PROPOSED CERTIFICATE OF COMPLIANCE NO. 1014

APPENDIX C

INSPECTIONS, TESTS, AND EVALUATIONS

FOR THE HI-STORM 100S VERSION E CASK

TABLE OF CONTENTS

TABLES

1 INSPECTIONS, TESTS, AND EVALUATIONS

1.1 Definitions

Refer to Appendix D for Definitions.

1.2 Neutron Absorber Tests

1.2.1 MPC-24, 24E, 24EF, 32, 32F, 68, 68F, 68FF and 68M

MPCs listed in 1.2.4 shall meet the minimum requirements for 10B areal density or B4C content, as applicable in Appendix A, Section 1.2.

1.2.2 MPC-32 Version 1 and MPC-68 Version 1 – Metamic Classic

Section 9.1.5.3 of the HI-STORM 100 FSAR is hereby incorporated by reference into the HI-STORM 100 CoC. For each MPC model specified in Sections 1.2.4.2 and 1.2.4.3 (MPC-32 version 1 and MPC-68 version 1) below, the neutron absorber shall meet the minimum requirements for 10B areal density or B4C content, as applicable.

1.2.3 MPC-32M - Metamic-HT

1.2.3.1 The weight percentage of the boron carbide must be confirmed to be greater than or equal to 10% in each lot of Al/B4C powder.

1.2.3.2 The areal density of the B-10 isotope corresponding to the 10% min. weight density in the manufactured Metamic-HT panels shall be independently confirmed by the neutron attenuation test method by testing at least one coupon from a randomly selected panel in each lot.

1.2.3.3 If the B-10 areal density criterion in the tested panels fails to meet the specific minimum, then the manufacturer has the option to reject the entire lot or to test a statistically significant number of panels and perform statistical analysis for acceptance.

1.2.4 Design Important to Neutron Absorber Tests

1.2.4.1 MPC-24, 24E, 24EF, 32, 32F, 68, 68F, 68FF and 68M, in HI-STORM 100S Version E shall meet the specifications of Appendix A Section 1.2.

1.2.4.2 MPC-32 version 1

a. Fuel cell pitch: ≥ 9.158 in.
b. 10B loading in the neutron absorbers: ≥ 0.0310 g/cm2 (METAMIC)

1.2.4.3 MPC-68 version 1

a. Fuel cell pitch: ≥ 6.43 in.
b. 10B loading in the neutron absorbers: ≥ 0.0310 g/cm2 (METAMIC)

1.2.4.4 MPC-32M

a. Basket Cell wall thickness 0.5 in. (nom.)
b. B4C content in METAMIC-HT shall be ≥ 10 wt. %

1.3 Fabrication Helium Leak Test

At completion of welding the MPC shell to baseplate, an MPC confinement weld helium leak test shall be performed using a helium mass spectrometer. This test shall include the base metals of the MPC shell and baseplate. A helium leak test shall also be performed on the base metal of the fabricated MPC lid. The confinement boundary leakage rate tests shall be performed in accordance with ANSI N14.5 to “leaktight” criteria. If a leakage rate exceeding the acceptance criteria is detected, then the area of leakage shall be determined and the area repaired per ASME Code Section III, Subsection NB requirements. Re-testing shall be performed until the leakage rate acceptance criterion is met.

2 SITE

2.1 Site Specific Parameters and Analyses for HI-STORM 100S Version E with All MPCs

2.1.1.1 The temperature of 70° F is the maximum average yearly temperature. A site's yearly average ambient temperature may be used for site-specific analysis.

2.1.1.2 The allowed temperature extremes, averaged over a 3-day period, shall be greater than -40° F and less than 125° F.

2.1.1.3

a. The resultant horizontal acceleration (vectorial sum of two horizontal Zero Period Accelerations (ZPAs) at a three-dimensional seismic site), aH, and vertical ZPA, aV, on the top surface of the ISFSI pad, expressed as fractions of gravity, shall satisfy the following inequalities:

$$aH \leq f\,(1 - aV);$$

$$\text{and } aH \leq r\,(1 - aV) / h$$

where f is the Coulomb friction coefficient for the cask/ISFSI pad interface, r is the radius of the cask, and h is the height of the cask center-of-gravity above the ISFSI pad surface. Unless demonstrated by appropriate testing that a higher coefficient of friction value is appropriate for a specific ISFSI, the value used shall be 0.53. If acceleration time-histories on the ISFSI pad surface are available, aH and aV may be the coincident values of the instantaneous net horizontal and vertical accelerations. If instantaneous accelerations are used, the inequalities shall be evaluated at each time step in the acceleration time history over the total duration of the seismic event.

