

Request for Supplemental Information
Holtec International
Docket No. 71-9375
Model No. HI-STAR ATB 1T Package

By letter dated June 7, 2019, Holtec International (Holtec) submitted an application for Certificate of Compliance No. 9375, Revision No. 0, for the Model No. HI-STAR ATB 1T package.

This request for supplemental information (RSI) identifies information needed by the U.S. Nuclear Regulatory Commission staff (the staff) in connection with its acceptance review of the Model No. HI-STAR ATB 1T package application to confirm whether the applicant has submitted a complete application in compliance with regulatory requirements.

NUREG-1609, "Standard Review Plan for Transportation Packages for Radioactive Material," was used for this review.

Chapter 2 – Structural Evaluation

Provide animation and analysis files for the remaining portion of the 30 ft HAC (oblique) drop and several other drop simulations.

The applicant has provided a partial submission of the 30 ft HAC oblique drop scenario results generated by LS-DYNA. Specifically, the results from the 30 ft HAC (oblique) drop scenario appear to correspond to a drop progression that has not fully terminated (results are truncated at 0.06049 seconds (frame 244)), which indicate that the cask has not made complete contact with the target.

Provide and/or update the results in the SAR that correspond to a complete 30 ft HAC (oblique) drop.

In addition, the following files are requested:

- The input files used to generate the 1 ft NCT drop (top end).
- Output files for the 30 ft C1 sensitivity analysis

This information is needed by the staff to determine compliance with Title 10 of the *Code of Federal Regulations* (10 CFR) 71.71(c)(7) and 71.73(c)(1).

OBSERVATION

Justify the parameters used to model the target's concrete in LS-DYNA for the ¼-scale prototype drop simulation.

Enclosure

MAT_PSEUDO_TENSOR (*MAT_016), used to represent the concrete portion of the target, incorporates values of the Lawrence Livermore National Laboratories (LLNL) target (as reported in UCRL-ID-126295) which has different concrete compressive strength and target characteristics than those of the Sandia National Laboratories (SNL) target that was effectively used for the ¼ scale drop tests.

The applicant has not demonstrated that the LS-DYNA model used to represent the target at LLNL is representative of the one used at SNL. The applicant has also not justified the values of the parameters used in the *MAT_016 material card, such as cohesion, pressure hardening coefficients, effective plastic strain coefficients, yield stress values, etc.

The staff notes that the applicant was reminded of this concern, during the August 24, 2018, pre-application meeting. The publicly available meeting summary (Agencywide Documents Access and Management System Accession Number ML18256A100) notes that *“the applicant shall provide additional information on the derivation of properties based on those of the test site at SNL or perform a sensitivity analysis for the variation of the concrete parameters”*.

This information is needed by the staff to determine compliance with 10 CFR 71.71(c)(7), 71.73(c)(1), and 71.73(c)(3).