



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

December 20, 1994

Mr. Ronald A. Milner, Acting Director
Office of Program Management and Integration
Office of Civilian Radioactive Waste Management
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, D.C. 20585

SUBJECT: MINUTES OF THE AUGUST 31, 1994, MEETING ON DESIGN CONTROL/QUALITY ASSURANCE

Dear Mr. Milner:

I am transmitting the minutes of the August 31, 1994, NRC-DOE meeting on design control/quality assurance for the exploratory studies facility at Yucca Mountain. The meeting was held at the DOE Office of Civilian Radioactive Waste Management (OCRWM) Yucca Mountain Project offices in Las Vegas, Nevada. The meeting attendees included representatives from the U.S. Nuclear Regulatory Commission, the U.S. Department of Energy (DOE), the DOE Office of Civilian Radioactive Waste Management's (OCRWM's) Management and Operating Contractor (M&O), OCRWM's Quality Assurance Technical Support Service Contractor, the State of Nevada, local governments, and other organizations.

The meeting was called to discuss the DOE quality assurance (QA) program and the M&O design quality/QA program. At the meeting, the NRC presented an overview of its perspective on concerns with the aforementioned programs. Then the M&O and DOE presented information on their design control/QA programs and the corrective actions to improve these programs.

The NRC staff presented its conclusions that it considered the DOE/M&O plans and explanations to be acceptable in many areas and that the "shake-down" phase of proceeding with the planned boring of up to 40 feet with the tunnel boring machine was acceptable. However, the NRC staff indicated that more detailed questions would be forthcoming, and these will be forwarded in a separate letter.

Throughout the course of the meeting, questions from the floor were responded to and discussions took place between the presenters and members of the audience. There was also dialog throughout the meeting among the staff members present from the NRC, the DOE, and the M&O.

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D. Shelor

- 1 -

A written response to this letter is not required. If you have any questions regarding this letter, please contact Jack Spraul of my staff at (301) 415-6715.

Sincerely,

Joseph J. Holonich, Chief
High-Level Waste and Uranium
Recovery Projects Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: As stated

cc: R. Loux, State of Nevada
J. Meder, Nevada Legislative Counsel Bureau
R. Nelson, YMPO
C. Einberg, DOE/Wash, DC
M. Murphy, Nye County, NV
M. Baughman, Lincoln County, NV
D. Bechtel, Clark County, NV
D. Weigel, GAO
P. Niedzielski-Eichner, Nye County, NV
B. Mettam, Inyo County, CA
V. Poe, Mineral County, NV
W. Cameron, White Pine County, NV
R. Williams, Lander County, NV
L. Fiorenzi, Eureka County, NV
J. Hoffman, Esmeralda County, NV
C. Schank, Churchill County, NV
L. Bradshaw, Nye County, NV
W. Barnard, NWTRB
R. Holden, NCAI
E. Lowery, NIEC
S. Brocoun, YMPO
R. Arnold, Pahrump, NV
R. Kallen, PS Commission, MI

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OFC	HLUR*	E	HLUR *	HLUR					
NAME	JGSpraul/jk		RJohnson	JHolonich					
DATE	09/09/94		/ /94	11/2/94					

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D. Shelor

- 1 -

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Enclosure: As stated *on the staff*

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OFC	HLUR*	E	HLUR *	HLUR				
NAME	JGSpraul/jk		RJohnson	JHolonich				
DATE	09/09/94		/ /94	12/20/94				

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D. Shelor

- 2 -

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Recovery Projects Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: As stated

cc: w/enc

R. Loux, State of Nevada
T. J. Hickey, Nevada Legislative Committee
J. Meder, Nevada Legislative Counsel Bureau
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OFC	HLUR	E	HLUR	E	HLUR				
NAME	JGSpraul/jk		RJohnson		JHolonich				
DATE	09/09/94		02/19/94		09/ /94				

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Rec'd with letter dated 12/30/94

MINUTES OF THE AUGUST 31, 1994, MEETING ON DESIGN CONTROL/QUALITY ASSURANCE

The NRC-DOE meeting on design control/quality assurance for the exploratory studies facility at Yucca Mountain was held at the OCRWM Yucca Mountain Project offices in Las Vegas, Nevada, on August 31, 1994.¹ The meeting attendees included representatives from the U.S. Nuclear Regulatory Commission, the U.S. Department of Energy (DOE), the DOE Office of Civilian Radioactive Waste Management's (OCRWM's) Management and Operating Contractor (M&O), OCRWM's Quality Assurance Technical Support Service Contractor, the State of Nevada, local governments, and other organizations. An attendance list is included as Attachment 1.

This meeting, to discuss the DOE quality assurance (QA) program and the M&O design quality/QA program,² was called to order at about 1:00 p.m. It began with self-introduction of the attendees. Following the introductions, the NRC staff presented an overview of its perspective on concerns with the aforementioned programs. Attachment 2 is a copy of the "overheads" used during this presentation.

The M&O and DOE staffs then presented information on their design control/QA programs and the corrective actions taken and being taken to improve these programs. Attachment 3 is a copy of the "overheads" used during the M&O/DOE presentation, and it includes the agenda which was generally followed at the meeting. Attachment 4 is a copy of replacement "overheads"/additional information supplied by the M&O/DOE staff during the meeting. Attachments 2, 3, and 4 were distributed to those present at the meeting.


The NRC staff caucused after the M&O/DOE presentation. After caucusing, the NRC staff presented its conclusions that it considered the DOE/M&O plans and explanations to be acceptable in many areas and that the "shake-down" phase of proceeding with the planned boring of up to 40 feet with the tunnel boring machine was acceptable. However, the staff had remaining concerns and questions regarding items such as the lack of integrated evaluation of all findings, the continuing work on other design packages, and the failure to effectively implement the earlier design control improvement plan. The NRC staff indicated that more detailed questions would be forthcoming, and these will be forwarded in a separate letter.


¹ NRC meeting notice (Spraul to Johnson) dated August 18, 1994.

² Letter dated August 19, 1994 from the NRC (Holonich) to the DOE (Milner)

Throughout the course of the meeting, questions from the floor were responded to and discussions took place between the presenters and members of the audience. There was also dialog throughout the meeting among the staff members present from the NRC, the DOE, and the M&O.

The meeting was adjourned at about 5:30 p.m.


