



Reply to:

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Las Vegas, Nevada 89119
Tel: (702) 388-6125
FTS: 598-6125

MEMORANDUM

DATE: March 16, 1989

FOR: John J. Linehan, Director, Repository Licensing Project
Directorate, Division of High-Level Waste Management,
M/S 4-H-3

FROM: John W. Gilray, Sr. ^{JWA} OR - YMP

SUBJECT: YMP Site Report for the month of February, 1989, and
through to March 10, 1989

The following report pertains to the QA, waste package and surface facility activities associated with the Yucca Mountain Project for the month of February.

I. QUALITY ASSURANCE

A. DOE Headquarters surveillance of YMP's implementation of the OAF-88-9 Rev. 2 and the Project's readiness to start Title II design of the ESF was conducted by a team of four QA specialists and four technical specialists from March 7 to March 9, 1989. The surveillance team identified the following as proposed significant deficiencies.

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1. There was insufficient documented evidence to determine adequacy and acceptability of technical process and technical basis for generating baseline documents (i.e., Systems Requirements document/YMP-MGDS; SDRD; and lower tier baseline documents.

2. Formal procedures were found lacking in describing technical and QA preparation, review and approval of technical documents. The team believes that lower tier technical documents should be reviewed against the next higher tier technical document for adequate and accurate inclusion of requirements and controls from this higher tier document.

3. The current hierarchy of baseline documents are not consistent with 88-3, "Systems Engineering Management Plan".

4. Organizational interfaces and interactions between different participating organizations (subcontractors) are not clearly described in procedures.

OR comments on this surveillance:

1. The DOE surveillance team found similar procedural deficiencies at DOE headquarters in their preparation of the top tier General Requirements document.

2. The team did not identify any technical deficiencies in the baseline documents both at headquarters and projects.

3. The team findings of the Projects procedural deficiencies were previously known to the project management and reported to DOE headquarters but were not recorded on Standard Deficiency Reports.

B. Status of QA Project's Surveillance of Participants

Fenix & Scisson, Inc. (F&S), Holmes and Narver, Inc. (H&N), Lawrence Livermore (LLNL), Los Alamos (LANL), and Sandia (SNL): All QA and design procedures necessary to start ESF Title II have been reviewed by QA projects and found acceptable except for some procedural corrections that are underway for H&N, LANL, and SNL. The surveillance of training records, and qualification of personnel and the verification of proper close-out of pertinent corrective actions and standard deficiency reports have been completed and found acceptable.

The surveillance of the U.S. Geological Survey (USGS) QA and design procedures, the training and qualification of personnel and the verification of proper close-out of pertinent corrective actions and standard deficiency reports is presently underway and a similar surveillance of Reynolds Electric and Engineering Co., Inc. (REECO) is scheduled for the week of March 20, 1989.

The OR has periodically observed these surveillances and found they were being conducted in an acceptable manner using detailed check lists which keys each applicable 88-9 control against an equivalent control in each procedure.

NOTE: The participants QA procedures for computer software programs have not been included in those required to be complete prior to the start of ESF Title II design. Precautions are being taken by QA Projects to assure no software programs are used prior to the project's acceptance of the control procedures. QA Projects are presently reviewing F&S and H&N software procedures and are expected to be approved within two weeks.

C. F&S Gold Star Audit

QA Projects is planning on conducting a QA programmatic audit of F&S April 10 through 14, 1989 to verify that F&S QA Program (implementing procedures) meets the requirements of NNWSI QAP-88-9 Rev. 2 and to verify the adequacy of implementation of the QA Program requirements. No technical work will be audited since no ESF Title II work is in progress. Again QA Project has just completed a 100% review of those F&S QA and design procedures necessary to start ESF Title II to assure they meet NNWSI QAP-88-9.

The schedule for conducting other Gold Star audits is addressed in Enclosure 1.

D. Software QA Program

During the observation of YMP-QA audit of F&S last November 7 through 14, 1988, it was reported that commercial grade software programs were used on ESF Title I design activities without proper verification and configuration management controls. This condition was described on WMPD Standard Deficiency Report No. 267 and a response provided to YMP by F&S through their letter of January 23, 1989 (Enclosure 2). Highlights of corrective actions are:

- Identify all computer software used in Title I design
- Identify all output documents utilizing computer software
- Identify programs that will require verification for Title II design
- Verify documentation
- Assess adverse effects

- Correct adverse effects
- If any deficiencies are identified, perform corrective actions as required
- Develop a Configuration Management System for computer software and train the F&S personnel to this program prior to start of Title II engineering

These actions are scheduled to be complete by February 28, 1989. QA Projects intends to verify the proper close-out of these corrective actions. Also as reported earlier QAP Projects is presently reviewing F&S software procedure.

