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APPENDIX A

TECHNICAL SPECIFICATIONS
FOR THE NAC-MPC SYSTEM

AMENDMENT 6

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A 1.0 USE AND APPLICATION

A 1.1 Definitions

---NOTE---
The defined terms of this section appear in capitalized type and are applicable to the Technical Specifications and description of the Approved Contents and NAC-MPC Design Features.

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.
CANISTER	See TRANSPORTABLE STORAGE CANISTER
CANISTER HANDLING FACILITY	The CANISTER HANDLING FACILITY includes the following components and equipment: (1) a canister transfer station that allows the staging of the TRANSFER CASK with the CONCRETE CASK or transport cask to facilitate CANISTER lifts involving spent fuel handling not covered by 10 CFR 50; and (2) either a stationary lift device or mobile lifting device used to lift the TRANSFER CASK and CANISTER.
CONCRETE CASK	See VERTICAL CONCRETE CASK
CY-MPC	CY-MPC is a NAC-MPC SYSTEM having a fuel basket designed to accommodate Connecticut Yankee reactor spent fuel. The CY-MPC meets the NAC-MPC SYSTEM requirements.
CY-MPC DAMAGED FUEL CAN	A stainless steel container that confines a damaged Connecticut Yankee spent fuel assembly, but allows gaseous and liquid media to escape, while minimizing the dispersal of gross particulates. Connecticut Yankee DAMAGED FUEL ASSEMBLIES must be loaded in a CY-MPC DAMAGED FUEL CAN. The CY-MPC DAMAGED FUEL CAN may also hold an INTACT FUEL ASSEMBLY, LATTICE or a FAILED ROD STORAGE CANISTER.

(continued)

CY-MPC RECONFIGURED FUEL ASSEMBLY	A stainless steel container, having external dimensions that are slightly larger than a standard Connecticut Yankee fuel assembly, that ensures criticality control geometry and which permits gaseous and liquid media to escape while minimizing dispersal of gross particulate. It may contain a maximum of 100 INTACT FUEL RODS or DAMAGED FUEL RODS, or FUEL DEBRIS from any Connecticut Yankee spent fuel assembly.
DAMAGED FUEL ASSEMBLY (applicable for Yankee-MPC and CY-MPC fuel assembly contents only)	A fuel assembly containing at least one DAMAGED FUEL ROD or that cannot be handled by normal means, or both. Yankee class fuel assemblies containing up to 20 fuel rod positions that are either missing or that are holding DAMAGED FUEL RODS.
DAMAGED FUEL ROD	DAMAGED FUEL ROD is a fuel rod with a known or suspected cladding defect greater than a hairline crack or pinhole leak.
FAILED ROD STORAGE CANISTER	A handling container for moving up to 60 individual INTACT FUEL RODS or DAMAGED FUEL RODS in stainless steel tubes into a CY-MPC DAMAGED FUEL CAN. The steel tubes are held in place by regularly spaced plates welded in an open stainless steel frame. The FAILED ROD STORAGE CANISTER, which is closed at the top end by a bolted closure and at the bottom by a welded plate to capture the fuel rods in the tubes, must be loaded in a CY-MPC DAMAGED FUEL CAN.
FORCED AIR COOLING	Air delivered to the bottom eight ports of the TRANSFER CASK at a minimum rate of 250 CFM and a maximum air temperature of 75°F for Yankee-MPC, and at a minimum rate of 375 CFM and a maximum air temperature of 75ºF for CY-MPC. The canister must be backfilled with helium.
FUEL DEBRIS	FUEL DEBRIS is fuel in the form of particles, loose pellets, and fragmented rods or assemblies. FUEL DEBRIS may be loaded in a handling container.
HANDLING CONTAINER	A stainless steel device (or container) designed to facilitate handling and loading of FUEL DEBRIS, fuel rods and rod segments during DFC loading operations.
INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI)	The facility within the perimeter fence licensed for storage of spent fuel within NAC-MPC SYSTEMs (see also 10 CFR 72.3).

(continued)

