

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

NONCONFORMANCE REPORT

Project No. 20-5708-471

NCR No. 97-05

PART 1: DESCRIPTION OF NONCONFORMANCE

Contrary to the requirements of QAP-002, paragraphs 5.6 and 5.7 and Table 1, no Format Review was accomplished on CNWRA deliverable "Geologic Input on Unsaturated Zone for Total System Performance Assessment Code Version 3.1," dated September 1997, prior to it being sent to the U.S. NRC. Additionally, no QA Verification of Compliance with QAP-002 was performed on the documentation package (including CNWRA Form AP-6-2) prior to it being sent to the NRC.

Initiated by: *Sam Malab*

Date: 9/30/97

PART 2: PROPOSED DISPOSITION AND CORRECTIVE ACTION *Response due 10/14/97 Ben*

Disposition: - SEE ATTACHED MEMO

Basis of Disposition: - SEE ATTACHED MEMO

Action to correct nonconformance: - SEE ATTACHED MEMO

Action to prevent recurrence: - SEE ATTACHED MEMO

Target date for completion: 9/29/97

Proposed by: H. L. McKAGUE

Date: 9/2/97

PART 3: APPROVAL

Element Manager: *H. L. McKague*

Date: ~~9/2/97~~ 10/2/97 *MAX MEIK*

Director of QA: *Sam Malab*

Date: 10/13/97

Comments/Instructions:

Original L. McKague response received 10/2/97. Subsequent discussions led to a second more comprehensive memorandum dated 10/13/97. Format Review and Verification of Compliance completed 10/13/97. Ben 10/13/97

PART 4: CLOSE OUT

Comments: *Documentation package complete; NCR 97-05 closed 10/13/97.*

Distribution: *L. McKague / Respondent
B. Sagar
EMS
H. Garcia*

Verified by: *Sam Malab* Date: 10/13/97

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

MEMORANDUM

October 13, 1997

TO: Bruce Mabrito

FROM: H. Lawrence McKague *HL McKague*

SUBJECT: Nonconformance report 97-05

The disposition of this CAR (97-05) will include a Format Review, as well as the Verification of Compliance with QAP-002 block signed. Only two minor format errors were identified in the Format Review. These were documented on the document by the reviewer.

No major changes to the document were found and document will not be resubmitted to NRC.

Staff was notified of corrective action and completed that action.

IM 20-5708-471-711 was forwarded to NRC without a Verification of Compliance Review. To prevent this from happening in the future a form has been developed and implemented into use in the GLGP Element as of 10/01/97. Implementation requires two copies of the form for all documents for which the element has review responsibilities and which the Element Secretary processes. One copy of the form remains with the document in review at all times and appropriate sections are completed only by the secretary. The second copy will be kept by the secretary on her desk. Its principal function is to track documents when they are not in her possession. A copy of the form is attached.

/adm
Attachment

(d:\mckague\letmem\lm109705.lm)

Review Process for GLGP Documents

Title _____

Senior Author _____

• Author final copy received _____

• AP 6 prepared _____

- signed _____

• Technical Review started _____

• Technical Review completed _____

- Draft Transmittal letter completed _____

• Editorial Review started _____

• Editorial Review finished _____

- Draft Transmittal letter completed _____

• Programmatic Review started _____

• Programmatic Review finished _____

• Format Review _____

- Sign Transmittal letter _____

• QA Review completed _____

Preceding must be completed before the following can be done

• Preparation of copies _____

• NRC distribution _____

• CNWRA distribution _____

• Transfer to QA file _____



CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES
DOCUMENT REVIEW REQUEST AND TRANSMITTAL CONTROL (REF. QAP-002)

I. DOCUMENT INFORMATION

a. TITLE: Geologic Input for Unsaturated Zone for Total Performance Assessment Code Version 3.1

b. DOCUMENT TYPE

<input checked="" type="checkbox"/> Technical Report	<input type="checkbox"/> AP	<input type="checkbox"/> RPD	<input type="checkbox"/> Paper/Presentation *	<input type="checkbox"/> Project/Test Plan
<input type="checkbox"/> Guidance Document	<input type="checkbox"/> TOP	<input type="checkbox"/> CQAM/QAP	<input type="checkbox"/> OPs/Work Plan	<input type="checkbox"/> Proposal