QA Projects is aware of the possibility that other participants may have generated Title I designs and engineering data using commercial or unverified computer software programs and is therefore developing actions to investigate and identify areas of deficiencies.

II. WASTE PACKAGES AND SURFACE FACILITIES

Preliminary discussions were held with YMP personnel regarding the status of programs pertaining to waste packages and surface facilities. The long range planning and schedules have been developed from the work breakdown structure for these two work activities which are presently going through peer reviews prior to release. Additional discussions are planned to identify the ongoing activities pertaining to waste packages and surface facilities including the status of these activities. These activities are now under the responsibility of Leo Little who has just recently been appointed the Director of the Division of Engineering and Development replacing Larry Skousen who recently left YMP.

The waste package testing in G-Tunnel is in the phased power reduction stage. Projects states that the data acquisition from this testing has been encouraging. LLNL has received a request to brief DOE headquarters on waste package isolation impacts.

III. MISCELLANEOUS

- ♦ The results of the investigation pertaining to the Singer allegation are being evaluated by QA Projects. A report of this investigation is expected to be submitted by the QA organization within two months.
- ♦ Copies of QA procedures were submitted to J. Conway per his request.
- ♦ It was decided not to do a review of the F&S QA program and design controls for the start of ESF Title II design work due to the proposed planned Gold Star audit of F&S.

IV. ACTION ITEMS FOR MARCH AND APRIL

- ♦ Conduct a review of the hierarchy of baseline documents necessary to start ESF Title II and the documented QA, management, and process controls used in the preparation, review approval and control of these documents.
- ♦ Continue observing the QA Projects surveillances of the participants.
- ♦ Participate in the QA monthly QA meeting at Las Vegas on March 22, 1989.
- ♦ Attend the ASQC Energy Division on QA For Waste Management From the Project Manager's Perspective, April 2 through 5, 1989.
- ♦ Conduct more in-depth discussions with YMP technical individuals responsible for waste packages and surface facilities regarding status, schedules and any major problem areas pertaining to these two areas of activity.

cc: With enclosures: K. Stablein, R. E. Adler, J. E. Latz,
J. Kennedy

Without enclosures: C. P. Gertz, R. R. Loux, M. Glora,
D. M. Kunihiro, R. E. Browning, G. Cook,
L. Kovach, S. Gagner, K. Turner,
H. Thompson, H. Denton, R. Bernero

