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SACRAMENTO MUNICIPAL UTILITY DISTRICT ☐ P. O. Box 15830, Sacramento CA 95852-1830, (916) 452-3211
AN ELECTRIC SYSTEM SERVING THE HEART OF CALIFORNIA

MPC&D 00-038

March 2, 2000

U.S. Nuclear Regulatory Commission
Attn.: Document Control Desk
Washington, DC 20555

Docket No. 72-11
Rancho Seco Independent Spent Fuel Storage Installation
Rancho Seco Independent Spent Fuel Storage Installation Proposed Technical Specifications

Attention: Randy Hall

Attached is the latest version of the proposed Technical Specifications for the Rancho Seco ISFSI. This revision to the Technical Specifications reflects comments received in previous discussions with the NRC.

If you, or members of your staff, have questions requiring additional information or clarification, please contact Bob Jones at (916) 732-4843.

Sincerely,

Steve Redeker
Manager, Plant Closure & Decommissioning

Cc: E.W. Merschoff, NRC, Region IV, Arlington
R. Dudley, NRC, Rockville

NMSS01Public

TECHNICAL SPECIFICATIONS

FOR RANCHO SECO

INDEPENDENT SPENT FUEL STORAGE INSTALLATION

(ISFSI)

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 DSCs 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 MP-187 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 MP-187 CASK is ready for TRANSFER OPERATIONS.
MP-187 CASK	The MP187 CASK can be used for on-site transfer of a loaded DSC and offsite transportation of a loaded DSC under 10 CFR 71.
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 MP-187 CASK loaded with a DSC containing INTACT or DAMAGED SPENT FUEL ASSEMBLIES. TRANSFER OPERATIONS begin when the MP-187 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 INTACT 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 EXAMPLE 1.2-1
(continued)

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 not 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	12 hours
		AND		
		B.2	Perform Action B.2	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 EXAMPLE 1.3-2
(continued)

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 REQUIREMENTS

SURVEILLANCE	FREQUENCY
Verify flow 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.

2.0 FUNCTIONAL AND OPERATING LIMITS

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.

Only intact Rancho Seco spent fuel assemblies may be placed in an FO-DSC or FC-DSC.

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.

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.

2.0 FUNCTIONAL AND OPERATING LIMITS

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
Cooling Time After Discharge	≥7 years
Maximum Decay Heat per DSC[1]	13.5 Kw
Maximum Enrichment	3.43%
Maximum Burnup	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.

3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

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	72 hours
	B.2.1 Determine and complete corrective actions necessary to return the DSC to an analyzed condition. OR	30 days
	B.2.2 Unload the DSC	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 3.1.1.1 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 that the vacuum drying pressure is within limits.	
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 limits.	
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 Rancho Seco Nuclear Generating Station (RSNGS) site in Sacramento County, California. The site is approximately 26 miles north-northeast of Stockton and 25 miles southeast of Sacramento.

4.2 Storage Features

4.2.1 Storage System

The Rancho Seco ISFSI Storage System is comprised of 21 dry shielded canisters (DSCs), 22 concrete horizontal storage modules (HSMs), and one MP-187 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 can be used for on-site transfer of a loaded DSC and offsite transportation of a loaded DSC under 10 CFR 71. The cask provides the biological shielding and structural support necessary to carry a DSC through the various phases of drying, sealing, and transfer to the HSM for storage. 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

[1] The MP-187 Cask is used for onsite transfer and offsite transport of loaded DSCs.

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. The ISFSI storage capacity consists of 18 FC-DSCs, 2 FO-DSCs, and 1 FF-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.

4.0 Design Features

4.3 Codes and Standards

4.3.1 MP-187 Cask

The cask structural components are designed by analysis 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 are conservatively developed to meet the requirements of ANSI N14.6-1993 for critical loads.