John G. Spraul
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards
U. S. Nuclear Energy Commission


Donald G. Horton, Director
Office of Quality Assurance
Office of Civilian Radioactive
Waste Management
U. S. Department of Energy

ATTACHMENT 1

ATTENDANCE LIST

ATTACHMENT 2

NRC PERSPECTIVE ON CONCERNS WITH THE M&O QUALITY ASSURANCE PROGRAM



*United States
Nuclear Regulatory Commission*

NRC PERSPECTIVE ON CONCERNS WITH THE M&O QUALITY ASSURANCE PROGRAM


* * * * *

**Joseph J. Holonich, Chief
High-Level Waste and Uranium Recovery
Projects Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards**

* * * * *

**Presentation to the U. S. Department of Energy
August 31, 1994**

AGENDA

- o NRC'S Independent Regulatory Role**
- o DOE's Quality Assurance (QA) Program**
- o Importance of DOE QA**
- o Summary of August 20, 1993, Letter**
- **o NRC Comments on Observations of Design Packages 2A, 2B, and 2C**
- o Subsequent Interactions**
- o Findings from Audits and Surveillance**
- o Management Commitment**
- o Conclusions**

NRC'S INDEPENDENT REGULATORY ROLE

o Pre-application Review

- Early Identification and Resolution of Issues at the Staff Level**
- Pre-licensing Consultation to help Ensure Complete and High Quality License Application from DOE**
- Prepare Preliminary Site Characterization Sufficiency Comments for any DOE recommendation to the President**

o Review of License Application

- Burden of Proof on DOE to Demonstrate Compliance with 10 CFR Part 60**
- NRC Reviews Licenses Application and Determines Acceptability of DOE Demonstration of Compliance**

DOE'S QA PROGRAM

o QA Program Requirements

-10 CFR Part 60, Subpart G

**-10 CFR Part 50, Appendix B as Applicable and Appropriately
Supplemented by Additional Criteria**

o QA Program Application

-Structures, Systems, and Components Important to Safety

**-Design and Characterization of Barriers Important to Waste
Isolation**

-Activities Related Thereto

o QA Program Coverage

-Site Characterization

-Facility and Equipment Construction

-Facility Operations

-Performance Confirmation

-Permanent Closure

-Decontamination Dismantling of Surface Facilities

IMPORTANCE OF DOE QA

- o NRC Cannot Review or Inspect Everything**
- o Applicant Responsible for Establishment/Execution of QA Program**
- o DOE QA Provides the Framework for a Structured and Systematic Method Obtaining Data, Performing Analyses, and Documents these Activities**
- o DOE Records**
 - Supporting Documentation for NRC Licensing Decision**
 - Provide Traceability of Work**
- o Issues in NRC Licensing Review**
 - Lack of Complete Records**
 - Documentation to Show Work was done Properly**

SUMMARY OF AUGUST 20, 1993 LETTER

- o Concern with Design and Surface Based Testing Integration**
- o Need for July 27, 1993, Technical Exchange**
 - Understand how DOE is Factoring the Staff's Concerns into Decisions Related to the Exploratory Studies Facility**
 - Discuss ESF Design Changes**
 - Make DOE Aware of Potential Concerns the Staff may have Related to Ongoing ESF Design Work**
- o Request for Information from DOE**
 - Rationale to Continue Work**
 - Corrective Actions**
 - Completeness of Design Information**
 - Timeliness of Design Information and Response to NRC Concerns**
- o Provide Response in 90 Days**

NRC COMMENTS ON OBSERVATIONS OF DESIGN PACKAGES 2A, 2B, and 2C

- o 2A NRC Report Dated October 1, 1993**
 - Determination of Importance Evaluation Appears to rely on Judgment Rather Than Data and Analyses**
 - Models may not be Sufficient for Recognized Phenomena**
 - Not Clear on Appropriate Level of Conservation used in Design**
 - Design Package Wording Vague**

- o 2B NRC Report Dated February 18, 1994**
 - Lack of Integration/Interaction Between M&O and Contractors**
 - Design Team did not Totally have Necessary background/Experience**
 - At 90% Stage over 50% Items not Classified ITWI/IRS**
 - Document Hierarchy not Clear**
 - Lack of DIE Report**
 - Lack of Intergration Between Design Packages**
 - Lack of Documentation for Excavation Studies**

- o 2C NRC Report Dated August 10, 1994**
 - Improvement of Integration Among M&O Disciplines**
 - Improper Use of Response Spectrum In Seismic Design**
 - Lack of Attention to Detail**
 - Lack of Appropriate Degree of Conservatism**

SUBSEQUENT INTERACTIONS

- o September 17, 1993, ESF Concerns Meeting**
- o September 22, 1993, NRC Letter to DOE-Open Dialogue**
- o M&O Design Control Improvement Plan (Rev. 1) to NRC
September 28, 1993**
- o ESF/Technical Exchanges**
 - October 4-5, 1993**
 - December 8, 1993**
 - February 3, 1994**
 - April 19, 1994**
 - July 27, 1994**
- o March 31, 1994 NRC Letter**
 - Progress Towards Resolution**
 - Proof of Effective Implementation Needed**
- o Periodic QA Meetings**
- o NRC Observes Audits and Surveillance**

NRC/DOE FINDINGS FROM QA AUDITS AND SURVEILLANCE OF M&O

- o 1992 DOE Findings**
 - Control of As-built Drawings**
 - Objective Evidence**

- o 1993 DOE and M&O Findings**
 - Preparation of Procedures**
 - Methodology to Fully Accomplish Quality Affecting Activity**
 - Quality Assurance Program Description**
 - Processing of Field Change Requests**
 - Implementing Line Procedures**
 - Selection and review of Design Methods per NQA-1**
 - Control of Design Information**
 - Documentation of Reviews**

- o NRC Efforts in May 1993**
 - On-Site Representative Review**
 - Traceability of Flowdown Design Requirements**
 - Lack of Objective Evidence**
 - Lack of Complete Design**

- o 1994 DOE Findings**
 - Errors, Inconsistencies in Design Drawings, Specifications**
 - Control of Design Information**
 - Documentation of Reviews**
 - Lack of Objective Evidence**
 - Traceability of Flowdown Design Requirements**

MANAGEMENT COMMITMENT (FORD STUDY FINDINGS)

- o Strong Management Involvement**
- o View of QA as a Management Tool to Assure Completion of Complex Project and as Necessary for Licensing**
- o Prompt to Diagnose Problems and take Necessary Corrective Actions**
- o Reliance on NRC to Detect Problems**
- o Achievement of Quality is Management's Responsibility**

CONCLUSIONS

- o Concerns**

- Findings from DOE Audits and Surveillance**
- Lack of Objective Evidence**
- Work Continuing**

- o Lack of Confidence in M&O Corrective Action Program**

- o Question Ability to Implement "Get-Well" Plan**

- o Recurrence of Issues are of Great Concern**

- o Basis for DOE's Confidence that Rework to Date is Acceptable**

- o Lack of Positive QA Culture at M&O**

- o Similar Significant Problems are not being Identified with Other Contractors**