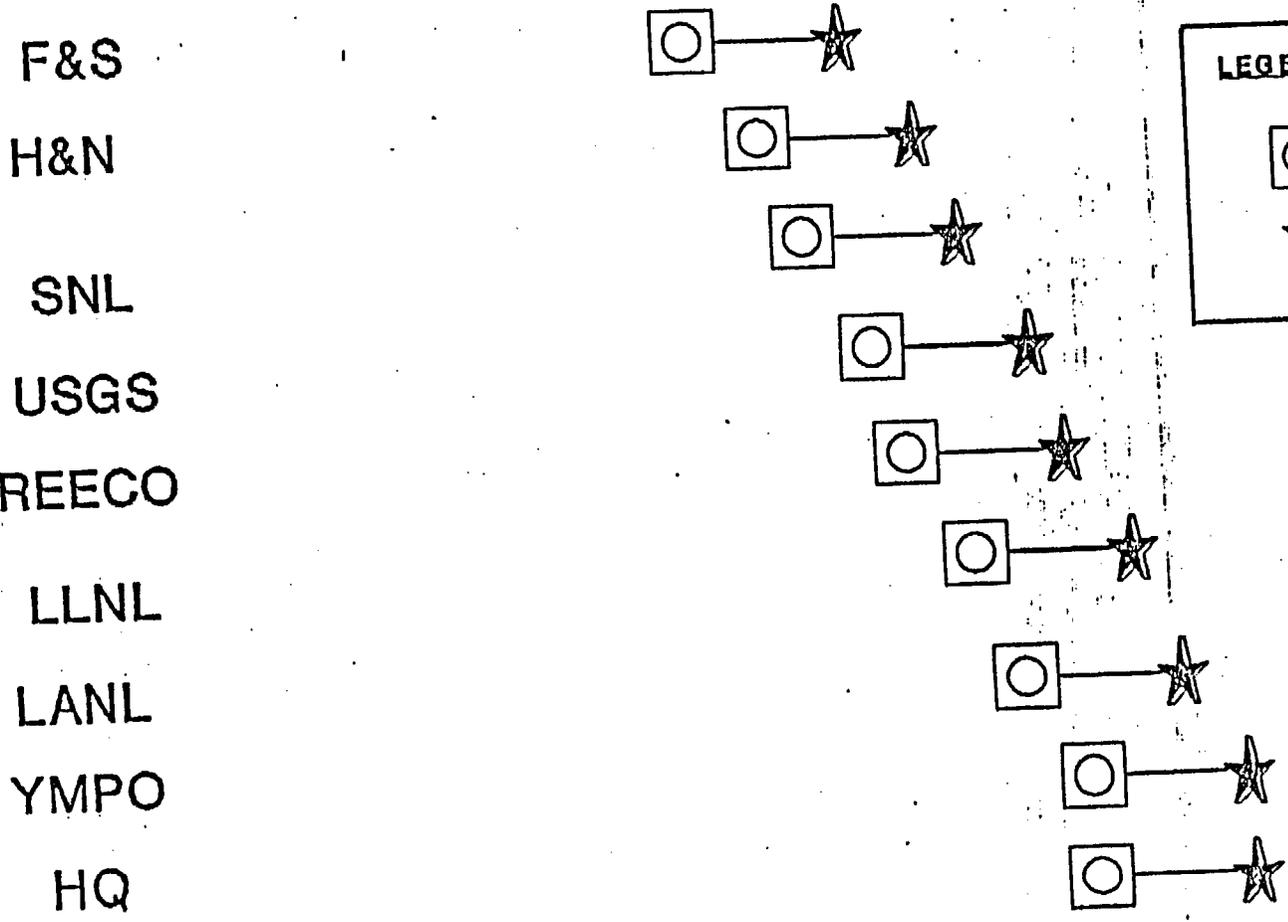
Enclosures: (1) QA Program Qualification, (2) Correspondence
pertaining to SDR 267 regarding F&S software QA problem

Enclosure I

QA PROGRAM QUALIFICATION

REVISED "GOLD STAR" - PRELIMINARY 31 JAN 89

1989 | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT



LEGEND:

-  BEGIN GOLD STAR AUDIT
-  GOLD STAR ACCEPTANCE

Enclosure #2.



Department of Energy

Nevada Operations Office
P. O. Box 98518
Las Vegas, NV 89193-8518

WBS #1.2.9.3
"QA"

FEB 24 1989

"INFORMAL COMMUNICATION"

Richard L. Bullock
Technical Project Officer for Yucca Mountain Project
Fenix & Scisson, Inc.
101 Convention Center Drive
Phase II, Suite P-250
M/S 403
Las Vegas, NV 89109

ACCEPTANCE OF RESPONSES TO STANDARD DEFICIENCY REPORTS (SDRs) RESULTING FROM YUCCA MOUNTAIN PROJECT OFFICE (PROJECT OFFICE) QUALITY ASSURANCE (QA) AUDIT S89-02 OF FENIX & SCISSON, INC. (F&S)

The Project Office QA staff has evaluated and accepted your responses to SDRs 261 through 269 generated as a result of Project Office QA Audit S89-02 of F&S. The SDRs will be closed after verification of satisfactory completion of the specified corrective actions. Copies of the SDRs are enclosed for your information.

Verification of completion of your corrective action will be performed after the effective dates that were provided. Any extension to these due dates must be requested in writing with appropriate justification prior to the due date. Please send copies of the extension request to Nita J. Brogan, Science Applications International Corporation, 101 Convention Center Drive, Las Vegas, Nevada 89109, and Ralph W. Gray, U.S. Department of Energy, P.O. Box 98518, Las Vegas, Nevada 89193.

If you have any questions, please contact Wendell B. Mansel of my staff at 794-7945 or Stephen R. Dana of Science Applications International Corporation at 794-7176.

