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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

December 10, 1998

72-22

Mr. John D. Parkyn
Chairman of the Board
Private Fuel Storage, L.L.C.
P.O. Box C4010
La Crosse, WI 54602-4010

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION (TAC NO. L22462)

Dear Mr. Parkyn:

The staff of the Nuclear Regulatory Commission has reviewed Private Fuel Storage, L.L.C.'s (PFS's) three partial responses to the first request for additional information (RAI) and the subsequent updates submitted to PFS's application to construct and operate an away-from-reactor independent spent fuel storage installation (ISFSI) on the reservation of the Skull Valley Band of Goshute Indians. The staff's review has resulted in a second RAI which has been divided into five sections. Section 1 consists primarily of siting issues associated with information in the Safety Analysis Report. Section 2 deals with the Emergency Plan. Section 3 is concerned with the Safeguards and Security Plan; Section 4 refers to a proposed Intermodal Transfer Point discussed in the License Application which is the subject of a contention before the Atomic Safety and Licensing Board (ASLB); and Section 5 requests additional financial information. Section 3 is the only section where information needed for the staff's safety evaluation has not been requested previously.

In responding to the first RAI, PFS, with the staff's agreement, proposed submitting four partial responses to this RAI. To date, PFS has submitted three of the four partial responses. PFS has indicated that there will be a delay in the submittal of the fourth response. Therefore, the fourth partial response to the first RAI will not be available until after this second RAI has been provided to PFS. Consequently, the staff will review that response at the same time that it reviews your response to the second RAI. This allows the remainder of the PFS review to be carried out under the staff's standard review process which provides for the issuance of all RAIs for a given round at one time and receipt of all responses at one time. We have found that this is the most effective way to ensure that a comprehensive safety review is accomplished while making efficient use of our limited staff resources.

Upon receipt of all outstanding responses to the first and second RAIs, the staff will determine whether it can proceed to write a safety evaluation report (SER) for the non-cask specific aspects of this application or if significant additional information is still necessary. The quality and completeness of the PFS response to all RAI's will be a major factor in this determination. If the staff finds that the revised PFS safety analysis report (SAR) is sufficient to allow for a safety evaluation to be written, we will proceed to prepare an SER. If the responses to the first and second RAIs are not complete, we will assess whether this will impact the safety review schedule.

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J. Parkyn

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As discussed with PFS representatives in public meetings on March 22, 1998, and November 12, 1998, the staff is concerned that PFS has not provided the staff with its plans for submitting the information necessary to determine that at least one of the cask systems referenced in the PFS SAR is compatible with the bounding site-specific parameters designated by the vendor. In particular, the design basis horizontal and vertical seismic acceleration levels for both the Holtec HI-STORM and Sierra Nuclear TranStor cask designs are far below the levels of .67g horizontal and .69g vertical accelerations reported for the PFS site. The staff expects that PFS will submit the information necessary to support use of at least one of the designated cask designs at the Skull Valley site in February, along with the responses to all outstanding RAIs. This will ensure that review resources will be available and will allow the review of these analyses and information to be factored into our schedule. If you do not intend to provide this information in February, we would like to meet with you at your convenience, but as soon as possible, to discuss this issue.

A non-proprietary version of Section 5 of this RAI has been prepared and will be provided to the Service Lists and made publicly available.

Please provide your response to this RAI within 60 days of receipt of this letter. The NRC staff is prepared to meet with PFS, either in person or via teleconference, to assure that you understand this RAI and any other matters discussed in this letter.

If you have any questions regarding this letter, please contact me at (301) 415-8518.

Sincerely,

Original Signed by

Mark S. Delligatti, Senior Project Manager
Licensing and Inspection Directorate
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Docket No.: 72-22

Enclosure: Request for Additional Information

cc: Service Lists

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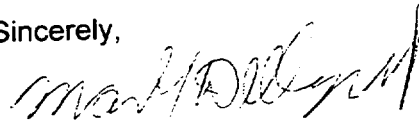
As discussed with PFS representatives in public meetings on March 22, 1998, and November 12, 1998, the staff is concerned that PFS has not provided the staff with its plans for submitting the information necessary to determine that at least one of the cask systems referenced in the PFS SAR is compatible with the bounding site-specific parameters designated by the vendor. For instance, the design basis horizontal and vertical seismic acceleration levels for both the Holtec HI-STORM and Sierra Nuclear TranStor cask designs are far below the levels of .67g horizontal and .69g vertical accelerations reported for the PFS site. The staff expects that PFS will submit the information necessary to support use of at least one of the designated cask designs at the Skull Valley site in February, along with the responses to all outstanding RAIs. This will ensure that review resources will be available and will allow the review of these analyses and information to be factored into our schedule. If you do not intend to provide this information in February, we would like to meet with you at your convenience, but as soon as possible, to discuss this issue.

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Mark S. Delligatti, Senior Project Manager
Licensing and Inspection Directorate
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Docket No.: 72-22

Enclosure: Request for Additional Information

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SECTION 1 - SITING ISSUES

Request for Additional Information

This Request for Additional Information (RAI) was developed based on Private Fuel Storage Facility (PFSF) responses to the first round of RAIs and a reexamination of the Conduct of Operations chapter of the PFSF Safety Analysis Report (SAR) using the updated version of NUREG-1567.

The assumption has been made that commitments resulting from the first round of RAIs will be carried out to the satisfaction of the reviewers. Such commitments include, but are not limited to:

- Tracking and evaluating changes made in referenced cask SARs (RAI 1-1).**
- Conducting and reporting geophysical investigations (RAI 2-5).**
- Submitting structural calculations and drawings (RAI 4-0).**
- Developing procedures for implementation of the technical specifications (RAI 10-3).**

CHAPTER 1—INTRODUCTION AND GENERAL DESCRIPTION OF INSTALLATION

The following regulatory requirements are applicable to the requests for additional information (RAIs) in this chapter: 10 CFR 72.2(a)(1); 72.11; 72.22; 72.24(a), (b), (c)(3), (j), (n); 72.28(a); 72.40(a)(3), (5); and 72.236(a) (Nuclear Regulatory Commission, 1997). It should be noted that other regulatory requirements may be applicable to Chapter 1 of the Safety Analysis Report (SAR).

