APPENDIX

TECHNICAL SPECIFICATIONS

FOR THE

RANCHO SECO

INDEPENDENT SPENT FUEL STORAGE INSTALLATION

(ISFSI)

Renewed License

TABLE OF CONTENTS

TABLE OF CONTENTS

1.0 USE AND APPLICATION

1.1 DEFINITIONS

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

Term	Definition
ACTIONS	ACTIONS shall be the part of a specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
DAMAGED SPENT FUEL ASSEMBLY	A DAMAGED SPENT FUEL ASSEMBLY is a fuel assembly with known or suspected cladding defects greater than hairline cracks or pinhole leaks.
DRY SHIELDED CANISTER	The DRY SHIELDED CANISTER (DSC) is a welded pressure vessel that provides confinement of radioactive materials in an inert atmosphere. Rancho Seco requires the following three types of DSCs: 1. FO-DSCs store fuel assemblies only 2. FC-DSCs store fuel assemblies with control components 3. FF-DSCs store DAMAGED SPENT FUEL ASSEMBLIES
HORIZONTAL STORAGE MODULE (HSM)	The HORIZONTAL STORAGE MODULE (HSM) is a low profile reinforced concrete structure that can store any of the three DSC types used at Rancho Seco.
INTACT SPENT FUEL ASSEMBLY	An INTACT FUEL ASSEMBLY is a fuel assembly with no known or suspected cladding defects greater than hairline cracks or pinhole leaks.
LOADING OPERATIONS	LOADING OPERATIONS include those licensed activities performed on a DSC while it is being loaded with INTACT

	or DAMAGED SPENT FUEL ASSEMBLIES, and on an MP187 CASK while it is being loaded with a DSC containing INTACT or DAMAGED SPENT FUEL ASSEMBLIES. LOADING OPERATIONS begin when the first INTACT or DAMAGED SPENT FUEL ASSEMBLY is lowered into the DSC and end when the MP187 CASK is ready for TRANSFER OPERATIONS.
MP187 CASK	The MP187 CASK is used for onsite transfer of a loaded DSC.
STORAGE OPERATIONS	STORAGE OPERATIONS include all licensed activities that are performed at the ISFSI while a DSC containing INTACT or DAMAGED SPENT FUEL ASSEMBLIES is located in an HSM on the storage pad within the ISFSI perimeter.
TRANSFER OPERATIONS	TRANSFER OPERATIONS include those activities involving movement of an MP187 CASK loaded with a DSC containing INTACT or DAMAGED SPENT FUEL ASSEMBLIES. TRANSFER OPERATIONS begin when the MP187 CASK is placed on the transfer trailer following LOADING OPERATIONS and end when the DSC is at its storage location in an HSM on the storage pad within the ISFSI perimeter.
UNLOADING OPERATIONS	UNLOADING OPERATIONS include activities performed on a DSC to be unloaded of the contained INTACT or DAMAGED SPENT FUEL ASSEMBLIES. UNLOADING OPERATIONS begin when the DSC is removed from the HSM and end when the last I NT ACT or DAMAGED SPENT FUEL ASSEMBLY has been removed from the DSC.

1.2 Logical Connectors

PURPOSE

The purpose of this section is to explain the meaning of logical connectors.

Logical connectors are used in Technical Specifications (TS) to discriminate between, and yet connect, discrete Conditions, Required Actions, Completion Times, Surveillances, and Frequencies. The only logical connectors that may appear in TS are AND and OR. The physical arrangement of these connectors constitutes logical conventions with specific meanings.

BACKGROUND

Several levels of logic may be used to state Required Actions. These levels are identified by the placement (or nesting) of the logical connectors and by the number assigned to each Required Action. The first level of logic is identified by the first digit of the number assigned to a Required Action and the placement of the logical connector in the first level of nesting (i.e., left justified with the number of the Required Action). The successive levels of logic are identified by additional digits of the Required Action number and by successive indentations of the logical connectors.

When logical connectors are used to state a Condition, Completion Time, Surveillance, or Frequency, only the first level of logic is used, and the logical connector is left justified with the statement of the Completion Time, Surveillance, or Frequency.

EXAMPLES

The following examples illustrate the use of logical connectors.

EXAMPLES (continued)

EXAMPLE 1.2-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met	A.1 Verify.... AND A.2 Restore...	

In this example the logical connector AND is used to indicate that when in Condition A, both required Actions A.1, and A.2 must be completed.

EXAMPLES (continued)

EXAMPLE 1.2-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met	A.1 Stop OR A.2.1 Verify AND A.2.2.1 Reduce OR A.2.2.2 Perform OR A.3 Remove...	

