



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

QA: L

OCT 20 1994

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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

VERIFICATION OF CORRECTIVE ACTION AND CLOSURE OF CORRECTIVE ACTION REQUEST (CAR) YM-94-057 RESULTING FROM U.S. DEPARTMENT OF ENERGY/HEADQUARTERS AUDIT HQ-94-02 OF THE CIVILIAN RADIOACTIVE WASTE MANAGEMENT SYSTEM MANAGEMENT AND OPERATING CONTRACTOR (SCP/B: N/A)

The YMQAD staff has verified the corrective action to CAR YM-94-057 and determined the results to be satisfactory. As a result, the CAR is considered closed.

If you have any questions, please contact either Robert B. Constable at 794-7945 or John R. Matras at 794-7197.

Richard E. Spence, Director  
Yucca Mountain Quality Assurance Division

YMQAD:RBC-363

Enclosure:  
CAR-YM-94-057

cc w/encl:  
T. A. Wood, HQ (RW-10) FORS  
~~J. G. Spradley~~ NRC, Washington, DC  
S. W. Zimmerman, NWPO, Carson City, NV  
R. L. Robertson, M&O/TRW, Vienna, VA  
Richard Jiu, M&O/Duke, Las Vegas, NV  
R. P. Ruth, M&O/TRW, Las Vegas, NV  
D. G. Horton, OQA (RW-3), NV  
R. M. Nelson, Jr., YMSCO, NV

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

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WASHINGTON, D.C.

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**CORRECTIVE ACTION REQUEST**

<sup>1</sup> Controlling Document  
DOE/RW-0333P - Supplement I, Software

<sup>2</sup> Related Report No.  
HQ-94-02

<sup>3</sup> Responsible Organization  
CRWMS M&O

<sup>4</sup> Discussed With  
N. Hodgson, R. Bahney

<sup>5</sup> Requirement:

Paragraph I.2.8.A states: "The defect reporting and resolution system shall be integrated with the software configuration management system to assure formal processing of defect resolution."

<sup>6</sup> Adverse Condition:

Problem reports received from the vendor of ANSYS 5.0A were maintained by the user with no intention of integrating these problem reports into the configuration management system.

<sup>9</sup> Does a significant condition adverse to quality exist? Yes x No \_\_\_  
If Yes, Circle One: A (B) C D E

<sup>10</sup> Does a stop work condition exist? Yes \_\_\_ No x; If Yes - Attach copy of SWO  
If Yes, Circle One: A B C

<sup>13</sup> Response Due Date:  
20 working days from issuance

<sup>11</sup> Required Actions:  Remedial  Extent of Deficiency  Preclude Recurrence  Root Cause Determination

<sup>12</sup> Recommended Actions:

- Obtain, if available from the vendor, all problem reports on all qualified software.
- Process all problem reports through the configuration management system.

<sup>7</sup> Initiator John R Matras  
John Matras Date 6/23/94

<sup>14</sup> Issuance Approved by:  
QADD [Signature] Date 7/12/94

<sup>15</sup> Response Accepted  
QAR John R Matras Date 8/15/94

<sup>16</sup> Response Accepted  
QADD [Signature] Date 8/23/94

<sup>17</sup> Amended Response Accepted  
QAR \_\_\_\_\_ Date \_\_\_\_\_

<sup>18</sup> Amended Response Accepted  
QADD \_\_\_\_\_ Date \_\_\_\_\_

<sup>19</sup> Corrective Actions Verified  
QAR CC. Williams for John R. Matras Date 10-18-94

<sup>20</sup> Closure Approved by:  
QADD [Signature] Date 10/19/94

**ORIGINAL**  
THIS IS A RED STAMP

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<sup>1</sup> CAR NO. YH-84-057  
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*8-2-94*

