

# **CNWRA** *A center of excellence in earth sciences and engineering*

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December 22, 2000  
Contract No. NRC-02-97-009  
Account No. 20.01402.661

U.S. Nuclear Regulatory Commission  
ATTN: Mrs. Deborah A. DeMarco  
Two White Flint North  
11545 Rockville Pike  
Mail Stop T8A23  
Washington, DC 20555

Subject: Programmatic Review of Abstract

Dear Mrs. DeMarco:

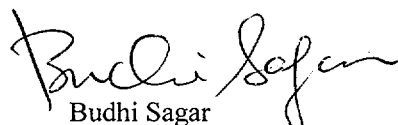
The enclosed abstract is being submitted for programmatic review. This abstract will be submitted for presentation at the Society of Industrial and Applied Mathematics Geosciences Conference to be held June 9-11, 2001, in Boulder, Colorado. The title of the abstract is

“Modeling Thermal Radiation and Forced Ventilation in Open Tunnels” by S. Painter and  
D. Hughson

This abstract presents results of work conducted by CNWRA as part of the Thermal Effects on Flow Key Technical Issue. This abstract is a product of the CNWRA and does not necessarily reflect the view(s) or regulatory position of the NRC.

Please advise me of the results of your programmatic review. Your cooperation in this matter is appreciated.

Sincerely,

  
Budhi Sagar  
Technical Director

/ph  
Enclosures

cc:	J. Linehan	T. Essig	W. Patrick
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## Modeling Thermal Radiation and Forced Ventilation in Open Tunnels

Scott Painter

Debra Hughson

A model for heat-transfer in the emplacement tunnels of the nuclear waste repository proposed for Yucca Mountain, Nevada has been developed and coupled with a multiphase, non-isothermal flow code. Thermal radiation within the tunnel is calculated analytically, as are solutions to the nonlinear differential equations describing temperature and moisture content of ventilation air. The result is self-consistent simulation of the hydrothermal response of the mountain to the repository, including the cooling and drying effects of ventilation. This work was performed under contract NRC-97-009 and does not reflect the regulatory position of the NRC.