ATTACHMENT 3

M&O DESIGN QUALITY/ QUALITY ASSURANCE PROGRAM

M&O Design Quality/Quality Assurance Program

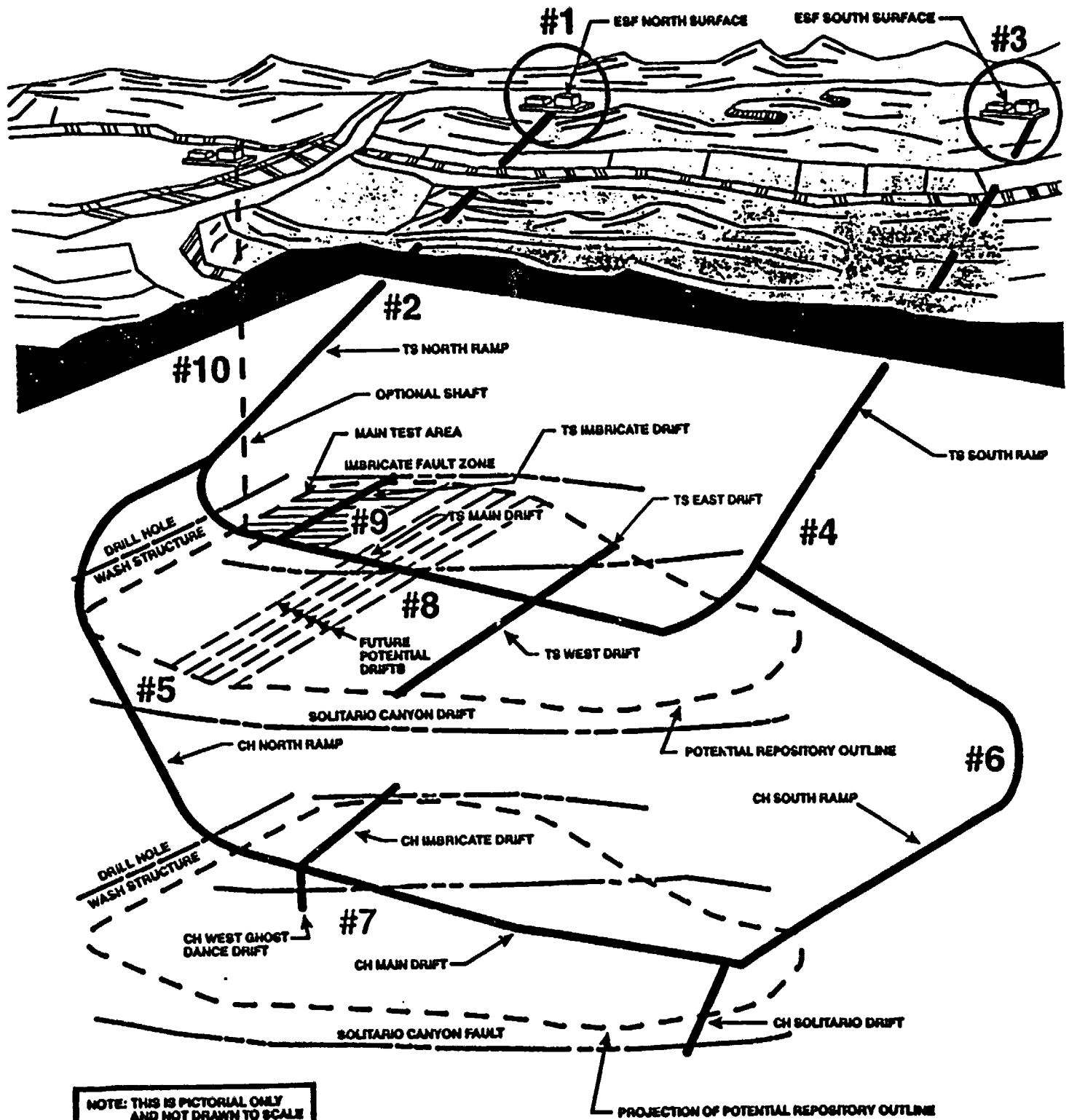
August 31, 1994

AGENDA

Overview (NRC)	Holonich
Opening Remarks	Simecka
Background	Sandifer
History of Concerns with M&O QA Program	Ruth
Six-Point Correction Program	Sandifer, Horton, Replogle
Status Of Corrective Actions	Sandifer, Horton
DOE/M&O Verification of Corrective Actions	Ruth
Other Actions by DOE and M&O	Sandifer, Horton, Replogle
Response to August '93 Letter	Horton
Summary	Sandifer, Horton, Replogle
Overview	(Project Office)
NRC Caucus	
Closing Remarks	

BACKGROUND

EXPLORATORY STUDIES FACILITY



BACKGROUND

- **ESF Design Packages**

- 1A. Site preparation and starter tunnel for of North Ramp
- 1B. Surface facilities at North Portal
- 1C. Surface utilities at North Portal
- 1D. Surface facilities & foundations at North Portal
- 1E. Surface structures and facilities at North Portal
- 2A. North Ramp from portal to Tonopah Spring Level (TSL), analyses & early procurement
- 2B. North Ramp from portal to TSL, analyses & early procurement
- 2C. North Ramp from portal to TSL, specifications & drawings
- 3A. Site preparation and partial portal of South Ramp
- 3B. Surface facilities at South Portal
- 4. South Ramp from portal to TSL
- 5. North Ramp from Calico Hills (CH) turnout to CH level
- 6. South Ramp from CH turnout to CH level
- 7. Full length Drift at the CH level
- 8A. Main Drift at TSL
- 8B. North Ramp extension drift
- 9. Main Test Level core area
- 10. Shaft at North end - Surface to Main Test Level

BACKGROUND

- **Package 2C Released In Two Phases**
 - ① **Partial Release Containing Documents Required for TBM Startup (up to 40 feet)**
 - ② **Remaining QA and Non-QA Documents**
- **Package 2C Makeup**
 - **Partial Release**
 - ♦ **7 QA products (3 specs, 4 drawings)**
 - ♦ **Supported by 2 WIEs, 1 TIEs, 1 DIE and the applicable input lists**
 - **Full Release**
 - ♦ **250 products total (drawings & specifications)**
 - ♦ **40 which are QA products (included in 250 total)**
 - ♦ **Supported by WIEs, TIEs, and DIE from above and the applicable input lists**

BACKGROUND

- **TBM Phases**

Phase 1 Initial 40 feet of tunnel (under head shield)

Phase 2 TBM Ground Support

Phase 3 Mapping Gantry

Phase 4 Complete Conveyor System

HISTORY OF CONCERNS WITH M&O QUALITY ASSURANCE PROGRAM

HISTORY OF CONCERNS WITH QA PROGRAM

QUESTION: WHAT COMMON, OR RECURRING, PROBLEMS HAVE BEEN IDENTIFIED IN AUDITS CONDUCTED SINCE FEB. '93?

	<u>AUDIT</u>	<u>RESULTS</u>
• 3/93	DOE AUDIT/ SURVEILLANCE	PROCESS AND IMPLEMENTATION PROBLEMS
• 7/93	DOE SURV.	PROCESS & IMPLEMENTATION
• 10/93	DOE SURV.	IMPLEMENTATION PROB.
• 12/93	DOE SURV.	PRIMARILY IMPL. PROB.
• 2/94	M&O AUDIT	IMPLEMENTATION PROBLEMS

HISTORY OF CONCERNS WITH QA PROGRAM

- 3/94 DOE SURV. PROCESS ISSUE (NON-SIGN)
 - 6/94 DOE AUDIT IMPLEMENTATION PROBLEMS
 - 7/94 M&O SURV IMPLEMENTATION PROBLEMS
 - 7/94 DOE AUDIT IMPLEMENTATION PROBLEMS
-
- DESIGN CONTROL IMPROVEMENT PLAN
SIGNIFICANTLY IMPROVED M&O PROCEDURES
 - IMPLEMENTATION PROBLEMS STILL EXIST

HISTORY OF CONCERNS WITH QA PROGRAM

QUESTION: GIVEN THE RECURRENCE OF SOME FINDINGS OVER SEVERAL AUDITS, WHAT IS THE ROOT CAUSE FOR THESE PROBLEMS, AND WHY DIDN'T THE CORRECTIVE ACTION PROGRAM FIX THESE FINDINGS?

