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Date: 12/20/02 4:19PM
Subject: RAM Package Vulnerability Study weekly email report

RAM Package Vulnerability Study

Weekly Report for the Week Ending 12/12/02

Submitted by Jeremy Sprung

Jetliner Impact Draft Report. Revision of Section 2 on jetliner impact and Section 3 on jet fuel pool fires in response to NRC comments continued. In particular, work continued on the preparation of a flow chart and a general description of the analysis methodology and on revisions to Section.

Global Jetliner Impact Calculations. The global jetliner CTH impact calculations are being rerun using a impact velocity. A calculation that used Zapotec to model the global impact of a jetliner onto the HI-STORM cask was completed. Reasons for differences between Zapotec and CTH results are being investigated.

Boeing was sent a draft copy of the SNL report that discusses the SNL jetliner model and the methodology SNL is using to analyze crashes of this jetliner. Delta Airlines staff were contacted about visiting their Atlanta facilities to examine this jetliner. A visit has been tentatively scheduled for 8 January 2003.

Jetliner Components Impact Calculations. Performance of additional landing gear strut PRONTO impact calculations for the HI-STORM cask continued (1 calculation was completed, 3 calculations are underway and 1 more will be run). The performance of PRONTO landing gear strut impact calculations at two different impact orientations for the NAC UMS cask continued. Work developing input for a jetliner engine impact calculation was begun.

Calculations. Benchmarking of predictions against actual test results (the ETR Drawbar cask was completed. The analysis showed that, when strain hardening of lead is modeled, agreement between calculation and test results is very good.

Jet Fuel Pool Fire Calculations. Construction of input for the CAFÉ/PThermal code for use in modeling the response of the HI-STORM cask to a wind driven fire continued. Because the CAFÉ/PThermal code closely couples a pool fire code to a heat transport code, when run this calculation will confirm the adequacy/conservatism of the thermal analyses of the HI-STORM cask performed using the VULCAN pool fire code followed by 1D heat transport analyses.

Calculations. Wall thickness and material properties for the NUHOMS, VSC-24, TN-68, and HI-STORM casks are being obtained to support SCAP calculations. A parameter studies that will evaluate the sensitivity of SCAP results to material parameter values is being planned.

Fission Product Release. Development continued of a MELCOR model of the NAC

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Portions Ex 2

Information in this record was deleted in accordance with the Freedom of Information Act, exemptions 2
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that will be evaluated include a small passenger plane, Ex 2

A preliminary definition of the specific threats to be evaluated has been received from NSIR in a meeting on 11/06/02 and this information has been coordinated with the contractor. Completion of the remaining threats is currently scheduled for Sept 2003

NRC staff is monitoring the contractor progress and periodically meets with SNL personnel to obtain status reports and to provide technical direction to the project.

Staff recently reviewed a draft report regarding the contractors large plane analysis for storage and transportation casks. A copy of this report was sent to the commission offices. Contact: Ron Parkhill, Ext. 1376, SFPO

C. Status of Spent Fuel Storage Vulnerability Study (Last updated 12/10/2002)

The study will assess the damage to a representative dry storage cask system and ISFSI from large and small aircraft threats and to assess the damage to other selected dry storage cask systems from a range of threats and scenarios, determine the dispersion and dose consequences, and estimate costs for property damage and cleanup. The team has selected casks to be analyzed. A contract with Sandia National Laboratories (SNL) is in place, in which SNL is performing the majority of the analyses.

The threat will involve using a and a small aircraft. The damage effects to be studied will include aircraft impact with maximum pay loads/fuel for the and resulting fire effects, and for small aircraft the aircraft impact with a mix of fuel and for maximum payload. For the small aircraft there has been an extensive database created by the contractor of aircraft generally in this category. The analyses for the large plane is scheduled to be completed by the end of the calendar year and the associated report completed by the end of March 2002. Ex 2

Other threats and scenarios against these cask systems will be staged with the first stage to be single threat scenarios resulting from

The second stage studies will address a larger range of types of threats and threats in combination, both with various scenarios. As a result of a coordination meeting with NSIR on 11/6/02, a series of preliminary vulnerability assessment threat characteristics have been provided that will guide these studies and the information has been coordinated with the contractor. The current target date for the results for the small plane and other events is November 2002. Ex 2

SNL is be preparing a methodology to evaluate effects for NRC concurrence. NRC staff is monitoring the contractor progress and periodically meets with SNL personnel to obtain status reports and to provide technical direction to the project. Contact: Robert Shewmaker, Ext. 2842, SFPO Ex 2

Portions Ex 2