Enclosure 2

VPN-021-99
February 11, 1999

Independent Spent Fuel Storage Installation
Technical Specification Update

Summary and Description of Changes
to Trojan ISFSI Technical Specifications

No.	Page	Section	Description of Change
1	ii	Table of Contents	Added LCO and SR for AIR PADS.
2	iii	Table of Contents	Repagination because of added specifications on previous page.
3	iv	List of Effective Pages	Revised to reflect updated pages included in this enclosure.
4	1.1-1	Definitions	Added a new definition for AIR PADS.
5	1.1-2 to 1.1-4	Definitions	Repagination because of new definition for AIR PADS.
6	3.4-1	LCO 3.4.1 and SR 3.4.1.1 and 3.4.1.2	Added new specifications for the AIR PADS.
7	4.0-3	4.3.1	Added BASKET OVERPACK to title since same standard applies to it.
8	4.0-3	4.3.2.1	Added new section to reflect deviations from CONCRETE CASK design standard.
9	4.0-3 and 4.0-4	4.3.3	Moved construction/fabrication exceptions to a new section to encompass the CONCRETE CASKS as well as the PWR BASKET and BASKET OVERPACK.
10	4.0-5 and 4.0-6	Table 4-1	Repagination because of addition of new table listing CONCRETE CASK design standard deviations.
11	4.0-7	Table 4-2	Added new table listing the CONCRETE CASK Code Deviations.
12	4.0-8	Figure 4-1	Repagination because of addition of new table listing CONCRETE CASK design standard deviations.
13	B3.4-1 to B3.4-3	BASES	Added new Bases for the AIR PADS.

INSTRUCTION SHEET

The following information is provided as a guide for the insertion of new sheets for changes to the "Trojan Independent Spent Fuel Storage Installation Technical Specifications," dated February 11, 1999.

Remove	Insert
Table of Contents Pages ii through iii	Table of Contents Pages ii through iii
List of Effective Pages Page iv	List of Effective Pages Page iv
Section 1.0 Pages 1.1-1 through 1.1-4	Section 1.0 Pages 1.1-1 through 1.1-4
Section 3.0 None	Section 3.0 Page 3.4-1
Section 4.0 Pages 4.0-3 through 4.0-6	Section 4.0 Pages 4.0-3 through 4.0-8
Bases None	Bases Pages B3.4-1 through B3.4-3

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LIST OF EFFECTIVE PAGES

Page	Revision
Technical Specifications	
All pages except the following:	1/22/99
ii through iv	2/11/99
1.1-1 through 1.1-4	2/11/99
3.4-1	2/11/99
4.0-3 and 4.0-4	2/11/99
4.0-5 and 4.0-6 (Table 4-1)	2/11/99
4.0-7 (Table 4-2)	2/11/99
4.0-8 (Figure 4-1)	2/11/99
Bases	
All pages except the following:	1/22/99
B 3.4-1 through B 3.4-3	2/11/99

1.0 USE AND APPLICATION

1.1 Definitions

---NOTE---

The defined terms of this section appear in capitalized type and are applicable throughout these Trojan ISFSI Technical Specifications and Bases.

Term	Definition
ACTIONS	ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
AIR PADS	The AIR PADS are commercially available lifting devices that are used to move the CONCRETE CASKS. The AIR PADS consist of four air bladders that are inserted into the CONCRETE CASK air inlets and are inflated to lift a CONCRETE CASK up to four inches off the surface which then allows it to be moved.
BASKET OVERPACK	The BASKET OVERPACK is the welded container which is designed to provide a Confinement Boundary in the event of a PWR BASKET failure.
CONCRETE CASK	The CONCRETE CASK is the structure in which a PWR BASKET and a BASKET OVERPACK are stored.
DAMAGED FUEL	DAMAGED FUEL are fuel assemblies which can be handled by normal means: (1) with known or suspected cladding defects greater than pinhole leaks or hairline or (2) with missing fuel rods that are not replaced with dummy fuel rods. Fuel assemblies which cannot be handled by normal means due to fuel cladding damage are considered to be FUEL DEBRIS. DAMAGED FUEL is stored in FAILED FUEL CANS.
FAILED FUEL CAN	FAILED FUEL CANS are specially designed enclosures for DAMAGED FUEL, FUEL DEBRIS, and PROCESS CAN CAPSULES. FAILED FUEL CANS are stored in a PWR BASKET.