**CORRECTIVE ACTION REQUEST**

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|---|--|---|
| <sup>1</sup> Controlling Document<br>DOE/RW-0333P - Supplement I, Software  |  | <sup>2</sup> Related Report No.<br>HO-84-02                       |
| <sup>3</sup> Responsible Organization<br>CRWMS M&O  | <sup>4</sup> Discussed With<br>N. Hodgson, R. Bahney   |   |
| <sup>5</sup> Requirement:<br><br>Paragraph 1.2.6.A states: "The defect reporting and resolution system shall be integrated with the software configuration management system to assure formal processing of defect resolution."                           |  |   |
| <sup>6</sup> Adverse Condition:<br><br>Problem reports received from the vendor of ANSYS 5.0A were maintained by the user with no intention of integrating these problem reports into the configuration management system.                                |  |   |
| <sup>7</sup> Does a significant condition adverse to quality exist? Yes <u>x</u> No ___<br>If Yes, Circle One: A <b>(B)</b> C D E   | <sup>10</sup> Does a stop work condition exist? Yes ___ No <u>x</u> ; If Yes - Attach copy of SWO<br>If Yes, Circle One: A B C | <sup>13</sup> Response Due Date:<br>20 working days from issuance |
| <sup>8</sup> Required Actions: <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Extent of Deficiency <input checked="" type="checkbox"/> Preclude Recurrence <input checked="" type="checkbox"/> Root Cause Determination |  |   |
| <sup>12</sup> Recommended Actions:<br><br>1. Obtain, if available from the vendor, all problem reports on all qualified software.<br>2. Process all problem reports through the configuration management system.  |  |   |
| <sup>9</sup> Initiator<br>John Matras<br>Date 8/23/94   | <sup>14</sup> Issuance Approved by:<br>QADD <i>RC Bahney</i> Date 7/12/94  |   |
| <sup>15</sup> Response Accepted<br>QAR Date   | <sup>16</sup> Response Accepted<br>QADD Date   |   |
| <sup>17</sup> Amended Response Accepted<br>QAR Date   | <sup>18</sup> Amended Response Accepted<br>QADD Date   |   |
| <sup>19</sup> Corrective Actions Verified<br>QAR Date   | <sup>20</sup> Closure Approved by:<br>QADD Date  |   |

*8/10/94*

*LV QA RDT 08-911-271*

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**CORRECTIVE ACTION REQUEST (CONTINUATION PAGE)**

**A. Remedial Action**

The ANSYS user has prepare and submitted to the Las Vegas Software Configuration Manager (LSCM) an IOC identifying by attachment, all vendor-supplied Class III problem reports received to date by the user for ANSYS 5.0A. This IOC includes an impact assessment of the problem reports that indicates that there is no impact on quality-affecting work.

This action has been completed by Robert Bahney in June 1994.

**B. Extent of Deficiency**

(1) I have discussed the facts of the adverse condition from this CAR with the M&O Software Configuration Managers for Vienna, Las Vegas, and Charlotte (Virginia Sauers, Nat Hodgson, and Mike Engineer, respectively) and have determined that no similar condition exists for any other software which has been baselined for use in work subject to QARD controls.

(2) ANSYS is a leased code for which the vendor (Swanson) maintains a proactive defect reporting process. Each lessee-of-record receives copies of all Class III problem reports from the vendor and there is no chance that a registered ANSYS user could be unaware of these problem reports. I have discussed the facts of the adverse condition from this CAR with Robert Bahney, the user-of-record and the recipient of the vendor problem reports for ANSYS. He described how his group reviews each problem report as soon as it has been received, specifically (a) determining whether any deficiency affects the use of ANSYS within its formal range of validation and (b) annotating the ANSYS Users Manual to ensure that all users of the software are aware of the specifics of the problem reports. He also told me that, to date, ANSYS had not been used in any work subject to QARD requirements.

(3) I conclude that the extent of the deficiency described in this CAR is very limited and that there is no chance that it affected work subject to QARD requirements.