Section 1.4 Spent Fuel Transportation to the PFSF

- 1-1 The applicant must demonstrate that the newly identified rail spur connecting the potential Low, Utah location to the site is considered in demonstrating compliance with 10 CFR 72.92 which requires that natural phenomena must be identified and their effects assessed with respect to the safe operation of the ISFSI.
- The rail spur will trend east-west in the vicinity of the PFSF for about 3 miles. The railroad embankment may present an obstacle to overland flow in the vicinity of the PFSF. The effect of the railroad embankment on the ISFSI with respect to flood heights and velocity of flow during runoff events should be evaluated.

CHAPTER 2—SITE CHARACTERISTICS

The following regulatory requirements are applicable to the RAIs in this chapter: 10 CFR 72.24(a); 72.90; 72.92; 72.94; 72.96(a); 72.98; 72.100; 72.102; 72.104; 72.106; 72.108; 72.122(b); and Appendix A to 10 CFR Part 100 (Nuclear Regulatory Commission, 1997). It should be noted that other regulatory requirements may be applicable to Chapter 2 of the SAR.

Section 2.6.1.12 Stability of Foundations for Structures and Embankments

2-1 Provide additional information to explain how the soil classifications given in Attachment 1 of Appendix 2A were obtained.

- The laboratory testing program described in Attachment 2 of the appendix indicates that only two specimens (from boreholes B-4 and C-2) were tested for Atterberg limits, three specimens (from boreholes A-4, D-1, and D-4) were tested for fine-particle fraction, and four specimens (from boreholes A-1, A-3, D-1, and D-4) were tested for particle-size gradation for the proposed emplacement area (approximately 4,000,000 ft²). This does not explain how the soil classifications were obtained.

2-2 Provide additional explanation regarding soil analyses:

- (a) Discuss why soil compressibility parameters obtained from three specimens at depths of 10.8, 11.2, and 11.4 ft in borehole C-1 and one specimen at depth of 10.9 ft in borehole C-2 were determined to be applicable to the top 25–30 ft soil layer over the entire proposed emplacement area (approximately 4,000,000 ft²).
- (b) Explain why values of undrained shear strength obtained from one specimen at depth of 10.4 ft in borehole B-4 and one specimen at depth of 11.1 ft in borehole C-2 were determined to be applicable to the top 25–30 ft soil layer over the entire proposed emplacement area (approximately 4,000,000 ft²).
- (c) Demonstrate that the value of standard penetration resistance, N, was determined to be 15 for the top 25–30 ft soil layer over the entire proposed emplacement area (approximately 4,000,000 ft²) (Figure 2 of Appendix 2A), considering the lateral and depth variation of N values observed in different boreholes (Attachment 2 of Appendix 2A).

Section 2.4 Surface Hydrology

2-3 Justify the exclusion of the upstream drainage area in Skull Valley south of the proposed PFSF (addition of as much as 250 square miles to the currently evaluated drainage area) and the associated possible runoff in the PFSF flood assessment and PMF studies.

- The proposed PFSF sits in an area where it might be affected by runoff from three distinct drainage areas i) Hickman Knolls Basin, ii) Basin I (SAR), and iii) the area up slope to the south of the proposed PFSF. The SAR considers the effects of runoff from the Hickman Knolls basin (about .93 sq mi) and Basin I (about 26 sq mi)

extending to the east of the proposed PFSF site but does not mention or consider the upstream area (over 250 sq mi) which extends approximately 26 miles to the south of the PFSF as a potential source of runoff and possible flooding at the PFSF site. Any increase in flood height or water velocity in the vicinity of the site due to the inclusion of the upper watershed/basin runoff might have an adverse impact on proposed structural components at the PFSF site and should be considered in determining the impact on the design bases. The applicant must demonstrate that the facility is in compliance with 10 CFR 72.92 which requires that natural phenomena be identified and their effects assessed with respect to the safe operation of the ISFSI.

References

Private Fuel Storage L.L.C.. 1998. License Application Amendment Private Fuel Storage Facility Docket No. 72-22/TAC NO. L22462 Private Fuel Storage L.L.C. License Amendment 2. Letter from J.D. Parkyn, Chairman, Private Fuel Storage L.L.C. to Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission.

CHAPTER 3—PRINCIPAL DESIGN CRITERIA

The following regulatory requirements are applicable to the RAls in this chapter: 10 CFR 72.24(c); 72.40; 72.82(a); 72.106(a), (b), (c); 72.120(a), (b); 72.122(a), (b), (c), (d), (e), (f), (g), (h), (j), (k); 72.124(a), (b), (c); 72.126(a); 72.128(a), (b); 72.130; 72.182(a); and 72.236 (e), (f), (g), (k) (Nuclear Regulatory Commission, 1997). It should be noted that other regulatory requirements may be applicable to this chapter.

- There are no further requests for this section at this time.

CHAPTER 4—INSTALLATION DESIGN

The following regulatory requirements are applicable to the RAs in this chapter: 10 CFR 72.11; 72.24(b), (c), (d), (i), (l)(2); 72.26; 72.40; 72.44(c); 72.70; 72.82(c); 72.106; 72.120(a); 72.122 (a), (b), (c), (d), (f), (g), (h) (k), (l); 72.146; 72.154; 72.162; and 72.236 (Nuclear Regulatory Commission, 1997). It should be noted that other regulatory requirements may be applicable to this chapter.

