APPENDIX

TECHNICAL SPECIFICATIONS
FOR THE
HUMBOLDT BAY
INDEPENDENT SPENT FUEL STORAGE INSTALLATION

Docket No. 72-27

Materials License No. SNM-2513

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1.0 USE AND APPLICATION

1.1 Definitions

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

Term	Definition
ACTIONS	ACTIONS shall be that part of a Specification that prescribes Required Actions to be taken under designated Conditions within specified Completion Times.
DAMAGED FUEL ASSEMBLY	DAMAGED FUEL ASSEMBLIES are fuel assemblies with known or suspected cladding defects, as determined by a review of records, greater than pinhole leaks or hairline cracks; empty fuel rod locations that are not filled with solid Zircaloy or stainless steel rods; no longer in the form of an intact fuel assembly and consist of, or contain, debris such as loose fuel pellets, rod segments, etc.; or those that cannot be handled by normal means. This also includes fuel assemblies that are damaged in such a manner as to impair their structural integrity, or have missing or displaced structural components such as grid spacers. DAMAGED FUEL ASSEMBLIES must be stored in a DAMAGED FUEL CONTAINER.
DAMAGED FUEL CONTAINER (DFC)	DFCs are specially designed enclosures for DAMAGED FUEL ASSEMBLIES that permit gaseous and liquid media to escape to the atmosphere in the MPC-HB, while minimizing dispersal of gross particulates within the MPC-HB. A DFC can hold one DAMAGED FUEL ASSEMBLY comprised of material up to the equivalent of an INTACT FUEL ASSEMBLY.

(continued)

1.1 Definitions (continued)

INTACT FUEL ASSEMBLY	INTACT FUEL ASSEMBLY is a fuel assembly without known or suspected cladding defects greater than pinhole leaks or hairline cracks and which can be handled by normal means. A fuel assembly shall not be classified as INTACT FUEL ASSEMBLY unless solid Zircaloy or stainless steel rods are used to replace missing fuel rods and which displace an amount of water equal to that displaced by the original fuel rod(s).
LOADING OPERATIONS	LOADING OPERATIONS include all licensed activities on an SFSC while it is being loaded with its approved contents. LOADING OPERATIONS begin when the first fuel assembly is placed in the MPC and end when the SFSC is suspended from or secured on the transporter.
MULTI-PURPOSE CANISTER (MPC-HB)	MPC-HB is a sealed SPENT NUCLEAR FUEL container that consists of a honeycombed fuel basket contained in a cylindrical canister shell that is welded to a baseplate, lid with welded port cover plates, and closure ring. The MPC-HB provides the confinement boundary for the contained radioactive materials.
OPERABLE/OPERABILITY	A system, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety function(s) and when all necessary attendant instruments, controls, normal or emergency electrical power, and other auxiliary equipment that are required for the system, component, or device to perform its specific safety function(s) are also capable of performing their related support function(s).
OVERPACK	OVERPACK is a cask that receives and contains a sealed MPC-HB for transportation to and interim storage in the independent spent fuel storage installation (ISFSI). It provides the helium retention boundary, gamma and neutron shielding, protection against environmental phenomena, and a set of lifting trunnions for handling.

(continued)

1.1 Definitions (continued)

SPENT FUEL STORAGE CASKS (SFSCs)	SFSCs are containers approved for the storage of spent fuel assemblies at the ISFSI. The HI-STAR HB SFSC System consists of the OVERPACK and its integral MPC-HB.
SPENT NUCLEAR FUEL	SPENT NUCLEAR FUEL means fuel that has been withdrawn from a nuclear reactor following irradiation, has undergone at least one year's decay since being used as a source of energy in a power reactor and has not been chemically separated into its constituent elements by reprocessing. SPENT NUCLEAR FUEL includes the special nuclear material, byproduct material, source material, and other radioactive materials associated with fuel assemblies, including fuel channels.
STORAGE OPERATIONS	STORAGE OPERATIONS include all licensed activities that are performed at the ISFSI while at least one loaded SFSC is in place in the storage vault with the vault lid and all its lid bolts installed.
TRANSPORT OPERATIONS	TRANSPORT OPERATIONS include all licensed activities performed on an SFSC loaded with its approved contents when it is being moved to or from the ISFSI. TRANSPORT OPERATIONS begin when the loaded SFSC is first suspended from or secured to the transporter and end when the SFSC is at its destination and no longer secured on or suspended from the transporter.
UNLOADING OPERATIONS	UNLOADING OPERATIONS include all licensed activities on an SFSC while its contained MPC-HB is being unloaded of its approved contents. UNLOADING OPERATIONS begin when the SFSC is no longer suspended from the transporter and end when the last of its approved contents is removed from the MPC-HB.

