



**Department of Energy**  
 Office of Civilian Radioactive Waste Management  
 Yucca Mountain Site Characterization Office  
 P.O. Box 98608  
 Las Vegas, NV 89193-8608

SEP 25 1996

L. D. Foust  
 Technical Project Officer  
 for Yucca Mountain  
 Site Characterization Project  
 TRW Environmental Safety Systems, Inc.  
 Bank of America Center, Suite P-110  
 101 Convention Center Drive  
 Las Vegas, NV 89109

**EVALUATION OF RESPONSES TO DEFICIENCY REPORTS (DR) YM-96-D-081 AND YM-96-D-082 RESULTING FROM YUCCA MOUNTAIN QUALITY ASSURANCE DIVISION'S (YMQAD) AUDIT YM-ARC-96-18 OF SANDIA NATIONAL LABORATORIES**

The YMQAD staff has evaluated the responses to DRs YM-96-D-081 and YM-96-D-082. The responses have been determined to be satisfactory. Verification of completion of the remedial actions will be performed after the effective date provided. Any extension to this date must be requested in writing, with appropriate justification, prior to the date. Please send a copy of extension requests to Deborah Sult, YMQAD/QATSS, P.O. Box 98608, Mail Stop 455, Las Vegas, Nevada 89193-8608.

If you have any questions, please contact either Robert B. Constable at (702) 794-5580 or Stephen D. Harris at (702) 794-5522.

*Robert B. Constable for*

Richard E. Spence, Director  
 Yucca Mountain Quality Assurance Division

YMQAD:RBC-2700

Enclosure:  
 DRs YM-96-D-081 and  
 YM-96-D-082

cc w/encl:  
 T. A. Wood, DOE/HQ (RW-14) FORS  
 J. G. Spraul, NRC, Washington, DC  
 S. W. Zimmerman, NWPO, Carson City, NV  
 R. L. Strickler, M&O, Vienna, VA  
 B. R. Justice, M&O, Las Vegas, NV  
 R. P. Ruth, M&O, Las Vegas, NV  
 R. R. Richards, M&O/SNL, Albuquerque, NM, M/S 1333  
 Records Processing Center

cc w/o encl:  
 W. L. Belke, NRC, Las Vegas, NV  
 S. D. Harris, YMQAD/QATSS, Las Vegas, NV  
 D. G. Sult, YMQAD/QATSS, Las Vegas, NV  
 D. G. Horton, DOE/OQA, Las Vegas, NV

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YMP-5

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*102.7*  
*NH 33*  
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*Recip: NMS/HLUR*

**OFFICE OF CIVILIAN  
RADIOACTIVE WASTE MANAGEMENT  
U.S. DEPARTMENT OF ENERGY  
WASHINGTON, D.C.**

**ORIGINAL**  
~~THIS IS PART OF THE REPORT~~  
 Deficiency Report  
NO. YM-96-D081  
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QA: L

**PERFORMANCE/DEFICIENCY REPORT**

1 Controlling Document: <b>QARD, Revision 5</b>	2 Related Report No. <b>YM-ARC-96-18</b>
3 Responsible Organization: <b>SNL</b>	4 Discussed With: <b>R. Richards and T. Ehrhorn</b>

5 Requirement/Measurement Criteria:

Section 5.2.2 C. states in part, "A sequential description of the work to be performed including controls for altering the sequence of required inspections, tests, and other operations...."

Section 5.2.2 G. states "Methods for demonstrating that work was performed as required (such as provisions for recording inspection and test results, check off lists, or sign off blocks.)"

6 Description of Condition:

1. Contrary to the above requirement for sequential description of work to be performed, QAIP 5-1, Revision 05 is not clear about the sequential activities followed to initiate a new procedure and to change a procedure. In discussions with QA representatives, it was stated that the process followed was verbal and information was transferred electronically. This process was not described in the procedure.
2. "Revision History" is included in procedures but not in QAIP 5-1 as being part of the format to explain the rationale for changes.

7 Initiator <i>Stephen D. Harris</i> <b>Stephen D. Harris</b> Date <b>8/1/96</b>	9 Is condition an isolated occurrence? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown; Must be Yes if PR
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10 Recommended Action: (Not required for PR)

1. Revise QAIP 5-1 to reflect the actual process followed to initiate or revise a new procedure. Assure the process used has appropriate objective evidence generated to show compliance to the process.
2. Revise QAIP 5-1 to require the "Revision History" to be included in procedures.