* Conference/Journal Title: _____

Sponsoring Organization(s) _____ Location _____ Date(s) _____

c. PROJECT INFORMATION

Project No. 20-5708-471 Milestone No. 20-5708-471-711 Subject Code 714.4

CNWRA DOCUMENT NO. Yes _____ No _____ Assigned No. CNWRA 97 -

d. SCHEDULE Today's Date 09/25/97 Scheduled Transmittal Date 09/29/97

II. RESPONSIBILITIES (Fill in names on each blank line in this section.)

Author(s) H.L. McKague, and J. Stamatakos Element Manager H. Lawrence McKague
Assigned Secretary A. Mandujano Editor _____

III. REVIEW (See QAP-002 table 1 for applicable review types.)

Review Types & Reviewers Determined by Element Manager H.L. McKague 9/25/97
(EM Signature) (Date)

		<u>Req'd Date</u>	<u>Initials</u>	<u>Completed</u>
<input checked="" type="checkbox"/>	TECHNICAL (Attach CNWRA form QAP-12.) Reviewer(s): <u>Michael P. Miklas</u>	<u>09/26/97</u>	<u>JRM</u>	<u>09/26/97</u>
<input type="checkbox"/>	PEER (Attach CNWRA form QAP-13.) Reviewer(s):	_____	_____	_____
<input type="checkbox"/>	CONCURRENCE; Reviewer:	_____	_____	_____
<input type="checkbox"/>	QA Reviewer:	_____	_____	_____
<input checked="" type="checkbox"/>	PROGRAMMATIC Reviewer: <u>Budhi Sagar</u>	<u>09/29/97</u>	<u>B</u>	<u>9/29/97</u>
<input checked="" type="checkbox"/>	FORMAT Reviewer:	_____	_____	_____

Verification of Compliance with QAP-002 _____

IV. TRANSMITTAL

TO: Phil Justus FROM: H. Lawrence McKague

COPIES TO: (Add/delete names as required using current information in "Guidelines for Minimum Distribution of CNWRA Correspondence.")

Distribution (listed below)

<u>J. Linehan</u>	<u>K. Stablien</u>	<u>W. Patrick</u>	_____
<u>S. Fortuna</u>	<u>M. Bell</u>	<u>CNWRA Directors</u>	_____
<u>B. Stiltenspole</u>	<u>S. Wastler</u>	<u>CNWRA Elem Mgrs</u>	_____
<u>B. Meehan</u>	<u>D. Brooks</u>	<u>S. Rowe</u>	_____
<u>J. Greeves</u>	<u>B. Ibrahim</u>	<u>J. Stamatakos</u>	_____
<u>M. Federline</u>	<u>J. Weldy</u>	<u>S. Mohanty</u>	_____



CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

INSTRUCTIONS TO TECHNICAL REVIEWERS

Technical Review Items to Verify

TO: Michael P. Miklas

SUBJECT: Geologic Input for Unsaturated Zone for Total Performance Assessment Code
Review of Version 3.1

Please perform a Technical Review of the subject document in accordance with CNWRA QAP-002, verifying the specific items identified below. Technical comments shall be documented on the attached Comment Resolution Record and presented to the author for resolution. Initial blanks on right side of page to show completion of assigned review.

Required review completion date: 09/26/97

ASSIGNED

ACCOMPLISHED

TECHNICAL CORRECTNESS

- | | | | |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|----------|
| <input checked="" type="checkbox"/> | Assumptions are reasonable and clearly stated. | <input checked="" type="checkbox"/> | 09/26/97 |
| <input type="checkbox"/> | Appropriate techniques are used.* | <input type="checkbox"/> | |
| <input type="checkbox"/> | Computations are correct, calculations are documented and verified in accordance with QAP-014 (document this review by a statement on the TOP-3 form). | <input type="checkbox"/> | |
| <input type="checkbox"/> | Existing data are qualified (or exempted) in accordance with QAP-015. | <input type="checkbox"/> | |
| <input type="checkbox"/> | Conclusions are properly supported by correctly interpreted data.*
<small>* Novel or beyond state-of-the-art techniques or significant uncertainties in data and interpretations warrant application of the Peer Review.</small> | <input type="checkbox"/> | |

READABILITY

- | | | | |
|-------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------|----------|
| <input checked="" type="checkbox"/> | Document is written for the intended audience, with correct grammar and syntax. | <input checked="" type="checkbox"/> | 09/26/97 |
| <input checked="" type="checkbox"/> | Illustrations and tables clearly present basic information and emphasize relationships. | <input type="checkbox"/> | |