Section 4.2 Storage Structures

- 4-1 Justify the use of the referenced cask systems at a site where the ambient or off-normal conditions appear to be an unanalyzed temperature condition.
- The SAR states that the PFSF has established a site design ambient temperature of 110 °F based on the recorded high temperatures in the Skull Valley, which range from 105 °F to 109 °F. The HI-STORM and TranStor storage casks are designed for a lower daily ambient air temperature of 80 °F and 75 °F, respectively. Both systems have an off-normal design temperature range from -40 °F to 100 °F.
- 4-2
- a) Clarify the thermal energy balances between the concrete pad, casks, and environment.
 - b) Demonstrate that the “chimney effect” incorporated into the design of the TranStor and HI-STORM casks is unaffected.
 - In addition to the heat generated by the spent nuclear fuel (SNF), the thermal energy balance needs to address heat from the environment, thermal energy loss from the concrete pad to the surrounding soil, and convection and radiation to the atmosphere.
 - The concrete storage pad will act as a receptor for thermal energy and may serve as a stored heat source. The concrete pad will be heated and cooled by the environment. Because of the heat-retaining nature of the concrete pad, the air temperature near the ground will be higher than the temperature 15 ft above. This will have an impact on the ventilation system for the casks, which relies on natural convection, in which cool air is drawn into the cask inlets and heated by the inner canister, causing the air to rise.

- 10 CFR 72.128 requires that spent fuel storage, high-level radioactive waste storage, and other systems that might contain or handle radioactive materials associated with spent fuel or high-level radioactive waste be designed to ensure adequate safety under normal and accident conditions. These systems must be designed with a heat-removal capability having testability and reliability consistent with its importance to safety.
- 4-3
- a) Justify that the application of the thermal energy balance requested in RAI 4-2 would not result in concrete temperatures that exceed the acceptable limits specified in the cask Topical Safety Analysis Reports (TSARs).
 - b) If the concrete temperature limits are exceeded, then justify that the concrete used to construct the TranStor and HI-STORM casks will not be degraded and result in a radiological release.
- The TSARs for the TranStor and HI-STORM casks present calculations bounding the maximum temperature of the casks. The results included in the individual TSARs are based upon the temperature limits discussed in RAI 4-1.
 - 10 CFR 72.128 requires that spent fuel storage, high-level radioactive waste storage, and other systems that might contain or handle radioactive materials associated with spent fuel or high-level radioactive waste be designed to ensure adequate safety under normal and accident conditions. These systems must be designed with a heat-removal capability having testability and reliability consistent with its importance to safety. In addition, 10 CFR 72.236(f) requires that the cask systems be designed to provide adequate heat removal capacity without active cooling systems.

CHAPTER 5—OPERATION SYSTEMS

The following regulatory requirements are applicable to the RAIs in this chapter: 10 CFR 72.24(b), (d)(1)(2), (f); 72.40(a)(1), (a)(5), (13); 72.44(c)(1); 72.104(b); 72.122(f), (g), (h), (i), (j), (k), (l); and 72.236(j) (Nuclear Regulatory Commission, 1997). It should be noted that other regulatory requirements may be applicable to this chapter.

Chapter 5 General

5-1 Discuss how the operating restrictions specified in Appendix A of the PFSF License Application will be accommodated by the operating systems described in Chapter 5 of the PFSF SAR.

- Appendix A of the PFSF license application identifies numerous operating constraints placed on handling and storing canisters. These restrictions were not discussed in the SAR and may need to be included as licensing requirements for the PFSF. For example, the license application imposes limits on the minimum temperature for lifting the transfer casks, ambient temperature limits for handling a load, and vent inspection intervals. [10 CFR 72.24(g)].

CHAPTER 6—SITE GENERATED WASTE CONFINEMENT AND MANAGEMENT

The following regulatory requirements are applicable to RAls in this chapter: 10 CFR 72.104; 72.122; 72.126; and 72.128 (Nuclear Regulatory Commission, 1997). It should be noted that other regulatory requirements may be applicable to this chapter.

- There are no further requests for this section at this time.

CHAPTER 7—RADIATION PROTECTION

The following regulatory requirements are applicable to the RAIs in this chapter: 10 CFR 72.24(e), (l)(1), (2), (m); 72.40(a)(5), (13); 72.92(c); 72.94(c); 72.104; 72.106(a), (b); 72.122(h)(3), (5); 72.128; 72.130; 10 CFR 20.1101; 20.1201; 20.1207; 20.1208; 20.1301; 20.1302; 20.1501; 20.1502; 20.1601(a), (b), (c), (d), (e); 20.1602; 20.1701; 20.1702; 20.1801; 20.1802; and 20.2106 (Nuclear Regulatory Commission, 1997). It is noted that other regulatory requirements may be applicable to this chapter.

7-1 Revise the calculation of the impacts of the accident using the release fractions and methodology contained in Interim Staff Guidance-5 (ISG-5), Accident Dose Calculations (Nuclear Regulatory Commission, 1998) to show compliance with the accident dose limits in 10 CFR 72.106(b).

- The calculation in the SAR has been conducted inappropriately. The use of a respirable fraction of 5% for the release of Co-60 is not appropriate. The SAR cites Table XX of SAND80-2124 to justify the use of this fraction. However, page 39 of this document indicates that this fraction was measured for particulates released from the interior of the fuel via a burst-rupture mechanism. The majority of the source of Co-60 from the spent fuel would be from the CRUD on the exterior of the fuel assemblies.
- The licensee's calculation of accident impacts in the SAR does not follow the most recent staff guidance on calculating the consequences of a postulated loss-of-confinement event. The current staff guidance on this calculation is published by the Spent Fuel Project Office as Interim Staff Guidance - 5 (ISG-5) (Nuclear Regulatory Commission, 1998).

