to NUREG/CR-5849 or current NRC guidance on Termination Surveys. Remember that the Termination Survey is the mechanism that demonstrates the materials have been removed and the facility adequately decommissioned.