INTACT FUEL ASSEMBLY (applicable for Yankee-MPC and CY-MPC fuel assembly contents only)	INTACT FUEL ASSEMBLY is a fuel assembly without DAMAGED FUEL RODS. Connecticut Yankee fuel assemblies with missing fuel rods, or with missing fuel rods replaced with solid filler rods, or with structural damage, are considered INTACT FUEL ASSEMBLIES provided that they have no DAMAGED FUEL RODS. Yankee Class fuel assemblies with missing fuel rods replaced with Zircaloy or stainless steel rods, or with structural damage, are considered INTACT FUEL ASSEMBLIES provided they have no DAMAGED FUEL RODS.
INTACT FUEL ROD	INTACT FUEL ROD is a fuel rod without known or suspected cladding defects greater than a pinhole leak or hairline crack.
LACBWR DAMAGED FUEL ASSEMBLY	Spent nuclear fuel (SNF) that cannot fulfill its fuel-specific or system-related function. SNF is classified as a LACBWR DAMAGED FUEL ASSEMBLY under the following conditions. 1. There is visible deformation of the rods in the SNF assembly. Note: This is not referring to the uniform bowing that occurs in the reactor; this refers to bowing that significantly opens up the lattice spacing. 2. Individual fuel rods are missing from the assembly and the missing rods are not replaced by a solid dummy rod that displaces a volume equal to, or greater than, the original fuel rod. 3. The SNF assembly has missing, displaced or damaged structural components such that either radiological and/or criticality safety is adversely affected (e.g., significantly changed rod pitch); or the assembly cannot be handled by normal means (i.e., crane and grapple). 4. Any SNF assembly that contains fuel rods for which reactor operating records (or other records or tests) cannot support the conclusion that they do not contain gross breaches. Note: Breached fuel rods with minor cladding defects (i.e., pinhole leaks or hairline cracks that will not permit significant release of particulate matter from the spent fuel rod) are classified as undamaged. 5. The SNF is no longer in the form of an intact fuel bundle (e.g., consists of or contains debris such as loose fuel pellets or rod segments).

(continued)

LACBWR DAMAGED FUEL CAN	A stainless steel container that confines a LACBWR DAMAGED FUEL ASSEMBLY, DAMAGED FUEL ROD or FUEL DEBRIS, while allowing gaseous and liquid media to escape and minimizing the dispersal of gross particulates. LACBWR DAMAGED FUEL ASSEMBLIES must be loaded in a LACBWR DAMAGED FUEL CAN.
LACBWR UNDAMAGED FUEL ASSEMBLY	A spent nuclear fuel assembly that can meet all fuel-specific and system-related functions. A LACBWR UNDAMAGED FUEL ASSEMBLY is spent nuclear fuel that is not a LACBWR DAMAGED FUEL ASSEMBLY, as defined herein, and does not contain assembly structural defects that adversely affect radiological and/or criticality safety. As such, a LACBWR UNDAMAGED FUEL ASSEMBLY may contain breached spent fuel rods (i.e., rods with minor defects up to hairline cracks or pinholes), but cannot contain grossly breached fuel rods.
LATTICE	A fuel assembly structure that is used to hold up to 204 INTACT FUEL RODS or DAMAGED FUEL RODS from other fuel assemblies. A LATTICE is sometimes called a fuel skeleton, cage or structural cage. It is built from the same components as a standard fuel assembly, but some of those components may be modified slightly, such as relaxed grids, to accommodate the distortion that may be present in a DAMAGED FUEL ROD. The outside dimensions are identical to a standard fuel assembly.
LOADING CATEGORY (LOADING CATEGORIES)	The LOADING CATEGORY defines allowable combinations of maximum total canister decay heat and maximum fuel assembly decay heat for the CY-MPC. They are used to determine operational time limits during LOADING OPERATIONS or TRANSFER OPERATIONS.

(continued)

LOADING OPERATIONS	LOADING OPERATIONS include all activities on an NAC-MPC SYSTEM while it is being loaded with fuel assemblies. LOADING OPERATIONS begin when the first fuel assembly is placed in the CANISTER and end when the NAC-MPC SYSTEM is secured on the transporter. LOADING OPERATIONS do not include post-storage operations, i.e., CANISTER transfer operations between the TRANSFER CASK and the CONCRETE CASK or transport cask after STORAGE OPERATIONS.
MPC-LACBWR	MPC-LACBWR is a NAC-MPC SYSTEM having a fuel basket designed to accommodate La Crosse BWR (LACBWR) reactor spent fuel. The MPC-LACBWR meets the NAC-MPC SYSTEM requirements.
NAC-MPC SYSTEM	NAC-MPC SYSTEM includes the components approved for loading and storage of spent fuel assemblies at the ISFSI. The NAC-MPC SYSTEM consists of a CONCRETE CASK, a TRANSFER CASK, and a CANISTER. The NAC-MPC SYSTEM is provided in three configurations: the YANKEE-MPC, CY-MPC, and MPC-LACBWR.
OPERABLE	An OPERABLE CONCRETE CASK heat removal system transfers sufficient heat away from the fuel assemblies such that the fuel cladding, CANISTER component and CONCRETE CASK temperatures do not exceed applicable limits. The CONCRETE CASK heat removal system is considered OPERABLE if the difference between the ISFSI ambient temperature and the average outlet air temperature is ≤ 92°F for the YANKEE-MPC and for the MPC-LACBWR; or ≤ 110°F for the CY-MPC, or if all four air inlet and outlet screens are visually verified to be unobstructed. Failing this, a CONCRETE CASK heat removal system may be declared OPERABLE if an engineering evaluation determines the CONCRETE CASK has adequate heat transfer capabilities to assure continued spent fuel, CANISTER and CONCRETE CASK integrity.

