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U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Subject: USNRC Docket Nos. 72-1008 and 72-1014
HI-STAR 100 Certificate of Compliance 1008
HI-STORM 100 Certificate of Compliance 1014
HI-STAR 100 System 10 CFR 72.48(d)(2) Biennial Report
HI-STORM 100 System 10 CFR 72.48(d)(2) Biennial Report

References: 1. Holtec Project 5014
2. Holtec Letter 5014694

Dear Sir:

In accordance with 10 CFR 72.48(d)(2), Holtec International herewith submits the biennial report of changes, tests, and experiments implemented for the HI-STAR 100 and HI-STORM 100 Systems under the provisions of 10 CFR 72.48. The attached report summarizes all changes tests, and experiments implemented by Holtec under the provisions of 10 CFR 72.48 for the HI-STAR 100 and HI-STORM 100 Systems between January 1, 2010 and December 31, 2011.

It is noted that the last such biennial report (Reference 2) was submitted on January 4, 2010, and that the period between these filings is consistent with the 10 CFR 72.48(d)(2) reporting requirement.

Sincerely,

Tammy S. Morin
Licensing Manager, Holtec Technical Services
Holtec International

Attachment: Biennial Summary of Changes, Tests, and Experiments Pertaining to the HI-STAR 100 and HI-STORM 100 Dry Cask Storage Systems

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10 CFR 72.48(d)(2) Report for the HI-STAR 100 and HI-STORM 100 Cask Systems

Attachment 1- Biennial Summary of Changes, Tests, and Experiments Pertaining to the HI-STAR 100 and HI-STORM 100 Dry Cask Storage Systems

NRC Docket Nos. 72-1008 and 72-1014

10 CFR 72.48(d)(2) Report

Notes on the 10 CFR 72.48(d)(2) Report:

1. The first two columns of the report are the Holtec 72.48 number assigned (sequentially) to the change, test or experiment and the corresponding latest revision.
2. The third column of the report is the dry cask certificate number impacted by the change, test or experiment.
3. The fourth column of the report is the Holtec Project Number for the component(s) impacted by the change, test or experiment. These are:
 - a. 1020 – HI-STAR Overpack
 - b. 1021 – MPC-68/68F/68FF
 - c. 1022 – MPC-24/24E/24EF
 - d. 1023 – MPC-32/32F
 - e. 1024 – HI-STORM 100/100S/100S Version B Overpack
 - f. 1025 – HI-TRAC 125/125D Transfer Cask
 - g. 1026 – HI-TRAC 100/100D Transfer Cask
 - h. 1027 – Ancillary Equipment
 - i. 5014 – Generic
4. The fifth column of the report lists if the change, test or experiment was initiated by an engineering change order (ECO) or a manufacturing deviation (SMDR).
5. The sixth column of the report lists if the change, test or experiment required a full evaluation (an adverse change) or only a screening (not an adverse change).
6. The seventh column of the report lists the affected component/s of the change, test or experiment.
7. The eighth and ninth columns of the report are the description of the change, test, or experiment and the summary of the evaluation (required for full evaluations only).

10 CFR 72.48(d)(2) Report for the HI-STAR 100 and HI-STORM 100 Cask Systems

72.48 #	72.48 Rev.	CoC #s	Holtec Project	ECO or SMDR	7248 Type	Affected Component	Description of Change, Test or Experiment	Summary of Evaluation (Full Evaluations Only)
923	0	1014	5014	ECO	Screening Only	N/A	It is proposed to add text to Section 3.5 of the HI-STORM 100 FSAR to clarify that the integrity of the fuel cladding is assured for design basis accidents analyzed for the HI-STORM system and to present discussion of NUREG-1864 which concludes that the fuel cladding can withstand decelerations greater than the 45g limit imposed on the HI-STORM system. As a result, Section 3.8 is updated to include references to NUREG-1864 and LLNL UCID-21246. See Attachment A for the complete markup.	N/A
930	0	1014	1021, 1022, 1023	ECO	Screening Only	MPC Basket	It is proposed to remove the option to allow the neutron absorber panels to be made from two short panels instead of one long panel. Therefore, neutron absorber panels may now only be single-piece panels. This change is implemented for MPC-68/68F/68FF, MPC-32/32F, and MPC-24/24E/24EF baskets. No MPC baskets were ever manufactured utilizing the two-piece panel construction; therefore this is only an administrative change to remove the two-piece panel construction option from the basket licensing drawings.	N/A