4.3.2 DSC

The DSC is designed by analysis to meet the stress intensity allowables of the ASME Boiler and Pressure Vessel Code (1983) Section III, Division I, Subsection 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.

4.3.3 HSM

The reinforced concrete HSM is 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

ISFSI SAR, Appendix A lists the ASME Code exceptions found acceptable by the NRC staff for the MP-187 Cask and the DSCs. Proposed alternatives to the ASME code, including 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, 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, Plant Closure and Decommissioning (MPC&D) is responsible for the overall management of the Rancho Seco ISFSI, and ensuring the safe storage of irradiated core components. The MPC&D will delegate in writing the succession of his responsibilities during his absences.

5.0 ADMINISTRATIVE CONTROLS

5.2 Organization

The Rancho Seco Defueled Safety Analysis Report (DSAR) describes the SMUD corporate organization and its relationship to the Rancho Seco nuclear organization. SMUD will operate the Rancho Seco ISFSI under the same organization responsible for the Rancho Seco Nuclear Generating Station.

The SMUD Board of Directors is the policy-making body that has ultimate responsibility for the Rancho Seco ISFSI license. The General Manager (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 ISFSI Safety Analysis Report 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 senior site manager 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

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

Prior to termination of the 10 CFR 50 license, appropriate 10 CFR 72.48 reviews will be conducted to ensure continued compliance with ISFSI license requirements. This process will result in "stand-alone" ISFSI programs that implement the 10 CFR 72 license. The District will maintain the appropriate administrative and managerial controls at the Rancho Seco ISFSI until the 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 SAR.

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.

d. In accordance with 10 CFR 72.44(d), an annual report will be submitted specifying the quantity of each of the principal radionuclides released to the environment in liquid and gaseous effluents during the previous calendar year of operation.

5.0 ADMINISTRATIVE CONTROLS

5.5 Programs

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 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 a 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.

5.0 ADMINISTRATIVE CONTROLS

5.5 Programs

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 MP-187 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°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.

5.0 ADMINISTRATIVE CONTROLS

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 enroute 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 enroute 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.

TECHNICAL SPECIFICATIONS BASES

FOR THE

RANCHO SECO

INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI)

B 2.1 FUNCTIONAL AND OPERATING LIMITS

B.2.1.1 Fuel Stored at the ISFSI

BASES

BACKGROUND

Because the RSNGS spent fuel pool will be decommissioned as a part of overall plant decommissioning, the Rancho Seco ISFSI is designed to provide interim storage for 100% of RSNGS' spent fuel assemblies and control components. The heat load and radiological sources for all 493 fuel assemblies were quantified prior to ISFSI design and operation.

The Babcock & Wilcox 15X15 PWR fuel will be stored as non-consolidated fuel assemblies both with and without control components. Since this is a 100% fuel storage campaign, provisions are made to store assemblies with cladding degradation in the specifically designated FF-DSC.

DSC loading operations involve placing a DSC inside of the cask, and lowering the cask/DSC into the spent fuel pool. Fuel assemblies will be loaded into the DSC in accordance with the fuel movement schedule. Strict administrative controls and independent verification will ensure that all fuel movements are in verbatim compliance with the fuel movement schedule.

After loading the DSC, the shield plug is placed on the DSC and the cask/DSC is removed from the pool to the wash-down platform. On the wash-down platform the DSC is sealed, drained and dried, and backfilled with helium. The DSC is also surveyed to ensure that any radioactive contamination is within administrative limits

The loaded cask/DSC is then moved from the wash-down platform to the transport trailer where it is transferred to the ISFSI and the DSC is unloaded into the HSM using the hydraulic ram. Radiation surveys are taken to ensure compliance with radioactive contamination and dose rate limits.

APPLICABLE SAFETY ANALYSES

Loading a DSC that could result in exceeding the design basis of the ISFSI is not a credible event. Because Rancho Seco is permanently defueled, the inventory available for loading into the DSCs is limited

to the 493 spent fuel assemblies in the spent fuel pool. The heat load and radiological sources for all 493 fuel assemblies have been quantified prior to ISFSI design and operation.