This example represents a more complicated use of logical connectors. Required Actions A.1, A.2, and A.3 are alternative choices, only one of which must be performed as indicated by the use of the logical connector OR and the left justified placement. Any one of these three Actions may be chosen. If A.2 is chosen, then both A.2.1 and A.2.2 must be performed as indicated by the logical connector AND. Required Action A.2.2 is met by performing A.2.2.1 or A.2.2.2. The indented position of the logical connector OR indicates that A.2.2.1 and A.2.2.2 are alternative choices, only one of which must be performed.

1.3 Completion Times

PURPOSE	The purpose of this section is to establish the Completion Time convention and to provide guidance for its use.
BACKGROUND	Limiting Conditions for Operations (LCOs) specify the lowest functional capability or performance levels of equipment required for safe operation of the facility. The ACTIONS associated with an LCO state Conditions that typically describe the ways in which the requirements of the LCO can fail to be met. Specified with each stated Condition are Required Action(s) and Completion Time(s).
DESCRIPTION	The Completion Time is the amount of time allowed for completing a Required Action. It is referenced to the time of discovery of a situation (e.g., equipment or variable not within limits) that requires entering an ACTIONS Condition unless otherwise specified, providing the facility is in a specified condition stated in the Applicability of the LCO. Required Actions must be completed prior to the expiration of the specified Completion Time. An ACTIONS Condition remains in effect and the Required Actions apply until the Condition no longer exists or the facility is not within the LCO Applicability. Once a Condition has been entered, subsequent subsystems, components, or variables expressed in the Condition, discovered to be not within limits, will <u>not</u> result in separate entry into the Condition unless specifically stated. The Required Actions of the Condition continue to apply to each additional failure with Completion Times based on initial entry into the Condition.

EXAMPLES The following examples illustrate the use of Completion Times with different types of Conditions and changing Conditions.

EXAMPLE 1.3-1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Times not met.	B.1 Perform Action B.1 AND B.2 Perform Action B.2	12 hours 36 hours

Condition B has two Required Actions. Each Required Action has its own separate Completion Time. Each Completion Time is referenced to the time that Condition B is entered.

The Required Actions of Condition B are to complete action B.1 within 12 hours AND complete action B.2 within 36 hours. A total of 12 hours is allowed for completing action B.1 and a total of 36 hours (not 48 hours) is allowed for completing action B.2 from the time that Condition B was entered. If action B.1 is completed within 6 hours, the time allowed for completing action B.2 is the next 30 hours because the total time allowed for completing action B.2 is 36 hours.

EXAMPLES (continued)

EXAMPLE 1.3-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One system not within limits.	A.1 Restore system to within limit.	7 days
B. Required Action and associated Completion Time not met.	B.1 Complete action B.1 AND B.2 Complete action B.2	12 hours 36 hours

When a system is determined to not meet the LCO, Condition A is entered. If the system is not restored within 7 days, Condition B is also entered and the Completion Time clocks for Required Actions B.1 and B.2 start. If the system is restored after Condition B is entered, Conditions A and B are exited, and therefore, the Required Actions of Condition B may be terminated.

EXAMPLES (continued)

EXAMPLE 1.3-3

ACTIONS

NOTE:
Separate Condition entry is allowed for each component.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Restore compliance with LCO.	4 hours
B. Required Action and associated Completion Time not met.	B.1 Complete action B.1 AND B.2 Complete action B.2	6 hours 12 hours

The Note above the ACTIONS Table is a method of modifying how the Completion Time is tracked. If this method of modifying how the Completion Time is tracked was applicable only to a specific Condition, the Note would appear in that Condition rather than at the top of the ACTIONS Table.

The Note allows Condition A to be entered separately for each component, and Completion Times tracked on a per component basis. When a component is determined to not meet the LCO, Condition A is entered and its Completion Time starts. If subsequent components are determined to not meet the LCO, Condition A is entered for each component and separate Completion Times start and are tracked for each component.

IMMEDIATE COMPLETION TIME	When "Immediately" is used as a Completion Time, the Required Action should be pursued without delay and in a controlled manner.

1.4 Frequency

PURPOSE

The purpose of this section is to define the proper use and application of Frequency requirements.

DESCRIPTION

Each Surveillance Requirement (SR) has a specified Frequency in which the Surveillance must be met in order to meet the associated Limiting Condition for Operation (LCO). An understanding of the correct application of the specified Frequency is necessary for compliance with the SR.

The "specified Frequency" is referred to throughout this section and each of the Specifications of Section 3.0, Surveillance Requirement (SR) Applicability. The "specified Frequency" consists of the requirements of the Frequency column of each SR as well as certain Notes in the Surveillance column that modify performance requirements.

