APPENDIX A
TO
MATERIALS LICENSE NO. SNM-2516

TECHNICAL SPECIFICATIONS
FOR THE
HI-STORE CONSOLIDATED INTERIM STORAGE (CIS) FACILITY

DOCKET 72-1051

TABLE OF CONTENTS

1.0 USE AND APPLICATION

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

1.1 Definitions

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.
AMBIENT TEMPERATURE	AMBIENT TEMPERATURE for Short Term Operations (operations involving use of the HI-TRAC CS, a Lifting device, and/or an on-site transport device) is defined as the 72 hours average of the local temperature as forecast by the National Weather Service.
CASK CRANE	CASK CRANE is the crane installed in the CTB for heavy load handling activities.
CASK TRANSFER BUILDING (CTB)	The reinforced concrete building that houses the Canister Transfer Facility (CTF) and the cask receiving area and provides storage space for ancillary equipment used in short term operations.
CANISTER TRANSFER FACILITY (CTF)	CTF is a below-grade placement location where the Transport Cask is temporarily placed to effectuate vertical canister transfer between the Transport Cask and the TRANSFER CASK (HI-TRAC CS).
ISFSI PAD	means the reinforced concrete pad that defines the top extremity of the HI-STORM UMAX VVM and provides the support surface for the cask handling device.
MULTI-PURPOSE CANISTER (MPC) (canister)	MPCs are the sealed spent nuclear fuel canisters which consist of a honeycombed fuel basket contained in a cylindrical canister shell which is welded to a baseplate, lid with welded port cover plates, and closure ring. The MPC provides the confinement boundary for the contained radioactive materials.

1.1 Definitions

Term	Definition
MPC (canister) TRANSFER	For operations on the ISFSI PAD, MPC TRANSFER begins when the MPC (canister) is lifted off the TRANSFER CASK (HI-TRAC CS) bottom lid (shield gates) and ends when the canister is supported from beneath by the HI-STORM UMAX VVM Base Plate (or the reverse). For operations in the CTB, MPC TRANSFER begins when the canister is lifted off the Transport Cask bottom plate or forging and ends when the canister is supported from beneath by the TRANSFER CASK bottom lid (or the reverse).
OVERPACK	For the HI-STORM UMAX, the term OVERPACK is synonymous with the term VVM defined below.
PRE-TRANSFER/SHIPMENT OPERATIONS	PRE-TRANSFER/SHIPMENT OPERATIONS include all licensed activities associated with insertion or removal of an MPC into or out of a Transport Cask, TRANSFER CASK, or CANISTER TRANSFER FACILITY, using the Cask Transporter or Crane. PRE-TRANSFER/SHIPMENT OPERATIONS do not include TRANSPORT OPERATIONS.
SPENT FUEL STORAGE CASKS (SFSCs)	SFSCs are containers approved for the storage of spent fuel assemblies at the ISFSI PAD. The HI-STORM UMAX SFSC System consists of the OVERPACK and its integral MPC.
STORAGE OPERATIONS	STORAGE OPERATIONS include all licensed activities that are performed at the ISFSI PAD while an SFSC containing spent fuel is situated within the ISFSI PAD perimeter. STORAGE OPERATIONS does not include MPC TRANSFER.
TRANSFER CASK	TRANSFER CASKs are containers designed to transfer the MPC between the Transport Cask and the SFSC. The HI-TRAC CS is the TRANSFER CASK at the HI-STORE CIS Facility.

1.1 Definitions

Term	Definition
TRANSPORT OPERATIONS	TRANSPORT OPERATIONS include all licensed activities involving a TRANSFER CASK loaded with an MPC containing one or more fuel assemblies when it is being moved from the CTB to the ISFSI PAD or vice versa. TRANSPORT OPERATIONS begin when the TRANSFER CASK is first suspended from or secured on the Cask Transporter and ends when the TRANSFER CASK is at its destination and no longer secured on or suspended from the transporter. TRANSPORT OPERATIONS includes MPC TRANSFER.
VERTICAL VENTILATED MODULE (VVM)	The VVM is a subterranean type overpack which receives and contains the sealed MPC for interim storage at the ISFSI PAD. The VVM supports the MPC in a vertical orientation and provides gamma and neutron shielding and also provides air flow through cooling passages to promote heat transfer from the MPC to the environs.

1.0 USE OF 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.

1.0 USE OF APPLICATION

1.2 Logical Connectors (continued)

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)

1.0 USE OF APPLICATION

1.2 Logical Connectors (continued)

EXAMPLES (continued)

EXAMPLE 1.2-2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met.	A.1 Stop . . . OR A.2 A.2.1 Verify . . . AND A.2.2 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 Times(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 HI-STORM UMAX 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 HI-STORM UMAX 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)

1.0 USE AND APPLICATION

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 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.

(continued)

1.0 USE AND APPLICATION

1.3 Completion Times (continued)

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)

1.0 USE AND APPLICATION

1.3 Completion Times (continued)

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.

(continued)

1.0 USE AND APPLICATION

1.3 Completion Times (continued)

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 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)

1.0 USE AND APPLICATION

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)

1.0 USE AND APPLICATION

1.4 Frequency (continued)

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" 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.