If this static equilibrium based inequality cannot be met, a dynamic analysis of the cask/ISFSI pad assemblage with appropriate recognition of soil/structure interaction effects shall be performed to ensure that the casks will not tip over or undergo excessive sliding under the site's Design Basis Earthquake.

b. Under environmental conditions that may degrade the pad/cask interface friction (such as due to icing) the response of the casks under the site's Design Basis Earthquake shall be established using the best estimate of the friction coefficient in an appropriate analysis model. The analysis should demonstrate that the earthquake will not result in cask tipover or cause excessive sliding such that impact between casks could occur. Any impact between casks should be considered an accident for which the maximum total deflection, d, in the active fuel region of the basket panels shall be limited by the following inequality: $d \leq 0.005\,l$, where l is the basket cell inside dimension.

2.1.1.4 The maximum permitted depth of submergence under water shall not exceed 125 feet.

2.1.1.5 The maximum permissible velocity of floodwater, V, for a flood of height, h, shall be the lesser of V1 or V2, where:

$$V_1 = (1.876\ W^*)^{1/2} / h$$

$$V_2 = (1.876\ f\ W^*/\ D\ h)^{1/2}$$

and W* is the apparent (buoyant weight) of the loaded overpack (in pounds force), D is the diameter of the overpack (in feet), and f is the interface coefficient of friction between the ISFSI pad and the overpack, as used in step 2.1.1.3.a above. Use the height of the overpack, H, if h>H.

2.1.1.6 The potential for fire and explosion while handling a loaded OVERPACK or TRANSFER CASK shall be addressed, based on site-specific considerations. The user shall demonstrate that the site-specific potential for fire is bounded by the fire conditions analyzed by the Certificate Holder, or an analysis of the site-specific fire considerations shall be performed.

2.1.1.7 The ISFSI pad shall be verified by analysis to meet the structural acceptance criteria set forth in section 2.II.2.2 of the HI-STORM FSAR. A restriction on the lift and/or drop height is not required to be established if the cask is lifted with a device designed in accordance with applicable stress limits from ANSI N14.6, and/or NUREG-0612, and has redundant drop protection features.

2.1.1.8 In cases where engineered features (i.e., berms and shield walls) are used to ensure that the requirements of 10CFR72.104(a) are met, such features are to be considered important to safety and must be evaluated to determine the applicable quality assurance category.

2.1.1.9 LOADING OPERATIONS, OVERPACK TRANSPORT OPERATIONS, and UNLOADING OPERATIONS shall only be conducted with working area ambient temperatures ≥ 0ºF for all MPC heat loads, and

a. ≤ 90ºF (averaged over a 3-day period) for operations subjected to direct solar heating

b. ≤ 110ºF (averaged over a 3-day period) for operations not subjected to direct solar heating for all MPC heat loads.

If the reference ambient temperature exceeds the corresponding Threshold Temperature then a site specific analysis shall be performed using the actual heat load and reference ambient temperature equal to the three day average to demonstrate that the steady state peak fuel cladding temperature will remain below the 400°C limit.

2.1.1.10 For those users whose site-specific design basis includes an event or events (e.g., flood) that result in the blockage of any OVERPACK inlet or outlet air ducts for an extended period of time (i.e, longer than the total Completion Time of LCO 3.1.2), an analysis or evaluation may be performed to demonstrate adequate heat removal is available for the duration of the event. Adequate heat removal is defined as fuel cladding temperatures remaining below the accident temperature limit. If the analysis or evaluation is not performed, or if fuel cladding temperature limits are unable to be demonstrated by analysis or evaluation to remain below the accident temperature limit for the duration of the event, provisions shall be established to provide alternate means of cooling to accomplish this objective.

2.1.1.11 Users shall establish procedural and/or mechanical barriers to ensure that during LOADING OPERATIONS and UNLOADING OPERATIONS, either the fuel cladding is covered by water, or the MPC is filled with an inert gas.

2.1.1.12 The entire haul route shall be evaluated to ensure that the route can support the weight of the loaded system and its conveyance.

2.1.1.13 The loaded system and its conveyance shall be evaluated to ensure under the site-specific Design Basis Earthquake the system does not tipover or slide off the haul route.

