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Date: 2/5/03 11:07AM
Subject: INMM abstracts

Bernie,
I have attached my two abstracts for the INMM meeting. I think that the canister pressurization one is going to be fine. I'm not sure how the paper will turn out for the airplane component impacts. I'm sure we will be discussing that one in the near future.

Thanks,
Bob Kalan
<<INMM_abs2.doc>> <<INMM_abs1.doc>>

release all

C133

Structural Response of a Spent Fuel Rail Cask to Aircraft Component Impacts

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As part of the Nuclear Regulatory Commission's Radioactive Material (RAM) Package Vulnerability Study, Sandia National Laboratories (SNL) examined the response of a spent fuel rail cask to impacts from hard aircraft components, such as the landing gear strut and the aircraft engine. The analyses were conducted using the Sandia developed non-linear transient dynamic finite element code PRONTO3D. PRONTO3D is a shock-wave propagation code developed specifically for impact analyses. It uses an explicit time integration algorithm for solving the equations of motion. For these analyses, the landing gear strut was modeled as a steel metal tube impacting the center region of the cask. The strut was modeled with two different material yield strengths and for two different impact orientations, perpendicular to cask centerline and at a 45° angle to the cask centerline. The force of the impacting aircraft engine was modeled as a pressure pulse and was also applied at the center region of the cask body. The pressure versus time loading function was developed using data acquired by SNL from GE J-79 aircraft engine impact tests. The structural response of the cask for each of these load cases is presented.

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² Sandia is a multi-program laboratory operated by Sandia Corporation, a Lockheed Martin company, for the United States Department of Energy under Contract DE-AC04-94AL85000.