Situations where a Surveillance could be required (i.e., its Frequency could expire), but where it is not possible or not desired that it be performed until sometime after the associated LCO is within its Applicability, represent potential SR 3.0.4 conflicts. To avoid these conflicts, the SR (i.e., the Surveillance or the Frequency) is stated such that it is only "required" when it can be and should be performed. With a SR satisfied, SR 3.0.4 imposes no restriction.

EXAMPLES The following examples illustrate the various ways that Frequencies are specified.

EXAMPLE 1.4-1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Verify pressure within limit.	12 hours

Example 1.4-1 contains the type of SR most often encountered in the Technical Specifications (TS). The Frequency specifies an interval (12 hours) during which the associated Surveillance must be performed at least one time. Performance of the Surveillance initiates the subsequent interval. Although the Frequency is stated as 12 hours, an extension of the time interval to 1.25 times the stated Frequency is allowed by SR 3.0.2 for operational flexibility. The measurement of this interval continues at all times, even when the SR is not required to be met per SR 3.0.1 (such as when a variable is outside specified limits, or the facility is outside the Applicability of the LCO). If the interval specified by SR 3.0.2 is exceeded while the facility is in a condition specified in the Applicability of the LCO, the LCO is not met in accordance with SR 3.0.1.

If the interval as specified by SR 3.0.2 is exceeded while the facility is not in a condition specified in the Applicability of the LCO for which performance of the SR is required, the Surveillance must be performed within the Frequency requirements of SR 3.0.2 prior to entry into the specified condition. Failure to do so would result in a violation of SR 3.0.4.

EXAMPLES (continued)

EXAMPLE 1.4-2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
Verify pressure is within limits.	Once within 12 hours prior to starting activity AND 24 hours thereafter

Example 1.4-2 has two Frequencies. The first is a one time performance Frequency, and the second is of the type shown in Example 1.4-1. The logical connector "AND" indicates that both Frequency requirements must be met. Each time the example activity is to be performed, the Surveillance must be performed within 12 hours prior to starting the activity.

The use of "once" indicates a single performance will satisfy the specified Frequency (assuming no other Frequencies are connected by "AND"). This type of Frequency does not qualify for the 25% extension allowed by SR 3.0.2.

"Thereafter" indicates future performances must be established per SR 3.0.2, but only after a specified condition is first met (i.e., the "once" performance in this example). If the specified activity is canceled or not performed, the measurement of both intervals stops. New intervals start upon preparing to restart the specified activity.

EXAMPLES (continued)

EXAMPLE 1.4-3

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
NOTE: Not required to be met until 96 hours after verifying the helium leak rate is within limit.	
Verify DSC vacuum drying pressure is within limit.	Once after verifying the helium leak rate is within limit.

As the Note modifies the required performance of the Surveillance, it is construed to be part of the "specified Frequency." Should the vacuum drying pressure not be met immediately following verification of the shield lid weld helium leak rate while in LOADING OPERATIONS, this Note allows 96 hours to perform the Surveillance. The Surveillance is still considered to be performed within the "specified Frequency."

Once the shield lid weld helium leak rate has been verified to be acceptable, 96 hours, plus the extension allowed by SR 3.0.2, would be allowed for completing the Surveillance for the vacuum drying pressure. If the Surveillance was not performed within this 96 hour interval, there would then be a failure to perform the Surveillance within the specified Frequency, and the provisions of SR 3.0.3 would apply.

2.1 Functional And Operating Limits

2.1.1 Fuel Stored At The ISFSI

The spent nuclear fuel to be stored in HSMs at the Rancho Seco ISFSI consists of the following:

a. INTACT SPENT FUEL ASSEMBLIES as characterized in Table 2-1.

b. DAMAGED SPENT FUEL ASSEMBLIES having 15 or less fuel pins per assembly with known cladding damage.

c. Fuel assembly control components as described in Table 2-2.

With the exception of the six fuel assemblies identified in footnote 1 that are permitted to be stored in five identified FC-DSCs, only intact Rancho Seco spent fuel assemblies may be placed in an FO-DSC or FC-DSC.[1]

Rancho Seco control rod assemblies, burnable poison rod assemblies, axial power shaping rod assemblies (gray or black), neutron sources, retainer clips, and orifice rod assemblies may be placed only in an FC-DSC within an INTACT SPENT FUEL ASSEMBLY, with the exception of the six fuel assemblies identified in footnote 1.

DAMAGED SPENT FUEL ASSEMBLIES having 15, or less, fuel pins with known cladding damage may be placed in an FF-DSC. INTACT SPENT FUEL ASSEMBLIES may also be placed in the FF-DSC.

No control components or neutron sources may be placed in an FF-DSC.