ROOT CAUSES:

- 1. QARD (DOE RW-0214 VERSION) NOT USER FRIENDLY**
- 2. PROCEDURE WRITERS NOT USED TO WORKING TO A NUCLEAR QA REGULATED PROGRAM**
- 3. FOUND TRAINING TO BE INEFFECTIVE:**
 - OLD METHOD - SELF STUDY**
 - NEW METHOD - CLASSROOM WITH ATTENDEES PARTICIPATING IN EXERCISES**
- 4. SCHEDULE PRESSURES RESULTING IN:**
 - LACK OF ATTENTION TO DETAIL**
 - CHANGING QA PROCEDURES**
 - ATTITUDE THAT QA COULD BE SACRIFICED FOR SCHEDULE**

M&O CORRECTIVE ACTIONS

**QUESTION: WHY DIDN'T M&O CORRECTIVE ACTION PROGRAM
FIX THESE FINDINGS?**

- 1. INADEQUATE TREND PROGRAM**
- 2. LACK OF CULTURAL UNDERSTANDING OF QA**
- 3. INTERNAL ENGINEERING ASSURANCE EFFORT NOT YET EFFECTIVE**
- 4. PROCESS PROBLEMS ESSENTIALLY FIXED**
- 5. IMPLEMENTATION PROBLEMS STILL EXIST**

**QUESTION: WHAT TYPE OF FINDINGS HAVE BEEN
IDENTIFIED BY INTERNAL M&O AUDITS?**

(ADDRESSED ABOVE)

SIX-POINT CORRECTION PROGRAM

Six Point Correction Program

QUESTION: WHAT IS THE PROGRAM

- **The program consists of 6 parts plus a summary section (Management Plan Closure)?**
 - 1.0 CAR Analysis**
 - 2.0 Items corrected during recent audits/surveillances**
 - 3.0 Design Process Review**
 - 4.0 Classification Process Review**
 - 5.0 Product Quality Review**
 - 6.0 Culture Review**
 - 7.0 Management Plan Closure**

Six Point Correction Program

- **Correction program is being implemented in three parts**
 - **QA portion of Partial Release of Package 2C**
 - **Remainder of QA portion of Package 2C**
 - **All other design products**

Six Point Correction Program

- **Question: Where does the program stand in terms of development and implementation?**

Six Point Correction Program

Partial Release of 2C

ACTIVITY

STATUS*

1.0	CAR Analysis	
1.1	Assign responsibility for analysis	Completed
1.2	Develop corrective action for open CARs	Completed
1.3	Get M&O QA review/comments/agreement	Completed
1.4	Get DOE QA comments/agreement	*
1.5	Implement corrective action	**

*** Complete except for two DOE CARs (M&O responses being reviewed)**

**** All agreed to actions identified to date are complete**

Six Point Correction Program

Partial Release of 2C

ACTIVITY		STATUS*
2.0	Items corrected during recent audits/surveillances	
2.1	Assign responsibility for analysis for similar problems	Completed
2.2	Review products for similar problems	Completed
2.3	Develop corrective action as required	Completed
2.4	Implement corrective action	*

*** All actions identified to date are complete**

Six Point Correction Program

Partial Release of 2C

ACTIVITY		STATUS
3.0	Design Process Review	
3.1	Develop detailed flow chart	Completed
3.2	Review CARs, etc., for process problems	Completed
3.3	Develop process revisions as required	Completed
3.4	Change the procedures as required	Ongoing
3.5	Train the affected personnel as required	Ongoing

Six Point Correction Program

Partial Release of 2C

ACTIVITY		STATUS
4.0	Classification Process Review	
4.1	Develop detailed flow chart	Completed
4.2	Review CARs, etc., for classification problems	Completed
4.3	Develop revision(s) to the procedures as required	N/R
4.4	Change the procedures	N/R
4.5	Train the affected personnel as required	N/R

Six Point Correction Program

Partial Release of 2C

ACTIVITY

STATUS

5.0	Product Quality Review	Complete except for line and grade dwgs
5.1	Line organization review	“ “ “ “
5.2	Independent review	“ “ “ “
5.3	Consolidation/analysis of results	“ “ “ “
5.4	Implement corrective action	All agreed to actions identified to date are complete

Six Point Correction Program

Partial Release of 2C

ACTIVITY

STATUS

6.0	Culture Review	
6.1	Root Cause: Recommendation/development	TBD
6.2	Develop QA program briefing/training	TBD
6.3	Brief/train affected M&O personnel	TBD

Six Point Correction Program

Partial Release of 2C

ACTIVITY		STATUS
7.0	Management Plan Closure	
7.1	1.0, Documentation of Objective Evidence <ul style="list-style-type: none">• Analyses and corrective actions for each CAR• Copies of formal submittals to M&O QA and DOE QA	Ongoing
7.2	2.0, Documentation of Objective Evidence <ul style="list-style-type: none">• Analyses and corrective actions from previously closed audits/surveillances	Ongoing

Six Point Correction Program

Partial Release of 2C

ACTIVITY		STATUS
7.0	Management Plan Closure (Continued)	
7.3	3.0, Documentation of Objective Evidence <ul style="list-style-type: none">• Recommended adjustments or enhancements to design process• Applicability to complete and in-process design products	Ongoing
7.4	4.0, Documentation of Objective Evidence <ul style="list-style-type: none">• Recommended adjustments or enhancements to classification process• Applicability to completed or in-process design products	Ongoing

Six Point Correction Program

Partial Release of 2C

ACTIVITY	STATUS
7.0 Management Plan Closure (Continued)	
7.5 5.0, Documentation of Objective Evidence <ul style="list-style-type: none">• Members of each team• Problems, concerns, corrective actions identified	Ongoing
7.6 6.0, Documentation of Objective Evidence <ul style="list-style-type: none">• Analyses• Resulting actions• Plan for follow-up reviews	TBD
7.7 Summary Report	Ongoing

Six Point Correction Program

Partial Release of 2C

QUESTION: HOW DOES DOE KNOW THE PROGRAM IS BEING ACCEPTABLY IMPLEMENTED BY THE M&O?

