



UNITED STATES NUCLEAR REGULATORY COMMISSION
CENTRAL FILES
WASHINGTON, D. C. 20555

P1-37

APR 18 1991

MEMORANDUM FOR: Ronald L. Ballard, Chief
Geosciences and Systems Performance Branch
Division of High-Level Waste Management, NMSS

FROM: Seth M. Coplan
Systems Performance Section
Geosciences and Systems Performance Branch
Division of High-Level Waste Management, NMSS

SUBJECT: DRAFT FINAL REPORT ON INTRAVAL TEST CASE 6
"SYNTHETIC MIGRATION EXPERIMENT"

Richard Codell of the Systems Performance Section has recently completed the attached report, which represents the inputs from the INTRAVAL working group composed of representatives from NRC, CNWRA, Battelle-Pacific Northwest Laboratories, NAGRA (Switzerland) and the Technical University of Zurich (Switzerland). It will be published along with the other phase 1 test cases in an INTRAVAL report. We should also consider whether it would be worth publishing it as a NUREG report.

The problem is based on tracer migration experiment through a single granitic fracture plane in the Grimsel Rock Laboratory in the Swiss Alps. The INTRAVAL Project Team created a synthetic but highly realistic computer model to simulate the behavior of the experiment both from the standpoint of hydrology and transport. The synthetic model was then stressed by a series of simulated experiments, much like those that would be carried out to characterize a real site. Data collected from the synthetic experiments were used by modeling teams to characterize the synthetic site. These characterized models were then used to predict the outcome of tracer migration experiments for which the modelers had no prior knowledge. Results were compared to the original "real" synthetic site in order to validate the site characterization schemes employed by the modeling teams.

Several independent teams of modelers attempted to estimate the performance of the site with varying degrees of success. In several cases, more-sophisticated models did no better than relatively simple approaches. The NRC team consisted of Richard Codell and Rex Wescott. Each worked independently to characterize the synthetic site and predict its behavior in terms of simulated tracer migration. Richard Codell also was responsible for running most of the programs to generate the synthetic data for the INTRAVAL project team.

This INTRAVAL test case was an interesting and potentially important exercise in site characterization. Although the site itself was unlike Yucca Mountain in several important respects, the difficulty of characterizing this relatively simple site could be viewed as an object lesson for DOE site characterization and prediction of repository performance.

9104230041 910418
NMSS SUBJ
412 CF

412
NHXV

We would be happy to brief you on any aspect of this INTRAVAL exercise. Please direct all questions to Richard Code11 on extension 20408.



Seth M. Coplan
Systems Performance Section
Geosciences and Systems Performance Branch
Division of High-Level Waste Management, NMSS

Enclosure:
Draft - INTRAVAL Phase 1
Final Report

cc: BJYounblood
SPS Section
HTS Section

APR 18 1991

- 2 -

We would be happy to brief you on any aspect of this INTRAVAL exercise. Please direct all questions to Richard Codell on extension 20408.

151

Seth M. Coplan
Systems Performance Section
Geosciences and Systems Performance Branch
Division of High-Level Waste Management, NMSS

Enclosure:
Draft - INTRAVAL Phase 1
Final Report

cc: BYoungblood
SPS Section
HTS Section

DISTRIBUTION:

Central Files
BYoungblood, HLWM
JLinehan, HLPD
RMBernero, NMSS
TMcCartin, RES

HLGP r/f
JBunting, HLEN
RCodell, HLGP
GArlotto, NMSS
JRandall, RES

NMSS r/f
RBallard, HLGP
SCoplan, HLGP
TNicholson, RES
MSilberberg, RES

*SEE PREVIOUS CONCURRENCE

OFC :	HLGP*	:HLGP*	:HLGP
NAME:	RCodell/ga	:SCoplan	:RBallard
Date:	04/03/91	:04/03/91	: / /91

APR 18 1991

INTRA/

- 3 -

We would be happy to brief you on any aspect of this INTRAVAL exercise. Please direct all questions to Richard Code11 on extension 20408.

Ronald L. Ballard, Chief
Geosciences and Systems Performance Branch
Division of High-Level Waste Management, NMSS

Enclosure:
Draft - INTRAVAL Phase 1
Final Report

cc: SPS Section
HTS Section

DISTRIBUTION:

Central Files
BJYoungblood, HLWM
JLinehan, HLPD

HLGP r/f
JBunting, HLEN
RCode11, HLGP

NMSS r/f
RBallard, HLGP
SCoplan, HLGP

OFC :	HLGP	:HLGP	:HLGP
NAME:	RCode11/ga	:SCoplan	:RLBallard
Date:	4/3/901	:4/3/91	: / /91