[1] Note: Six fuel assemblies with known or suspected cladding defects greater than hairline cracks or pinhole leaks were determined to be stored in five different FC-DSCs. Analysis has shown that storing these spent fuel assemblies, with cladding damage greater than a hairline crack or pinhole leak, at the Rancho Seco ISFSI will have no adverse affect on the continued safe storage of the spent fuel and the safe operation of the ISFSI.

2.2 Functional And Operating Limits Violations

2.2.1 Fuel Stored At The ISFSI:

If the Functional and Operating Limits of 2.1.1 are violated, the following actions shall be completed:

a. The affected fuel assemblies shall be placed in a safe condition.

b. Within 24 hours, notify the NRC Operations Center, and

c. Within 30 days, submit a special report that describes the cause of the violation and actions taken to restore compliance and prevent recurrence.

Table 2-1
Spent Fuel Limits

CHARACTERISTIC	VALUE
Fuel Design	B&W 15X15
Minimum Cooling Time After Discharge	7 years
Maximum Decay Heat per DSC[1]	13.5 Kw
Maximum Enrichment	3.43%
Maximum Burn-up	38,268 MWd/MTU
Cladding Material	Zircaloy-4

[1] including control components

Table 2-2

Fuel Assembly Control Components

Component
1. Control Rod Assemblies
2. Axial Power Shaping Rod Assemblies
3. Burnable Poison Rod Assemblies
4. Neutron Sources
5. Retainer Clips
6. Orifice Rod Assemblies

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1 LCOs shall be met during specified conditions in the Applicability, except as provided in LCO 3.0.2.

LCO 3.0.2 Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5.

If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Actions(s) is not required, unless otherwise stated.

LCO 3.0.3 This specification is not applicable to an ISFSI. The placeholder is retained for consistency with the power reactor technical specifications.

LCO 3.0.4 When an LCO is not met, entry into a specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent changes in specified conditions in the Applicability that are required to comply with ACTIONS.

LCO 3.0.5 Equipment removed from service or not in service in compliance with ACTIONS may be returned to service under administrative control solely to perform testing required to demonstrate it meets the LCO or that other equipment meets the LCO. This is an exception to LCO 3.0.2 for the system returned to service under administrative control to perform the testing.

LCO 3.0.6 This specification is not applicable to an ISFSI. The placeholder is retained for consistency with the power reactor technical specifications.

LCO 3.0.7 This specification is not applicable to an ISFSI. The placeholder is retained for consistency with the power reactor technical specifications.

3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

SR 3.0.1 SRs shall be met during specified conditions in the Applicability for individual LCOs, unless otherwise stated in the SR. Failure to meet a SR, whether such failure is experienced during the performance of the Surveillance or between performances of the Surveillance, shall be failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be failure to meet the LCO except as provided in SR 3.0.3. Surveillances do not have to be performed on inoperable equipment or variables outside specified limits.

SR 3.0.2 The specified Frequency for each SR is met if the Surveillance is performed within 1.25 times the interval specified in the Frequency, as measured from the time a specified condition of the Frequency is met.

For Frequencies specified as "once," the above interval extension does not apply. If a Completion Time requires periodic performance on a "once per ... " basis, the above Frequency extension applies to each performance after the initial performance.

Exceptions to this Specification are stated in the individual Specifications.

SR 3.0.3 If it is discovered that a Surveillance was not performed within its specified Frequency, then compliance with the requirement to declare the LCO not met may be delayed, from the time of discovery, up to 24 hours or up to the limit of the specified Frequency, whichever is less. This delay period is permitted to allow performance of the Surveillance.

If the Surveillance is not performed within the delay period, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

When the Surveillance is performed within the delay period and the SR is not met, the LCO must immediately be declared not met, and the applicable Condition(s) must be entered.

SR 3.0.4 Entry into a specified condition in the Applicability of an LCO shall not be made unless the LCO's SRs have been met within their specified Frequency. This provision shall not prevent entry into specified conditions in the Applicability that are required to comply with ACTIONS or that are related to establishing an inert atmosphere in the DSC.

3.1 DSC Integrity

3.1.1 DSC Vacuum Pressure

LCO 3.1.1 DSC Vacuum Pressure during drying shall be ≤ 3 Torr.

The time at pressure shall be not less than 30 minutes.

Applicability: During LOADING OPERATIONS.