2.1.1.14 The HI-STORM 100S Version E /HI-TRAC stack which occurs during MPC TRANSFER shall be evaluated to ensure under the site specific Design Basis Earthquake the system does not tipover. A probabilistic risk assessment cannot be used to rule out the occurrence of the earthquake during MPC TRANSFER.

2.2 Environmental Temperature Requirements

TRANSPORT OPERATIONS involving any version of the HI-TRAC transfer cask can be carried out if the reference ambient temperature (three day average around the cask) is ABOVE ≥ 0° F and below the Threshold Temperature of 110 deg. F ambient temperature, applicable during HI-TRAC MS transfer operations inside the 10 CFR Part 50 or 10 CFR Part 52 structural boundary and 90 deg. F outside of it. The determination of the Threshold Temperature compliance shall be made based on the best available thermal data for the site.

If the reference ambient temperature exceeds the corresponding Threshold Temperature then a site specific analysis shall be performed using the actual heat load and reference ambient temperature equal to the three day average to ensure that the steady state peak fuel cladding temperature will remain below the ISG-11 Rev 3 limits. If the peak fuel cladding temperature exceeds ISG-11 Rev 3 limits, then the operation of a Supplemental Cooling System (SCS) in accordance with LCO 3.1.4 is mandatory.

2.3 <u>Cask Transfer Facility (CTF)</u>

2.3.1 Transfer Cask and MPC Lifters

Lifting of a loaded TRANSFER CASK and MPC using devices that are not integral to structures governed by 10 CFR Part 50 shall be performed with a CTF that is designed, operated, fabricated, tested, inspected, and maintained in accordance with the guidelines of NUREG-0612, “Control of Heavy Loads at Nuclear Power Plants”, as applicable, and the below clarifications. The CTF Structure requirements below do not apply to heavy loads bounded by the regulations of 10 CFR Part 50 or to the loading of an OVERPACK in a belowground restraint system which permits MPC TRANSFER near grade level and does not require an aboveground CTF.

2.3.2 CTF Structure Requirements

2.3.2.1 Cask Transfer Station and Stationary Lifting Devices

a. The metal weldment structure of the CTF structure shall be designed to comply with the stress limits of ASME Section III, Subsection NF, Class 3 for linear structures. The applicable loads, load combinations, and associated service condition definitions are provided in Table 2-1. All compression loaded members shall satisfy the buckling criteria of ASME Section III, Subsection NF.

b. If a portion of the CTF structure is constructed of reinforced concrete, then the factored load combinations set forth in ACI-318 (89) for the loads defined in Table 2-1 shall apply.

c. The TRANSFER CASK and MPC lifting device used with the CTF shall be designed, fabricated, operated, tested, inspected and maintained in accordance with NUREG-0612, Section 5.1.

d. The CTF shall be designed, constructed, and evaluated to ensure that if the MPC is dropped during inter-cask transfer operations, its confinement boundary would not be breached. This requirement applies to CTFs with either stationary or mobile lifting devices.

2.3.2.2 Mobile Lift Devices

If a mobile lifting device is used as the lifting device, in lieu of a stationary lifting device, it shall meet the guidelines of NUREG- 0612, Section 5.1, with the following clarifications:

a. Mobile lifting devices shall have a minimum safety factor of two over the allowable load table for the lifting device in accordance with the guidance of NUREG-0612, Section 5.1.6(1)(a) and shall be capable of stopping and holding the load during a Design Basis Earthquake (DBE) event.

b. Mobile lifting devices shall conform to meet the requirements of ANSI B30.5, “Mobile and Locomotive Cranes,” in lieu of the requirements of ANSI B30.2, “Overhead and Gantry Cranes.”

c. Mobile cranes are not required to meet the requirements of NUREG-0612, Section 5.1.6(2) for new cranes.

d. Horizontal movements of the TRANSFER CASK and MPC using a mobile crane are prohibited.

Table 2-1: Load Combinations and Service Condition Definitions for the CTF Structure (Note 1)

Load Combination	ASME III Service Condition for Definition of Allowable Stress	Comment
D* D + S	Level A	All primary load bearing members must satisfy Level A stress limits
D + M + W’ (Note 2) D + F D + E D + Y	Level D	Factor of safety against overturning shall be ≥ 1.1

D = Dead load

D* = Apparent dead load

S = Snow and ice load for the CTF site

M = Tornado missile load for the CTF site

W’ = Tornado wind load for the CTF site

F = Flood load for the CTF site

E = Seismic load for the CTF site

Y = Tsunami load for the CTF site

Notes:
1. The reinforced concrete portion of the CTF structure shall also meet the factored combinations of loads set forth in ACI-318(89).
2. Tornado missile load may be reduced or eliminated based on a PRA for the CTF site.