(continued)

RETAINER	A retainer used for the Gulf United Nuclear Fuel (GUNF) lead test assemblies to retain the removable fuel rods within the fuel assembly.
STORAGE OPERATIONS	STORAGE OPERATIONS include all activities that are performed at the ISFSI, while an NAC-MPC SYSTEM containing spent fuel is located on the storage pad within the ISFSI perimeter.
STRUCTURAL DAMAGE	Damage to the fuel assembly that does not prevent handling the fuel assembly by normal means. STRUCTURAL DAMAGE is defined as partially torn, abraded, dented or bent grid straps, end fittings or guide tubes. The damaged grid straps or end fittings must continue to provide support to the fuel rods, as designed, and may not be completely torn or missing. Guide tubes cannot be ruptured and must be continuous between the upper and lower end fittings. Fuel assemblies with STRUCTURAL DAMAGE are considered to be INTACT FUEL ASSEMBLIES provided that they do not have failed or DAMAGED FUEL RODS.
TRANSFER CASK	TRANSFER CASK is a shielded lifting device that holds the CANISTER during LOADING and UNLOADING OPERATIONS and during closure welding, vacuum drying, leak testing, and non-destructive examination of the CANISTER closure welds. The TRANSFER CASK is also used to transfer the CANISTER into and from the CONCRETE CASK and into the transport cask.
TRANSFER OPERATIONS	TRANSFER OPERATIONS include all activities involved in transferring a loaded CANISTER from a CONCRETE CASK to another CONCRETE CASK, to a TRANSPORT CASK, or to an appropriate location for unloading.
TRANSPORTABLE STORAGE CANISTER (CANISTER)	TRANSPORTABLE STORAGE CANISTER is a container consisting of a tube and disk fuel basket in a cylindrical canister shell welded to a baseplate. When the shield lid with welded port covers and the structural lid are welded in place, or the closure lid with port covers is welded in place, the CANISTER provides the confinement boundary for the confined spent fuel.

(continued)

TRANSPORT OPERATIONS	TRANSPORT OPERATIONS include all activities involved in moving a loaded NAC-MPC CONCRETE CASK and CANISTER to and from the ISFSI. TRANSPORT OPERATIONS begin when the NAC-MPC SYSTEM is positioned on the transporter, and end when the NAC-MPC SYSTEM is at its destination and no longer on the transporter.
UNLOADING OPERATIONS	UNLOADING OPERATIONS include all activities on a NAC-MPC SYSTEM to be unloaded of the contained fuel assemblies. UNLOADING OPERATIONS begin when the NAC-MPC SYSTEM is no longer secured on the transporter and end when the last fuel assembly is removed from the NAC-MPC SYSTEM.
VERTICAL CONCRETE CASK (CONCRETE CASK)	VERTICAL CONCRETE CASK is the cask that receives and holds the sealed CANISTER. It provides the gamma and neutron shielding and convective cooling of the spent fuel confined in the CANISTER.
WATER COOLING	Placement of the TRANSFER CASK holding an NAC-MPC CANISTER in the spent fuel pool. The canister must be backfilled with helium. WATER COOLING shall be maintained for a minimum of 24 hours, once initiated.
YANKEE-MPC	YANKEE-MPC is a NAC-MPC SYSTEM having a fuel basket designed to accommodate Yankee Class spent fuel. The YANKEE-MPC meets the requirements designated for the NAC-MPC SYSTEM.
YANKEE-MPC DAMAGED FUEL CAN	A stainless steel container that is similar to an enlarged fuel tube and that confines a Yankee Class INTACT FUEL ASSEMBLY, DAMAGED FUEL ASSEMBLY, RECAGED FUEL ASSEMBLY or a RECONFIGURED FUEL ASSEMBLY. A damaged fuel can is closed on its end by screened openings that allow gaseous and liquid media to escape, but minimize the dispersal of gross particulate. Use of the damaged fuel can requires that four cans be used in the canister in conjunction with a special shield lid machined to accept the cans.

(continued)

YANKEE-MPC RECAGED FUEL ASSEMBLY	A Yankee Class Combustion Engineering fuel assembly LATTICE (skeleton) holding United Nuclear fuel rods with no empty fuel rod positions.
YANKEE-MPC RECONFIGURED FUEL ASSEMBLY	A stainless steel canister having the same external dimensions as a standard Yankee Class fuel assembly, that ensures criticality control geometry and which permits gaseous and liquid media to escape while minimizing dispersal of gross particulates. It may contain a maximum of 64 INTACT FUEL RODS or DAMAGED FUEL RODS, or FUEL DEBRIS from any type of Yankee Class spent fuel assembly.