1.0 USE AND APPLICATION

1.1 Definitions

FUEL DEBRIS	FUEL DEBRIS is fuel with known or suspected defects, such as ruptured fuel rods, severed rods, or loose fuel pellets and fuel pellet fragments. FUEL DEBRIS includes fuel assembly metal fragments such as portions of fuel rods and grid assemblies. Fuel assemblies which cannot be handled by normal means due to fuel cladding damage are considered to be FUEL DEBRIS. FUEL DEBRIS is stored in PROCESS CAN CAPSULES which are stored in FAILED FUEL CANS or directly in FAILED FUEL CANS depending upon the extent of damage.
INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI)	The facility within the perimeter fence licensed for storage of spent fuel within CONCRETE CASKS.
INTACT FUEL ASSEMBLY	INTACT FUEL ASSEMBLIES are fuel assemblies which can be handled by normal means: (1) without known or suspected cladding defects greater than pinhole leaks or hairline cracks; or (2) with missing fuel rods which are replaced by dummy rods. Fuel assemblies from which fuel rods are missing shall not be classified as INTACT FUEL ASSEMBLIES unless dummy fuel rods are used to displace an amount of water equal to that displaced by the original fuel rod(s).
LOADING OPERATIONS	LOADING OPERATIONS include those licensed activities performed on a PWR BASKET while it is being loaded with INTACT FUEL ASSEMBLIES, DAMAGED FUEL, or FUEL DEBRIS, and on a CONCRETE CASK while it is being loaded with a PWR BASKET containing INTACT FUEL ASSEMBLIES, DAMAGED FUEL, or FUEL DEBRIS. LOADING OPERATIONS begin when the first INTACT FUEL ASSEMBLY, DAMAGED FUEL, or FUEL DEBRIS, is lowered into the PWR BASKET and ends when the CONCRETE CASK is ready for TRANSPORT OPERATIONS.
PROCESS CAN CAPSULE	PROCESS CAN CAPSULES are sealed, inerted canisters containing FUEL DEBRIS. PROCESS CAN CAPSULES are stored in FAILED FUEL CANS.

1.0 USE AND APPLICATION

1.1 Definitions

PWR BASKET	The PWR BASKET is the stainless steel welded container which is designed for storage and transportation of INTACT FUEL ASSEMBLIES and FAILED FUEL CANS which contain DAMAGED FUEL and FUEL DEBRIS.
STORAGE OPERATIONS	STORAGE OPERATIONS include all licensed activities that are performed at the ISFSI while a CONCRETE CASK containing a PWR BASKET or a BASKET OVERPACK with INTACT FUEL ASSEMBLIES, DAMAGED FUEL, and FUEL DEBRIS, is located on the storage pad within the ISFSI perimeter including movement of and use of the TRANSFER CASK, BASKET OVERPACK, or a shipping cask on the storage pad.
TRANSFER CASK	The TRANSFER CASK is used to lift and transport a PWR BASKET in the Fuel Building and support a PWR BASKET at the TRANSFER STATION.
TRANSFER STATION	The TRANSFER STATION is a steel structure, located on the Transfer Pad, to the west of the storage pad, designed to safely facilitate loading the PWR BASKET into a shipping cask or BASKET OVERPACK.
TRANSPORT OPERATIONS	TRANSPORT OPERATIONS include those activities involving movement of a CONCRETE CASK loaded with a PWR BASKET containing INTACT FUEL ASSEMBLIES, DAMAGED FUEL, or FUEL DEBRIS. TRANSPORT OPERATIONS begin when the CONCRETE CASK is first moved from the Fuel Building following LOADING OPERATIONS and ends when the CONCRETE CASK is at its storage location within the ISFSI.
UNLOADING OPERATIONS	UNLOADING OPERATIONS include activities performed on a PWR BASKET to be unloaded of the contained INTACT FUEL ASSEMBLIES or FAILED FUEL CANS. UNLOADING OPERATIONS begin when actions have commenced to relocate