1.0 USE AND APPLICATION

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 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 indentions 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 Condition, Completion Time, Surveillance, or Frequency.

EXAMPLES

The following examples illustrate the use of logical connectors.

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.

(continued)

1.2 Logical Connectors

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.

1.0 USE AND APPLICATION

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 Operation (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 cask system 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 cask system 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.

(continued)

1.3 Completion Times (continued)

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 Time 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 completion 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.

(continued)

1.3 Completion Times

EXAMPLES
(continued)

EXAMPLE 1.3-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One system not within limit.	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 not to 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.

(continued)

1.3 Completion Times

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.

1.0 USE AND APPLICATION

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. 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 an SR satisfied, SR 3.0.4 imposes no restriction.

(continued)

1.4 Frequency (continued)

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 interval specified in the 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 the equipment or variables are 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.

(continued)

1.4 Frequency

EXAMPLES
(continued)

EXAMPLE 1.4-2

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" indicated 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 percent extension allowed by SR 3.0.2.

"Thereafter" indicated 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 cancelled or not performed, the measurement of both intervals stops. New intervals start upon preparing to restart the specified activity.

2.0 APPROVED CONTENTS

2.1 Functional and Operating Limits

2.1.1 Spent Fuel To Be Stored

INTACT FUEL ASSEMBLIES and DAMAGED FUEL ASSEMBLIES meeting the limits specified in Tables 2.1-1 and 2.1-2 may be stored in the SFSC System.

2.1.2 GTCC Waste To Be Stored

Greater-than-Class-C (GTCC) waste meeting the description in Section 3.1 of the Humboldt Bay ISFSI SAR may be stored in one cask at the ISFSI.

2.2 Functional and Operating Limits Violations

If any Fuel Specifications or Loading Conditions of 2.1 are violated, the following ACTIONS shall be completed:

1. The affected fuel assemblies shall be placed in a safe condition.
2. Within 24 hours, notify the NRC Operations Center.
3. Within 30 days, submit a special report which describes the cause of the violation, and ACTIONS taken to restore compliance and prevent recurrence.

TABLE 2.1-1

MPC-HB-HB FUEL ASSEMBLY LIMITS

A. Allowable Contents (Notes 1 and 2)

1. Uranium oxide, INTACT FUEL ASSEMBLIES and DAMAGED FUEL ASSEMBLIES, with or without channels, meeting the criteria specified in Table 2.1-2 and the following specifications.

Cladding type	ZR (Note 3)
Planar-Average Initial enrichment	≤ 2.60 and ≥ 2.09 wt% ^{235}U.
Post-irradiation cooling time per assembly	≥ 29 years
Average burnup per assembly	≤ 23,000 MWD/MTU
Decay heat per assembly	≤ 50 Watts
Decay heat per SFSC	≤ 2000 Watts
Fuel assembly length	≤ 96.91 inches (nominal design)
Fuel assembly width	≤ 4.70 inches (nominal design)
Fuel assembly weight	≤ 400 lb (including channel and DFC)

B. Quantity per MPC-HB: Up to 80 fuel assemblies.

C. DAMAGED FUEL ASSEMBLIES must be stored in a DAMAGED FUEL CONTAINER. Allowable Loading Configurations: Up to 28 DAMAGED FUEL ASSEMBLIES in DAMAGED FUEL CONTAINERS, can be stored in the peripheral fuel storage locations as shown in Figure 2.1-1, or up to 40 DAMAGED FUEL ASSEMBLIES in DAMAGED FUEL CONTAINERS, can be stored in a checkerboard pattern as shown in Figure 2.1-2. The remaining fuel storage locations may be filled with INTACT FUEL assemblies meeting the above applicable specifications, or with INTACT FUEL assemblies optionally stored in DFCs.

NOTE 1: Fuel assemblies with channels may be stored in any fuel cell location.

