

August 18, 2000

Ms. Lynette Hendricks, Director
Plant Support
Nuclear Generation Division
Nuclear Energy Institute
1776 I Street, NW Suite 400
Washington, DC 20006-3708

SUBJECT: COMMENTS ON NEI 96-07, APPENDIX B: GUIDELINES FOR 10 CFR 72.48
EVALUATIONS

Dear Ms. Hendricks:

My staff has completed its review of NEI 96-07, *Appendix B: Guidelines for 10 CFR 72.48 Evaluations*, which you submitted to the Nuclear Regulatory Commission (NRC) on June 15, 2000. This document provides guidance for implementing the new requirements of 10 CFR 72.48. Overall, we have found that *Appendix B* to NEI 96-07 is comprehensive and provides an appropriate level of detail for future users. However, we have identified a number of suggestions for changes and some areas that need further clarification to meet the objectives of the pending changes to 10 CFR 72.48, and have listed them in the enclosure.

We will discuss the staff comments on the guidance document at a future meeting to be scheduled for early September. We look forward to resolving these comments at the meeting and working to finalize this important guidance document. We appreciate your extensive effort in developing this document and anticipate your issuing it in final form. Subsequently, the staff will develop and issue its regulatory guide endorsing *Appendix B* to NEI 96-07 prior to April 5, 2001, the effective date of the revisions to 10 CFR 72.48.

If you have any questions about the staff comments please contact Chet Poslusny at (301) 415-1341.

Sincerely,
/RA/ original signed by /s/
E. William Brach, Director
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Enclosure: NRC Comments on
NEI 96-07 Appendix B

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NEI 96-07 Appendix B

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NRC COMMENTS ON NEI 96-07 APPENDIX B

General Comments

1. Include a section to deal with a dual-purpose cask. Discussion is needed to consider effects of a 72.48 change on the Part 71 Certificate of Compliance (CoC).
2. UFSAR vs. SAR, FSAR references. Provide a consistent reference to the updated FSAR throughout the document.
3. Define fission product barriers with and without failed fuel. In the case of canned failed fuel, there may not be two barriers.
4. Analyses for a cask are done for normal, off normal, and accident conditions. Most of the analysis discussion deals with accidents and accident mitigation. This needs to be modified or clarified.
5. Use the term "important to safety" classification instead of "safety related."
6. The terms "Facility" and "ISFSI facility" are used throughout the document. Choose one or the other for consistency.
7. Identify reactor-related references as such, and describe how the references may apply to an ISFSI or cask design.
8. Replace or remove a number of reactor terms, e.g., plant, train, pump motor change, control rooms, random single failure, loss of offsite power, steam generator tube rupture, failure modes and effects analysis, Class 1E, Seismic Category I, mode changes, ATWS, etc.
9. The guidance states that in evaluating the requirements of 72.48(c)(2)(iii) and (iv) regarding offsite dose consequences, the 72.104 requirements will not be used. The staff believes that there is merit in not applying the minimal standard (e.g., 10% of the margin) to the 72.104 dose limits because the limits are so low (25 mrem). However, the guidance is not clear as to which dose limits should be applied when performing a 72.48 evaluation for an activity that affects an accident that was previously evaluated in the FSAR against the 72.104 dose limits. It is essential that the guidance be clear as to how the offsite consequences need to be evaluated under 72.48(c)(2)(iii) and (iv) for off-normal events; for example, those events in Section 15.2.1 of NUREG-1567, "Standard Review Plan for Spent Fuel Dry Storage Facilities," described in the FSAR.

One alternative would be to state in the 72.48 guidance that the acceptance criteria presented in the FSAR be used as the limits for the 72.48(c)(2)(iii) and (iv) evaluations, instead of referring to 72.104 or 106 specifically. We are willing to discuss alternative approaches.

10. The definition of “safety analysis” excludes the analysis used to demonstrate compliance with 72.104, excludes normal operation, and is too narrow in scope. The staff recommends deriving the definition of safety analysis from 72.24(d). We propose the following definition:

Safety analyses are analyses performed pursuant to NRC requirements to demonstrate the design and performance of structures, systems, and components important to safety, with the objective of assessing the impact on public health and safety, resulting from operation of the ISFSI or MRS and including determination of:

(1) The margins of safety during normal operations and expected operational occurrences during the life of the ISFSI or MRS; and

(2) The adequacy of structures, systems, and components provided for the prevention of accidents and the mitigation of the consequences of accidents, including natural and manmade phenomena and events.

