CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

TRIP REPORT

SUBJECT: DECOVALEX III Task 2 Task Force Meeting

DATE/PLACE: December 3-4, 2002, Lawrence Berkeley National Laboratory, Berkeley, California

AUTHORS: Ronald Green and Simon Hsiung

DISTRIBUTION:

CNWRA	NRC-NMSS	SwRI Contracts
W. Patrick	M. Nataraja	T. Nagy (Contracts)
CNWRA Directors	J. Greeves	P. Maldonado
CNWRA Element Managers	J. Schlueter	
R. Fedors	W. Reamer	
S. Mohanty	D. Demarco	
G. Ofoegbu	B. Meehan	
A. Ghosh	J. Linehan (w/o Attachment)	
D. Gute	E. Whitt	
B. Dasgupta	D. Brooks	
T. Maxwell	K. Stablein	
	B. Jagannath	
	L. Campbell	
	T. Ahn	
	R. Johnson	
	T. McCartin	
	J. Pohle	
	P. Justus	

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

TRIP REPORT

SUBJECT: DECOVALEX III Task 2 Task Force Meeting

DATE/PLACE: December 3-4, 2002, Lawrence Berkeley National Laboratory, Berkeley, California

AUTHORS: Ronald Green and Simon Hsiung

PERSONS PRESENT: Yvonne Tsang, Chin-Fu Tsang, Bill Boyle, Debbie Barr, Sebastia Olivella, Johnny Rutquist, Mysore Nataraja, Ki-Bok Min, Lanru Jing, Simon Hsiung, Ron Green, M. Yui.

BACKGROUND AND PURPOSE OF TRIP: Task force meeting for Task 2 of DECOVALEX III to discuss modeling results.

SUMMARY OF PERTINENT POINTS:

Simon Hsiung and Ronald Green from Center for Nuclear Waste Regulatory Analyses (CNWRA) and Raj Nataraja from Nuclear Regulatory Commission (NRC) attended the DECOVALEX III Task 2 Task Force meeting that was held at the Lawrence Berkeley National Laboratory (LBNL), Berkeley, California, on December 3-4, 2002. The purpose of the meeting was to review the current status of Task 2 analyses performed by the various team members and to develop a plan and schedule for the remaining Task 2 activities. The analyses discussions were grouped into the following categories: thermal-hydrological, thermal-mechanical, thermal-hydrological-mechanical, and thermal-hydrological-chemical. Participating teams included: NRC, Department of Energy (DOE), ENRESA (Spain), Japan Nuclear Cycle Development Institute (JNC, Japan), and Commission of Atomic Energy (CEA, France).

R. Green/CNWRA summarized the thermal-hydrological analysis of the heating phase of the Yucca Mountain Drift-Scale Heater Test (DST) (Task 2 of DECOVALEX III). S. Hsiung/CNWRA summarized the thermal-mechanical analysis of the DST. These numerical simulation results were compared with similar analyses conducted by other participants. S. Olivella/UPC-ENRESA summarized the results of his two-dimensional coupled thermal-hydrological-mechanical model BRIGHTCODE for ENRESA. J. Rutquist/LBNL-DOE in the past had represented the Swedish team. He is now working solely for DOE at LBNL. Rutquist presented results from the fully coupled thermal-hydrological-mechanical model he is developing.

R. Datta/LBNL summarized the results of A. Millard/CEA, who was not able to attend. M. Yui/JNC discussed the results of the Japanese thermal-hydrological-mechanical-chemical modeling analysis. Their models are not yet fully developed; however, it appears that they are fully engaged and actively working to advance their models.

R. Datta/LBNL discussed a problem related to the temperature distribution data provided by the Task 2 monitoring research team. He indicated that this problem will be corrected and the revised temperature distribution data will be provided to research teams. The research teams involving Task 2C thermal-mechanical modeling are requested to redo the modeling work using the revised data.

Future activities of the DECOVALEX III project were discussed. DECOVALEX III is scheduled for completion in late 2003. Final analyses results are being asked to be presented at a special session of the GeoProc Conference in October, 2003. R. Green and S. Hsiung had been asked to submit abstracts to the conference. Summary (i.e., 6-page long) papers are due in April for GeoProc. Some selected papers will be invited from the conference to be published in full in a special issue of Rock Mechanics.

The prospect of analyzing the 4-yr long cool-down phase of the DST was discussed. These analysis results would be beneficial to performance confirmation analyses. Issues not adequately addressed during the heating phase of the DST (i.e., the effect of the thermal bulkhead) could be examined to a greater degree using the cooling-phase test results in addition to the currently available heating phase results.

A new potential international project was discussed briefly in the Task Force meeting. The research teams involved in the discussion emphasized the need for the new project to focus on performance confirmation.

SUMMARY OF ACTIVITIES: Simon Hsiung and Ron Green provided summaries of their modeling activities. These results were compared with results from the other teams. There was significant time for in-depth discussions.

CONCLUSIONS: None

PROBLEMS ENCOUNTERED: None

PENDING ACTIONS: None

RECOMMENDATIONS: The interactions with various national teams are extremely valuable. It is recommended for NRC to continue with these types of interactions. The interactions offer a very good opportunity to stay current with the programs of other countries.

SIGNATURES:

Shi-Min Hsiung

Ronald Green and Simon Hsiung
Staff and Principal Engineers

01/28/2003

Date

CONCURRENCE:

Asadul Chowdhury, Manager
Mining, Geotechnical, and Facility Engineering

1-28-03
Date

for Budhi Sagar
Technical Director

1/29/2003
Date