NOTE 2: The total quantity of damaged fuel permitted in a single DAMAGED FUEL CONTAINER is limited to the equivalent weight and special nuclear material quantity of one intact fuel assembly.

NOTE 3: ZR means any-zirconium-based fuel cladding material authorized for use in a commercial nuclear power plant reactor.

TABLE 2.1-2

FUEL ASSEMBLY CHARACTERISTICS (Note 1)

Fuel Assembly Type	GE Type II	GE Type III, Exxon Type III & IV
Design Initial U (kg/assy.)	≤ 78	≤ 78
No. of Fuel Rods	49	36
Fuel Rod Cladding O.D. (in.)	≥ 0.486	≥ 0.5585
Fuel Rod Cladding I.D. (in.)	≤ 0.426	≤ 0.505
Fuel Pellet Dia. (in.)	≤ 0.411	≤ 0.488
Fuel Rod Pitch (in.)	≤ 0.631	≤ 0.740
Active Fuel Length (in.)	≤ 80	≤ 80
No. of water rods	0	0
Channel Thickness (in)	0.060	0.060

NOTE 1: All dimensions are design nominal values. Maximum and minimum dimensions are specified to bound variations in design nominal values among fuel assemblies.

FIGURE 2.1-1

CONFIGURATION 1: DAMAGED FUEL IN
PERIPHERAL CELLS OF BASKET ONLY

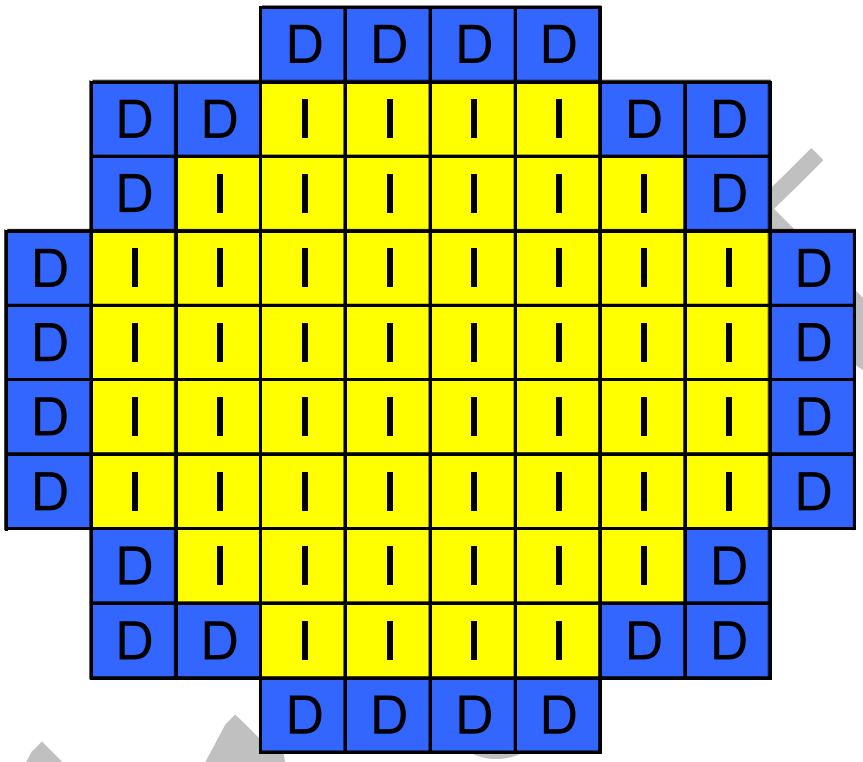
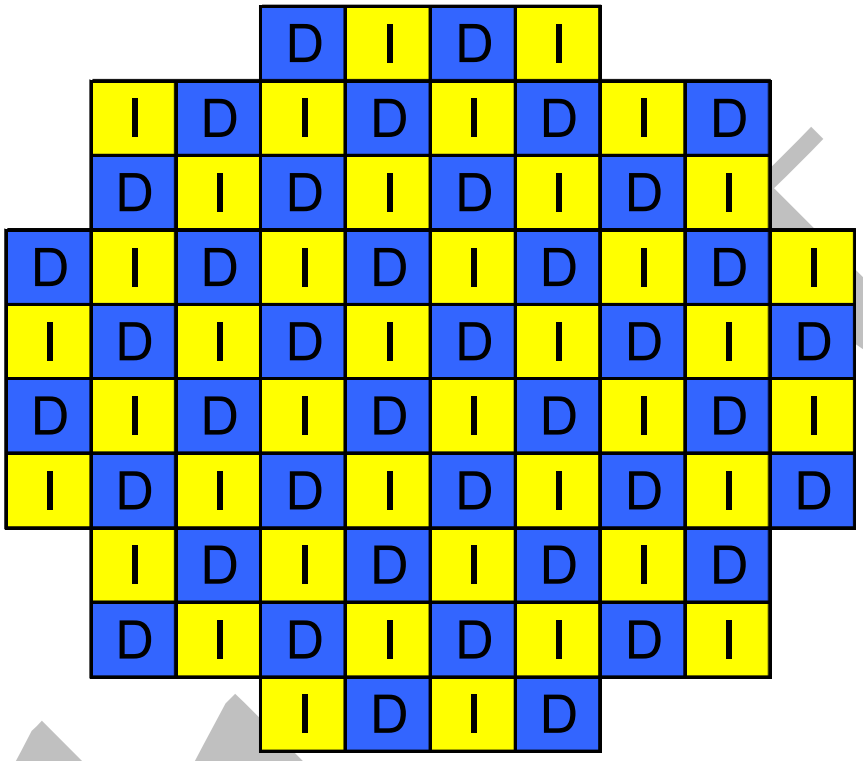


