From: "Adkins, Harold E" <Harold.Adkins@pnl.gov>
To: Christopher Bajwa <CSB1@nrc.gov>
Date: Mon, Feb 2, 2004 9:26 PM
Subject: RE: PATRAM-04-Abstract.doc

Give this a try. I use USNRC because the conference is to take place overseas.

Later,

Harold E. Adkins, Jr.
Senior Research Engineer
Fluid and Computational Engineering Group,
Pacific Northwest National Laboratory
P.O. Box 999, Mail Stop K7-15, Richland, WA 99352
509-372-6629 voice; 509-375-3865 fax; Harold.Adkins@pnl.gov

-----Original Message-----
From: Christopher Bajwa [mailto:CSB1@nrc.gov]
Sent: Thursday, January 29, 2004 12:28 PM
To: Adkins, Harold E
Subject: PATRAM-04-Abstract.doc

Hey I gotta cut outta here to pick up my car from the shop.

I'll call you tomorrow.

-Chris Bajwa

A/4

Title: **Spent Fuel Transportation Cask Performance: Response to a Tunnel Fire Scenario**

Harold E. Adkins, Jr.
Pacific Northwest National Laboratories
Christopher S. Bajwa, P.E.
United States Nuclear Regulatory Commission

Abstract:

On July 18, 2001, a freight train carrying hazardous (non-nuclear) materials derailed and caught fire while passing through the Howard Street railroad tunnel in downtown Baltimore, Maryland. The U.S. Nuclear Regulatory Commission (USNRC), the agency responsible for ensuring the safe transportation of radioactive materials in the United States, undertook an investigation of the train derailment and fire, in order to determine the possible regulatory implications of this particular event for the transportation of spent nuclear fuel by railroad.

Shortly after the accident occurred, the USNRC met with the National Transportation Safety Board (NTSB), the agency responsible for determining the cause of the accident, to discuss the details of the accident and the ensuing fire. Following these discussions, the NRC assembled a team of experts from the National Institute of Standards and Technology (NIST), the Center for Nuclear Waste Regulatory Analyses (CNWRA), and Pacific Northwest National Laboratory (PNNL) to determine the thermal conditions present in the Howard Street tunnel fire and analyze the effects of this type of fire on various spent fuel transportation cask designs.

The Fire Dynamics Simulator (FDS) code, developed by NIST, was utilized to determine the thermal environment present in the Howard Street tunnel during the fire. The FDS results were used in conjunction with the ANSYS® and COBRA-SFS thermal codes to evaluate the thermal performance of different cask designs. The staff concluded that the transportation casks analyzed would withstand a fire similar to the Baltimore tunnel fire and that there would be no release of radioactive material had any of the cask designs analyzed been involved in the Baltimore tunnel fire event. This paper describes the applied analytical approach, provides details on the models developed for this assessment, and presents the staff's results and conclusions.

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