2.0 FUNCTIONAL AND OPERATING LIMITS

2.1 Approved Contents, Fuel Specifications and Loading Conditions

The spent nuclear fuel and assembly hardware to be stored in canisters in the HI-STORM UMAX VVM at the HI-STORE CIS Facility shall meet the following requirements:

- Fuel Specifications and Loading Conditions in Section 2.1 of the HI-STORM UMAX Certificate of Compliance 72-1040, Amendment 0, 1, or 2.
- For fuel assemblies in the MPC-37 and MPC-89, the applicable fuel assembly limits in Appendix B, Table 2.1-1 of the HI-STORM UMAX Certificate of Compliance 72-1040, Amendment 0, 1, or 2.
- For fuel assemblies in the MPC-37, the fuel assembly characteristics in Appendix B Table 2.1-2 of the HI-STORM UMAX Certificate of Compliance 72-1040, Amendment 0, 1, or 2.
- For fuel assemblies in the MPC-89, the fuel assembly characteristics in Appendix B Table 2.1-3 of the HI-STORM UMAX Certificate of Compliance 72-1040, Amendment 0, 1, or 2.
- For fuel assemblies in the MPC-37, the decay heat limits shown in Table 2-1. Note that these maximum fuel storage location decay heat limits must account for decay heat from both the fuel assembly and any non-fuel hardware. These fuel assemblies must also meet the restrictions on burnup, enrichment, and cooling time specified in the HI-STAR 190 SAR, Table 7.C.8 (HI-2146214, Revision 3).
- For fuel assemblies in the MPC-89, the decay heat limits shown in Table 2-2. Note that these maximum fuel storage location decay heat limits must account for decay heat from both the fuel assembly and any non-fuel hardware. These fuel assemblies must also meet the restrictions on burnup, enrichment, and cooling time specified in the HI-STAR 190 SAR, Table 7.C.10 (HI-2146214, Revision 3).
- For MPC-37 and MPC-89 canisters, original helium backfill pressures shown in Tables 2-3 and 2-4.
- Each canister shall meet the Acceptance Program criteria in Section 5.5.5.

2.0 FUNCTIONAL AND OPERATING LIMITS

2.1 Approved Contents, Fuel Specifications and Loading Conditions (continued)

- Additionally, any Non-Fuel Hardware (NFH) stored in the canisters shall meet the requirements of Table 2-5. Fuel assemblies containing burnable poison rod assemblies (BPRAs), thimble plug devices (TPDs) with or without absorber rodlets, wet annular burnable absorbers (WABAs), water displacement guide tube plugs, orifice rod assemblies, or vibration suppressor inserts, may be stored in any fuel storage location. Fuel assemblies with or without instrument tube tie rods (ITTRs) or guide tube anchors (GTAs) may also be stored in any fuel storage location. Fuel assemblies containing axial power shaping rods (APSRs), rod cluster control assemblies (RCCAs), control element assemblies (CEAs), control rod assemblies (CRAs), or neutron source assemblies (NSAs) may only be loaded in fuel storage Regions 1 and 2 (see Figure 2-1).

2.0 FUNCTIONAL AND OPERATING LIMITS

2.2 Violations

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

a. The affected CANISTER shall be placed in a safe condition.

b. Within 24 hours of discovering the event, notify the NRC Operations Center of the violation.

c. 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

LOADING PATTERNS FOR MPC-37 (PWR FUEL ASSEMBLY)

Pattern	Region (Note 1)	Maximum Decay Heat Load per Basket Location (kW)
1	1	0.38
	2	1.7
	3	0.50
2	1	0.42
	2	1.54
	3	0.61
3	1	0.61
	2	1.23
	3	0.74
4	1	0.74
	2	1.05
	3	0.8
5	1	0.8
	2	0.95
	3	0.84
6	1	0.95
	2	0.84
	3	0.8

Notes:
1. For basket region numbering scheme refer to Figure 2-1.

Table 2-2

LOADING PATTERNS FOR MPC-89 (BWR FUEL ASSEMBLY)

Pattern	Region (Note 1)	Maximum Decay Heat Load per Basket Location (kW)
1	1	0.15
	2	0.62
	3	0.15
2	1	0.18
	2	0.58
	3	0.18
3	1	0.27
	2	0.47
	3	0.27
4	1	0.32
	2	0.41
	3	0.32
5	1	0.35
	2	0.37
	3	0.35

Notes:
1. For basket region numbering scheme refer to Figure 2-2.

Table 2-3

MPC BACKFILL PRESSURE REQUIREMENTS FOR DESIGN BASIS HEAT LOAD (Note 1)

MPC Type	**Pressure Range (Note 2)**
MPC-37	$\geq$ 39.0 psig and $\leq$ 46.0 psig
MPC-89	$\geq$ 39.0 psig and $\leq$ 47.5 psig

Note 1: MPCs are backfilled during fuel loading operations prior to transport to the HI-STORE CIS Facility.

Note 2: Helium used for backfill of MPC shall have a purity of $\geq$99.995%. The pressure range is based on a reference temperature of 70^{o}F.

Table 2-4

MPC BACKFILL PRESSURE REQUIREMENTS FOR SUB-DESIGN BASIS HEAT LOAD (Notes 1 and 2)

MPC Type	**Pressure Range (Note 3)**
MPC-37	> 39.0 psig and < 50.0 psig
MPC-89	> 39.0 psig and < 50.0 psig

Note 1: MPCs are backfilled during fuel loading operations prior to transport to the HI-STORE CIS Facility.