FIGURE 2.1-2

CONFIGURATION 2: CHECKERBOARD OF
DAMAGED FUEL AND INTACT FUEL



I Intact Assembly (with or w/o DFC)

D Damaged Fuel in DFC

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. If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required, unless otherwise stated.
LCO 3.0.3	Not applicable.
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 or that are related to the unloading of an SFSC.
LCO 3.0.5	Not applicable.

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 Surveillance, 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 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 previous performance or 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 Surveillance 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 LCOs Surveillances 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 the unloading of an SFSC.

3.1 SFSC INTEGRITY

3.1.1 MULTI-PURPOSE CANISTER (MPC-HB)

LCO 3.1.1 The MPC-HB shall be dry and helium filled.

APPLICABILITY: During TRANSPORT OPERATIONS and STORAGE OPERATIONS

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each MPC-HB

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. MPC-HB cavity drying acceptance criterion not met.	A.1. Perform an engineering evaluation to determine the quantity of moisture left in the MPC-HB. AND A.2 Develop and initiate corrective actions necessary to return the MPC-HB to an analyzed condition.	7 days 30 days
B. MPC-HB helium backfill pressure limit not met.	B.1 Perform an engineering evaluation to determine the impact of helium pressure differential. AND B.2 Develop and initiate corrective actions necessary to return the MPC-HB to an analyzed condition.	72 hours 14 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. MPC-HB helium leak rate limit for vent and drain port cover plate welds not met.	C.1 Perform an engineering evaluation to determine the impact of increased helium leak rate on heat removal capacity. AND C.2 Develop and initiate corrective actions necessary to return the MPC-HB to an analyzed condition.	24 hours 7 days
D. Required Actions and associated Completion Times not met.	D.1 Remove all fuel assemblies from the MPC-HB.	30 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.1.1 Verify MPC-HB cavity vacuum drying pressure is ≤ 3 torr for ≥ 30 min. OR While recirculating helium through the MPC-HB cavity, verify that the gas temperature exiting the demoisturizer is ≤ 21°F for ≥ 30 min or the dew point of the gas exiting the MPC is ≤ 22.9°F for ≥ 30 min.	Once, prior to TRANSPORT OPERATIONS.
SR 3.1.1.2 Verify MPC-HB helium backfill pressure is ≥ 45.2 psig and ≤ 48.8 psig at a reference temperature of 70°F.	Once, prior to TRANSPORT OPERATIONS.
SR 3.1.1.3 Verify that the total helium leak rate through the MPC-HB vent and drain port cover plate welds is ≤ 5.0E-6 atm-cc/sec (He).	Once, prior to TRANSPORT OPERATIONS.

3.1 SFSC INTEGRITY

3.1.2 OVERPACK Heat Removal System

LCO 3.1.2 The OVERPACK shall be dry and helium filled.

