see pocket 6 for enclosure

WM Record File 102

WM Project 16
Docket No.
PDR ✓
LPDR ✓

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Distribution: Linehan
REB MJB JOB MRK JTG HJM
DEM CFR Giarratana
(Return to WM, 623-SS) Bilhorn
Johnson

WM DOCKET CONTROL
CENTER

MAY 17 1985

'85 MAY 20 A11:25

MEMORANDUM FOR: Robert E. Browning, Director
Division of Waste Management

FROM: Tilak R. Verma, Senior On-Site
Licensing Representative

SUBJECT: SRP SITE REPORT FOR THE WEEKS OF MAY 6
AND MAY 13, 1985

1. Attended a Quality Assurance Audit of Morrison-Knudsen (M-K) in Boise, Idaho. M-K is a sub-contractor to Fluor Engineers, Inc., A/E for Repository Design in Salt. The QA audit was conducted by Fluor and it focused primarily on design and document control activities. I was invited as a NRC observer for the audit. A copy of the checklist (with my notes on it) along with the relevant portions of QA Manual and Project Procedure Manual is attached for your information. A copy of the audit report prepared by the Fluor Audit Team is also attached. I have discussed the results of the QA audit with Susan Bilhorn of WMRP.

2. I have received a draft copy of Surface-Based Test Plan for Deaf Smith County Site in Texas. I am in the process of reviewing it and then plan to discuss it with Salt Team Members at the NRC-HQ. The final document will be made available to NRC as a support document for SCP.

3. A copy of "Schemastic Hierarchy of Salt Repository Project Activities and Documentation" is attached for your information. This could be very useful information for planning DOE-NRC interactions and prelicensing consultation.

Tilak R. Verma
Tilak R. Verma
Senior On-Site Licensing
Representative, SRP

Attachments

cc: M. Bell
J. Bunting
H. Miller
M. Knapp
J. Greeves
J. Linehan
R. Johnson
J. Giarratana
S. Bilhorn
R. Cook
P. Prestholt

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PDR WASTE
WM-16 PDR

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dl memo to REB
fm. Verma 5/17/85
106

U.S. DEPARTMENT OF ENERGY
Nuclear Waste Repository in Salt
Contract DE-AC02-83WM46656

FLUOR ENGINEERS, INC.
Advanced Technology Division
Fluor Contract 839704

QUALITY ASSURANCE AUDIT REPORT NO SP02-85
DESIGN AND DOCUMENT CONTROL ACTIVITIES

Conducted: May 7 and 8, 1985

Auditors: W.E. Underwood
J.R. Fitch

Observers: L.A. Parys DOE
T.Verma NRC

Contacted:

Morrison-Knudsen Personnel	
Quality Assurance	D.R. Bledsoe
Engineering Manager	R.W. Whiton
Staff Engineer	D. Rogers
Staff Engineer	W.R. Kennedy
Senior Staff Engineer	J.J. Sinsky
Document Control Coordinator	Michelle L. Paurley

Scope:

The noted Morrison-Knudsen Salt Project Team Members were interviewed to assess the degree of compliance, implementation, and effectiveness to Salt Project requirements as defined in the M-K Salt Project Procedure Manual, M-K Quality Assurance Manual, and M-K Quality Assurance Procedures. Major areas covered during the performance of this audit included:

1) Design Control
2) Procurement Document Control
3) Instructions and Procedures
4) Document Control
5) Design Verification
6) Computer Codes and Calculations
7) Engineering Study Reports

The following areas were also included in the audit checklist, but were judged not auditable or applicable due to insufficient activity at this stage of the project:

1) Design verification items per checklist numbers 4,25 and 26

2) Resolution of disagreements between reviewer and originator of documents per checklist item 14
3) Alternate calculations per checklist item 15
4) Voided drawing requirements per checklist item 20
5) Revisions to reports per checklist item 21
6) Documents issued external to originating discipline per checklist item 24

Results

One discrepancy (Finding) was identified and recorded as noted below-

Findings:

1) Checklist item 18, based on PPM paragraph 6.4.3 states that initials and dates of reviewer of calculations shall be entered on calculation sheet. Contrary to this requirement calculation item number 3 for diesel fuel supply system has not been completed and/or reviewed/checked even though the results were reported/used in the Utility Service Entrance in Boreholes report.

