



Department of Energy
Washington, DC 20585

QA: QA

FEB 20 2003

R. W. Andrews
Bechtel SAIC Company, LLC
1180 Town Center Drive, M/S 423
Las Vegas, NV 89144

**VERIFICATION OF CORRECTIVE ACTION AND CLOSURE OF DEFICIENCY REPORT
(DR) BSC-01-D-088 REGARDING SUBMITTAL OF PROJECT SOFTWARE TO
SOFTWARE CONFIGURATION MANAGEMENT**

The Office of Quality Assurance staff has evaluated the corrective action of DR BSC-01-D-088 and determined the results to be satisfactory. As a result, the DR is considered closed.

If you have any questions, please contact either James Blaylock at (702) 794-1420 or Samuel E. Archuleta at (702) 794-1476.

OQA:JB-0716

Enclosure:
DR BSC-01-D-088

James Blaylock
R. Dennis Brown, Director
Office of Quality Assurance



NMSS07
WM-11

R. W. Andrews

-2-

FEB 20 2003

cc w/encl:

N. K. Stablein, NRC, Rockville, MD
Robert Latta, NRC, Las Vegas, NV (2 cys)
S. W. Lynch, State of Nevada, Carson City, NV
L. W. Bradshaw, Nye County, Pahrump, NV
M. A. Jaeger, BSC, Las Vegas, NV
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J. D. Ziegler, DOE/ORD (RW-40W), Las Vegas, NV

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ORIGINAL
DEFICIENCY REPORT STAMP
 DEFICIENCY REPORT
 CORRECTIVE ACTION REPORT
7/2/01
D66
NO. BSC-01-D-088
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DEFICIENCY/CORRECTIVE ACTION REPORT

1. Controlling Document:
AP-SI.1Q Rev 3 ICN 1

2. Related Report No.:
N/A

3. Responsible Organization:
BSC

4. Discussed With:
Ed Melczer, Sam Archuleta, Judy Gebhart, Ken Beale, Jose Archuleta

5. Requirement:
2.0 APPLICABILITY
Third paragraph states in part: "Any source code developed or acquired solely with OCRWM funds, for use specifically within OCRWM, is considered Project software and must be submitted to SCM in accordance with this procedure."
Second paragraph states: "Software items subject to QARD requirements cannot be used in quality-affecting activities prior to the software being qualified and baselined except as provided for in Subsection 5.10 of this procedure."
Section 5.7.3.1 a): states "Ensure that the software being used was obtained from SCM."

6. Description of Condition:
Contrary to the above requirements:

- Software procured with OCRWM funds that were not turned into SCM. (Dictra V.20, Thermo-Clac V.M, Image Pro Plus V 4.1, Fidap V 8, and Fluent V 5.5
- Software that was used in the SSPA prior to being in the 5.10 process. (the 5 codes listed in # 1 and MSTHAC V 6.4.2 which was a developed code)
- None of the discussed software was obtained from SCM prior to its use.

LLNL is responsible for: Dictra V.20, Thermo-Clac V.M, Image Pro Plus V 4.1, and Msthac V 6.4.2
SNL is responsible for: Fidap V 8, and Fluent V 5.5

Discussion: The rationale for not turning the codes into SCM, as required by procedure, was that there were commercial license issues of making archive or backup copies. However, SCM was not informed of the purchase or involved in the efforts to resolve the issues until SQC/SCM staff identified the problems during review of Revision 00C of the SSPA.

7. Initiator:
Steve Splawn *[Signature]* Date 7/2/02

9. Does a stop work condition exist? (Not required for a DR)
 Yes No
If Yes, Check One: A B C D

10. Recommended Actions:
See Continuation Page.

11. Review:
[Signature] Date 7/2/01

12. Response Due Date:
10 Working Days From Issuance

13. DQQA Issuance Approval:
Printed Name Robert W. Clark Signature *[Signature]* Date 7/10/01

22. Corrective Actions Verified:
[Signature] Date 2-13-03

23. Closure Approved by:
DQQA *[Signature]* Date 2/19/03

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Concur with the description of condition as stated. This deficiency goes beyond the similar condition as described in BSC-01-C-002, "Deficiencies in Procedural Compliance, Item 2), page 4, and therefore should not be referred to the CAR.

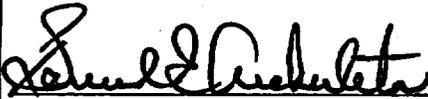
Recommended Action:

Because the deficient condition involves more than one National Laboratory, recommend a thorough assessment of the extent of condition be conducted at all four National Laboratories and the USGS.

Any software discovered that falls under the conditions identified in the Deficiency Report is to be immediately reported to Software Configuration Management.

Such software is to be placed under immediate control per AP-SI.1Q, Software Management.

Recommend development of line procedures which comply with AP-SI.1Q and which address, as a minimum, controls which govern the procurement of software, the development of software, sending software to Software Configuration Management (SCM), requisitioning of software from SCM, and the initial installation and testing of software



Samuel E. Archuleta
QA Representative

7/2/01
Date

TYPE RESPONSE:

- Initial
- Complete
- Amended

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DEFICIENCY/CORRECTIVE ACTION REPORT (RESPONSE)

14a. Immediate Actions:

The deficient conditions identified in this Deficiency Report are similar ongoing issues to those issues addressed in BSC-C-01-002. A root cause team was established for CAR 002 and the report is expected shortly. The root cause(s) and contributing factor will be used to evaluate and complete the response for this deficiency.

An ongoing management stand-down is in place. The stand-down has been communicated to the project and specific criteria are established for lifting the stand-down as described in the CAR 002 response.

As deficient software is identified, it will be reported and placed under immediate control per AP-SI.1Q, Software Management. In addition, LLNL and SNL will furnish all information from vendors (e.g. POC's, Telephone numbers) to SCM for action. Compliance Date: 7/24/01

14. Remedial Actions:

Remedial actions 2) Failure to Withdraw and or use Code from SCM; and 4) Lack of effective training and implementation (AP-SI.1Q) addressed in Block 14 of CAR 002 apply to this deficiency as well. Actions underway to address CAR 002 issues have not been implemented prior to the issuance of this deficiency.

All software except Thermo-Clac V.M. have been acquired by SCM from premission of the vendors.

A COMPLETED RESPONSE WILL BE SUBMITTED BY 9/30/01. 7/12/01

15. Extent of Condition:

The complete response will include the determination of the extent of condition. Similar issues are addressed in CAR 002 and BSC-01-D-110 (pending). The complete response will address issues related to the procurement and use of software.

Because the deficient condition involves more than one National Laboratory, the extent of condition will include investigation actions at the Las Vegas location, the four National Laboratories and the USGS.

16. Cause: (Attach results of root cause determination prepared in accordance with AP-16.4Q for a significant deficiency.)

The cause will be provided in the complete response. Results from the Root Cause Determination for CAR 002 may be used in establishing the cause for this similar deficiency.

17. Action to Preclude Recurrence:

The management stand-down as discussed in Block 14a above and CAR 002 remains in effect. Additional, focused training for AP-SI.1Q, Revision 3, ICN 1 is underway. Completion of the Root Cause Determination for CAR 002 will provide additional direction to establish actions to preclude recurrence to be provided in the complete response to this deficiency.

18. Due Date: 9/30/01

- For submittal of complete response
- For completion of corrective action

19. Response by: Ahmed M. Monib

ahm/monib

Date 7/24/01

Phone 702-295-7631

20. Evaluation:

- Accept
- Partially Accept
- Reject

QAR *James Blaylock* Date *8-1-01*

21. Concurrence:

DOQA *James Blaylock* Date *8/1/01*

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DEFICIENCY/CORRECTIVE ACTION REPORT/STOP WORK ORDER CONTINUATION PAGE

QAR Evaluation:

The initial response has been evaluated and deemed to be acceptable.

Since issuance of this DR, an additional DR (BSC-01-D-110) which addresses the same kind of deficiencies observed in Volume II of the SSPA. has been written. Because of the similarity of issues, DR-110 has been referred to DR088 via issuance of a DIR. DR110 contains recommendations beyond those stated in DR088.

In addressing the deficiency described in DR110, it is suggested that Responsible Managers consider the additional recommendations in preparation of the complete response.



Samuel E. Archuleta
QA Representative

8.1.01
Date

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DEFICIENCY IDENTIFICATION AND REFERRAL

DG 0 8/16/01

Date: July 30, 2001	DR/CAR Referred to: BSC-01-D-088
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Description of Deficiency:
AP-SI.1Q, Section 2 states, in part, that Software items subject to the QARD cannot be used in quality affecting work until the software has been qualified and baselined except as provided for in Subsection 5.10 of the procedure. It also that all software used within OCRWM be submitted to SCM, and that SCM will issue the controlled versions of said software. Responsible Manager's are responsible for ensuring that software is obtained from SCM. Section 5.10 of said procedure specifies the controls for the interim use of software.

Contrary to these requirements, software was used in the development of the SSPA, Vol II without the stated requirements being met.

The following codes were used in development of the SSAA, Vol II: Soilexp v1.0; Seepagedll2 v1..0; REWRITE PERCOLATION DATA v1.0; WRITEFILES v1.0; TRANSFORM PERC FILES INTO-TABLES v1.0, LAG WPFailure TIME v1.0; PATCH FAIL LAG v1.0; PREWAP v1.0; SEEPAGEDLLV2UU v1.0; SEEPAGEDLLMK2_UU v1.0; WTRISE v1.0; POST10K BINS v.1.0; BATH_10 v1.0; GoldSim v7.17.200; PDFCDF v1.0; WAPDEG v4.0 STN10000-4.0-02; PROCESSBTC; SEEPDLL v1.0; SEEPAGEDLL; Whitefiles_new v1.0; FEHM v2.12

These violations constitute recurrences of violations cited in BSC-01-D-088 and BSC-01-C-002. Although there is similarity to part of the issues identified in the CAR, the conditions described in DR-110 are more similar to those identified in DR-088. It is recommended, therefore, that corrective actions required to address the conditions identified in BSC-01-D-110 be referred to and managed under deficiency report BSC-01-D-088. Recommendations made in DR-110 should be considered in developing corrective and preventive actions for conditions identified in both DRS (-088 and -110).

The recommendations are stated on the attached continuation page.

How Identified:
The above conditions were identified as a result of observations documented in BSC-01-D-110. Responsible Management concurs in referral of the DR-110 issues to DR-088, and has requested this action.

Existing Open DR/CAR: BSC-01-D-088	
Open DR/CAR QAR's Concurrence: Samuel E. Archuleta <i>[Signature]</i>	Date: <i>8-1-0001</i>
Initiator: Samuel E. Archuleta <i>[Signature]</i>	Date: <i>8-1-0001</i> <i>DG 8/16/01</i>

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DEFICIENCY/CORRECTIVE ACTION REPORT/STOP WORK ORDER CONTINUATION PAGE

Recommendations:

1. Recommend a thorough evaluation of the extent of condition be conducted in parallel with the evaluation underway as a result of BSC-01-D-088.
2. Any software discovered that falls under the conditions identified in this deficiency report is to be immediately reported to Software Configuration Management.
3. Such software is to be placed under immediate control per AP-SI.1Q, Software management.
4. Because of the sheer numbers of codes identified in this deficiency report and the DR referenced in number 1, above, it is strongly recommended that IMMEDIATE ACTION be taken to institute policy and/or procedures to ensure that ALL procurements of software by ANY OCRWM organization, including the National Laboratories and USGS, be processed through BSC Information Technology for review in order to identify any potential duplications, identify and properly deal with any licencing or copywrite issues, and to provide complete assurance that the software will be placed under positive control per AP-SI.1Q prior to its use. The importance of avoiding similar recurrences demands that stronger measures than those taken in the past be taken now to prevent such recurrences.
5. During corrective action efforts to address this deficiency report and for all future software procurements, recommend policy and/or procedures be established to ensure that the licence holder for any OCRWM software is listed as DOE/YMP or any other DOE-approved identity. This will ensure continuity in ownership and future use can be managed, regardless of what contractors are in place at the time of need.


Samuel E. Archuleta
QA Representative

8-1-01
Date

TYPE RESPONSE:

- Initial
- Complete
- Amended

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DEFICIENCY/CORRECTIVE ACTION REPORT (RESPONSE)

14a. Immediate Actions:

No changes since 7/24/01 Response

Compliance Date: 7/24/01

14. Remedial Actions:

No changes since 7/24/01 Response

15. Extent of Condition:

BSC has developed a strategy to determine the extent of condition by conducting a comprehensive review to identify any software used in quality affecting activities on the Yucca Mountain Project (YMP) that was not obtained from Software Configuration Management (SCM) or which was not documented as a single use routine/macro in technical products.. Potentially involved project staff in Las Vegas, at the National Labs, at the US Geological Survey, and at subcontractor locations will be required to respond to a survey questionnaire designed to identify such software.

Potentially involved project staff will be identified through the training records for procedure AP-SI.1Q and SCM records for known users of software. Potentially involved project staff will be directed by the Manager of Projects to review past software use, including as appropriate of their records and memories, to identify software, routines, and macros, either acquired or developed, used in work subject to the QARD that were not obtained from SCM or were not documented as single use routines/macros in technical products.

16. Cause: (Attach results of root cause determination prepared in accordance with AP-16.4Q for a significant deficiency.)

The causes of this deficiency are included in those identified in the Root Cause Analysis Report for CAR BSC-01-C-002. This document was dated August 8, 2001 and was submitted with the CAR response and is currently available on the Lotus Notes Database. The corrective actions for BSC-01-C-002 will respond to the root causes.

17. Action to Preclude Recurrence:

The management stand-down discussed in the previous response (7/24/01) is still in effect. In addition, a three level training curriculum has been developed and conducted in Las Vegas, at the National Labs, the USGS, and several subcontractor sites. The training modules include sessions for senior managers, mid-level managers, and developers/users. This training has been well received at all of the locations at which it has been offered to date. Additional training sessions will be scheduled, as appropriate.

