YMP/88-19C

U.S. DEPARTMENT OF ENERGY

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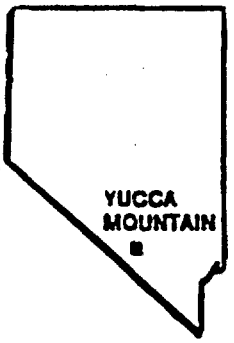
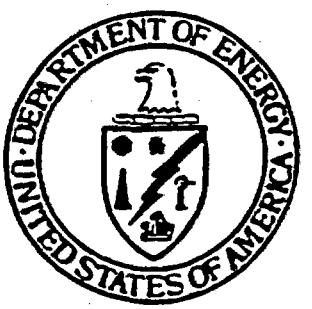


YUCCA MOUNTAIN PROJECT

YUCCA MOUNTAIN PROJECT EXPLORATORY SHAFT FACILITY TITLE I 100 PERCENT TECHNICAL ASSESSMENT REVIEW

REVIEW RECORD MEMORANDUM

VOLUME 3



AUGUST 1988

UNITED STATES DEPARTMENT OF ENERGY
NEVADA OPERATIONS OFFICE/YUCCA MOUNTAIN PROJECT OFFICE

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS PROJECT

TITLE I - TECHNICAL ASSESSMENT REVIEW

FOR THE EXPLORATORY SHAFT FACILITY

AT 100 PERCENT DESIGN COMPLETION

REVIEW RECORD MEMORANDUM

Review Meeting: August 8, 1988

Report Issued: October 10, 1988

Technical Assessment Review Committee Approval	Date
G. K. Beall (Chairman)	G.K. Beall 10/7/88
J. G. Reiser (Secretary)	Joseph G. Reiser 10-5-88
P. J. Karnoski (Quality Assurance)	Peter J. Karnoski 10/7/88
M. C. Brake (Civil/Structural/Architectural)	MARGE BRAKE BY Ira Cottle
E. M. Cikanek (Geotechnical/Testing)	Edward M. Cikanek 10/7/88
R. Tome' (Mechanical)	RF May for R. Tome 10/7/88
I. R. Cottle (T&MSS Lead Reviewer)	Ira R Cottle 10/7/88
J. H. McConville (Electrical)	James H McConville
T. H. Pysto (Environmental)	Thomas H Pysto
S. C. Smith (Repository/Operations)	Steven C Smith 10/7/88
A. L. Langstaff (Mining/Shaft/Ventilation)	A L Langstaff 10/7/88
S. W. Phillips (Safety)	S W Phillips 10/7/88
J. M. Davenport (Regulatory Compliance)	J M Davenport 10/7/88

PREFACE

The focus of this review is to provide a Technical Assessment of the ESF Title I Design at 100 percent completion and to document the review comments and resolutions. The review purpose was to determine whether the design meets the criteria provided to the Architect-Engineers (A/Es) in the Project approved Title I Scope and Planning Documents, for a preliminary design.

To support the assessments required, the Yucca Mountain Project Office invited seventeen (17) reviewing and four (4) observing organizations to participate in the review process, of which fifteen (15) reviewing organizations participated. The reviewing organizations provided a total of fifty-one (51) reviewers representing the technical/scientific disciplines required for the technical review of the A/Es design drawing, specifications, etc.

The review process started on August 8, 1988 and was completed on September 9, 1988. The process developed eleven hundred and seventy-two (1172) comments, of which only five (5) remain in dispute by the reviewers. It is the responsibility of the reviewer to present his/her concerns in writing to the next higher level of project authority for a decision.

As part of the 100 Percent Title I ESF Technical Assessment Review (TAR) the design submitted by the Architect/Engineers (A/Es) was subjected to a review for compliance with 10 CFR 60. A proposed checklist of the regulations in 10 CFR 60 that apply to the design of the ESF, considering eventual incorporation into the repository system, was developed by the Nuclear Regulatory Compliance Division (NRCD) of the T&MSS contractor (SAIC). The list was developed using 10 CFR 60, input from other T&MSS staff members, and notes from recent NRC interactions. Prior to conducting the review, the NRCD presented this list to the organizations assigned the responsibility of conducting the compliance review. Assignments of responsibility were made by the NRCD and the Project participants based on the scopes of Project work of the participants. During two workshops a final checklist to be used by the organizations was finalized. The review itself consisted of the responsible organization assessing the compliance of the design with the assigned 10 CFR 60 regulation(s) and supplying a short justification of that assessment on forms provided by the NRCD. The reviewing organizations determined that the ESF design complied with 15 of the 20 applicable 10 CFR 60 regulations. Please note that an additional evaluation (of 10 CFR 60 - General Comment) was completed during the review. In all cases where the reviewers determined the design was not in compliance with the regulations, a comment was submitted to the proper Architect/Engineer (A/E). Listed below are the regulations to which the reviewers felt the ESF - design was not in compliance and the number of the comment made by the reviewer to the A/E addressing this non-compliance:

10 CFR 60 - General Comment	Comment No. S.MI.RES.004
10 CFR 60.75 - NRC Office Space	Comment No. T.AR.JMD.003
10 CFR 60.113(a)(1) -Postclosure Performance by Engineered Barrier System	Comment No. L.MI.DGW.018
10 CFR 60.133(b) - Flexibility of Design of Underground Facilities	Comment No. S.GE.TEB.001
10 CFR 60 -Subpart F -Performance Confirmation Program	Comment No. S.MI.RES.004

All comments submitted to the A/Es as a result of this exercise were dispositioned satisfactorily to both the reviewer and the A/E, indicating that the reviewer believed the design either complied with the regulation or would comply with the regulation once the agreed-upon action had been completed. For more details, see Section 7.0, Volume 2, "10 CFR 60 Compliance Review of this memorandum.

The Exploratory Shaft Facility Title I-100 Percent Design completion Technical Assessment Review was conducted in accordance with Quality Management Procedure QMP-02-08 and the approved plan, which among other requirements calls for the Technical Assessment Review Secretary to provide "Meeting Minutes" of the review activities, and "Review Record Memorandum". No attempt was made to produce a daily verbatim transcription of the interchange between the fifty-one Reviewers and their counterparts on the Architect-Engineers design teams. This decision is based upon the fact that the resulting culmination of the dialogue between the parties is represented in the final documentation of the Reviewer's Comments Sheets and the Architect-Engineers Comments Resolution Sheets as accepted by the parties, and this three Volume Review Record Memorandum constitutes relevant meeting minutes. Both sets of "records" referred to above have been included in Section 6.0 Volume 2 and Section 3.0 Volume 1 respectively of this memorandum. Where a workshop was conducted and meeting minutes were considered to be either useful or necessary, they have been provided, (i.e. "Concerns Related to 10 CFR 60" Section 7.0 Volume 2 of this memorandum).

Additionally, Reviewers were asked to verify that his/her organization's comments from the ESF Title I-50 Percent Design Review had been incorporated. The reviewer's responses are contained in either the reviewer's restatement of the comment in this review or in a separate stand alone statement, included in this document.

Lastly, from a review checklist, the Technical Assessment Review Committee Discipline Coordinators (TARC) prepared responses in accordance with their area of technical expertise. Section 1, Volume 1.0 Findings & Recommendations were developed from the Discipline Coordinates Responses. This Review Record Memorandum is a comprehensive document, which provides an in depth report of the Technical Assessment Review activities. Briefly, this memorandum includes the following key activities and/or documents:

- o The DOE approved Plan used to implement the QMP-02-08 review process.
- o Presentations to Reviewers provided to highlight the review process and the reviewers' responsibilities.
- o Identification of the reviewing organizations, their respective scopes, and qualified reviewers.
- o Comment and resolution acceptance documentation.
- o TARC Team Findings and Recommendations as appropriate, based on a checklist evaluation by TAR Team Members.
- o Comment Resolution Concurrence and Items in dispute process.
- o Other items as identified in the Table of Contents of this memorandum.

Joseph G. Reiser, Secretary
Technical Assessment Review Team

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TABLE OF CONTENTS

8.0 Documentation of Technical Assessment Review Notifications and Identification of Reviewers Transmittals

TECHNICAL ASSESSMENT REVIEW NOTICE

N-QA-010
7/88

Date 7/28/88

Technical Area to be Reviewed Exploratory Shaft Facility Title I Design at 100 Percent Design Completion (Preliminary Design). See Plan for specific area of review responsibility.

WBS No.: 1.2.6.1

Review Date 8-8-88 Location Henderson, NV Time 8:00 a.m.

Technical Assessment Review Chairperson G. Kenton Beall (at 794-7829)

Based on review of the qualification documentation, this Technical Assessment Review Chairperson is qualified to execute the responsibilities of QMP-02-08 with respect to the scope and purpose of this Review.

Scope of Technical Assessment Review: Assess the Architect-Engineers specifications for the surface and underground works in satisfaction to the design basis requirements as provided by DOE/WMPO.

(See attached Plan)

Purpose of Technical Assessment Review: A WMPO Management Review to assess the accomplishment of the items identified in QMP-02-08 Section 3.1 and DOE Order 4700.1.

(See attached Plan)

Signed Michael E. Spaeth

Michael E. Spaeth
Technical Project Officer
for NNWSI
Science Applications
International Corporation

Attachments: Title I - Technical Assessment Review Plan for the Exploratory Shaft Facility (ESF) at 100 Percent Design Completion

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

AUG 0 3 1988

Ronald C. Briggs
U.S. Department of Interior
Bureau of Mines
2401 E Street, N.W.
Washington, D.C. 20241

REVIEW NOTICE AND IDENTIFICATION OF REVIEWERS FOR THE TITLE I TECHNICAL ASSESSMENT REVIEW FOR THE EXPLORATORY SHAFT FACILITY (ESF) AT 100 PERCENT DESIGN COMPLETION

The U.S. Department of Energy, Nevada Operations Office, Waste Management Project Office (WMPO) will conduct a Technical Assessment Review of the ESF Title I Design at 100 percent completion. WMPO has approved the Title I Technical Assessment Review Plan (TARP) for the ESF at 100 Percent Design Completion. Science Applications International Corporation (SAIC) is the WMPO designee for the conduct of this Technical Assessment Review in accordance with the enclosed plan.

The review period is scheduled to start Monday, August 8, 1988, at 8 a.m. and run through September 13, 1988. Specific calendar day activities and overall schedules are as shown in the TARP enclosed, and will be conducted at the Henderson Convention Center, Henderson, Nevada.

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Your organization is asked to indicate the review team members, including the team's Lead Representative, their qualifications (forms and example enclosed) and the organization's commitment for the review team members' participation in the review process. It is strongly urged, consistent with prior commitment or other schedule demands that, where practical, the same reviewer who participated in the ESF Title I Design Review at 50 percent completion be assigned to this currently planned review.

If you have any questions or need additional information regarding this matter, please contact Lester P. Skousen of my staff at (702) 794-7929 or FTS 544-7929 or G. Kenton Beall of SAIC at (702) 794-7829 or FTS 544-7829.