Note 2: Sub-Design Basis Heat Load is defined as 80% of the design basis heat load in every storage location defined in Tables 2-1 and 2-2 for MPC-37 and MPC-89 respectively.

Note 3: Helium used for backfill of MPC shall have a purity of >99.995%. The pressure range is based on a reference temperature of 70^{o}F.

Table 2-5
NON-FUEL HARDWARE BURNUP AND COOLING TIME LIMITS (Notes 1, 2, 7)

Post-irradiation Cooling Time (yrs)	Inserts (Note 3) Maximum Burnup (MWD/MTU)	NSA or Guide Tube Hardware (Note 4,8) Maximum Burnup (MWD/MTU)	Control Component (Note 5) Maximum Burnup (MWD/MTU)	APSR Maximum Burnup (MWD/MTU)
≥ 3	≤ 24,635	N/A (Note 6)	N/A	N/A
≥ 4	≤ 30,000	≤ 20,000	N/A	N/A
≥ 5	≤ 36,748	≤ 25,000	≤ 630,000	≤ 45,000
≥ 6	≤ 44,102	≤ 30,000	-	≤ 54,500
≥ 7	≤ 52,900	≤ 40,000	-	≤ 68,000
≥ 8	≤ 60,000	≤ 45,000	-	≤ 83,000
≥ 9	-	≤ 50,000	-	≤ 111,000
≥ 10	-	≤ 60,000	-	≤ 180,000
≥ 11	-	≤ 75,000	-	≤ 630,000
≥ 12	-	≤ 90,000	-	-
≥ 13	-	≤ 180,000	-	-
≥ 14	-	≤ 630,000	-	-

NOTES
1. Burnups for non-fuel hardware are to be determined based on the burnup and uranium mass of the fuel assemblies in which the component was inserted during reactor operation.
2. Linear interpretation between points is permitted, except that NSA or Guide Tube Hardware and APSR burnups > 180,000 MWD/MTU and ≤ 630,000 MWD/MTI must be cooled ≥ 14 years and ≥ 11 years, respectively.
3. Includes BPRAs, WABAs, and vibration suppressor inserts. For TPDs with absorber rodlets refer to Note 9.
4. Includes TPDs, water displacement guide tube plugs and orifice rod assemblies.
5. Includes CRAs, CEAs, and RCCAs.
6. N/A means not authorized for loading at this cooling time.
7. Non-fuel hardware burnup and cooling time limits are not applicable to ITTRs and GTAs, since they are installed post-irradiation.
8. Maximum burnup for TPDs with absorber rodlets is limited to 60,000 MWD/MTU.