(See also RAI 8-4)

CHAPTER 8—ANALYSIS OF DESIGN EVENTS

The following regulatory requirements are applicable to the RAIs in this chapter: 10 CFR 72.11; 72.24(a), (d), (e), (k), (m); 72.26; 72.32; 72.40(a)(1), (13); 72.44(c); 72.92; 72.94; 72.102(c), (d), (f); 72.104; 72.106(a), (b); 72.120(a); 72.122(b), (d), (g), (h), (i), (j), (l); 72.124; 72.126(d); 72.128; and 72.236 (Nuclear Regulatory Commission, 1997). It should be noted that other regulatory requirements may be applicable to this chapter.

Section 8.1 Accident Analysis

8-1 Based on the requirement of 10 CFR 72.126(b) justify the appropriateness and safety classification of the radiation alarm systems to be installed in the PFSF and describe how the alarm systems described in the SAR will be used to inform the operators of a radiation release.

- Section 3.3.3.2 of the SAR states that radiation monitors shall be utilized during the canister transfer process to ensure that occupational exposures are within 10 CFR Part 20 limits and during the storage process to ensure that doses to the public are within 10 CFR 72.104 limits.
- Section 3.3.3.1 of the TSAR does not identify the alarm system as important to safety.
- 10 CFR 72.126(b) requires that radiological alarm systems be provided in accessible work areas as appropriate to warn operating personnel of radiation and airborne radioactive material concentrations above a given setpoint and of concentrations above control limits of radioactive material in effluents. Radiation alarm systems must be designed with provisions for calibration and operability testing.

8-2 Regarding “hanging bombs,” the following information is needed:

- The number of training flights that the National Guard and Air Force conduct per year with live ordinance.
- The flight path or routes of these training flights.
- The net explosive weight of the typical ordinances used.
- The probability of occurrence of live ordinance to fail to drop when released.
- The mechanism for failure.

- The emergency or contingency plans for failure to release the live ordinance.
- The probability that a failure could result in an unintentional release over the PSF ISFSI and result in an impact to the facility.
- The consequences of such an impact if found to be credible.

8-3 Concerning wildfires, the following information is needed:

- The annual probability of a fire severe enough to reach the PSF ISFSI site.
- The fire magnitude, duration, flame propagation, heat generation, etc.
- The impact of a fire (direct heat, smoke generation, lack of cooling of the casks) for a prolonged period of time on the casks.
- The consideration of casks in various operational modes (storage, transfer, etc) to assess worst case impact.
- The emergency procedures for external fires.

Section 8.2.7.3 Accident Dose Calculations

- 8-4 (a) Justify neglecting dose pathways other than the inhalation pathway in evaluating the impacts of a loss of confinement accident from a spent fuel cask.
- (b) Justify neglecting these pathways in showing compliance with the accident dose limits in 10 CFR 72.106.
- The calculation of dose in this section includes only dose from the inhalation of the released material as it passes a receptor.
 - Other pathways (eg., direct radiation from radionuclides deposited on the ground, ingestion of contaminated food, and incidental soil ingestion) were not included.
 - Calculations provided for the ingestion pathway in response to the first round of RAIs neglect to consider the ingestion of potentially contaminated meat and dairy products from livestock grazing on the land within the two mile radius assumed.

(See also RAI 7-1)

CHAPTER 9—CONDUCT OF OPERATIONS

The following regulatory requirements are applicable to the RAIs in this chapter: 10 CFR 72.24(e), (h), (i), (j), (k), (p); 72.28(a), (b), (c), (d); 72.30(d)(1); 72.32(a); 72.40(a)(4), (9), (11), (13)(i); 72.44(b)(4), (5); 72.144(d); 72.190; 72.192; 72.194; and 73.21(a), (b)(i), (iii), (v), (viii), (x), and (xii) (Nuclear Regulatory Commission, 1997). It should be noted that other regulatory requirements may be applicable to this chapter.

Section 9.1 Organizational Structure

- 9-1 Describe the frequency and scope of any audits or inspections to be conducted by the corporate organization [NUREG–1567, revised (Section 10.5.1.1)].

Section 9.1.1.1 Private Fuel Storage L.L.C. Functions, Responsibilities, and Authorities

- 9-2 Provide information on the Quality Assurance Audit Program for the PFSF including the audit frequency and the methods for communicating and documenting findings
- NUREG–1567, revised (Section 10.4.1) discusses the inclusion of this information.
 - The frequency of the audits and the methods for communicating and documenting the findings should be specified as described NUREG–1567, revised (Section 10.4.1) so that the NRC staff can evaluate the adequacy of the audit program.

Section 9.1.2.2.2 Radiation Protection Manager

- 9-3 Clarify the organizational independence of the Radiation Protection Manager.
- The functions of the radiation protection entity are to be separate from the entity responsible for facility operations [NUREG–1567, (Section 10.5.1.2)]. However, Section 9.1.2.2.2, Radiation Protection Manager, and Figure 9.1-3, Operational Organization, both indicate that the Radiation Protection Manager reports directly to the General Manager/Chief Operating Officer who is the person responsible for conducting operations.

Section 9.1.2.1.1 Safety Review Committee

9-4 Clarify the authorities and membership of the Safety Review Committee.

- The Safety Review Committee should have appropriate review and approval authority [NUREG–1567, revised (Section 10.5.1.2)]. However, the PFSF response to RAI 9-7 noted that the Safety Review Committee “has no approval authority or responsibility.”
- Section 9.1.2.1.1 of the SAR defines the membership of the Safety Review Committee as the General Manager/Chief Operating Officer and, as a minimum, staff members from four functional areas. The SAR does not prohibit these individuals being the functional group leads, thereby allowing that the Safety Review Committee and the Operational Review Committee could be staffed by the same persons. The NRC would consider this an inappropriate reduction in the independence of the safety review functions.