CONTENT AND FORMAT

- | | | | |
|-------------------------------------|---------------------------------------------------------------------------------------------------------|-------------------------------------|----------|
| <input checked="" type="checkbox"/> | Title reflects the objectives of the document. | <input checked="" type="checkbox"/> | 09/26/97 |
| <input type="checkbox"/> | Abstract states purpose, describes study, and summarizes the pertinent results and conclusions. | <input type="checkbox"/> | |
| <input checked="" type="checkbox"/> | Introduction states the objectives and scope of the work and presents background information. | <input checked="" type="checkbox"/> | 09/26/97 |
| <input checked="" type="checkbox"/> | Body of the manuscript is logically organized and presents the basic information. | <input checked="" type="checkbox"/> | 09/26/97 |
| <input checked="" type="checkbox"/> | Conclusions and results summarize the principal findings and answer each of the objectives of the work. | <input checked="" type="checkbox"/> | 09/26/97 |
| <input checked="" type="checkbox"/> | References are cited in the text and in the references section. | <input checked="" type="checkbox"/> | 09/26/97 |

ELEMENT MANAGER H. Lawrence McKague	DATE 9/25/97	COGNIZANT DIRECTOR Budhi Sagar	DATE 9/27/97
--------------------------------------------	-----------------	---------------------------------------	-----------------

CNWRA REPORT REVIEW / COMMENT RESOLUTION RECORD

PAGE

OF

PAGES

PROJECT NUMBER

20-5708-471

DOCUMENT DATE

DOCUMENT NUMBER

TITLE: Geologic Input for Unsaturated Zone for Total Performance Assessment Code Version 3.1

The comments shown below address questions and concerns of a technical and/or programmatic nature which arose in this review. Because of possible implications, they require action and response.

RESPONSE:

(Write "accept" and note briefly how comment was incorporated, or give justification if rejected.)

1. See editorial comments in mark-up.

ACCEPTED

2. Please clarify "use of this model for saturated flow model" (1-1)

SENTENCE REWRITTEN

3. Rectify Version 3.1 with Mantrolol reference. (1-1)

REFERENCE DELETED NO SUITABLE REFERENCE TO TPA VERSION 3.1 CURRENTLY EXISTS

4. Make sure figure 1-2 is not mounted crooked.

ACCEPTED

5. Suggest changing "historics ... will" to "regimens" ... will p. 2-1.

ACCEPTED

6. p. 3-1 Batuvansson or Bandowaga, 1996 should be et al. as Wu was also an author.

ACCEPTED AND CORRECTED

7. p. 4-2 Add (m) to title line

ACCEPTED

8. p. 4-3 Mention "glass" on this page + "coviv" summary (or change "glass" on ~~top~~ p 5-1 to "vitic".

ACCEPTED

9. 4-3 Probably should reference Buxton.

ACCEPTED

10. 4-3 Change "Clayton" reference to be consistent with others.

ACCEPTED

11. 6-1 Ortiz not in references.

ACCEPTED AND ADDED

REVIEWER SIGNATURE:

DATE:

Melrose J. Melillo

09/26/97

RESPONDER SIGNATURE:

DATE:

A. Lammere McKeay

9/26/97

Response accepted by:

09/26/97

Melrose J. Melillo

Signature

Date

If resolution cannot be achieved, the matter shall be elevated to the next level of authority.

Distribution: This completed form shall be maintained in a record file.

CNWRA REPORT REVIEW / COMMENT RESOLUTION RECORD

PAGE 1 OF 1 PAGES

PROJECT NUMBER

20-5708-471

DOCUMENT DATE

DOCUMENT NUMBER

TITLE: Geologic Input for Unsaturated Zone for Total Performance Assessment Code Version 3.1

The comments shown below address questions and concerns of a technical and/or programmatic nature which arose in this review. Because of possible implications, they require action and response.

RESPONSE:
(Write "accept" and note briefly how comment was incorporated, or give justification if rejected.)