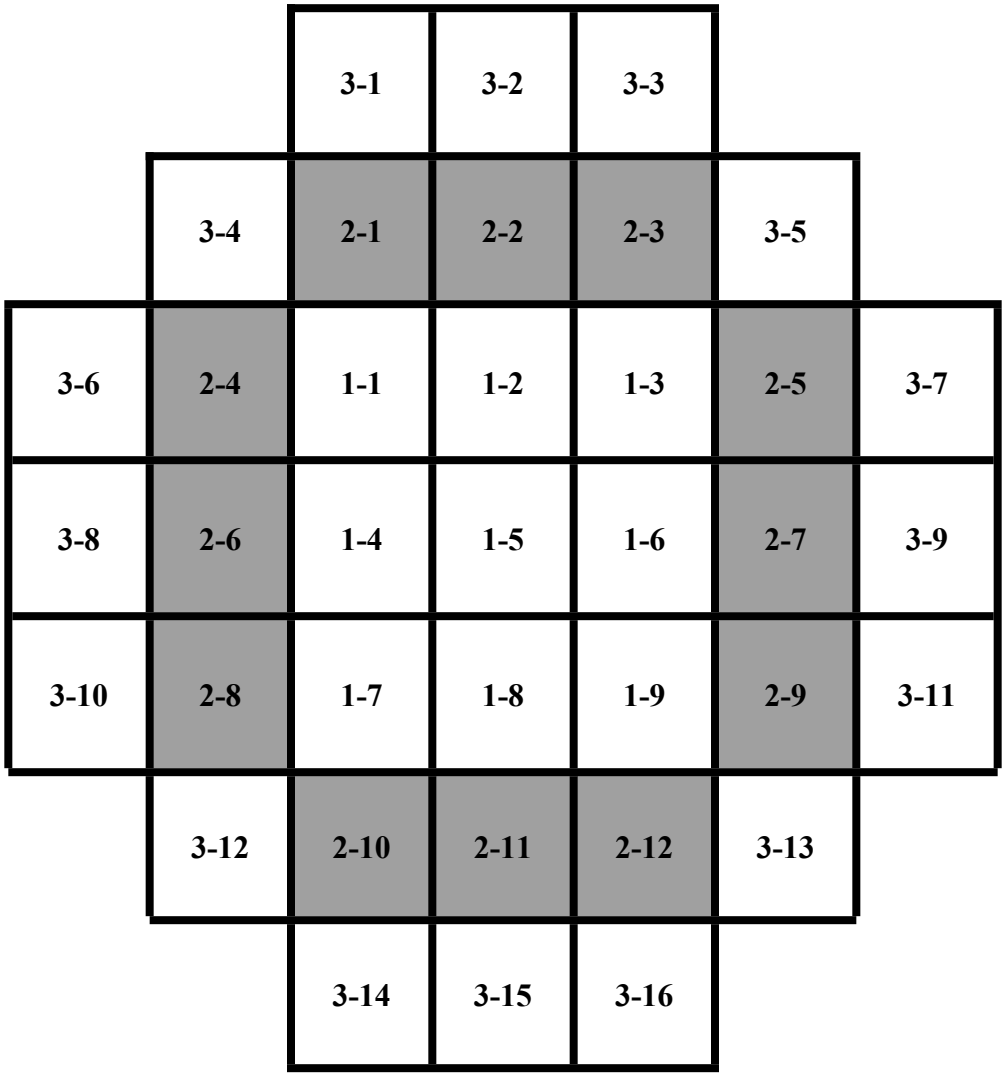

Figure 2-1

MPC-37 REGION CELL IDENTIFICATION

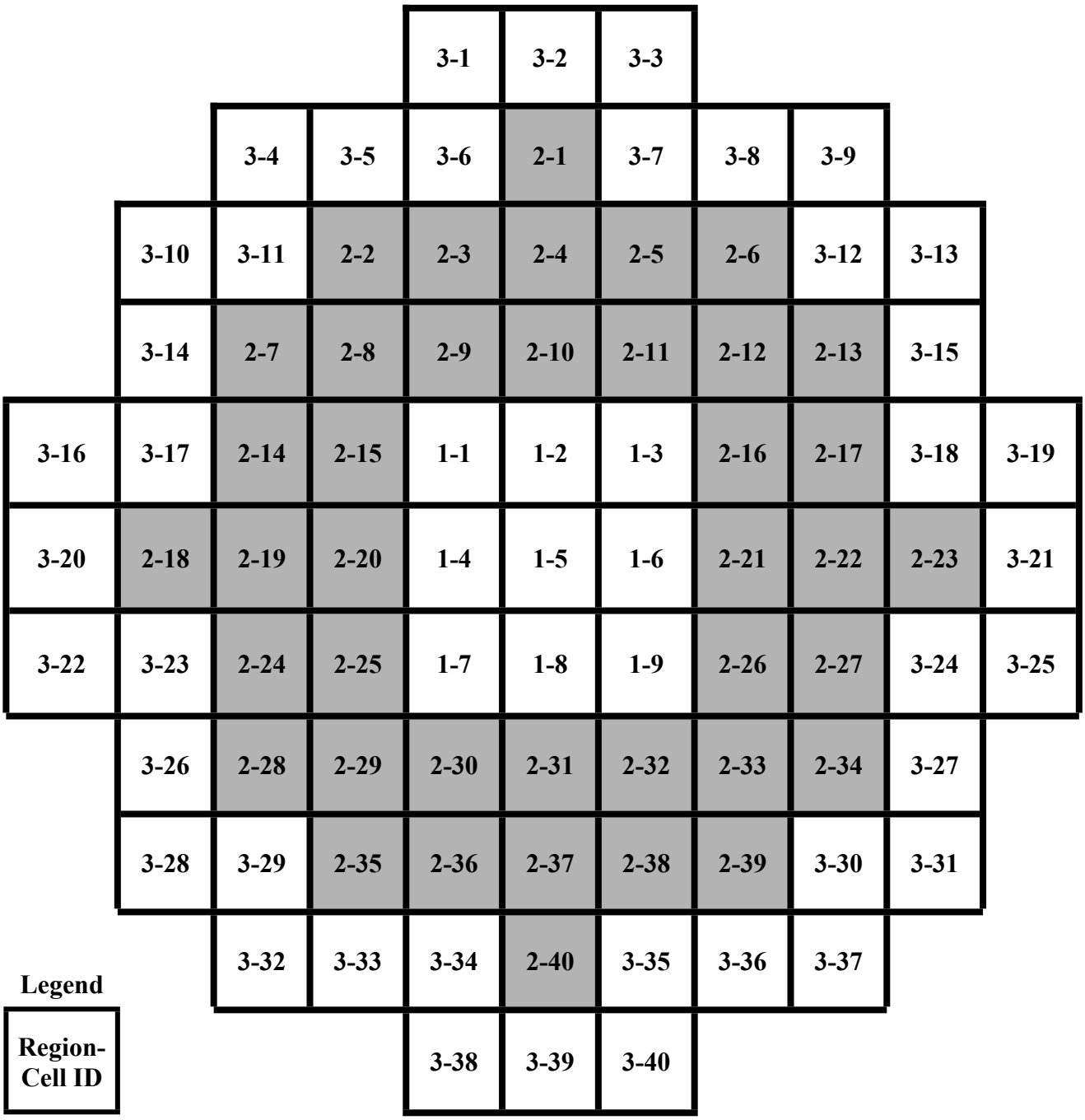

Figure 2-2

MPC-89 REGION CELL IDENTIFICATION

3.0 LIMITING CONDITIONS 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 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.
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.