Carl P. Gertz, Project Manager
Waste Management Project Office

WMPO:LPS-3132

Enclosure:
Title I - Technical Review Plan for
the ESF at 100 Percent Design Completion

cc w/encl:
Bruce Cantrell
Twin Cities Research Center
5629 Minnehaha Ave., South
Minneapolis, MN 55417

R. Lindsey Mundel
Denver Research Center, Bldg. 20
Denver Federal Center
Denver, CO 80225

cc w/o encl:
Dean Stucker, HQ (RW-223) FORS
M. E. Spaeth, SAIC, Las Vegas, NV
M. D. Voegele, SAIC, Las Vegas, NV
J. E. Shaler, SAIC, Las Vegas, NV
G. K. Beall, SAIC, Las Vegas, NV
S. H. Klein, SAIC, Las Vegas, NV
J. G. Reiser, SAIC, Las Vegas, NV
James Blaylock, WMPO, NV
E. L. Wilmot, WMPO, NV

Department of Energy
Nevada Operations Office
P. O. Box 98518
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AUG 0 3 1988

Dr. Dennis Brown
VP of Academic Affairs
University of Nevada Reno
Clark Area 110
Reno, NV 89557

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AUG 0 3 1888

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Carl P. Gertz, Project Manager
Waste Management Project Office

WMPO:LPS-3137

Enclosure:
Title I - Technical Review Plan for
the ESF at 100 Percent Design Completion

cc w/o encl:
Dean Stucker, HQ (RW-223) FORS
M. E. Spaeth, SAIC, Las Vegas, NV
M. D. Voegele, SAIC, Las Vegas, NV
J. E. Shaler, SAIC, Las Vegas, NV
G. K. Beall, SAIC, Las Vegas, NV
S. H. Klein, SAIC, Las Vegas, NV
J. G. Reiser, SAIC, Las Vegas, NV
James Blaylock, WMPO, NV
E. L. Wilmot, WMPO, NV

SAIC/T&MSS

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

AUG 0 3 1988

John Linehan
Acting Branch Chief Operation
U.S. Nuclear Regulatory Commission
Mail Stop 4H3
Washington, D.C. 20555

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Carl P. Gertz, Project Manager
Waste Management Project Office

WMPO:LPS-3134

Enclosure:
Title I - Technical Review Plan for
the ESF at 100 Percent Design Completion

cc w/encl:
Dr. Mysore Nataraja, NRC (MS-4H3)
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G. K. Beall, SAIC, Las Vegas, NV
S. H. Klein, SAIC, Las Vegas, NV
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E. L. Wilmot, WMPO, NV

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AUG 0 3 1988

Lawrence D. Ramspott, LLNL, Livermore, CA
Thomas O. Hunter, SNL, 6310, Albuquerque, NM
Donald T. Oakley, LANL, Los Alamos, NM
Michael E. Spaeth, SAIC, Las Vegas, NV
Larry R. Hayes, USGS, Denver, CO
Robert F. Pritchett, REECo, Las Vegas, NV

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Carl P. Gertz, Project Manager
Waste Management Project Office

WMPO:LPS-3131

Enclosure:
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cc w/encl:
Bob Craig, USGS, Denver, CO
Bob Stinebaugh, SNL, Albuquerque, NM
Thomas J. Merson, LANL, Las Vegas, NV
Dale Wilder, LLNL, Livermore, CA
Dan Koss, REECo, Las Vegas, NV
I. R. Cottle, SAIC, Las Vegas, NV

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V. J. Cassella, HQ (RW-123) FORS
Dean Stucker, HQ (RW-223) FORS
M. E. Spaeth, SAIC, Las Vegas, NV
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E. L. Wilmot, WMPO, NV

Department of Energy
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AUG 0 3 1988

Dr. William Wells
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University of Nevada Las Vegas
4505 S. Maryland Parkway
Las Vegas, NV 89154

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Carl P. Gertz, Project Manager
Waste Management Project Office

WMPO:LPS-3138

Enclosure:
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M. D. Voegele, SAIC, Las Vegas, NV
J. E. Shaler, SAIC, Las Vegas, NV
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Nevada Operations Office
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Las Vegas, NV 89193-8518

AUG 0 3 1988

Robert R. Loux, Jr.
Executive Director
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State of Nevada
Evergreen Center, Suite 252
1802 North Carson Street
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AUG 0 3 1988

Robert R. Loux, Jr.

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Carl P. Gertz, Project Manager
Waste Management Project Office

WMPO:LPS-3133

Enclosure:
Title I - Technical Review Plan for
the ESF at 100 Percent Design Completion

cc w/encl:
Jim Grubb, State of Nevada, Carson City, NV

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Dean Stucker, HQ (RW-223) FORS
C. M. Smith, HQ (RW-421) FORS
Allen Benson, HQ (RW-123) FORS
S. M. Volek, SAIC, Las Vegas, NV
M. E. Spaeth, SAIC, Las Vegas, NV
M. D. Voegele, SAIC, Las Vegas, NV
J. E. Shaler, SAIC, Las Vegas, NV
G. K. Beall, SAIC, Las Vegas, NV
S. H. Klein, SAIC, Las Vegas, NV
J. G. Reiser, SAIC, Las Vegas, NV
C. L. West, OEA, NV
M. L. Powell, WMPO, NV
James Blaylock, WMPO, NV
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SAIC/T&MSS

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Nevada Operations Office
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AUG 0 3 1988

Shed R. Elliott, SHD, NV
Peter K. Fitzsimmons, HPED, NV
E. Wayne Adams, SSD, NV
Vern F. Witherill, NTSO

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Carl P. Gertz, Project Manager
Waste Management Project Office

WMPO:LPS-3136

Enclosure:
Title I - Technical Review Plan for
the ESF at 100 Percent Design Completion

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A. R. Veloso, NTSO

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Dean Stucker, HQ (RW-223) FORS
M. E. Spaeth, SAIC, Las Vegas, NV
M. D. Voegele, SAIC, Las Vegas, NV
J. E. Shaler, SAIC, Las Vegas, NV
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James Blaylock, WMPO, NV
E. L. Wilmot, WMPO, NV

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AUG 0 3 1988

Ram Lahoti, Branch Chief, Underground Facilities, HQ (RW-223) FORS

REVIEW NOTICE AND IDENTIFICATION OF REVIEWERS FOR THE TITLE I TECHNICAL ASSESSMENT REVIEW FOR THE EXPLORATORY SHAFT FACILITY (ESF) AT 100 PERCENT DESIGN COMPLETION

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In order to support these WMPO activities, your organization is requested to participate as a reviewer of the ESF designs prepared by the architect/ engineers. WMPO has defined the scope of work for each reviewing organization, including the method for qualification of each reviewer regarding his/her area of technical expertise. These requirements are mandatory in order to satisfy WMPO quality assurance requirements.

Your organization is asked to indicate the review team members, including the team's Lead Representative, their qualifications (forms and example enclosed) and the organization's commitment for the review team members' participation in the review process. It is strongly urged, consistent with prior commitment or other schedule demands that, where practical, the same reviewer who participated in the ESF Title I Design Review at 50 percent completion be assigned to this currently planned review.

If you have any questions or need additional information regarding this matter, please contact Lester P. Skousen of my staff at FTS 544-7929 or (702) 794-7929, or G. Kenton Beall of SAIC at FTS 544-7829 or (702) 794-7829.

Carl P. Gertz, Project Manager
Waste Management Project Office

WMPO:LPS-3130

Enclosure:
Title I - Technical Review Plan for
the ESF at 100 Percent Design Completion

cc w/encl:
Dean Stucker, HQ (RW-223) FORS

cc w/o encl:
V. J. Cassella, HQ (RW-123) FORS
M. E. Spaeth, SAIC, Las Vegas, NV
M. D. Voegele, SAIC, Las Vegas, NV
J. E. Shaler, SAIC, Las Vegas, NV
G. K. Beall, SAIC, Las Vegas, NV
S. H. Klein, SAIC,

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

AUG 0 3 1988

John Jenkins, Manager
Underground Facilities Section
Roy F. Weston
955 L'Enfant Plaza S.W., 8th Floor
Washington, D.C. 20024

REVIEW NOTICE AND IDENTIFICATION OF REVIEWERS FOR THE TITLE I TECHNICAL ASSESSMENT REVIEW FOR THE EXPLORATORY SHAFT FACILITY (ESF) AT 100 PERCENT DESIGN COMPLETION

The U.S. Department of Energy, Nevada Operations Office, Waste Management Project Office (WMPO) will conduct a Technical Assessment Review of the ESF Title I Design at 100 percent completion. WMPO has approved the Title I Technical Assessment Review Plan (TARP) for the ESF at 100 Percent Design Completion. Science Applications International Corporation (SAIC) is the WMPO designee for the conduct of this Technical Assessment Review in accordance with the enclosed plan.

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Carl P. Gertz, Project Manager
Waste Management Project Office

WMPO:LPS-3135

Enclosure:
Title I - Technical Review Plan for
the ESF at 100 Percent Design Completion

cc w/encl:
J. Montgomery, Weston, Washington, D.C.

cc w/o encl:
Dean Stucker, HQ (RW-223) FORS
M. E. Spaeth, SAIC, Las Vegas, NV
M. D. Voegele, SAIC, Las Vegas, NV
J. E. Shaler, SAIC, Las Vegas, NV
G. K. Beall, SAIC, Las Vegas, NV
S. H. Klein, SAIC, Las Vegas, NV
J. G. Reiser, SAIC, Las Vegas, NV
James Blaylock, WMPO, NV
E. L. Wilmot, WMPO, NV

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

AUG 0 3 1988

Thomas Lukins, District Manager
U.S. Department of Labor, Mine
Safety and Health Administration
620 Central Avenue
Building Number 7
Alameda, CA 94501

REVIEW NOTICE AND IDENTIFICATION OF REVIEWERS FOR THE TITLE I TECHNICAL ASSESSMENT REVIEW FOR THE EXPLORATORY SHAFT FACILITY (ESF) AT 100 PERCENT DESIGN COMPLETION

The U.S. Department of Energy, Nevada Operations Office, Waste Management Project Office (WMPO) will conduct a Technical Assessment Review of the ESF Title I Design at 100 percent completion. WMPO has approved the Title I Technical Assessment Review Plan (TARP) for the ESF at 100 Percent Design Completion. Science Applications International Corporation (SAIC) is the WMPO designee for the conduct of this Technical Assessment Review in accordance with the enclosed plan.

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If you have any questions or need additional information regarding this matter, please contact Lester P. Skousen of my staff at FTS 544-7929 or (702) 794-7929, or G. Kenton Beall of SAIC at FTS 544-7829 or (702) 794-7829.

Carl P. Gertz, Project Manager
Waste Management Project Office

WMPO:LPS-3128

Enclosure:
Title I - Technical Review Plan for
the ESF at 100 Percent Design Completion

cc w/encl:
Roderic M. Breland, MSHA, Boulder City, NV

cc w/o encl:
Dean Stucker, HQ (RW-223) FORS
M. E. Spaeth, SAIC, Las Vegas, NV
M. D. Voegele, SAIC, Las Vegas, NV
J. E. Shaler, SAIC, Las Vegas, NV
G. K. Beall, SAIC, Las Vegas, NV
S. H. Klein, SAIC, Las Vegas, NV
J. G. Reiser, SAIC, Las Vegas, NV
James Blaylock, WMPO, NV
E. L. Wilmot, WMPO, NV

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

AUG 0 3 1988

Brian W. Doyle, P.E.
Chief, Technical Support Branch
U.S. Army Corps of Engineers
650 Capitol Mall
Sacramento, CA 95814-4794

REVIEW NOTICE AND IDENTIFICATION OF REVIEWERS FOR THE TITLE I TECHNICAL ASSESSMENT REVIEW FOR THE EXPLORATORY SHAFT FACILITY (ESF) AT 100 PERCENT DESIGN COMPLETION

The U.S. Department of Energy, Nevada Operations Office, Waste Management Project Office (WMPO) will conduct a Technical Assessment Review of the ESF Title I Design at 100 percent completion. WMPO has approved the Title I Technical Assessment Review Plan (TARP) for the ESF at 100 Percent Design Completion. Science Applications International Corporation (SAIC) is the WMPO designee for the conduct of this Technical Assessment Review in accordance with the enclosed plan.