Section 9.1.3.1.13 Emergency Preparedness Coordinator

9-5 Provide a commitment to require that staff with expertise in developing and implementing a systematic approach to training will be used to support the training program at the PFSF.

- Section 9.3.1 (Training Program) of the PFSF SAR commits to developing a training program using a systematic approach to training (SAT). Proper development and implementation of a SAT requires experience in such a program. The personnel qualification requirements for the emergency preparedness coordinator (EPC) that are defined in Section 9.1.3.1.13 (Emergency Preparedness Coordinator) of the SAR do not include experience with developing or implementing an SAT. However, the EPC is given responsibility for administration of the training program in SAR Section 9.3.4 (Administration and Records). The SAR should include SAT experience in the qualification requirements for the EPC or should commit to acquiring qualified support for initial development and implementation of the SAT. If qualified support is acquired for initial SAT development, continued program implementation could be transferred to the PFSF staff after that staff is sufficiently familiarized with the SAT process.

Section 9.3 Training Program

9-6 For initial and refresher training:

Define the methods for evaluating certified operator trainee mastery of the training objectives including written and oral tests and walk-through exercises. Include the pass/fail criteria to be used.

If applicable, define criteria for determining overall certified operator proficiency and any criteria for dismissal from the program.

- The description of the training program should identify the methods for evaluating specific and overall trainee performance including the pass/fail criteria that will be used in the training and certification of operators. Their inclusion is required so that the NRC staff can determine that the PFSF training program is consistent with those of other nuclear facilities.

Section 9.3.2.2 Job Specific Certification and Training

[SEE RAI 9-7 SECOND TO LAST BULLET]

Section 9.4.2.2 Records to be Maintained

[SEE LAST ITEM OF RAI 9-7]

CHAPTER 9—CONDUCT OF OPERATIONS - GENERAL

9-7 The following refinements to the SAR that are necessary to clarify commitments and for the SAR to function as a continuing reference for the evaluation of the safe operation of the PFSF.

- **Section 9.1.3.1.4 (Lead Mechanic/Operator):** The requirement for the Lead Mechanic/Operator to be a licensed locomotive operator does not support or enhance the skills required for performing mechanical operations important to safety at the PFSF. This requirement can be deleted, or its relevance to licensed PFSF operations should be explained.

[This appears on SAR page 9.3-1.]

- **Section 9.3 (Training Program):** This section of the SAR should define the methods for evaluating the overall effectiveness of the training program including review of performance on tests, performance on walk through evaluations, on-the-job performance, and feedback from trainees, supervisors, and instructors.
- **Section 9.3.2.2 (Job Specific and Certification Training):** Revise the statement regarding additional or job specific training on page 9.3-4 to state: "Whenever additional or job-specific training is required, the "Systematic Approach to Training" shall be used to Exceptions to the use of the SAT method shall be approved on a case basis by the Emergency Preparedness Coordinator."
- **Section 9.3.2.2 (Job Specific and Certification Training):** Clarify the entry "transportation" on the list of topics to be addressed in the operator training program. It is not clear how this topic is to be related to licensed operations.
- **Section 9.3.2.2 (Job Specific and Certification Training):** This section of the SAR should include a list of equipment or controls that are important to safety and the operations or manipulations that must be performed for specific systems or components as a part of job specific operator training. In lieu of a list of equipment or controls and the operations or manipulations, provide a commitment that the SAT will identify equipment and controls important to safety for each storage system type, those operations and manipulations that must be performed for demonstrating proficiency, and that operators and supervisors shall be certified for those operations associated with that storage system type.
- **Section 9.4 (Normal Operations):** Section 9.4.1.1.1 (Administrative Procedures) should make a specific commitment to conduct medical evaluations of those PFSF staff members who are certified for operations important to safety. The commitment should reference use of ANSI/ANS Standard as listed on NRC Form 396. Section

9.4.2.2 (Records to be Maintained) of the SAR should include records for the medical evaluations of the physical conditions of the certified operators.

CHAPTER 10—OPERATING CONTROLS AND LIMITS

The following regulatory requirements are applicable in this chapter: 10 CFR 72.11; 72.24 (g); 72.26; 72.44(c); 72.44(d); 72.104; 72.106; 72.164; 72.172; 72.234(a); and 72.236 (Nuclear Regulatory Commission, 1997). It should be noted that other regulatory requirements may be applicable to this chapter.

Section 10.2.1.2 Canisters Authorized for Use at the Private Fuel Storage Facility

10-1 Provide a list of the items that will require visual inspection/verification at the PFSF to ensure the as-received fuel and the storage canisters meet the PFSF technical specifications (RAI 10-3).

- The certification of the casks is the basis for the preclusion of releases of material from the off-normal and accident conditions. Assurance must be made that the casks comply with the assumptions used in the SAR prior to receipt by the facility. [10 CFR 72.82, Tests and Inspections].

REFERENCES

Nuclear Regulatory Commission. 1996. *Standard Review Plan for Spent Fuel Dry Storage Facilities*. NUREG-1567. Draft Report for Comment. Washington, DC: Nuclear Regulatory Commission.

Nuclear Regulatory Commission. 1997. *Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste*. Code of Federal Regulations. Title 10—Energy, Chapter 1—Nuclear Regulatory Commission Parts 20, 72 and 100. Washington, DC: U.S. Government Printing Office.

Sandia National Laboratories. 1981. *Transportation Scenarios for Commercial Spent Fuel*. SAND-80 2124. Albuquerque, NM: Sandia National Laboratories.