3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

SR 3.0.1	SRs shall be met during the 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.

3.0 SURVEILLANCE REQUIREMENT (SR) APPLICABILITY

SR 3.0.3 (continued)	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 LCO's 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.

3.1 SFSC INTEGRITY

3.1.1 SFSC Heat Removal System

LCO 3.1.1 The SFSC Heat removal System shall be operable.

The loaded HI-STORM UMAX heat removal system shall meet the operability and surveillance requirements of this LCO.

----------NOTE----------
The SFSC Heat Removal System is operable when 50% or more of the inlet vent duct areas and 50% or more of the outlet vent area are unblocked and available for flow or when air temperature requirements are met.

APPLICABILITY: During STORAGE OPERATIONS.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each SFSC.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. SFSC Heat Removal System operable, but partially (<50%) blocked.	A.1 Remove blockage.	N/A
B. SFSC Heat Removal System inoperable.	B.1 Restore SFSC Heat Removal System to operable status.	8 hours
C. Required Action B.1 and associated Completion Time not met.	C.1 Measure SFSC dose rates in accordance with the Radiation Protection Program. AND C.2.1 Restore SFSC Heat Removal System to operable status. OR C.2.2 Transfer the MPC into a TRANSFER CASK.	Immediately and once per 12 hours thereafter 24 hours 24 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.1.2	Verify all VVM inlets and outlets duct screen are free of blockage from solid debris or floodwater. OR For VVMs with installed temperature monitoring equipment, verify that the difference between the average VVM air outlet duct temperature and ISFSI ambient temperature is ≤ 91°F.	24 hours 24 hours

3.2 SFSC RADIATION PROTECTION

3.2.1 CANISTER Surface Contamination

LCO 3.2.1 Removable contamination on the top surface of the CANISTER shall not exceed:

a. 1000 dpm/100 cm^2 from beta and gamma sources; and

b. 20 dpm/100 cm^2 from alpha sources.

APPLICABILITY: During TRANSPORT OPERATIONS

ACTIONS

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

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CANISTER top surface contamination limits not met.	A.1 Restore removable surface contamination to within limits	7 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.1	Verify that the removable contamination on the CANISTER top surface is within limits	Once, prior to TRANSPORT OPERATIONS

4.0 DESIGN FEATURES

4.1 Site

The HI-STORE CIS Facility is located in Lea County, New Mexico (NM), approximately 32 miles east of Carlsbad, NM, and 34 miles west of Hobbs, NM.

4.2 Site Specific Parameters and Analyses

4.2.1 Storage System

The HI-STORE CIS Facility is designed to store spent fuel and assembly hardware in the HI-STORM UMAX Canister Storage System. The HI-STORE CIS Facility is designed to store up to 500 loaded canisters in the HI-STORM UMAX systems (Type SL and Type XL of the UMAX) at the ISFSI PAD. Each HI-STORM UMAX system is loaded with one PWR or BWR MPC. Each MPC is loaded at a Part 50 or Part 72 facility in accordance with 10 CFR 72 Certificate of Compliance (CoC) No. 1040 (Amendments 0, 1, or 2) and shipped to the HI-STORE CIS Facility in a HI-STAR 190. The loaded MPC is transferred to the HI-TRAC CS at the CTF in the Cask Transfer Building (CTB). The HI-TRAC CS transfers the MPC from the CTB to its designated HI-STORM UMAX VVM location on the ISFSI PAD. MPCs to be stored at the HI-STORE CIS Facility shall comply with Codes and Standards for MPC design, and Criticality Control Features requirements in Sections 3.2 and 3.3 of the Appendix B to CoC No. 1040 Amendments 0, 1, or 2.

4.2.2 Storage Capacity

The storage capacity of the HI-STORE CIS Facility is limited to 8680 MTU (500 loaded canisters). This capacity includes spent fuel in the forms specified in Section 2.1.

4.2.3 HI-STORM UMAX VVMs Spacing

VVM-to-VVM Pitch

The minimum center-to-center pitch between adjacent VVMs shall be 15 feet 6 inches.

RPS

A Radiation Protection Space as (RPS) defined in HI-STORM UMAX CoC 72-1040 (Amendments 0, 1, or 2), Appendix B Section 3.4, Item 7, shall be utilized for any excavation activity.

Excavation

Excavation activities contiguous to a loaded HI-STORM UMAX ISFSI PAD on the side facing the excavation can occur down to the depth of the bottom surface of the SFP of the loaded ISFSI PAD considering that there may be minor variations in the depth due to normal construction practices.

4.2.4 Site Temperature Limits

PRE-TRANSFER OPERATIONS, TRANSPORT OPERATIONS, and SHIPMENT OPERATIONS shall only be conducted with working area Ambient Temperature ≥ 0°F and with working area three-day average Ambient Temperature ≤ 91°F.

4.2.5 Cask Transporter

The following requirements apply to a Cask Transporter that handles the system from above, and do not apply to a Cask Transporter that supports the system from underneath, unless otherwise noted.