Actions:

Note: **The Condition below applies for each DSC**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The required vacuum pressure is not obtained.	A.1 Establish DSC vacuum pressure within limits	7 days
B. Required Action A.1 and associated Completion Time not met.	B.1 Establish a helium atmosphere in the DSC AND B.2.1 Determine and complete corrective actions necessary to return the DSC to an analyzed condition. OR B.2.2 Unload the DSC	72 hours 30 days 30 days

3.1 DSC Integrity

3.1.1 DSC Vacuum Pressure

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
NOTE: Not required to be met until 96 hours after the DSC is removed from the spent fuel pool.	
SR 3.1.1 Verify DSC vacuum pressure is less than, or equal to, 3 Torr for at least 30 minutes.	Once per DSC, after an acceptable NDE on the weld of the inner top cover plate

3.1 DSC Integrity

3.1.2 DSC Helium Leakage Rate

LCO 3.1.2 DSC Helium Leakage Rate of primary Inner Seal Weld shall be $\leq 10^{-5}$ std-cc/sec.

Applicability: During LOADING OPERATIONS.

Action:

Note: **The Condition below applies for each DSC**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Inner seal weld leak rate not met.	A.1 Establish the DSC inner shell leak rate to within the limit.	7 days
B. Required Action A.1 and the associated Completion Time not met.	B.1 Determine and complete corrective actions necessary to return the DSC to an analyzed condition. OR B.2 Unload the DSC.	30 days 30 days

3.1 DSC Integrity

3.1.2 DSC Helium Leakage Rate

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
NOTE: Not required to be met until 72 hours after verifying the vacuum drying pressure is within limit.	
SR 3.1.2 Verify that the DSC inner shell leak rate is within limit.	Once per DSC, after the vacuum drying specification is achieved.

3.1 DSC Integrity

3.1.3 DSC Helium Backfill Pressure

LCO 3.1.3 DSC helium backfill pressure shall be zero to 2.5 psig.

Applicability: During LOADING OPERATIONS.

Action:

Note: **The Condition below applies for each DSC**

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. The required backfill pressure can not be met.	A.1 Establish the DSC helium backfill pressure to within the limit.	72 hours
B. Required Action A.1 and associated Completion Time not met.	B.1 Determine and complete corrective actions necessary to return the DSC to an analyzed condition. OR B.2 Unload the DSC.	30 days 30 days

3.1 DSC Integrity

3.1.3 DSC Helium Backfill Pressure

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
NOTE: Not required to be met until 72 hours after verifying that the helium leak rate is within limit.	
SR 3.1.3 Verify that the DSC helium backfill pressure is 0 to 2.5 psig.	Once per DSC, after the helium leak rate specification is met.

4.0 Design Features

4.1 Site Location

The Rancho Seco Independent Spent Fuel Storage Installation (ISFSI) is located at the former Rancho Seco Nuclear Generating Station (RSNGS) site in Sacramento County, California. The site is approximately 26 miles north-northeast of Stockton and approximately 25 miles southeast of Sacramento.

4.2 Storage Features

4.2.1 Storage System

The Rancho Seco ISFSI Storage System is comprised of 22 dry shielded canisters (DSCs), 22 concrete horizontal storage modules (HSMs), and one MP187 cask.[1]

The DSC is a high integrity stainless steel, welded pressure vessel that provides confinement of radioactive materials, encapsulates the fuel in an inert atmosphere, and provides biological shielding (in the axial direction) during DSC closure, transfer, and storage. Since the Rancho Seco ISFSI must provide 100% storage for RSNGS fuel and control components, three types of DSCs are required.

1. FO-DSCs can store fuel assemblies only
2. FC-DSCs can store fuel assemblies with control components
3. FF-DSCs can store damaged fuel assemblies.

The HSM is a low profile reinforced concrete structure that can hold any of the DSCs used at the Rancho Seco ISFSI. The HSM is designed to withstand all normal condition loads as well as the abnormal condition loads created by earthquakes, tornadoes, flooding, and other natural phenomena.

The MP187 cask is used for onsite transfer of a loaded DSC. The cask provides the biological shielding and structural support necessary to carry a DSC through the various phases of drying, sealing, and transfer to an HSM for storage.

---

[1] The MP187 cask is used for onsite transfer of loaded DSCs.

4.0 Design Features

Other than the DSCs, HSMs, and the cask, there are no additional systems required for the safe storage of Rancho Seco fuel and control hardware. Ancillary systems present at the storage site include: lighting, security systems, including CCTV and intrusion detection, temperature monitoring, and lightning protection.

4.2.2 Storage Capacity

The Rancho Seco ISFSI can accommodate all of Rancho Seco's 493 spent fuel assemblies and greater-than-Class C radioactive waste. The ISFSI storage capacity consists of 18 FC-DSCs, 2 FO-DSCs, 1 FF-DSC, and 1 GTCC DSC.

4.2.3 ISFSI Storage Pad

The ISFSI storage pad consists of a concrete slab approximately 225 feet long, 170 feet wide, and 2 feet thick at the location of the HSMs. A security fence surrounds the slab.