ANSWER: (DOE QA)

- **DAILY CONTACT BETWEEN DOE AND M&O TEAM**
- **SECTION 7.0 OF THE 6-POINT CORRECTION PROGRAM PROVIDES OBJECTIVE EVIDENCE THAT CORRECTIVE ACTION WAS COMPLETED**
- **VERIFICATION OF CORRECTIVE ACTION OF CARs**
- **QAP 6.2 REVIEW OF TECHNICAL PRODUCTS**

Six Point Correction Program

Partial Release of 2C

QUESTION: HOW DOES DOE KNOW THE PROGRAM IS BEING ACCEPTABLY IMPLEMENTED BY THE M&O?

ANSWER: (DOE LINE ORGANIZATION)

- DOE LINE MANAGEMENT WILL UTILIZE ITS OWN STAFF TO MONITOR THE TYPES OF NCRs AND CARs THAT ARE BEING WRITTEN DURING AUDITS AND AND SURVEILLANCES**
- THESE NCRs AND CARs WILL BE CATEGORIZED AND AND TRENDS OF REPETITIOUS CARs AND NCRs ANALYZED**
- IF THE OCCURRENCE OF SIMILAR ITEMS BEGINS REDUCING, DOE WILL KNOW THE PROGRAM IS BEGINNING TO BE FULLY IMPLEMENTED**

Six Point Correction Program

Partial Release of 2C

EXAMPLES OF PROGRAM IMPLEMENTATION ARE:

- **BETTER TRAINING FOR DOE AND M&O DESIGN STAFF**
- **QUALITY PRODUCT ORIENTED SCHEDULES MADE AND AGREED TO JOINTLY BY THE M&O AND DOE**
- **IMPROVED ATTITUDE BY THE M&O AND DOE FOR VERBATIM COMPLIANCE**
- **INCREASED USE OF READINESS REVIEW PRIOR TO ISSUING PACKAGES FOR CONSTRUCTION**
- **REVIEW OF QAP 2.6 PROCEDURE TO MAKE IT MORE RESPONSIVE**

Six Point Correction Program

Partial Release of 2C

QUESTION: WHY DOES DOE BELIEVE THIS PROGRAM WILL CORRECT THE PROBLEM GIVEN THE HISTORY OF RECURRENCE?

ANSWER: (DOE QA)

- **THIS PROGRAM TOGETHER WITH IMPLEMENTATION OF CORRECTIVE ACTIONS THAT ARE NOW EMPHASIZING ROOT CAUSE DETERMINATION WILL ISOLATE CAUSES TO PREVENT RECURRENCE**

Six Point Correction Program

Partial Release of 2C

- **QUESTION: WHY DOES DOE BELIEVE THIS PROGRAM WILL CORRECT THE PROBLEM GIVEN THE HISTORY OF RECURRENCE?**
- **ANSWER: (DOE LINE ORGANIZATION)**
 - **SINCE THE IMPLEMENTATION OF THE DESIGN CONTROL IMPROVEMENT PLAN, THE FOLLOW UP AUDITS AND SURVEILLANCE INDICATE THAT THE PROCESS PROBLEMS ARE CORRECTED WITH ONLY MINOR INFRACTIONS**
 - **THE IMPLEMENTATION PROBLEMS FOUND IN EACH AUDIT CONTINUE TO BE A PROBLEM, HOWEVER, ANALYSIS OF THE FINDINGS CONFIRM THEY ARE OF DIFFERENT AREA OF IMPLEMENTATION**

Six Point Correction Program

Partial Release of 2C

- DOE LINE MANAGEMENT HAS OBSERVED A GENUINE DESIRE ON THE M&Os PART TO CHANGE THE QA CULTURE AND HAS MADE PROGRESS IN IMPLEMENTATION**
- THE PORTION OF THE M&O DESIGN/DESIGN SUPPORT ORGANIZATION THAT IS INVOLVED WITH THE NON-COMPLIANCES IS CONFINED TO A RELATIVELY SMALL SEGMENT OF THE M&O ORGANIZATION/POPULATION, THUS THE M&O EFFORTS CAN BE NARROWLY FOCUSED.**

STATUS OF CORRECTIVE ACTIONS

Status of Package 2C

- **Question: What is the status of Design Package 2C and the basis for starting the TBM?**
- **Answer (with respect to design activities):**
 - **The schedules for the Partial Release and Full Release of Package 2C will be discussed next and will show the current status of Design Package 2C**
 - **Completion of CARs remedial actions**
 - **Bounding extent of CAR deficiency**
 - **Verification by DOE QA on completion of corrective action**
 - **DOE 6.2 review for acceptance**

M&O Status of Early Release of Package 2C

<u>Item</u>	<u>Status</u>
(1) Complete remedial action for CARs	Ongoing
(2) Approve DIE & Calculation on Ramp Geometry	Complete
(3) Approve Analysis for ESFDR Allocations	Complete
(4) Approve the Design Input Lists	Complete
(5) Baseline and DOE acceptance of Design Input Lists	Not Started
(6) Complete checking & ID Review of Products	Not Started
(7) Verify Products	Not Started
(8) Approve Products	Not Started
(9) Submit products for baselining and DOE acceptance	*

***Currently projected 9/3/94**

M&O Status of Full Release of Package 2C

<u>Item</u>	<u>Status</u>
(1) Complete remedial action for CARs	Ongoing
(2) Prepare/approve Analysis & Calculations	Ongoing
(3) Prepare/approve Analysis for ESFDR Allocations	Ongoing
(4) Prepare/approve the Design Input Lists	Ongoing
(5) Baseline the Design Input Lists and obtain DOE acceptance	Not Started
(6) Verify Drawings and Specs.	Not Started
(7) Approve Drawings and Specs.	Not Started
(8) Submit Drawings & Specs for baselining and DOE acceptance	*

***Currently projected 9/23/94**

Status of Package 2C

- **Question: What is the length of time for DOE to review Design Package 2C for acceptance?**
- **Question: What is the viability of the 9/08/94 TBM start date?**

Answers: (DOE QA)

- **length of time for DOE acceptance of 2C will be as long as it takes to provide an adequate review and obtain acceptable comment resolution**
- **viability of the 9/08/94 date is dependent on the following:**
 - * **actual M&O Design Release to 6.2 review and time requirements for DOE acceptance**
 - * **other program/project requirements which must be met prior to DOE approval to initialize TBM operations**

DOE/M&O VERIFICATION OF CORRECTIVE ACTIONS

DOE/M&O VERIFICATION OF CORRECTIVE ACTIONS

QUESTION: HOW WILL DOE AND THE M&O HAVE CONFIDENCE THAT THE REWORK COMPLETED WILL BE ACCEPTABLE GIVEN THE CORRECTIVE ACTIONS ARE ONGOING?