James Blaylock
James Blaylock
Project Quality Manager
Yucca Mountain Project Office

YMP:JB-2250

Enclosures:
SDR 261 through 269

Richard L. Bullock

-2-

FEB 24 1989

cc w/encls:

N. J. Brogan, SAIC, Las Vegas, NV
B. A. Tabaka, SAIC, Las Vegas, NV
R. W. Gray, MED, NV
W. B. Mansel, YMP, NV
C. E. Hampton, YMP, NV

cc w/o encls:

Ralph Stein, HQ (RW-30) FORS
L. H. Barrett, HQ (RW-3) FORS
M. J. Regenda, F&S, Las Vegas, NV
S. H. Klein, SAIC, Las Vegas, NV
H. H. Caldwell, SAIC, Las Vegas, NV
E. P. Ripley, SAIC, Las Vegas, NV
S. R. Dana, SAIC, Las Vegas, NV
C. P. Gertz, YMP, NV
M. B. Blanchard, YMP, NV
W. R. Dixon, YMP, NV
E. L. Wilmot, YMP, NV

QA RECEIVED

FEB 28 1989

WMPO STANDARD DEFICIENCY REPORT

N-QA-038
3/87

Completed by Originating QA Organization

1 Date Dec 05, 1988	2 Severity Level <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3	Page 1 of 3
3 Discovered During F&S Audit S89-02	3a Identified By K. Wolverton	3b Branch Chief Concurrence Date
4 SDR No. 267		Rev. 0
5 Organization Fenix & Scisson	6 Person(s) Contacted B. Chytrowski/J. Grenia/B. Stanley	7 Response Due Date is 20 Working Days from Date of Transmittal
8 Requirement (Audit Checklist Reference, if Applicable) (Audit Checklist Item 1-30) NNWSI QA Plan, NVO-196-17, Rev. 5, Section III, "Scientific Investigation and Design Control":		
9 Deficiency Contrary to the above, F&S NNWSI Quality Assurance Program Plan, Rev. 3, Section 3, para. 3.3.2, exempts commercial software from the documentation requirements stated in Block 8. Therefore, F&S has not documented nor		
10 Recommended Action(s): <input checked="" type="checkbox"/> Remedial <input checked="" type="checkbox"/> Investigative <input checked="" type="checkbox"/> Corrective 1. Revise F&S QAPP, Section 3, para. 3.3, to comply with the latest revision of NNWSI/88-9 and Appendix H requirements.		

11 QAE/Lead Auditor Date <i>S. Dana 12/15/88</i>	12 Branch Manager Date <i>Attorney for 12/15/88</i>	13 Project Quality Mgr. Date <i>James Blaylock 12/19/88</i>
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14 Remedial/Investigative Action(s) See Attachment No. 1	15 Effective Date <u>February 28, 1989</u>
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16 Cause of the Condition & Corrective Action to Prevent Recurrence See Attachment No. 1	17 Effective Date <u>February 28, 1989</u>
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18 Signature/Date
B.R. [Signature] 1/23/89, Project Design Mgr

19 Response	<input checked="" type="checkbox"/> Accept <input type="checkbox"/> Reject	<input type="checkbox"/> Amended Response	QAE/Lead Auditor/Date <i>S. Dana 1/25/89</i>	Branch Manager/Date <i>J. Clark for HHC 1/26/89</i>
20 Amended Response	<input type="checkbox"/> Accept <input type="checkbox"/> Reject		QAE/Lead Auditor/Date	Branch Manager/Date
21 Verification	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory		QAE/Lead Auditor/Date	Branch Manager/Date

22 Remarks

23 QA CLOSURE	QAE/Lead Auditor/Date	Branch Manager/Date	PQM/Date
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WMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET

N-QA-038
10/86

SDR No. 267

Rev. 0

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8 Requirement (continued)

1. Para. 3.3.2

"Documentation of computer software shall include the following, as a minimum:

- o Software Summary;
- o Description of mathematical models and numerical methods;
- o User's manual;
- o Code assessment and support; and
- o Continuing documentation and code listings."

2. Para. 3.3.3

"F&S will institute a software configuration management program appropriate to the projects they conduct and will provide documentation of this program to the Records Management System (RMS). The minimum requirements for this configuration management program will be: (1) the inclusion of a unique identification, including software version numbers whenever feasible, in the output; (2) listing of the software; and (3) a brief chronology of the software versions, including descriptions of the changes made between versions.

9 Deficiency (continued)

obtained documentation from the supplier concerning commercial software used during Title I design activities. Furthermore, none of the commercial software has been verified in accordance with NNWSI-SOP-03-02, Rev. 0, "Software Quality Assurance". During interviews with F&S design personnel, it was stated that all software utilized by F&S during Title I design was commercially produced. It was also stated that they (F&S) had not instituted a software configuration program since they have only utilized commercial software.

10 Recommended Actions (continued)

2. Identify all software used in design activities.
3. Design output based on software identified above should not be used for Title II activities until all corrective actions associated with this SDR are complete and approved by the Project Office.
3. Develop a plan to evaluate all previous design activities to assess any adverse effects on completed activities as well as design activities in process. The plan should be provided with response to the SDR.
4. If any deficiencies are identified, perform corrective action as required.
5. Initiate the configuration management system for computer software utilized to date in accordance with current Project Office requirements.