Fuel assembly qualification is based on the requirements for criticality safety, decay heat removal, radiological protection, and structural integrity. The analyses presented in Chapters 7 and 8 of ISFSI SAR Volumes I, II, and III document the qualification of the complete inventory of spent fuel assemblies and control components for storage in the three DSC designs. The analyses of the ISFSI decay heat removal and radiological protection are valid for DSC loading after June 1996.

To identify fuel assemblies with visible cladding damage, underwater cameras were used to visually inspect the accessible areas of each fuel assembly. The inspections were video taped. Based on the visual inspection of the accessible areas of each spent fuel assembly, 10 fuel assemblies were determined to have some cladding damage, and no assemblies are believed to have cladding damage in more than 15 fuel rods.

Up to 13 assemblies with visible cladding damage in 15 or fewer fuel pins are qualified for storage in the FF DSC. Rancho Seco will develop the fuel loading schedule to ensure that damaged fuel assemblies are not loaded in either the FO or FC DSCs.

The following controls will ensure that each fuel assembly is loaded into a known cell location within a DSC:

A loading schedule will be independently verified and approved.

A fuel movement schedule will be based upon the written loading plan. All fuel movements from any rack location will be performed under controls that will ensure strict, verbatim compliance with the fuel movement schedule.

Prior to placement of the shield plug, all fuel assemblies will be video taped and independently verified, by ID number, to match the fuel movement schedule.

A third independent verification will be performed by a senior manager. This third verification verifies that fuel in the DSCs is placed in accordance with the original cask loading plan.

Based on the qualification of the spent fuel and the administrative

controls used to ensure that each fuel assembly is loaded into the correct location within a DSC, incorrect loading of a DSC is not considered a credible event.

FUNCTIONAL AND OPERATING LIMITS VIOLATIONS	Loading a DSC that could result in exceeding the design limits specified in Table 2-1 is not a credible event. The actions specified in Section 2.2.1 reflect the reporting requirements of 10 CFR 72.75.
REFERENCES	ISFSI SAR, Volume I, Section 3.1. ISFSI SAR, Volume I, Section 5.1. ISFSI SAR, Volume I, Section 10.2.

B 3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

BASES

LCOs

LCO 3.0.1, 3.0.2, 3.0.4, and 3.0.5 establish the general requirements applicable to all Specifications and apply at all times, unless otherwise stated.

LCO 3.0.1

LCO 3.0.1 establishes the Applicability statement within each individual Specification as the requirement for when the LCO is required to be met (i.e., when the facility and its components are in the specified conditions of the Applicability statement of each Specification).

LCO 3.0.2

LCO 3.0.2 establishes that upon discovery of a failure to meet an LCO, the associated ACTIONS shall be met. The Completion Time of each Required Action for an ACTIONS Condition is applicable from the point in time that an ACTIONS Condition is entered. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of an LCO are not met. This Specification establishes that:

a. Completion of the Required Actions within the specified Completion Times constitutes compliance with a Specification; and

b. Completion of the Required Actions is not required when an LCO is met within the specified Completion Time, unless otherwise specified.

There are two basic types of Required Actions. The first type of Required Action specifies a time limit in which the LCO must be met. This time limit is the Completion Time to restore an inoperable system or component to operable status or to restore variables to within specified limits. If this type of Required Action is not completed within the specified Completion Time, a cessation of operations may be required to place the system or component in a condition in which the Specification is not applicable. (Whether stated as a Required Action or not, correction of the entered Condition is an action that may always be considered upon entering ACTIONS.) The second type of Required Action specifies the remedial measures that permit continued operation that is not further restricted by the Completion Time. In this case, compliance with the Required Actions provides an acceptable level of safety for continued operation.