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72.48 #	72.48 Rev.	CoC #s	Holtec Project	ECO or SMDR	7248 Type	Affected Component	Description of Change, Test or Experiment	Summary of Evaluation (Full Evaluations Only)
931	0	1014	1021, 1022, 1023	ECO	Screening Only	Fuel Spacers	<p>It is proposed to make the following changes to the MPC enclosure vessel licensing Dwg 3923 R24:</p> <p>[1] Sheet 5, Zone D6, Change Lower PWR Fuel Spacer Upper Plate thickness from 3/8"THK (Max.) to 3/8" THK OR 1/4" THK.</p> <p>[2] Sheet 5, Zone C6, Change Lower PWR Fuel Spacer Lower Plate thickness from 3/8"THK (Max.) to 3/8" THK OR 1/4" THK.</p> <p>[3] Sheet 5, Zone D2, Change Lower BWR Fuel Spacer Upper Plate thickness from 3/8"THK (Max.) to 3/8" THK OR 1/4" THK.</p> <p>[4] Sheet 5, Zone C2, Change Lower BWR Fuel Spacer Lower Plate thickness from 3/8"THK (Max.) to 3/8" THK OR 1/4" THK.</p> <p>[5] Sheet 5, Zone B5, Change Upper PWR Fuel Spacer Upper Plate thickness from 3/8"THK (Max.) to 3/8" THK OR 1/4" THK.</p> <p>[6] Sheet 5, Zone B2, Change Upper BWR Fuel Spacer Upper Plate thickness from 3/8"THK (Max.) to 3/8" THK OR 1/4" THK.</p> <p>[7] Sheet 5, Zone A6, Change Upper PWR Fuel Spacer Lower Plate thickness from 3/4"THK (Min.) to 3/4" THK.</p> <p>[8] Sheet 8, Zone D7, Change Optional Lower BWR Fuel Spacer Top Plate thickness from 1/4"THK (Max.) to 3/8" THK OR 1/4" THK.</p> <p>[9] Sheet 8, Zone D2, Change Optional Lower PWR Fuel Spacer Top Plate thickness from 3/8"THK (Max.) to 3/8" THK OR 1/4" THK.</p>	N/A
932	0	1014	5014	ECO	Screening Only	N/A	It is proposed to add Section 4.5.5.3 to the HI-STORM FSAR which evaluates the Supplemental Cooling System Failure accident condition for all cask heat loads. See Attachment A for complete text change.	N/A
933	0	1014	5014	ECO	Screening Only	N/A	It is proposed to modify FSAR Section 3.5 text in order to clarify that verbiage related to NUREG-1864 is included in the section to further support the ability of the fuel to withstand decelerations up to and including 45gs. See Attachment A for complete markup of Section 3.5.	N/A.

10 CFR 72.48(d)(2) Report for the HI-STAR 100 and HI-STORM 100 Cask Systems

72.48 #	72.48 Rev.	CoC #s	Holtec Project	ECO or SMDR	7248 Type	Affected Component	Description of Change, Test or Experiment	Summary of Evaluation (Full Evaluations Only)
937	0	1014	1021, 1022, 1023, 5014	ECO	Full Evaluation	MPC lid, HI-TRAC pool and top lids, HI-STORM anchor blocks	Per ECO 5014-182R0, it is proposed to make changes to the FSAR and MPC drawings as part of corrective action report (CAR 168) for QPV 717. See Attachment A of ECO 5014-182 for a complete markup of the FSAR changes. The net effect of these changes is to increase the minimum yield strength of the MPC lid material to 33ksi.	There are no malfunctions associated with the HI-STORM system so no malfunction likelihood, consequences or results can be increased. The structural integrity, thermal performance, and shielding effectiveness of the HI-STORM, HI-TRAC, and MPC is maintained, so no accident consequences can be increased. Methods of handling and operating the cask systems are not affected, so no new accidents can be created. Cask system temperatures, including fuel cladding, are not increased and MPC internal pressures are not increased, so no fission product boundary limit is exceeded. No new evaluation methods are used.