1.0 USE AND APPLICATION

1.1 Definitions

the PWR BASKET to the Cask Loading Pit and ends when the last INTACT FUEL ASSEMBLY or FAILED FUEL CAN has been removed from the PWR BASKET.

3.4 AIR PADS

3.4.1 AIR PAD Limits

LCO 3.4.1 The AIR PADS shall not be installed under a CONCRETE CASK containing a loaded PWR BASKET:

a. For more than 9 hours in a 24-hour period, or

b. When the ambient air temperature is greater than 75°F.

APPLICABILITY: LOADING, TRANSPORT, and STORAGE OPERATIONS.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. AIR PADS installed for more than 9 hours in a 24-hour period.	A.1 Remove the AIR PADS.	Immediately
B. Ambient air temperature greater than 75°F.	B.1 Remove the AIR PADS.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.4.1.1 Verify the AIR PADS are not installed for more than 9 hours in a 24-hour period.	Hourly when the AIR PADS are installed.
SR 3.4.1.2 Verify ambient air temperature is less than or equal to 75°F.	Once within one hour before installation and hourly when the AIR PADS are installed.

DESIGN FEATURES

4.3 Codes and Standards

4.3.1 PWR BASKET and BASKET OVERPACK

4.3.1.1 The American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section III, 1992 Edition with Addenda through 1994, is the governing Code for the PWR BASKET and BASKET OVERPACK Storage System used at Trojan.

4.3.1.2 Design Exceptions to Codes, Standards, and Criteria

Table 4-1 lists approved exceptions for the design of the ISFSI.

4.3.2 CONCRETE CASK

4.3.2.1 The governing Codes for the CONCRETE CASKS used at the Trojan ISFSI are American Concrete Institute (ACI) 349, Code Requirements for Nuclear Safety Related Concrete Structures, 1985 Edition, and American National Standards Institute (ANSI) 57.9, Design Criteria for an Independent Spent Fuel Storage Installation (Dry Storage Type), 1984 Edition.

4.3.2.2 Design Exceptions to Codes, Standards, and Criteria

Table 4-2 lists approved deviations for the design of the ISFSI CONCRETE CASKS.

4.3.3 Construction/Fabrication Exceptions to Codes, Standards, and Criteria

Proposed alternatives to ASME Code, Section III, 1992 Edition with Addenda through 1994, including exceptions allowed by Section 4.3.1.1, and deviations from ACI-349, 1985, or ANSI N57.9-1984, may be used when authorized by the Director of the Office of Nuclear Material Safety and Safeguards or designee. The licensee should demonstrate that:

1. The proposed alternatives would provide an acceptable level of quality and safety, or

DESIGN FEATURES

2. Compliance with the specified requirements of ASME Code Section III, 1992 Edition with Addenda through 1994, or with ACI-349, 1985, or with ANSI N57.9-1984, would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Requests for relief in accordance with this section shall be submitted in accordance with 10 CFR 72.4.

