



## RADIOACTIVE WASTE MANAGEMENT ASSOCIATES

February 27, 1998

Charles Haughney, Director  
Spent Fuel Project Office, Mail Stop 6F18  
Nuclear Regulatory Commission  
Washington, D.C. 20555

Re: Holtec HI-STAR 100 TSAR  
NRC Docket No. 72-1008

Dear Charley:

This letter concerns the g force that spent fuel cladding can withstand and the use of this parameter in safety analyses by Holtec, Sierra Nuclear and other cask manufacturers. This issue relates to the Holtec and Transtor storage/transport cask and transportation casks in general. In my opinion the most vulnerable fuel cannot withstand a 63g force in the most adverse orientation (Holtec TSAR, p. 3.5-1) but a force considerably less. At the very least, additional information should be requested from Holtec before issuing a Certificate of Compliance for the HI-STAR 100 cask. The Commission may also need to fund additional studies to consider this issue as it generally relates to transportation accidents involving irradiated fuel assemblies.

The "63 g" force for most vulnerable fuel is based on an analysis of the more ductile unirradiated, not irradiated, cladding. Despite the title of the Lawrence Livermore National Laboratory report on which Holtec relies ("Dynamic Impact Effects on Spent Fuel Assemblies," UCID-21246, October 1987), the LLNL report does not deal with "spent fuel" assemblies, only with non-irradiated fuel assemblies. As you are aware, irradiation within a reactor makes fuel assemblies more brittle and less resistant to impact. "Cladding ductility decreases and yield stress increases with increasing neutron fluence." ("Assessment of the Use of Extended Burnup Fuel in Light Water Power Reactors," Battelle Pacific Northwest Labs, NUREG/CR-5009, p. 2-5, February 1988).

LLNL's calculation for most vulnerable fuel also does not take into account the weight of the fuel itself, only the g force without the additional weight of the fuel. This considerable additional weight is an additional internal force. LLNL assumes fuel pellets remain in a rigid array in a high impact accident and will not impart a force to the cladding. This is obviously not correct.

NRC staff should ask Holtec and Sierra Nuclear to address this issue in their TSAR's. If no available studies analyze irradiated fuel cladding in high impact accidents, the NRC should fund additional studies to address this issue.

Marvin Resnikoff, Ph.D. ♦ Senior Associate

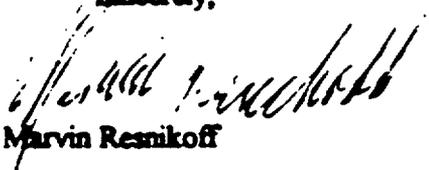
C Haughney, NRC

02/27/98

I wish these comments to be included in Holtec's NRC docket and to be considered in the Staff's safety evaluation report. Please send me a copy of the staff's draft safety evaluation report for the Holtec cask so that we may provide comments. If you have questions, feel free to call.

cc: D Curran  
C Nakahara

Sincerely,

  
Marvin Resnikoff