SECTION 2 - EMERGENCY PLAN

Request for Additional Information

Private Fuel Storage Facility Safety Analysis Report Section 9.5 and Private Fuel Storage Facility Emergency Plan

Each individual RAI describes information needed by the staff to complete review of the application and/or the SAR and to determine whether the applicant has demonstrated compliance with the regulatory requirements. Where an individual RAI relates to the applicant's apparent failure to meet one or more regulatory requirements or where an RAI focuses on compliance issues associated with one or more specific regulatory requirements (e.g., specific design criteria or accident conditions), such requirements will be specified in the individual RAI.

EMERGENCY PLAN:

The following regulatory requirements are applicable: 10 CFR 72.32

Emergency Plan

Section 1 FACILITY DESCRIPTION

EP-1 Describe any impediments to egress along the path of the planned PFSF access road from Skull Valley Road.

Section 2 TYPES OF ACCIDENTS AND ACCIDENT CLASSIFICATION

EP-2 Provide the specific emergency action level (EAL) for each of the identified events that would result in the declaration of an emergency Alert at PFSF.

- The description of events that may result in declaration of an Alert at PFSF appears to be adequate. However, while general information from which EALs could be developed is included in the description, there is no specific definition of EALs.

Section 4 ORGANIZATION

EP-3 Clarify or correct the number of managers reporting to the General Manager.

- Emergency Plan Section 4.1 states that *The General Manager has overall ... and provides direction to the three functional managers in the operations of their department.* From a review of the normal organization chart, it appears that there are more than three managers reporting to the General Manager.

- EP-4 Clarify whether the Security Sergeant is on-site at all times.
- Section 4.2 states that the Security Sergeant acts as the Emergency Response Leader when the General Manager or his designee are not on-site. However, the availability of the Sergeant is not discussed.
- EP-5
- (a) Identify the PFSF department(s) responsible for activation of the emergency organization during normal and off normal hours.
- Section 5.1.1, states that when a Alert is declared, the ERO will be activated and provides the methods, but does not address who will perform the actions necessary for activation.
- (b) Specify the department(s) from which personnel will be obtained to perform off-site notifications during normal and off normal hours.
- Section 5.1.1 states that the Emergency Response Leader is responsible for approval of offsite notifications, but the plan is unclear as to the availability of personnel to perform this task.
- (c) Verify and justify that the minimum staffing of this department (or departments) is sufficient to accomplish these tasks in a timely manner while attending to the department's primary duties during the various potential events that are classified as emergencies.
- (d) Address 10 CFR 72.32(a)(8) in this response.
- 10 CFR 72.32 (a)(8), states: *The notification and coordination must be planned so that unavailability of some personnel, parts of the facility and some equipment will not prevent the notification and coordination.*
- EP-6
- (a) Clarify the role of the security force in providing initial radiological assessment and radiological safety during an off hours radiological event.
- (b) State the training given to the security force in support of initial radiological assessment and radiological safety response efforts, if they are expected to perform such a role.
- (c) If the security force is not assigned the role of initial response for off hours radiological events, clarify what department will respond and the associated qualifications and training of the personnel. Discuss and justify the timing of this response.

- The PFSF RAI response of June 15, 1998, to Question 9-14 stated that *Training in emergency procedure techniques will be provided to the security force to ensure capability for immediate emergency assessment.* However, the specialized training items listed in Section 6.1 for security personnel do not reference any radiological training as may be necessary for the safety of initial responders.

EP-7 (a) Provide the minimum number of qualified fire brigade personnel that are required for response to a fire at PFSF and from where these personnel will be obtained during off normal hours (e.g., call out, pager carrier, security force)

(b) Provide the expected response time for the fire brigade during off normal hours.

- The RAI response of June 15, 1998 stated that two fire brigade members will carry pagers, that an additional security person will carry a pager and that others will be available via automated call out. It is recognized that the highest threat of fire is during routine operations when normal staffing is available. However, it is not clear what PFSF capabilities are to respond to a fire during off normal hours.
- Describe the amount of water to be maintained for fire fighting at the site and justify its adequacy.

EP-8 (a) Provide the PFSF department(s) or local agencies from which personnel will be obtained to operate the backup PFSF fire truck located on the Goshute reservation when it is used in response to fires at PFSF.

(b) Provide the expected response time during normal and off normal hours.

- It is recognized that the response of this fire truck is supplemental to the onsite fire truck. However, the plan does not state what organization operates the truck.

Section 5 NOTIFICATION AND PROTECTIVE RESPONSE

EP-9 Provide a description of the following emergency response facilities:

- (a) The control point that is established to control access to the restricted area in the Security and Health Physics Building.
- (b) The facility used by the Emergency Response Organization (ERO) in the Administration Building.

- (c) The backup facility in the Operations and Maintenance Building that may be used if either of the above facilities are unavailable.
- EP-10
- (a) Provide a description of the area used for decontamination of personnel or justify the lack of such an area.
- (b) Provide a description of decontamination provisions/supplies as they relate to emergency response.
- SAR Section 7.5.2 *Equipment, Instrumentation and Facilities* states that: *Provisions for personnel decontamination are contained in the Security and Health Physics Building.* However, no description of the area or provisions/supplies is provided.
- EP-11
- (a) Provide a description of the communications equipment present in each of the following emergency response facilities:
- the control point that is established to control access to the restricted area in the Security and Health Physics Building,
 - the facility used by the ERO in the Administration Building and
 - the backup facility in the Operations and Maintenance Building that may be used if either of the above facilities are unavailable.
- (b) Describe the communication links available between these emergency response facilities and between these facilities and officials that will be notified in the event of an emergency at PFSF.
- The use of a given communications system as primary or backup system should be noted.
- (c) Describe the communication links available between teams in the field and each of these emergency response facilities.
- (d) Describe the communication links available between the primary and backup assembly areas and these emergency response facilities.
- It would expedite review of the PFSF response if a diagram depicting the communication links described were provided. It would also be helpful if the expected users on each end of these communication links were noted. It may

be appropriate to include the diagram or some variation of it in the Emergency Plan.