18. Due Date: 31 January 2002

- For submittal of complete response
- For completion of corrective

19. Response by:

William W. Watson
William W. Watson Date: 28 Sept. 2001 Phone: 5-5550

20. Evaluation: Accept Partially Accept Reject

(See comments)
QAR *Donald A. Rebeleta* Date 10-3-01

21. Concurrence:

DOQA *James B. Laybourn* Date 10/3/01

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Block 15 continued

Individuals receiving the survey questionnaire will be provided with the current software baseline list and a list of single use routines/macros for which there is objective evidence of correct and complete documentation in technical products. This list will be based on the recent DR-039 verification documentation. Potentially involved project staff will be directed to identify any codes used in quality affecting work but not obtained from SCM (software) or documented in a technical product (single use routine/macro). As each questionnaire is received, identified software will be brought to the attention of SCM and steps initiated to bring it under control of AP-SI.1Q.

The QAR will be provided with: (1) a copy of the survey questionnaire which will be used to document the review and report any identified codes, (2) the cover letter from the Manager of Projects directing potentially involved staff to cooperate with this effort, and (3) the list of addressees. Information generated from the review will be included in the determination of Extent of Condition for Item 2 in Block 6 of BSC-01-C-002

In order to perform a through review, a 30 day period will be established for individuals to respond to the survey questionnaire. Since the questionnaire must be mailed to some individuals for which no e-mail address is known, a 90 day period has been established for the total period of sending, receiving, and evaluating the questionnaires. A further 30 day period is allotted for development of the corrective action plan. It is recognized that some individuals may be away from work for extended periods (e.g., illness, military service, etc.), may have left the project and/or the companies they work for may no longer be performing work for YMP. Such individual cases will be evaluated based on the number of missing responses to the survey at the completion of the response period. Where appropriate, responsible managers may respond for missing individuals.

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REQUEST FOR EXTENDED PROCESSING

Extended Actions: (Identify those corrective actions planned for completion beyond 100 days from issuance of the deficiency)

During the extended period, the extent of condition effort described in Block 15 will be conducted. The corrective action plan, based on that extent of condition, will be developed and submitted to the QAR for approval in an amended response. These actions will be completed within 120 days of acceptance of this response.

Expected Completion Date: January 31, 2002 for completion of the extent of condition and development of the corrective action plan. Implementation of the corrective action plan will be scheduled when the extent of condition is known. A proposed completion date will be provided in an amended response submitted on or before 1/31/02

Justification: (Provide an explanation as to why the required actions can not be completed within 100 days)

The proposed approach to determining the extent of condition involves conducting a survey of potential software developer/users. Developing this information is expected to require 90 days and development of corrective action is expected to require another 30 days. This schedule is based on timely responses to the survey questionnaire.

Impact: (Provide an impact statement to indicate what affect not completing within 100 days will have relative to waste isolation and safety, and impact on other work, if any)

The proposed extension for processing this DR will not have any impact on waste isolation or safety. The impact on work is minimized by the commitment to immediately provide to SCM any identified software and to take immediate action to bring such software under the control of procedure AP-SI.1Q.

Approvals

Responsible Individual: <u>William W. Watson</u> <u>William W. Watson</u> <u>28 Sept 01</u> Printed Name Signature Date			Senior Management: <u>NIANCY WILLIAMS</u> <u>[Signature]</u> <u>9/28/01</u> Printed Name Signature Date		
DOE Project Management: <u>D. G. HOBSON</u> <u>[Signature]</u> <u>10/1/01</u> Printed Name Signature Date			Director, OQA: <u>R. DAVIS</u> <u>[Signature]</u> <u>10/1/01</u> Printed Name Signature Date		
Director, OCRWM (required for scheduled completion dates one year or more from initial issue) <u>N/A</u> <u>N/A</u> <u>N/A</u> Lake Barrett (Act) Signature Date					

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8. DR/CAR
 Stop Work Order

NO BSC-01-D-088

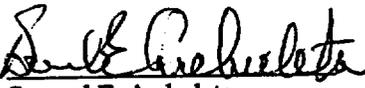
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DEFICIENCY/CORRECTIVE ACTION REPORT/STOP WORK ORDER CONTINUATION PAGE

Evaluation of Amended Initial Response dated 9-28-01:

Your amended initial response and request for extended processing is accepted and approved. The date for completion of the extent of condition is now set at January 31, 2002. The following recommendations are submitted:

1. As potentially involved project staff are identifying any codes used in quality affecting work, it will be very important that they compare the time frame during which software was used to the date that software was baselined, as shown on the Software Baseline Report, in order to determine if the software was on the baseline when it was actually used. If not, an impact analysis might be called for.
2. Any codes discovered not to have been obtained from Software Configuration Management (SCM) or documented in a technical product should be identified to SCM as soon as they are discovered, rather than waiting until the extent of condition has been fully determined. This will allow the maximum time possible for corrective actions.
3. Your response indicates that any information generated from the review will be included in the determination of the Extent of Condition for BSC-01-C-002. That is certainly appropriate. Pardon this reminder of the obvious: do not overlook including it in the documentation for this DR as well.


Samuel E. Archuleta

10-3-01
Date

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DEFICIENCY IDENTIFICATION AND REFERRAL

Date:

January 21, 2002

DR/CAR Referred to:

BSC-01-D-088

Description of Deficiency:

WinSASW Software, Version 1.23 was used in the processing of data transmitted for use in the development of Analysis Model Report (AMR), ANL-MGR-GE-000004, Revision 00A, dated November 2001, titled, *Geotechnical Data for a Potential Waste Handling Building and for Ground Motion Analyses for Yucca Mountain Site Characterization Projects*, without being qualified. The subject software was categorized as Level 3 due to the low level of effort. However, it was identified in 6/00 in Scientific Notebook SN-M&O-SCI-022-V1 as required but to date not qualified raising the concern as to whether the level of effort was underestimated. Further there was no Baseline Request or Software Request form completed as required by Subsection 5.10.

How Identified:

This deficiency was identified during a surveillance, BSC-02-S-05, at URS, Inc., Oakland, CA. Augumented staff at that facility are task with developing the above referenced AMR.

Existing Open DR/CAR:

BSC-01-D-088

Open DR/CAR CAR's Concurrence:

Date:

1/22/02

Initiator:

Date:

Mafochak 1/22/02

TYPE RESPONSE:

- Initial
- Complete
- Amended

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DEFICIENCY/CORRECTIVE ACTION REPORT (RESPONSE)

14a. Immediate Actions:

No changes since 7/24/01 response.

Compliance Date:

14. Remedial Actions:

This amended response supercedes the previous responses in its entirety.

(See continuation sheet)

15. Extent of Condition:

This amended response supercedes the previous responses in its entirety.

(See continuation sheet)

(See Addendum 1)

16. Cause: (Attach results of root cause determination prepared in accordance with AP-16.4Q for a significant deficiency.)
No changes since 7/24/01 response.

17. Action to Preclude Recurrence:

No changes since 7/24/01 response.

18. Due Date: 2/21/02

- For submittal of complete response
- For completion of corrective action

19. Response by: Leon Fossum

Leon K Fossum
Date *1/30/02*

1/30/02
Phone *5-3935*
BSC & E
URW

20. Evaluation:

- Accept
- Partially Accept
- Reject

James Blaylock Jr Date *1-31-02*

21. Concurrence:

DOQA *James Blaylock Jr* Date *2/7/02*

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BLOCK 14

Based on the survey results addressed in block 15 the following actions will be taken for each category of deficiency addressed in the DR:

- a) For software that was procured with OCRWM funds and is not under SCM control, the affected organization shall arrange to have the software under SCM control as per applicable sections of AP-SI.1Q for acquired software.
- b) For software that was used prior to being qualified and have not initiated the AP-SI.1Q, 5.10 process, the affected organizations will initiate the 5.10 process for the identified software.
- c) To address the concern where software is not obtained from SCM for use, the user will comply with AP-SI.1Q, Section 5.7.2, Requesting Baseline Software. In circumstances where the original user is no longer with the YMP the Responsible Manager will designate a qualified individual to be the designated user of the software.

A completed response will be provided by the date in Block 18.

BLOCK 15

The DR identified the following 3 areas where software documentation/actions was deficient in meeting the procedural requirements:

1. Software that was procured with OCRWM funds that was not turned into SCM.
2. Software that was used in SSPA prior to being in the AP-SI.1Q, 5.10 process.
3. Software not obtained from SCM prior to use.

To determine the extent of these conditions, BSC conducted a survey to identify any acquired, developed or modified software that was not controlled by SCM. Potentially involved project staff in Las Vegas, National Labs and USGS received the survey questionnaire that established the criteria for assigning software to a deficiency category. The survey results were received from the locations surveyed. Two National Labs provided partial results and will be submitting final results. Further, DIR 02-4 has identified one software code that was not controlled by SCM and used by a subcontractor in an AMR at a location not covered by the survey. Since a similar deficiency was found in a location beyond the scope of the survey, the scope of the survey will be expanded to cover other locations.

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DEFICIENCY/CORRECTIVE ACTION REPORT/STOP WORK ORDER CONTINUATION PAGE

REQUEST FOR EXTENDED PROCESSING

DIR 02-4 identified a similar condition at a location beyond the scope covered in the original survey of affected organizations. Therefore, additional time is needed to determine the extent of conditions at locations not addressed in the initial survey. No adverse impact for requesting additional time is expected. This is because the codes that support SSPA are supplementary information to the TSPA-SR, and codes that support TSPA-SR are related to non-principal factor content.

An extension until March 1, 2002 will allow time to complete the extent of condition investigation and remedial actions.

Leon V Fossun
Leon Fossun, Responsible Individual

1/30/02
Date

Russ Fray
Russ Fray, Senior Manager

1/30/02
Date

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U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

8. DR/CAR
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1/31/02
01
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DEFICIENCY/CORRECTIVE ACTION REPORT/STOP WORK ORDER CONTINUATION PAGE

Evaluation of Initial Amended Response:

:Your Amended Initial Response dated 1/30/02 is accepted.

Request for Extended Processing:

Your request for extended processing, dated 1/30/02 is approved.
The new due date for the Complete Response is now March 1, 2002.



Sam E. Archuleta
QA Representative

1-31-02
Date

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APPROVAL SIGNATURES FOR REQUEST FOR EXTENDED PROCESSING FOR DR
BSC-01-D-088 (EXTENDED PROCESSING REQUESTED UNTIL 3/1/02)

DOE Project Manager

Date

Acting Director, Office of Quality Assurance

Date

Deficiency closed prior to obtaining
signatures and, therefore,
are no longer applicable.

Robert J. Opilowski, CAE
2/13/03

TYPE RESPONSE:

- Initial
- Complete
- Amended

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DEFICIENCY/CORRECTIVE ACTION REPORT (RESPONSE)

14a. Immediate Actions:

No changes since 7/24/01 response.

14. Remedial Actions:

See Continuation (Page 2) for Remedial Actions.

15. Extent of Condition:

See Continuation (Page 6) for Extent of Condition.

16. Cause: (Attach results of root cause determination prepared in accordance with AP-16.4Q for a significant deficiency.)

No changes since 9/28/01 response.

17. Action to Preclude Recurrence:

No changes since 9/28/01 response.

18. Due Date: ^{4 AX 4 MAR 2002} March 2002

- For submittal of complete response
- For completion of corrective action

19. Response by:

Michael [Signature]
Leon K. [Signature] Date 3/4/02 Phone 5-6172
gms *ged BSC DE* *PK*

20. Evaluation: Accept Partially Accept Reject

QAR *[Signature]* Date 3/5/02

21. Concurrence:

DOQA *James Blaylock* Date 3/7/02

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Block 14
Remedial Actions

This amended response supercedes the response of 1/30/02 in its entirety.

Based on the initial and additional survey results, actions were taken for each category of deficiency addressed in the DR:

- a) For Software that was procured with OCRWM funds and that was not turned into SCM, it was verified that a copy of the software was under SCM control.
- b) For Software that was used prior to being in the 5.10 process, it was verified that the 5.10 process was initiated for each of the identified software.
- c) In cases where User Requests were not submitted, it was verified that appropriate User Request Forms were submitted.

The following specific actions were taken for each item identified as deficient by BSC-01-D-088, DIR 01-6 and DIR 02-4:

BATH_10 v1.0 STN: 10539-1.0-00 -The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

Dictra V.20 STN: 10391-20-00 – Due to licensing issues with Thermo-Calc and the delays caused by resolution of this issue, the process required initiation for the use of this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a Software User Request, 5.10 SAP, and a Disaster Recovery copy of the media.

FEHM V2.12 STN: 10086-2.12-00. This is a code developed at LANL. A DLL version of the code was used in SSPA for the TSPA Model, by the PA group. The code has been identified as a 5.10 code however it was obtained directly from the LANL developers, not from SCM. AP-SI.1Q Rev 3 ICN 3 Section 5.10 process has therefore been initiated by the PA group for this code.

Fidap V 8 STN: 10549-8.0-00-SCM currently holds a copy of this media. After purchase, a decision was made not to use the software. Cancellation of the qualification and baselining process submitted on 8 Jan 2002.

Fluent V 5.5 STN: 10550-5.5-00-The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

GoldSim v7.17.200 STN: 10344-7.17.200-00-The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

Image Pro Plus V4.1 STN: 10422-4.1-00-The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

LAG_WPFAILURE_TIME v1.0 -This item was identified as part of DIR 01-6. However, no code by this name was used in SSPA Vol II.

MSTHAC v6.4.2 STN: 10419-6.4.2-00 – The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3, ICN 1. Section 5.10 had been initiated, and SCM had been submitted a Software User Request, 5.10 SAP, and copy of the media. This software should not have been included in DR-88 since all requirements for interim use were met in mid 2001.