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72.48 #	72.48 Rev.	CoC #s	Holtec Project	ECO or SMDR	7248 Type	Affected Component	Description of Change, Test or Experiment	Summary of Evaluation (Full Evaluations Only)
948	1	1014	1025	ECO	Full Evaluation	HI-TRAC 125D	<p>It is proposed to add few clarification notes regarding weld details to the HI-TRAC licensing drawing (DWG 3768). Some editorial clarifications to the welding notations and weld sizes have also been made at various locations in the drawing. The weld connecting the outer shell to the rib is reduced from 1/2" to 5/16". These changes are detailed in ECO-1025-63 and are specifically screened/evaluated in this 72.48 in order to implement the proposed changes.</p> <p>*****Revision 1***** Corrected typo in summary of 72.48 evaluation to match with evaluation. No change to the 72.48 evaluation.</p>	<p>THERE ARE NO MALFUNCTIONS ASSOCIATED WITH THE HI-STORM SYSTEM DUE TO THE PROPOSED ACTIVITY AND THEREFORE NO MALFUNCTION LIKELIHOOD, CONSEQUENCE OR RESULT CAN BE INCREASED.</p> <p>THE CONTAINMENT BOUNDARY REMAINS UNCHANGED, SO NO ACCIDENT CONSEQUENCES CAN BE INCREASED. METHOD OF HANDLING AND OPERATING THE CASK IS NOT AFFECTED, SO NO NEW ACCIDENTS CAN BE CREATED. CASK SYSTEM TEMPERATURES, INCLUDING FUEL CLADDING, ARE NOT INCREASED AND MPC INTERNAL PRESSURES ARE NOT INCREASED, SO NO FISSION PRODUCT BOUNDARY LIMIT IS EXCEEDED. NO NEW EVALUATION METHODS ARE USED.</p> <p>THE FULL EVALUATION HAS DETERMINED THAT THE CHANGE MAY BE IMPLEMENTED WITHOUT PRIOR NRC APPROVAL.</p>

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949	0	1014	1021, 1022, 1023	ECO	Screening Only	MPC lid	On DWG 3923, it is proposed to change the contour finish of the non structural weld surface that joins the two portions of the MPC split lid from "concave" to "flush".	N/A
950	1	1014	5014	ECO	Screening Only	N/A	<p>Addition of the heat load assumptions used in the thermal analysis for the individual cell locations during vacuum drying (with and without annulus flushing) to FSAR Chapter 4.</p> <p>Revision 1 contains a clarification to the text in Section 1.3 of the supporting 72.48 file only. No additional changes to the FSAR were made as a result of this revision; therefore this revision is not signed by any chapter author. The revision does not affect the determination that this proposed change is "Screening Only" nor does it affect any conclusions of the screening.</p>	N/A
952	0	1014	5014	ECO	Screening Only	N/A	Clarification is added to the FSAR with regard to the paint equivalency. The alternate equivalent paint must have the same or better functional characteristics/properties as the specified paint for its intended use and it may not be exactly equivalent in all other properties.	N/A
953	1	1014	1025	ECO	Screening Only	HI-TRAC 125D	<p>THE FOLLOWING TEXT CHANGES TO THE HI-STORM FSAR, HI-2002444 REV 9, ARE PROPOSED:</p> <p>[1] SECTION 9.1.5.2, PARAGRAPH 2: REPLACE THE SECOND SENTENCE WITH THE FOLLOWING, "THE MINIMUM TOTAL THICKNESS OF LEAD SHEETS INSTALLED IN THE CAVITY SHALL BE VERIFIED TO MEET THE LICENSING DRAWING INCLUDING TOLERANCE."</p> <p>[2] SECTION 9.1.2.2.1, PARAGRAPH 2: CHANGE THE SECOND SENTENCE TO READ, "THE TEST PRESSURE GAGE INSTALLED ON THE WATER JACKET SHALL BE GRADUATED OVER A RANGE NOT LESS THAN 1.5 TIMES NOR MORE THAN 4 TIMES THE TEST PRESSURE. DIGITAL TYPE PRESSURE GAGES MAY BE USED WITHOUT RANGE RESTRICTION PROVIDED THE COMBINED ERROR DUE TO CALIBRATION AND READABILITY DOES NOT EXCEED 1% OF THE TEST PRESSURE."</p>	N/A

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955	0	1014	1026	ECO	Screening Only	HI-TRAC 100D	It is proposed to add clarification notes regarding weld details and make the bottom flange chamfer as a reference dimension in the HI-TRAC licensing drawing (DWG 4128).	N/A
956	0	1014	5014	ECO	Screening Only	N/A	It is proposed to add discussion to the FSAR in order to present the rational for allowing bulk water removal from the MPC using a helium or nitrogen blow-down process. See Attachment A to ECO-5014-192 for the proposed wording.	N/A
958	0	1014	1021	ECO	Screening Only	MPC-68	It is proposed to make the following changes to the MPC-68/68F/68FF licensing Dwg 3928R14: [1] SHEET 4, ZONE C6: CHANGE 20.26 ± 1/4"; 66.34" +3/8", -1/4" AND 26.635" ± 1/4" DIMENSION TO 20 1/4" ± 1/4"; 66 11/32" +3/8", -1/4" AND 26 5/8" ± 1/4" RESPECTIVELY. [2] SHEET 4, ZONE C5: CHANGE 53.05" +3/8", -1/4" AND 66.03" +3/8", -1/4" DIMENSIONS TO 53 1/16" +3/8", -1/4" AND 66 1/32" +3/8", -1/4" RESPECTIVELY.	N/A
962	0	1014	5014	ECO	Screening Only	N/A	Text changes to HI-STORM 100 FSAR (HI-2002444 R9) Section 3.5 are shown in Attachment A to ECO 5014-193. The discussion on the performance of the cladding during a design basis accident is removed from the FSAR based on guidance in Reg Guide 3.61 which only requires that cladding analysis be performed if the cladding is being credited for confinement of radioactive materials in the System (Per Regulatory Guide 3.61, Section 3.5, "When fuel cladding is considered in the design criteria for confinement of radioactive material under normal or accident condition, provide an analysis or test results showing that the cladding will maintain its integrity."), ISG-2 which clarifies that fuel be retrievable after normal and off-normal conditions of storage, and ISG-3 which clarifies that the MPC must be recoverable from a System after an accident and no performance criteria is specifically applied to the fuel cladding.	N/A