11. The document would benefit from adding a table of contents and list of references.
12. The use and definition of “NRC approved” needs clarification and examples in the document. In addition, the guidance pertaining to NRC approved evaluation methodologies is very broad and could lead to significant uncertainty in the application of the guidance. The staff is particularly concerned that methodologies that have not been approved by NRC may be considered approved by a licensee or vendor using the guidance. This needs further discussion and clarification.
13. The guidance document should include additional examples of application of the 72.48 screening and evaluation process if possible and a reasonable number of examples should include proposed changes that result in requiring NRC approval.

Detailed Comments/Questions (Note: Bold type identifies suggested text additions)

Page 1

Second paragraph: Add as the last sentence: **Guidance for implementation of the regulation by a wet ISFSI licensee is not specifically included in this document.**

Page 2

1. B1.2: Add a discussion of the relationship of 72.48 to 72.104, Subpart F of Part 72, and Part 21.
2. Third Bullet: Suggest that “Quality Assurance” be deleted in third bullet since it has no change process under Part 72.

3. Last Bullet: Suggest mentioning that NEI 99-04 is directed toward reactor licensees but has guidance that is applicable to a CoC holder and Part 72 licensee.

Page 3

Second Bullet: Suggest attaching GL 83-11 or noting that the document is available on the NRC website.

Page 4

1. B1.2.3: Clarify how the 50.59 reference applies to casks or ISFSIs.
2. Bottom paragraph: Add the sentence **General licensees should adopt and maintain the current FSAR as of the date of first use of the cask at the ISFSI.**

Page 6

Section B 1.5, line 6: “allows an **ISFSI** licensee...”

Page 7

1. B2.0, line 4: “design stage **for a spent fuel storage cask,**”
2. B2.0, line 5: “through the **robust** design of physical barriers . . . and through the use of shielding to minimize radiation dose to the public for both normal and off-normal conditions of operation . . . ”

Suggest adding a discussion of the design preventing criticality, ability to withstand postulated accidents and natural phenomena, ensuring fuel retrievability, and heat removal capability.

The discussion of two barriers should be qualified for non-failed fuel and that for failed fuel stored in cans. In the case of a cask with failed fuel, only one fission product barrier, the confinement, will be relied upon.

3. Last paragraph: Delete reference to engineered safety features, add normal, off-normal, and accident discussion.
4. Last sentence: “the integrity of the barrier(s) will be maintained, and limits established in 10 CFR **72.104 and 72.106 will not be exceeded...**”
5. Last paragraph, line 4: Remove “civil structures” as they are generally not part of the barriers in the context of cladding and confinement.

Page 8

1. First sentence: Add a reference to 72.236.
2. Second paragraph, second sentence: “to contain radioactivity **and to minimize doses to the public during normal, off normal, and accident conditions.**”

3. Next to last paragraph: Add references to SRPs and NUREGs-1567 and -1536.
4. Next to last paragraph: Second and third sentences are incorrect. Discuss normal, off-normal, and accident conditions and the basis for each. See NUREG-1567, page xxx.
5. Last paragraph, line 2: “of the physical barriers during **normal, off-normal, and accident conditions...**”

Page 9

1. First paragraph, line 6: “control rooms, **if present,**”
2. Add the following at the beginning of the second paragraph: **As stated in NUREG-1567, the following are considered the basic nuclear safety criteria for the design of an ISFSI installation: maintain subcriticality, prevent the release of radioactive material above acceptable amounts, ensure radiation rates and doses do not exceed acceptable levels, and maintain retrievability of the stored radioactive materials.** At the end of the first sentence of the second paragraph, add **and the maintenance of long-term integrity.**
3. Last paragraph, next to last sentence: “and to impact the **ability to meet the design criteria discussed above.**”

Page 10

Suggest adding a definition of normal, off-normal, and accident conditions.