EP-12 (a) Clarify or correct the frequency of communication equipment testing.

- Emergency Plan Section 5.5.1 refers to Section 8.2 for further explanation of communications equipment testing. Section 8.2 describes the frequency of drills, not the frequency of communications equipment testing.

(b) State the frequency of emergency response equipment and supplies inventory.

(c) Provide a brief description of the of the program for maintaining fire protection systems and equipment in accordance with 10 CFR Part 72.32 (a) (5).

EP-13 Provide a description of the emergency response related equipment deployed in each of the following emergency response facilities:

- The control point that is established to control access to the restricted area in the Security and Health Physics Building.
- The facility used by the ERO in the Administration Building.
- The backup facility in the Operations and Maintenance Building that may be used if either of the above facilities are unavailable.

EP-14 Provide the radiological criteria which will be used for the following protective responses:

- evacuation of emergency response facilities,
- evacuation of the assembly area,
- decontamination of personnel,
- use of respiratory protective equipment, and
- evacuation of general personnel from the site.

- EP-15 Provide a commitment to develop procedures to estimate the CEDE component of TEDE received by responders exposed to a radioactive material plume, or justify its exclusion.
- The PFSF Emergency Plan encompasses response to a radiological release. In this unlikely event, personnel may be exposed to a mixture of radioactive material. PFSF must be able to estimate the TEDE of emergency responders. Since exposure to radioactive material associated with spent fuel would entail a CEDE component of exposure, direct exposure measurements alone would not suffice to estimate individual TEDE. Further, immediate response needs may not allow time for analysis of air samples and calculation of CEDE from intake. Licensees often establish an estimate of the expected CEDE component of a given dose received from plume exposure, to facilitate rapid assessment of personnel dose.

Section 6 EMERGENCY RESPONSE TRAINING

- EP-16 Clarify the specialized training given to the Security Sergeant.
- Section 4 states that the Security Sergeant assumes the Emergency Response Leader position if the General Manager is unavailable. However, Section 6 does not state that the Security Sergeants will receive specialized training for personnel responsible for management of an emergency.
- EP-17 Clarify the frequency of training for ERO members.
- Section 6.1 indicates that personnel with ERO responsibilities will receive training annually, but then goes on to state that training procedures will specify the frequency of training.
- EP-18 (a) Provide an estimate of the number of hours of specialized emergency response training and retraining provided for ERO members
- (b) Provide an estimate of the number of hours of general emergency response training and retraining for general staff.
- It is noted that training procedures will specify the details of training requirements and that the Emergency Plan provides an adequate summary of topics included in training, but the plan does not provide an estimate of the duration of training.
- EP-19 (a) Describe the training provided on the topic of personnel and facility decontamination.

(b) What personnel are provided this training.

EP-20 Describe the training provided for local authorities associated with the Goshute reservation.

- The Emergency Plan commits to offer an appropriate level of training to Tooele County personnel, but no mention is made of training provided to local Goshute authorities.

EP-21 (a) Describe the training that onsite fire brigade members will receive to qualify them in fire fighting using the onsite pumper truck.

(b) Describe the training fire brigade members receive in the fighting of fires involving radioactive material.

(c) Describe the training that will be provided for those individuals who may operate the PFSF fire truck located on the Goshute reservation.

- (d) Describe the training offsite support fire brigade members will receive in the fighting of fires involving radioactive material.

EP-22 Describe the training and qualifications of PFSF personnel who will operate the site ambulance.

Section 10 OFFSITE ASSISTANCE, SUPPORT AND RESOURCES

EP-23 Provide the frequency of review and renewal of letters of agreement established with Tooele County and any other involved offsite emergency response agencies.

EP-24 Clarify the PFSF intention to meet periodically (e.g., annually) with offsite organizations who support PFSF to review items of mutual interest such as: changes to the plan, emergency action level scheme, adequacy of equipment and supplies, notification procedures and overall response coordination.

EP-25 Describe provisions to modify security or safeguards measures for site access during an emergency.

- If the response involves safeguards information, appropriate confidentiality precautions should be taken.

EP-26 Discuss the role of the Goshute or other appropriate authorities in emergency preparedness activities at PFSF.

- The Emergency Plan adequately describes the relationship with support agencies within Tooele County. However, no mention is made of a relationship with the Goshute Reservation or other appropriate authorities, if any.

CHAPTER 9—CONDUCT OF OPERATIONS

Section 9.1.3.1.13 Emergency Preparedness Coordinator

9-5.1 Justify the compatibility of the qualifications and responsibilities of the Emergency Preparedness Coordinator or increase the qualifications to a professional level similar to that of the Radiation Protection Manager as indicated in the PFSF response to RAI No. 1, Question 9-5.

- The PFSF SAR RAI No.1, Question 9-5 response described the qualifications of the Emergency Preparedness Coordinator (EPC). The response referenced SAR Section 9.1.3.1.2 as describing the EPC qualifications. This SAR Section describes the qualifications of the Radiation Protection Manager, not the EPC. The EPC qualifications are described in SAR Section 9.1.3.1.13. These qualifications call for a high school diploma and two years of emergency preparedness experience and are different than the qualifications of the Radiation Protection Manager. It is noted that the RAI response specified that the EPC would have a minimum of four years of working experience in radiation protection. This is similar to the level of experience expected of a radiation protection technician.

A review of the EPC duties in the Emergency Plan and SAR Section 9.1.2.2.14 indicates that the position is responsible for a wide range of duties, including interface with offsite organizations, conduct of the training program, maintenance of the emergency preparedness program and conduct of drills. The qualifications stated for this position do not appear compatible with the responsibilities of the position. The previous RAI response did not address this issue adequately.