A 1.0 USE AND APPLICATION

A 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 Technical Specifications are "<u>AND</u>" and "<u>OR</u>." 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; the logical connector is left justified with the statement of the Condition, Completion Time, Surveillance, or Frequency.

(continued)

EXAMPLES The following examples illustrate the use of logical connectors.

EXAMPLES 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)

EXAMPLES (continued)

EXAMPLE 1.2-2

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. LCO not met	A.1	Stop …	
	OR		
	A.2	Complete …	
	A.2.1	Verify …	
	AND		
	A.2.2	Check …	
	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" indicated that A.2.2.1 and A.2.2.2 are alternative choices, only one of which must be performed.

A 1.0 USE AND APPLICATION

A 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 NAC-MPC SYSTEM. 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, provided that the NAC-MPC SYSTEM is in a specified Condition stated in the Applicability of the LCO. Prior to the expiration of the specified Completion Time, Required Actions must be completed. An ACTIONS Condition remains in effect and the Required Actions apply until the Condition no longer exists or the NAC-MPC 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)

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 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 six 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)

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 seven 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; therefore, the Required Actions of Condition B may be terminated.

(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 to be 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 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.

A 1.0 USE AND APPLICATION

A 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.

Each "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 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.

The use of "met" or "performed" in these instances conveys specific meanings. A Surveillance is "met" only after the acceptance criteria are satisfied. Known failure of the requirements of a Surveillance, even without a Surveillance specifically being "performed," constitutes a Surveillance not "met."

(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, SR 3.0.2 allows an extension of the time interval to 1.25 times the interval specified in the Frequency 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)

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.

A 2.0 [Reserved]

A 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 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 to a NAC-MPC SYSTEM.
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 NAC-MPC SYSTEM. Exceptions to this Condition are stated in the individual Specifications. These exceptions allow entry into specified conditions in the Applicability where the associated ACTIONS to be entered allow operation in the specified conditions in the Applicability only for a limited period of time.
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 to return to service under administrative control to perform the testing.

A 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 a failure to meet the LCO. Failure to perform a Surveillance within the specified Frequency shall be a 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.

(continued)

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 or that are related to the unloading of a NAC-MPC SYSTEM.

A 3.1 NAC-MPC SYSTEM Integrity

A 3.1.1 CANISTER Maximum Time in Vacuum Drying

LCO 3.1.1

1. The following limits for vacuum drying time shall be met, as appropriate:

   1.a For the YANKEE-MPC configuration, the time duration from completion of draining the CANISTER through completion of vacuum dryness testing and the introduction of helium backfill shall not exceed the time shown for the specified heat loads:

Total Heat Load (L) (kW)	Time Limit (Hours)
$10.5 < L \leq 12.5$	38
$8.5 < L \leq 10.5$	48
$6.5 < L \leq 8.5$	58
$4.5 < L \leq 6.5$	83
$L \leq 4.5$	Not Limited

   1.b For the CY-MPC configuration, the time duration from completion of draining the CANISTER through completion of vacuum dryness testing and the introduction of helium backfill shall not exceed the time shown for the specified LOADING CATEGORY (Tables B2-5 and B2-6):

LOADING CATEGORY	Time Limit (Hours)
A	21
B	23
C	33
D	72

   1.c For MPC-LACBWR configuration, the time duration from completion of draining the CANISTER through completion of vacuum dryness testing and the introduction of helium backfill shall not exceed the time shown for the specified heat loads:

Total Heat Load (L) (kW)	Time Limit (Hours)
$L \leq 4.5$	Not Limited

2. The time duration from the end of a minimum of 24 hours of WATER COOLING or of FORCED AIR COOLING of the CANISTER through completion of vacuum dryness testing and the introduction of helium backfill shall not exceed the following limits.

(continued)

LCO 3.1.1 (continued)

2.a For the Yankee-MPC configuration, the time duration shall not exceed the time shown for the specified heat loads:

Total Heat Load (L) (kW)	Time Limit (Hours) After FORCED AIR COOLING or WATER COOLING
$10.5 < L \leq 12.5$	10
$8.5 < L \leq 10.5$	12
$6.5 < L \leq 8.5$	16
$4.5 < L \leq 6.5$	40

2.b For the CY-MPC configuration, the time duration shall not exceed the time shown for the specified LOADING CATEGORY (reference Tables B2-5 and B2-6):

LOADING CATEGORY	Time Limit (Hours) After WATER COOLING	Time limit (Hours) After FORCED AIR COOLING
A	12	8
B	15	12
C	24	21
D	66	60

APPLICABILITY: During LOADING OPERATIONS

ACTIONS

--------------------------------------NOTE--------------------------------------

Separate Condition entry is allowed for each NAC-MPC SYSTEM.