   It should be noted that corrective action was taken in that these calculations were completed and checked prior to audit completion.

Three observations were identified and recorded as noted below-

Observations:

1) Checklist item number 1, based on QAM paragraph 3.2.2, discusses changes to approved documents. Response to this audit question made reference to PPM paragraph 6.8.1g which left doubt as to who provided final approval status. Final approval statusing is by DOE. Paragraph 6.8.1g should be modified to indicate this position

2) Checklist items 12 & 13, based on QAP 3.3 "Design Verification", documentation provided to show compliance to these paragraphs was a test case situation which addressed comments on a report only and did not constitute a design document review as intended by QAP 3.3. Also M-K has issued to Fluor a position paper on Verification and Reviews (copy attached) which recommends that the Independent Review requirements be satisfied by the DOE/ONWI review activity.

Recommendation: It is recommended that QAP 3.3 be either rescinded, modified, or applicable positions written into New Engineering Procedure Manual until such time as Position document has DOE resolution.

3) Checklist Items 17 & 18, based on PPM Paragraphs 6.4.1 and 6.4.3, require that calculations shall be titled as to scope and objectives. This activity is adequately covered, however, no reference is shown on calculations Lead Sheet as to which report calculation is being prepared for.

Recommendation: The Calculation Lead Sheet should reference the report or document to which it is applicable and/or the published reports should have the calculation number entered along or near calculation title.

W.E. Underwood
Project Quality Assurance Manager

J.R. Fitch
Manager, Columbus Operations

CONTRACTORS
ENGINEERS
DEVELOPERS

MORRISON-KNUDSEN COMPANY, INC.

EXECUTIVE OFFICE
MORRISON-KNUDSEN PLAZA
P.O. BOX 7808 / BOISE, IDAHO 83729 / U.S.A.
PHONE. (208) 386-5000 / TELEX: 368439

MBFI-314C

REFERENCE. U S. DEPARTMENT OF ENERGY
NUCLEAR WASTE REPOSITORY IN SALT
CONTRACT DE-AC02-83WM46656
FLUOR CONTRACT 839704-9-K014
M-K WORK ORDER 1638

April 29, 1985

Mr. T. O. Mallonee (+2)
Fluor Technology, Inc.
3333 Michelson Drive
Irvine, CA 92730

Subject: Verification and Reviews

Dear Mr. Mallonee:

The Salt Project Statement of Work (SOW) Attachment C, Quality Assurance Specifications Paragraph 1.5, "Verification and Review" states in part

> "As a minimum, all design reports...shall undergo independent technical verification/review. That is, independent technical verification/review shall be performed by any competent individual(s) or group(s) other than those who performed the original design but who may be from the same organization. These verification reviews shall supplement and not replace the design review/peer review to be conducted in response to Basic Requirement 3 and Supplement 3S-1 of NQA-1."

Additionally, SOW Paragraph 4.1.6, "Engineering Design Studies" states in part

> "... studies shall be documented in comprehensive and free-standing design reports."

Therefore, as described above, design reports are engineering studies. These studies are an examination and analysis of subjects identified in the various SOW Paragraphs. ANSI/ASME NQA-1 does not require that design analyses be verified, but that they be

> "... sufficiently detailed as to purpose, method, assumptions, design input, references, and units such that a person technically qualified in the subject can review and understand the analyses and verify the adequacy of the results without recourse to the originator."

Based on these definitions, it is M-K's position that study reports are subject only to the independent technical verification/review described by SOW Paragraph 1.5 of Attachment C, shown above, and not design verification as described by Basic Requirement 3 and Supplement 3S-1 of NQA-1.

The requirements for conducting and documenting the independent technical verification/review required by the SOW are not defined, therefore, it is also M-K's position that the review of M-K study reports conducted by ONWI constitutes an independent technical review. These reviews are documented, responded to, and applicable comments are incoroprated into the reports.

If you disagree with the M-K position on the review of these reports, please advise me of the action you wish M-K to take.