2.4 Forced Helium Dehydration System

2.4.1 System Description

Use of a forced helium dehydration (FHD) system, (a closed-loop system) is an alternative to vacuum drying the MPC for moderate burnup fuel (≤ 45,000 MWD/MTU) with lower MPC heat load and for drying MPCs containing one or more high burnup fuel assemblies or higher MPC heat loads as indicated in Appendix D Table 3.3-1 and 3.3-2. The FHD system shall be designed for normal operation (i.e., excluding startup and shutdown ramps) in accordance with the criteria in Section 2.4.2.

2.4.2 Design Criteria

2.4.2.1 The temperature of the helium gas in the MPC shall be at least 15°F higher than the saturation temperature at coincident pressure.

2.4.2.2 The pressure in the MPC cavity space shall be ≤ 60.3 psig (75 psia) during drying. Backfill pressures shall be as described in Appendix D.

2.4.2.3 The hourly recirculation rate of helium shall be ≥ 10 times the nominal helium mass backfilled into the MPC for fuel storage operations.

2.4.2.4 The partial pressure of the water vapor in the MPC cavity will not exceed 3 torr. The limit is met if the gas temperature at the demoisturizer outlet is verified by measurement to remain ≤ 21°F for a period of 30 minutes or if the dew point of the gas exiting the MPC is verified by measurement to remain ≤ 22.9°F for ≥ 30 minutes.

2.4.2.5 The condensing module shall be designed to de-vaporize the recirculating helium gas to a dew point ≤ 120°F.

2.4.2.6 The demoisturizing module shall be configured to be introduced into its helium conditioning function after the condensing module has been operated for the required length of time to assure that the bulk moisture vaporization in the MPC (defined as Phase 1 in FSAR Appendix 2.B) has been completed.

2.4.2.7 The helium circulator shall be sized to effect the minimum flow rate of circulation required by these design criteria.

2.4.2.8 The pre-heater module shall be engineered to ensure that the temperature of the helium gas in the MPC meets these design criteria.

2.4.3 Fuel Cladding Temperature

A steady-state thermal analysis of the MPC under the forced helium flow scenario shall be performed using the methodology described in HI-STORM 100 FSAR Section 4.4, with due recognition of the forced convection process during FHD system operation. This analysis shall demonstrate that the peak temperature of the fuel cladding, under the most adverse condition of FHD system operation, is below the peak cladding temperature limit for normal conditions of storage for the applicable fuel type (PWR or BWR) and cooling time at the start of dry storage.

2.4.4 Pressure Monitoring During FHD Malfunction

During an FHD malfunction event, described in HI-STORM 100 FSAR Chapter 11 as a loss of helium circulation, the system pressure must be monitored to ensure that the conditions listed therein are met.

2.5 72.212 Evaluations for Renewed CoC Use

Any general licensee that initiates spent fuel dry storage operations with the HI-STORM 100 system after the effective date of the renewal of the CoC and any general licensee operating a HI-STORM 100 system as of the effective date of the renewal of the CoC, including those that put additional storage systems into service after that date, shall:

2.5.1 Evaluations

2.5.1.1 As part of the evaluations required by 10CFR72.212(b)(5), include the evaluations related to the terms, conditions, and specifications of this CoC amendment as modified (i.e., changed or added) as a result of the renewal of the CoC.

2.5.1.2 As part of the document review required by 10CFR72.212(b)(6), include a review of the FSAR changes resulting from the renewal of the CoC; and

2.5.1.3 Ensure that the evaluations required by 10CFR72.212(b)(7) and (8) capture the evaluations and review described in (a) and (b) of this CoC condition.

3 LIST OF ASME CODE ALTERNATIVES FOR HI-STORM MULTI-PURPOSE CANISTERS (MPCS)

Table 3-1: **LIST OF ASME CODE ALTERNATIVES FOR HI-STORM Multi-Purpose Canisters (MPCs)**