(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO Condition 1 or Condition 2 (if applicable) time limits not met	A.1 Commence filling CANISTER with helium to 0 (+1, -0) psig	2 hours
	<u>AND</u>	
	A.2.1 Commence WATER COOLING	2 hours
	<u>AND</u>	
	A.2.2 Maintain WATER COOLING for a minimum of 24 hours	Prior to restart of LOADING OPERATIONS
	<u>OR</u>	
	A.2.3 Commence FORCED AIR COOLING.	2 hours
	<u>AND</u>	
	A.2.4 Maintain FORCED AIR COOLING for a minimum of 24 hours	Prior to restart of LOADING OPERATIONS

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.1.1	For NAC-MPC systems having limited vacuum drying times in LCO Condition 1, monitor elapsed time from completion of CANISTER draining operations until start of helium backfill	Once at the completion of CANISTER draining <u>AND</u> 2 hours thereafter
SR 3.1.1.2	For NAC-MPC systems having limited vacuum drying times in LCO Condition 2, monitor elapsed time from the end of WATER COOLING or FORCED AIR COOLING until start of helium backfill	Once at end of WATER COOLING or FORCED AIR COOLING <u>AND</u> 2 hours thereafter

A 3.1 NAC-MPC SYSTEM Integrity

A 3.1.2 CANISTER Vacuum Drying Pressure

LCO 3.1.2	The CANISTER vacuum drying pressure shall be ≤ 10 torr. Vacuum pressure shall be held for a minimum of 10 minutes with pressure remaining below 10 torr during the 10-minute period.
APPLICABILITY:	During LOADING OPERATIONS

ACTIONS

-----NOTE-----

10-minute period shall commence following system pressure stabilization at a vacuum pressure at or below 10 torr. Separate Condition entry is allowed for each NAC-MPC SYSTEM.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CANISTER vacuum drying pressure limit not met	A.1 Establish CANISTER cavity vacuum drying pressure within limit	25 days
B. Required Action and associated Completion Time not met	B.1 Remove all fuel assemblies from the NAC-MPC SYSTEM	5 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.2.1	Verify CANISTER cavity vacuum drying pressure is within limit	Once prior to TRANSPORT OPERATIONS

A 3.1 NAC-MPC SYSTEM Integrity

A 3.1.3 CANISTER Helium Backfill Pressure

LCO 3.1.3 The CANISTER helium backfill pressure shall be 15 (+2, -0) psia. Prior to helium backfill, the CANISTER vacuum pressure shall be ≤ 3 torr.

APPLICABILITY: During LOADING OPERATIONS

ACTIONS

------------------------------NOTE------------------------------
Separate Condition entry is allowed for each NAC-MPC SYSTEM.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CANISTER helium backfill pressure limit not met	A.1 Establish CANISTER helium backfill pressure within limit	25 days
B. Required Action and associated Completion Time not met	B.1 Remove all fuel assemblies from the NAC-MPC SYSTEM	5 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.3.1	Verify CANISTER helium backfill pressure is within limit.	Once prior to TRANSPORT OPERATIONS

A 3.1 NAC-MPC SYSTEM Integrity

A 3.1.4 CANISTER Maximum Time in TRANSFER CASK

LCO 3.1.4

The CANISTER shall be transferred from the TRANSFER CASK to a CONCRETE CASK, or to a transport cask, or returned to an appropriate location for UNLOADING OPERATIONS.

APPLICABILITY: During LOADING OPERATIONS, TRANSFER OPERATIONS, or UNLOADING OPERATIONS

ACTIONS:

-----NOTE-----
Separate Condition entry is allowed for each NAC-MPC SYSTEM.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CANISTER transfer not completed	A.1 Complete CANISTER TRANSFER OPERATIONS	25 days
B. Required Action and associated completion time not met	B.1 Remove all fuel assemblies from the CANISTER	5 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	Verify CANISTER transfer completed	Once within 25 days

A 3.1 NAC-MPC SYSTEM Integrity

A 3.1.5 CANISTER Helium Leak Rate

LCO 3.1.5 The CANISTER shield lid to CANISTER shell confinement weld shall be tested to demonstrate a helium leak rate less than 2×10^{-7} cm^3/sec (helium). The test sensitivity shall be 1×10^{-7} cm^3/sec (helium).

APPLICABILITY: During LOADING OPERATIONS of YANKEE-MPC and CY-MPC CANISTERS only

ACTIONS

---NOTE---

Separate Condition entry is allowed for each NAC-MPC SYSTEM.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CANISTER helium leak rate limit not met	A.1 Establish CANISTER helium leak rate within limit	25 days
B. Required Action and associated Completion Time not met	B.1 Remove all fuel assemblies from the NAC-MPC SYSTEM	5 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.5.1	Verify CANISTER helium leak rate is within limit	Once prior to TRANSPORT OPERATIONS.