Sincerely,

for P. W. McKie
Project Manager

DRB/daB

cc: K. A. MacDonald
R. W. Whiton
F. L. Wilson
K. K. Bhattacharyya
J. M. Taipale
D. R. Bledsoe
Project File
Reading File
Document Control

THIS PAGE IS AN OVERSIZED DRAWING OR FIGURE,

THAT CAN BE VIEWED AT THE RECORD TITLED:

"SCHEMATIC HIERARCHY OF SALT REPOSITORY PROJECT ACTIVITIES AND DOCUMENTATION"

WITHIN THIS PACKAGE..

D-01

bcc: JKClark
JRFitch, Fluor Columbus
GOFredrickson
KAMacDonald
JVParish
RDSnell
DESahlin
TJReese, DOE
PIC
RF

FLUOR ENGINEERS, INC.
ADVANCED TECHNOLOGY DIVISION

3333 MICHELSON DRIVE
IRVINE, CALIFORNIA
TELEPHONE: (714) 553-5000
TELEX: 18-2294

REPLY TO:
P.O. BOX C-11944
SANTA ANA, CA 92711-1944

April 29, 1985

Reference: Nuclear Waste Repository in Salt
Contract DE-AC02-83WM46656
Fluor Contract 839704

Letter No: FIMB-163C

Morrison-Knudsen Company, Inc.
Four Morrison-Knudsen Plaza
P.O. Box 7808
Boise, Idaho 83729

Attention: Mr. P. W. McKie
Project Manager

Gentlemen:

Fluor Quality Assurance Audit of Morrison-Knudsen's
Salt Project Task Force-Audit No. SP02-85
Design and Document Control Activities

An audit of the Morrison-Knudsen Salt Project Task Force regarding Design and Document Control Activities is scheduled for May 7 and 8, 1985. The scope of the audit will include an evaluation of the Design and Document Control Activities as outlined in the QA Manual and Project Procedure Manual sections related to these subjects. Audit will be performed using a checklist prepared from requirements in the latest revisions of these Morrison-Knudsen documents.

Audit team members will be as follows:

W. E. Underwood	Audit Team Leader	Fluor Irvine
J. R. Fitch	Auditor	Fluor Columbus
T. J. Reese	Auditor	DOE Columbus
L. A. Parys	Observer	DOE Columbus
B. Waters	Observer	DOE Columbus
T. Verma	Observer	NRC Representative in Columbus

Please provide adequate facilities for conducting preaudit and post audit meetings, and for the audit team to caucus and review documents.

Please notify cognizant management and other appropriate personnel of the proposed audit, and request their attendance at a preaudit meeting scheduled for 8:30 AM, May 7, 1985. Audit schedule times are as shown on attached audit plan.

FLUOR

Mr. P. W. McKie
Morrison-Knudsen Company, Inc.
Boise, Idaho

April 29, 1985
2

If you require additional information regarding the audit and/or proposed schedule please contact Gene Underwood.

Very truly yours,

T O Mallonee

T. O. Mallonee
Project Manager

TOM:WEU:lp

cc: D. R. Bledsoe
R. Whiton

QUALITY ASSURANCE AUDIT PLAN

Audit Number SP02-85 Audited Organization Morrison-Knudsen

Project Name Salt Location Boise, Idaho

Audit Dates May 7 & 8, 1985

Audit Team:

Audit Team Leader W. E. Underwood

Auditor J. R. Fitch Fluor Columbus

Auditor T. J. Reese DOE Columbus

Observers - L. Parys, DOE/Columbus; T. Verma, NRC/Columbus;
B. Waters, DOE/Columbus

Audit Scope/Purpose:

Evaluation of Morrison-Knudsen Design and Document Control Activities to ensure compliance with reference document requirements.