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Carl P. Gertz, Project Manager
Waste Management Project Office

WMPO:LPS-3129

Enclosure:
Title I - Technical Review Plan for
the ESF at 100 Percent Design Completion

cc w/encl:
Erick O. Jensen, DQA
U.S. Army Corps
of Engineers, Sacramento, CA

cc w/o encl:
Dean Stucker, HQ (RW-223) FORS
M. E. Spaeth, SAIC, Las Vegas, NV
M. D. Voegele, SAIC, Las Vegas, NV
J. E. Shaler, SAIC, Las Vegas, NV
G. K. Beall, SAIC, Las Vegas, NV
S. H. Klein, SAIC, Las Vegas, NV
J. G. Reiser, SAIC, Las Vegas, NV
James Blaylock, WMPO, NV
E. L. Wilmot, WMPO, NV

9.0 Technical Assessment Review Team Selection Record, and Reviewer Qualifications

TECHNICAL ASSESSMENT REVIEW TEAM SELECTION RECORD

N-QA-008
7/88

:hnical Assessment Review Subject ESF TITLE I -- 100 PERCENT DESIGN COMPLETION

FUNCTION	REPRESENTATIVE
Secretary T&MSS TARC	J. G. REISER
QUALITY ASSURANCE - T&MSS TARC	P. J. KARNOSKI
REGULATORY COMPLIANCE - T&MSS TARC	J. M. DAVENPORT
CIVIL/STRU/ARCH - T&MSS TARC	M. C. BRAKE
TESTING - T&MSS TARC	D. M. ROSS-BROWN
GEOTECHNICAL - T&MSS TARC	E. M. CIKANEK
MECHANICAL - T&MSS TARC	R. L. TOME'
TESTING - T&MSS TARC	I. R. COTTLE
ELECTRICAL - T&MSS TARC	J. H. MCCONVILLE
ENVIRONMENTAL DESIGN - T&MSS TARC	T. H. PYSTO
REPOSITORY/OPERATIONS - T&MSS TARC	S. C. SMITH
MINING/VENTILATION - T&MSS TARC	A. L. LANGSTAFF
SAFETY - T&MSS TARC	S. W. PHILLIPS
'RE PROTECTION - REECO	J. L. BETTS
GEOTECHNICAL - SNL	T. E. BLEJWAS
TELECOMMUNICATIONS - DOE/NTSO	W. A. BOSS
MINING SAFETY & HEALTH REGS - US/MSHA	R. M. BRELAND
COMMUNICATIONS - NVO/ISD	D. D. BROGAN
MINING TECHNOLOGY - US/BOM	B. C. CANTRELL
TESTING - USGS	R. W. CRAIG
CONSTRUCTION MANAGER, CONTRACTS - REECO	L. G. GREVELT
MINING TECHNOLOGY - US/BOM	R. A. DICK
MINING TECHNOLOGY - US/BOM	D. R. DOLINAR
COMMUNICATIONS - DOE/WMPO	R. D. EDWARDS

Based on review of the qualification documentation, these representatives cover the functions for this Review and are acceptable as team members to accomplish the scope and purpose of this review.

Signed _____
T&MSS TARC CHAIRMAN

Attachment:

Qualification Documentation

TECHNICAL ASSESSMENT REVIEW TEAM SELECTION RECORD

N-QA-008
7/88

Technical Assessment Review Subject: ESF TITLE I - 100 PERCENT DESIGN COMPLETION

FUNCTION	REPRESENTATIVE
Secretary	
ELECTRICAL - REECO	L. J. FLORES
CONSTRUCTION MANAGER, QUALITY ASSURANCE - REECO	M. A. FOX
MINING/IN SITU TESTING - LOS ALAMOS	S. D. FRANCIS
MINING - REECO	W. H. GRAMS
ENVIRONMENTAL COMPLIANCE - REECO	O. L. HAWORTH
SURFACE FACILITIES - U.S.A./COE	E. O. JENSEN
MINING - REECO	D. L. KOSS
GEOTECHNICAL - USGS	T. L. LIPPERT
SITE HEALTH & SAFETY - NVO/SHD	D. G. MCPHERSON
IN SITU TESTING - LOS ALAMOS	T. J. MERSON
PROGRAM REQUIREMENTS - WESTON	J. E. MONTGOMERY
MINING - US/BOM	R. L. MUNDELL
MINING - DOE/WMPO	L. J. OWENS
FIRE PROTECTION - NVO/SHD	P. E. PHILLIPS
CIVIL - USA/COE	D. L. POTTER
MINING - REECO	R. R. ROMMEL
SAFETY - REECO	F. A. SPENIA
GEOTECHNICAL - SNL	R. E. STINEBAUGH
PROGRAM REQUIREMENTS - DOE/HQ	D. STUCKER
MINE HEALTH & SAFETY - US/MSHA	P. TALLEY
MINING - NVO/NTSO	S. A. THOMAS
INTERFACE SITE FACILITIES & UTILITIES - NVO/NTSO	A. R. VELOSO

Based on review of the qualification documentation, these representatives cover the functions for this Review and are acceptable as team members to accomplish the scope and purpose of this review.

Signed _____
T&MSS TARC CHAIRMAN

Attachment:

Qualification Documentation

TECHNICAL ASSESSMENT
REVIEW TEAM SELECTION RECORD

N-QA-008
7/88

Technical Assessment Review Subject ESF TITLE I - 100 PERCENT DESIGN COMPLETION

FUNCTION	REPRESENTATIVE
Secretary	
PROGRAM REQUIREMENTS - WESTON	D. WAGG
GENERAL ENGINEER - DOE/WMPO	R. S. WATERS
GEOTECHNICAL - USGS	M. S. WITFIELD
MINE HEALTH & SAFETY - US/MSHA	J. WIDOWS
WASTE PACKAGE & TEST INTERFACE - LLNL	D. G. WILDER

Based on review of the qualification documentation, these representatives cover the functions for this Review and are acceptable as team members to accomplish the scope and purpose of this review.

Signed Ken Beall
T&MSS TARC CHAIRMAN

Attachment:

Qualification Documentation

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date August 9, 1988

Name Roxanne D. Edwards Title General Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activities Ms. Edwards is qualifed to participate as a reviewer in both Title I and II Technical Assessment Reviews for the Exploratory Shaft Facility (ESF) based on a review of her education and experience. In addition to having a B.S. from Idaho State University (ISU) in General Engineering with a specialty in digital and control systems engineering, she has been trained in the DOE Project Management System while working at DOE. Prior to working at DOE, Ms. Edwards was employed by the College of Engineering at ISU as a teaching assistant in a digital systems lab and an electronics lab. As part of her job, Ms. Edwards reviews work plans, work effort, and technical and programmatic documents for technical content and consistency with regulatory requirements and DOE/OCRWM/OGR policies as they relate to the ESF. The review scope al includes compliance with project execution as a Major System Acquisition, as defined by DOE Order 4700.1A, and compliance with other applicable DOE Orders.

Proficiency Report Conducted and Certified by

Signature [signature] Title Branch Chief

Date 8/11/88

NOTE: This report should be completed on on annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date August 15, 1988

Name Dennis H. Irby Title General Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Provides detailed guidance to contractors regarding project planning and coordination as it relates to the Exploratory Shaft Facility (ESF); assures that management information system/baseline is used and kept current for monitoring project progress and performance. Maintains knowledge of work excuted by contractors. Assures that the project is executed as a major systems acquisition, DOE Order 5700; reviews work plans, work effort, and technical and programmatic documents for technical content and consistency with regulatory requirements and DOE/OCRWM/OGR policies. Supports quality assurance audits and surveillance of contractors. Develops the triennial budget requirements for the Exploratory Shaft Facility WBS element. Maintains thorough knowledge of the design aspect to assure validity of the cost estimates submitted by the contractors. Assures that the contractors submit appropriate technical information and the necessary level of detail to support the field work package proposal/agreements. Acts on own initiative in a timely and responsible manner. Plans work and establishes priorities to maximize output. Utilizes effectively available project management tools to manage ESF portion of the project. Mr. Irby's educational background professional experience and training acquired since joining DOE makes him a qualified reviewer in conformance with QMP-02-08 requirements.

Proficiency Report Conducted and Certified by

Signature [signature] Title Branch Chief

Date 8/15/88

WMPO PROFICIENCY REVIEW REPORT

N-QA-00?
6/92

Review Date 8-8-88

Name Derrick Wagg Title Mining Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based on a review of Mr. Wagg's education and experience in underground design, construction and operation, he is fully qualified to serve in the above capacity. His duties and responsibilities include:

Mr. Wagg has over 30 years experience in senior engineering and management of production mining and mine development, specializing in shaft and slope construction and underground development.

As part of the Weston Technical Support Team to the Office of Civilian Waste Management, Mr. Wagg is responsible for the review and evaluation of various technical documents submitted to HQ by the project office for review and approval. He also provides technical guidance on mining related activities such as occupational safety, shaft and underground facility design and construction, equipment evaluation, and underground ventilation.

Proficiency Report Conducted and Certified by

Signature [signature] Title MGR. ESF & REPOSITORY DES. (WESTON/JACOBS)

Date July 8/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date 8/5/88 Revised 8/12/88

Name John Marshall Davenport III Title Licensing Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Prior to joining SAIC, Mr. Davenport had licensing experience as an employee of Battelle Memorial Institute. Prior to that, he participated in geologic field activities with TVA related to design and siting of nuclear plants under 10 CFR 50. He is qualified by education and experience for the position of Licensing Engineer. Mr. Daveport's duties include regulatory review of technical documents, assessment of applicability and implementation of regulatory requirements, review and comment on regulations, participation in NRC interactions, and development of regulatory positions. Mr. Davenport received a BA degree from the University of Tennessee in 1979. He has six years of experience related to nuclear siting and licensing activities.

Proficiency Report Conducted and Certified by

Signature [signature] Title Manager, Regulatory Compliance

Date 5/12/88 Department

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-00[illegible]
6

Review Date May 2, 1988

Name Thomas H. Pysto Title Senior Environmental Scientist

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Mr. Pysto is employed with SAIC as a Senior Environmental Scientist. He is assigned to the Nevada Nuclear Waste Storage Investigations (NNWSI) Project in the Environmental Regulatory Compliance Division. His work duties include coordinating and interfacing engineering activities with permitting requirements. He is involved with obtaining the applicable permits, preparing environmental compliance procedures, and conducting regulatory compliance inspections.

Before joining SAIC, Mr. Pysto was a project environmental biologist for Occidental Petroleum Corporation on their experimental mine site. His duties included: con ng environmental compliance inspections; reviewing and updating permits; resolving environmental compliance problems; and working with the various engineering departments to ensure environmental requirements were incorporated into all work plans.

Mr. Pysto received a B.S. degree in Wildlife Biology from Colorado State University in 1975. He has over 12 years of experience in the environmental field.