Component	Reference ASME Code Section / Article	Code Requirement	Alternative, Justification & Compensatory Measures
MPC Enclosure Vessel	Subsection NCA	General Requirements. Requires preparation of a Design Specification, Design Report, Overpressure Protection Report, Certification of Construction Report, Data Report, and other administrative controls for an ASME Code stamped vessel.	Because the MPC is not an ASME Code stamped vessel, none of the specifications, reports, certificates, or other general requirements specified by NCA are required. In lieu of a Design Specification and Design Report, the HI- STORM FSAR includes the design criteria, service conditions, and load combinations for the design and operation of the MPCs as well as the results of the stress analyses to demonstrate that applicable Code stress limits are met. Additionally, the fabricator is not required to have an ASME-certified QA program. All important-to-safety activities are governed by the NRC-approved Holtec QA program. Because the cask components are not certified to the Code, the terms “Certificate Holder” and “Inspector” are not germane to the manufacturing of NRC-certified cask components. To eliminate ambiguity, the responsibilities assigned to the Certificate Holder in the Code, as applicable, shall be interpreted to apply to the NRC Certificate of Compliance (CoC) holder (and by extension, to the component fabricator) if the requirement must be fulfilled. The Code term “Inspector” means the QA/QC personnel of the CoC holder and its vendors assigned to oversee and inspect the manufacturing process.
MPC Enclosure Vessel	NB-1100	Statement of requirements for Code stamping of components.	MPC Enclosure Vessel is designed and will be fabricated in accordance with ASME Code, Section III, Subsection NB to the maximum practical extent, but Code stamping is not required.

Table 3-1: LIST OF ASME CODE ALTERNATIVES FOR HI-STORM Multi-Purpose Canisters (MPCs)

Component	Reference ASME Code Section / Article	Code Requirement	Alternative, Justification & Compensatory Measures
MPC lift lugs	NB-1130	NB-1132.2(d) requires that the first connecting weld of a non-pressure retaining structural attachment to a component shall be considered part of the component unless the weld is more than 2t from the pressure retaining portion of the component, where t is the nominal thickness of the pressure retaining material. NB-1132.2(e) requires that the first connecting weld of a welded nonstructural attachment to a component shall conform to NB-4430 if the connecting weld is within 2t from the pressure retaining portion of the component.	The lugs that are used exclusively for lifting an empty MPC are welded to the inside of the pressure-retaining MPC shell, but are not designed in accordance with Subsection NB. The lug-to-Enclosure Vessel Weld is required to meet the stress limits of Reg. Guide 3.61 in lieu of Subsection NB of the Code.
MPC Enclosure Vessel	NB-2000	Requires materials to be supplied by ASME-approved material supplier.	Materials will be supplied by Holtec approved suppliers with Certified Material Test Reports (CMTRs) in accordance with NB-2000 requirements.
MPC Enclosure Vessel	NB-2121	Provides permitted material specification for pressure- retaining material, which must conform to Section II, Part D, Tables 2A and 2B.	Certain duplex stainless steels are not included in Section II, Part D, Tables 2A and 2B. UNS S31803 duplex stainless-steel alloy is evaluated in the HI-STORM FW FSAR and meet the required design criteria for use in the HI-STORM 100 system per ASME Code Case N-635-1. Appendix 1.A provides the required property data for the necessary safety analysis.

Table 3-1: LIST OF ASME CODE ALTERNATIVES FOR HI-STORM Multi-Purpose Canisters (MPCs)

Component	Reference ASME Code Section / Article	Code Requirement	Alternative, Justification & Compensatory Measures
MPC Enclosure Vessel	NB-3100 NF-3100	Provides requirements for determining design loading conditions, such as pressure, temperature, and mechanical loads.	These requirements are not applicable. The HI-STORM FSAR, serving as the Design Specification, establishes the service conditions and load combinations for the storage system.
MPC Enclosure Vessel	NB-4120	NB-4121.2 and NF-4121.2 provide requirements for repetition of tensile or impact tests for material subjected to heat treatment during fabrication or installation.	In-shop operations of short duration that apply heat to a component, such as plasma cutting of plate stock, welding, machining, and coating are not, unless explicitly stated by the Code, defined as heat treatment operations.
MPC Enclosure Vessel	NB-4220	Requires certain forming tolerances to be met for cylindrical, conical, or spherical shells of a vessel.	The cylindricity measurements on the rolled shells are not specifically recorded in the shop travelers, as would be the case for a Code-stamped pressure vessel. Rather, the requirements on inter-component clearances (such as the MPC-to-transfer cask) are guaranteed through fixture- controlled manufacturing. The fabrication specification and shop procedures ensure that all dimensional design objectives, including inter-component annular clearances are satisfied. The dimensions required to be met in fabrication are chosen to meet the functional requirements of the dry storage components. Thus, although the post-forming Code cylindricity requirements are not evaluated for compliance directly, they are indirectly satisfied actually exceeded) in the final manufactured components.