WMPO STANDARD DEFICIENCY REPORT
CONTINUATION SHEET

N-QA-038
10/86

SDR No. 267

Rev. 0

Page 3 of 3

10 Recommended Actions (continued)

6. Train appropriate personnel to revised programmatic requirements.

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... only used for commercial

14. Remedial/Investigative Action(s)

- ✓(a) F&S QAPP Section 3, para. 3.3 has been revised to comply to NNWSI/88-9, Rev. 2 and Appendix H and has been sent to DOE for approval. (Recommended action number 1)
- (b) All software used in the design will be identified. (Recommended action number 2)
- (c) Design Output based on software identified above will not be finalized and complete until this verification program is in place and implemented. "In all cases, the verification and validation of software shall be completed prior to relying on the software to support the license application." (NNWSI/88-9, Rev. 2, para. 3.1.6) (Recommended action number 3a)
- (d) Plan for evaluation of design activities:
 - SCAP - All computer software used in Title I design will be identified
 - Identify all output documents utilizing computer software
 - SPAP - Identify programs that will require verification for Title II design
 - Verify documentation
 - Assess adverse effects (if any)
 - Correct adverse effects
 - (Recommended action number 3b)
- (e) If any deficiencies are identified, perform corrective actions as required. (Recommended action number 4)
- SCAP (f) The Configuration Management System for computer software has been initiated and will be completed prior to start of Title II engineering. (Recommended action number 5)
- (g) Personnel will be trained to the Configuration Management System. (Recommended action number 6)

15. Effective date: February 28, 1989

16. Cause of the Condition and Corrective Action to Prevent Recurrence

Cause: Existing QAPP did not conform to NVO-196-17 because F&S misinterpreted the requirements related to commercial Computer Codes.

16. (Continued)

Corrective action: The QAPP has been revised and rewritten to conform to 88-9, Rev. 2 and Appendix H and has been sent to DOE for approval. Also, the Configuration Management System to implement the NNWSI/88-9 requirements is being developed and will be issued and personnel will be trained.

17. Effective date: February 28, 1989

FENIX & SCISSON, INC.
YUCCA MOUNTAIN PROJECT OFFICE
101 CONVENTION CENTER DRIVE • SUITE P250
LAS VEGAS, NEVADA 89109
(702) 794-7979

WBS 1.2.9
QA

ADDRESS REPLY TO: FS-YMP-1198

January 23, 1989

Carl P. Gertz, Project Manager
Yucca Mountain Project Office
U. S. Department of Energy
Nevada Operations Office
P. O. Box 98518
Las Vegas, Nevada 89193-8518

ATTN: J. Blaylock, Project Quality Manager

YUCCA MOUNTAIN PROJECT OFFICE (PROJECT OFFICE) QUALITY ASSURANCE (QA)
STANDARD DEFICIENCY REPORTS (SDRS) RESULTING FROM AUDIT S89-02 OF FENIX &
SCISSON, INC., (F&S) SUPPORT OF THE YUCCA MOUNTAIN PROJECT (YMP) (YMPO
ACTION ITEM NO. NN1-1989-0678)

Reference: DOE/YMP Letter YMP:JB-1111, dated December 21, 1988, J.
Blaylock to R. L. Bullock

Enclosed are the F&S responses to SDRs No. 261 through 269.

If there are any questions, please contact Mr. M. J. Regenda, Manager of
the Quality Assurance Division, at 794-7226.


J. A. CROSS
GENERAL MANAGER

JAC:MJR:mjh

Enclosures

cc: H. H. Caldwell, SAIC, w/enc.
N. J. Brogan, SAIC, w/original enclosures
R. W. Gray, MED, DOE, w/enc
A. D. Boyce, MED, DOE, w/enc.

Rec'd 1/23/89
nh

FENIX & SCISSON, INC.

C. P. Gertz
FS-YMP-1198
Page 2

bcc: D. L. Lockwood, w/enc.
P. K. Ortego, w/enc.
R. L. Bullock, w/enc.
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B. R. Chytrowski, w/enc.
H. L. Jacocks, w/enc.
J. L. Rue, w/enc.
J. M. Johnson, w/enc.
D. J. Tunney, w/enc.
Audit File S89-02, w/enc.
F&S YMP QA Files, w/o enc.
F&SRC, w/enc.