Proficiency Report Conducted and Certified by

Signature E. W. McCann As Amended E. W. McCann Title E. W. McCann, Environmental Regulatory Compliance Division

Date 5/3/88 8/11/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date 8/27/87

Name Robert H. Klemens Title QA Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Performance of activities including but not limited to:

- o Preparation, planning, conducting, and performance of audits and surveillances
- o Procedure preparation and review
- o Review of technical documents for QA requirements
- o Training
- o Performing literature surveys on Waste Management subjects
- o Represent Manager of Audits & Surveillances during Manager's absence
- o Assist in administrative matters related to planning, scheduling and other administrative matters as required
- o Evaluate candidates for performing duties as auditors, technical specialists and lead auditors

Certification is based on 12 years of prior nuclear QA experience and the indoctrination into NNWSI Project requirements.

Education includes a BS in Engineering from the University of Pittsburgh.

Proficiency Report Conducted and Certified by

Signature W. R. Kasper Title Mgt. Audits & Surveillances

Date 8/27/87 8/27/87

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-CA-000
6/86

Review Date August 9, 1988

Name Paul Talley Title Health and Safety Specialist

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based upon a review of Mr. Talley's education and employment history, he is fully qualified to serve on the Title II Technical Review Board. Mr. Talley is a high school graduate from Lead, South Dakota, including several college short courses. He was employed by Lithium Mine Corporation as a mechanic/hoist operator. Subsequently, Mr. Talley was a heavy equipment instructor/recovery specialist while in the Army. He was employed by Homestake Mining Company in various capacities including hoisting, mining, and assistant Safety Director. Presently Mr. Talley is employed by the Mine Safety and Health Administration: 5 years as a general mine inspector, 14 years as a mechanical specialist--hoists/shafts, cranes and wire rope. During his time with MSHA he is active in 30 CFR committee work, training instr rs throughout the States, mine rescue, nondistructive wire rope and Fib Rope "Kevlar", state-of-the-art design and testing, special projects, working with manufaturers and consultants, including Lilly/Logan hoist controllers.

Proficiency Report Conducted and Certified by

Signature Bodie M Breland Title Supervisory Mine Inspector

Date August 9, 1988

NOTE: This report should be completed on an annual basis.

FIGURE V - WMPO PROFICIENCY REVIEW REPORT FORM

WMPO PROFICIENCY REVIEW REPORT

K-QA-007
BCS

Review Date 08/08/88

Name R. L. Mundell Title Supervisory Mining Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based upon a review of Mr. Mundell's education and employment history, he is fully qualified to serve on the Title II Technical Review Board. Mr. Mundell holds a B.S. degree in Mining Engineering from the Pennsylvania State University and has completed graduate courses in industrial ventilation and industrial hygiene at the University of Pittsburgh. He was employed by Republic Steel Corp., National Gypsum Company and Lee-Norse Co. in various capacities including underground surveyor, mine foreman, mine engineer and applications engineer. Subsequently, Mr. Mundell was employed by the Mine Health and Safety Administration, Dept. of Labor where he was responsible for completing engineering field studies including mine ventilation and respirable dust surveys. He later was promoted to group supervisor; in this capacity he supervised a number of field crews conducting engineering field studies. Mr. Mundell was also employed by Bituminous Coal Research, Inc. as a supervising mining engineer and is currently employed as a group supervisor with the U.S. Bureau of Mines, Dept. of Interior. Mr. Mundell has approximately 13 years total experience supervising a multi-disciplinary staff of professional engineers, scientists and technicians. Groups Mr. Mundell has supervised were responsible for conducting laboratory and field investigations and research projects at surface and underground mining operations. Mining

Proficiency Report Conducted and Certified by

Signature _____ Title _____

Date _____

NOTE: This report should be completed on an annual basis.

FIGURE V - WMPO PROFICIENCY REVIEW REPORT FORM

WMPO PROFICIENCY REVIEW REPORT

Review Date 08/08/88

Name R. L. Mundell Title Supervisory Mining Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activities research projects supervised included study of coal mine pillar design, structural analysis and design for longwall mining, roof and pillar stability in coal mine intersections, and coal mine bounces, bursts, and gas outbursts in deep western mines. In addition to his regular duties as a Mining Research Group Supervisor, in his past work Mr. Mundell also assumed the responsibilities of Program Manager for the Bureau of Mines/Nuclear Regulatory Commission (NRC) Interagency Agreement. Under the agreement his group was required to provide technical assistance to the NRC regarding rock mechanics and geologic repository design.

Proficiency Report Conducted and Certified by.

Signature _____ Title _____

Date 8/8/88

NOTE: This report should be completed on an annual basis.

FIGURE V - WMPO PROFICIENCY REVIEW REPORT FORM

WMPO PROFICIENCY REVIEW REPORT

Review Date 08/08/88

Name Dennis R. Dolinar Title Mining Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based upon a review of Mr. Dolinar's education and employment history, he is fully qualified to serve on the TITLE I AND Title II Technical Review Board. He holds a B.S. degree in Mining Engineering from the University of Minnesota and has taken several graduate courses in rock mechanics and geology from the Colorado School of Mines. He has been employed by the U.S. Bureau of Mines, Denver Research Center where he has been a lead researcher on various ground control projects including Stress Research Applied to Mine Design and Subsidence Control and Correlation of Geotechnical Factors to Massive Rock Failures. Currently Mr. Dolinar is a principal investigator on a research project entitled Support for Large Underground Openings. As principal investigator, he has to plan and conduct the research necessary to accomplish the project objectives. He also participates in the planning and review of research activities in the research center. Mr. Dolinar, through his research experience has developed expertise in the areas of in situ stress measurement and interpretation, ground control problem analysis, ground control instrumentation layout, physical property testing and mine structure and support system design.

Proficiency Report Conducted and Certified by

Signature _____ Title _____

Date _____

NOTE: This report should be completed on an annual basis.

FIGURE V - WMPO PROFICIENCY REVIEW REPORT FORM

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date August 8, 1988

Name Thomas E. Blejwas Title Division Supervisor

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activities Based on a review of Dr. Blejwas' education and employment history, he is fully qualified to serve on the Title I and II review boards. He holds a BS in Aerospace and Mechanical Engineering from Princeton University, an MS in Mechanical Engineering from the University of Southern California, and a PhD in Civil Engineering from the University of Colorado. For the past three years as the supervisor of the NNWSI Geotechnical Projects Division at Sandia National Laboratories, he has supervised geotechnical experimental and design work. Previously, he spent five years as the lead engineer for the design analysis and testing of models at nuclear containment structures. Prior to joining Sandia, he spent two years as a faculty member at Oklahoma State University where he taught courses in mechanics and performed research in structural dynamics including the seismic analysis of bu[illegible]gs. Previous work includes one year as a research engineer at the University of California, Berkeley in seismic analysis, five years as a structural dynamics engineer at Martin Marietta Corp., and four years as a test engineer in the U. S. Air Force.

Proficiency Report Conducted and Certified by

Signature Thomas O. Hunter Title TPO SNL

Date 8/8/88

NOTE: This report should be completed on an annual basis.

FIGURE V - WMPO PROFICIENCY REVIEW REPORT FORM

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date August 8, 1988

Name George E. Barr Title Member of Technical Staff

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Dr. George E. Barr is qualified by education and employment history to serve on the Title I and II review boards. He holds a BA in physics of the University of Wisconsin and a PhD in physics from Oregon State University. For the past 12 years, he has worked in Performance Assessment performing analyses and constructing models first for the WIPP project and more recently for NNWSI. He is one of the developers of the use of event trees for scenario identification and construction and in addition has filed a number of patent disclosures on matters important to waste disposal.

Thomas O. Hunter TPO SNL

Proficiency Report Conducted and Certified by

Signature Felton W. Bingham Title Supervisor

Date 8/10/88

NOTE: This report should be completed on an annual basis.

FIGURE V - WMPO PROFICIENCY REVIEW REPORT FORM

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date August 8, 1988

Name Stephen D. Francis Title Staff Member

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based upon a review of Mr. Francis' education and employment history, he is fully qualified to serve on the Title II and Title IV Technical Review Board. Mr. Francis has a BS degree in Mining Engineering from South Dakota School of Mines and Technology. He was employed by Gulf Mineral Resources at their Mount Taylor and Mariano Lake Mines, in the capacity of shaft inspector and shift boss respectively. He was then employed by American Mine Services as the Shaft Engineer. Duties included shaft design and supervision of installation of structural members within the shaft. Prior to his employment at LANL, he was employed by Phillips Uranium Corporation in the capacity of Senior Shaft Inspector, supervising four shaft inspectors. He subsequently assumed the duties of construction superintendent (acting), working directly under the construction manager. Mr. Francis' experience in his discipline exceeds a minimum of five years.

Proficiency Report Conducted and Certified by

Signature [signature] 8/9/88 Title Test Manager

Date August 9, 1988

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date August 8, 1988

Name William A. Boss

Title Telecommunications & Scientific Cabling Management Specialist

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activites Based upon a review of Mr. W. A. Boss's education and employment history, he is fully qualified to serve on the Titles I & II Technical Review Board. He has been employed in a technician, supervisory and management capacity with over 25 years of proven accomplishments in the field of telecommunications. He has been employed with the US Department of Energy for approximately 12 years as Telecommunications & Scientific Cabling Management Specialist. This experience relates to all types of communications systems, such as VHF/UHF radio, microwave, CCTV and CATV, Fire and Security Alarm Systems telephone systems, and multiconductor, coaxial and fiber optic cables and interfacing equipment. Mr. Boss also spent four years in Saudi Arabia where he worked as Customer Relations Manager, over the telephone/telex and mobile radio services in a newly developed city of approximately 50,000 people. He also worked with Hughes Aircraft on the design, fabrication and final testing of the Surveyor TV camera for the first soft landing of a spacecraft on the moon. Prior experience consisted of telecommunications work at Fort Huachuca, Arizona and Holloman AFB in New Mexico.

Proficiency Report Conducted and Certified by

Signature F. R. Huckabee

Title Chief, Test Construction Branch, NTSO

Date August 8, 1988

NOTE: This report should be completed on an annual basis.

Enclosure 10

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date August 11, 1988

Name Stewart A. Thomas Title General Engineer - Mining

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based on a review of Mr. S. A. Thomas's experience and employment history, he is fully qualified to participate as a Reviewer on the Titles I & II Technical Review Board. Mr. Thomas has been employed for 23 years in engineering, technical and supervisory positions in a variety of mining situations. His experience includes 13 years employment with a copper mining company which operated two large underground shaft mines, one a high-grade selective mining operation and the other a bulk-mined deposit employing block-caving methods. Mining operations were conducted at depths of 1700 feet to 4900 feet at rates up to 60,000 tons per day. The company operated shafts at these properties through which all utilities, materials, ore and waste transportation, ventilation and access were conducted for the direct underground support of 2000-2500 people (total employment was 6,000 to 7,000). During Mr. Thomas's employment, approximately 12,500 feet shafts were designed, constructed, equipped and placed in operation at these properties. Mr. Thomas's various responsibilities during this em-employment included preparation of mining and development plans, design and administration of surface and underground drilling programs, definition of ore reserves, mining limits, evaluation of rock mass characteristics as they relate to ground support and mining configuration, and preparation, calculation and maintenance of mineable ore reserves. Mr. Thomas was also directly involved in the shaft construction program for approximately 6 years, including a supporting raise drilling program. Subsequently, Mr. Thomas was

(Please turn page)

Proficiency Report Conducted and Certified by

Signature F. R. Hamblen Title Chief, Test Construction Branc TSO

Date 8-12-88

NOTE: This report should be completed on an annual basis.

orig.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date July 21, 1988

Name FRANK A. SPENIA Title Safety Professional II

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activities

Mr. Spenia's background and experience qualify him to review and comment on safety related items for the following activities:

Surface and underground construction, including shafts, drifts, ventilation, equipment, work locations, roads, shop, storage facilities and other related facilities to support the construction effort.