Reference Documents M-K QAM sections 3.0, 4.0, 5.0, 6.0 and QAP 3.3, M-K PPM Section 6.0

Audited Organization(s) Notified By letter #FIMB-163C dated April 29, 1985

Audit Plan Approved by W. E. Underwood
name

4/29/85
date

Proposed Audit Schedule: (Time/Location)

Preaudit Conference: 8:30 AM May 7, 1985

Audit Schedule: 9:00 AM - 4:30 PM 5/7/85, 8:30 AM - 3:00 PM 5/8/85

Post Audit Conference: 4:00 PM 5/8/85

FLUOR
ADVANCED TECHNOLOGY DIVISION

AUDIT NO. SP02-85

QUALITY ELEMENT CHECKLIST

CONTROLLING DOCUMENT (TITLE, NUMBER, REVISION)	AUDITED ACTIVITY	AUDIT TITLE
M-K - Quality Assurance Manual M-K - Project Procedure Manual	Morrison-Knudsen Salt Project Task Force Boise	Design and Document Control Activities

CHK LT NO.	PROCEDURE PARA. NO.	ELEMENT CHARACTERISTIC	OBJECTIVE EVIDENCE REVIEWED/PERSONNEL CONTACTED	AUDIT RESULTS
1	QAM Sect 3.0 Para 3.2.2	States in part that the Mine Design Engineering Manager is responsible for assuring that applicable design inputs, such as design criteria, performance requirements, regulatory requirements, codes and standards are identified, documented and their selection reviewed and approved. Changes form approved status shall also be identified, approved, documented plus reason for change.	Approved Status: defined in the Project Procedure Manual page 6-40. "Approval Status needs to be clarified."	
2	QAM Sect. 3.0 Para 3.2.3(b)	States inpart that the Mine Design Engineering Manager shall identify and document the appropriate quality standards to be included in the design and that these standards shall be reviewed and approved by Quality Assurance.	→ Requirement being satisfied.	
3	QAM Sect 3.0 Para 3.2.3i	States inpart that computer programs shall be controlled to assure that changes are documented and approved by authorized personnel and that when changes to previously verified computer programs are made, verification is required for changes.	In place. verification and validation addressed in Project Procedures Manual.	

PREPARED BY: W.E. Underwood Date: 4-26-85

APPROVED BY: T.O Mallouk Date: 4-26-85

FLUOR
ADVANCED TECHNOLOGY DIVISION

AUDIT NO. SP02-85

QUALITY ELEMENT CHECKLIST

CONTINUATION SHEET

CHK LT NO.	PROCEDURE PARA. NO.	ELEMENT CHARACTERISTIC	OBJECTIVE EVIDENCE REVIEWED/PERSONNEL CONTACTED	AUDIT RESULTS
4	QAM	States in part that documentation		
	Sect 3.0 Para 3.2.3J	of design analysis shall include: a)Definition of objective(s) of the analysis	Independent Technical verification reviews ! Technical Review, Peer Review. Design Review	
		b)Definition of the design inputs and their source		
		c)Identification of assumptions and indication of those that must be verified as the design proceeds	Definition on these terms needed.	
		d)Review and approval		
5	QAM	States in part that design verifi-	Gassy Mine's Report. Requirements are met.	
	Sect 3.0 Para 3.2.4 (b)	cation shall be performed by an individual or group other than those who performed the original design.	Qualifications of individual or group performing design verification. Requirements met.	
6	QAM	States in part that controls shall be		
	Sect 3.0 Para 3.2.7e	established to assure that documentation and records which provide evidence that design and verification processes were performed in accordance with requirements of this manual are stored and maintained in a manner which would preclude loss or damage by any means.		
7	QAM	States in part that Procurement	Procurement for consulting	
	Sect 4.0 Para 4.2.1 a(1) & a(3)	documents issued at all tiers of procurement shall include: a)Statement of scope of work to be performed	services : A statement should be added that the individual consultants would	
		b)Requirements for the supplier to incorporate quality program requirements in subtier procurement documents.	work under M[illegible]-QA Program.	