4.3 Codes and Standards

4.3.1 MP187 Cask

The cask structural components are designed to meet the stress allowables of the ASME Code, Section III, Subsection NB for structural or shell components or NF for the neutron shield jacket assembly. Service Levels A and B allowables are used for all normal operating and off-normal loadings. Service Levels C and D allowables are used for load combinations that include postulated accident loadings. Allowable stress limits for the lifting trunnions meet the recommendations of ANSI N14.6-1993 for critical loads.

4.3.2 DSC

The DSCs are designed to meet the stress intensity allowables of the ASME Boiler and Pressure Vessel Code (1983) Section III, Division I, Subsections NB, NF, and NG for Class I components and supports, as applicable. ASME Code Service Levels A and B allowables are used for normal and off-normal operating conditions. Service Levels C and D allowables are used for accident conditions such as a postulated cask drop accident.

4.0 Design Features

4.3.3 HSM

The reinforced concrete HSMs are designed to meet the requirements of ACI 349-85. The load combinations specified in ANSI 57.9-1984, Section 6.17.3.1 are used for combining normal operating, off-normal, and accident loads for the HSM.

4.3.4 Fabrication Exceptions to Codes and Standards

The ISFSI SAR, Appendix A, lists the ASME Code exceptions found acceptable by the NRC staff for the MP187 Cask and the DSCs. Proposed alternatives to the ASME code, including additional exceptions listed in Appendix A of the SAR, and deviations from ACI 349-85, may be used when authorized by the Director, Office of Nuclear Material Safety and Safeguards or designee. The licensee should demonstrate that:

1. The proposed alternative provides an acceptable level of quality and safety, or

2. Compliance with the specified requirements of the following ASME Code Sections, 1992 Edition with 1993 Addenda, or with ACI 349-85, would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

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

5.0 ADMINISTRATIVE CONTROLS

5.1 Responsibility

The Manager, Rancho Seco Assets (MRSA) is responsible for the overall management of the Rancho Seco ISFSI, and ensuring the safe storage of irradiated core components. The MRSA will delegate in writing the succession of his responsibilities during his absences.

5.0 ADMINISTRATIVE CONTROLS

5.2 Organization

The Rancho Seco ISFSI Final Safety Analysis Report (IFSAR) describes the SMUD corporate organization and its relationship to the Rancho Seco nuclear organization.

The SMUD Board of Directors is the policy-making body that has ultimate responsibility for the Rancho Seco ISFSI license. The Chief Executive Officer & General Manager (CEO & GM) is SMUD's Chief Executive Officer and reports directly to the Board of Directors.

Administrative procedures define the lines of authority and responsibility, from executive management through the operating organizations, for the overall safety and operation of the Rancho Seco facilities.

The Rancho Seco IFSAR defines the corporate and site management positions that are responsible for ensuring the safe storage of the spent fuel, ensuring effective day-to-day operations, and maximizing the effectiveness of nuclear policies and procedures. The Manager, Rancho Seco Assets will delegate in writing the succession of his responsibilities during his absence.

5.0 ADMINISTRATIVE CONTROLS

5.3 ISFSI Staff Qualifications

Each member of the Rancho Seco staff meets or exceeds the minimum qualifications of ANSI N18.1-1971 for comparable positions, except the Radiation Protection/Chemistry Superintendent who meets or exceeds the qualifications of Regulatory Guide 1.8, September 1975. Plant personnel are selected and trained for their assigned duties to ensure safe and efficient Rancho Seco ISFSI operations.

Training, retraining, and replacement training programs for the operating staff and security force are maintained and conducted in accordance with approved procedures.

5.0 ADMINISTRATIVE CONTROLS

5.4 Procedures

5.4.1 Rancho Seco staff will prepare, review, and approve written procedures for all normal operations, maintenance, and testing at the Rancho Seco ISFSI prior to its operation. Written procedures shall be established, implemented, and maintained covering the following activities that are important to safety:

a. Administrative controls;

b. Routine ISFSI operations;

c. Alarms and Annunciators;

d. Emergency operations;

e. Design control and facility change or modification;

f. Control of surveillances and tests;

g. Control of special processes;

h. Maintenance;

i. Health physics, including ALARA practices;

j. Special nuclear material accountability;

k. Quality assurance, inspection, and audits;

l. Physical security and safeguards;

m. Records management;

n. Reporting; and

o. All programs specified in Specification 5.5.

5.0 ADMINISTRATIVE CONTROLS

5.5 Programs

The managerial and administrative controls for the conduct of operations at the Rancho Seco ISFSI, built upon the RSNGS organization under the former 10 CFR 50 license, include the requirements of the 10 CFR 72 license.