- “EARLY RELEASE” PORTION OF PKG 2C CONSISTS OF 7 PRODUCTS**
- CARs HAVE BEEN REVIEWED BY DOE QA TO ASSURE:**
 - 1. EXTENT OF DEFICIENCY WITH REGARD TO “EARLY RELEASE” OF 2C HAS BEEN ID’d**
 - 2. THOSE CORRECTIVE ACTIONS ADEQUATELY ADDRESS EARLY-RELEASE PRODUCTS**

DOE/M&O VERIFICATION OF CORRECTIVE ACTIONS

- **ALL PARTIAL RESPONSES TO THE CARs
WILL BE ACCEPTED BY QA**
- **ALL Q-PRODUCTS IN “EARLY RELEASE” OF
PKG 2C WILL GO THROUGH DOE 6.2 REVIEW/
RESOLUTION PRIOR TO RELEASE TO FIELD**

M&O ACTIONS

M&O ACTIONS

QUESTION: WHAT OTHER ACTIONS HAVE DOE AND THE M&O TAKEN, OR PLAN TO TAKE, TO ADDRESS THE DEFICIENCIES IDENTIFIED WITH THE M&O PROGRAM?

ANSWER:

- LOOK AT PERSONNEL/ORGANIZATIONAL UNITS VERSUS WHERE ERRORS ARE TAKING PLACE. HAVE TAKEN/WILL TAKE ACTION WHERE APPROPRIATE:**
 - * MOST OF THE PROBLEMS ARE OCCURRING IN VERY SMALL SEGMENT OF THE TOTAL ORGANIZATION**
 - * WORKFORCE INVOLVED IS SMALL FRACTION OF TOTAL**
 - * NARROW FOCUS SUGGESTS THAT THE PROBLEM IS MANAGEABLE**

M&O ACTIONS

- * SUGGESTS POSSIBLE LOCAL MANAGEMENT PROBLEM**
- * ORGANIZATIONAL ADJUSTMENTS ALREADY MADE OR ARE BEING MADE AS A RESULT OF OUR INITIAL REVIEW INCLUDE:**
 - REPLACED TWO LEAD ENGINEERS, REPLACING ANOTHER**
 - BROUGHT IN TWO ADDITIONAL SR LEVEL QA ENGINEERING PERSONNEL**

DOE ACTIONS

DOE ACTIONS

QUESTION: WHAT OTHER ACTIONS HAVE DOE AND THE M&O TAKEN, OR PLAN TO TAKE, TO ADDRESS THE DEFICIENCIES IDENTIFIED WITH THE M&O PROGRAM?

ANSWER: (DOE QA)

- **PRESENT TRAINING ON THE DOE CORRECTIVE ACTION PROGRAM EMPHASIZING:**
 - **INITIATION**
 - **CORRECTIVE ACTION RESPONSE**
 - **EVALUATION**
 - **CORRECTIVE ACTION**
 - **VERIFICATION**
 - **SIGNIFICANCE**
 - **ROOT CAUSE DETERMINATION**
- **CORRECTIVE ACTION TRAINING TARGETED FOR M&O LINE PERSONNEL AND QA.**

OTHER DOE ACTIONS

QUESTION: WHAT OTHER ACTIONS HAVE DOE AND THE M&O TAKEN, OR PLAN TO TAKE, TO ADDRESS THE DEFICIENCIES IDENTIFIED WITH THE M&O PROGRAM?

ANSWER: (DOE LINE ORGANIZATION)

- DOE HAS APPOINTED A TEAM LEADER WITH TWO SUPPORT STAFF TO MONITOR THE IMPLEMENTATION OF DESIGN PROCESS IMPROVEMENT**
- THIS TEAM WILL SERVE AS PRODUCT QUALITY MONITORS**
- DOE WILL PERIODICALLY MONITOR THE EXPERTISE OF THIS TEAM AND MAKE NECESSARY ADJUSTMENTS TO HAVE QUALIFIED AND EXPERIENCED PERSONNEL SERVE ON THIS TEAM**

NRC LETTER OF AUGUST 20, 1993

QUESTION: DESCRIBE WHY THE DOE ACTIONS TAKEN IN RESPONSE TO THE AUGUST 20, 1993 LETTER DID NOT PREVENT THESE CONCERNS FROM OCCURRING?

ANSWER: PROCESS (PAST) VERSUS IMPLEMENTATION (NOW)

- **MGDS DESIGN CONTROL IMPROVEMENT PLAN DEALT WITH IMPROVING THE PROCESS VIA PROCEDURE REVISIONS**
 - **OQA SURVEILLANCE OF DESIGN CONTROL IMPROVEMENT PLAN - SHOWED SATISFACTORY RESULTS**
- **CURRENT DESIGN CONTROL PROBLEMS - DUE PRIMARILY TO LACK OF IMPLEMENTATION (FAILURE TO PAY ATTENTION TO DETAIL)**
- **PROBLEMS WERE NEW (IMPLEMENTATION) VERSUS PROCESS (PAST) - MORE NON-ITERATIVE THAN RECURRING**

SUMMARY

SUMMARY

(M&O)

- **EARLY AUDITS SHOWED PROCESS AND IMPLEMENTATION PROBLEMS**
- **RECENT AUDITS SHOW THE PROCESS PROBLEMS ARE MINIMAL, IMPLEMENTATION PROBLEMS ARE DOMINANT**
- **DOE CONTROLS IN PLACE TO MONITOR PRODUCTS**
- **M&O RE-ANALYZING PKG 2C WITH A 6-POINT CORRECTION PLAN BEFORE RELEASING**
- **TOTAL REVIEW OF PACKAGE 2C BY M&O AND DOE PRIOR TO RELEASE**

SUMMARY

(DOE LINE ORGANIZATION)

- **DOE WILL INCREASE AMEFO STAFF TO MONITOR FUTURE DESIGN PACKAGES TO ENSURE THE 6-POINT CORRECTION PLANS ARE IMPLEMENTED ACROSS THE BOARD**
- **ADDITIONALLY, THE DOE STAFF WILL MONITOR THE ACTIVITIES OF DOE PAST THE 90% DESIGN REVIEW TO ENSURE FINAL PRODUCT IS A QUALITY PRODUCT**
- **QUALITY PRODUCT ORIENTED SCHEDULES WILL BE IMPLEMENTED TO ALLOW FOR ADEQUATE DESIGN TIME, AND PLANNING FOR START OF CONSTRUCTION**
- **CONFIRM OVERALL PREPAREDNESS BY INCREASED USE OF READINESS REVIEW**

OVERVIEW (PROJECT OFFICE)

YMSCO PROJECT MANAGER'S APPROACH TO DETERMINE READINESS OF OPERATING THE EXPLORATORY STUDIES FACILITY

**MAXWELL B. BLANCHARD
SENIOR TECHNICAL ADVISOR TO
THE PROJECT MANAGER**

**DOE-NRC MEETING ABOUT
M&O DESIGN QUALITY & QUALITY ASSURANCE**

AUGUST 31, 1994

OVERVIEW (PROJECT OFFICE)

YMSCO PROJECT MANAGER'S APPROACH TO READINESS OF ESF OPERATIONS

- **ISSUES**
- **PHASES**
- **STRATEGY**
- **ASSESSMENTS OF READINESS**
- **PREREQUISITES FOR AUTHORIZATION**

OVERVIEW (PROJECT OFFICE)