4.2.5.1 The HI-TRAC CS (TRANSFER CASK) when loaded with spent fuel, may be lifted to and carried at any height necessary during TRANSPORT OPERATIONS and MPC TRANSFER, provided the lifting equipment is designed in accordance with items a through d below.

a. The vehicle main frame of the Cask Transporter shall be designed to comply with stress limits from an industry standard such as ASME Section III, Subsection NF, Class 3 for linear-type supports, AISC Specification for Structural Steel Buildings, or similar.

b. The overhead beam, lifting attachments, and MPC downloader on the Cask Transporter shall be designed in accordance with applicable guidance of NUREG-0612, Section 5.1.6. This includes applicable stress limits from ANSI N14.6.

c. The lifting towers of the Cask Transporter shall be designed in accordance with ASME Section III, Subsection NF, Class 3 for linear-type supports and ASME B30.1 with twice the design factor as required by the referenced ASME codes.

d. The Cask Transporter shall have redundant drop protection features which prevent uncontrolled lowering of the load due to a single system failure, loss of hydraulic pressure, or loss of electric power.

4.2.5.2 The quantity of combustible fluid in the Cask Transporter shall be ≤ 430 gallons.

4.2.5.3 The Cask Transporter shall be designed to ensure that its dimensions, center of gravity, and weight when carrying a loaded HI-TRAC CS are such that the loaded Cask Transporter will not tip-over due to the HI-STORE CIS Facility operating basis earthquake (OBE) ground motions.

4.2.5.4 The Cask Transporter shall be designed for the maximum lifted load specified in Paragraph 4.2.6.3.

4.2.5.5 The quantity of combustible fluid in the Cask Transporter shall be ≤ 528 gallons and the mass of combustible solids in the Cask Transporter shall be ≤ 4479 lb (only applicable to Cask Transporters that support from below).

4.2.6 Cask Crane

4.2.6.1 Transfer of a Transport Package from the rail or transport vehicle to the Cask Tilt Frame shall be performed using the Cask Crane in combination with the Transport Cask Horizontal Lift Beam or Transport Cask Lift Yoke, as applicable. This includes upending and downending of the Transport Cask and transfer into the CTF.

4.2.6.2 The Cask Crane shall be designed, fabricated, operated, tested, inspected, and maintained in accordance with applicable sections and guidance of ASME NOG-1 for Type I (single-failure-proof) cranes.

4.2.6.3 The Cask Crane shall be designed to withstand the following design basis loadings:

Load Description	Value	Comment
Maximum Lifted Load	200 tons	Bounds the weight of all heavy loads lifted by the Cask Crane/Cask Transporter
1000-Year Return Earthquake (OBE)	2% Damped Reg. Guide 1.60 spectra with a ZPA equal to 0.10 in three orthogonal directions (2 horizontal, 1 vertical)	The seismic motion is applied at the elevation of the CTB Slab

4.2.6.4 The Cask Crane shall be designed to withstand the OBE ground motions at the HI-STORE CIS Facility without uncontrolled lowering of the loaded HI-STAR 190 or HI-TRAC CS.

4.2.7 Storage Pads

4.2.7.1 Storage Pads shall be designed to support the loaded HI-STORM UMAX VVMs and Cask Transporter with loaded HI-TRAC CS.

4.2.7.2 Storage Pads shall be designed to withstand the ground motion due to the design basis earthquake and mitigate impact on HI-STORM UMAX VVMs to within design acceptance criteria.

4.2.8 Special Lifting Devices

Lifting of loaded HI-TRAC CS, Transport Cask, and/or canister shall be performed in the CTB in accordance with guidelines of NUREG-0612 using special lifting devices. Special lifting devices, such as the Transport Cask Lift Yoke, the Transport Cask Horizontal Lift Beam, the HI-TRAC CS Lift Yoke, the HI-TRAC CS Lift Links, the MPC Lift Attachment, and the MPC Lifting Device Extension, shall be designed, fabricated, operated, tested, inspected, and maintained in accordance with applicable sections and guidance of NUREG-0612, Section 5.1. This includes applicable stress limits from ANSI N14.6.

4.2.9 Canister Transfer Facility (CTF)

The CTF is a below-grade placement location for vertically transferring the MPC from the Transport Cask to the HI-TRAC CS (TRANSFER CASK) and vice versa. The Cask Crane is to be used to handle the Transport Cask, HI-TRAC CS, MPC, and other ancillaries during transfer operations at the CTF. The CTF shall be designed to withstand applicable normal, off-normal and design basis earthquake and other accident conditions without compromising the integrity or recovery of the loaded MPC and maintain design basis temperatures for the MPC and contents.

4.2.10 Tilt Frame

The Tilt Frame shall be used in conjunction with the Cask Crane for upending and downending of the Transport Cask and consists of a set of trunnion support stanchions and a cask support saddle. The Tilt Frame shall be designed to support the weight of the loaded Transport Cask during routine transfer operations and design basis earthquake or other applicable accident conditions without uncontrolled lowering of the Transport Cask.

4.3 Cask Transfer Building (CTB)

The CTB is a reinforced concrete building that houses the CTF and the cask receiving area and provides storage space for ancillary equipment used in short term operations. The CTB design is in accordance with NUREG-6190.

5.0 ADMINISTRATIVE CONTROLS AND PROGRAMS

5.1 Responsibility

The HI-STORE CIS Facility Site Manager shall be responsible for overall facility operation and shall delegate in writing the succession of this responsibility during his absence.