BASES

Completing the Required Actions is not required when an LCO is met or is no longer applicable, unless otherwise stated in the individual Specifications.

The Completion Times of the Required Actions are also applicable when a system or component is removed from service intentionally. The reason for intentionally relying on the ACTIONS include, but are not limited to, performance of Surveillances, preventive maintenance, corrective maintenance, or investigation of operational problems. Entering ACTIONS for these reasons must be done in a manner that does not compromise safety. Intentional entry into ACTIONS should not be made for operational convenience.

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 LCO 3.0.4 establishes limitations on changes in specified conditions in the Applicability when an LCO is not met. It precludes placing the DSC or transfer cask in a specified condition stated in that Applicability (e.g., Applicability desired to be entered) when the following exist:

a. Facility conditions are such that the requirements of the LCO would not be met in the Applicability desired to be entered; and

b. Continued noncompliance with the LCO requirements, if the Applicability were entered, would result in a required action to exit the Applicability desired to be entered to comply with the Required Actions.

Compliance with the Required Actions that permit continued operation of the facility for an unlimited period of time in a specified condition provides an acceptable level of safety for continued operation. This is without regard to the status of the facility. Therefore, in such cases, entry into a specified condition in the Applicability may be made in accordance with the provisions of the Required Actions. The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components before entering an associated specified condition in the Applicability.

BASES

The provisions of LCO 3.0.4 shall not prevent changes in specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of LCO 3.0.4 shall not prevent changes in specified conditions in the Applicability that are related to establishing and maintaining the spent fuel in an inert atmosphere.

Exceptions to LCO 3.0.4 are stated in the individual Specifications. These exceptions allow entry into specified conditions in the Applicability when the associated ACTIONS to be entered do not provide for continued operation for an unlimited period of time. Exceptions may apply to all the ACTIONS or to a specific Required Action of a Specification.

LCO 3.0.5 LCO 3.0.5 establishes the allowance for restoring equipment to service under administrative controls when it has been removed from service or determined to not meet the LCO to comply with ACTIONS. The sole purpose of this Specification is to provide an exception to LCO 3.0.2 (e.g., to not comply with the applicable Required Action(s)) to allow the performance of SRs to demonstrate:

a. The equipment being returned to service meets the LCO: or

b. Other equipment meets the applicable LCOs.

The administrative controls ensure the time the equipment is returned to service in conflict with the requirements of the ACTIONS is limited to the time absolutely necessary to perform the allowed surveillance. This Specification does not provide time to perform any other preventive or corrective maintenance.

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.

BASES

SRs

SR 3.0.1 through SR 3.0.4 establish the general requirements applicable to all Specifications and apply at all times, unless otherwise stated.

SR 3.0.1

SR 3.0.1 establishes the requirement that SRs must be met during the specified conditions in the Applicability for which the requirements of the LCO apply, unless otherwise specified in the individual SRs. This Specification is to ensure that Surveillances are performed to verify systems, components, and variables are within specified limits. Failure to meet a SR within the specified Frequency, in accordance with SR 3.0.2, constitutes a failure to meet an LCO.

Systems and components are assumed to meet the LCO when the associated SRs have been met. Nothing in this Specification, however, is to be construed as implying that systems or components meet the associated LCO when:

a. The systems or components are known to not meet the LCO, although still meeting the SRs; or

b. The requirements of the Surveillance(s) are known not to be met between required Surveillance performances.

Surveillances do not have to be performed when the facility is in a specified condition for which the requirements of the associated LCO are not applicable, unless otherwise specified.

Unplanned events may satisfy the requirements (including applicable acceptance criteria) for a given SR. In this case, the unplanned event may be credited as fulfilling the performance of the SR. This allowance includes those SRs whose performance is normally precluded in a specified condition.

Surveillances, including Surveillances invoked by Required Actions, do not have to be performed on equipment that has been determined to not meet the LCO because the ACTIONS define the remedial measures that apply. Surveillances have to be met and performed in accordance with SR 3.0.2, prior to returning equipment to service.