PATCH_FAIL_LAG v1.0 STN: 10532-1.0-00 –The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

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DEFICIENCY/CORRECTIVE ACTION REPORT/STOP WORK ORDER CONTINUATION PAGE

Block 14 (Continued from Previous Page)
Remedial Actions

PDFCDF v1.0 STN: 10558-1.0-00 -The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

POST10K_BINS v1.0 STN: 10538-1.0-00 -This code is properly documented in an AMR. (MOL.20001208.0060) Only the data was used in SSPA Vol II, not the code. Therefore no action is necessary on this item.

PREWAP v1.0 STN: 10533-1.0-00 -The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

PROCESSBTC STN: 10556-1.0-00 - This item was qualified, and testing determined that the versions used before and after qualification produced the same results.

REWRITE_PERCOLATION_DATA v1.0 STN: 10501-1.0-00-The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

SEEPAGEDLL - This item was identified as part of DIR 01-6. However, no code by this name was used in SSPA Vol II.

Seepagedll2 v1.0 -This item was identified as part of DIR 01-6. However, no code by this name was used in SSPA Vol II.

SEEPAGEDLLMK2_UU v1.0 STN: 10534-1.0-00 -The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

SEEPAGEDLLV2UU v1.0 STN: 10535-1.0-00-The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

SEEPDLL v1.0 -This item was identified as part of DIR 01-6. However, no code by this name was used in SSPA Vol II.

Thermo-Calc V.M STN: 10170-M-00 -Thermo-Calc was in the qualification process and already reviewed at CP2 under AP-SI.1Q Rev2 ICN 4. A problem was identified by LLNL in mid 2000 with the license agreement from the vendor since Thermo-Calc was a COTS application, and the vendor would not allow any type of copies to be generated for SCM. SCM was notified of the issue in 2000 and the issue was eventually resolved by SCM with Thermo-Calc in September of 2001 by obtaining a waiver for a Disaster Recovery copy. Thermo-Calc is being revised with CP2 comments to be resubmitted for baselining. SCM has a SAP, RD, ITP, VTP, SUR and a Disaster Recovery copy of the code.

TRANSFORM_PERC_FILES_INTO_TABLES v1.0 STN: 10530-1.0-00 -The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

WAPDEG v4.0 STN: 10000-40-02 -The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

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Block 14 (Continued from Previous Page)
Remedial Actions

WinSASW STN: 10588-1.23-00 -License for this code is currently being obtained by SCM for testing and archival purposes. Once this process is complete SCM will have a copy of the media. The code is on schedule to be qualified and baselined by March 2002.

WRITEFILES v1.0 STN: 10527-1.0-00 -This code is qualified and was baselined in August of 2001. A copy of the media and a User Request were submitted to SCM to initiate the interim unqualified use process as per AP-SI.1Q Section 5.10, but a SAP written as per AP-SI.1Q Section 5.10 and submitted prior to qualification was not found. However, the unqualified media submitted was later qualified, and SCM has a single copy of the media rather than a pre-qualification copy and post-qualification copy. As the software used on an interim unqualified basis was the exact software that was qualified, there is no impact.

Writefiles_new v1.0 STN: 10560-1.0-00 -The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

WTRISE v1.0 STN: 10537-1.0-00 -This code is properly documented in an AMR. (MOL.20001208.0060) Only the data was used in SSPA Vol II, not the code. Therefore no action is necessary on this item.

During the preparation of the survey questionnaire other software items were identified as deficient. Although they do not fall in any specific categories of deficiencies identified in the the DR or DIRs their status has been addressed as follows:

extract_qinf STN: 10649-1.0-00 -The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

GTDist STN: 10590-1.0-00 -This code is qualified and was baselined in Sept 2001. Since this was qualified after the date of the DR and used to support TSPA-SR, an impact statement is provided in Block 15.

Soilexp v 1.0 STN: 10492-1.0-00 -The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

statistics STN: 10651-1.0-00 -The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

HumIntInfDist STN: 10589-1.0-00 -This code is qualified and was baselined in Sept 2001. Since this was qualified after the date of the DR and used to support TSPA-SR, an impact statement is provided in Block 15.

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Block 14 (Continued from Previous Page)
Remedial Actions

Several items were identified in survey responses. These items were resolved as follows:

Ashplume LV V1.4 STN: 10022-1.4LV-01-A qualification effort has been initiated for this code for the platform used. The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

future_cs-hlw.f V 1.0 STN: 10783-1.0-00 -The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media..

future_cs-csrf.f V1.0 STN: 10784-1.0-00 -The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

Seepagedll_v2_sens2 V1.0 STN: 10782-1.0-00 -The process required to use this code on an interim unqualified basis as per AP-SI.1Q Rev 3 ICN 3 Section 5.10 has been initiated, and SCM has a User Request, 5.10 SAP, and copy of the media.

SZ_Convolute V2.1 AP-SI.1Q Rev 3 ICN 3 Section 5.10 process has been initiated by the PA group for this code.

Geochemist's Workbench V3.2 -SCM has a copy of this code.

Finally, two software items identified in CAR BSC-01-002 are discussed below.

DST_Interpolator and SHT_Interpolator both utilized by Sandia National Labs have been identified in DIR 01-3, associated with CAR BSC-01-002, as software items for which the responsible manager failed to submit User Request Forms. Software User Request Forms have been submitted for both of these codes.

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Block 15

Extent of Condition

This response for Block 15 supercedes the previous response in its entirety

This extent of condition is the result of items and issues raised by DR BSC-01-D-088, DIR 01-6, DIR 02-4, and a software survey distributed to the National Labs, Las Vegas personnel, and USGS on 12/19/01 and to departments of the Science and Analysis organization on 1/31/02.

Three areas where software documentation or actions were deficient were identified in the DR:

Category 1: Software that was procured with OCRWM funds that was not immediately turned into SCM.

Category 2: Software that was used in support of SSPA prior to being in the AP-SI.1Q, 5.10 process.

Category 3: Software not obtained from SCM prior to use (no user request)

The following software fell into these three categories:

Category 1: Dictra V.20, FIDAP V8.0, FLUENT V5.5, Image Pro Plus V4.1, and Thermo-Calc V.M

Category 2: All items in Category 1, BATH_10 v1.0, FEHM V2.12, GoldSim v7.17.200, PATCH_FAIL_LAG, PDFCDF, PREWAP v1.0, PROCESSBTC, REWRITE_PERCOLATION_DATA v1.0, SEEPAGEDLLMK2_UU, SEEPAGEDLLV2UU, TRANSFORM_PERC_FILES_INTO_TABLES v1.0, WAPDEG v4.0, WRITEFILES v1.0, and Writefiles_new v1.0

Category 3: All items in Category 1

In addition, several codes were identified by user organizations as having been used in quality affecting work while not under the control of SCM. These codes are: extract_qinf, GTDist, HumIntInfDist, Soilexp v 1.0, and statistics. Finally, WinSASW was identified by DIR 04-2 as used in an AMR without being under SCM control.

As mentioned above, in order to determine the extent of condition for CAR 002 and DR 088, a software survey was sent to the National Labs, Las Vegas personnel, and USGS on 12/19/01. Due to additional software deficiencies identified in DIR 02-4 after the original survey distribution, it was necessary to expand the survey to address all the department managers, their direct reports and subcontractors. There is a concern that some managers located in Las Vegas and subcontractors in remote locations (some examples are DESI, Geomatrix, URS, PE&A, SEA, and DRI) may not have been completely covered by the original survey distribution. The second survey was distributed to department heads with instructions to cover their direct reports and subcontractors on 1/31/02.

The user organizations identified the following software as deficient:

Ashplume LV V1.4, future_cs-hlw.f V 1.0, future_cs-csnf.f V1.0, Seepagedllv2_sens2 were identified as items for which AP-SI.1Q Rev 3 ICN 3 Section 5.10 process was not initiated.

Geochemist's Workbench V3.2 was identified as a software item procured with OCRWM funds that was not under SCM control.

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DEFICIENCY/CORRECTIVE ACTION REPORT/STOP WORK ORDER CONTINUATION PAGE

Block 15

Extent of Condition (Continued from Previous Page)

SZ_Convolute V2.1 This is a code developed at LANL. A DLL version of the code was used in SSPA for the TSPA Model. The code has been identified as a 5.10 code however it was obtained directly from the ANL developers, not from SCM. AP-SI.1Q Rev 3 ICN 3 Section 5.10 process has therefore been initiated by the PA group for this code.

IMPACT

The items identified in DR BSC-01-D-088, DIR 01-6, DIR 02-4 and confirmed in the extent of condition were used in support or development of SSPA. They were selected on the basis of the most current and best available scientific information with the understanding and intention that if a license application was submitted, any of the software used to support the license application would be qualified and baselined. Use of this software and the results obtained do not replace the controlled baseline information for TSPA-SR, but were supplemental and corroborative in nature.

The AMR in which WinSASW was used will not be released until the software actually used is fully qualified, and therefore there is no impact.

The user group identified software is all scheduled for qualification and under SCM control. The software actually used will be qualified, and comparison confirmation methodologies are contained in the interim unqualified use SAP on file with SCM. No impact is expected following the qualification of these codes.

Only four of the codes identified in the survey were used to support items found in the TSPA-SR: Ashplume LV1.4, GTDist HumIntInfDist, and Seepagedll_v2_sens2.

ASHPLUME 1.4 LV was not directly used in reaching conclusions related to SR. It was used along with ASHPUME 2.0 to demonstrate that modeling approaches based on different input parameters yielded results that were comparable to a natural analog. This was accomplished in response to NRC questions concerning the viability of both approaches. ASHPLUME 1.4LV is on the baseline but is only qualified for a SUN platform. The runs performed for the comparison were made on a Windows platform

The results of this comparison were documented in an appendix to the TSPA-SR but could just as easily have been documented in a non-Q calculation or letter report. Conclusions supporting SR were obtained using the qualified version, ASHPLUME 1.4LV-DLL which is a DLL version of ASHPLUME 1.4LV. As a result the use of this code did not have any impact on the results presented in the TSPA-SR. Inclusion of this code as requiring qualification results solely from the fact that the results of the comparison were documented in a Q document, which resulted from the logical assumption that because corroborative data is exempt, the software generating that data would also be exempt. However, no such exemption is specifically granted in AP-SI.1Q.

GTDist is a simple preprocessor which extracts glacial transition infiltration data from in-drift percolation flux data files. There are no complicated mathematical formulations involved in this program and it is easily verified to produce the desired output by visual inspection. This code has been qualified in accordance with AP-SI.1Q at which time the code was verified to perform as desired. Since this code is qualified and has been verified to perform the functions desired the impact from its use prior to qualification is considered to be minimal

HumIntInfDist is a simple preprocessor used to calculate percentile distributions from net surface infiltration data. There are no complicated mathematical formulations involved in this program and it is easily verified to produce the desired output by visual inspection. This code has been qualified in accordance with AP-SI.1Q at which time the code was verified to perform as desired. Since this code is qualified and has been verified to perform the functions desired the impact from its use prior to qualification is considered to be minimal.

SeepagedllV2_sens2 is a slight modification to the original seepagedllV2 code to allow the code to accept input supporting sensitivity studies related to spatial variability. The output from this modification of the code was reported in the TSPA-SR Technical Report in two of the sensitivity studies. The analyst did verify that the modified code produced the same results as the unmodified code for the base case but did not document the modification or verification. Qualification efforts have been initiated for the code, and as the results obtained when using this modified code are known to be identical to those obtained from the seepagedllV2 code, there is no technical impact to its use.

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Complete response, dated 03/04/02 is partially accepted. The stated responses pertaining to Immediate Actions, Remedial Actions, and Extent of Condition are acceptable, pending verification. However, the response pertaining to Cause is not acceptable for the following reasons:

- a. The complete response failed to amend the response as stated in the Initial/Amended response dated 9/28/01.
- b. The 9/28/02 response refers to causes identified in the Root Cause Analysis for CAR BSC-01-C-002, but fails to specifically list which causes apply to this Deficiency Report (DR).
- c. In the evaluation of the Initial/Amended Response dated 9/28/01, the QAR's written evaluation, dated 10/3/01, stated that while it is appropriate to include information generated in the Management of CAR BSC-01-C-002 (CAR002), that such information should be included in documentation for DR BSC-01-D-088 (DR088). The intent is clear: the use of any information from the management of CAR002 which is used in the management of DR088 needs to be specifically stated in the response to DR088. Simply referring to the CAR or the Root Cause Analysis (RCA) or any other document is not acceptable, because the response is incomplete.

AP-16.1Q, *Management of Conditions Adverse to Quality*, Subsection 5.3d)3) contains the requirement to identify the cause(s) in the response to a DR. Subsection 5.3dd)4) contains the requirement that specific action is required for each cause identified.

In order to verify that all causes have been addressed by specific actions, a Complete/Amended response is required wherein the Responsible Manager specifically delineates each cause he/she believes to be applicable, and then ensures that specific actions taken to address each identified cause are documented.



Sam E. Archuleta
QA Representative

3/5/02
Date

TYPE RESPONSE:

- Initial
- Complete
- Amended

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DEFICIENCY/CORRECTIVE ACTION REPORT (RESPONSE)

14a. Immediate Actions:

No changes since 7/24/01 response.

14. Remedial Actions:

In addition to remedial actions previously stated, SBRFs for the four additional codes identified in Block 15 have been submitted to SCM. The codes will be qualified as Level 3 codes; therefore, media are not required to be submitted until the SMR is submitted to SCM to baseline the code.

15. Extent of Condition:

In addition to the extent previously stated, four additional codes have been identified: Leng1 V1.0, Chang V1.0, Rmang V1.0 and Corr.c V1.0.

16. Cause: (Attach results of root cause determination prepared in accordance with AP-16.4Q for a significant deficiency.)

This response supercedes all previous Block 16 information submitted for this DR.

The causes of deficiencies identified in this DR are lack of awareness of and/or lack of compliance with AP-SI.1Q.

17. Action to Preclude Recurrence:

To preclude recurrence, training on AP-SI.1Q as described in the 09/28/01 amended response to this DR has been, and continues to be provided for developers/users, supervisors and managers. The management stand-down on software described in earlier responses to this DR is still in effect. In addition, Software Summits attended by key players from the national labs, USGS and Projects have reinforced requirements.

