

May 03, 2004

Mr. Brian Gutherman
Licensing Manager
Holtec International
555 Lincoln Drive West
Marlton, NJ 08053

SUBJECT: HI-STORM 100, AMENDMENT 2, NRC THERMAL ANALYSES
(TAC NO. L23657)

Dear Mr. Gutherman:

On March 4, 2002, Holtec International (Holtec) submitted an application in accordance with 10 CFR Part 72 for an amendment to Certificate of Compliance (CoC) No. 1014 for the HI-STORM 100 Cask System to: (a) revise the contents in accordance with various new thermal, confinement, criticality, and shielding review methodologies; (b) permit the inclusion of damaged fuel contents to the Multi-Purpose Cask (MPC) -32; and (c) permit the inclusion of intact, damaged fuel, and fuel debris contents to a new MPC-32F.

On March 23, 2004, the U.S. Nuclear Regulatory Commission (NRC) staff informed you of our preliminary results of confirmatory analyses regarding the thermal aspects of the Holtec HI-STORM 100 Amendment 2 application, and determined that, in some areas the staff's thermal analysis results were not in agreement with the Holtec analysis results. The staff attached information to assist you in understanding the staff's analytical methods. It was noted that the NRC analyses and results were preliminary and did not comprise a final staff position or conclusion regarding the HI-STORM Amendment 2 application. To further support your efforts to determine the discrepancy between the Holtec results and the staff results, enclosed are the staff's most current preliminary HI-STORM 100 confirmatory analyses, the results of which are summarized in Table 1 below, comparing the NRC three dimensional analysis results with the Holtec two dimensional Porous Media Model results for the MPC-68. Again, it should be noted that the enclosed information is preliminary and should not be considered as a final NRC position regarding the disposition of your HI-STORM 100 Amendment 2 application.

**Table 1: Preliminary NRC HI-STORM 100 Confirmatory Analysis Results -
NRC 3-D Analysis Results Versus Holtec 2-D Porous Media Model Results for MPC-68**

Case	Holtec: Peak Cladding Temperature (PCT)	NRC: PCT	Interim Staff Guidance-11. PCT Limit
1) Use of Appendix C (Ref) Flow Resistance Parameters	718 °F (654K)	744 °F (669K)	752 °F (673K)
2) Use of Appendix M (Ref) Flow Resistance Parameters	705 °F (647K)	721 °F (656K)	752 °F (673K)
3) Use of NRC Flow Resistance Parameters (See Note)	Would likely exceed ISG-11 allowable limit	823 °F (713K)	752 °F (673K)

Note: Assumed a friction factor $f=64/Re$ and a 2 inch grid strap length. A friction factor $f=80/Re$, or higher ($f=96/Re$) should be used to determine the flow resistance parameters. Mesh information can be extracted from the enclosed FLUENT case files.

Reference: Holtec International. Holtec Report HI-2033054, Revision 1, Appendix C, and Holtec Report HI-2033054, Revision 2, Appendix M.

The staff recognizes that much of the information upon which the staff's analyses, contained in attachments to this letter, are based or derived from, has been determined to be Holtec Proprietary information and has been withheld from public disclosure per 10 CFR Part 2.390. In light of the above, the information contained in the attachments will not be made public until completion of the staff review at which time the NRC will determine, under 10 CFR §2.390, which information should continue to be withheld from public disclosure. We will inform you of any future determination to release information contained as attachments to this letter in separate correspondence.

Please continue to reference docket number 72-1014 and TAC No. L23657 in future correspondence related to this action. You may contact me at (301) 415-1179, if you have any questions regarding our review of the amendment request.

Sincerely,

/RA/

Christopher M. Regan, Project Manager
Licensing Section
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Docket No. 72-1014

TAC No. L23657

Enclosure (Files on CD): Case 1- appendixc.cas.gz and appendixc.dat.gz
Case 2 -appendixm.cas.gz and Appendixm.dat.gz
Case 3 - twinchstrap_64_Re.cas.gz and twinchstrap_64_Re.dat.gz

Table 1: Preliminary NRC HI-STORM 100 Confirmatory Analysis Results - NRC 3-D Analysis Results Versus Holtec 2-D Porous Media Model Results for MPC-68

Case	Holtec: Peak Cladding Temperature (PCT)	NRC: PCT	Interim Staff Guidance-11. PCT Limit
1) Use of Appendix C (Ref) Flow Resistance Parameters	718 °F (654K)	744 °F (669K)	752 °F (673K)
2) Use of Appendix M (Ref) Flow Resistance Parameters	705 °F (647K)	721 °F (656K)	752 °F (673K)
3) Use of NRC Flow Resistance Parameters (See Note)	Would likely exceed ISG-11 allowable limit	823 °F (713K)	752 °F (673K)

Note: Assumed a friction factor $f=64/Re$ and a 2 inch grid strap length. A friction factor $f=80/Re$, or higher ($f=96/Re$) should be used to determine the flow resistance parameters. Mesh information can be extracted from the enclosed FLUENT case files.

Reference: Holtec International. Holtec Report HI-2033054, Revision 1, Appendix C, and Holtec Report HI-2033054, Revision 2, Appendix M.

The staff recognizes that much of the information upon which the staff's analyses, contained in attachments to this letter, are based or derived from, has been determined to be Holtec Proprietary information and has been withheld from public disclosure per 10 CFR Part 2.390. In light of the above, the information contained in the attachments will not be made public until completion of the staff review at which time the NRC will determine, under 10 CFR §2.390, which information should continue to be withheld from public disclosure. We will inform you of any future determination to release information contained as attachments to this letter in separate correspondence.

Please continue to reference docket number 72-1014 and TAC No. L23657 in future correspondence related to this action. You may contact me at (301) 415-1179, if you have any questions regarding our review of the amendment request.

Sincerely,
 /RA/
 Christopher M. Regan, Project Manager
 Licensing Section
 Spent Fuel Project Office
 Office of Nuclear Material Safety
 and Safeguards

Docket No. 72-1014

TAC No. L23657

Enclosure (Files on CD): Case 1- appendixc.cas.gz and appendixc.dat.gz
 Case 2 -appendixm.cas.gz and Appendixm.dat.gz
 Case 3 - twinchstrap_64_Re.cas.gz and twinchstrap_64_Re.dat.gz

DISTRIBUTION:

NRC File Center Docket File 72-1014 SFPO r/f NMSS r/f Public ML041250500
 PNarbut MWHodges LCamper EWBrach
C:\ORPCheckout\FileNET\ML041250495.wpd ADAMS Pkg Accession No. *See previous Concurrence

OFC	SFPO	E	SFPO	C	SFPO	E	SFPO	C				
NAME	CRegan*		EZiegler*		JGuttman*		JMonninger*					
DATE	5/ 3 / 04		5/ 3 / 04		5/ 4 / 04		5/ 4 / 04					

C = COVER

E = COVER & ENCLOSURE

N = NO COPY

OFFICIAL RECORD COPY