A 3.1 NAC-MPC SYSTEM Integrity

A 3.1.6 CONCRETE CASK Heat Removal System

LCO 3.1.6 The CONCRETE CASK Heat Removal System shall be OPERABLE.

APPLICABILITY: During STORAGE OPERATIONS

ACTIONS

-----NOTE-----
Separate Condition entry is allowed for each NAC-MPC SYSTEM.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. LCO not met	A.1 Restore CONCRETE CASK Heat Removal System to OPERABLE status	8 hours
B. Required Action and associated Completion Time not met	B.1 Perform SR 3.1.6.1	Immediately and every 6 hours thereafter
	AND	
	B.2.1 Perform an engineering evaluation to determine that the CONCRETE CASK Heat Removal System is OPERABLE	12 hours
	OR	
	B.2.2 Place the NAC-MPC SYSTEM in a safe condition	12 hours

(continued)

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.1.6.1	Verify the difference between the average CONCRETE CASK air outlet temperature and ISFSI ambient temperature is $\leq$92°F for the YANKEE-MPC CANISTER and the MPC-LACBWR CANISTER or $\leq$110°F for the CY-MPC CANISTER.	24 hours
	<u>OR</u>	
	Visually verify all four air inlet and outlet screens are unobstructed.	24 hours

A 3.1 NAC-MPC SYSTEM Integrity

A 3.1.7 Fuel Cooldown Requirements

LCO 3.1.7 Fuel cooldown requirements for UNLOADING a CANISTER installed in the TRANSFER CASK shall be met as appropriate.

1. Initiate CANISTER internal cooldown
   a. Start nitrogen gas flush and maintain for a minimum of 10 minutes.
   b. Start cooling water flow rate of 5 (+3, -0) gallons per minute at inlet pressure of 25 (+10, -0) psig. Minimum cooling water temperature is 70°F.
   c. Limit the CANISTER pressure to ≤ 50 psig.
   d. Maintain cooling water flow through CANISTER until outlet water temperature is ≤ 200°F.

APPLICABILITY: During UNLOADING OPERATIONS

--NOTES--

The LCO is only applicable to wet UNLOADING OPERATIONS. Separate Condition entry is allowed for each NAC-MPC SYSTEM.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CANISTER internal cooldown requirements not met	A.1 Complete CANISTER internal cooldown steps	Prior to removal of CANISTER shield lid or closure lid

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.7.1	Condition 1.a Monitor Nitrogen gas flush time.	Within 10 minutes of start of Nitrogen gas flow.
SR 3.1.7.1	Condition 1.b Monitor cooling water temperature and flow rate.	Verify temperature prior to start of flow. Verify flow rate within 10 minutes of start of water flow and hourly thereafter.
SR 3.1.7.1	Condition 1.c Monitor CANISTER internal pressure.	At start of flow and every 30 minutes thereafter until cooling water begins to exit the CANISTER.
SR 3.1.7.1	Condition 1.d Monitor CANISTER water discharge temperature.	Once at start of discharge flow and hourly thereafter.

A 3.2 NAC-MPC SYSTEM Radiation Protection

A 3.2.1 CANISTER Surface Contamination

LCO 3.2.1 Removable contamination on the exterior surfaces of the CANISTER shall each not exceed:

a. 10,000 dpm/100 cm^2 from beta and gamma sources; and

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

APPLICABILITY: During LOADING OPERATIONS

ACTIONS

--NOTE--

Separate Condition entry is allowed for each NAC-MPC SYSTEM.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CANISTER removable surface contamination limits not met	A.1 Restore CANISTER removable surface contamination to within limits	Prior to TRANSPORT OPERATIONS

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.1.1	Verify by either direct or indirect methods that the removable contamination on the exterior surfaces of the CANISTER is within limits	Once, prior to TRANSPORT OPERATIONS

A 3.2 NAC-MPC SYSTEM Radiation Protection

A 3.2.2 CONCRETE CASK Average Surface Dose Rates

LCO 3.2.2

A. The average surface dose rates of each YANKEE-MPC CONCRETE CASK shall not exceed:

- 50 mrem/hour (neutron + gamma) on the side (on the concrete surfaces);
- 55 mrem/hour (neutron + gamma) on the top; and,
- 200 mrem/hour (neutron + gamma), an average of the measurements at air inlets and outlets.

B. The average surface dose rates of each CY-MPC CONCRETE CASK shall not exceed:

- 170 mrem/hour (neutron + gamma) on the side (on the concrete surfaces);
- 100 mrem/hour (neutron + gamma) on the top; and,
- 110 mrem/hour (neutron + gamma), an average of the measurements at air inlets and outlets.