Upon completion of maintenance, appropriate post maintenance testing is required. This includes ensuring applicable Surveillances are not failed and their most recent performance is in accordance with SR 3.0.2. Post maintenance testing may not be possible in the current specified conditions in the Applicability due to the necessary facility parameters not having been established. In these situations, the equipment may be considered to meet the LCO provided testing has been satisfactorily completed to the extent possible and the equipment is not otherwise believed to be incapable of performing its function. This will allow operation to proceed to a specified condition where other necessary post maintenance tests can be completed.

SR 3.0.2

SR 3.0.2 establishes the requirements for meeting the specified Frequency for Surveillances and any Required Action with a Completion Time that requires the periodic performance of the Required Action on a "once per." interval.

SR 3.0.2 permits a 25% extension of the interval specified in the Frequency. This extension facilitates Surveillance scheduling and considers facility conditions that may not be suitable for conducting the Surveillance (e.g., transient conditions or other ongoing Surveillance or maintenance activities).

The 25% extension does not significantly degrade the reliability that results from performing the Surveillance at its specified Frequency. This is based on the recognition that the most probable result of any particular Surveillance being performed is the verification of conformance with the SRs. The exceptions to SR 3.0.2 are those Surveillances for which the 25% extension of the interval specified in the Frequency does not apply. These exceptions are stated in the individual Specifications as a Note in the Frequency stating, "SR 3.0.2 is not applicable."

As stated in SR 3.0.2, the 25% extension also does not apply to the initial portion of a periodic Completion Time that requires performance on a "once per." basis. The 25% extension applies to each performance after the initial performance. The initial performance of the Required Action, whether it is a particular Surveillance, or some other remedial action is considered a single action with a single Completion Time. One reason for not allowing the 25% extension to this Completion Time is that such an action usually verifies that no loss of function has occurred by checking the status of redundant or diverse components or accomplishes the function of the inoperable equipment in an alternative manner.

The provisions of SR 3.0.2 are not intended to be used repeatedly merely as a convenience to extend Surveillance intervals or periodic Completion Time intervals beyond those specified.

SR 3.0.3

SR 3.0.3 establishes the flexibility to defer declaring affected equipment as not meeting the LCO or an affected variable outside the specified limits when a Surveillance has not been completed within the specified Frequency. A delay period of up to 24 hours or up to the limit of the specified Frequency, whichever is less, applies from the point in time that it is discovered that the Surveillance has not been performed in accordance with SR 3.0.2, and not at the time that the specified Frequency was not met.

This delay period provides adequate time to complete Surveillances that have been missed. This delay period permits the completion of a Surveillance before complying with Required Actions or other remedial measures that might preclude completion of the Surveillance.

The basis for this delay period includes consideration of facility conditions, adequate planning, availability of personnel, the time required to perform the Surveillance, the safety significance of the delay in completing the required Surveillance, and the recognition that the most probable result of any particular Surveillance being performed is the verification of conformance with the requirements. When a Surveillance with a Frequency based not on time intervals, but upon specified facility conditions or operational situations, is discovered not to have been performed when specified, SR 3.0.3 allows the full delay period of 24 hours to perform the Surveillance.

SR 3.0.3 also provides a time limit for completion of Surveillances that become applicable as a consequence of changes in the specified conditions in the Applicability imposed by Required Actions.

Failure to comply with specified Frequencies for SRs is expected to be an infrequent occurrence. Use of the delay period established by SR 3.0.3 is a flexibility which is not intended to be used as a convenience to extend Surveillance intervals.

If a Surveillance is not completed within the allowed delay period, then the equipment is considered to not meet the LCO or the variable is considered outside the specified limits and the Completion Time of the Required Actions for the applicable LCO Conditions begin immediately upon expiration of the delay period. If a Surveillance is failed within the delay period, then the equipment does not meet the LCO, or the variable is outside the specified limits and the Completion Time of the Required Actions for the applicable LCO Conditions begin immediately upon the failure of the Surveillance.