Mr. Spenia has hands on experience in, and a working knowledge of, pertinent safety codes and standards relating to both aboveground and underground construction.

Spenia holds an M.S. degree in Industrial Safety from West Virginia University and has eight years of working experience, most of it in tunnels at the Nevada Test Site.

Proficiency Report Conducted and Certified by

Signature R F Pritchett Title Technical Project Officer

Date 8-4-88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date August 4, 1988

Name JAMES L. BETTS Title Fire Protection Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activities

Based upon a review of Mr. Bett's education and employment history, he is fully qualified to perform as an Exploratory Shaft Facility Technical Reviewer. Mr. Betts has been employed by REECo as a Fire Protection Engineer for over nine years. One of his primary duties is to review and comment on engineering design drawings/specifications relative to fire protection and safety criteria (DOE orders, NFPA Standards, UBC, OSHA, MSHA, etc.) Prior to REECo, Mr. Betts was employed by the University of Texas for three years as the Fire and Safety Coordinator, and by St. Luke's Episcopal Hospital for two years as the Safety Director. In both of these previous jobs, Mr. Betts reviewed drawings/specifications as part of his routine assignments. Mr. Betts is a Certified Safety Professional and a member of the National Fire Protection Association.

Education

AAS Degree in Fire and Safety, University of Houston
BS Degree in Psychology, University of Houston.

Proficiency Report Conducted and Certified by

Signature R F Pritchett Title Technical Project Officer

Date 8/4/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date August 4, 1988

Name LEONIDES J. FLORES Title Principal Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activities

Based on a review of Mr. Flores' education, employment history and experience, he is fully qualified to perform the following activities concerning the review of drawings and specifications for the ESF Design.

1. Review of all electrical drawings and specifications to assure constructibility, completeness, code compliance, and electrical safety.

2. Review of all other drawings to assure proper interfacing and to assure constructibility and safety.

Mr. Flores' qualifications are based upon the following work experience and education:

As an operations superintendent, electrical, for underground construction he was responsible for the installation of underground utilities, including power, instrument, and diagnostic systems at the Nevada Test Site tunnels from approximately 1965 to 1970. This also included power and controls for ventilation, dewatering, and reentry systems, plus supervision of general portal area work to support the systems mentioned above. In addition he supervised various construction crafts in constructing facilities for office and industrial use for approximately five years.

Education

BS in Electrical Engineering, University of New Mexico

Proficiency Report Conducted and Certified by

Signature R F Pritchett Title Technical Project Officer

Da 8/4/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date AUGUST 4, 1988

Name LOUISE G. CREVELT Title Contract Administration Branch/Section Chief

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activities

Based upon a review of Mrs. Crevelt's education, employment history, and experience, she is fully qualified to perform the following activities concerning the review of drawings and specifications for the ESF design.

1. Analysis of specifications and drawings for ambiguities which might result in contingency bidding.

2. Review of technical specifications to assure that they do not conflict with the subcontract terms and Conditions and Special Conditions.

3. Analysis of the drawings and specifications to assure that all required services and equipment are adequately defined for fixed price contracting.

Mrs. Crevelt's qualifications are based on nine and three-quarter years contract administration experience at REECo with four and one-quarter years as Contract Administration Branch/Section Chief, Construction. Ten years progressive experience in government procurement and contracting both in the United States and overseas, including more than two years as supervising purchasing agent and deputy contracting officer with full signature authority.

Education

Bachelor of Arts Cum Laude (English), University of Colorado
Master of Arts (English), University of Nevada, Las Vegas
Professional Contract Management (16 credit hours, University of California, Santa Barbara
Blueprint Reading Course, Clark County Community College
(3 credit hours.

Proficiency Report Conducted and Certified by

Signature RF Pritchett Title Technical Project Officer

Date 8/4/88

NOTE: This report should be completed on on annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date August 4, 1988

Name MONO A. FOX Title Quality Assurance Manager

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activities

Based on a review of Mr. Fox's education, employment history, and experience, he is fully qualified to perform the following activities concerning the review of drawings and specifications for the Exploratory Shaft Facility design.

1. Analysis of specifications and drawings which would affect the ability of the construction manager/constructor, and subcontractors to implement the quality assurance (QA) program.

2. Analysis of drawings and specifications to assure QALA's are assigned or are listed as to be assigned.

Mr. Fox's qualifications are based on over twenty-two years of responsible QA experience, including implementation and management of QA programs for the REECo NNWSI program. In addition, Mr. Fox has experience in design engineering and operations management in the field of electronics.

Education

College - San Diego State University, San Diego, CA

College - Western State University f Law, San Diego, CA
LLB - Bachelor of Law

Proficiency Report Conducted and Certified by

Signature R F Pritchett Title Technical Project Officer

Da' 8/4/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date August 4, 1988

Name ROBERT D. MILLER Title Senior Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activities

Based on a review of Mr. Miller's education, employment history, and experience, he is fully qualified to perform the following activities concerning the review of drawings and specifications for the Exploratory Shaft Facility design:

1. Underground construction including shafts, drifts, utilities, equipment, and ventilation.

2. Surface construction including general site work, roads, facilities, utilities and equipment to support the underground construction (i.e., buildings, headframes, hoists, compressors, etc.).

3. The constructibility, use of standard construction practices, quality control, operations, maintenance and safety,m relative to the activities listed above.

Mr. Miller's qualifications are based on over five years of construction, construction management and operations at the Nevada Test Site including Title I & II reviews, material take-off and procurement, supervision of craft labor, and inspection of ongoing construction projects. In addition, he has four years experience with major construction firms in the field of project schedule engineering.

Education

BS in Basic Engineering, Colorado School of Mines, Golden, CO

Proficiency Report Conducted and Certified by

Signature R F Pritchett Title Technical Project Officer

Date 8/4/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date August 8, 1988

Name Orin L. Haworth Title Environmental Compliance Officer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based upon a review of Mr. Haworth's education, employment history, and experience, he is fully qualified to perform the following activities concerning the review of drawings and specifications for the ESF design.

1. Review drawings and specifications to identify areas where state of Nevada operating permits and/or notifications will be required to ensure compliance with state and federal environmental regulations.

Mr. Haworth's qualifications are based on over 11 years of experience at the NTS in the area of Industrial Hygiene, and more recently, as the Environmental Compliance Officer for REECo. His last four years of work with REECo have been spent primarily in the area of environmental compliance. Ms. Haworth is Board Certified in Industrial Hygience by the A.B.I.H.

Bachelor of Science degrees in Chemistry and Biology from the University of California Riverside.

Proficiency Report Conducted and Certified by

Signature [signature] Title ESF PROJECT MANAGER

Date 8-08-88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date August 8, 1988

Name Dennis Potter Title Civil Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based on a review of Mr. Potter's education and employment history, he is fully qualified to serve as a reviewer to the Title I and II Technical Assessment Review. Mr. Potter received a B.S. in Civil Engineering from Michigan Technological University in 1976. In July of that year he started work for the Corps of Engineers St. Paul District as a Hydraulic Engineer. His duties with the St. Paul District varied from designing dam spillways, developing a Standard Project Flood for a 40,000 square mile basin, and performing several dam break analyses. In 1981, Mr. Potter accepted an overseas assignment with the Corps of Engineers Pacific Ocean Division (POD). At POD, he conducted several flood studies for Hawaii, Guam, and Saipan. At the conclusion of the overseas tour, he was transferred to the Corps of Engineers Sacramento District where he presently serves as Civil Engineer with the Design Quality Assurance Section. Since 1985, Mr. Potter has reviewed approximately 300 projects for both the Army and the Air Force. Most recently, he has been made the section's point of contact for hazardous waste material designs.

Proficiency Report Conducted and Certified by

Signature Kerik O. Jensen Title Mechanical Engineer, Lead
Representative for COE

Date August 8, 1988

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
8/86

Review Date 8/4/88

Name PATRICK E. PHILLIPS Title Sr. Fire Protection Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Mr. Patrick E. Phillips has a degree in Fire Protection and Safety Engineering (1953 Illinois Institute of Technology). This degree includes a minor in every chemistry minor engineering field. He is qualified to review and comment in all areas of designs and previous reviews have shown his effectiveness. In addition to an overall review, he provides an in-depth review of fire protection and safety matters. He is highly knowledgeable of DOE Orders, Codes, and Standards as they relate to construction.

Mr. Phillips, a registered Professional Engineer, is qualified by virtue of his education and over 35 years of experience, including active participation in the national community of Fire Protection Engineers*, to review and comment on all ESF specifications and designs with regard to fire detection, fire alarms, and fire extinguishing systems, and on facility designs to minimize the fire hazard potential.

*Chairs two NFPA committees, serves on two other NFPA committees, and is a member of the UL Fire Council.

Proficiency Report Conducted and Certified by

Signature Alan R. Martin Title Deputy Director
Safety and Health Division
Nevada Operations Office
U.S. Department of Energy

Date 8/4/88

NOTE: This report should be completed on an annual basis.

FIGURE V - WMPO PROFICIENCY REVIEW REPORT FORM

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date 8/19/88

Name Patrick E. Phillips Title Sr. Fire Protection Enginee

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Mr. Patrick E. Phillips, a registered Professional Engineer, is qualified by virtue of his education, training, and over 35 years of experience in fire protection and safety disciplines to serve as the NV Safety and Health Division Lead Engineer for the comment resolution activities.

Proficiency Report Conducted and Certified by

Signature for Shed R. Elliott Title Director, Safety & Health Div.

Date 8/19/88

NOTE: This report should be completed on an annual basis.

FIGURE V - WMPO PROFICIENCY REVIEW REPORT FORM

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date August 11, 1988

Name D. Dean Brogan Title Comm. Mngmt. Spec.

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activities Based upon a review of Mr. Brogan's education and employment history, he is fully qualified to serve on the Title I and II Technical Review Board. Mr. Brogan holds an AA degree in Computer Science from the University of Alaska. He has been employed by DOE/NV for 6 years in the capacity of Communications Management, performing various functions of Communications System Design Review and Communications Contractor Oversight. Prior to that he was employed by DOE/Oak Ridge for 8 years, where he was responsible for various communications system design and reviews. For 14 years prior to that he filled a position with the Department of Defense when he served as a Communications Citcuit System Engineer. During that time he was responsible for the design and installation of a great variety of communications systems. For seven years prior to that, Mr. Brogan was employed by Pacific Tel & Tel as a circuit/system design engineer.

Proficiency Report Conducted and Certified by

Signature _____ Title Grover Lewis, Director
Information Systems Division

Date August 11, 1988

NOTE: This report should be completed on an annual basis.

