CERTIFICATE OF COMPLIANCE NO. 1014

APPENDIX A

TECHNICAL SPECIFICATIONS

FOR THE HI-STORM 100 CASK SYSTEM

1.1 Definitions (continued)

LOADING OPERATIONS	LOADING OPERATIONS include all licensed activities on an OVERPACK or TRANSFER CASK while it is being loaded with fuel assemblies. LOADING OPERATIONS begin when the first fuel assembly is placed in the MPC and end when the OVERPACK or TRANSFER CASK is suspended from or secured on the transporter. LOADING OPERATIONS does not include MPC TRANSFER.
MINIMUM ENRICHMENT	MINIMUM ENRICHMENT is the minimum assembly average enrichment. Natural uranium and low enrichment blankets are not considered in determining minimum enrichment.
MULTI-PURPOSE CANISTER (MPC)	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.
MPC TRANSFER	MPC TRANSFER begins when the MPC is lifted off the TRANSFER CASK bottom lid and ends when the MPC is supported from beneath by the OVERPACK or VVM (or the reverse).
NON-FUEL HARDWARE	NON-FUEL HARDWARE is defined as Burnable Poison Rod Assemblies (BPRAs), Thimble Plug Devices (TPDs), Control Rod Assemblies (CRAs), Axial Power Shaping Rods (APSRs), Wet Annular Burnable Absorbers (WABAs), Rod Cluster Control Assemblies (RCCAs), Control Element Assemblies (CEAs), Neutron Source Assemblies (NSAs), water displacement guide tube plugs, orifice rod assemblies, instrument tube tie rods (ITTRs), vibration suppressor inserts, and components of these devices such as individual rods.

(continued)

1.1 Definitions (continued)

OVERPACK	OVERPACKs are the casks which receive and contain the sealed MPCs for interim storage on the ISFSI. They provide gamma and neutron shielding, and provide for ventilated air flow to promote heat transfer from the MPC to the environs. The term OVERPACK does not include the TRANSFER CASK.
PLANAR-AVERAGE INITIAL ENRICHMENT	PLANAR AVERAGE INITIAL ENRICHMENT is the average of the distributed fuel rod initial enrichments within a given axial plane of the assembly lattice.
REPAIRED/RECONSTITUTED FUEL ASSEMBLY	Spent nuclear fuel assembly which contains dummy fuel rod(s) that displaces an amount of water greater than or equal to the original fuel rod(s) and/or which contains structural repairs so it can be handled by normal means. If irradiated dummy stainless steel rods are present in the fuel assembly, the dummy/replacement rods will be considered in the site specific dose calculations.
SPENT FUEL STORAGE CASKS (SFSCs)	SFSCs are containers approved for the storage of spent fuel assemblies at the ISFSI. The HI-STORM 100 SFSC System consists of the OVERPACK/VVM and its integral MPC.
STORAGE OPERATIONS	STORAGE OPERATIONS include all licensed activities that are performed at the ISFSI while an SFSC containing spent fuel is situated within the ISFSI perimeter. STORAGE OPERATIONS does not include MPC TRANSFER.
TRANSFER CASK	TRANSFER CASKs are containers designed to contain the MPC during and after loading of spent fuel assemblies and to transfer the MPC to or from the OVERPACK/VVM. The HI-STORM 100 System employs either the 125-Ton or the 100-Ton HI-TRAC TRANSFER CASK.

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3.1 SFSC INTEGRITY

3.1.2 SFSC Heat Removal System

LCO 3.1.2 The SFSC Heat Removal System shall be operable

----------NOTE----------
The SFSC Heat Removal System is operable when 50% or more of the inlet and outlet vent areas are unblocked and available for flow or when air temperature requirements are met. If surveillance shows partial blockage (≤ 50%) of the duct areas, the blockage should be removed.

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~~Deleted.	A.1 ~~Remove blockage~~Deleted.	~~N/A~~Deleted.
B. SFSC Heat Removal System inoperable.	B.1 Restore SFSC Heat Removal System to operable status.	8 hours (Overpacks containing MPCs with heat loads greater than 19 kW at time of entering condition) OR 24 hours (Overpacks containing MPCs with heat loads less than or equal to 19 kW at time of entering condition)

CONDITION	REQUIRED ACTION	COMPLETION TIME
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	Immediately and once per 12 hours thereafter
	C.2.1 Restore SFSC Heat Removal System to operable status.	64 hours (Storage cell heat loads≤ Tables 3-3 or 3-4 limits) 24 hours (Storage cell heat loads> Tables 3-3 or 3-4 limits)
	OR C.2.2 Transfer the MPC into a TRANSFER CASK.	64 hours (Storage cell heat loads≤ Tables 3-3 or 3-4 limits) 24 hours (Storage cell heat loads> Tables 3-3 or 3-4 limits)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY

SR 3.1.2	Verify all OVERPACK inlets and outlets are free of blockage from solid debris or floodwater.	24 hours (Overpacks containing MPCs with heat loads greater than 19 kW at time of inspection) *OR* *30 days* (Overpacks containing MPCs with heat loads less than or equal to 19 kW at time of inspection)
	OR For OVERPACKS with installed temperature monitoring equipment, verify that the difference between the average OVERPACK air outlet temperature and ISFSI ambient temperature is $\leq$ 155°F for OVERPACKS containing PWR MPCs, $\leq$ 137°F for OVERPACKS containing BWR MPCs.	24 hours (Overpacks containing MPCs with heat loads greater than 19 kW at time of inspection) *OR* *30 days* (Overpacks containing MPCs with heat loads less than or equal to 19 kW at time of inspection)

3.3 SFSC CRITICALITY CONTROL

3.3.1 Boron Concentration

LCO 3.3.1 As required by CoC Appendix B, Table 2.1-2, the concentration of boron in the water in the MPC shall meet the following limits for the applicable MPC model and the most limiting fuel assembly array/class and classification to be stored in the MPC:

a. MPC-24 with one or more fuel assemblies having an initial enrichment greater than the value in Table 2.1-2 for no soluble boron credit and $\leq$ 5.0 wt% ^{235}U: $\geq$ 400 ppmb

b. MPC-24E or MPC-24EF (all INTACT FUEL ASSEMBLIES) with one or more fuel assemblies having an initial enrichment greater than the value in Table 2.1-2 for no soluble boron credit and $\leq$ 5.0 wt% ^{235}U: $\geq$ 300 ppmb

c. Deleted.
d. Deleted.

e. MPC-24E or MPC-24EF (one or more DAMAGED FUEL ASSEMBLIES or FUEL DEBRIS) with one or more fuel assemblies having an initial enrichment > 4.0 wt% ^{235}U and $\leq$ 5.0 wt% ^{235}U: $\geq$ 600 ppmb

f. MPC-32/32F: Minimum soluble boron concentration as required by the table below†.

Array/Class	All INTACT FUEL ASSEMBLIES		One or more DAMAGED FUEL ASSEMBLIES or FUEL DEBRIS	
	Maximum Initial Enrichment $\leq$ 4.1 wt% ^{235}U (ppmb)	Maximum Initial Enrichment 5.0 wt% ^{235}U (ppmb)	Maximum Initial Enrichment $\leq$ 4.1 wt% ^{235}U (ppmb)	Maximum Initial Enrichment 5.0 wt% ^{235}U (ppmb)
14x14A/B/C/D/E	1,300	1,900	1,500	2,300
15x15A/B/C/G/I	1,800	2,500	1,900	2,700
15x15D/E/F/H	1,900	2,600	2,100	2,900
16x16A/B/C	1,400	2,000	1,500	2,300
17x17A	1,600	2,200	1,800	2,600
17x17~~A~~/B/C	1,900	2,600	2,100	2,900

† For maximum initial enrichments between 4.1 wt% and 5.0 wt% ^{235}U, the minimum soluble boron concentration may be determined by linear interpolation between the minimum soluble boron concentrations at 4.1 wt% and 5.0 wt%.

Table 3-1
MPC Cavity Drying Limits for all MPC Types

Fuel Burnup (MWD/MTU)	**MPC Heat Load (kW)**	**Method of Moisture Removal (Notes 1 and 2)**
All Assemblies ≤ 45,000	≤ 30 Note 5 (MPC-24/24E/24EF, MPC-32/32F, MPC-68/68F/68FF) ≤ 36.9 Note 6 (MPC-68M)	VDS Note 5 or FHD Note 6
All Assemblies ≤ 45,000	> 30 Note 6 (MPC-24/24E/24EF, MPC-32/32F, MPC-68/68F/68FF)	FHD Note 6
One or more assemblies > 45,000	≤ 29 (MPC-68M)	VDS Note 4 or FHD Note 6
One or more assemblies > 45,000	≤ 36.9 Note 6 (MPC-24/24E/24EF/MPC-32/32F/MPC-68/68F/68FF/MPC-68M	FHD Note 6

Notes:

1. VDS means a vacuum drying system. The acceptance criterion when using a VDS is MPC cavity pressure shall be ≤ 3 torr for ≥ 30 minutes.