APPLICABILITY: During TRANSPORT OPERATIONS and STORAGE OPERATIONS

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each OVERPACK

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. OVERPACK annulus drying acceptance criterion not met.	A.1. Perform an engineering evaluation to determine the quantity of moisture left in the OVERPACK. AND A.2 Develop and initiate corrective actions necessary to return the OVERPACK to an analyzed condition.	7 days 30 days
B. OVERPACK annulus helium backfill pressure limit not met.	B.1 Perform an engineering evaluation to determine the impact of helium pressure differential. AND B.2 Develop and initiate corrective actions necessary to return the OVERPACK to an analyzed condition.	72 hours 30 days
C. OVERPACK helium leak rate limit not met	C.1 Perform an engineering evaluation to determine impact of increased helium leak rate on heat removal capability and off-site dose release effects. AND C.2 Develop and initiate corrective actions necessary to return the OVERPACK to analyzed condition.	7 days 30 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.2.1 Verify OVERPACK annulus vacuum drying pressure is ≤ 3 torr for ≥ 30 min.	Once, prior to TRANSPORT OPERATIONS
SR 3.1.2.2 Verify OVERPACK annulus helium backfill pressure is ≥ 10 psig and ≤ 14 psig	Once, prior to TRANSPORT OPERATIONS
SR 3.1.2.3 Verify that the total helium leak rate through the OVERPACK closure plate inner mechanical seal, the OVERPACK vent port plug seal and the OVERPACK drain port plug seal is ≤ 4.3E-6 atm-cc/sec (He).	Once, prior to TRANSPORT OPERATIONS

3.1 SFSC INTEGRITY

3.1.3 Fuel Cool-Down

LCO 3.1.3 The MPC-HB cavity bulk helium temperature shall be ≤ 200°F.

----------NOTE----------
The LCO is only applicable to wet UNLOADING OPERATIONS.

APPLICABILITY: During UNLOADING OPERATIONS prior to re-flooding.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each MPC-HB

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. MPC-HB cavity bulk Helium temperature not within limit.	A.1 Establish MPC-HB cavity bulk Helium temperature within limit. AND A.2 Ensure adequate heat transfer from the MPC-HB to the environment	Prior to initiating MPC-HB re-flooding operations. 24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.3.1 Ensure via analysis or direct measurement that the MPC-HB cavity bulk helium temperature is ≤ 200°F.	Prior to MPC-HB re-flooding operations.

4.0 DESIGN FEATURES

4.1 Design Features Significant to Safety

4.1.1 Criticality Control

a. MULTI-PURPOSE CANISTER (MPC-HB) MPC-HB

1. Fuel cell pitch: $\geq$ 5.83 in.

2. ^{10}B loading in the neutron absorbers: $\geq$ 0.01 g/cm^2

4.2 Codes and Standards

The American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), 1995 Edition with Addenda through 1997, is the governing Code for the HI-STAR HB System, except for Sections V and IX. For activities governed by Section V and IX, the latest effective Code Edition is applicable.

Any specific alternatives to these codes and standards, and the codes and standards for other components followed for the Humboldt Bay ISFSI storage system, are provided in the Humboldt Bay ISFSI Safety Analysis Report (SAR).

4.2.1 Alternatives to Design Codes, Standards, and Criteria

Approved alternatives to the ASME Code are listed in SAR Table 3.4-5. Changes to these alternatives or new alternatives may be used when authorized by the Director of the Office of Nuclear Material Safety and Safeguards or designee. The licensee should demonstrate that:

a. The proposed alternative would provide an acceptable level of quality and safety, or

b. Compliance with the specified requirements of the ASME Code would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Requests for alternatives as described in this section shall be submitted in accordance with 10 CFR 72.4.

(continued)

4.0 DESIGN FEATURES (continued)

4.3 Cask Handling

4.3.1 Cask Transporter

A cask transporter is used to transport the SFSC between the power plant and the ISFSI. The requirements for the cask transporter are as follows:

a. Except for the period of time in which the loaded SFSC is being moved on the rail dolly, TRANSPORT OPERATIONS shall be conducted using the cask transporter.

b. The cask transporter fuel tank shall not contain > 50 gallons of diesel fuel at any time.

c. The cask transporter shall be designed, fabricated, inspected, maintained, operated, and tested in accordance with the applicable guidelines of NUREG-0612.

d. The cask transporter lifting towers shall have redundant drop protection features.