THE FOLLOWING REVIEWERS' QUALIFICATIONS WERE APPROVED

DURING THE 50% DESIGN REVIEW

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 9, 1988

Name TERRANCE DINKEL Title ELECTRICAL ENGINEER

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activities B.S. Electrical Engineer, 1971

M.S. Management, 1981

17 years experience (9 years MSHA Tech. Spt)

Federal Electrical Certification Instructor (L/M Volt (U/G), L/M Volt (Surface), HV (UG/Surface)

Electrical Engineer: Power Distribution

Safety Grounding

Protective Device Coordination

Fault Study - Analysis

Communications

Lighting

Hoist Control

Fire Detection

ADP

Mine Elect. Equipment

Instrumentation and Protection System

Permissability

Intrinsic Safety

Proficiency Report Conducted and Certified by

Signature Thomas C. Jukins Title Western District Manager MSHA

Date 5-12-88

Reviewed by: Don Walker, Chief, Denver Tech. Spt. MSHA

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 9, 1988

Name ROGER PIERCE Title MINING ENGINEER

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities B.S., Mining Engineering, 1961, Wisconsin Institute of Technology

Completed a mine ventilation class and have 7 months experience with MSHA. Have a working knowledge of 30 CFR 57.4, Fire Regulations, 30 CFR 57.8, Ventilation, and 30 CFR 57.11, Escape Ways.

12 years experience as Project Manager for design and construction of plant facilities.

12 years experience as Ventilation Engineer for private industry.

Proficiency Report Conducted and Certified by

Signature Thomas C. Perkins Title Western District Manager MSHA

Date 5-12-88

NOTE: This report should be completed on on annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date November 16, 1987

Name William E. Narrows Title Project Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based on a review of Mr. Narrow's education and his past and current work, he is fully qualified to serve in the above capacity. His duties in the above position include; assistance in the recording and documentation of meetings, assistance in the control and coordination of the efforts of the Exploratory Shaft Facility Architect/Engineers (A/Es) on the NNWSI Project in order to support the Waste Management Project Office (WMPO). He is also involved in the initial review of the special engineering studies that the A/Es have written. Mr. Narrows conducts the final comparative analysis on each of the studies in order to assure that the subject studies are suitable for the approval of the WMPO.

Proficiency Report Conducted and Certified by

Signature _____ Title FS & TF Integration Branch Manager

Date Nov 17, 1987

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date March 8, 1988

Name Ronald L. Tome' Title Senior Project Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities

Based on a review of Mr. Tome's education and past employment, he is fully qualified to serve in the above capacity. Most recently, Mr. Tome' participated in design review and evaluation of prototype fuel rod consolidation designs developed by three companies for the prototypical consolidation demonstration project (PCDP). He also participated in design review and evaluation of a topical report for a dry vault independent spent fuel storage installation. He has participated in review and evaluation of studies, reports and miscellaneous documentation associated with the high-level nuclear waste repository in Tuff (NNWSI Project). He has also participated in the advanced conceptual design of the high-level nuclear waste repository in Salt. Mr. Tome's efforts for these tasks include design evaluation, document review, technical studies, report preparation, functional analysis, conceptual design and development of engineering requirement for remote systems.

Proficiency Report Conducted and Certified by

Signature [signature] Title Mgr. Engr. Dev.

Date 4-21-88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 5, 1988

Name Steven Smith Title Senior Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based upon a review of Mr. Smith's education and past employment, he is fully qualified to serve in the above capacity. Prior to joining SAIC, his employment history was as shown below:

- Battelle Project Management Division, Office of Nuclear Waste, Principal Engineer; duties included design management, review, and evaluation of an Exploratory Shaft Facility, and Development of project retrieval strategy.

- Kaiser Engineers, Associate Engineer; duties included design, engineering, and costing of both an exploratory shaft facility and nuclear waste repository.

In the above capacity, Mr. Smith's duties include: the responsibility for geological and mining engineering, and project management related tasks that support the WMPO in reviewing and assessing project work involving design and construction of the ESF and repository. These tasks include extensive analysis of engineering requirements, engineering data, and design criteria from project participants. Perform a detailed review of network schedules, logic diagrams, special studies and comments from others to determine the project interfaces between the assigned architect/engineers. Perform an analysis of design drawings, specifications, procedures, and Quality Control programs involving ESF and repository design and development. Provide support to the WMPO in design, calculations, procedures, specifications, schedules, networks, codes, standards, rules, regulations relating to both surface and underground engineering related tasks.

Proficiency Report Conducted and Certified by

Signature K. Brall Title ESF Integration Mining Manager

Date 5/5/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 13, 1988

Name Dermot Ross-Brown Title Senior Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activities Mining methods and procdures, including drifting, raising and shaft sinking. Geological mapping and analysis of frcture systems. Close-range photogrammetry. Site investigation (geology, and hydrology). Field and laboratory testing (primarily rocks and rails). Determinatoin of rock mass properties, including scale effects, spatial variabiilty (using geostatistics and constraints analysis (using Bayesian statistics). Analysis of rock mass behavior, incuding stability of underground openings, mine subsidence, seismic effects, and support systems. Design and construction of dams, slopes and waste piles. Performance Assessment studies for nuclear waste repositories, particulary thermo-mechanical analysis.

Proficiency Report Conducted and Certified by

Signature Colin L. Stewart Title Deputy Manager TEAO

Date 13 MAY 88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date November 4, 1987

Name Joseph G. Reiser

Title ESF SYSTEMS ENGINEER

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities BASED UPON A REVIEW OF MR REISER'S EDUCATION AND PAST EMPLOYMENT HISTORY, AS INDICATED BELOW, HE IS QUALIFIED TO SERVE IN THE ABOVE CAPACITY. MR REISER HAS MORE THAN 25 YEARS OF EXPERIENCE IN PLANNING AND EXECUTION OF ENGINEERING PROJECTS HAVING SUCCESSFULLY PERFORMED THE FUNCTIONS & DUTIES OF DESIGN ENGINEER, SENIOR PROJECT ENGINEER, PROGRAM MANAGER, AND EXECUTIVE ENGINEER. HIS MOST RECENT EXPERIENCE, SIX YEARS, INCLUDES SYSTEM INTEGRATION AND CONSTRUCTION SUPPORT FOR TESTS & TEST FACILITIES FOR A DEEP GEOLOGIC TEST FACILITY CALLED THE EXPLORATORY SHAFT FACILITY (ESF). THE ESF IS PART OF THE SITE CHARACTERIZATION PHASE OF THE NATIONAL WASTE POLICY ACT OF 1982. FOR THIS PHASE OF THE PROGRAM HE MADE MAJOR CONTRIBUTIONS AS AUTHOR/COAUTHOR OF CONFIGURATION MANAGEMENT PLAN, RECORDS MANAGEMENT PLAN, DESIGN BASIS CRITERIA DEVELOPMENT OF APPENDIX A FOR TWO-PHASED REPOSITORY FEASIBILITY STUDY, AND ESF CONSTRUCTION/OPERATION PREREQUISITES PLAN INCLUDING THE PROJECT READINESS REVIEW PROCESS. HE WAS LEAD ENGINEER IN THE DEVELOPMENT OF THE METHODOLOGY AND PERFORMANCE OF THE FUNCTIONAL ANALYSIS OF THE ONWI/ESF, AND DEVELOPED OTHER RELATED PLANS AND PROCEDURES. MR REISER PARTICIPATED IN DESIGN REVIEWS AND PRESENTATIONS TO BWIP MANAGEMENT, DOE AND THE NRC.

Proficiency Report Conducted and Certified by

Signature

Title ES & TF Integration Branch Manager

Date 11/6/87

NOTE: This report should be completed on an annual basis.

WMPO INDOCTRINATION RECORD

N-QA-019
6/85

To Tom Pysto Title Senior Environmental Scientis

From Ed McCann Title Manager, Environmental Regulatory Compliance Division

Please read the documents listed below. If you have any questions about the content of the documents, contact me for clarification. This indoctrination should be completed by 5/2/88 (Date)

DOCUMENT/TITLE - REVISION

1. NVO-196-17, NNWSI Project Quality Assurance Plan (QA) & implementing procedur
2. WMPO/88-1, WMPO QA Program Plan & Quality Management Procedures.
3. 10 CFR 60, Disposal of High Level Wastes in Geologic Repositories.
4. Nuclear Waste Policy Act of 1982. + 1987 Amendments
5. 10 CFR 960, General Guidelines for Recommendations of Sites for Nuclear Waste Repositories.
6. 40 CFR 191, Environmental Standards for Management and Disposal of Spent Nuclear Fuel, High Level Transuranic Radioactive Waste.

I have read the documents listed above and understand the content. Any questions regarding the contents have been clarified to my satisfaction.

Employee Signature Thomas H Pysto Date 5-4-88

NOTE: When completed, send to WMPO QA records files.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 2, 1988

Name Thomas H. Pysto

Title Senior Environmental Scientist

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Mr. Pysto is employed with SAIC as a Senior Environmental Scientist. He is assigned to the Nevada Nuclear Waste Storage Investigations (NNWSI) Project in the Environmental Regulatory Compliance Division. His work duties include coordinating and interfacing engineering activities with permitting requirements. He is involved with obtaining the applicable permits, preparing environmental compliance procedures, and conducting regulatory compliance inspections.

Before joining SAIC, Mr. Pysto was a project environmental biologist for Occidental Petroleum Corporation on their experimental mine site. His duties included: conducting environmental compliance inspections; reviewing and updating permits; resolving environ-al compliance problems; and working with the various engineering departments to ensure environmental requirements were incorporated into all work plans.

Proficiency Report Conducted and Certified by

Signature E. W. McCann

Title E. W. McCann, Environmental Regulatory Compliance Division

Date 5/3/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date 4/6/88

Name Stanleigh W. Phillips Title Technical Coordinator

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Mr. Phillip's professional certification in the comprehensive practice of industrial hygiene attests to his capability to perform the following assignments:

1. Prepare plans and procedures to implement safety and health requirements
2. Review technical documents and designs to assure their adequacy relative to industrial hygiene and non-radiological safety requirements
3. Prepare and implement a comprehensive safety and health program
4. Prepare hazard analyses and risk assessments

His previous experience as an SAIC division manager and project manager demonstrate his ability to plan and coordinate work plans, cost account plans, and work package plans and to coordinate reporting and tracking of action items.

Proficiency Report Conducted and Certified by

Signature John E Shaler Title Dep Dept MGR TP/A&E

Date 4-6-88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date 4/6/88

Name Stanleigh W. Phillips Title Technical Coordinator

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Mr. Phillip's professional certification in the comprehensive practice of industrial hygiene attests to his capability to perform the following assignments:

1. Prepare plans and procedures to implement safety and health requirements
2. Review technical documents and designs to assure their adequacy relative to industrial hygiene and non-radiological safety requirements
3. Prepare and implement a comprehensive safety and health program
4. Prepare hazard analyses and risk assessments

His previous experience as an SAIC division manager and project manager demonstrate his ability to plan and coordinate work plans, cost account plans, and work package plans and to coordinate reporting and tracking of action items.

Proficiency Report Conducted and Certified by

Signature John E Shaler Title Dep Dept MGR TP/A+E

Da 4-6-88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date April 12, 1988

Name James H. McConville Title Electrical Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based upon a review of Mr. McConville's education and past employment, he is fully qualified to serve in the above capacity. Prior to joining the nuclear waste programs, Mr. McConville served for 25 years as a designer analyst and test engineer in the aerospace and transportation fields. He was employed by DOE in 1982 as the Project Electrical Engineer for WIPP where he coordinated and reviewed the design of the electrical system, the communication systems, and the monitoring and control system. His duties there included resolving design conflicts and deficiencies with the technical support contractor, the A/E, national laboratories, government agencies. Following the completion of the design of WIPP, he joined Battelle as the Salt Repository Instrumentation Engineer where he set forth the plan for specifying the ESF Data Acquisition System. Mr. McConville's present duties encompass management review of the ESF electrical and communications systems design and to provide technical assistance to DOE in the development of the Integrated Data Acquisition System.