When management lifts the software stand-down -- this is expected by 01 May 02 - conditions will be imposed. Among those conditions will be the requirement that all personnel involved in development, use, qualification, review, verification and approval of software will have completed the appropriate module(s) of AP-SI.1Q training prior to such involvement. ~~The Manager of INTEGRATED MANAGEMENT OF TECHNICAL PRODUCT INPUTS~~ will be assigned responsibility to review new software activities to ensure compliance with training requirements. If the Manager of ~~INTEGRATED MANAGEMENT OF TECHNICAL PRODUCT INPUTS~~ determines software activities are in compliance he may at his discretion reduce scope of, or eliminate these compliance reviews after 01 September 2002; furthermore, even if full compliance is demonstrated, he may choose to continue these reviews after 01 September 02.

assigned A manager 3/21/02

3/21/02

18. Due Date: 01 May 02

- For submittal of complete response
- For completion of corrective action

19. Response by

Michael Jaeger RFWA JCB BSC BE
MICHAEL JAEGER Date 3/21/02 Phone 53906

20. Evaluation: Accept Partially Accept Reject

QAR *[Signature]* Date 3/25/02

21. Concurrence:

DOQA *James Blaylock* Date 3/29/02

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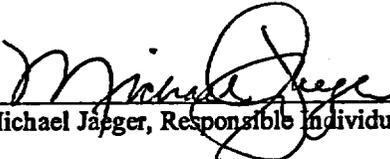
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3/21/02

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REQUEST FOR EXTENDED PROCESSING

Based on the partial acceptance by OQA, the actions to prevent recurrence for this DR have been disassociated with those identified in BSC-01-C-002. In addition, 4 software codes recently identified must be processed per AP-SI.1Q as part of the remedial action. Additional time is required to process those 4 codes and lift the software shutdown. No adverse impact from requesting additional time is expected because the software stand down is in effect until lifted per block 17 of this DR.

An extension until May 21, 2002 will allow time to complete the remedial actions, the actions to prevent recurrence, and the verification by OQA.


Michael Jaeger, Responsible Individual RFW/j

3/21/2002
Date


Nancy Williams, Senior Manager

3/21/02
Date

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DEFICIENCY/CORRECTIVE ACTION REPORT/STOP WORK ORDER CONTINUATION PAGE

Your Complete/Amended Response dated 3/21/02 is accepted.

Your request for extended processing is approved. The date for completion of corrective action remains at 5/01/02, with closure of the Deficiency Report now established as 5/21/02. Please notify the Corrective Action Coordinator via email when corrective actions are complete and you are ready for verification.



Sam E. Archuleta
QA Representative

3/25/02

Date

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2. Check if Amended
Check if also Initial Response

3. Extended Processing
 No Yes (If, yes submit
Extended Processing request)

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

1. DR/CAR NO. BSC-01-D-088
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DEFICIENCY REPORT/CORRECTIVE ACTION REPORT COMPLETE RESPONSE

4. Extent of Condition: (Amended response will be required if all Extent of Condition investigations are not complete and documented herein)

No changes since 3/21/02 response.

5. Impact: (Provide an impact statement relative to waste isolation and safety, and impact to other work, if any)

No changes since 3/21/02 response.

6. Remedial Actions: (Document all actions necessary to address the results of the Extent of Condition)

In addition to remedial actions previously stated, media and SMRs for Leng1 v1.0, Chang v1.0, Rmang v1.0 and Corr v1.0 have been submitted to SCM. These codes are under SCM control.

Remedial Actions for BSC-01-D-088 are complete.

7. Root Cause (For a significant CAQ, attach results of formal root cause determination prepared in accordance with AP-16.4Q)
 Apparent Cause

No changes since 3/21/02 response.

8. Action to Preclude Recurrence: (Address those actions necessary to prevent the identified cause from recurring)

Actions taken to preclude recurrence:

- Training on AP-SI.1Q as described in the 09/28/01 amended response to this DR has been, and continues to be provided for developers/users, supervisors and managers.
- The management stand-down on software described in earlier responses to this DR is still in effect.
- Software Summits attended by key players from the national labs, USGS and Projects have reinforced requirements.
- Management issued a requirement (Nancy Williams memorandum dated 4/5/02, #0322021923, posted on BSC Today on 4/8/02) that all personnel involved in development, use, qualification, review, verification and approval of software will have completed the appropriate module(s) of AP-SI.1Q training prior to such involvement. Michael Jaeger was assigned responsibility to review new software activities to ensure compliance with these training requirements. Steve Splawn was assigned responsibility to inform Michael Jaeger of new software activities and to ensure the training compliance reviews are completed before allowing software to pass Control Point 1, Control Point 2, or become baselined.

Actions to preclude recurrence are complete.

9. Due Date for Completion of Correction Action

01 May 2002

10. Responsible Manager

Michael Jaeger *Michael Jaeger* 01 May 2002
Printed Name Signature Date

BSC QF CM 5/1/02

11. CAR Evaluation: Accept Partially Accept Reject

Sam E. Archuleta NOT SIG.
SAM E. ARCHULETA 5-6-02
Printed Name Signature Date

12. QAM Concurrence:

Ran MURPHY *James Blaylock* 5/10/02
Printed Name Signature Date

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DEFICIENCY IDENTIFICATION AND REFERRAL

Date:
05/14/02

Open DR/CAR:
BSC-01-D-088

Description of Deficiency:

AP-SI.1Q, Revision 3, ICN 3, *Software Management*, Section 2.0, Applicability, "Software items subject to QARD requirements cannot be used in quality-affecting activities prior to the software being qualified and baselined except as provided for in Subsection 5.10 of this procedure."

Software being used in the Test Coordination Office under the cognizance of Fred Homuth commonly called Qconvert (TCODMU Version 1.0), and related to the Drift Scale Test data collection process, is in continuous use but has not been qualified or baselined as required by AP-SI.1Q.

How Identified:

Identified during Audit BSC-ARC-02-09.

Open DR/CAR QAR's Concurrence:

Printed Name Robert P. Hasson

Signature *Robert P. Hasson*

Date 5/21/02

Prepared by:

QAM Printed Name Marilyn A. Kavchak

Signature *M. A. Kavchak*

Date 5-21-02

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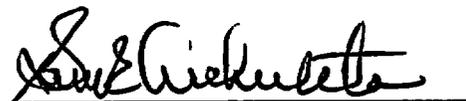
CONDITION ADVERSE TO QUALITY CONTINUATION PAGE

The acceptance of your Amended/Complete response dated May 1, 2002 was initially accepted on May 6, 2002. The acceptance of that response is hereby withdrawn. The withdrawal of the acceptance is not based on insufficiencies contained in your complete response (none of the corrective actions have yet been verified), but rather, this action is initiated in view of the following objective evidence:

1. DIR 02-10, written as a result of audit BSC-ARC-02-09, identifies another condition involving the use of software which has not been baselined (TCODMU V 1.0, commonly referred to as "Qconvert"). Preliminary verification efforts indicate that there are no reported actions taken to respond to this condition.
2. Quality Observation BSC(B)-02-O-024 (This DR is in "pending" status as of this date.) identifies another condition involving the use of software which has not been baselined (Casmov V4.8.3). This is a stand-alone deficiency document, and actions taken to address the condition described will be managed separately from DR088.
3. Deficiency Report LANL(B)-02-D-133 (This DR is also in "pending" status as of this date.) identifies additional conditions involving the use of software which has not been baselined (Chain (Version unknown), Tough V1.1, SORBEQ (Version unknown), PDREACT (Version unknown), FEHMN (Version unknown)). This is also a stand-alone deficiency document, and actions taken to address the condition described will be managed separately from DR088

These conditions described in items 2 and 3 above have some similarity to the conditions described in BSC-01-D-088, but they also involve other issues sufficiently different from DR088. Therefore, the above referenced conditions should be addressed in stand-alone Deficiency Reports issued to the appropriate responsible organizations for corrective actions. However, these conditions do provide evidence of some questionable adequacy in the extent of condition investigation as reported in previous responses to DR088. Specifically, the discovery of six more unbaselined software codes is considered to be sufficient reason to question the effectiveness of the extent of condition investigation for DR088.

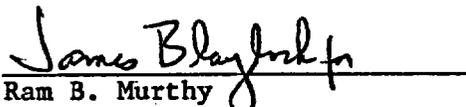
Corrective actions and the extent of condition for DR088 will, therefore, have to be revisited in light of the new conditions referred to above. Also, corrective actions to address the condition described in item 1 above will have to be reported. An Amended/Complete response is required within 10 working days from the date of receipt of this notification. It is, indeed, recognized that a significant amount of good work has already been done to address conditions described in this DR.



Sam Archuleta
QA Representative

6-5-02

Date



Ram B. Murthy
QA Manager

6/6/02

Date

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2. Check if Amended

3. Extended Processing

No Yes (If yes, submit Extended Processing request)

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DEFICIENCY REPORT/CORRECTIVE ACTION REPORT INITIAL RESPONSE

4. Immediate Actions Necessary to Bring the Process Under Control: (If none, provide justification statement)

A survey will be conducted among department managers to determine if there are other software items that are in use prior to qualification. This survey is to increase awareness amongst the managers and will be sent to any organizations that may have been missed during previous surveys.

Date when process will meet requirements: 8/15/02

5. Immediate Remedial Actions Completed:

The subject software TCO DMU Version 1.0 was baselined on June 26, 2002, thus ensuring use of qualified software.

6. Plan for Determining the Extent of Condition:

Two software surveys were conducted previously to determine the extent of condition. As mentioned above, to enhance the awareness and ensure that all department managers are addressed, an additional survey will be sent to select organizations that may have been missed in the previous two surveys.

7. Due Date for Submittal of Completed Response:
August 15, 2002

8. Response by: (Responsible Manager)

JED 7/02/02 Michael Jaeger
MICHAEL A. JAEGER 7/2/02
Printed Name Signature Date

9. QAR Evaluation: Accept Partially Accept Reject

10. QAM Concurrence:

SAM E. ARCHULETA [Signature] 7/9/02
Printed Name Signature Date

RAN MURPHY [Signature] 7/16/02
Printed Name Signature Date

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REQUEST FOR EXTENDED PROCESSING

3. Extended Actions: (Identify those corrective actions planned for completion beyond 100 days from issuance of the DR/CAR)
The extent of condition described in previous responses to this DR need to be revisited as described in the 6/6/02 Withdrawal of Acceptance. The extent of condition will be re-evaluated and if warranted, additional immediate and remedial actions will be described in amended responses to the DR.

Expected Completion Date: 12/19/2002

4. Justification: (Provide an explanation as to why the required actions cannot be completed within 100 days)
It is estimated it will take about 6 weeks to reissuing the survey to additional organizations, evaluate the responses, and develop corrective actions. Implementing those corrective actions may take another 14 weeks depending upon the complexity of the issues identified. Another 4 weeks will be allowed for verification.

5. Impact: (Provide an impact statement to indicate what affect not completing within 100 days will have relative to waste isolation and safety, and impact to other work, if any)
The extent of condition determined in previous responses to the DR has discovered administrative and procedural compliance problems. No technical problems with software or data have been found. Therefore, no impact affecting waste isolation, safety or other work is expected.

Approvals

6. Responsible Manager:			7. Senior Manager:		
Michael Jaeger	<i>Michael Jaeger</i>	7/2/2002	Nancy Williams	<i>Nancy Williams</i>	7/3/02
Printed Name	Signature	Date	Printed Name	Signature	Date
8. DOE Project Management:			9. DOQA:		
J. R. Dyer	<i>J. R. Dyer</i>	8/9/02	Ram Murrey	<i>Ram Murrey</i>	8/9/02
Printed Name	Signature	Date	Printed Name	Signature	Date
10. Director, OCRWM: (required for scheduled completion dates one year or more from initial issue)					
	<i>[Signature]</i>				8/14/02
Printed Name	Signature				Date

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CONDITION ADVERSE TO QUALITY CONTINUATION PAGE

Your amended initial response dated 7/2/02 is accepted, pending approval of your request for extended processing.

Prior to verification of corrective actions, a complete listing of all deficient codes discovered during all of your extent of condition investigations will be required in order to ensure that verification can be accomplished for all remediated software. Please provide the listing of deficient software, together with a statement of the deficient condition, and the action taken to remedy the condition. This listing should include the codes originally identified in the DR.



Sam E. Archuleta
QA Representative

7/8/02
Date

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2. Check if Amended
Check if also Initial Response

3. Extended Processing

No Yes (If yes, submit
Extended Processing request)

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DEFICIENCY REPORT/CORRECTIVE ACTION REPORT COMPLETE RESPONSE

4. Extent of Condition: (Amended response will be required if all Extent of Condition investigations are not complete and documented herein)

This response supercedes all previous Extent of Condition responses.

The extent of condition was determined using the survey method. The survey was sent to managers within Projects. On two occasions, additional items were identified in a Deficiency Identification and Referral document. On each occasion, the survey was sent to additional managers. Table 1 lists codes identified that support the SSPA. Table 2 lists codes identified that support TSPA-SR. Table 3 lists the remaining codes assessed during the preparation of this DR.

5. Impact: (Provide an impact statement relative to waste isolation and safety, and impact to other work, if any)

This response supercedes all previous Impact responses. See Continuation Page 2.

6. Remedial Actions: (Document all actions necessary to address the results of the Extent of Condition)

This response supercedes all previous Remedial Actions responses. See Tables 1, 2, and 3.

7. Root Cause (For a significant CAQ, attach results of formal root cause determination prepared in accordance with AP-16.4Q)
 Apparent Cause

The apparent cause is personnel non-compliance with AP-SI.1Q due to ineffective or lack of training.

8. Action to Preclude Recurrence: (Address those actions necessary to prevent the identified cause from recurring)

This response supercedes all previous Action to Preclude Recurrence responses. See Continuation Page 3.

