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U.S. Nuclear Regulatory Commission  
ATTN: Mrs. Deborah A. DeMarco  
Office of Nuclear Material Safety and Safeguards  
Program Management, Policy Development, and Staff  
Office of the Director  
Mail Stop 8D-37  
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 American Geophysical Union 2002 Fall Meeting to be held December 6-10, 2002, in San Francisco, California. The title of the abstract is:

"Using Results from the Yucca Mountain Drift-Scale Heater Test to Evaluate Thermohydrological Conceptual Models" by R. Green and S. Painter

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

Sincerely,

  
Budhi Sagar  
Technical Director

/ph  
Enclosures Abstract  
NRC Form 390A

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## Using Results from the Yucca Mountain Drift-Scale Heater Test to Evaluate Thermohydrological Conceptual Models

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The U.S. Department of Energy is conducting a long-term drift -scale heater test (DST) as part of a comprehensive evaluation of a proposed geologic high-level nuclear waste repository at Yucca Mountain, Nevada. The DST completed its four-year heating phase and recently began a four-year cooling phase. Results from the heating phase of the DST are available for evaluating conceptual models used to simulate heat and mass transport at the proposed repository. Conceptualizations of greatest interest include models for multiple continua, fracture representations, constitutive relations, and initial and boundary conditions. Although physical characterization (i.e., property value assignment) is not strictly considered model conceptualization, the values assigned to the model, nonetheless, have a significant affect on model outcome and were included in the evaluation.

A multiphase simulator, MULTIFLO, was used to perform the conceptual model evaluations. Conceptualizations in the model included: two- and three-dimensionality; dual continua (matrix and fracture); matrix-fracture interaction relations; van Genuchten, Brooks-Corey, and linear relative permeability functions; a range of property values (thermal conductivity and fracture permeability); and a broad range of reasonable initial (saturation) and boundary (infiltration) conditions. The evaluations identify which conceptualizations are feasible and consistent with observations from the DST, which model representations are most important for the model to agree with ambient conditions (infiltration, matrix-fracture interaction relations), and which representations are most important for the model to agree with DST heating phase results (fracture permeability and thermal conductivity).

This abstract is an independent product of the CNWRA and does not necessarily reflect the views or regulatory position of the U.S. Nuclear Regulatory Commission.

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Using Results from the Yucca Mountain Drift-Scale Heater Test to Evaluate Thermohydrological Conceptual Models

2. AUTHOR(s)  
R. Green And S. Painter

3. NAME OF CONFERENCE, LOCATION, AND DATE(s)  
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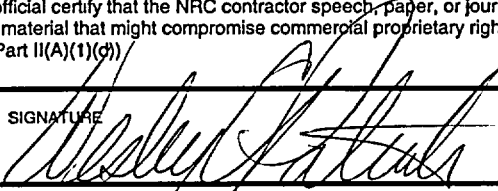
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