- **WHAT IS THE PURPOSE OF THIS READINESS REVIEW?**
 - **IS IT TO ASSURE READINESS OF THE TBM?**
 - **IS IT TO ASSURE READINESS OF THE ESF?**
- **ANSWER:**
 - **IT IS TO ASSURE READINESS OF THE ESF FOR THE PHASE OF OPERATIONAL ACTIVITY TO BE PERFORMED.**

OVERVIEW (PROJECT OFFICE)

PHASES TO INITIATE OPERATIONS OF EXPLORATORY STUDIES FACILITY

- 1. STARTUP TESTING OF TUNNEL BORING MACHINE (TBM)**
- 2. TBM TAIL SHIELD CLEARS STARTER TUNNEL**
- 3. INSTALLATION OF MAPPING PLATFORM AND CONDUCT SCIENCE INVESTIGATION**
- 4. OPERATIONS: ALL COMPONENTS OF TBM AND ITS SUPPORT SYSTEM ARE IN PLACE AND FULLY FUNCTIONAL**

OVERVIEW (PROJECT OFFICE)

STRATEGY

- 1. AGREE ON THE DEFINITION OF PHASES**
- 2. AGREE ON THE SPECIFIC ITEMS REQUIRED TO PROCEED WITH PHASE 1**
- 3. AGREE ON A SCHEDULE TO HAVE THOSE THINGS DONE**
- 4. AGREE ON SPECIFIC ITEMS REQUIRED FOR SUBSEQUENT PHASES**
- 5. AGREE ON NEED DATES AND HOLD POINTS FOR AN OVERALL READINESS REVIEW OF THE ESF**
- 6. FACTOR ALL OF THE ABOVE INTO A SCHEDULE**

OVERVIEW (PROJECT OFFICE)

YMSCO'S ASSESSMENT OF READINESS TO INITIATE OPERATIONS OF EXPLORATORY STUDIES FACILITY

- **CONCEPT:**
 - REQUIREMENTS
 - PROCEDURES
 - TRAINING
 - RECORDS
- **ACTION:**
 - M&O READINESS REVIEW
 - SEPARATE DOE OVERSIGHT TEAM
- **INDEPENDENT OVERSIGHT**

**DOE HEADQUARTERS,
ASS'T SECRETARY FOR ENVIRONMENT, SAFETY,
AND HEALTH
CODE EH**

OVERVIEW (PROJECT OFFICE)

YMSCO'S ASSESSMENT OF READINESS TO INITIATE OPERATIONS OF EXPLORATORY STUDIES FACILITY

- **CERTIFICATIONS**
 - **M&O AND CONTRACTORS**
 - *M&O READINESS REVIEW*
 - **AMEFO: DESIGN, REVIEWS, WORK AUTHORIZATIONS FOR CONSTRUCTION**
 - **AMSP: STUDY PLANS, JOB PACKAGES AND WORK AUTHORIZATION FOR TESTING**
 - **AMSL: NRC'S REQUIREMENTS
DOE'S COMMITMENTS TO NRC
ESF SYSTEMS OPERATIONS**

OVERVIEW (PROJECT OFFICE)

YMSCO'S ASSESSMENT OF READINESS TO INITIATE OPERATIONS OF EXPLORATORY STUDIES FACILITY

- **CERTIFICATIONS (Con't)**
 - **AMESH: WORKER SAFETY AND HEALTH
 ENVIRONMENTAL COMPLIANCE PERMITS**
- **CONCURRENCES:**
 - **SEPARATE DOE OVERSIGHT TEAM OF
 READINESS REVIEW**
 - **OFFICE OF QUALITY ASSURANCE/YMQAD**

ATTACHMENT 4

ADDITIONAL "OVERHEADS"

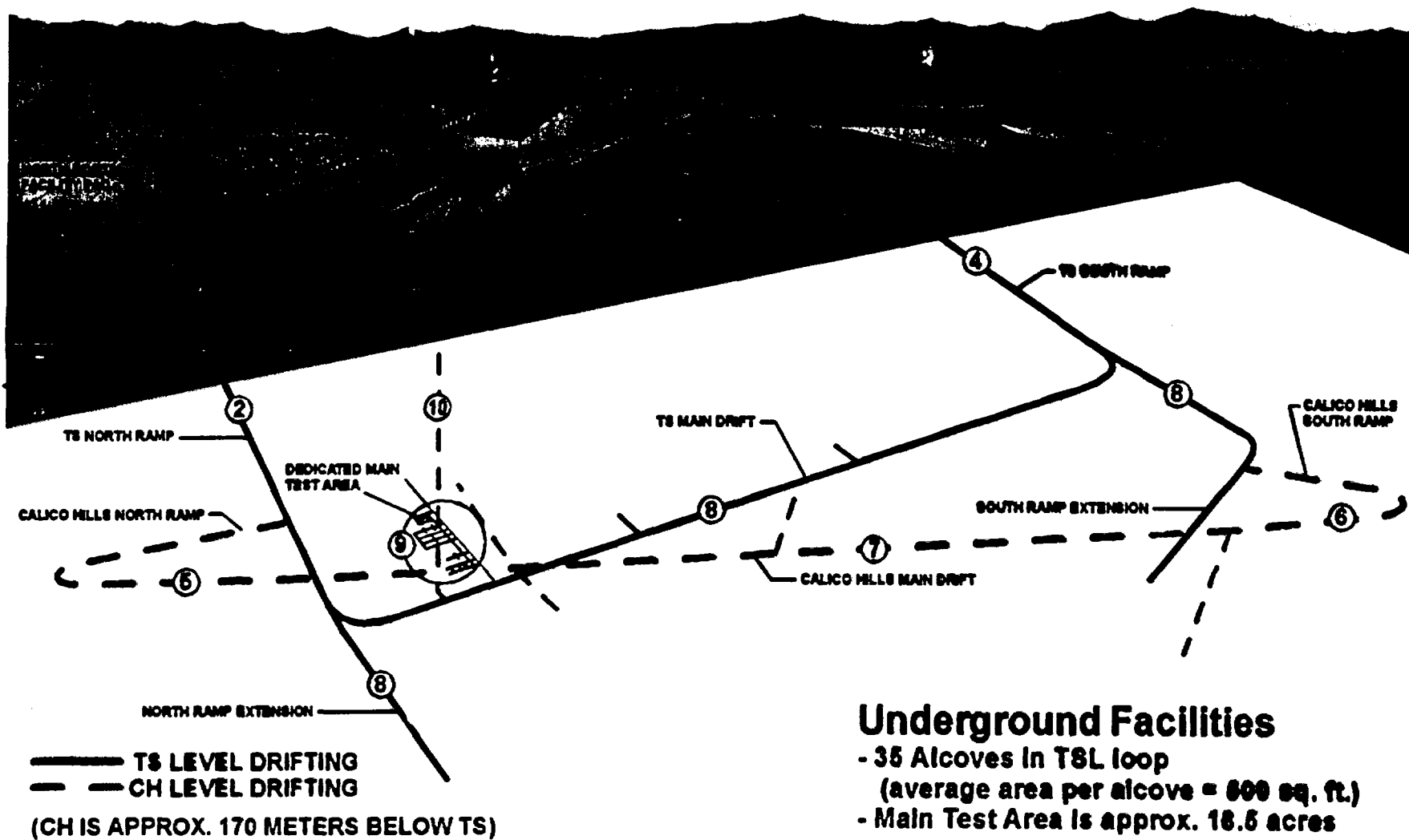
ESF Title II Design

The design of the ESF has been divided into 10 design packages:

