

NUCLEAR REGULATORY COMMISSION
Notice of Availability of Documents Regarding
Spent Fuel Transportation Package Response to the
Caldecott Tunnel Fire Scenario

AGENCY: Nuclear Regulatory Commission.

ACTION: Notice of availability.

FOR FURTHER INFORMATION CONTACT: Allen Hansen, Thermal Engineer, Criticality, Shielding and Heat Transfer Section, Spent Fuel Project Office, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20005-0001. Telephone: (301) 415-1390; fax number: (301) 415-8555; e-mail: agh@nrc.gov.

SUPPLEMENTARY INFORMATION:

I. Introduction

Under contract with the Nuclear Regulatory Commission (NRC), The Pacific Northwest National Laboratory prepared a draft NUREG/CR report, "Spent Fuel Transportation Package Response to the Caldecott Tunnel Fire (CTF) Scenario." Highway tunnel fire accidents are very low frequency events, but can be severe, in terms of fire duration and peak temperatures. The CTF was chosen for the study because it represents a severe historical highway tunnel accident, even though it is a very low frequency event. This NUREG/CR documents the thermal analysis of one spent fuel transportation package, the NAC International Model No. LWT ("NAC LWT"), exposed to boundary conditions simulating the CTF scenario.

The results of this study strongly indicate that no spent nuclear fuel (SNF) particles or fission products would be released from the NAC LWT or a similar spent fuel shipping cask involved in a severe tunnel fire such as the Caldecott highway tunnel fire. The peak internal temperatures predicted for the NAC LWT in the analysis of the CTF scenario were not high enough to result in rupture of the fuel cladding. Therefore, it would not be expected that any radioactive material (i.e, SNF particles or fission products) would be released from within the

fuel rods.

The maximum NAC LWT temperatures experienced in the regions of the lid, vent and drain ports exceeded the seals' rated service temperatures, making it theoretically possible for a small release to occur, due to CRUD that might spall off of the surfaces of the fuel rods. However, any release is expected to be very small due to a number of factors. These include: (1) the tight clearances maintained between the lid and cask body by the lid closure bolts; (2) the low pressure differential between the cask interior and the outside; (3) the tendency of the small clearances to plug; and (4) the tendency of CRUD particles to settle or plate out. The potential releases calculated in Chapter 8 of this report for the NAC LWT truck cask indicate that the release of CRUD from the cask, if any, would be very small - less than an A₂ quantity.

II. Summary

The purpose of this notice is to provide the public an opportunity to review and comment on the Draft NUREG/CR thermal analysis, the consequence analyses and the conclusions.

III. Further Information

The document related to this action is available on-line at <http://www.nrc.gov/reading-rm/doc-collections/nuregs/docs4comment.html>. In addition, a copy of this document has been posted electronically at the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm/adams.html>. From this site, you can access the NRC's Agencywide Document Access and Management System (ADAMS), which provides text and image files of NRC's public documents. The ADAMS accession number for the document related to this notice is ML060330028. If you do not have access to ADAMS or if there are problems in accessing the document located in ADAMS, contact the NRC Public Document Room (PDR) Reference staff at 1-800-397-4209, 301-415-4737, or by email to pdr@nrc.gov.

This document may also be viewed electronically on the public computers located at the NRC's PDR, O 1 F21, One White Flint North, 11555 Rockville Pike, Rockville, MD 20852. The

PDR reproduction contractor will copy documents for a fee. Comments and questions on the draft NUREG/CR can be entered on-line or directed to the NRC contact listed above by May 30, 2006. Comments received after this date will be considered if it is practical to do so, but assurance of consideration cannot be given to comments received after this date.

Dated at Rockville, Maryland this 17 day of February, 2006.

For the Nuclear Regulatory Commission

/RA/

Larry Campbell, Chief,
Criticality, Shielding and Heat Transfer Section,
Spent Fuel Project Office,
Office of Nuclear Material Safety,
and Safeguards.

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