Table 4-1
ASME Code Deviations

Section	Requirement	Exception
Subsection NCA	Miscellaneous administrative requirements.	No Design Specification or Design Report will be required. Manufacturer will not be required to have a Certificate of Authorization or an NCA-4000 Quality Assurance Program. Material Organizations will not be required to have an NCA-3800 Quality Assurance Program. Authorized Inspection will not be required. Code Data Reports and Code Symbol/Stamps will not be required.
NC-3211.1 NC-3254 NC-4267	Welding configuration requirements allowed in vessels designed per the requirements of NC-3200.	Structural attachment welds are permitted to be attached by welds that are not continuous on all sides. These attachments do not serve a pressure retaining function, and, when fuel is loaded, are subject only to accident loads. Cyclic loading, stress ratchet, and fatigue are not credible events. Detailed drop analysis includes actual weld configuration and potential load transfer to the pressure retaining boundary.
NC-3252 NC-3253	Category C welded joints for vessels designed to NC-3200	Subsection NC requires Category C full-penetration corner welded joints to be examined by the radiographic or ultrasonic method. Because of the difficulty of performing a meaningful examination (due to the attenuation of UT signals by austenic stainless steel weld metal and a joint geometry that complicates UT interpretation), and the inherent cracking resistance of these materials, the Category C structural lid closure weld will not be nondestructively examined in accordance with NC-2553. This weld will be examined by the liquid penetrant method (multi-layer procedure that includes the root and final layers and sufficient intermediate layers to detect critical flaws). In addition, the partial penetration weld between the shield lid and the shell will be examined by the liquid penetrant method (as required by NC-5260) and will be helium leak tested, ensuring a leak-tight boundary.
NC-3258	Design of head attachments using corner joints	When the head-to-shell weld is a corner joint, NC-3258.3 requires the through-thickness dimension of the weld to exceed the thinner of the head or shell thickness by an amount that varies with the specific joint design. Due to the geometry of the internals and due to lack of access to the inside surface of the structural lid closure weld, the shell-to-bottom-plate weld and the structural-lid-to-shell closure weld do not have the required ¼ in. fillet weld or other weld reinforcement on the ID surface.