Table 3-1: LIST OF ASME CODE ALTERNATIVES FOR HI-STORM Multi-Purpose Canisters (MPCs)

Component	Reference ASME Code Section / Article	Code Requirement	Alternative, Justification & Compensatory Measures
MPC Enclosure Vessel	NB-4122	Implies that with the exception of studs, bolts, nuts and heat exchanger tubes, CMTRs must be traceable to a specific piece of material in a component.	MPCs are built in lots. Material traceability on raw materials to a heat number and corresponding CMTR is maintained by Holtec through markings on the raw material. Where material is cut or processed, markings are transferred accordingly to assure traceability. As materials are assembled into the lot of MPCs being manufactured, documentation is maintained to identify the heat numbers of materials being used for that item in the multiple MPCs being manufactured under that lot. A specific item within a specific MPC will have a number of heat numbers identified as possibly being used for the item in that particular MPC of which one or more of those heat numbers (and corresponding CMTRS) will have actually been used. All of the heat numbers identified will comply with the requirements for the particular item.
MPC Lid and Closure Ring Welds	NB-4243	Full penetration welds required for Category C Joints (flat head to main shell per NB-3352.3)	MPC lid and closure ring are not full penetration welds. They are welded independently to provide a redundant seal.
MPC Closure Ring, Vent and Drain Cover Plate Welds	NB-5230	Radiographic (RT) or ultrasonic (UT) examination required.	Root (if more than one weld pass is required) and final liquid penetrant examination to be performed in accordance with NB-5245. The closure ring provides independent redundant closure for vent and drain cover plates. Vent and drain port cover plate welds are helium leakage tested. As an alternative, the helium leakage test does not have to be performed if the REDUNDANT PORT COVER DESIGN is used.
MPC Lid to Shell Weld	NB-5230	Radiographic (RT) or ultrasonic (UT) examination required.	Only progressive liquid penetrant (PT) examination is permitted. PT examination will include the root and final weld layers and each approx. 3/8" of weld depth.

Table 3-1: LIST OF ASME CODE ALTERNATIVES FOR HI-STORM Multi-Purpose Canisters (MPCs)

Component	Reference ASME Code Section / Article	Code Requirement	Alternative, Justification & Compensatory Measures
MPC Enclosure Vessel and Lid	NB-6111	All completed pressure retaining systems shall be pressure tested.	The MPC vessel is strength welded in the field following fuel assembly loading. Pressure tests (Hydrostatic or pneumatic) will not be performed because lack of accessibility for leakage inspections precludes a meaningful pressure retention capability test. The different models of MPCs available in the industry are not subject to pressure tests because of the dose to the crew, the proven ineffectiveness of the pressure tests to reveal any leaks and the far more effective tests performed on the MPC confinement boundary, such as: All MPC enclosure vessel welds (except closure ring and vent/drain cover plate) are inspected by volumetric examination. All MPC shell and baseplate materials are UT tested. Finally, the MPC lid-to-shell weld shall be verified by progressive PT examination. PT must include the root and final layers and each approximately 3/8 inch of weld depth. The inspection results, including relevant findings (indications) shall be made a permanent part of the user's records by video, photographic, of other means which provide an equivalent record of weld integrity. The video or photographic records should be taken during the final interpretation period described in ASME Section V, Article 6, T-676. The vent/drain cover plate and the closure ring welds are confirmed by liquid penetrant examination. The inspection of the weld must be performed by qualified personnel and shall meet the acceptance requirements of ASME Code Section III, NB-5350.
MPC Enclosure Vessel	NB-7000	Vessels are required to have overpressure protection.	No overpressure protection is provided. Function of MPC enclosure vessel is to contain radioactive contents under normal, off-normal, and accident conditions of storage. MPC vessel is designed to withstand maximum internal pressure considering 100% fuel rod failure and maximum accident temperatures.

Table 3-1: LIST OF ASME CODE ALTERNATIVES FOR HI-STORM Multi-Purpose Canisters (MPCs)

Component	Reference ASME Code Section / Article	Code Requirement	Alternative, Justification & Compensatory Measures
MPC Enclosure Vessel	NB-8000	States requirements for nameplates, stamping and reports per NCA-8000.	The HI-STORM 100 System is to be marked and identified in accordance with 10CFR71 and 10CFR72 requirements. Code stamping is not required. QA data package to be in accordance with Holtec approved QA program.