C. The average surface dose rates of each MPC-LACBWR CONCRETE CASK shall not exceed the following limits unless required ACTIONS A.1 and A.2 are met:

- 20 mrem/hour (neutron + gamma) on the side (on the concrete surfaces);
- 25 mrem/hour (neutron + gamma) on the top;
- 100 mrem/hour (neutron + gamma), an average of the measurements at air inlets and outlets.

APPLICABILITY: Prior to or at the beginning of STORAGE OPERATIONS

ACTIONS

---NOTE---

Separate Condition entry is allowed for each NAC-MPC SYSTEM.

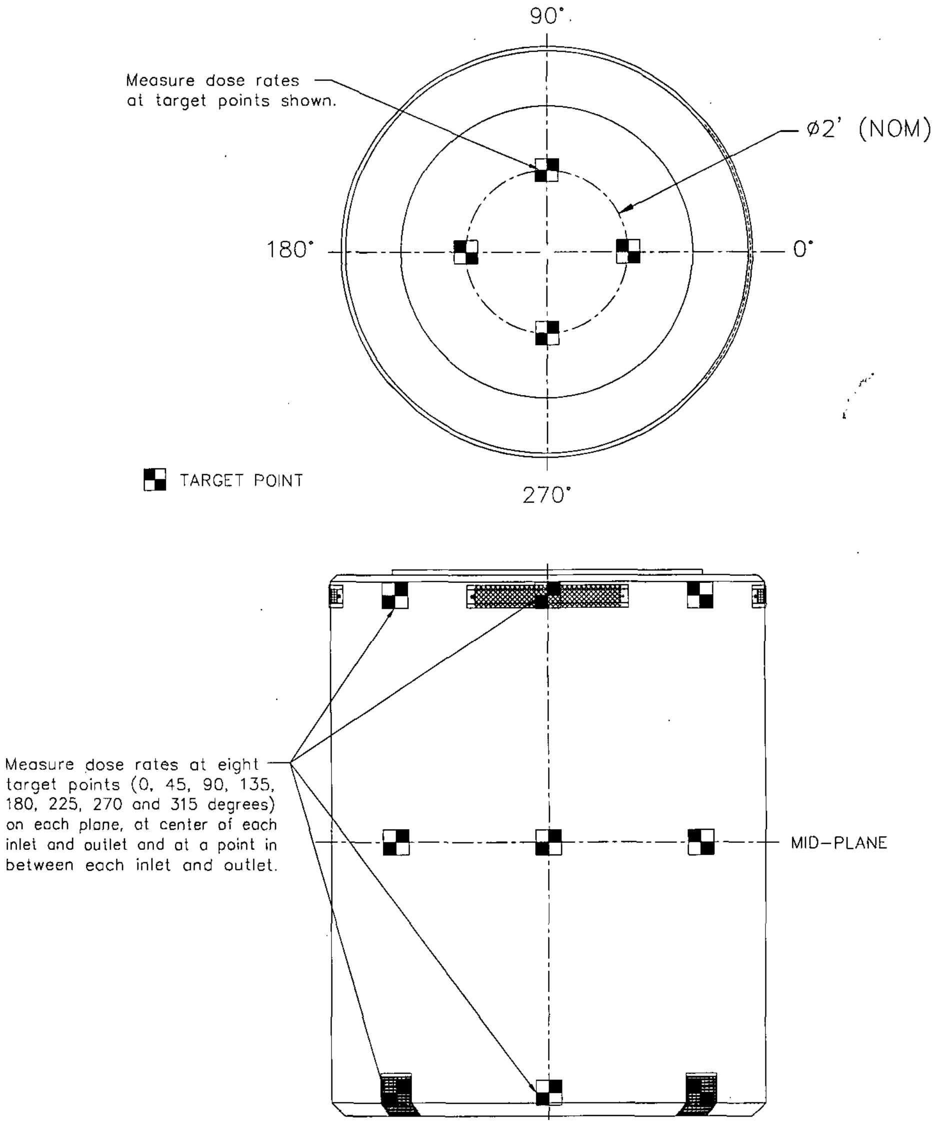
(continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CONCRETE CASK average surface dose rate limits not met	A.1 Administratively verify correct fuel loading	24 hours
	<u>AND</u>	
	A.2 Perform analysis to verify compliance with the ISFSI offsite radiation protection requirements of 10 CFR 20 and 10 CFR 72.	7 days
B. Required Action and associated Completion Time not met.	B.1 Remove all fuel assemblies from the NAC-MPC SYSTEM	30 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.2.2.1	Verify average surface dose rates of CONCRETE CASK loaded with a CANISTER containing fuel assemblies are within limits. Dose rates shall be measured at the locations shown in Figure A3-1.	Prior to STORAGE OPERATIONS

Figure A3-1 CONCRETE CASK Average Surface Dose Rates



A 4.0 [Reserved]

A 5.0 ADMINISTRATIVE CONTROLS AND PROGRAMS

A 5.1 Training Program

A training program for the NAC-MPC SYSTEM shall be developed under the general licensee's Systems Approach to Training Program. Training modules shall include comprehensive instructions for all activities related to the NAC-MPC SYSTEM and the independent spent fuel storage installation (ISFSI).