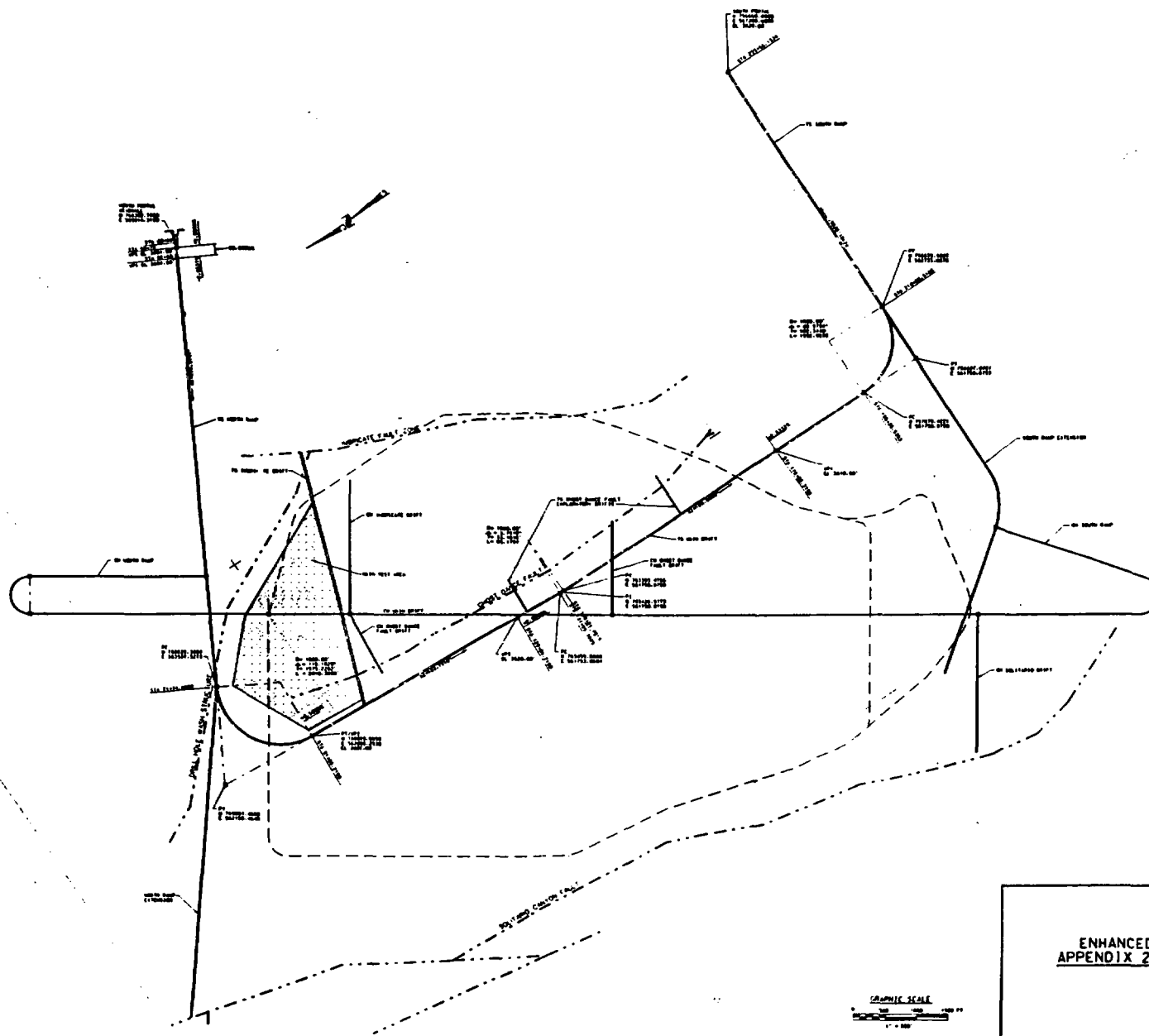
- 1. Site preparation and surface facilities, north portal**
- 2. North ramp - surface to Topopah Spring Level (TSL)**
- 3. Site preparation and surface facilities, south portal**
- 4. South ramp - surface to TSL**
- 5. North ramp to Calico Hills Level (CHL)**
- 6. South ramp to CHL**
- 7. CHL drifting**
- 8. TSL drifting except Main Test Area (MTA)**
- 9. Main Test Area**
- 10. Optional shaft**

The numbering of the packages does not indicate the order of either design or construction

PROPOSED ESF DESIGN



Title: Description and Rationale for Enhancement
to the Baseline ESF Configuration
Originator: D. G. McKenzie



ENHANCED ESF LAYOUT
APPENDIX 2 - FIGURE A2-1

MGDS Design Control Improvement Plan Analysis

- **Problems 1.5 years ago focused on process/procedure problems and implementation problems (lack of attention to detail, workmanship)**
- **Process/procedure problems were essentially corrected**
- **Correcting implementation problems were dependent on procedure rewrites by users (user friendly), classroom training and culture change**

MGDS Design Control Improvement Plan Analysis

(Cont'd)

- **Package 2C performed primarily under old procedures/old training (self-study)... retrofitted to new procedures**
- **Many of the implementation problems associated with 2C were due to starting with the old procedures and transitioning to the new procedures**
- **Work currently in-process is the first work done under the new procedures**

A. EXAMPLES OF PROCESS PROBLEMS

- | | |
|---|--------------------------------|
| (1) QAPs AND ILPs DO NOT MEET QAPD
REQUIREMENTS AND DO NOT REFLECT
CURRENT PRACTICES | YM-93-037
HQ-93-013 |
| (2) NONEXISTENT OR INADEQUATE
PROCEDURES | YMP-93-070 |
| (3) INADEQUATE PROCEDURE FOR
SELECTION OF DESIGN CONFIGURATION | YMP-94-014 |
| (4) NLP DOES NOT ADDRESS QARD
REQUIREMENTS ON TIE REVIEW | 94-QN-C-055 |

B. EXAMPLES OF IMPLEMENTING PROBLEMS

- | | |
|--|--------------------|
| (1) VALIDATION STATUS IS NOT
DOCUMENTED OR TRACKED FOR SOME
DATA IN WIEs | YMP-94-015 |
| (2) INPUTS ARE NOT LISTED ON DRAWINGS | YMP-93-093 |
| (3) TBM OPERATIONS & MAINTENANCE
MANUALS ARE NOT CONTROLLED
DOCUMENTS | YM-94-069 |
| (4) WIE WAS NOT DEVELOPED PER THE
APPLICABLE PROCEDURE | 94-QN-C-044 |