



## Department of Energy

Office of Civilian Radioactive Waste Management  
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QA: N/A

**MAY 30 2002**

### OVERNIGHT MAIL

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### TRANSMITTAL OF REPORT ADDRESSING KEY TECHNICAL ISSUES (KTI) UNSATURATED AND SATURATED FLOW UNDER ISOTHERMAL CONDITIONS (USFIC) 4.07 AND GENERAL (GEN) 1.01, COMMENT 75

This letter transmits a hard copy (Enclosure 1) and a CD (Enclosure 2) of TDR-NBS-GS-000027, Rev 00, ICN 02, "*Natural Analogue Synthesis Report*." This report addresses USFIC Agreement 4.07 and GEN Agreement 1.01, comment 75, as described below:

USFIC 4.07 - "Provide documentation of the results obtained from the Natural Analogs modeling study. The study was to apply conceptual models and numerical approaches developed from Yucca Mountain to natural analog sites with observations of seepage into drifts, drift stability, radionuclide transport, geothermal effects, and preservation of artifacts.

DOE will provide documentation of the results obtained from the Natural Analogs modeling study. The study was to apply conceptual models and numerical approaches developed from Yucca Mountain to natural analog sites with observations of seepage into drifts, drift stability, radionuclide transport, geothermal effects, and preservation of artifacts. This will be documented in the Natural Analogs for the Unsaturated Zone AMR (ANL-NBS-HS-000007) expected to be available to NRC FY 2002."

GEN 1.01 comment 75 - "The cave natural analogues described on pp. 4-12 and 4-13 are all examples without significant seepage flux. How do other environmental variables, such as RH in the cave, near field saturation, and percolation flux, compare to YM? Are there examples of natural analogues that show significant seepage over time (Rainier Mesa has seepage)? ...we [DOE] will provide documentation of the results for all relevant natural analogues that we identify. This includes any natural analogs that may indicate significant seepage."

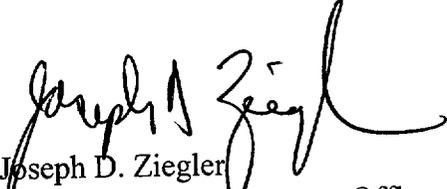
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In fulfilling USFIC 4.07, the report provides documentation of the results obtained from the Natural Analogs modeling study, including the application of conceptual models and numerical approaches developed from Yucca Mountain, to natural analog sites with observations of seepage into drifts (section 8), drift stability (section 3), radionuclide transport (sections 10 and 12), geothermal effects (section 11), and preservation of artifacts (sections 3.3, 6.2 and 8.3). Although USFIC 4.07 stated that the information would be documented in the *Natural Analogs for the Unsaturated Zone* AMR (ANL-NBS-HS-000007), this information has been included in the enclosed report as discussed at the April 15-16, 2002, NRC/DOE Technical Exchange and Management Meeting on KTIs. This does not impact the nature and extent of the information to be provided to the NRC in accordance with the agreement.

In addition, the enclosed report fully addresses GEN 1.01, comment 75, concerning natural analogs for seepage (section 8).

This letter contains no additional regulatory commitments. Please direct any questions concerning this letter and its enclosures to Timothy C. Gunter at (702) 794-1343 or Drew H. Coleman at (702) 794-5537.

  
Joseph D. Ziegler  
Acting Assistant Manager, Office of  
Licensing and Regulatory Compliance

OL&RC:TCG-1199

Enclosures:

1. Hard Copy of TDR-NBS-GS-000027, Rev 00,  
ICN 02, "*Natural Analogue Synthesis Report*"
2. CD copy of Enclosure 1

cc w/encl 2:

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cc w/encl 2: (continued)

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