Proficiency Report Conducted and Certified by

Signature K L Bell Title ESF Integration Mining Manag

Date 4/20/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 4, 1988

Name Alvin Langstaff Title Senior Mining Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based upon a review of Mr. Langstaff's education and employment history, he is fully qualified to serve on the Title I 50% Design Review Board. Mr. Langstaff holds a B.S. degree in Mining Engineering from the Colorado School of Mines. He was employed by Amax Inc. at the Urad and Henderson mines in various capacities including ventilation engineer, mine planning engineer, underground surveyor, and blasting crew miner. Subsequently, Mr. Langstaff was employed by Cleveland Cliffs where he was responsible for completion of feasibility studies. Duties included design of mine layouts, ventilation system design, equipment selection and material handling system design. Prior to joining the SAIC T&MSS team he was employed by Westinghouse Hanford on the Basalt Waste Isolation Project where he was responsible for providing mining expertise and guidance for design of the BWIP exploratory shaft facility. Assignments included leading a study group reviewing changes in mine regulations, direction of Architect Engineer contractor and team leader of a group defining design recommendations for the underground facility. In his current position as Technical Support Representative liaison he is responsible for interface and coordination of design activities between project participants and the underground design A/E

Proficiency Report Conducted and Certified by

Signature K. Blair Title ESF Integration Mining Manager

Date 5/5/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date November 12, 1987

Name Peter J. Karnoski Title Quality Assurance Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Mr. Karnoski has a Bachelor of Science Degree in Mechanical Engineering and graduate credits in Nuclear Engineering. He has been associated with the nuclear industry since 1956, serving in increasingly responsible positions in nuclear design, construction, and quality assurance. His previous employers include Brown & Root, Martin Marietta, and Commonwealth Associates. His nuclear experience consists of the design, fabrication, and operation of reactor systems and refueling machinery. He has managed nuclear quality assurance organizations at construction sites and in the home office. Recently, he has participated in quality assurance audits of the Exploratory Shaft Facility Architect Engineers and has successfully completed Lead Auditor's training. He is registered as a professional engineer in 35 states. Based upon his education, experience, and knowledge of the Project, Mr. Karnoski is highly qualified for the position of Quality Assurance Engineer.

Proficiency Report Conducted and Certified by

Signature [signature] Title ES & TF Integration Branch Ma

Date November 13, 1987

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date 3/9/88

Name John Jardine Title QA Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities As the QA Engineer assigned to the Repository and Waste Package design activities this individual provides advice and counsel to the WMPO Technology Development and Engineering Branch staff relative to quality assurance requirements affecting design activities. Further support is provided in the way of procedure, preparation/development, document review and participation in WMPO Audits as a technical specialist. Inherent in the performance of these duties is participation in the development and implementation of systems engineering and configuration management.

Proficiency Report Conducted and Certified by

Signature _____ Title Mgr., QA Reviews Div.

Date 3/14/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date 5/2/88

Name J. Marshall Davenport Title Licensing Engineer - NRC Divis

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based on a review of Mr. Davenport's education and past employment, he is fully qualified to serve in the above capacity. Previously, Mr. Davenport was employed by the Tennessee Valley Authority as an engineering geologist with responsibilities for conducting geotechnical, hydrological, and engineering investigations at nuclear facilitie He also prepared regulatory and quality assurance related documents. Before joining SAIC, he was a senior licensing engineer with Battelle Memorial Institute on the Salt Repository Project in Deaf Smith County, Texas. His duties included managing preparation of the Deaf Smith County Site Characterization Plan (SCP), reviewing various geotechnical and engineering documents for both technical content and regulatory compliance and participating in onsite and DOE/HQ reviews during the development of the SCP. His duties in the above position include: serving as a regulatory interface on the design and construction of the Exploratory Shaft Facility, reviewing engineering documents for technical content and regulatory compliance, resolving open items, and assisting in review and preparation of regulatory related documents.

Proficiency Report Conducted and Certified by

Signature D. M. Dawson Title D. M. Dawson, Nuclear Regulatory Compliance Division

Date 5/3/88

NOTE: This report should be completed on an annual basis.

T&MSS PROFICIENCY REVIEW REPORT

T-QA-021
6/85

Review Date April 22, 1988

Name Ivan R. Cottle Title Testing Integrator

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based on a review of Mr. Cottle's background, experience, and training in the management and integration of large Nuclear Waste Projects, Mr. Cottle is capable of performing all duties and responsibilities associated with his position as Testing Integrator for the T&MSS contractor to the U.S. Department of Energy/Waste Management Project Office. These duties and responsibiilties include: Integrating the ESF testing with ESF design and construction, review of proposed field operations, development of network and budgets, development of management plans to control test operations.

Proficiency Report Conducted and Certified by

Signature David B. Jay Title TISD Manager

Date 5/5/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date March 23, 1988

Name Edward M. Cikanek Title Mining Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based on a review of Mr. Cikanek's education and experience, he is fully qualified to serve in the above capacity. Mr. Cikanek's entire professional career has been spent with the Harza Engineering Company as a geotechnical engineer. The vast majority of his experience in the past 20 years has been with the design and construction of tunnels, shafts, and underground chambers. He has performed and directed: planning of, and evaluation of results from, exploratory programs; studies on rock support, construction, and bidding methods; preparation of the geotechnical and some civil engineering portior plans and specifications for several Projects. The most significant of these Projects include: Section A-6 of the Washington, D.C. Metro subway system, the 2100 MW Bath County Pumped Storage Project, and the Mainstream System tunnels and underground pumping station of the Chicag Tunnel and Reservoir Plan (TARP). Following his extensive design efforts on TARP, Mr. Cikanek was Chief Field Engineer for 2 years and then Resident Construction Manager for 2 years for the construction of 20 miles of tunnel and 90 shafts for the Mainstream System of TARP. Mr Cikanek has a Bachelor of Science degree in Civil Engineering from Northwestern University and a Master of Science degree in Civil En-

(Cont.)

Proficiency Report Conducted and Certified by

Signature [signature] Title ES & TF Integration Branch Manager

Date March 30, 1988

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date November 5, 1987

Name Margaret C. Brake Title Systems Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Margaret C. Brake is currently employed as a Systems Engineer in the Systems Integration Branch of the T&MSS contractor (Science Applications International Corporation) to the U.S. Department of Energy Waste Management Project Office.

She had received BS degrees in Aerospace (1969) and Civil (1973) Engineering and an MBA (1984). She is a registered Civil Engineer in the state of California.

Her previous professional experience included positions in the nuclear testing program at the Nevada Test Site. During this time, she was the quality assurance representative for her department and was responsible for ensuring that DOE's requirements for implementing NQA-1 were carried out. She was a Level II NDE Engineer. She has also been the project engineer on several large construction projects. She managed the field engineering, scheduling, estimating, cost accounting, and material requisitioning for the construction of industrial buildings, office buildings, housing facilities, and their associated utilities.

Her present duties include the application of systems engineering techniques to the scientific and engineering aspects of the project, and the preparation of procedures to implement these techniques.

Based on Ms. Brake's educational background and professional experience, she is judged to be qualified for her present position.

Proficiency Report Conducted and Certified by

Signature [signature] Title ES & TF Integration Branch Manager

Date 11/5/87

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 3, 1988

Name George Kenton Beall Title ESF Integration Mining Manager

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based upon a review of Mr. Beall's education and past employment, he is fully qualified to serve in the above capacity. Previously, Mr. Beall was employed by Battelle as the Engineering Department Manager on the Salt Repository Project. As Department Manager, his responsibilities incuded integration and technical direction of activities on the exploratory shaft, repository, and waste package. Before his employment with Battelle, he was a member of the technical staff at Sandia National Laboratories where he managed all contracts associated with the development of the conceptual design for the Nevada Nuclear Waste Storage Investigation Project repository. Mr. Beall also served as the Mine Design Manager for the technical support contractor on the Waste Isolation Pilot Plant Project. His duties in the above positions included: integrating work performed by multiple Project participants, including national laboratories; developing Project plans, schedules, and cost estimates. As the ESF Integration Mining Manager, his duties include integration of ESF activities with the Waste Management Project Office, Nevada Operations Office, the U.S. Department of Energy/Headquarters, and other Project participants; preparation of schedules, cost estimates, and Project plans; performing design reviews and technical reviews of various designs and documents; providing technical and management support to the Waste Management Project Office.

Proficiency Report Conducted and Certified by

Signature David B. Jay Title TISD Manager

Date 5/4/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 11, 1988

James E. Montgomery Title Mining Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities All Title I drawings and specifications. The individual noted above has experience in mining operations and design; 27 years of experience in underground mining; 9 years with various nuclear waste design teams.

Degree: Mining Engineering, Colorado School of Mines, 1960

Proficiency Report Conducted and Certified by

Signature [signature] Title MGR. ESF/REPOSITORY DESIGN WESTON/JACOBS

Date May 11, 1988

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 9, 1988

Name John David Jenkins Title Manager, Repository and ESF Desig.
Weston/Jacobs

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Comment on the Mining/Structural/Mechanical aspects of the ESF Title I Design.

Background:

- 24 years experience in the mining industry, shaft sinking and tunneling in Europe, Africa, Australasia, and North America.
- B.S. in Mining
- H.N.C. Mechanical Engineering
- Manager of design departments, multi-discipline
- On site Project Management
- Head of R & D (2 years)

Proficiency Report Conducted and Certified by

Signature W J Edwards Title Manager, Engineering & Geosciences Department

Date 5/16/88 Roy F Weston, Inc.

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date 5/9/88

Name Henry L. Bermanis Title Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Participation in ESF 50 percent Title I Design Review as member of Western Task Group.

B.S. (Physics/Math) 1962 University of Cincinnati; Reactor Design, control, shielding courses, General Electric Company, 1955-1960. Bliss El. Engr. Sch., Washington, D.C., 1948.

1953 - 1968 General Electric Company, Principal Engineer, Nuclear Technology

1968 - Present United Engineers and Constructors Int'l, Project Manager (DOE Tech. Support Team, OCRWM) Previously, Licensing Manager, UE&C Reactor Projects

(QA - Qualified Auditor)

Proficiency Report Conducted and Certified by

Signature [signature] Title Department Manager Regulatory & Safety

Date 5/16/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-
6/85

Review Date December 11, 1987

Name Robert S. Waters Title General Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Provides guidance to contractors and labs regarding project planning and coordination as it relates to the ESF. Responsible for ES testing interface between project participants and WMPO. Monitors the developing of the IDS system and ES test design requirements. Maintains knowledge of work executed by contractors/labs; assures that work is accomplished as a major system acquisition under DOE order 4700. Reviews work plans, study plans, and contractor submitted documents for review and approval. Maintains a thorough knowledge of ES test plans and IDS plans so that effective integration into the design process of the ESF occurs. Plans work, establishes priorities and acts on own initiative to manage the testing interface portion of the ESF.

Proficiency Report Conducted and Certified by

Signature Title Branch Chief

Date December 11, 1987

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date December 18, 1987

Name Dennis H. Irby Title General Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Provides detailed guidance to contractors regarding project planning and coordination as it relates to the Exploratory Shaft Facility (ESF); assures that management information system/baseline is used and kept current for monitoring project progress and performance. Maintains knowledge of work executed by contractors. Assures that the project is executed as a major systems acquisition, DOE Order 5700; reviews work plans, work effort, and technical and programmatic documents for technical content and consistency with regulatory requirements and DOE/OCRWM/OGR policies. Supports quality assurance audits and surveillance of contractors. Develops the triennial budget requirements for the Exploratory Shaft Facility WBS element. Maintains thorough knowledge of the design aspect to assure validity of the cost estimates submitted by the contractors. Assures that the contractors submit appropriate technical information and the necessary level of detail to support the field work package proposal/agreements. Acts on own initiative in a timely and responsible manner. Plans work and establishes priorities to maximize output. Utilizes effectively available project management tools to manage ESF portion of the project.