11 QA Review: <i>Stephen D. Harris</i> <b>QAR Stephen D. Harris</b> Date <b>8/1/96</b>	12 Response Due Date <b>20 working days from issuance</b>
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13 Affected Organization QA manager Issuance Approval: (QAR for PR)

Printed Name **RESPEENCE** Signature *Robert B. Constable* Date **8.7.96**

22 Corrective Action Verified <b>QAR</b> Date	23 Closure Approved by: (N/A for PR) <b>AQAM</b> Date
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WASHINGTON, D.C.

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PERFORMANCE/DEFICIENCY REPORT RESPONSE

14 Remedial Actions:

See Continuation Page

15 Extent of Condition: (Not required for PR)

See Continuation Page

16 Root Cause Determination: (Not required for PR)

Required

Yes

No

17 Action to Preclude Recurrence: (Not required for PR)

Required

Yes

No

18 Corrective Action Completion Due Date:

October 21, 1996

19 Response by:

for R. A. Richards *R. A. Richards*

Initial

Amended

Date 9/4/96

Phone 378-0641

20 Response Accepted

QAR

*S. D. Harris*

Date

9-20-96

21 Response Accepted (N/A for PR):

AOQAM

*Robert B. Constable*

Date

9-23-96

9/5/96 *Bridget Spencer*

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PR/DR CONTINUATION PAGE

**BLOCK 14 - REMEDIAL ACTIONS:**

QAIP 5-1 is clear when describing the process for formally requesting a new procedure or change to an existing procedure which is the process that would normally be followed by personnel outside of the QA organization. However, as the evaluator pointed out, QAIP 5-1 does not describe the informal interaction that is normally used to initiate procedure changes. Since most procedures are initiated or revised by personnel in the QA Department at the direction of the QA Department Manager, the Procedure Action Request form is rarely used. QAIP 5-1 will be modified to reflect that informal process and to ensure that the actual decision to generate or revise a procedure is documented (memo, E-mail, etc.) and that documentation is maintained in the non-processed procedure file. Appendix B of QAIP 5-1, "Procedure Format and Content", will also be corrected to describe the "Revision History" which is to be included in all procedures.

**BLOCK 15 - EXTENT OF CONDITION:**

The other two procedures that govern the initiation and revision of internal implementing documents were reviewed. QAIP 1-5 which governs Work Agreements states clearly how Work Agreements are initiated and revised. And, it states that a revision history will be included in the Work Agreement. QAIP 20-1 which governs Technical Procedures also clearly specifies the process and the need for a revision history. There are no further actions required other than the remedial action mentioned above and, since the scope of the deficiency is clear and limited, there is no requirement for root cause determination.

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**ORIGINAL**  
Approved Report  
 Deficiency Report  
 NO. YM-96-D082  
 PAGE 1 OF 2  
 QA: L

**PERFORMANCE/DEFICIENCY REPORT**

1 Controlling Document: <b>QAIP 19-1, Revision 02</b>	2 Related Report No. <b>YM-ARC-96-18</b>
3 Responsible Organization: <b>SNL</b>	4 Discussed With: <b>Tom Ehrhorn</b>

5 Requirement/Measurement Criteria:

Section 5.5 Step 5(b), 1., states, "Complete the form by indicating approval and identifying all affected baseline elements...."

6 Description of Condition:

Contrary to the above requirement, the following change request forms for Reg CM2 had no indication of affected baseline elements:

- 1) MOD #122 indicated at top of page, QA Verification 2/27/95
- 2) MOD #123 indicated at top of page, QA Verification 2/27/95
- 3) Tracking #110,179,001, 11/11/94, QA Verification 3/7/95
- 4) Tracking #110,179,002, 11/11/94, QA Verification 3/7/95

7 Initiator <i>Richard H. White</i> <b>Stephen D. Harris</b> Date <b>8/1/96</b>	09 Is condition an isolated occurrence? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown; Must be Yes if PR
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10 Recommended Action: (Not required for PR)

Evaluate and document what, if any, baseline elements are affected by the changes. Modify the Change Request Forms, following change procedures, and reference the documented evaluation and any affected baseline elements. If baseline elements are affected, complete the required actions for them as described in QAIP 19-1.