Page 12

Second line: replace “plant” with **facility or cask design.**

Page 13

First line: delete “transient”.

Page 14

1. The paragraph under the Conservative vs. Non-Conservative Evaluation Results section discusses a one point evaluation which might not be an acceptable means of verifying that a revised method was acceptable. This should be clarified.
2. Suggest adding a criticality methodology example to discuss an improper application of a revised method.
3. Suggest that the guidance include the following example in this section. A licensee makes a change to a methodology and finds it acceptable because the results of current analysis are similar to the original analysis results. He then makes a change to a cask design and uses the revised methodology to determine that the change does not require NRC approval following the guidance in Appendix B. However, he applies the methodology to an unacceptable range and this should be approved by NRC via an

amendment. The guidance should address how the 72.48 process would address this situation.

Page 15

Section B3.5: Add discussion of normal, off-normal, and accident conditions.

Page 19

Second full paragraph: Delete “Quality Assurance” as there are no change processes for a QA program under Part 72.

Page 22

1. Third bullet right column: Suggest adding benchmarking and correlation ranges.
2. Second bullet in mid page: Add reference to 72.104 and discussion of normal, off-normal, etc.

Page 23

1. Bottom paragraph, line 2: “integrity of the spent fuel cask” **or ISFSI...**
2. Bottom paragraph: Delete “mitigate” or clarify its use for the cask design since Part 72 does include a reference to the design being able to mitigate the results of an accident, and add reference to 72.104.

Page 24

1. Discussion paragraph, line 2: “cask design’s **capability to perform its intended functions during normal and off-normal conditions...**”
2. Discussion paragraph: Add as second sentence: “**Cask analysis for normal and off-normal conditions are discussed in the applicable sections of the FSAR and . . . These analyses for normal, off-normal, and accident conditions** clearly fall within the meaning of “safety analysis” . . .

Page 25

1. Discussion paragraph: “unanalyzed **storage conditions...**”
2. Discussion paragraph: Replace “high flow rates” with **high stresses**.

Page 27

1. First paragraph: Replace “technical specifications” with **technical specifications/CoC**.
2. Second paragraph, line 1: Replace “Another” with **A second...**
3. Add a third paragraph before B4.1.2 that would begin as: **A third situation that would involve 72.48 and another regulation is when a change is proposed for a dual-**

purpose cask that will affect the Part 71 license. This needs to be discussed further here and in other sections of the guidance.

Page 29

Set of bullets: Suggest that these are too reactor-oriented and should reflect procedures used at an ISFSI.

Page 32

1. Second bullet: “design function **or passive design characteristics...**”
2. Sixth bullet: “degrade the seismic, **structural, heat removal, shielding, or criticality control capability of the SSC or cask?**”
3. Seventh bullet: What is the meaning of multiple cask site?

Page 33

1. Second paragraph: Change “non safety related” to **not important to safety** (two times plus in third paragraph).
2. Second paragraph, last sentence: Change “cool” to **remove heat from**.
3. Last paragraph, bullet: Suggest using a more practical example than the valve changeout.

Page 34

1. First bullet: “material **with similar properties including load capacity...**”
2. Second bullet: Suggest using an alternative example or adding more detail to the discussion.

Page 35

First paragraph: Change “an evaluation” to a **72.48 evaluation**.

Page 36

1. Fourth full paragraph: “in an **NRC-approved** topical report and **its associated** SER.”
2. Bullet at bottom: “in the **applicable NRC-approved** topical report and its **associated** SER.”

Page 40

Second bullet: Change “plant-specific” to **site-specific**.

Page 41

1. B4.3.2, first paragraph: Change “safety related” to **important to safety**.
2. B4.3.2, third paragraph: Provide a better example than “a motor change on a pump”.

Page 42

Middle paragraph: Discussion of trains and analog to digital upgrade should be modified to better reflect cask designs.

Page 43

Section 3, fourth bullet: Change “plant systems” to **cask design functions**.

Page 44

1. Top two lines: Provide better example instead of “pump casings”.
2. Third paragraph: Rewrite to be more cask design specific.
3. Example: Rewrite to remove discussion of elapsed time as it may not be appropriate in certain climates.