Completion of the Surveillance within the delay period allowed by this Specification, or within the Completion Time of the ACTIONS, restores compliance with SR 3.0.1.

SR 3.0.4 SR 3.0.4 establishes the requirement that all applicable SRs must be met before entry into a specified condition in the Applicability.

This Specification ensures that system and component requirements and variable limits are met before entry into specified conditions in the Applicability for which these systems and components ensure safe operation of the facility.

The provisions of this Specification should not be interpreted as endorsing the failure to exercise the good practice of restoring systems or components before entering an associated specified condition in the Applicability.

However, in certain circumstances, failing to meet an SR will not result in SR 3.0.4 restricting a change in specified condition. When a system, subsystem, component, device, or variable is outside its specified limits, the associated SR(s) are not required to be performed, per SR 3.0.1, which states that surveillances do not have to be performed on such equipment. When equipment does not meet the LCO, SR 3.0.4 does not apply to the associated SR(s) since the requirement for the SR(s) to be performed is removed. Therefore, failing to perform the Surveillances(s) within the specified Frequency does not result in an SR 3.0.4 restriction to changing specified conditions of the Applicability. However, since the LCO is not met in this instance, LCO 3.0.4 will govern any restrictions that may (or may not) apply to specified condition changes.

The provisions of SR 3.0.4 shall not prevent changes in specified conditions in the Applicability that are required to comply with ACTIONS. In addition, the provisions of LCO 3.0.4 shall not prevent changes in specified conditions in the Applicability that are related to the establishment and maintenance of an inert atmosphere in the DSC.

The precise requirements for performance of SRs are specified such that exceptions to SR 3.0.4 are not necessary. The specific time frames and conditions necessary for meeting the SRs are specified in the Frequency, in the Surveillance, or both. This allows performance of Surveillances when the prerequisite condition(s) specified in a Surveillance procedure require entry into the specified condition in the Applicability of the associated LCO prior to the performance or completion of a Surveillance. A Surveillance that could not be performed until after entering the LCO Applicability, would have its Frequency specified such that it is not "due" until the specific conditions needed are met. Alternately, the Surveillance may be stated in the form of a Note as not required (to be met or performed) until a particular event, condition, or time has been reached. Further discussion of the specific formats of SRs annotation is found in Section 1.4, Frequency.

B 3.1 DSC Integrity

B 3.1.1 DSC Vacuum Pressure During Drying

BASES

BACKGROUND

DSC loading operations involve placing a DSC inside of the cask, and lowering the cask/DSC into the spent fuel pool. After loading the DSC, the shield plug is placed on the DSC and the cask/DSC is removed from the pool and placed on the wash-down platform. On the wash-down platform the DSC is sealed, drained and dried, and backfilled with helium.

After the initial blow-down of the DSC, the DSC is evacuated using the vacuum drying system to remove residual water and water vapor in the DSC cavity. The evacuation ensures that the reactive gases remaining are less than 0.25% by volume.

When the system pressure has stabilized, the DSC is backfilled with helium and a helium leak test of the inner seal weld is performed to ensure compliance with Technical Specifications limits.

The DSC is also surveyed to ensure that any radioactive contamination is within Technical Specification limits.

APPLICABLE SAFETY ANALYSES

Vacuum drying operations will result in a significant loss of heat transfer to non-fuel system components because heat conduction in the DSC cavity is reduced due to the lack of helium in the cavity.

An analysis of the FO-DSC and FC-DSC in the cask during the draining and drying operations on the wash-down platform was performed to determine the temperature distribution and the maximum fuel cladding temperatures. The wash-down platform area temperature is assumed to be 100^0 F. No solar heat load is incident on the cask and the radiation from the cask outside surface is to a concrete wall instead of ambient air. The analysis assumes air in the annulus between the DSC outer shell and cask inner shell.