11 QA Review: <i>Stephen D. Harris</i> <b>QAR Stephen D. Harris</b> Date <b>8/1/96</b>	12 Response Due Date <b>20 working days from issuance</b>
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13 Affected Organization QA manager Issuance Approval: (QAR for PR) Printed Name <b>R.E. SPENCE</b> Signature <i>Robert B. Spence</i> Date <b>8.7.96</b>
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22 Corrective Action Verified QAR      Date	23 Closure Approved by: (N/A for PR) AOQAM      Date
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WASHINGTON, D.C.**

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PR/DR NO. YM-96-0082

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QA: L

**PERFORMANCE/DEFICIENCY REPORT RESPONSE**

**14 Remedial Actions:**

The code sponsor (Starley Thompson, NCAR) was contacted and provided the missing information for the two Change Requests (identified by Tracking Numbers 110.179.001 and 110.179.002) by letters to the SNL Contract Monitor (Joe Schelling) dated 26 July 1996. These letters, which have been attached to the Change Request Forms, indicate that for Tracking Number 110.179.001, which referred to code improvements, the baseline element for the software item itself was affected, and for Tracking Number 110.179.002, installing the code on a different platform, no baseline elements were affected. These letters have been filed with, and noted as attachments to the appropriate Change Request Forms. These corrected records have been submitted for processing as Project records. No additional QAIP 19-1 actions are needed. As a second remedial action, the Change Request Form itself has been modified (see attached example) to prompt the Code Sponsor to clearly indicate whether or not any baseline elements are affected by a proposed change.

**15 Extent of Condition: (Not required for PR)**

What appear as 4 separate deviations is really a single instance. The original Change Requests, one incorporating code changes and one to port the code to another platform, were initiated 11/14/94, approved 1/12/95, and verified 2/27/95. The second set is a 2/24/96 fax of the code sponsor's copy to SNL, signed by Software QA 3/7/95. It is not clear why the faxed copies were signed on a later date, other than to note that the Software Use Form, authorizing the complete code release for 110.179.001, was also issued on 3/7/95, indicating perhaps an intention of ensuring documentation completeness for the released code. Because this is a one-time occurrence, for which it appears to have been unclear to the Code Sponsor of the need to identify any affected baseline elements, including the subject code, a root cause determination is unnecessary. The revised Change Request Form (See Block 14), should suffice to preclude recurrence.

**16 Root Cause Determination: (Not required for PR)**

Required  Yes  No

**17 Action to Preclude Recurrence: (Not required for PR)**

Required  Yes  No

**18 Corrective Action Completion Date:**

*Completed*

**19 Response by:**

Initial *F Joseph Schelling*  
 Amended Date *8/27/96* Phone *505 848 0643*

**20 Response Accepted**

QAR *S.D. Harris* Date *9-20-96*

**21 Response Accepted (N/A for PR):**

AOQAM *Robert B. Constable* Date *9.23.96*

*9/5/96 Brady & Spence*

**National Center for Atmospheric Research  
Climate Change Research Section (CCR)  
Climate and Global Dynamics Division  
P.O. Box 3000, Boulder, Colorado 80307-3000  
Telephone: (303) 497-1624 Fax: (303) 497-1348**

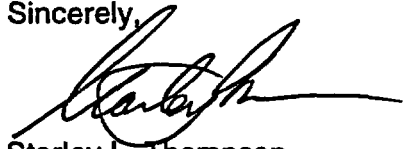
26 July 1996

Joe Schelling  
Sandia National Laboratories  
Dept. 6853, M/S 1333  
P.O. Box 5800  
Albuquerque, NM 87185-1333

Dear Joe:

Per your request this letter certifies that the baseline element for the software item itself is affected by Change Request Form 110.179.001.