2. FHD means a forced helium dehydration system. The acceptance criterion when using an FHD system is the gas temperature exiting the demoisturizer shall be ≤ 21°F for ≥ 30 minutes or the gas dew point exiting the MPC shall be ≤ 22.9°F for ≥ 30 minutes.

3. Deleted

4. The maximum allowable decay heat per fuel storage location is 0.426 kW.

5. Maximum allowable storage cell heat load is 1.25 kW (MPC-24/24E/24EF), 0.937 kW (MPC-32/32F) and 0.441 kW (MPC-68/68F/68FF).

6. Maximum per assembly allowable heat loads under uniform or regionalized storage defined in Appendix B, Section 2.4.1 or 2.4.2.

Table 3-3: Regionalized Storage[Note 2] Cell Heat Load Limits

MPC Type	Number ofCells in Inner Region[Note 1]	Storage Cell Heat Load (Inner Region) (kW)	Number of Cells in Outer Region[Note 1]	Storage Cell Heat Load (Outer Region) (kW)
MPC-24	4	1.470	20	0.900
MPC-24E/EF	4	1.540	20	0.900
MPC-32/32F	12	1.131	20	0.600
MPC-68/68F/68FF/68M	32	0.500	36	0.275

Note 1: The location of MPC-32 and MPC-68 inner and outer region cells are defined in Appendix B Figures 2.1-3 and 2.1-4 respectively.
The MPC-24 and MPC-24E/EF cell locations are defined below:
Inner Region Cell numbers 9, 10, 15, 16 in Appendix B Figures 2.1-1 and 2.1-2 respectively.
Outer Region Cell numbers 1-8, 11-14, 17-24 in Appendix B Figures 2.1-1 and 2.1-2 respectively.

Note 2: The storage cell regionalization is defined in Note 1 in accordance with safety analyses under the heat load limits of this Table.

Table 3-4: Uniform Storage Cell Heat Load Limits

MPC Type	Heat Load (kW)
MPC-24	1.157
MPC-24E/EF	1.173
MPC-68/68F/68FF/68M	0.414
MPC-32	0.898

5.5 Cask 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 OVERPACK 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 OVERPACK 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...) ~~or is being handled by a device designed in accordance with the increased safety factors of ANSI N14.6 and having redundant drop protection~~.

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

a. For free-standing OVERPACKS and the TRANSFER CASK, the following requirements apply:

1. The lift height above the transport route surface(s) shall not exceed the limits in Table 5-1 except as provided for in Specification 5.5.a.2. Also, if applying the limits in Table 5-1, the program shall ensure that the transport route conditions (i.e., surface hardness and pad thickness) are equivalent to or less limiting than either Set A or Set B in HI-STORM FSAR Table 2.2.9.

2. The program may determine lift heights by analysis based on the site-specific conditions to ensure that the impact loading due to design basis drop events does not exceed 45 g's at the top of the MPC fuel basket. These alternative analyses shall be commensurate with the drop analyses described in the Final Safety Analysis Report for the HI-STORM 100 Cask System. The program shall ensure that these alternative analyses are documented and controlled.

(continued)

5.5 Cask Transport Evaluation Program (continued)

3. The TRANSFER CASK or OVERPACK, when loaded with spent fuel, may be lifted to any height necessary during TRANSPORT OPERATIONS, provided the lifting device is designed in accordance with applicable stress limits from ANSI N14.6, and/or NUREG-0612, and has redundant drop protection features.

4. The TRANSFER CASK and MPC, when loaded with spent fuel, may be lifted to those heights necessary to perform cask handling operations, including MPC TRANSFER, provided the lifts are made with structures and components designed in accordance with the criteria specified in Section 3.5 of Appendix B to Certificate of Compliance No. 1014, as applicable.

b. For the transport of OVERPACKS to be anchored to the ISFSI pad, the following requirements apply:

1. Except as provided in 5.5.b.2, user shall determine allowable OVERPACK lift height limit(s) above the transport route surface(s) based on site-specific transport route conditions. The lift heights shall be determined by evaluation or analysis, based on limiting the design basis cask deceleration during a postulated drop event to $\leq$ 45 g's at the top of the MPC fuel basket. Evaluations and/or analyses shall be performed using methodologies consistent with those in the HI-STORM 100 FSAR.

2. The OVERPACK, when loaded with spent fuel, may be lifted to any height necessary during TRANSPORT OPERATIONS provided the lifting device is designed in accordance with applicable stress limits from ANSI N14.6, and/or NUREG-0612, and has redundant drop protection features.

(continued)