

# Technical Data Information Report

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7731	Chavez	University of Nevada, Re	QARC	Nye County NWRPO	Ventilation Modeling

Document Date: 1/21/2010      General Document Type: QA Program Doc      Keyword 2: Yucca Mountain

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Document Title/Subject: Coupled Hydrothermal-Ventilation Studies for Yucca Mountain. Annual Letter Report for April 1, 2009 to December 31, 2009.

Data Originator/Preparer: George Danko and Davood Bahrami

Data Description: This Annual Letter Report summarizes the results of the coupled ventilation-hydrothermal studies conducted to support the evaluation of the design and performance of the Department of Energy's proposed high level radioactive waste repository at Yucca Mountain, Nevada. Reviewed the Department of Energy's (DOE) UZ PC plans and related documentation regarding the proposed monitoring activities. Prepared recommendations for further in-drift PC activities necessary to monitor and characterize near-field conditions in view of our numerical studies. Finalized processing the numerical results from the MULTIFLUX (MF) 5.0 model for various model configurations and assumptions. Processed the results for the long-term post-closure thermal-hydrologic environment that affects corrosion at the Yucca Mountain repository. Prepared the results for the subject matter experts for further study. This work was performed during the periods of April 1, 2009 through December 31, 2009, by Drs. G. Danko, Professor, and D. Bahrami, Assistant Professor, University of Nevada, Reno under contract to Nye County, Nevada.

Data Collection Method: MULTIFLUX, a fully coupled, hydrothermal ventilation model and software code is used to model the flow of heat, moisture, and air in the emplacement drift of the proposed underground nuclear waste repository at Yucca Mountain, NV.

Data Collection Location: MULTIFLUX was configured to simulate the post-closure temperature and humidity conditions in a selected emplacement drift according to the Department of Energy's repository design in the current License Application documents.

Data Collection Period: 4/1/2009 to 12/31/2009

Data Sources: MULTIFLUX source is input data from the previous BSC/DOE input data files included in the relevant BSC's (Bechtel SAIC Company) Model Reports. Supporting Data: The calculations are based on the input configuration for the repository design and the input data used by BSC in the License Application documents.

Data Censoring: N/A

Data Processing: Procedures used in the MULTIFLUX code are applied in the numerical model. All processes are automated. The rockmass thermal-hydrologic responses are modeled using TOUGH2.

Data Limitations: Assumptions are stated in the description of the numerical model according to the MULTIFLUX Version 5.0 software documentation. The use of results must be limited to the conditions stated in the documentation. The results must be used within the scope of the assumptions.

Governing QA Docs: QAP-3.1, Rev 2.

Frequency of Transmittal: Yearly