With the termination of the 10 CFR 50 license, appropriate 10 CFR 72.48 reviews will ensure continued compliance with the Rancho Seco ISFSI license requirements. SMUD will maintain the appropriate administrative and managerial controls at the Rancho Seco ISFSI until DOE takes title to the fuel.

Rancho Seco will implement the following programs to ensure the safe operation and maintenance of the ISFSI:

- Safety Reviews
- Radiological Environmental Monitoring Program
- HSM Thermal Monitoring Program
- Radiation Protection

5.0 ADMINISTRATIVE CONTROLS

5.5 Programs

5.5.1 Safety Reviews

Rancho Seco staff will conduct safety reviews in accordance with 10 CFR 72.48 to determine whether proposed changes, tests, and experiments require NRC approval before implementation. Changes to the Technical Specification Bases and other licensing basis documents will be conducted in accordance with approved administrative procedures.

Rancho Seco staff may make changes to Technical Specification Bases and other licensing basis documents without prior NRC approval, provided the changes meet the criteria defined in 10 CFR 72.48.

The safety review process will contain provisions to ensure that the Bases and licensing basis documents are maintained consistent with the Rancho Seco IFSAR.

Proposed changes that do not meet the criteria above will be reviewed and approved by the NRC before implementation. Changes to the Bases implemented without prior NRC approval will be provided to the NRC in accordance with 10 CFR 72.48.

5.0 ADMINISTRATIVE CONTROLS

5.5 Programs

5.5.2 Radiological Environmental Monitoring Program

a. The radiological environmental monitoring program ensures the annual dose equivalent to any real individual located outside the ISFSI controlled area does not exceed the annual dose limits in 10 CFR 72.104(a).

b. Operation of the Rancho Seco ISFSI will not create any radioactive materials or result in any credible liquid or gaseous effluent release.

c. Dosimetry will be used to monitor direct radiation around the ISFSI.

5.5.3 HSM Thermal Monitoring Program

This program provides guidance for temperature measurements that are used to monitor the thermal performance of each HSM. The intent of the program is to prevent conditions that could lead to exceeding the concrete and fuel clad temperature criteria.

5.5.3.1 HSM Roof Concrete Temperature

The temperature measurement will be a direct measurement of the HSM roof concrete temperature, or other means that would identify and allow for the correction of off-normal thermal conditions that could lead to exceeding the concrete and fuel clad temperature criteria. A temperature measurement of the thermal performance for each HSM will be taken on a daily basis.

If the temperature of the HSM roof at the monitored location rises by more than 80°F, based on a daily surveillance, then it is possible that some type of an inlet and or outlet vent blockage has occurred and appropriate corrective actions will be taken to avoid exceeding the concrete and cladding temperature limits. This is based on Figure 8.2-16 of the Standardized NUHOMS® SAR (NUH-003, Revision 4A).

In addition, if the temperature of the HSM roof at the monitored location is greater than 225°F, then it is possible that some type of an inlet and or outlet vent blockage has occurred and appropriate corrective actions need to be taken to avoid exceeding the concrete and cladding temperature limits.

The HSM Thermal Monitoring Program provides a positive means to identify conditions that could approach the temperature criteria for proper HSM operation and allow for the correction of off-normal thermal conditions that could lead to exceeding the concrete and fuel clad temperature criteria.

5.5.3.2 HSM Air Temperature Difference

Following initial DSC transfer to the HSM, the air temperature difference between ambient temperature and the roof vent temperature will be measured 24 hours after DSC insertion into the HSM and again 7 days after insertion into the HSM.

If the air temperature differential is greater than 100°F, the air inlets and exits should be checked for blockage. If after removing any blockage found, the temperature is still greater than that specified, corrective actions and analysis of existing conditions will be performed in accordance with the Rancho Seco corrective action program and 10 CFR 72.48 to confirm that conditions adversely affecting the concrete or fuel cladding do not exist.

The specified air temperature rise ensures the fuel clad and concrete temperatures are maintained at or below acceptable long-term storage limits. If the temperature rise is within the specifications, then the HSM and DSC are performing as designed and no further temperature measurements are required.

5.5.3.3 HSM Air Vents

Since the HSMs are located outdoors, there is a possibility that the HSM air inlet and outlet openings could become blocked by debris. Although the ISFSI security fence and HSM bird screens reduce the probability of HSM air vent blockage, the ISFSI SAR postulates and analyzes the effects of air vent blockage.

The HSM design and accident analyses demonstrate the ability of the ISFSI to function safely if obstructions in the air inlets or outlets impair airflow through the HSM for extended periods. This specification ensures that blockage will not exist for periods longer than assumed in the analyses.

Staff will conduct a daily visual inspection of the air vents to ensure that HSM air vents are not blocked for more than 40 hours and that blockage will not exist for periods longer than assumed in the safety analyses.