9. Due Date for Completion of Corrective Action:

12/19/02

10. Responsible Manager:

Robert Wernheuer

Printed Name

Signature

08/15/02

Date

11. QAM Evaluation: Accept Partially Accept Reject

Jam E. Archuleta NOT SIGNIFICANT
JAM E. ARCHULETA 8/20/02
Printed Name Signature Date

12. QAM Concurrence:

RAM MURPHY

Printed Name

Signature

8/21/02

Date

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Continuation Block 5: IMPACT

In Table 1, the items are grouped by category such as the product that they support.

Software Supporting the Supplemental Science and Performance Assessment (SSPA):

Software for SSPA were selected on the basis of the most current and best available scientific information with the understanding and intention that if a license application was submitted, any of the software used to support the license application would be qualified and baselined. Use of this software and the results obtained do not replace the controlled baseline information for Total System Performance Assessment - Site Recommendation (TSPA-SR), but were supplemental and corroborative in nature. Since the results provide supplemental and corroborative information, there is no impact to the results of TSPA-SR.

Software Supporting TSPA-SR:

The results of the extent of condition included seven items used in support of the TSPA-SR. Two of the codes were qualified; however, software user requests were not submitted to Software Configuration Management (SCM) to have the software re-installed. The other five codes were used prior to qualification and were not submitted to SCM as part of the AP-SI.1Q, Software Management, paragraph 5.10 interim use of unqualified software process. The impact for the use of each of the five codes is described below.

Ashplume V1.4LV (Windows) was not directly used in reaching conclusions related to TSPA-SR. It was used along with Ashplume V2.0 to demonstrate that modeling approaches based on different input parameters yielded results that were comparable to a natural analog. This was done in response to Nuclear Regulatory Commission questions concerning the viability of both approaches. Ashplume V1.4LV is on the baseline for a Sun platform; however, the program was run on a Windows platform. The only Ashplume related program that was used to support conclusions for TSPA-SR were obtained using the qualified version, Ashplume V1.4LV-DLL. Since this code was not used directly to support the conclusions of TSPA-SR, there is no impact to the results of TSPA-SR.

Fehm V2.10NT was developed and used to support TSPA-SR in accordance with the AP-SI.1Q paragraph 5.10 process, interim use of unqualified software process. The Software Activity Plan indicated that the software would be qualified for a Windows NT platform. However, the code developer revised the software documentation and qualified the software on a Windows 2000 platform. This change was not identified until the work for TSPA-SR was completed. The code was then qualified for Windows NT; however, the version qualified was not the same as the version used. This was discovered during the confirmation testing required by the AP-SI.1Q Paragraph 5.10 process. During the confirmation testing, the unqualified code was compared to the qualified version, and it was determined that there were differences between the two codes. The code used to support TSPA-SR is currently in the AP-SI.1Q qualification process in accordance with paragraph 5.9.2. This part of the procedure addresses the process to qualify and baseline a code into retirement. The testing completed to date demonstrates that the version used to support TSPA-SR produced the same results as the qualified version. Therefore it is concluded the used of this code did not impact the results or conclusions presented in the TSPA-SR.

GTDist V1.0 is a simple preprocessor which extracts glacial transition infiltration data from in-drift percolation flux data files. There are no complicated mathematical formulae in this program and it is easily verified by visual inspection. This code has been qualified in accordance with AP-SI.1Q at which time the code was verified to perform correctly. Since this code is qualified and has been verified to perform correctly, there is no impact to the results of TSPA-SR.

HumIntInfDist V1.0 is a simple preprocessor used to calculate percentile distributions from net surface infiltration data. There are no complicated mathematical formulae in this program, and it is easily verified by visual inspection. This code has been qualified in accordance with AP-SI.1Q at which time the code was verified to perform correctly. Since this code is qualified and has been verified to perform correctly, there is no impact to the results of TSPA-SR.

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CONDITION ADVERSE TO QUALITY CONTINUATION PAGE

SeepagedllV2_sens2 V1.0 is a slight modification to the original seepagedllV2 code to allow the code to accept input supporting sensitivity studies related to spatial variability. The output from this modification of the code was reported in the TSPA-SR in two sensitivity studies. This code has been tested in accordance with the provisions of paragraph 5.9.2 of AP-SI.1Q Rev 3/ICN4. This testing has determined this version produces the same results as the qualified version using the same inputs. The spatial variability flag added to the code was also tested and performed as expected. This code is in the process of being baselined into retirement in accordance with the provisions of AP-SI.1Q. Use of this code for sensitivity studies within SR did not impact the results and conclusions presented in TSPA-SR.

Software Supporting Data:

There were eight items that supported data. Seven of these were identified as part of the data confirmation process initiated as an action associated with LVMO-98-C-002 and LVMO-99-C-01.

Chang V1.0, Corr.c V1.0, Leng1 V1.0, Rmang V1.0 and DATAVG V1.30 are codes used during data development for Pre-PVAR and Post-PVAR data.

DATAVG V1.20 and V1.27 are codes used during data acquisition for a Pre-PVAR data.

These codes were identified during the preparation of an AP-3.15Q checklists for Pre-PVAR and Post-PVAR data selected to support Site Recommendation and/or data that will be used for License Application. The AP-3.15Q checklist process was initiated in response to previous CARs so that legacy data would be screened for traceability, procurement, and software problems. Since there is a process in place to address legacy codes supporting data, these items will be addressed outside of DR-088, and the impact will be completed for these items when the checklist process is completed.

Since the discovery of these codes, all but DATAVG V1.20 and V1.27 have been qualified. Nothing was discovered during the qualification process that required changes to the data. DATAVG V1.20 and V1.27 are currently in the qualification process.

TCODMU V1.0 is a set of data management utilities used to transfer data between physical locations. As part of the software execution, an extensive log file for each utility is generated that serves as verification that the utility functioned correctly. Based on the detailed log files and the subsequent qualification and addition to the software baseline without modification, the use of this software prior to qualification had no impact on waste isolation, safety, or the TSPA-SR.

Since the items discussed in Block 5 were used to support the analyses for Site Recommendation and not for License Application, there is no impact to waste isolation and safety.

Continuation Block 8: ACTIONS TO PRECLUDE RECURRENCE

Actions taken to preclude recurrence:

1. A three level training curriculum has been developed and conducted in Las Vegas, at the National Labs, the USGS, and several subcontractor sites. The training modules include sessions for senior managers, mid-level managers, and developers/users. The series of training sessions schedule to prevent recurrence are complete. On a continuing basis, training sessions are scheduled as required to train personnel with new assignments that include software related responsibilities.
2. Management issued a requirement (Nancy Williams memorandum dated 4/5/02, #0322021923, posted on BSC Today on 4/8/02) for additional management oversight of the software development process to ensure that developers are trained to AP-SI.1Q.

TABLE 1
BSC-01-D-008
CODES THAT SUPPORT SSPA

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
BATH_10 V1.0	10539-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	
Dictra V20	10391-20-00	LLNL	Software procured with OCRWM funds not submitted to SCM. Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DR-88	This code is qualified and was baselined on 8/6/02.	
extract_qinf V1.0	10649-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	This code was cancelled from qualification process. No further action required. See Note 1.	
FEHM V2.12	10086-2.12-00	LANL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was qualified and baselined on 5/23/02.	
Fluent V5.5	10550-5.5-00	SNL	Software procured with OCRWM funds not submitted to SCM. Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DR-88	This code was cancelled from qualification process. No further action required. See Note 1.	

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TABLE 1
BSC-01-D-008
CODES THAT SUPPORT SSPA

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
future_cs-csnf.f V1.0	10784-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	This code was cancelled from qualification process. No further action required. See Note 1.	
future_cs-hlw.f V 1.0	10783-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	This code was cancelled from qualification process. No further action required. See Note 1.	
GoldSim V7.17.200	10344-7.17.200-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	
Image Pro Plus V4.1	10422-4.1-00	LLNL	Software procured with OCRWM funds not submitted to SCM. Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DR-88	This code was cancelled from qualification process. No further action required. See Note 1.	
MSTHAC V6.4.2	10419-6.4.2-00	LLNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DR-88	This code was cancelled from qualification process. No further action required. See Note 1.	
PATCH_FAIL_LAG V1.0	10532-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	

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TABLE 1
BSC-01-D-008
CODES THAT SUPPORT SSPA

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
PDFCDF V1.0	10558-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	
PREWAP V1.0	10533-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was qualified and baselined on 8/14/01.	
PROCESSBTC V1.0	10556-1.0-00	LANL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This coes was qualified and baselined on 12/7/01.	
REWRITE_PERCOLATION_DATA V1.0	10501-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was qualified and baselined on 8/10/01.	
SEEPAGEDLLMK2_UU V1.0	10534-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	
SEEPAGEDLLV2U V1.0	10535-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	
Soilexp V1.0	10492-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was qualified and baselined on 8/14/01.	

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TABLE 1
BSC-01-D-008
CODES THAT SUPPORT SSPA

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
statistics V1.0	10651-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	This code was cancelled from qualification process. No further action required. See Note 1.	
Thermo-Calc VM	10170-M-00	LLNL	Software procured with OCRWM funds not submitted to SCM. Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DR-88	This code was qualified and baselined on 7/1/02.	
TRANSFORM_PER C_FILES_INTO_Tables V1.0	10530-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	
WAPDEG V4.0	10000-40-02	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was qualified and baselined on 8/14/01.	
WinSASW V1.23	10588-1.23-00	URS	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 02-4	This code was qualified and baselined on 3/14/02.	
WRITEFILES V1.0	10527-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code is qualified and was baselined on 8/14/01.	

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TABLE 1
BSC-01-D-008
CODES THAT SUPPORT SSPA

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
Writefiles_new V1.0	10560-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	

Note 1: This software was used only in the SSPA. This version will not be carried forward to LA. Consequently, this software was cancelled in accordance with the provisions specified in TWP-MGR-MD-000014. An impact analysis attached to the Software Baseline Request for cancellation demonstrated that the cancellation did not adversely affect the quality for the Site Recommendation.

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TABLE 2
BSC-01-D-008
CODES THAT SUPPORT TSPA-SR

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
Ashplume LV V1.4	10022-1.4LV-01	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	Supports TSPA-SR. Code is in qualification process per para. 5.9 of AP-SI.1Q. Will be under SCM control when qualification and baseline process complete.	
DST_Interpolator V1.0	10423-1.0-00	SNL	Software was not obtained from SCM prior to use.	DIR 01-3 (CAR-002)	Supports TSPA-SR. User Request Submitted, software installed, and user request returned to SCM.	
FEHM V2.10NT	10086-2.10-02	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	Supports TSPA-SR. Code is in qualification process. New SAN issued on 7/17/02. Will be under SCM control when qualification and baseline process complete.	
GTDist V1.0	10590-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	Supports TSPA-SR. This code was unqualified at the time it was used. The code is qualified and was baselined on 9/26/01	
HumIntInfDist V1.0	10589-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	Supports TSPA-SR. This code was unqualified at the time it was used. The code is qualified and was baselined on 9/24/01	
Seepagedll_v2_sens2 V1.0	10782-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	Supports TSPA-SR. Code is in qualification process per para. 5.9 of AP-SI.1Q. Will be under SCM control when qualification and baseline process complete.	
SHT_Interpolator V1.0	10424-1.0-00	SNL	Software was not obtained from SCM prior to use.	DIR 01-3 (CAR-002)	Supports TSPA-SR. User Request Submitted, software installed, and user request returned to SCM.	

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TABLE 3
BSC-01-D-008
ADDITIONAL CODES ASSOCIATED WITH DR-088

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
Following Codes Support Data						
Chang V1.0	10805-1.0-00	LBNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist and LBNL Survey Response	Supports data that was used for TSPA-SR. Code qualified and baselined on 5/3/02.	
Corr.c V1.0	10806-1.0-00	LBNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist and LBNL Survey Response	Supports data that was used for TSPA-SR. Code qualified and baselined on 5/3/02.	
DATAVG V1.20	TBD	SNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist	Supports data that will be used for LA. Code will be qualified per para. 5.9 of AP-SI.1Q. Will be under SCM control when qualification and baseline process complete.	
DATAVG V1.27	TBD	SNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist	Supports data that will be used for LA. Code will be qualified per para. 5.9 of AP-SI.1Q. Will be under SCM control when qualification and baseline process complete.	
DATAVG V1.30	10726-1.30-00	SNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist	Supports data that will be used for LA. Code qualified and baselined on 7/25/02.	
Leng1 V1.0	10807-1.0-00	LBNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist and LBNL Survey Response	Supports data that was used for TSPA-SR. This code as qualified and baselined on 5/3/02.	

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TABLE 3
BSC-01-D-008
ADDITIONAL CODES ASSOCIATED WITH DR-088

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
Rmang V1.0	10808-1.0-00	LBNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist and LBNL Survey Response	Supports data that was used for TSPA-SR. This code was qualified and baselined on 5/3/02.	
TCODMU V1.0	10563-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 02-10	Supports data that was used for TSPA-SR and will be used for LA. This code was qualified and baselined on 6/26/02.	
Following Code Procured and Not Used to Support SSPA, TSPA-SR, or Data						
Geochemist's Workbench	N/A	LLNL	Software procured with OCRWM funds not submitted to SCM.	LLNL Survey Response	The software license for this code needs to be submitted to SCM so that an agreement for a backup copy can be arranged.	
Fidap V8.0	10549-8.0-00	SNL	Software procured with OCRWM funds not submitted to SCM.	DR-88	Code cancelled from qualification process on 8 Jan 2002 because the team decided not to use this software. The Responsible Manager determined that the software was not used to support any quality affecting activities.	
Following Codes Do Not Have A Deficiency						
POST10K_BINS V1.0	10538-1.0-00	PA (LV)	None	DIR 01-6	This code is properly documented in an AMR. (MOL.20001208.0060) Only the data was used in SSPA, not the code.	
WTRISE V1.0	10537-1.0-00	PA (LV)	None	DIR 01-6	This code is properly documented in an AMR. (MOL.20001208.0060) Only the data was used in SSPA, not the code.	