A 5.2 Preoperational Testing and Training Exercises

A dry run training exercise on loading, closure, handling, unloading, and transfer of the NAC-MPC SYSTEM shall be conducted by the licensee prior to the first use of the system to load spent fuel assemblies. The training exercise shall not be conducted with spent fuel in the CANISTER. The dry run may be performed in an alternate step sequence from the actual procedures, but all steps must be performed. The dry run shall include, but is not limited to the following:

a. Moving the CONCRETE CASK into its designated loading area
b. Moving the TRANSFER CASK containing the empty CANISTER into the spent fuel pool
c. Loading one or more dummy fuel assemblies into the CANISTER, including independent verification
d. Selection and verification of fuel assemblies requiring preferential loading
e. Installing the shield lid or closure lid, as applicable
f. Removal of the TRANSFER CASK from the spent fuel pool
g. Closing and sealing of the CANISTER to demonstrate pressure testing, vacuum drying, helium backfilling, welding, weld inspection and documentation, and leak testing
h. TRANSFER CASK movement through the designated load path
i. TRANSFER CASK installation on the CONCRETE CASK
j. Transfer of the CANISTER to the CONCRETE CASK

(continued)

A 5.2 Preoperational Testing and Training Exercises (continued)

k. CONCRETE CASK shield plug and lid (or lid only for MPC-LACBWR) installation
l. Transport of the CONCRETE CASK to the ISFSI
m. CANISTER unloading, including reflooding and weld removal or cutting
n. CANISTER removal from the CONCRETE CASK

A 5.3 Surveillance After an Off-Normal, Accident, or Natural Phenomena Event

A Response Surveillance is required following off-normal, accident or natural phenomena events. The NAC-MPC SYSTEMs in use at an ISFSI shall be inspected within 4 hours after the occurrence of an off-normal, accident or natural phenomena event in the area of the ISFSI. This inspection must specifically verify that all the CONCRETE CASK inlets and outlets are not blocked or obstructed. At least one-half of the inlets and outlets on each CONCRETE CASK must be cleared of blockage or debris within 24 hours to restore air circulation.

The CONCRETE CASK and CANISTER shall be inspected if they experience a drop or a tip-over.

Following a natural phenomena event, the ISFSI shall be inspected to determine if movement or damage to the CONCRETE CASKS has resulted in unacceptable site boundary dose rates.

(continued)

A 5.4 Radioactive Effluent Control Program

The program implements the requirements of 10 CFR 72.44(d).

a. The NAC-MPC SYSTEM does not create any radioactive materials or have any radioactive waste treatment systems. Therefore, specific operating procedures for the control of radioactive effluents are not required.

b. This program includes an environmental monitoring program. Each general licensee may incorporate NAC-MPC SYSTEM operations into their environmental monitoring program for 10 CFR Part 50 operations.

c. An annual report shall be submitted pursuant to 10 CFR 72.44(d)(3) or 10 CFR 50.36(a).

A 5.5 NAC-MPC SYSTEM Transport Evaluation Program

This program provides a means for evaluating various transport configurations and transport route conditions to ensure that the design basis drop limits are met. For lifting of the loaded TRANSFER CASK or CONCRETE CASK using devices, which are integral to a structure governed by 10 CFR Part 50 regulations, 10 CFR 50 requirements apply. This program is not applicable when the TRANSFER CASK or CONCRETE CASK is in the fuel building or is being handled by a device providing support from underneath (i.e., on a rail car, heavy-haul trailer, air pads, etc.).

Pursuant to 10 CFR 72.212, this program shall evaluate the site specific transport route conditions.

(continued)

A 5.5 NAC-MPC SYSTEM Transport Evaluation Program (continued)

a. The program shall ensure that the transport route surfaces will not cause impact loading due to a design basis drop event in excess of 60g.

b. For site specific transport conditions, which are not bounded by the ISFSI pad surface characteristics, the program may evaluate the site specific conditions to ensure that the impact loading due to design basis drop events does not exceed 60g. This alternative analysis shall be commensurate with the drop analyses described in the Final Safety Analysis Report for the NAC-MPC SYSTEM. The program shall ensure that these alternative analyses are documented and controlled.

c. The TRANSFER CASK may be lifted in the vertical orientation to those heights necessary to perform cask handling operations, including CANISTER transfer, provided the lifts are made with structures and components designed in accordance with the criteria specified in Section B3.5. The TRANSFER CASK is not permitted to be lifted in the horizontal orientation.

d. The CONCRETE CASK is not permitted to be lifted in the horizontal orientation and is limited to 6 inches in the vertical orientation.