Analysis results show that the maximum fuel cladding temperature calculated during draining and drying operations is 998^0 F (537^0 C) which is well below the 1058^0 F (570^0 C) short term temperature

	limit. The temperature distribution in the DSC shell and the cask calculated with the FO-DSC, or FC-DSC containing 24 intact fuel assemblies can be conservatively assumed to be applicable to the FF-DSC also.
LCO	A stable vacuum pressure of ≤3 Torr ensures that all liquid water has evaporated in the DSC cavity, and that the resulting inventory of oxidizing gasses in the DSC is less than 0.25 volume percent.
APPLICABILITY	This specification is applicable to all DSCs during LOADING OPERATIONS after an acceptable NDE on the weld of the inner top cover plate.
ACTIONS	If the required vacuum pressure can not be obtained, actions will be taken to obtain the required pressure as soon as practicable. Since the vacuum drying process is initiated after the closure weld NDE, there is a high level of assurance that the confinement boundary is intact and properly sealed. The most likely reason for not meeting the LCO would be failure of the vacuum drying system or its associated hardware. Typical actions to obtain the required pressure would include: a. Confirm that the vacuum drying system is configured properly. b. Check and repair the system for leaks. c. Check and repair or replacing the vacuum pump d. Check and repair the seal weld between the inner top cover plate and the DSC shell. Since the maximum steady-state temperature that the fuel would experience during vacuum drying (998^0 F) is below the short term cladding temperature limit of 1058^0 F, no degradation of the fuel is anticipated due to delays in obtaining the required vacuum drying pressure. The 7 day Completion Time for Required Action A.1 is reasonable to meet the vacuum drying specification. The most likely reason for not meeting the vacuum drying specification would be problems associated with the Vacuum Drying System or DSC

	closure welds. Operations will initiate the 7-day COMPLETION TIME clock when Quality Control determines that the QC hold point for meeting the vacuum drying pressure specification can not be met within 96 hours after removing the loaded DSC from the spent fuel pool. Establishing a helium atmosphere within 72 hours in the DSC ensures adequate heat transfer while appropriate corrective actions are being taken. The 30-day Completion Time for Required Actions B.2.1 OR B.2.2 is reasonable to make weld repairs, repair the Vacuum Drying System, or return the DSC to an analyzed condition, or unload the DSC.
SURVEILLANCE REQUIREMENTS	SR 3.1.1.1 Verifying a stable vacuum pressure of ≤3 Torr ensures that all liquid water has evaporated in the DSC cavity, and that the resulting inventory of oxidizing gasses in the DSC is less than 0.25 volume percent.
REFERENCES	SAR, Volume I, Section 5.1 SAR, Volume III, Section 8.1

B 3.1 DSC Integrity

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

BASES

BACKGROUND	After the initial blow-down of the DSC, the DSC is evacuated using the vacuum drying system to remove residual water and water vapor in the DSC cavity. When the system pressure has stabilized, the DSC is backfilled with helium and a helium leak test of the inner seal weld is performed to ensure compliance with Technical Specifications limits.
APPLICABLE SAFETY ANALYSES	The Technical Specification leak rate is the lowest rate measurable for use with portable helium leak detectors. If a pressure of 1.5 atm developed within the DSC cavity for a period of 10 years, a leak rate of 10^{-5} std-cc/sec. would allow 4.7×10^{3} cm^3 of helium to escape. This would be insignificant compared to the more than 6.3×10^{6} cm^3 of helium initially in the DSC.
LCO	The spent fuel is stored in an inert (i.e., helium) atmosphere to prevent fuel degradation due to oxidation and protect fuel cladding integrity. This specification ensures that the DSC is leak tight so that the atmosphere surrounding the fuel assemblies remains an inert gas.
APPLICABILITY	This specification is applicable during LOADING OPERATIONS for leak testing the inner top cover plate seal weld of loaded DSCs.
ACTIONS	If the leakage rate of the inner seal weld exceeds the Technical Specification limit, perform the actions necessary to obtain the required leakage rate. Typical actions include: a. Check and repair the DSC vent and siphon port fittings for leaks. b. Check and repair the inner seal weld. c. Check inner top cover plate for any surface indications

resulting in leakage.