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TABLE 3
BSC-01-D-008
ADDITIONAL CODES ASSOCIATED WITH DR-088

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
Following Code Names Are Not Complete Code Designators						
LAG_WPFAILURE_TIME V1.0	N/A	PA (LV)	None	DIR 01-6	The software name and version are incomplete and could not be identified. The software baseline, the document and its Document Input Reference System (DIRS) were checked in an attempt to identify.	
SEEPAGEDLL	N/A	PA (LV)	None	DIR 01-6	The software name and version are incomplete and could not be identified. The software baseline, the document and its Document Input Reference System (DIRS) were checked in an attempt to identify.	
Seepagedll2 V1.0	N/A	PA (LV)	None	DIR 01-6	The software name and version are incomplete and could not be identified. The software baseline, the document and its Document Input Reference System (DIRS) were checked in an attempt to identify.	
SEEPDLL V1.0	N/A	PA (LV)	None	DIR 01-6	The software name and version are incomplete and could not be identified. The software baseline, the document and its Document Input Reference System (DIRS) were checked in an attempt to identify.	

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2. Check if Amended
Check if also Initial Response

3. Extended Processing

No Yes (If yes, submit
Extended Processing request)

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

1. DR/CAR NO. BSC-01-D-088
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QA: QA

DEFICIENCY REPORT/CORRECTIVE ACTION REPORT COMPLETE RESPONSE

4. Extent of Condition: (Amended response will be required if all Extent of Condition investigations are not complete and documented herein)

No changes since the 08/15/2002 response

5. Impact: (Provide an impact statement relative to waste isolation and safety, and impact to other work, if any)

No changes since the 08/15/2002 response

6. Remedial Actions: (Document all actions necessary to address the results of the Extent of Condition)

This response supercedes all previous Remedial Action Responses. See Tables 1, 2 & 3. These tables were submitted in the response dated 08/15/2002. Only tables 2 & 3 have been revised in this response. However Tables 1, 2 & 3 are being submitted for completeness.

7. Root Cause (For a significant CAQ, attach results of formal root cause determination prepared in accordance with AP-16.4Q)
 Apparent Cause

No changes since the 08/15/2002 response

8. Action to Preclude Recurrence: (Address those actions necessary to prevent the identified cause from recurring)

No changes since the 08/15/2002 response

9. Due Date for Completion of Corrective Action:
See date in block 10

10. Responsible Manager:

R.W. Andrews *[Signature]* ^{BSC DE} 11/20/02
Printed Name *[Signature]* Signature W. WATSON Date

11. QAR Evaluation: Accept Partially Accept Reject
 Re-evaluated for significance

12. QAM Concurrence:

SAUL ARCHULETA *[Signature]*
Printed Name Signature 11-27-02 Date

R DENNIS BROWN *[Signature]* 12/11/02
Printed Name Signature Date

TABLE 1
BSC-01-D-088
CODES THAT SUPPORT SSPA

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
BATH_10 V1.0	10539-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	
Dictra V20	10391-20-00	LLNL	Software procured with OCRWM funds not submitted to SCM. Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DR-88	This code is qualified and was baselined on 8/6/02.	
extract_qinf V1.0	10649-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	This code was cancelled from qualification process. No further action required. See Note 1.	
FEHM V2.12	10086-2.12-00	LANL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was qualified and baselined on 5/23/02.	
Fluent V5.5	10550-5.5-00	SNL	Software procured with OCRWM funds not submitted to SCM. Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DR-88	This code was cancelled from qualification process. No further action required. See Note 1.	
future_cs-csnf.f V1.0	10784-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	This code was cancelled from qualification process. No further action required. See Note 1.	

TABLE 1
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CODES THAT SUPPORT SSPA

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
future_cs-hlw.f V 1.0	10783-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	This code was cancelled from qualification process. No further action required. See Note 1.	
GoldSim V7.17.200	10344-7.17.200-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	
Image Pro Plus V4.1	10422-4.1-00	LLNL	Software procured with OCRWM funds not submitted to SCM. Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DR-88	This code was cancelled from qualification process. No further action required. See Note 1.	
MSTHAC V6.4.2	10419-6.4.2-00	LLNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DR-88	This code was cancelled from qualification process. No further action required. See Note 1.	
PATCH_FAIL_LAG V1.0	10532-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	
PDFCDF V1.0	10558-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	
PREWAP V1.0	10533-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was qualified and baselined on 8/14/01.	

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TABLE 1
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CODES THAT SUPPORT SSPA

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
PROCESSBTC V1.0	10556-1.0-00	LANL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This coes was qualified and baselined on 12/7/01.	
REWRITE_PERCOLATION_DATA V1.0	10501-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was qualified and baselined on 8/10/01.	
SEEPAGEDLLMK2_UU V1.0	10534-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	
SEEPAGEDLLV2U U V1.0	10535-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	
Soilexp V1.0	10492-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was qualified and baselined on 8/14/01.	
statistics V1.0	10651-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	This code was cancelled from qualification process. No further action required. See Note 1.	
Thermo-Calc VM	10170-M-00	LLNL	Software procured with OCRWM funds not submitted to SCM. Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DR-88	This code was qualified and baselined on 7/1/02.	

TABLE 1
BSC-01-D-088
CODES THAT SUPPORT SSPA

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
TRANSFORM_PER C_FILES_INTO_T ABLES V1.0	10530-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	
WAPDEG V4.0	10000-4.0-02	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was qualified and baselined on 8/14/01.	
WinSASW V1.23	10588-1.23-00	URS	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 02-4	This code was qualified and baselined on 3/14/02.	
WRITEFILES V1.0	10527-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code is qualified and was baselined on 8/14/01.	
Writefiles_new V1.0	10560-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	

Note 1: This software was used only in the SSPA. This version will not be carried forward to LA. Consequently, this software was cancelled in accordance with the provisions specified in TWP-MGR-MD-000014. An impact analysis attached to the Software Baseline Request for cancellation demonstrated that the cancellation did not adversely affect the quality for the Site Recommendation.

TABLE 2
BSC-01-D-088
CODES THAT SUPPORT TSPA-SR

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
Ashplume LV V1.4	10022-1.4LV-01	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	Supports TSPA-SR and LA. Code was qualified per para. 5.9 of AP-SI.1Q. Code qualified and baselined on 11/11/02	
DST_Interpolator V1.0	10423-1.0-00	SNL	Software was not obtained from SCM prior to use.	DIR 01-3 (CAR-002)	Supports TSPA-SR. User Request Submitted, software installed, and user request returned to SCM.	
FEHM V2.10NT	10086-2.10-02	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	Baselined into retirement 10/09/2002	
GTDist V1.0	10590-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	Supports TSPA-SR. This code was unqualified at the time it was used. The code is qualified and was baselined on 9/26/01	
HumIntInfDist V1.0	10589-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	Supports TSPA-SR. This code was unqualified at the time it was used. The code is qualified and was baselined on 9/24/01	
Seepagedll_v2_sens2 V1.0	10782-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	Baselined into retirement 9/18/2002	
SHT_Interpolator V1.0	10424-1.0-00	SNL	Software was not obtained from SCM prior to use.	DIR 01-3 (CAR-002)	Supports TSPA-SR. User Request Submitted, software installed, and user request returned to SCM.	

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TABLE 3
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ADDITIONAL CODES ASSOCIATED WITH DR-088

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
Following Codes Support Data						
Chang V1.0	10805-1.0-00	LBNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist and LBNL Survey Response	Supports data that was used for TSPA-SR. Code qualified and baselined on 5/3/02.	
Corr.c V1.0	10806-1.0-00	LBNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist and LBNL Survey Response	Supports data that was used for TSPA-SR. Code qualified and baselined on 5/3/02.	
DATAVG V1.20	10726-1.20-00	SNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist	Baselined in to Retirement 9/6/02.	
DATAVG V1.27	10726-1.27-00	SNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist	Baselined in to Retirement 9/6/02.	
DATAVG V1.30	10726-1.30-00	SNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist	Supports data that will be used for LA. Code qualified and baselined on 7/25/02.	
Leng1 V1.0	10807-1.0-00	LBNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist and LBNL Survey Response	Supports data that was used for TSPA-SR. This code as qualified and baselined on 5/3/02.	
Rmang V1.0	10808-1.0-00	LBNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist and LBNL Survey Response	Supports data that was used for TSPA-SR. This code was qualified and baselined on 5/3/02.	

TABLE 3
BSC-01-D-088
ADDITIONAL CODES ASSOCIATED WITH DR-088

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
TCODMU V1.0	10563-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 02-10	Supports data that was used for TSPA-SR and will be used for LA. This code was qualified and baselined on 6/26/02.	
Following Codes Procured and Not Used to Support SSPA, TSPA-SR, or Data						
Geochemist's Workbench	N/A	LLNL	Software procured with OCRWM funds not submitted to SCM.	LLNL Survey Response	Software license is under SCM control	
Fidap V8.0	10549-8.0-00	SNL	Software procured with OCRWM funds not submitted to SCM.	DR-88	Code cancelled from qualification process on 01/08/2002 because the team decided not to use this software. The Responsible Manager determined that the software was not used to support any quality affecting activities.	
Following Codes Do Not Have A Deficiency						
POST10K_BINS V1.0	10538-1.0-00	PA (LV)	None	DIR 01-6	This code is properly documented in an AMR. (MOL.20001208.0060) Only the data was used in SSPA, not the code.	
WTRISE V1.0	10537-1.0-00	PA (LV)	None	DIR 01-6	This code is properly documented in an AMR. (MOL.20001208.0060) Only the data was used in SSPA, not the code.	
Following Codes Names Are Not Complete Code Designators						
LAG_WPFAILURE_TIME V1.0	N/A	PA (LV)	None	DIR 01-6	The software name and version are incomplete and could not be identified. The software baseline, the document and its Document Input Reference System (DIRS) were checked in an attempt to identify.	

TABLE 3
BSC-01-D-088
ADDITIONAL CODES ASSOCIATED WITH DR-088

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
SEEPAGEDLL	N/A	PA (LV)	None	DIR 01-6	The software name and version are incomplete and could not be identified. The software baseline, the document and its Document Input Reference System (DIRS) were checked in an attempt to identify.	
Seepagedll2 V1.0	N/A	PA (LV)	None	DIR 01-6	The software name and version are incomplete and could not be identified. The software baseline, the document and its Document Input Reference System (DIRS) were checked in an attempt to identify.	
SEEPDLL V1.0	N/A	PA (LV)	None	DIR 01-6	The software name and version are incomplete and could not be identified. The software baseline, the document and its Document Input Reference System (DIRS) were checked in an attempt to identify.	

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

DR/CAR/QO
 SWO

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CONDITION ADVERSE TO QUALITY CONTINUATION PAGE

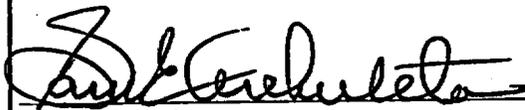
Your amended complete response dated 11/20/02 is partially accepted. Pending final verification, the corrective actions required to bring the identified software codes into compliance appear to be complete and acceptable.

However, another instance of deficient software of the type addressed by this DR. Model Report entitled "Ventilation Model: ANL-EBS-MD-000030, Rev 01/ICN01, was developed using some unqualified software code. Specifically: In Section 3.2 of the Model Report, MULTIFLUX V2.2 was reportedly used in the Model (A "Q" product). In researching this, there is also reference in the same section of the Model Report to the development of MULTIFLUX-Con and MULTIFLUX-Full Models. Because these references are discussed in Section 3, Use of Software, that permits one to conclude that these MAY be codes and MAY be modified forms of MULTIFLUX 2.2. (These codes, if they are codes, do not appear in Table 3-1). (NOTE: Since initiation of this document, BSCQE made some inquiries and learned that the references to MULTIFLUX-Con and -Full are to MODELS and NOT SOFTWARE). That means that there is only one code which is not compliant within the Model Report (MULTIFLUX V2.2). There is no mention of compliance with AP-SI.1Q for acquisition, development, modification, or use of MULTIFLUX V2.2. As of this date, the code is not baselined, nor is it qualified for use in quality affecting work.

Further, recommendations concerning implementation of procurement controls that would permit the review of software procurement actions by Information Technology (specifically, SCM), and recommendations that such controls ensure that the DOE is identified as the Licensee were made in the DR. The initial recommendation was made on 7/2/01. The recommendation was repeated on 8/1/01 following the issuance of DIR 01-06. To date, none of the responses submitted have addressed these recommendations to any extent. This is significant because the recommended controls could, at least in part, enhance actions to preclude recurrence of the issues at hand.

The concern is that, in view of subsequent repeats of the same deficiencies, the actions to preclude recurrence are suspect. More emphasis on training, the software stand-down, and the "additional management oversight", which were previously reported as actions to preclude recurrence have not appeared to be totally effective. There is also a question as to the adequacy of the extent of condition investigation; similar to the concern that resulted in withdrawal of a previous response acceptance on 6/5/02. Recurrences of similar conditions continue to indicate that other, stronger preventive measures are still required.

Accordingly, the response is returned for additional work. An Amended/Complete response to address the specific concerns noted above is required within 10 working days from the date of receipt of this notification.



Sam E. Archuleta
QA Representative

11-26-02
Date

Submittal Page 1 of 2

2. Check if Amended
Check if also Initial Response

3. Extended Processing
 No Yes (If yes, submit
Extended Processing request)

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U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C.

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DEFICIENCY REPORT/CORRECTIVE ACTION REPORT COMPLETE RESPONSE

4. Extent of Condition: (Amended response will be required if all Extent of Condition Investigations are not complete and documented herein)
No changes since the 08/15/2002 response.