Page 45

1. Second paragraph: Delete “inside or outside the control room” and replace “reactor accidents” with **accidents involving an ISFSI or a cask**.
2. Third paragraph: Suggest listing cask-related accidents instead of “turbine missiles and flooding”.
3. Fourth paragraph: It is not clear why the proposed activities governed by 72.104 are being proposed to be exempt from 72.48 screening and evaluations. This needs clarification or an alternative treatment. See general comment above.

Page 47

Example 1: This example should also address the 72.104 requirements. Suggest adding a qualifier for minimal, **<10% of the difference between 1 rem and 5 rem**.

Page 48

First paragraph: Delete underlined text and replace with: **This would become the 72.212 (b)(2)(i)(A) analysis of record for the modified facility or cask design. Alternatively, the licensee could instead choose to request that the CoC holder obtain NRC approval for the proposed change.**

Page 50

Second full paragraph: “random single failure, loss of offsite power, and steam generator tube scenarios” needs to be replaced by cask related discussions.

Page 51

1. First paragraph: Replace “plant” with **facility or cask design**.
2. First bullet: Add a sentence at the end. **Thus, this would require approval by NRC.**
3. Second bullet: The use of a pump replacement example should be qualified for ISFSI applicability or replaced by another example.

Page 52

1. Second paragraph: Delete FMEA discussion, replace “system” with **facility**, delete “event initiators”.
2. B4.3.7: Add a discussion of non-failed fuel versus failed fuel and effect on the number of fission product barriers.

Page 55

Table, right column: Clarify the basis for the basis limit list for criticality.

Page 56

Second paragraph, last sentence: “allowables” **and pressure**

Page 57

Suggest adding a criticality example to this section.

Page 58

B4.3.8, first paragraph: “design basis” **normal, off-normal, and**

Page 59

Second line: Suggest defining what “approved by the NRC” means regarding methods and analyses.

Page 62

1. First paragraph: Second sentence is not true for cask vendors. Vendors have not generally provided topical to the NRC for methodologies.
2. Third paragraph: Change “plant” to facility or cask design.

Page 63

Title: Define what “Technically Appropriate” means.

Page 64

1. First sub-bullet on bottom: Replace “Class 1E, Seismic Category I” with **seismic design basis**.
2. Second sub-bullet on bottom: “specific components” **or contents...**

Page 67

1. First full paragraph: Delete the underlined section and replace with the following:
For those cases where the need for an amendment is identified by a general licensee, the licensee should provide sufficient information to the CoC holder to support a request for amendment to the NRC. The CoC holder, rather than the general licensee, will need to officially request the amendment.
2. Next to last paragraph: Replace “make mode changes” with **continue normal operations of the ISFSI**.

Page 70

Fifth paragraph: The last sentence states, “This documentation does not constitute the record of changes required by 10 CFR 72.48, and thus is not subject to the recordkeeping requirements of the rule.” Although this is true, the guidance should recommend that such records be maintained for future review and audits. Such data would be useful for internal evaluations of how well the change process was working.

Page 72

Top of page: Suggest adding: **Although not required by regulations, it would be advisable if a general or specific licensee determines that no further action is required after evaluating a 72.48 change developed by another user or the CoC holder, that this determination be documented and maintained for future reference.**

ROUTING AND TRANSMITTAL SLIP

Date: August 18, 2000

NAME	INITIALS	DATE
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VTharpe		
JRHall		
SShankman		
EWBrach		
Secretary (dispatch)		

ACTION: _____ APPROVAL: _____ FOR YOUR INFO: _____
 NOTE & RETURN: _____ PREPARE REPLY: _____ COORDINATION: _____

EDO/NMSS TICKET NO(s):
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MEMORANDUM/LETTER TO: Lynette Hendricks, Nuclear Energy Institute
 FROM: Susan Shankman
 SUBJECT: Comments on NEI 96-07, Appendix B: Guidelines for
 10 CFR 72.48 Evaluations

REMARKS: HIGH PRIORITY - NEEDS TO BE SIGNED BY FRIDAY MORNING 8/18

ORIGINATOR: Chet Poslusny PHONE: 415-1341
 SECRETARY: Debra Damiano PHONE: 415-2385