The Site Manager, or his designee, shall approve prior to implementation and, subject to the provision of 10 CFR 72.48, each proposed test, experiment, or modification to structures, systems or components that are important to safety as defined in 10 CFR 72.3.

5.2 Onsite and Offsite Organizations

Onsite and offsite organizations shall be established for facility operation and corporate management, respectively. The onsite and offsite organizations shall include appropriate positions for controlling activities affecting safety at the HI-STORE CIS Facility.

a. Lines of authority, responsibility, and communication shall be defined and established throughout the highest management levels, intermediate levels, and all operating organization positions. These relationships shall be documented and updated, as appropriate, in organizational charts, and functional descriptions of departmental responsibilities and relationships and job descriptions for key personnel positions, or in equivalent forms of documentation. These requirements, including site-specific titles of those personnel fulfilling the responsibilities of the positions delineated in these Technical Specifications, shall be documented in the Safety Analysis Report (SAR) or the HI-STORE CIS Facility Quality Assurance Program;

b. The HI-STORE CIS Facility Site Manager shall be responsible for overall safe operation of the facility and shall have control over those onsite activities necessary for safe operation and maintenance of the facility;

c. A designated corporate executive shall have corporate responsibility for overall facility nuclear safety and shall take any measures needed to ensure acceptable performance of the staff in operating, maintaining, and providing technical support to the facility to ensure nuclear safety; and

d. The individuals who train the HI-STORE CIS Facility specialists, perform health physics functions, or perform quality assurance functions may report to the HI-STORE CIS Facility Site Manager; however, these individuals shall have sufficient organizational freedom to ensure their independence from operating pressures.

5.3 HI-STORE CIS Facility Staff Qualification

Each member of the HI-STORE CIS Facility staff shall meet or exceed the minimum qualifications of ANSI N18.1-1971 for comparable positions. The HI-STORE CIS Facility Site Manager and Specialists shall be trained and certified in accordance with the HI-STORE CIS Facility Training Program.

5.4 Procedures

Written procedures shall be established, implemented, and maintained covering the following activities that are important to safety:

a. Administrative controls;
b. Routine HI-STORE CIS Facility operations;
c. Alarms and annunciators;
d. Emergency operations;
e. Design control and facility change or modification;
f. Control of surveillances and tests;
g. Maintenance;
h. Health physics, including ALARA practices;
i. Special nuclear material accountability;
j. Quality assurance, inspection, and audits;
k. Physical security and safeguards;
l. Records management;
m. Reporting; and
n. All programs specified in Technical Specification 5.5 unless otherwise stated.

5.5 Programs

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

5.5.1 Radioactive Effluent Control Program

The HI-STORE CIS Facility does not create any radioactive materials or have any radioactive waste treatment systems. Canisters containing radioactive materials are designed to meet the leaktight criterion per ANSI N14.5 under normal, off-normal and hypothetical accident conditions, and are not opened or breached during operations and storage at the HI-STORE CIS Facility. Upon arrival of canisters in Transport Casks, acceptance tests are performed on the loaded Transport Casks in accordance with Section 5.5.5.b to verify the confinement of the canisters post-transportation.

Therefore, specific operating procedures for the control of radioactive effluents at the HI-STORE CIS Facility are not required.

Dosimetry located at the owner controlled area boundary shall be used to monitor direct radiation.

In accordance with 10 CFR 72.44(d), a periodic 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.

5.5.2 Radiation Protection Program

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

a. The HI-STORE CIS Facility shall comply with the dose limits in 10 CFR 72.104(a) under design basis (capacity) storage conditions.

b. Surface dose rate surveys shall be performed on the TRANSFER CASK during PRE-TRANSFER OPERATIONS and on the HI-STORM UMAX VVM after MPC TRANSFER to ensure compliance with 10 CFR 72.104(a) dose limits. Surveys shall be performed on the HI-STORM UMAX VVM and the TRANSFER CASK at the locations indicated in Section 5.5.2(g).

c. The average of the measured dose rates on a loaded VVM or a TRANSFER CASK shall not exceed the following values:

   1. 30 mrem/hr (gamma + neutron) on the top of the closure lid of the VVM (average)

   2. 350 mrem/hr (gamma + neutron) on the side of the TRANSFER CASK (average)

d. The licensee shall measure the TRANSFER CASK and VVM surface neutron and gamma dose rates as described in Section 5.5.2(g) for comparison against the limits established in Section 5.5.2(c).

e. If measured dose rates exceed the limits in Section 5.5.2(c), the following actions shall be taken:

   1. Administratively verify that the correct contents were loaded in the correct fuel storage cell locations.

   2. Perform a written evaluation within 30 days to verify whether a VVM at the ISFSI PAD containing the as-loaded MPC will cause the dose limits of 10 CFR 72.104 to be exceeded.

3. Perform a written evaluation within 30 days to determine why the surface dose rate limits were exceeded.

f. If the evaluation in Section 5.5.2(e) shows that the dose limits of 10 CFR 72.104 will be exceeded, the MPC shall not be placed into the VVM or the MPC shall be removed from the VVM until appropriate corrective action is taken to ensure the dose limits are not exceeded.

g. TRANSFER CASK and VVM surface dose rates shall be measured at approximately the following locations:

1. A minimum of four (4) dose rate measurements shall be taken on the top of the VVM. These measurements shall be taken approximately 90 degrees apart around the circumference of the lid, approximately 18 inches radially inward from the edge of the lid.