5. Impact: (Provide an impact statement relative to waste isolation and safety, and impact to other work, if any)
No changes since the 08/15/2002 response

6. Remedial Actions: (Document all actions necessary to address the results of the Extent of Condition)
No changes since the 08/15/2002 response, however additions are made to the previous response on the continuation page to address newly identified issues and previous OQA recommendations.

7. Root Cause (For a significant CAQ, attach results of formal root cause determination prepared in accordance with AP-16.4Q)
 Apparent Cause
No changes since the 08/15/2002 response

8. Action to Preclude Recurrence: (Address those actions necessary to prevent the identified cause from recurring)
No changes since the 08/15/2002 response

9. Due Date for Completion of Corrective Action:
See date in block 10

10. Responsible Manager:
R.W. Andrews *RWA* *7ed* 1-09-03
Printed Name Signature Date

11. QAR Evaluation: Accept Partially Accept Reject
 Re-evaluated for significance

12. QAM Concurrence:

EM E. ARCHULETA *Emmanuel Archuleta* 1-16-03
Printed Name Signature Date

DENNIS BROWN *Dennis Brown* 1/29/03
Printed Name Signature Date

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CONDITION ADVERSE TO QUALITY CONTINUATION PAGE

Remedial Actions (continued)

- a) MULTIFLUX V2.2 is an un-qualified software and was used to corroborate another qualified software in AMR ANL-EBS-MD-000030, REV 01, and ICN 01. It has been determined that use of un-qualified software although used to corroborate another qualified software is not acceptable. AMR ANL-EBS-MD-000030, REV 02, was issued to delete the use of MULTIFLUX V2.2 in the AMR. A Quality Observation (QO), BSC(B)-03-0-029 generated to document this issue has been closed since MULTIFLUX V2.2 has been deleted from the AMR.
- b) Procedures require submittal of Software User Request to SCM prior to use. Star*Net Plus V5.105 was recently identified as a software which was used prior to submitting a Software User Request to SCM. This issue is considered to be similar to other issues addressed in this DR. DR, BSC(B)-03-D-069 issued to document this issue will track and close this item..
- c) On 12/19/02 a DR, BSC(B)-03-D-067, was generated to identify that a software, Wildsoft V1.65, was used without a user specifically listed on the User Request. Further, preliminary findings indicate that the individual had not actually used the software. The deficiency identified is not considered to be similar to other items addressed in DR BSC-01-D-088. DR, BSC(B)-03-D-067 will track and close this item.
- d) Regarding OQA recommendation of implementing procurement controls, that would permit the review of software procurement by Information Technology (specifically SCM). After careful review of the recommendation it is concluded that a review by SCM of the software procurement will not preclude the use of unqualified software in technical products. SCM may be aware that particular software has been procured by an organization for use at YMP. This information may even be stored in a data base at SCM, but it still provides no assurance that organization that procured the software or another organization will not use this unqualified software in a technical product. It is expected that the new procedures and the associated training and the increased awareness of software quality will prevent recurrence of this problem. Therefore this recommendation will not be implemented.
- e) In response to OQA concern of repeated deficiencies and the effectiveness of the actions to preclude recurrence. It is noted that the actions taken including extensive and multiple surveys, emphasis on procedural compliance and a general increase in the nuclear culture has had positive impact on culture relative to software quality and configuration. The reduced number and type of software deficiencies that are being identified does indicate that there is increased awareness of software configuration requirements and the few violations identified recently are minor procedural violations and not programmatic issues

Based on this response BSC requests closure of this DR.

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CONDITION ADVERSE TO QUALITY CONTINUATION PAGE

Completed verification of corrective action commitments on February 10, 2003.

Verified that each software code identified as deficient in this DR and associated DIRs was appropriately addressed as indicated on the tables contained in Attachment 1 of this document. Specific action taken status is reported for each of the identified deficient codes.

Verified that the immediate actions reported were, in fact, satisfactorily implemented. The management stand-down was continued and remains in effect. (Attachments 3 and 4). By review of the Software Baseline Report and through interviews with Software Configuration Management, verified that the codes identified as deficient, and deficient codes discovered later were placed under Software Configuration Management control, were retired, qualification was canceled, or appropriate explanations were provided, as indicated in the "Status" column of Attachment 1.

The following remedial actions were verified as satisfactory:

- (a) For software that was procured with OCRWM funds and was not under SCM control, the affected organizations placed the software under SCM control per the provisions of AP-SI.1Q for acquired software.
- (b) For software that was used prior to being qualified and were not entered into the AP-SI.1Q, Section 5.10 process, the responsible organizations initiated the 5.10 process for developed or modified software.
- (c) For software which was not properly obtained from SCM, the affected organizations implemented the appropriate controls and affected corrective actions per AP-SI.1Q, Section 5.7.2.
- (d) Verified that the specific actions taken to remediate each of the deficient software codes were completed, as reported in the "Status" column of Attachment 1.
- (e) Also, there were three additional deficient codes (MULTIFLUX V2.2; Star*Net Plus V5.105, and Wildsoft V1.65) which were reported in the last amended response, and which were discovered after Attachment 1 was completed. In the case of MULTIFLUX V2.2, verified that the software will not be qualified, and resulting output data were removed from the Ventilation AMR. Also verified that corrective actions for Star*Net Plus and Wildsoft are being managed under separate DRs (BSC(B)-03-D-067 and BSC(B)-03-D-067), as stated in the final amended complete response.

Verified the methodology used to conduct the Extent of Condition investigation as satisfactory. The accepted method was to conduct a survey of Project personnel in Las Vegas, NV, the National Labs, and the USGS. The survey is provided as Attachment 2. In addition to the aforementioned organizations, one of the surveys also covered subcontractors to the Project. In all, a series of three surveys were conducted. As the survey results identified other codes that were deficient, those codes were placed under SCM control. Deficient software discovered during those surveys are identified in the "Source of Information" column of Attachment 1.

Verified that the assessment of cause for cited deficiencies (lack of awareness of and/or lack of compliance with AP-SI.1Q requirements due to ineffective or lack of training) appears to be accurate.

The following actions to preclude recurrence were verified as satisfactory:

- (a) The management stand-down is still in force and has been reiterated, and is being managed as part of BSC-01-C-002 corrective actions. Part of the stand-down process is intended to raise awareness of requirements which previously have been violated or ineffectively implemented. (Attachments 3 and 4).
- (b) A three tiered program of training to the requirements of AP-SI.1Q, Revision 3 was developed and training has been conducted on a recurring bases. The training is required for senior managers, mid-level managers, developers, and users. Through contact with the BSC Training Department, verified that among the three courses, several hundred Project personnel have received the training. As of January 13, 2003, AP-SI.1Q has been revised, and similar training is being conducted on a recurring basis for Revision 4. The new course is divided into three classes for managers, developers, and users. A spot check of individual training matrices indicates that these training requirements are appropriately reflected on training matrices.
- (c) BSC Projects Management issued a memorandum dated 4/5/02 which was distributed and posted on the BSC Today web page, calling for additional management oversight of the software development process to ensure that developers involved in software activities have been trained to AP-SI.1Q. (Attachment 5).

Continued on Page 2 of 2.

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CONDITION ADVERSE TO QUALITY CONTINUATION PAGE

Verification activities continued from Page 1 of 2:

(d) The stand-down process requires managers to acknowledge the requirement for compliance with appropriate requirements, and requires them to ensure that only appropriately trained personnel will be involved in the software activity. (Attachment 3). Verification of this activity was performed through a review of stand-down exemption letters.

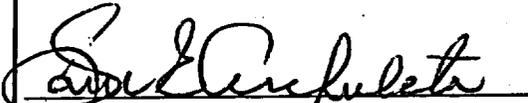
(e) Yet another requirement of the stand-down process is to have an independent verification of training by a member of the Performance Assessment Technical Input (PATI) staff. (Attachment 5). This was verified through interview with SCM and PATI personnel.

(f) Through the management stand-down, the surveys conducted for determination of the extent of condition, various communications from BSC Management to BSC Staff, and software summits attended by personnel who develop and/or use software, the level of awareness of software management requirements has been significantly raised. A self-assessment of the stand-down process which was directed by the Manager of Projects also effectively elevated the level of software management requirement awareness. (Attachment 6). These items were verified through interviews and first-hand observation.

The above stated actions to preclude recurrence are deemed to have been appropriate to address the stated cause.

Impact statements contained within the responses to this DR are satisfactory. In no case was there code which failed to produce correct results. No deficient code was found to have affected any technical product related to these deficient codes. None of the codes adversely affected products related to safety or waste isolation. While there were deficiencies in the implementation of administrative and control requirements, the deficiencies themselves were not technical in nature.

Based upon the satisfactory corrective and preventive actions taken, recommend closure of this DR at this time.



Sam E. Archuleta
QA Representative

2-13-03
Date

Attachments
As stated.

TABLE 1
BSC-01-D-088

CODES THAT SUPPORT SSPA

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
BATH_10 V1.0	10539-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	SA 1-29-03
Dictra V20	10391-20-00	LLNL	Software procured with OCRWM funds not submitted to SCM. Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DR-88	This code is qualified and was baselined on 8/6/02.	
extract_qinf V1.0	10649-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	This code was cancelled from qualification process. No further action required. See Note 1.	
FEHM V2.12	10086-2.12-00	LANL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was qualified and baselined on 5/23/02.	
Fluent V5.5	10550-5.5-00	SNL	Software procured with OCRWM funds not submitted to SCM. Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DR-88	This code was cancelled from qualification process. No further action required. See Note 1.	SA 1-29-03

DR BSC-01-D-088
Attachment 1
3 Tables, 9 Pages

TABLE 1
BSC-01-D-088

CODES THAT SUPPORT SSPA

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
future_cs-csnf.f V1.0	10784-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	This code was cancelled from qualification process. No further action required. See Note 1.	SA 1-29-03
future_cs-hlw.f V 1.0	10783-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	This code was cancelled from qualification process. No further action required. See Note 1.	
GoldSim V7.17.200	10344-7.17.200-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	
Image Pro Plus V4.1	10422-4.1-00	LLNL	Software procured with OCRWM funds not submitted to SCM. Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DR-88	This code was cancelled from qualification process. No further action required. See Note 1.	
MSTHAC V6.4.2	10419-6.4.2-00	LLNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DR-88	This code was cancelled from qualification process. No further action required. See Note 1.	
PATCH_FAIL_LAG V1.0	10532-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	SA 1-29-03

TABLE 1
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CODES THAT SUPPORT SSPA

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
PDFCDF V1.0	10558-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	SA 6-29-03
PREWAP V1.0	10533-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was qualified and baselined on 8/14/01.	
PROCESSBTC V1.0	10556-1.0-00	LANL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This coes was qualified and baselined on 12/7/01.	
REWRITE_PERCOLATION_DATA V1.0	10501-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was qualified and baselined on 8/10/01.	
SEEPAGEDLLMK2_UU V1.0	10534-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	
SEEPAGEDLLV2U V1.0	10535-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	
Soilexp V1.0	10492-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was qualified and baselined on 8/14/01.	SA 6-29-03

TABLE 1
BSC-01-D-088

CODES THAT SUPPORT SSPA

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
SZ_Convolute V2.1	10207-2.1-00	PA(LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DR-88	This code was cancelled from qualification process. No further action required. See Note 1.	SA 1-29-03
statistics V1.0	10651-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	This code was cancelled from qualification process. No further action required. See Note 1.	
Thermo-Calc VM	10170-M-00	LLNL	Software procured with OCRWM funds not submitted to SCM. Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DR-88	This code was qualified and baselined on 7/1/02.	
TRANSFORM_PER C_FILES_INTO_TABLES V1.0	10530-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	
WAPDEG V4.0	10000-4.0-02	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was qualified and baselined on 8/14/01.	
WinSASW V1.23	10588-1.23-00	URS	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 02-4	This code was qualified and baselined on 3/14/02.	SA 1-29-03

TABLE 1

BSC-01-D-088

CODES THAT SUPPORT SSPA

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
WRITEFILES V1.0	10527-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code is qualified and was baselined on 8/14/01.	SA 1-29-03
Writefiles_new V1.0	10560-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 01-6	This code was cancelled from qualification process. No further action required. See Note 1.	SA 1-29-03

Note 1: This software was used only in the SSPA. This version will not be carried forward to LA. Consequently, this software was cancelled in accordance with the provisions specified in TWP-MGR-MD-000014. An impact analysis attached to the Software Baseline Request for cancellation demonstrated that the cancellation did not adversely affect the quality for the Site Recommendation.