SECTION 3 - SAFEGUARDS AND SECURITY PLAN

Request for Additional Information

Private Fuel Storage Facility Independent Spent Fuel Storage Installation Physical Protection Plan, Revision 0, Dtd June 20, 1997

The regulatory requirements of 10 CFR Part 73 are applicable to this request for additional information.

	<u>Page</u>	<u>Paragraph</u>	<u>Comments</u>
SG-1	1-1	1-2	Revise the plan so that it follows the updated Standard Review Plan (NUREG- 1619). NUREG-1619 is based upon the new 10 CFR 73.51.
SG-2	1-3	Definitions	Protected area (PA) barrier - Clarify the height of the fence. Most barriers are constructed of a chain link fence topped with barbed wire to a total of 8 feet.
SG-3	3-1	3.1	Clarify whether the Central Alarm Station Operator is also one of the on-duty security personnel for each shift. The CAS operator must be trained to perform the appropriate duties.
SG-4	3-3	3.3	Justify the application of 10 CFR 73.56 regarding access authorization to this facility. 10 CFR 73.56 is usually applied to power reactor sites.
SG-5	4-2	4.3	Clarify that the secondary alarm station (SAS) operator discussed in the second paragraph is not one of the onsite security force.
SG-6	4.4		Clarify plans for implementation of the illumination requirement.

The illumination requirement (10 CFR 73.51(d)(2)) states that illumination must be sufficient to permit adequate assessment of unauthorized penetration of or activities within the protected area. The plan should so state.

- SG-7 5-1 5.3 Specify that individuals performing search function are trained in searching for firearms, explosive, and incendiary devices.
- SG-8 5-2 Last paragraph - Specify that the Security Force Captain or designee will assure that all packages they allow into the PA are suitably identified given the absence of the addressee.
- SG-9 6-1 6.1 a) Clarify that the intrusion detection system has line supervision and is tamper indicating.
- The second sentence of this paragraph is not clear.
- b) Paragraph A - Commit to the criteria for detecting and intruder crossing the zone of detection stated in Regulatory Guide 5.44 Perimeter Intrusion Alarm Systems.
- SG-11 9-1 9.2 Response force - Either find a method to reduce the response time for offsite responders or supplement the authoritative response with additional security force capabilities, such as weapons.
- As part of the review of the ISFSI physical protection plan the reviewer attempted to establish a reasonable response time which could be expected from the designated offsite responders. The response time appears to be excessive and may not prevent a loss of control at the facility.

SECTION 4 - LICENSE APPLICATION - INTERMODAL TRANSFER POINT

The following regulatory requirements are applicable to the RAIs in this chapter:
10 CFR 70.20a, 71.5, 72.2, 72.6 and 73.37.

ITP-1 Provide a detailed discussion of how shipments of spent fuel would be completed from the time they arrive at the intermodal transfer point (ITP) until they are received at ISFSI site. The discussion should include both the proposed options for rail and highway shipments, and address the following items:

- (a) PFS's role in completing the shipments once they've arrived at the ITP (e.g., common or contract carrier, freight forwarder, broker, etc.).
 - Include a description of the specific activities conducted by PFS personnel at the ITP, and in-transit between the ITP and ISFSI site.
- (b) The actions PFS needs to undertake to comply with Department of Transportation regulations for motor and/or rail carriers if PFS is acting as a contract or common carrier.
 - This includes both regulations for qualifying as a carrier, and for complying with carrier safety requirements for rail and/or highway.
- (c) The responsibilities of PFS's shippers (utility customers) and carriers for providing physical protection under 10 CFR Part 73.
 - The discussion, at a minimum, needs to address the following areas: shipment notifications, cask surveillance (escorts), communications (including two hour call-ins), and response arrangements with local law enforcement personnel.
 - The discussion should also focus on how physical protection requirements in these areas are implemented while spent fuel casks are in storage "incident to transit" at the ITP, as well as in transit between the ITP and ISFSI site.
- (d) Responsibilities of PFS (if any), its shippers and carriers for preparing casks for shipment (e.g., marking and labeling of casks, placarding, shipping papers and declarations).
 - The discussion should focus on PFS's activities at the ITP, and in transit between the ITP and ISFSI site.

- (e) Ownership of ITP facilities and equipment, and agreements concerning the use of such facilities and equipment.
- (f) The role of PFS, shippers and others in providing emergency response at the ITP, and in-transit between the ITP and ISFSI site.

Since the applicant will not take licensed possession of the spent fuel at the ITP, PFS should clarify whether it intends to act as either a common or contract carrier, broker, or freight forwarder in transporting spent fuel to the ISFSI site. Further, PFS should clarify whether it believes it could transport spent fuel as a private carrier from the ITP to the PFS site under the general license provisions in 10 CFR 71.12, even though it does not take possession of the spent fuel until receipt at the ISFSI site. The information provided in response to this RAI is needed to assess PFS's role in the actual transport of spent fuel from the ITP to the ISFSI site. The results of this assessment would be used to determine if the ITP needs to be included in a license issued under Part 72, or whether activities at the ITP are covered under the Department of Transportation regulations for shipping hazardous materials.

SECTION 5 - LICENSE APPLICATION - FINANCIAL

NON-PROPRIETARY VERSION

The following regulatory requirements are applicable to the RAIs in this section: 10 CFR 72.11, 72.22, 72.30, 72.54, 72.130, 72.136(l), and 10 CFR 61.55. It should be noted that other regulatory requirements may be applicable to this section.

- 1-1 Contains proprietary information.
- 1-2 Contains proprietary information.
- 1-3 Provide the approximate costs of any rail alternative which PFS is considering. Clarify whether the costs of the rail options are included in the \$100 million construction cost estimate in the License Application.