Table 4-1
ASME Code Deviations

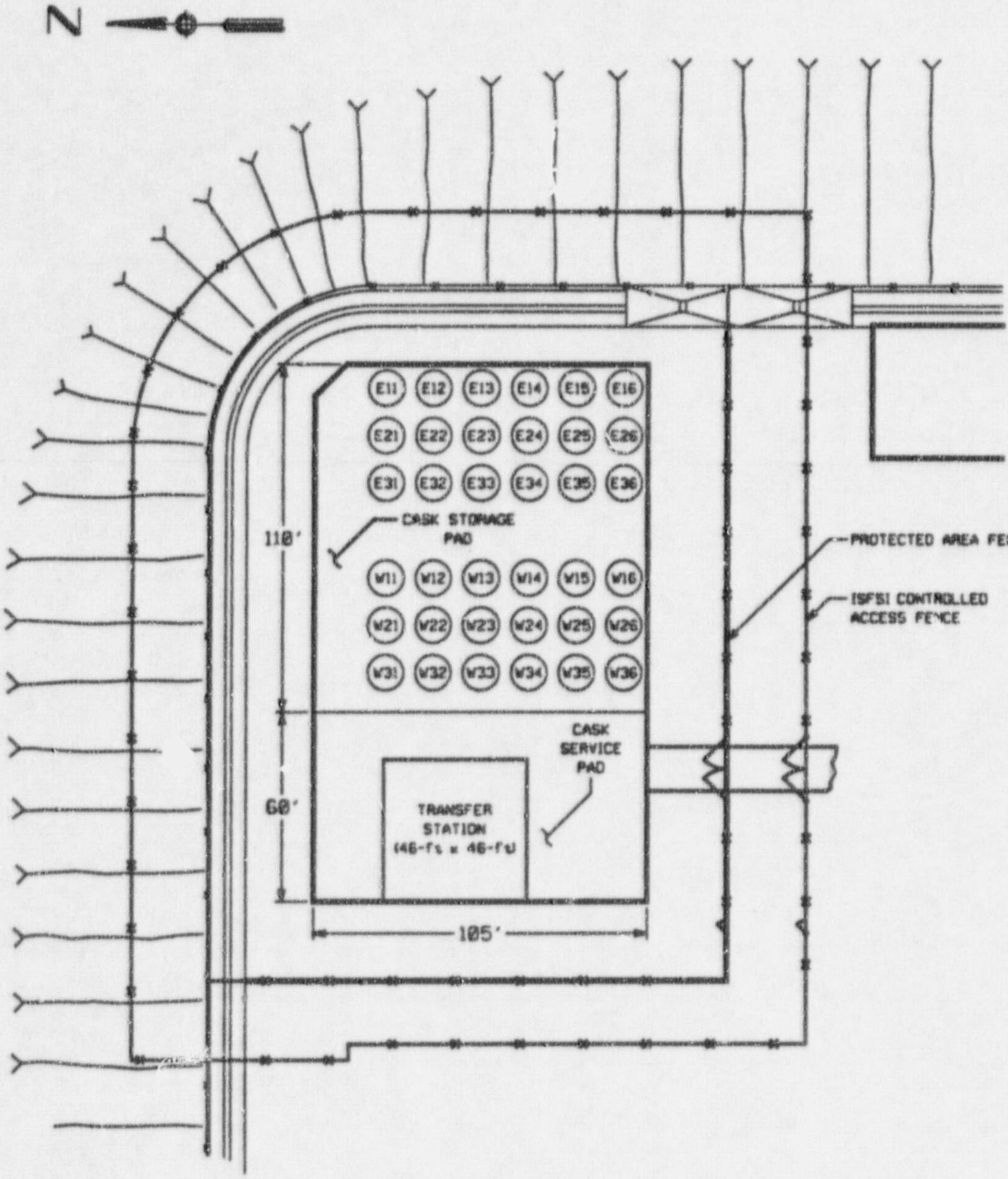
Section	Requirement	Exception
NC-6000	Hydrostatic pressure test	The vessel shell will not be hydrostatically tested in accordance with the code since vessel side walls and bottom are not accessible for inspection. Structural welds will be volumetrically examined, except the structural lid weld, which will be examined by the liquid penetrant method. The partial penetration shield lid weld will be hydrostatically tested, helium leak-tested and liquid penetrant tested.
NG-2121	Material utilized in fabrication shall conform to the requirements of the specification for material given in Tables 2A, 2B, and 4 of Section II, Part D, Subpart 1 and all special requirements of NG.	Not all Basket materials will be selected from materials permitted for use in Section III core support structures. Appropriate material properties will be determined from available technical literature. The primary function is structural, and appropriate structural materials will be selected.

Table 4-2

Concrete Cask Code Deviations[1]

Code Section No.	Requirement	Exception/Justification
1.2	Specifies how drawings and calculations must be handled	The loads used in the design are covered in the calculations rather than the drawings and specifications.
A.4	The limits for bulk (150°F) & local area (200°) concrete temperature.	A long term temperature limitation of 225°F is used. This increased limit is based on test data from several research efforts which show that concrete of similar composition to that used in the casks does not suffer loss of strength when exposed to temperatures up to 350°F.

[1] Deviations are from ACI-349.



TROJAN ISFSI

FIGURE 4-1

B 3.4 AIR PADS

B 3.4.1 AIR PAD Limits

BASES

BACKGROUND

The AIR PADS are used to move CONCRETE CASKS (References 1 and 2). The AIR PADS are inserted into the air inlets at the bottom of the CONCRETE CASK. Air compressors are used to inflate and maintain pressure in the AIR PADS. The inflated AIR PADS lift the CONCRETE CASK above the ground and allow it to float on a cushion of air. A transport vehicle is connected to the CONCRETE CASK to move it.