TABLE 2
BSC-01-D-088
CODES THAT SUPPORT TSPA-SR

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
Ashplume LV V1.4	10022-1.4LV-01	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	Supports TSPA-SR and LA. Code was qualified per para. 5.9 of AP-SI.1Q. Code qualified and baselined on 11/11/02	SA 1-29-03
DST_Interpolator V1.0	10423-1.0-00	SNL	Software was not obtained from SCM prior to use.	DIR 01-3 (CAR-002)	Supports TSPA-SR. User Request Submitted, software installed, and user request returned to SCM.	
FEHM V2.10NT	10086-2.10-02	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	Baselined into retirement 10/09/2002	
GTDist V1.0	10590-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	Supports TSPA-SR. This code was unqualified at the time it was used. The code is qualified and was baselined on 9/26/01	
HumIntInfDist V1.0	10589-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	Supports TSPA-SR. This code was unqualified at the time it was used. The code is qualified and was baselined on 9/24/01	
Seepagedll_v2_sens2 V1.0	10782-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	Performance Assessment (LV) Survey Response	Baselined into retirement 9/18/2002	
SHT_Interpolator V1.0	10424-1.0-00	SNL	Software was not obtained from SCM prior to use.	DIR 01-3 (CAR-002)	Supports TSPA-SR. User Request Submitted, software installed, and user request returned to SCM.	SA 1-29-03

TABLE 3
BSC-01-D-088
ADDITIONAL CODES ASSOCIATED WITH DR-088

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
Following Codes Support Data						
Chang V1.0	10805-1.0-00	LBNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist and LBNL Survey Response	Supports data that was used for TSPA-SR. Code qualified and baselined on 5/3/02.	SA 1-29-03
Corr.c V1.0	10806-1.0-00	LBNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist and LBNL Survey Response	Supports data that was used for TSPA-SR. Code qualified and baselined on 5/3/02.	
DATAVG V1.20	10726-1.20-00	SNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist	Baselined in to Retirement 9/6/02.	
DATAVG V1.27	10726-1.27-00	SNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist	Baselined in to Retirement 9/6/02.	
DATAVG V1.30	10726-1.30-00	SNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist	Supports data that will be used for LA. Code qualified and baselined on 7/25/02.	
Leng1 V1.0	10807-1.0-00	LBNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist and LBNL Survey Response	Supports data that was used for TSPA-SR. This code as qualified and baselined on 5/3/02.	SA 1-29-03

TABLE 3
BSC-01-D-088
ADDITIONAL CODES ASSOCIATED WITH DR-088

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
Rmang V1.0	10808-1.0-00	LBNL	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	AP-3.15Q Checklist and LBNL Survey Response	Supports data that was used for TSPA-SR. This code was qualified and baselined on 5/3/02.	SA 1-29-03
TCODMU V1.0	10563-1.0-00	PA (LV)	Software was not qualified or entered into the 5.10 process prior to use. Software was not obtained from SCM prior to use.	DIR 02-10	Supports data that was used for TSPA-SR and will be used for LA. This code was qualified and baselined on 6/26/02.	
Following Codes Procured and Not Used to Support SSPA, TSPA-SR, or Data						
Geochemist's Workbench	N/A	LLNL	Software procured with OCRWM funds not submitted to SCM.	LLNL Survey Response	Software license is under SCM control	
Fidap V8.0	10549-8.0-00	SNL	Software procured with OCRWM funds not submitted to SCM.	DR-88	Code cancelled from qualification process on 01/08/2002 because the team decided not to use this software. The Responsible Manager determined that the software was not used to support any quality affecting activities.	
Following Codes Do Not Have A Deficiency						
POST10K_BINS V1.0	10538-1.0-00	PA (LV)	None	DIR 01-6	This code is properly documented in an AMR. (MOL.20001208.0060) Only the data was used in SSPA, not the code.	
LAG_WPFAILURE_TIME V1.0	10531-1.0-00	PA (LV)	None	DIR 01-6	Baselined in to Retirement 10/31/2001	
WTRISE V1.0	10537-1.0-00	PA (LV)	None	DIR 01-6	This code is properly documented in an AMR. (MOL.20001208.0060) Only the data was used in SSPA, not the code.	SA 1-29-03

TABLE 3
BSC-01-D-088
ADDITIONAL CODES ASSOCIATED WITH DR-088

SOFTWARE NAME & VER	STN No (If Available)	RESP ORG	Deficiency	Source of Information	Status	Date Verified
Following Codes Names Are Not Complete Code Designators						
SEEPAGEDLL	N/A	PA (LV)	None	DIR 01-6	The software name and version are incomplete and could not be identified. The software baseline, the document and its Document Input Reference System (DIRS) were checked in an attempt to identify.	SK 1-28-03
Seepagedll2 V1.0	N/A	PA (LV)	None	DIR 01-6	The software name and version are incomplete and could not be identified. The software baseline, the document and its Document Input Reference System (DIRS) were checked in an attempt to identify.	
SEEPDLL V1.0	N/A	PA (LV)	None	DIR 01-6	The software name and version are incomplete and could not be identified. The software baseline, the document and its Document Input Reference System (DIRS) were checked in an attempt to identify.	SK 1-29-03

DR 088 and CAR 002 Extent of Condition Information

In order to determine the extent of condition for CAR 002 and DR 088, the lack of software configuration control for five situations involving quality-affecting software must be identified. The goal is to identify purchased, acquired, and/or developed software that should be under configuration control, but is not. . For purposes of this effort, software is considered under SCM configuration control if a Software Activity Number was obtained per AP-SI.1Q (i.e., SCM knows of the software). As a part of this effort, SCM will identify any cases where a Software Activity Number exists but media and supporting documentation has not been submitted to SCM.

Each organization must identify any software that falls into the following areas, taking into consideration the exemptions contained in the version of AP-SI.1Q, Section 2.1, Exemptions, which was current at the time the software was used. Exempted software need not be identified.

1. For the period of 12/15/1999 to 7/2/2001, identify any procured software used in quality-affecting work that was not under SCM configuration control. If there are any cases since 2 July, also identify those codes separately. The following are known examples of such software:

- Dictra V.20
- Thermo-Clac V.M
- Image Pro Plus V4.1
- Fidap V 8
- Fluent V 5.5

2. For the period of 12/15/1999 to 7/2/2001, identify any developed software used in quality-affecting work that was not under SCM configuration control. Software is considered under SCM configuration control if the media and associated documentation were submitted to SCM and the media was obtained from SCM for use. If there are any cases since 2 July, also identify those codes separately. The following are known examples:

- MSTHAC v6.4.2
- Soilxp v 1.0
- Seepagedll2 v1.0
- REWRITE_PERCOLATION_DATA v1/0
- WRITEFILES v1.0
- TRANSFORM_PERC_FILES_INTO_TABLES v1.0
- LAG_WPFAILURE_TIME v1.0
- PATCH_FAIL_LAG v1.0

- PREWAP v1.0
- SEEPAGEDLLV2UU v1.0
- SEEPAGEDLLMK2_UU v1.0
- WTRISE v1.0
- POST10K_BINS v1.0
- BATH_10 v1.0
- GoldSim v7.17.200
- PDFCDF v1.0
- WAPDEG v4.0 STN 10000-40-02
- PROCESSBTC
- SEEPDLL v1.0
- SEEPAGEDLL
- Writefiles_new v1.0
- FEHM v2.12
- GTDist
- HumIntInfDist
- statistics
- Extract_QNF

3. For the period 12/15/1999 to present, identify any modified software (software that was obtained from SCM but modified without version control processes applied per AP-SI.1Q) that was used in quality-affecting work. The following are known examples:

- Ashplume 1.4LV v1.0 (used on a Windows work station but only qualified for Sun workstation)
- Seepagedll_v2_sens2

4. For the period 6/30/1999 to 4/1/2001 (6/30/1999 to 2/7/2000 for scientific notebooks), identify any single-use routines used in quality-affecting work that were not documented in a technical product (including scientific notebooks active during the period), as allowed prior to the release of AP-SI1Q, Rev 3 or earlier, or documented in a DR-39 closeout package. Scientific notebooks that received an annual technical or closeout review that covered the 6/30/1999 to 2/7/2000 period do not require a separate review for this survey.

5. For the period 6/30/1999 to 4/1/2001 (6/30/1999 to 2/7/2000 for scientific notebooks), identify any single-use routines used in quality-affecting work that were documented in a technical product (including scientific notebooks active during the period), as allowed prior to the release of AP-SI1Q, Rev 3 or earlier, or documented in a DR-39 closeout package but were later used in a different technical product and neither documented as a single use routine in the different technical product or submitted to SCM as developed code. The following are known examples:

- future_cs-scnf.f
- future_cs-hlw.f

Notice of Management Directed Stand-Down

Due to an accumulation of issues within the Yucca Mountain Project regarding the status of quality-affecting software being used in technical products, as BSC's General Manager, I am directing a limited management stand-down of software development effective Thursday June 7, 2001. Other management actions are underway to address quality issues pertaining to models. Additional information will be communicated regarding those actions in various forms as appropriate.

Development of new quality-affecting software (i.e., software that has not achieved control point 1 as defined in APSI.1Q) or modification of existing quality-affecting software on the Project will cease until rescission criteria have been met. The use of existing software that is baselined or controlled under AP-SI.1Q (including Section 5.10 controls for the use of unqualified software) is not a part of this stand-down directive.

Development and modification work on software may continue for software directly required in development or support of the SSPA and SR subject to applicable procedural controls and any commitments made in applicable deficiency documents. Software for data collection is a special case. Upon identification of the use of unqualified software in data collection or other activities that, if those activities were to stop, would result in irretrievable loss of project data, immediately notify the Manager of Projects (Nancy Williams) for direction as to how to proceed. This shall also result in the initiation of a Deficiency Report. Only the Manager of Projects or I may grant exemptions to the stand-down and approve resumption of development or modification activities for specific software. Exemption requests will be in writing and considered on a case-by-case basis and will be granted upon sufficient justification indicating that the requirements of APSI.1Q can and will be met. The following information must accompany each request:

- Identification of the schedule and scope of activity(s) for which the request is being made (i.e., development or modification).
- *Identification of the impact(s) of not resuming the identified work on the schedule requested as well as the risks of resuming the activity(s).*
- Identification of any code by name, version, and Software Tracking Number (STN).
- Statement by the requesting manager indicating that indoctrination of those persons to be used in the identified activity(s) has been conducted. Indoctrination should include presentation of applicable procedure controls, management's expectations for compliance, and management's definition of the consequences of non-compliance.
- Statement by the responsible project manager that resources assigned will be adequate to achieve required quality while meeting schedules.

There are going to be questions raised as to the scope of the stand-down. Supervisors and managers shall obtain clarification from BSC Management and document unanticipated concerns and issues.

Rescission of the management stand-down will be directed when my confidence is restored in our ability to develop, modify, use, and manage software in full compliance with the requirements of the QARD.

Concurred by Robert W. Craig, Technical Project Officer, U.S. Geological Survey on June 7, 2001.

Approved by Kennon G. Hess, President and General Manager, Bechtel SAIC Company, LLC on June 7, 2001.

DR BSC-01-D-088
Attachment 3
1 Page



November 16, 2001

QA:QA

To Distribution:

CONTRACT NO. DE-AC08-01RW12101 - MANAGEMENT DIRECTED SOFTWARE STAND-DOWN

As the Project's focus changes to License Application (LA) documents, everyone should be mindful that the management directed stand-down for software is still in effect. Software development and modification is only approved for software supporting Supplemental Site Performance Assessment/Site Recommendation (SSPA/SR) products and the few exemptions from the stand-down that have been granted to date. As you proceed with your work for LA, the stand-down order requires a software developer to request an exemption before developing or modifying software. The stand-down order provides details concerning the information that must accompany any request for exemption.

Please access http://m-o.vmp.gov/html/prod/db_web/bsctoday/mgmtnotice.htm for the full notice on the software stand-down. A copy of the approved exemption should accompany the submittal of documents for Information Technology Software Management Analyst (ITSMA) review.

There is another software issue that needs to be emphasized at this time that is also related to LA documents. The provision in AP-SI.1Q for the interim use of unqualified software was limited to those that support SR products. This means that all software which supports an LA product must be qualified before any of the output from the software can be produced for use in an LA supporting document. In order to meet this requirement, software qualification should be initiated as soon as the need for new software or a software revision is identified and completed so that the needed software output can be generated after qualification, the document can be finalized, and reviewed/approved in time to meet the document's due date.

These measures are necessary to provide a strong pedigree for the Project's software that supports our Science and Engineering products. If you have any questions or comments, please direct them to Robert Wemheuer at 295-7590 or Mike Jaeger at 295-4245.

Nancy Williams
for Nancy Williams
Manager of Projects

11/16/01
Date Signed

MAJ/dsf - 1126010517



Interoffice Memorandum

QA: QA

To: Michael Jaeger, Steve Splawn No.: #0322021923
From: Nancy Williams *NW* Date: April 5, 2002
Re: Actions to Preclude Recurrence for CC:
BSC-01-D-088 (DR88)

To preclude recurrence of causes identified in DR 88, BSC has committed that at least until September 1, 2002, all new software activities will be reviewed to ensure that all individuals involved with software development, use, qualification, review, verification, and approval, have completed AP-SI.1Q training.

Michael Jaeger is assigned to ensure these reviews are conducted as described in the March 21, 2002 response to DR88. No software activity number will be assigned before verification of training. Software activities in progress before the date of this memorandum shall be verified before completing the next control point. Training verification shall be documented in an email to SCM from Mr. Jaeger or a member of his staff. Mr. Jaeger will identify members of his staff authorized to perform the verification and provide their names via email to Steve Splawn.

SCM is responsible to inform Michael Jaeger of all new software activities and ensure that software activities have been reviewed as required above, before completion of Control Point 1, Control Point 2, or baselining.

The above requirements become effective April 7, 2002 and shall remain in effect at least until September 1, 2002.



Interoffice Memorandum

QA: NA

To: Michael A. Jaeger
From: Nancy H. Williams *NHW*
Re: Software Stand-Down,
Self-Assessments
No.: #503022520
Date: 05/08/02
CC: Robert W. Andrews
Charles Sharrocks

BSC-01-C-002 (CAR-002) commits the project to enhanced management oversight of the software development process for YMP. Currently, the project allows exemptions to the limited management stand-down issued by the BSC General Manager on June 4, 2001, and a number of exemptions have been granted. To provide management more information on the implementation of the stand-down process, Michael Jaeger is assigned to ensure that a self-assessment is performed that evaluates the limited management stand-down.

The self assessment should evaluate the implementation of AP-SL1Q and the stand-down exemption process by each organization involved in software development, i.e. Performance Assessment including National Laboratories and the USGS, Engineering, and the CIO support organizations. The Manager of Projects will review and approve the proposed personnel for the self-assessment team to ensure the right technical expertise is on the team.

The self-assessment should evaluate:

1. Whether software that was or is being developed for License Application received an exemption with the proper authorization, as required by the stand-down announcement, prior to initiation of software development activities.
2. Whether organizations implemented all their responsibilities associated with the exemption process,
3. Whether organizations/individuals took steps to assure that AP-SL1Q would be followed so problems encountered in CAR-002 were not repeated,
4. Whether software verification documentation developed during the stand-down complies with AP-SL1Q,
5. Whether personnel performing software development have received training, and
6. Whether deficiency Reports were written when required.

The self-assessment due date is July 1, 2002.

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Attachment 6
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