Sincerely,



Starley L. Thompson

cc: QA File

SCCS 1.2

Tracking Number: 110.179.001  
MOD #122

**CHANGE REQUEST FORM**

From Requester/Orgn. C. D'Ambra, NCAR Date 11/11/94

Name of Code ReqCM2 Version Number 1.0

Operating System IRIX 6.0 Platform SGI Power Challenge

Modification Type  Defect Correction  Enhancement  
 Retirement  Rerelease

**REQU ESTER**

Description of and Rationale for Proposed Change

1. Incorporate improved lake model routine, which includes correction for units conversion problem previously identified.
2. replace CUP subroutine with version containing bug fixes and enhancements
3. change planetary boundary layer from 300 to 700 millibars.

Rationale is to correct known bugs and incorporate enhancements developed independently of YMP.

Requester's Signature *C. D'Ambra* Attachment \_\_\_\_\_

**SPONSOR**

Approved  Rejected

Proposed Resolution or Rationale for Rejection

Affected Baseline Elements See attached.

Code Sponsor's Signature *[Signature]* Date 1/12/95 Attachment 1p

**QA**

Verification of Completed Modifications to Affected Baseline Elements

Software QA *Claudette Jaramel* Date 02/27/95

MODIFICATIONS WERE REVIEWED 2/27/96 GEF ELL

EGS 2/27/96



**National Center for Atmospheric Research  
Climate Change Research Section (CCR)  
Climate and Global Dynamics Division  
P.O. Box 3000, Boulder, Colorado 80307-3000  
Telephone: (303) 497-1624 Fax: (303) 497-1348**

26 July 1996

Joe Schelling  
Sandia National Laboratories  
Dept. 6853, M/S 1333  
P.O. Box 5800  
Albuquerque, NM 87185-1333

Dear Joe:

Per your request this letter certifies that no baseline elements are affected by Change Request Form 110.179.002.

Sincerely,



Starley L. Thompson

cc: QA File

SCCS 1.3

Tracking Number: 110.179.002  
MOD # 123

**CHANGE REQUEST FORM**

From Requester/Orgn.	C. D'Ambra	Date	11/11/94
Name of Code	RegCM2	Version Number	1.0
Operating System	IRIX 5.2	Platform	SGI Challenge
Modification Type	<input type="checkbox"/> Defect Correction	<input checked="" type="checkbox"/> Enhancement	
	<input type="checkbox"/> Retirement	<input type="checkbox"/> Rerelease	

<b>REQUESTER</b>	Description of and Rationale for Proposed Change	
	Port model to SGI Power Challenge running IRIX 6.0:	
	1. with 32 bit compilers and identical options as used in baselining the model 2. with 64 bit compilers and options that will optimize performance, including Power Fortran (parallelizing), without adversely affecting quality.	
	Rationale is to enhance performance, enabling longer simulations to be conducted in the same amount of time.	
	Requester's Signature	Attachment
	<i>Charles A. D'Ambra</i>	

<b>SPONSOR</b>	<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Rejected	
	Proposed Resolution or Rationale for Rejection	
	Affected Baseline Elements	
	Code Sponsor's Signature	Date
	<i>[Signature]</i>	1/12/95
		Attachment <i>1p</i>
		<i>See attached</i>

<b>QA</b>	Verification of Completed Modifications to Affected Baseline Elements	
	Software QA	Date
	<i>Claudette Jaramila</i>	02/27/95

MODIFICATIONS WERE REVIEWED 8/27/96 OF F ELL

F/S 8/27/96

### APPENDIX B

<b>CIVILIAN RADIOACTIVE WASTE MANAGEMENT</b> Sandia National Laboratories	<h2 style="margin: 0;">Change Request Form</h2>
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From Requester/Orgn. _____	Date: _____
Name of Program: _____	Version Number: _____
Operating System _____	Platform _____
Modification Type: <input type="checkbox"/> Defect Correction	<input type="checkbox"/> Enhancement
<input type="checkbox"/> Retirement	<input type="checkbox"/> Rerelease

<b>REQUESTER</b>	
Description of and Rationale for Proposed Change	
Requester's Signature: _____	Attachments: _____

<b>SPONSOR</b>	
<input type="checkbox"/> Rejected	
Proposed Resolution or Rationale for Rejection	
<input type="checkbox"/> Approved	
List Baseline Elements Affected by This Change	
Code Sponsor's Signature: _____	Attachments: _____
Date: _____	

<b>QUALITY ASSURANCE</b>	
Verification of Completed Modifications to Affected Baseline Elements	
Software QA Signature: _____	Date: _____