The 7-day Completion Time for Required Action A.1 is reasonable to meet the helium leak rate specification. Operations will initiate the 7-day COMPLETION TIME clock when Quality Control determines that the QC hold point for meeting the helium leakage rate specification can not be met within 72 hours after verifying that the vacuum drying pressure is within limits.

No degradation of the fuel is anticipated as a result of delays in obtaining the required helium leak rate. Accordingly, the 30 day Completion Time for Required Action B.1 OR B.2 is reasonable to make welding repairs, correct problems with the helium leak rate detector, or return the DSC to an analyzed condition, or unload the DSC.

SURVEILLANCE REQUIREMENTS	SR 3.1.2 The DSC is designed to maintain the spent fuel in an inert environment. Verifying that the DSC helium leakage rate of primary Inner Seal Weld is $\leq 10^{-5}$ std-cc/sec ensures that the atmosphere surrounding the fuel assemblies remains an inert gas.
REFERENCES	SAR Volume I, Section 3.3.2.1 SAR Volume I, Section 10.3.4

B 3.1 DSC Integrity

B 3.1.3 DSC helium backfill pressure shall be 0 to 2.5 psig.

BASES

BACKGROUND	After using the vacuum drying system to remove residual water and water vapor from the DSC cavity, the DSC is backfilled with helium and a helium leak test of the inner seal weld is performed to ensure compliance with Technical Specification limits. If the helium leak rate test meets the Technical Specification limits, the helium backfill pressure is adjusted so that it is within the Technical Specification limits.
APPLICABLE SAFETY ANALYSES	A bounding internal pressure of 10 psig is conservatively applied for the design basis internal pressure stress calculations for normal and off-normal operating conditions. The range of 0 to 2.5 psig helium backfill pressure ensures that the DSC internal pressure is maintained at less than 10 psig during normal and off-normal thermal gradients.
LCO	This specification ensures that the atmosphere surrounding the spent fuel is a non-oxidizing inert gas and the atmosphere is favorable for the dissipation of decay heat. The range of 0 to 2.5 psig is selected to assure that the DSC internal pressure remains within expected limits during normal storage conditions.
APPLICABILITY	This specification is applicable during LOADING OPERATIONS.
ACTIONS	If the required pressure can not be obtained, perform the actions necessary to obtain the required pressure. Typical actions include: a. Confirm that the vacuum drying system and helium source are properly configured. b. Check and repair or replace the pressure gauge. c. Check and repair or replace the vacuum drying system for leaks. d. Check and repair or replace the helium source.

e. Check and repair the seal weld on inner cover plate.

The 72-hour Completion Time for Required Action A.1 is reasonable to meet the helium backfill pressure specification. Operations will initiate the 72 hour COMPLETION TIME clock when Quality Control determines that the QC hold point for meeting the helium backfill pressure specification can not be met within 72 hours after verifying that the helium leak rate is within limits.

The 30-day Completion Time for Required Action B.1 OR B.2 is considered reasonable to correct problems associated with not meeting the specification, return the DSC to an analyzed condition, or unload the DSC.

SURVEILLANCE REQUIREMENTS	SR 3.1.3 Verifying that the helium backfill pressure is 0 to 2.5 psig ensures that the atmosphere surrounding the spent fuel is conducive to long term dry storage and that the DSC internal pressure remains within expected limits during normal storage conditions.
REFERENCES	SAR Volume III, Section 8.1.1.2 SAR Volume I, Section 10.3.3