FLUOR
ADVANCED TECHNOLOGY DIVISION

AUDIT NO. SP02-85

QUALITY ELEMENT CHECKLIST

CONTINUATION SHEET

CHK LT NO.	PROCEDURE PARA. NO.	ELEMENT CHARACTERISTIC	OBJECTIVE EVIDENCE REVIEWED/PERSONNEL CONTACTED	AUDIT RESULTS
8	QAM	States in part that procurement	In effect.	
	Sect 4.0 Para 4.2.2e	documents shall be reviewed by QA personnel. This review to be performed and documented to assure that Quality requirements are correctly stated - etc.		
9	QAM	States that activities that affect	QAPs are prepared and are	
	Sect 5.0 Para 5.2.1	quality shall be described by and accomplished through implementation of documented procedures, instructions or drawings.	available for reviews. (Six QAPs are available)	
10	QAM	States in part that all documents,	In place.	
	Sect 5.0 Para 5.2.3	procedures, and instructions that delineate requirements for		
	Sect 6.0 Para 6.2.1	implementing or prescribing quality activities shall be reviewed, approved and signed by the Quality Assurance Manager.		
11	QAM	States in part that documents	In Place.	
	Sect 6.0 Para 6.2.2	prescribing or implementing quality affecting activities shall be controlled to assure that correct and applicable documents are available at the location where they are to be used and shall provide as a minimum: a)identification of document	QAP 6.1 for QA MANUAL.	
		b)identification of personnel positions or organization responsible for preparation, review approval and issuance.		

FLUOR
ADVANCED TECHNOLOGY DIVISION

AUDIT NO. SP02-85

QUALITY ELEMENT CHECKLIST

CONTINUATION SHEET

CHK LT NO.	PROCEDURE PARA. NO.	ELEMENT CHARACTERISTIC	OBJECTIVE EVIDENCE REVIEWED/PERSONNEL CONTACTED	AUDIT RESULTS
11 (Continued)		c) review for adequacy, completeness and correctness prior to approval and issuance.	QAP 6.1, paragraph 4.4. Master copy is kept with Document Control.	
12	QAP 3.3 Para 4.2.2	States in part that the engineering manager assign the Design/Document Review (DDR) form number and determines the need for internal or external design/document review and checks the appropriate block in the review meeting schedule section of the DDR form.	In place, checked Gassy Mine Report - Applicability of Gassy mine Regulation	
13	QAP 3.3 Para 4.2.4	States in part that the Engineering manager shall, for each review to be conducted, designate one individual as the review board chairman who shall be responsible for coordination of design/document review efforts.	In place	
14	QAP 3.3 Para 4.2.18	States in part that comments which, in judgement of the originating engineer, are nonrelevent or out-of-scope of the design may be dispositioned "reject" with written justification provided for the rejection. Where disagreement between reviewer and originator exists concerning validity of comment resolution is performed by the engineering manager.	The comments are filed with the original report. No specific example is available. Why?	

CHK LT NO.	PROCEDURE PARA. NO.	ELEMENT CHARACTERISTIC	OBJECTIVE EVIDENCE REVIEWED/PERSONNEL CONTACTED	AUDIT RESULTS
15	QAP 3.3	States in part that alternate cal-		
	Para 4.3.4	culations provided by the design/ document review board shall be	Not being done.	
		recorded on the Calculation Verification Record (CVR) and be attached to		
		the applicable Review Comment Record (RCR) page and be listed as an att-		
		achment on the applicable RCR page by CVR number.		
16	PPM	States in part that analytical and	One computer code is being	
	Para 6.3.4	computer design codes to be used during the Salt Project conceptual	used. This code on mine	
	(a) and (c)	and Title design must go through Software Validation and Verification	ventilation is not verified	
		consisting of a minimum of a) Reviewing theory, methodology and	or validated.	
		equations utilized in program for correctness and applicability. Plus		
		conformance to applicable codes and standards		
		b) Running sample problems and comparing results with known standard		
		and acceptable engineering solutions etc.		
		All software validation and verification shall be documented and controlled.		
17	PPM	States in part that calculations shall have properly defined input data,	In Place	
	Para 6.4.1	shall indicate that the originator has selected and correctly utilized		

