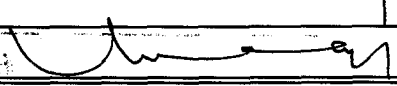
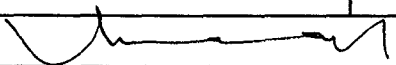


SOFTWARE RELEASE NOTICE

01. SRN Number: RDCO-SRN-145		
02. Project Title: Repository Design & TM Effects Technical Assistance		Project No. 20-5708-671
03. SRN Title: UDEC Version 2.01		
04. Originator/Requestor: Bruce Mabrito		Date: 05/13/97
05. Summary of Actions <ul style="list-style-type: none"> <input type="checkbox"/> Release of new software <input checked="" type="checkbox"/> Release of modified software: <ul style="list-style-type: none"> <input type="checkbox"/> Enhancements made <input checked="" type="checkbox"/> Corrections made <input type="checkbox"/> Change of access software <input checked="" type="checkbox"/> Software Retirement 		
06. Persons Authorized Access		
Name	RO/RW	A/C/D
Goodluck Ofoegbu Simon Hsiung Amit Ghosh Rui Chen Mikko Ahola Hengameh Karimi Asad Chowdhury		
07. Element Manager Approval: 		Date: 5/19/97
08. Remarks:		

SOFTWARE RELEASE NOTICE

01. SRN Number: RDCO-SRN-135		
02. Project Title: Repository Design & TM Effects Technical Assistance		Project No. 20-5708-671
03. SRN Title: UDEC Version 2.01		
04. Originator/Requestor: Robert Brient		Date: 02/08/96
05. Summary of Actions <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Release of new software <input type="checkbox"/> Release of modified software: <ul style="list-style-type: none"> <input type="checkbox"/> Enhancements made <input type="checkbox"/> Corrections made <input type="checkbox"/> Change of access software <input type="checkbox"/> Software Retirement 		
06. Persons Authorized Access		
Name	RO/RW	A/C/D
Goodluck Ofoegbu Simon Hsiung Amit Ghosh Rui Chen Mikko Ahola Hengameh Karimi Asad Chowdhury		
07. Element Manager Approval: 		Date: 5/19/97
08. Remarks:		

SOFTWARE SUMMARY FORM

01. Summary Date: 02/02/96	02. Summary prepared by (Name and phone) Simon Hsiung, 522-5209	03. Summary Action: New	
04. Software Date:	05. Short Title: Universal Distinct Element Code, Version 2.01		
06. Software Title: UDEEC, Version 2.01		07. Internal Software ID:	
08. Software Type: <input type="checkbox"/> Automated Data System <input checked="" type="checkbox"/> Computer Program <input type="checkbox"/> Subroutine/Module	09. Processing Mode: <input type="checkbox"/> Interactive <input type="checkbox"/> Batch <input checked="" type="checkbox"/> Combination	10. APPLICATION AREA a. General: <input checked="" type="checkbox"/> Scientific/Engineering <input type="checkbox"/> Auxiliary Analyses <input type="checkbox"/> Total System PA <input type="checkbox"/> Subsystem PA <input type="checkbox"/> Other b. Specific:	
11. Submitting Organization and Address: ITASCA Suite 210 1313 5th Street SE Minneapolis, Minnesota 55414		12. Technical Contact(s) and Phone: Loren Lorig (612) 623-9599	
13. Narrative: The distinct element method is a recognized discontinuum modeling approach for simulating the behavior of jointed media subjected to quasi-static or dynamic conditions. This program has three distinguishing features which make it well suited for discontinuum modeling. It covers a range of rock mass strengths and confining pressures which are encountered <i>in situ</i> .			
14. Computer Platform SUN	15. Computer Operating System: WINDOWS	16. Programming Language(s): FORTRAN 77	17. Number of Source Program Statements:
18. Computer Memory Requirements: 4 megabytes	19. Tape Drives:	20. Disk/Drum Units:	21. Graphics:
22. Other Operational Requirements			
23. Software Availability: <input checked="" type="checkbox"/> Available <input type="checkbox"/> Limited <input type="checkbox"/> In-House ONLY		24. Documentation Availability: <input checked="" type="checkbox"/> Available <input type="checkbox"/> Inadequate <input type="checkbox"/> In-House ONLY	
<div style="display: flex; justify-content: space-between;"> <div>Software Custodian: <u> <i>LSH</i> </u></div> <div>Date: <u> 3/6/96 </u></div> </div>			

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[37] From: Pat Starkweather at CNWRA-SUN 7/2/96 5:23PM (588 bytes: 1 ln)
To: Bruce Mabrito at CNWRA-OS2
cc: Linda Hearon at CNWRA-OS2, Robert Brient at CNWRA-OS2, Rawley Johnson at
CNWRA-OS2
Subject: Version Control: UDEC

----- Message Contents -----

Text item 1: Untitled

Mr. Mabrito;

Herewith notification that an S&E Software code has been
placed under Version Control in accordance with TOP-018.

Details

Program Name: UDEC 2.01
Date Entered: 2 July 96
Control Method: SCCS
Location: mammoth:/lan/rcs/~

Pat Starkweather
x-5238

11

Mikko P. Ahola

SCIENTIFIC NOTEBOOK

INITIALS:

1. INITIAL ENTRIES

Scientific NoteBook: # 165

Issued to: Mikko Ahola

Issue Date: January 31, 1996

Printing Period: January 31, 1996 to March 31, 1996

Project Title: Thermal-Mechanical (TM) Modeling of Emplacement Drift Stability

Project Staff: Mikko Ahola
Rui Chen
Hengameh Karimi

By agreement with the CNWRA QA this NoteBook is to be printed at approximate quarterly intervals. This computerized Scientific NoteBook is intended to address the criteria of CNWRA QAP-001.

1.1 Objectives

The specific objectives for this activity are to analyze the stability of emplacement drifts excavated in a jointed rock mass, under *in situ* and thermal stress fields, and to develop an understanding of the load that may be generated by rock movement and rock fall that will have an impact on the waste packages. This activity will provide a basis for assessing the acceptable range of thermal loads for the proposed repository, considering preclosure performance objectives as well as postclosure performance objectives. The Yucca Mountain (YM) rock properties will be used in the simulations, based on information available from borehole drilling. The UDEC code Version 2.01 will be used to model different scenarios. The range of thermal loads that will be used in this study will span the DOE "hot" and "cold" repository concepts. Using a rock joint network, as realistic as possible for the proposed repository at YM, this activity will investigate the effect of different thermal load regimes on the stability of the emplacement drifts and the corresponding load on the waste packages. It is realized that the current information on thermal degradation of rock properties is limited at best.

Installation test run of UDEC Version 2.01 was conducted by duplicating a given example problem (see page 2.1 of UDEC 2.0 User's Manual Volume I. That includes inserts for the new UDEC revision 2.01). This example problem provides the basic steps of operating the code. Our installation test run indicated that we have the reported capabilities of the code.

This activity will continue over a period of two years. In the first year, this study will focus on simulating the scenarios without any backfill in the emplacement drifts. Effects of backfill will be studied in the second year.

1.2 Technical Approaches

The technical approach for this project will be to utilize the discrete element code UDEC (ITASCA, 1993) to conduct a series of numerical modeling analyses to investigate the thermal-mechanical response of a typical repository waste emplacement drift assuming realistic ranges of joint geometries,

bashful:root > ./udec20

UDEEC Version 2.01

-- universal distinct element code ----

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Serial Number 001-000

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Minneapolis, Minnesota USA

*STARTING SCREEN
of The UDEC program
printed 8/19/96
SE*