1. Editorial markups are given in the text.

(1) ACCEPTED

2. Page 1-1: Use a DFE reference for repository depth.

(2) SENTENCE DELETE

3. Differentiate between 'model' and code.

(3) ACCEPTED

4. Provide the hydrologic property table on page 4-4.

(4) HYDROLOGIC TABLES ^{WELD TABLE 4-6} ADDED AS AN APPENDIX, TABLE 4-1 ADDED TO INDICATE CORRELATION BETWEEN MZD AND ^{STEADY STATE} NOMENCLATURE IN WELD'S TABLE 4. SENTENCE ADD TO SEC 4.3

REVIEWER SIGNATURE:

DATE:

9/26/97

RESPONDER SIGNATURE:

DATE:

10/31/97

Response accepted by:

Signature

9/28/97

Date

If resolution cannot be achieved, the matter shall be elevated to the next level of authority.

Distribution: This completed form shall be maintained in a record file.

Center for Nuclear Waste Regulatory Analyses

6220 CULEBRA ROAD • P.O. DRAWER 28510 • SAN ANTONIO, TEXAS, U.S.A. 78228-0510
(210) 522-5160 • FAX (210) 522-5155

September 29, 1997
Contract No. NRC-02-93-005
Account No. 20-5708-471

U.S. Nuclear Regulatory Commission
ATTN: Philip S. Justus
Office of Nuclear Material Safety and Safeguards
Two White Flint North
Mail Stop 7 C6
Washington, DC 20555

Subject: Geologic Input for Unsaturated Zone for Total Performance Assessment Code
Version 3.1 (IM 5708-471-711)

Dear Dr. Justus:

The purpose of this letter is to transmit IM 5708-471-711 Geologic Input for Unsaturated Zone for Total Performance Assessment Code Version 3.1. The report describes the basis for the subdivision of the repository into subareas, the model zones and their basis for unsaturated flow modeling with the TPA Code, and the distribution of zeolitization in the subareas.

If you have any questions please contact me at (210) 522-5183.

Sincerely,



H. Lawrence McKague
Element Manager
Geology and Geophysics

/adm
c:\letmem\lm099714.lm

cc: J. Linehan M. Bell CNWRA Directors
S. Fortuna J. Thoma CNWRA Element Managers
B. Stiltenspole D. Brooks D. Ferrill
B. Meehan K. Stablien J. Stamatakos
J. Greeves B. Ibrahim S. Mohanty
M. Federline W. Patrick S. Rowe



**GEOLOGIC INPUT ON UNSATURATED ZONE
FOR TOTAL-SYSTEM PERFORMANCE ASSESSMENT
CODE VERSION 3.1**

Prepared for

**Nuclear Regulatory Commission
Contract NRC-02-93-005**

Prepared by

**H. Lawrence McKague
John A. Stamatakos**

**Center for Nuclear Waste Regulatory Analyses
San Antonio, Texas**

September 1997

CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES

MEMORANDUM

Submitted 10/3/97 -
formed the basis
of resubmission

October 3, 1997

TO: Bruce Mabrito
FROM: H. Lawrence McKague *H.L. McKague* 10/13/97
SUBJECT: Nonconformance report 97-05

④ IM 20-5708-471-711 was forwarded to NRC without a Verification of Compliance Review. To prevent this from happening in the future a form has been developed and implemented into use in the GLGP Element as of 10/01/97. Implementation requires two copies of the form for all documents for which the element has review responsibilities and which the Element Secretary processes. One copy of the form remains with the document in review at all times and appropriate sections are completed only by the secretary. The second copy will be kept by the secretary on her desk. Its principal function is to track documents when they are not in her possession. A copy of the form is attached.

/adm
Attachment

(c:\mckague\letmem\lm109704.lm)

- 1.) THE DISPOSITION OF THIS CA12 (97-05) WILL INCLUDE A FORMAT REVIEW, AS WELL AS THE VERIFICATION OF COMPLIANCE WITH QAP-002 BLOCK SIGNED. ONLY TWO MINOR FORMAT ERRORS WERE IDENTIFIED IN THE FORMAT REVIEW. THESE WERE ~~NOT~~ DOCUMENTED ON THE DOCUMENT BY THE REVIEWER. ~~THE DOCUMENTED CHANGES WERE MINOR AND THE DOCUMENT WILL NOT BE RESUBMITTED TO NRC.~~
- 2.) NO MAJOR CHANGES TO THE DOCUMENT WERE FOUND AND DOCUMENT WILL NOT BE RESUBMITTED TO NRC.
- 3.) STAFF WAS NOTIFIED OF CORRECTIVE ACTION AND COMPLETED THAT ACTION