**C. Root Cause Determination**

(1) ANSYS is a multipurpose code and includes many functions which the user group will not use to perform QARD-controlled work. The subject problem reports cover the entire spectrum of ANSYS functionality and a telephone interview with the ANSYS user-of-record indicated that the he was acting under a good faith interpretation of the QAP-19-2 defect reporting requirements in that, had the vendor

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problem reports contained deficiencies that were relevant to use of the code in his QARD-controlled work, the user would have reported such defects under the formal defect-reporting system. This is supported by the user's knowledge that all lessees-of-record had received the same vendor problem reports, so there was no concern that other ANSYS users were unaware of the defects.

(2) Per QARD I.2.8.A, the current QAP-19-2 effectively integrates the software defect reporting and resolution system with the software configuration management system, so the cause of this condition is not a lack of procedure. QAP-19-2 provides M&O software users with detailed instructions for preparing and submitting Change Requests (the QAP form for reporting defects) to the various Software Configuration Control Boards (SCCBs).

(3) The root cause of this condition is defective human factors considerations in the existing QAPs. The decision to submit a formal defect report (Change Request) is left to the individual user and is, therefore, subject to the user's interpretation of technical and programmatic relevance.

D. Corrective Action to Preclude Recurrences

(1) It is not clear that it would be appropriate to revise the 19-series QAPs to include a level of detail sufficient to cover the range of explicit conditions under which users must prepare a Change Request. Certainly, it would be duplicative for several users to submit identical Change Requests in response to vendor-supplied information. An effective corrective action would be to ensure that all vendor-supplied problem reports are submitted directly to M&O Software Configuration Management for processing and dissemination to users. Therefore...

(2) A memorandum of understanding has been issued by M&O Purchasing to the M&O Quality Assurance, Purchasing, Information Resource Management, and Software Configuration Management organizations. The memorandum requires all preparers of Purchase Requisitions for acquired software to identify the M&O Software Configuration Manager (Virginia Sauers) as the technical point of contact, ensuring that SCM will receive all vendor-initiated problem reports. Under this memorandum, SCM has the responsibility for logging the vendor-supplied problem reports into the CM deficiency tracking system, then distributing the problem reports to all site Software Configuration Control Boards for local action, as appropriate. This corrective action effectively captures the auditor's recommended action from CAR item #12.

All actions are complete.

Responsible Manager: Warren Standley

*John J. Miller for Warren Standley*  
8/10/94

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CORRECTIVE ACTION REQUEST (CONTINUATION PAGE)

VERIFICATION OF CAR NO. YM-94-057

A. Remedial Action

Review of Interoffice Correspondence (IOC) LV.WP.AHB.6/94.160, R.H. Bahney to N. Hodgson indicated that Class 3 errors reports pertaining to ANSYS 5.0A were attached to this report and a statement that there was no impact on quality affecting work performed in the Waste Package Development Department.

B. Extent of Deficiency

Review of Vienna and Charlotte configuration management log revealed that there were no quality affecting software codes. Review of the following documentation revealed that there were no other problem reports on remaining quality affecting software codes: IOC LV.WP.DAT.6/94.159, D. A. Thomas to Nat Hodgson, memo from Romeo S. Jurani to N. Hodgson, 6/24/94, IOC LV.SB.RWE.6/94-078, Robert W. Elayer to Nat Hodgson, ION LV.WP.RHB.08/94-203, R.H. Bahney III to N. W. Hodgson.

C. Root Cause Determination

Root cause of this condition was defective human factors consideration. As a result a letter from Nat Hodgson to Robert Bahney, Saeed Bonabain, Juan Becerra, and Robert Elayer, 6/23/94 stating that all problem reports should be sent to the software configuration manager.

D. Corrective Action to Preclude Recurrence

A memorandum of understanding was agreed to by Virginia Sauer, Vienna Configuration Manager, John McConaghy, Charlotte Configuration Manager, Nat Hodgson, Las Vegas Configuration Manager and Barbara Bernhardt, M&O Purchasing, requiring that all Purchase Requisitions for acquired software to identify the M&O Software Configuration Manager (Virginia Sauer) as the technical point of contact ensuring that SCM will receive all vendor-initiated problem reports.

*CC Wanner for* JOHN R. MATRAS

John R. Matras, QAR

10-18-94  
Date