5.5.4 Radiation Protection Program

The Radiation Protection Program will establish administrative controls to limit personnel exposure to As Low As Reasonably Achievable (ALARA) levels in accordance with 10 CFR 20.

a. As part of the LOADING and TRANSFER OPERATIONS, radiation monitoring of the MP187 CASK and DSCs will be performed to ensure that surface dose rates are within the analyzed values.

b. A monitoring program to ensure the annual dose equivalent to any real individual located outside the ISFSI controlled area does not exceed regulatory limits is incorporated as part of the environmental monitoring program in the Radiological Environmental Monitoring Program of Specification 5.5.2.

c. Following placement of each loaded DSC/transfer cask into the cask decontamination area and prior to transfer to the ISFSI, the DSC smearable surface contamination levels on the outer surface of the DSC shall be less than 2200 dpm/100 cm^2 from beta and gamma emitting sources, and less than 220 dpm/100 cm^2 from alpha emitting sources.

5.0 ADMINISTRATIVE CONTROLS

5.6 Lifting Controls

5.6.1 Cask Lifting Heights

The lifting height of a loaded cask/DSC, is limited as a function of location and temperature, as follows:

a. No lifts or handling of the cask/DSC inside the Fuel Storage Building at any height is permissible at DSC basket temperatures below -20°F.

b. The maximum lift height of the cask/DSC inside the Fuel Storage Building shall be 80 inches if the basket temperature is below 0°F but higher than -20°F.

c. No lift height restriction[1] is imposed on the cask/DSC inside the Fuel Storage Building, or lowering the cask from or raising the cask into the Fuel Storage Building, if the basket temperature is higher than 0°F.

d. The maximum lift height and handling height for all transfer operations outside the Fuel Storage Building, with exception of lowering the cask from or raising the cask into the Fuel Storage Building, shall be 80 inches if the basket temperature is greater than 0°F.

e. The maximum lift height of the cask/DSC over the cask wash-down area inside the Fuel Storage Building shall be seven inches.

These restrictions ensure that any DSC drop as a function of location or low temperature is within the accident analysis. The DSC basket temperature can not be lower than the ambient air temperature. The record low temperature at Rancho Seco is $+17^0$F. Conformance with the temperature limits is confirmed if the ambient air temperature has not been less than the specified temperature limit. If the DSC basket temperature and location are outside of the specification limits, lifting and transfer operations will be terminated.

[1] No lift height restriction as a function of temperature. Other administrative lift height restrictions may apply.

5.6 Lifting Controls

5.6.2 Cask Drop

Inspection Requirement

The DSC will be inspected for damage after any transfer cask drop of fifteen inches or greater through air.

Background

Cask/DSC handling and loading activities are controlled under the 10 CFR 50 license until a loaded cask/DSC is placed on the transporter, at which time fuel handling activities are controlled under the 10 CFR 72 license. Although the probability of dropping a loaded cask/DSC while en route from the Fuel Storage Building to the ISFSI is small, the potential exists to drop the cask 15 inches or more.

Safety Analysis

The analysis of bounding drop scenarios shows that the transfer cask will maintain the structural integrity of the DSC pressure containment boundary from an analyzed drop height of 80 inches. The 80-inch drop height envelops the maximum vertical height of the transfer cask when secured to the transport trailer while en route to the ISFSI.

Although analyses performed for cask drop accidents at various orientations indicate much greater resistance to damage, requiring the inspection of the DSC after a drop of 15 inches or greater ensures that:

1. The DSC will continue to provide confinement

2. The transfer cask can continue to perform its design function regarding DSC transfer and shielding.

5.0 ADMINISTRATIVE CONTROLS

5.7 Flammable Fuel Controls

The ISFSI fire analysis postulates fire accidents that take place during DSC transfer to the ISFSI, DSC insertion into an HSM, or DSC storage in an HSM. The analysis postulates a worst case fire where 300 gallons of diesel fuel forms a pool directly beneath a loaded cask/DSC. The analysis uses the fire parameters from 10 CFR 71.73, and assumes the fire engulfs the entire cask/DSC. The results of the analysis show that the DSC maintains its integrity during the postulated fire accident.

SMUD will allow only diesel-fueled vehicles inside the ISFSI. Although there may be several vehicles involved in fuel transfer operations, it is not credible that more than one vehicle would simultaneous leak the entire contents of its diesel fuel. Accordingly, to ensure that the fire analysis bounds ISFSI fuel transfer operations, the amount of diesel fuel allowed in any single vehicle involved in loaded cask/DSC transfer operations will be limited to 200 gallons.

This specification does not exclude electric vehicles from the ISFSI.