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965	0	1014	5014	ECO	Screening Only	HI-STORM 100S	AN OPTION IS ADDED TO THE BASE BOTTOM PLATE NOTCH DIMENSION WHERE IT CAN BE EITHER 18" OR 22" REFERENCE DIMENSION. THE SYSTEM DESIGN AND PERFORMANCE IS NOT DEPENDENT ON THE SIZE OF THE NOTCH, THEREFORE EITHER SIZE NOTCH IS APPROPRIATE. HOWEVER, THE LARGER NOTCH SIZE MAY AVOID HANDLING INTERFERENCES WHEN USING CERTAIN ANCILLARY EQUIPMENT, SUCH AS THE ZERO PROFILE TRANSPORTER. INCREASING THE NOTCH WIDTH AT THE INLET VENTS SHALL AVOID ANY DAMAGE TO THE HI-STORM BASEPLATE WHEN USED WITH THE ZPT (QIF# 1066 WAS INITIATED TO ADDRESS THIS ISSUE).	N/A
966	0	1014	1024	ECO	Screening Only	HI-STORM 100S	It is proposed to remove the tolerance on the bolt circle dimensions for the cask lid anchor blocks and the mating device anchor blocks and make them as "REF" dimensions. These changes are detailed in ECO-1024-149 and are specifically screened/evaluated in this 72.48 in order to implement the proposed changes.	N/A
967	0	1014	1024	ECO	Screening Only	HI-STORM 100S	There is no physical change to the HI-STORM system. On DWG 4116R19, the all around symbol for the weld connecting the Lid Outer Ring and the Lid Shield Ring was incorrect because it cannot be completed as one continuous fillet weld. The weld is made from four weld segments due to the presence of the cut outs on the Lid Outer Ring. The proposed change removes this inconsistency on the drawing.	N/A

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969	0	1014	1024	ECO	Screening Only	HI-STORM 100S	<p>It is proposed to make the following changes to the HI-STORM 100S Ver. B licensing drawing (4116R21 and R22):</p> <p>[1] Sheet 1: Add the following text to the end of Note 9 - NON-STRUCTURAL SEAL AND TACK WELD DETAILS (GEOMETRY, WELD SIDE, ETC.) ON THIS LICENSING DRAWING ARE FOR INFORMATION ONLY AND MAY BE ALTERED BY THE FABRICATOR WITH HOLTEC CONCURRENCE.</p> <p>[2] Sheet 2: Add new note 13 with the following text - AS AN OPTION, STUDS USED TO ATTACH VENT SCREENS MAY BE REPLACED WITH THREADED FASTENERS. HOLES IN THE HI-STORM LID AND BODY SHALL BE LIMITED TO 5/16" MAXIMUM NOMINAL DIAMETER AND 3/4" MAXIMUM DEPTH. ALL HOLES SHALL BE PLUGGED WITH FASTENERS.</p> <p>[3] Sheet 2: Add new note 14 with the following text - STITCH WELDS (NUMBER AND LOCATION) MAY BE ALTERED, WITH HOLTEC CONCURRENCE, PROVIDED THE MINIMUM TOTAL LENGTH OF WELD ALONG THE WELD LINE IS MAINTAINED.</p> <p>[4] Sheet 12, C-1: Add # symbol and the following text to the tail of the lid shear ring assembly weld detail - SEE NOTE 9, OPTIONAL (MAY BE MADE FROM MULTIPLE PIECES)</p> <p>[5] Sheet 13: Change width of Outlet Gamma Shield Cross Assembly from 25-7/8" REF. to 25-3/4" REF.</p>	N/A