When installed, the AIR PADS partially block the CONCRETE CASK air inlets and reduce the cooling air flow. However, when the AIR PADS are inflated, for analysis purposes, it is assumed that all air flow is blocked even though there is some natural circulation through an unblocked opening and forced air flow from the AIR PAD itself. In either case (i.e., AIR PADS installed or inflated), although the air flow from natural draft air flow or forced air flow, respectively, will provide cooling, the extent of that cooling has not been determined.

APPLICABLE SAFETY ANALYSIS

The CONCRETE CASK bulk concrete temperature is the limiting thermal design parameter (References 3 and 6). Because of the temperature gradient across the concrete, the bulk concrete temperature is difficult to determine and use in analyses. Therefore, the inner concrete temperature is used in lieu of the bulk concrete temperature and is limited to 225°F for long-term normal operational storage (Reference 3). This is conservative since the bulk concrete temperature will not exceed the inner concrete temperature.

In the Full Blockage of Air Flow case in the SAR (Reference 4), which assumes complete air flow blockage of all inlets and all outlets, for a CONCRETE CASK loaded with a PWR BASKET with a 26 kW heat load, the inner concrete temperature will increase, reaching the long-term normal operation storage limit of 225°F in approximately 9.3 hours, the short-term off-normal limit of 300°F in approximately 21 hours, and the short-term accident limit of 350°F in approximately 31.5 hours (Reference 3). In order to prevent the inner concrete temperature from reaching the long-term

B 3.4 AIR PADS

B 3.4.1 AIR PAD Limits

BASES

normal storage limit, installation of the AIR PADS will be restricted to no more than 9 hours in any 24-hour period. The Full Blockage of Air Flow case in the SAR assumes an initial ambient air temperature of 75°F; therefore, a 75°F temperature limit is placed upon installation and use of the AIR PADS on a loaded CONCRETE CASK.

In the Blockage of One-Half of the Air Inlets case in the SAR (Reference 5), which assumes blockage of one-half of the air inlets, for a CONCRETE CASK loaded with a PWR BASKET with a 26 kW heat load, the inner concrete temperature will not reach the long-term storage limit of 225°F. This analysis also assumes an initial ambient air temperature of 75°F.

LCO

Restricting installation of the AIR PADS to no more than 9 hours in a 24-hour period ensures that the long-term inner concrete storage temperature is not exceeded and that the CONCRETE CASK is not adversely affected.

Restricting the installation of the AIR PADS on a loaded CONCRETE CASK to periods when the ambient air temperature is less than or equal to 75°F ensures that the long-term inner concrete storage temperature is not exceeded regardless of the PWR BASKET heat load (the actual heat load is less than the design heat load of 26 kW).

APPLICABILITY

The loaded CONCRETE CASKS will only be moved in LOADING, TRANSPORT, or STORAGE OPERATIONS. Therefore, this LCO and SR are only applicable during these conditions.

ACTIONS

A.1

If the AIR PADS are installed for more than 9 hours in a 24-hour period,

B 3.4 AIR PADS

B 3.4.1 AIR PAD Limits

BASES

the AIR PADS must be immediately removed. This will reestablish air flow to cool the concrete.

B.1

If ambient air temperature exceeds 75°F, the AIR PADS must be immediately removed. This will reestablish air flow to cool the concrete and stay within analyzed limits. Although all of the AIR PADS will be removed, the safety analysis has shown that blockage of one-half of the air inlets, which is more conservative than (but similar to) the case of two of the AIR PADS installed, does not lead to adverse concrete temperatures (Reference 5).

SURVEILLANCE REQUIREMENTS

SR 3.4.1.1

Since the long term integrity of the concrete is ensured by maintaining its temperature below the specified limits, the length of time during which the AIR PADS can be installed is monitored hourly while they are installed.

SR 3.4.1.2

Similarly, the ambient air temperature is monitored hourly

REFERENCES

1. SAR Section 5.1.1.3
2. SAR Section 5.2.1.1.7
3. SAR Table 4.2-12
4. SAR Section 8.2.7
5. SAR Section 8.1.2.2
6. SAR Table 4.2-2a