4.3.2 Storage Capacity

The Humboldt Bay ISFSI can accommodate up to 400 spent fuel assemblies. The ISFSI storage capacity can accommodate up to six SFSCs.

4.3.3 SFSC Load Handling Equipment

Lifting of a SFSC outside of structures governed by 10 CFR 50 shall be performed with load handling equipment that is designed, fabricated, inspected, maintained, operated and tested in accordance with the applicable guidelines of NUREG-0612, "Control of Heavy Loads at Nuclear Power Plants".

5.0 ADMINISTRATIVE CONTROLS

5.1 Administrative Programs

The following programs shall be established, implemented, and maintained:

5.1.1 Technical Specifications (TS) Bases Control Program

This program provides a means for processing changes to the Bases of these TS.

a. Changes to the TS Bases shall be made under appropriate administrative controls and reviews.

b. Changes to the TS Bases may be made without prior NRC approval in accordance with the criteria in 10 CFR 72.48.

c. The TS Bases Control Program shall contain provisions to ensure that the TS Bases are maintained consistent with the Humboldt Bay ISFSI SAR.

d. Proposed changes that do not meet the criteria of 5.5.1.b above shall be reviewed and approved by the NRC prior to implementation. Changes to the TS Bases implemented without prior NRC approval shall be provided to the NRC on a frequency consistent with 10 CFR 72.48 (d) (2).

5.1.2 Radioactive Effluent Control Program

a. This program is established and maintained to implement the requirements of 10 CFR 72.44 (d) or 72.126, as appropriate.

b. This program will provide limits on surface contamination of the OVERPACK and verification of meeting those limits prior to removal of a loaded OVERPACK from the refueling building.

5.1.3 MPC-HB and SFSC Loading, Unloading, and Preparation Program

This program shall be established and maintained to implement Humboldt Bay ISFSI SAR Section 10.2 requirements for loading fuel and components into MPC-HBs, unloading fuel and components from MPC-HBs, and preparing the MPC-HBs for storage in the SFSCs. The requirements of the program for loading and preparing the MPC-HB shall be complete prior to removing the MPC-HB from the Refueling Building. The program provides for evaluation and control of the following requirements during the applicable operation:

a. Verify that the acceptance criteria for drying are met to ensure short term fuel temperature limits are not violated and the MPC-HB and OVERPACK are adequately dry.

b. Verify that the MPC-HB and OVERPACK inerting backfill pressures and purity assure adequate heat transfer and corrosion control.

c. Verify that leak testing assures adequate OVERPACK integrity.

d. Verify surface dose rates on the SFSCs are consistent with the offsite dose analysis.

e. During MPC-HB re-flooding, verify the MPC cavity bulk helium temperature is such that water quenching or flashing does not occur.

f. Loading is to be independently verified by a cognizant engineer to ensure that the fuel assemblies in the MPCs are placed in accordance with the original loading plan.

5.0 ADMINISTRATIVE CONTROLS (continued)

5.1.4 ISFSI Operations Program

This program will implement the Humboldt Bay ISFSI SAR requirements for ISFSI operations. It will include criteria to be verified and controlled:

a. SFSC cask storage location.

b. Design features listed in Section 4.0 and design basis ISFSI parameters consistent with the Humboldt Bay ISFSI SAR analysis.

5.1.5 Cask Transportation Evaluation Program

This program will evaluate and control the transportation of loaded SFSCs between the HBPP Refueling Building and the ISFSI storage vault. Included in this program will be pre-transport evaluation and control during transportation of the following:

- Transportation route road surface conditions.
- Onsite hazards along the transportation route.
- Security, including control of the 100 meter boundary.
- Transporter control functions and operability.
- Offsite marine hazards from barge transport.
- Severe weather.

5.1.6 GTCC Cask Loading and Preparation Program

This program shall be established and maintained to implement Humboldt Bay ISFSI SAR Section 3.1 requirements for loading a GTCC cask and preparing the GTCC cask for storage in the ISFSI. The requirements of the program for loading and preparing the GTCC cask shall be complete prior to removing the GTCC cask from the refueling building. The program provides for evaluation and control of the following requirements during the applicable operation:

a. Verify surface dose rates on the GTCC cask are consistent with the offsite dose analysis.

b. Verify that any effluents from the GTCC cask comply with 10 CFR 20 requirements.