

# CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES NONCONFORMANCE REPORT

Project No. 20.06002.01.031

NCR No. 2004-21

**PART 1: DESCRIPTION OF NONCONFORMANCE**

In accordance with procedure QAP-001, paragraph 3.2.2, initial entries are to include objectives of the task, the proposed approach or procedure for achieving the objectives and address any special training or qualification requirements. The initial entry in Scientific Notebook 673 does not contain this information.

Attached is the first page of the notebook.

Initiated by: Mark R. Ehnstrom Date: 10/18/2004

Action Required by: G. Ofoegbu/ R. Reed Response Due Date: 11/01/2004

**PART 2: PROPOSED DISPOSITION AND CORRECTIVE ACTION**

Disposition: *Additional initial-entry information will be provided at the back page of Notebook 673. A statement will be added on page 1 of the notebook*  
 Basis of Disposition: *to indicate the existence of the additional information.*  
*The information needed is already provided in Notebook 654. This information will be copied to*  
 Action to Correct Nonconformance: *Notebook 673 to correct the nonconformance.*


*See "Disposition".*

Target date for completion: 12/31/04

Proposed by: Goodluck Ofoegbu Date: 11/01/2004

**PART 3: APPROVAL**

Manager:  Date: 11/1/04

Director of QA:  Date: 11/2/04

Comments/Instructions:

**PART 4: CLOSE OUT *(See attached pages)***

Comments: *Additional initial-entry information has been added to page 1 and pages 137-138 in Scientific Notebook 673. This information now makes the initial entry compliant to QAP-001. No additional actions are necessary.*

Verified by: Mark R. Ehnstrom Date: 1/5/05

Distribution:  
 Original-CENTER QA Records  
 ORIGINATOR  
 PRINCIPAL INVESTIGATOR  
 MANAGER  
 DIRECTOR

Sept. 14/2004.

This scientific notebook is a continuation of work summarized in scientific notebook SN654 Vol. 1 issued to Rodney Read (RSRead Consulting Inc.) by CNWRA.

Title: Validation of Universal Distinct Element Code (UDEC) Ver 3.1

Principal Investigator: Dr. Rodney S. Read, RSRead Consulting Inc.

CNWRA Personnel: Dr. Goodluck Ofoegbu, Dr. Asadul Chaudhury, Dr. Sui-mih Hsiung

The objectives, approach, qualification requirements, and description of analyses are contained in SN654 Vol 1, along with details on computer platform, software, and in-process entries describing progress.

Nov 19/04

These are reproduced on pages 137 and 138.

Sept 14/04

Case 7.1 UDEC Horizontal transgressing joint (no slip)

Case 7.1 was re-run using input file U71INPUT.TXT (see page 2) and file U71FILE.TXT (see page 199 in SN654 Vol. 1.). Data exported from UDEC was imported into EXCEL file U71.XLS to create comparable plots to those created using FLAC.

The sign convention for shear and normal stress on the joint were reversed to match those in FLAC.

Nov 10/2004. Supplemental initial entries for this scientific notebook areas follows:

1

SN 654 Vol. 1

Title: Validation of Universal Distinct Element Code (UDEC) Ver. 3.1

Principal Investigator: Dr. Rodney S. Reed, RSRead Consulting Inc.

CNWARA Personnel: Dr. Goodluck Ofoegbo, Dr. Asadul H. Chowdhury  
Dr. Sui-Min Hsiung

Objectives and Approach: The objectives of this software validation exercise are to conduct a series of validation tests using UDEC and the code Fast Lagrangian Analysis of Continua (FLAC) version 4.0, and to summarize the findings of these exercises in a report to CNWARA. The plan for these exercises is contained in the document entitled "Software Validation Test Plan for the Universal Distinct Element Code (UDEC) Version 3.1" (CNWARA, May 2002).

Qualification Requirements: Familiarity with software codes from HCTasca (Itasca Consulting Group, Inc.).

Description of Analyses: There are seven analyses detailed in the validation test plan. Three of these (Cases 1, 3 and 4) are discussed in the UDEC online manual, and are covered in sufficient detail in that document. The other four cases are as follows:

- Case 2 - Joint's slip intersected by a circular excavation
  - Case 5 - Heat conduction through a composite wall
  - Case 6 - Validate cable bolt performance
  - Case 7 - Mechanical response of a joint subject to heat load
- These cases will be examined individually as described in the test plan.

Initial entry addition to SN673 Vol. 1 as per  
NCR No. 2004-21, (pg 1 of 2)

- these entries were intended as part of entries on Page 1.

Nov 10/04

- the entries below were intended to be on Page 1

2

SN 673 Vol 1

Computer Platform: Analyses will be conducted on a DELL 8200 personal computer running Microsoft Windows XP (Version 5.1.2600 Service Pack 1 Build 2600) unless otherwise identified.

Computer Software: UDEC Version 3.10.112 was leased from Itasca Consulting Group on July 23, 2004. FLAC Version 4.0 will be leased at a later date. Specific version number will

*R. N. [Signature]*

be recorded at that time under individual validation exercises.

FLAC 4.0 Version 4.00.314, Serial number 213-001-0521-11415

Additional Initial Entries: Additional initial entries specific to each individual validation exercise will be listed separately under each exercise.

*R. N. [Signature]*  
Aug 1/2004

*R. N. [Signature]*  
Nov 10/04

Initial entries addition to SN 673 Vol 1 as per  
NCR No. 2004-21 (pg 2 of 2).

*R. N. [Signature]*  
Nov 10/04