FLUOR
ADVANCED TECHNOLOGY DIVISION

AUDIT NO. SP02-85

QUALITY ELEMENT CHECKLIST

CONTINUATION SHEET

CHK LT NO.	PROCEDURE PARA. NO.	ELEMENT CHARACTERISTIC	OBJECTIVE EVIDENCE REVIEWED/PERSONNEL CONTACTED	AUDIT RESULTS
17	(continued)	the appropriate procedure or	Several calculations were	
		methodology for obtaining stated results. Calculations shall also	picked and checked.	
		comply with the following requirements:	Procedures in Place	
		a) Shall be titled as to scope and objectives ~~of document~~	Procedure in Place	
		b) Applicable codes and standards shall be identified by title,		
		date of issue and revisions or addenda number.	Done	
		c) Formula and procedures shall be identified by source or logically derived.		
		d) Intermediate and final results shall be underlined or similarly identified.	Done	
18	PPM	States in part that heading of all calculations shall identify name of	Not far enough along in	
	Para 6.4.3	originator and that reviewer of calculations shall initial and date	some cases. Found O.K	
		the calculations to indicate concurrence with results obtained and	in several cases. However	
		methods used -	it was difficult to trace the calculations back to the report.	
			One calculation was incomplete and a Finding was issued	
19	PPM	States that Drawing Titles should be per sample Drawing Title Block	No Drawings issued yet. Formant	
	Para 6.5.2	as noted on attachment 6-3 of PPM		
20	PPM	States in part that when the requirement for a drawing no longer exists		
	Para 6.5.5			

CHK LT NO.	PROCEDURE PARA. NO.	ELEMENT CHARACTERISTIC	OBJECTIVE EVIDENCE REVIEWED/PERSONNEL CONTACTED	AUDIT RESULTS
20	(continued)	the word Voided is printed in heavy block letters across face of drawing.		
		drawing must be reissued with next revision number with description in	Not done yet.	
		revision block for reason of drawings being voided. All prints of		
		voided drawings shall be recalled and destroyed except for master orig-		
		inal.		
21	PPM			
	Para 6.8.1J	States in part that all revisions to Engineering Study Reports shall in-		
		clude the revision number and date, and shall identify all revised mat-	None Issued yet.	
		erial by some means and that a rev-		
		ision log shall be maintained by the		
		Project secretary -		
22	PPM			
	Para 6.8.3	States in part that for Evaluation of Alternatives that the objective of	In place. Checked two reports	
		the evaluation shall be clearly stated, describing the why for the	ESF Impact Report	
		evaluation performance and what decisions are to be resolved by	Borehole Report.	
		this effort.		
23	PPM	States in part that documents that contain information or design philos-	In place.	
	Para 6.11.2	ophy that another discipline must be aware of, and/or agree to shall be		
		submitted to that group for review and comment (or squad check)		

QUALITY ELEMENT CHECKLIST

CONTINUATION SHEET

CHK LT NO.	PROCEDURE PARA. NO.	ELEMENT CHARACTERISTIC	OBJECTIVE EVIDENCE REVIEWED/PERSONNEL CONTACTED	AUDIT RESULTS
24	PPM	States in part that all documents issued external to the originating	Not Applicable (It only relates to	
	Para 6.11.3	discipline shall be made by the Document Control Coordinator.	Squad check activities)	
	(c)			
25	PPM	States that the Quality Assurance Manager shall monitor and participate		
	Para 6.12.3	in verification activities to assure that documents were prepared, review-	Not being done at this time	
	e	ed, and approved in accordance with approved procedures and contain or	due to the fact that there is	
		reference the necessary quality requirements.	no design verification activities	
			at the present.	
26	PPM	States that Documentation and records which provide evidence that verifica-		
	Para 6.12.3	tion or review of design activities were correctly performed and con-	Same as above.	
	N	trolled shall be prepared by the document originator and such doc-		
		umentation stored and maintained in Project Library as Project Records.		
27	PPM	States that distribution logs for all controlled documents shall be main-		
	Para 6.17.2	tained by the project secretary and shall record who issued to and date		
	(b)	issue made -		
28	PPM	States in part that a revision log shall be maintained by Document		
	Para 6.17.3	Control for all controlled documents and shall provide identification of		
		revision number, date, and revision description.		

NOTE

Copies of Procedural Sections Considered For Audit. Highlighted Sections correspond with Check-List item Numbers.

Carl