2. A minimum of four (4) dose rate measurements shall be taken adjacent to the outlet vent duct screen of the VVM, approximately 90 degrees apart.

3. A minimum of four (4) dose rate measurements shall be taken on the side of the TRANSFER CASK at mid-height approximately 90 degrees apart around the circumference of the cask.

h. An annual report pursuant per 10 CFR 20.2206(b) of the results of radiation monitoring of individuals for a specific year shall be submitted to the NRC in accordance with 10 CFR 20.2206(c).

g. Contamination surveys performed on personnel and vehicles exiting the radiological controlled area of the HI-STORE CIS Facility ISFSI PAD shall comply with the requirements in 10 CFR 20. Contamination surveys performed on received packages shall comply with 10 CFR 20 requirements.

5.5.3 Pre-Operational Testing and Training Exercise of HI-STORE CIS Facility Systems and Equipment

Before the initial receipt of spent nuclear fuel at the facility, the licensee shall conduct dry operational training exercises of the transfer and handling of the HI-STORM UMAX MPC, VVM, CTF, Crane, VCT and other important to safety systems and components and appropriate ancillary equipment employed at the HI-STORE CIS Facility. The operational dry run training exercises may be performed in an alternative step sequence from the actual procedures, but all steps must be performed. The operational dry run training exercises shall include, but are not limited to, the following:

a. Transfer of the MPC from Transport Cask to CTF and HI-TRAC CS using the Cask Crane.

b. Transfer of the MPC in the HI-TRAC CS from the CTF in the CTB to the ISFSI PAD and placement into the HI-STORM UMAX VVM using the VCT.

c. Reverse transfer operations using the VCT to extract the MPC from the VVM into the HI-TRAC CS, transfer the loaded HI-TRAC CS from the ISFSI PAD to the CTF in the CTB, transferring the MPC to the Transport Cask using the Cask Crane, and transferring the Transport Cask to the rail or other transport vehicle.

5.5.4 Aging Management Program

a. The HI-STORE CIS Facility shall have an aging management program in accordance with HI-STORE CIS Facility SAR Chapter 18.

b. The Owner or Operator shall ensure that a Transport Cask suitable to isolate a canister, that is identified to be especially vulnerable to breach of Confinement by the Aging Management Program, is available at the site within 30 days of identifying such need.

5.5.5 Canister Acceptance Program

a. Canisters that have undergone an accident while in Part 71 transportation shall not be accepted at the HI-STORE CIS Facility.

b. Prior to TRANSFER OPERATIONS, each canister to be stored at the HI-STORE CIS Facility shall undergo acceptance testing.

1. Upon arrival at the HI-STORE CIS Facility, gas in the cavity of the HI-STAR 190 containing the loaded canister will be tested for Krypton-85 gas in accordance with pre-approved written procedures, using appropriate tools and ALARA considerations.

Concentration of Krypton-85 in the cavity of the loaded HI-STAR 190 shall be less than 10^{-4} µCi/cc prior to unloading the canister. Opening and unloading of HI-STAR 190s and canisters that fail to meet the requirement in this section is prohibited, and the loaded HI-STAR 190 is shipped to the nuclear plant of origin or other facility licensed to perform fuel loading procedures.

2. After passing the Krypton-85 test, each canister shall be subjected to a helium leak test in accordance with ANSI N14.5-2014. Leak testing methods and acceptance criteria are specified in Table 5-1. Canisters that fail to meet the acceptance criteria shall not be stored at HI-STORE CIS Facility and are shipped to the nuclear plant of origin or other facility licensed to perform fuel loading procedures.

3. If a canister fails the above acceptance test, it shall be kept within its sealed transportation overpack on site until it is returned to the originating site. The licensee shall set a time limit for returning the canister by using the measured dose rates from the loaded transportation overpack and ensuring annual dose rates are maintained below 10 CFR 72.104 limits including contribution from any non-accepted canisters within transportation overpacks.

c. Prior to canister acceptance at the HI-STORE CIS Facility each canister must have its records provided to the HI-STORE CIS Facility. These records must be reviewed and any applicable 10 CFR 72.48 screenings or evaluations written against the canister's original licensing basis evaluated against the HI-STORE CIS Facility site specific license to determine if a change requiring NRC approval is necessary.

5.5.6 Technical Specifications (TS) Bases Control Program

This program provides a means for processing changes to the TS Bases in Chapter 16 of the HI-STORE CIS Facility SAR.

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. Proposed changes that do not meet the criteria of 5.5.6.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).

Table 5-1
Canister Leakage Test Performance Specifications

Reference Helium Leakage Rate (L_R) Acceptance Criterion	1.85×10^{-7} ref-cm^3/s helium (Leaktight as defined by ANSI N14.5-2014 using helium as tracer gas)
Leakage Rate Test Sensitivity	9.2×10^{-8} ref-cm^3/s helium (½ of the leakage rate acceptance criterion per ANSI N14.5-2014, using helium as tracer gas)
Type of Leakage Rate Test	A.5.4, per ANSI N14.5, Appendix A
Instrument used	Helium mass spectrometer