Proficiency Report Conducted and Certified by

Signature Lester P. Skov Title Branch Chief

Date 12/21/87

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 9, 1988

Name Leonard J. Owens

Title ESF Design Review General Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based upon a review of Mr. Owens' education and experience, he is fully qualified to serve in the above. Part of Mr. Owens' job description is "reviews and approves conceptual, preliminary and final design work prepared by the NTS on site services, other NV architect-engineer contractors, supporting contractors, national laboratories, and other government agencies." Also, "serves as project engineer in managing and directing the efforts of architect-engineers, construction contractors and national laboratories for the completion of formal engineering design (Conceptual, Title I, and Title II) and formal test plans for surface and subsurface facilities." Prior to working for DOE, Mr. Owens was the lead engineer for defense high-level waste mine design at the WIPP site. Mr. Owens has also been chief engineer responsible for underground mine design, construction and operation.

Proficiency Report Conducted and Certified by

Signature [signature] Title Branch Chief

Date 5/6/88

NOTE: This report should be completed on an annual basis.

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WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 9, 1988

Name Dean Stucker Title Manager of ESF

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based on a review of Mr. Stucker's education and experience in underground design, constuction and operation, he is fully qualified to serve in the above capacity. Mr. Stucker has been employed with numerous mining companies and consultants over the past 17 years and has been with the Department of Energy for over three years. Mr. Stucker's duties and responsibilities include:

Provides for HQ management in the areas of exploratory shaft and surface and subsurface design, construction, operation and decommissioning, and underground facilities of repository design for the repository projects. Also manages existing test facilities and development of major test facilities necessary to support the design, construction, operation and decommissioning of a mined geologic repository at the various candidate sites. Responsible for the independent formulation, planning, direction, implementation and evaluation of project tasks in these broad areas.

Providing management overview of the exploratory shaft design, construction operations, and decommissioning for the repository project. Responsible for th functional design criteria, design reports and specifications, budget data sheets and other supporting activities necessary to provide for these facilities within the administravtive requirements of the Department.

Proficiency Report Conducted and Certified by

Signature RBLaholm Title Chief, Underground Facilities Branch

Date 6-28-88

NOTE: This report should be completed on an annual basis.

Enclosure 10

WMPO PROFICIENCY REVIEW REPORT

N-QA-00

Review Date 10 - 13 May 1988

Name ERIK O. JENSEN Title Mechanical Engineer

C.O.E. SACRAMENTO, CA
(916)557-2339

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities ·Education: BSME 1962 Wash St Univ, Pullman, Wash.

·Years of Engrg Experience: 6 yrs. before college and 24 yrs after, for a total of 30 yrs.

·Places of Employment and Type of Company: Allbrook Hydraulic Laboratory, Pullman Wash., Ackerman & Arnoff, Consulting Engr., Palo Alto, CA., Water Resources, State of California, Sacramento, CA., Stone and Webster, Boston Mass., Des. & Constr. - Nuclear Power Plants. Naval Weapons Station, Concord, CA. - AMMO Base, Western Division Naval Facilities Engineering Command, San Bruno, CA - Energy Conservation boiler work, COE, Sacramento, CA - Unit Leader, Mech. Review Group.

·Type of Experience/Systems:HVAC, Fire Protection (sprinkler, HALON, carbon dioxide and AFFF Systems), plumbing (DWV, Storm Drainage, Compr. Air, etc.), Fuel Systems (aircraft fuels), misc. space and missile projects at Vandenberg and Hill AFB's (AF), Test Facilities for the Army at Dugway PG, UT., misc. laboratory facilities.

Proficiency Report Conducted and Certified by

Signature [signature] Title Acting Chief, Design Quality Assurance Division - Air Force.

Date 6 May 1988

NOTE: This report should be completed on a annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-α 8/85

Review Date 5/4/88

Name William H. Grams Title Senior Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities MINE DESIGN: Including mine equipment design and selection, hoisting, ventilation, excavation, rock (ground) support, and utilities.

CONSTRUCTION AND OPERATION OF FACILITIES: Including scheduling, man/equipment loading, procurement.

MACHINE DESIGN: Including mobile drilling equipment, haulage equipment and special test equipment.

ROCK MECHANICS: Including in-situ testing for stress, mechanical properties, and opening performance, laboratory testing both lab and bench scale, instrumentation, design of test equipment.

QUALITY CONTROL: Including development of procedures and test and operating plans.

QUALIFICATIONS: BS in Mining Engineering, 1969 - MS in Mechanical Engineering, 1971, from S. D. School of Mines and Technology; 10 years experience in mining related machine design, 7 years experience rock mechanics and mine design; civil engineering experience for 5 years with U.S. Army Corp of Engineers 109th Engineer Group SD ARNG

Proficiency Report Conducted and Certified by

Signature R F Pritchett Title Technical Project Officer NNWSI/REECo

Date May 5, 1988

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-6/85

Review Date 5/4/88

Name Daniel L. Koss Title ESF Project Manager

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Mr. Koss' background and experience qualify him to perform design and constructibility reviews of engineering packages for the following activities as a minimum:

Underground Construction including: Shafts, drifts, utility systems, ground support systems, ventilation systems, equipment, etc.

Surface Construction including: General site work, roads, buildings, facilities, utility systems, equipment, hoisting systems, etc.

All effort to support underground construction, operations, maintenance and scientific testing activities.

The feasibility of construction, organization of construction, quality control, interface of engineering disciplines, economy of design, practicability of equipment and general arrangements, use of Government furnished equipment, completeness of information presented, safety, etc., relative to activities listed above.

Proficiency Report Conducted and Certified by

Signature R F Pritchard Title Technical Project Officer, NNWSI/REECo

Date May 5, 1988

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-0
6/85

Review Date 5/4/88

Name Daniel L. Koss Title ESF Project Manager

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Qualifications: BS Mining Engineering, Michigan Technological University, 1960. Overall 27 years experience in the mining/ construction field; 13 years in operations supervision and management, 14 years in project engineering and management.

Proficiency Report Conducted and Certified by

Signature R J Pritchett Title Tech. Project Officer NNWSI/REECO

Date May 5, 1988

NOTE: This report should be completed on an annual basis.

Enclosur

WMPO PROFICIENCY REVIEW REPORT

N-QA 6/85

Review Date 5/4/88

Name Robert R. Rommel Title Project Engineer

The proficiency review is based on the experience, knowledge and training of the individual. Th activities the individual is capable to perform are listed below.

Activities Mr. Rommel's background and experience qualify him to review, as a minimum, the following activities:

Underground Construction including: Shafts, drifts, utilities, equipment, and ventilation.

Surface Construction including: General site work, roads, facilities, utilities and equipment to support the underground construction (i.e., buildings, headframes, hoists, compressors, etc.).

The constructibility, use of standard construction practices, quality control, operations, maintenance and safety, relative to the activities listed above.

Qualifications: BS in Mining Engineering, 1961, from the University of Nevada, MacKay School of Mines; 11 years construction management/ construction experience, overall 27 years experience in the design and construction of underground construction projects, mines, and associate support facilities and utilities.

Proficiency Report Conducted and Certified by

Signature R J Pritchett Title Technical Project Officer NNWSI/REEC

Date May 5, 1988

NOTE: This report should be completed on an annual basis.

Enclosure 10

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 9, 1988

Name Andres R. Veloso

Title General Engineer a /Drilling

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Drilling Operations

NNWSI Activities - Design, Engineering, Construction

Petroleum Engineering

Industrial Engineering

Mining Engineering

Geology

Proficiency based on education training and 24 years experience working in Mining Engineering, Geology, Industrial Engineering, Petroleum Engineering and NNWSI Drilling/Project Management fields.
B.S. Mining Engineering, 1962, Mapua Institute of Technology, Manila, Philippines
Present assignment is as a General Engineer/Drilling at Nevada Test Site/DOE. Main responsibility is NNWSI project support.

Proficiency Report Conducted and Certified by

Signature Robert C Bivona

Robert C. Bivona

Title Acting Chief, Test Construction Br.

Date 5/6/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date 5/10/88

Name WILLIAM G. SCHOTT Title General Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Mr. William G. Schott is qualified by virtue of his education and 27 years of electrical engineering experience, including supervisory and managerial roles, to review and comment on all ESF electrical designs and specifications with regard to compliance with applicable nationally recognized codes and standards.

Proficiency Report Conducted and Certified by

Signature Alan R. Martin Title Deputy Director
Safety & Health Division
Nevada Operations Office
U. S. Dept. of Energy

Date 5/10/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date 5/10/88

Name PATRICK E. PHILLIPS Title Sr. Fire Protection Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Mr. Patrick E. Phillips, a registered Professional Engineer, is qualified by virtue of his education and over 35 years of experience, including active participation in the national community of Fire Protection Engineers*, to review and comment on all ESF specifications and designs with regard to fire detection, fire alarms, and fire extinguishing systems, and on facility designs to minimize the fire hazard potential.

* rs two NFPA committees, serves on two other NFPA committees, and is a member of the UL Fire Council.

Proficiency Report Conducted and Certified by

Signature Dow R. Martin Title Deputy Director
Safety and Health Division
Nevada Operations Office
U. S. Dept. of Energy

Date 5/10/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date 5/10/88

Name DON R. MARTIN Title Dep. Director, Safety & Health Div.
U. S. Dept. of Energy

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Mr. Don R. Martin is qualified by virtue of his education, training, and over 33 years of safety and health-related experience, including supervisory/managerial roles, 15 of which have been concerned with NTS activities, to coordinate the comments of the three other SHD reviewers. He is qualified to comment on policy and procedural matters concerning the ESF activities.

Proficiency Report Conducted and Certified by

Signature Shel R Ellis Title Director
Safety & Health Division
Nevada Operations Office
U. S. Dept. of Energy

to May 10, 1988

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 10, 1988

Darrel G. McPherson Title Health & Safety Specialist

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Mr. Darrel G. McPherson is qualified by virtue of his education, training, and 29 years experience in the mining industry, including seven years as a Federal Mine Inspector for MSHA for both large surface and underground mines, to review and comment on all ESF specifications and designs with regard to compliance with all applicable nationally recognized codes and standards.

Proficiency Report Conducted and Certified by

Signature Glen R. Martin Title Deputy Director
Safety & Health Division
Nevada Operations Office
U. S. Dept. of Energy

Date 5/10/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 10 - June 10, 1988

Name Don A. York Title Staff Member

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Review activities where ESF testing is affected by the design of the facility. Review activities where the Integrated Data System is affected by the design of the facility. Review activities where ESF testing is affected by operation of the facility.

Experience:

Have worked on ESF design and testing since 1982.

Member of ESTP Committee since 1982

Attended and recorded minutes of ESF Project Status Meetings for 4 years.

Served as QA Liaison for 4 years.

Worked on first Title I and II designs of ESF for 4 years.

Thirty years in engineering, project management, and construction

Education:

B.S. in Mechanical Engineering from University of Missouri

Societies:

Past member of ANS, ASME, SAM, and ASPE

Proficiency Report Conducted and Certified by

Signature [signature] Title Manager, ES Testing

to 5/11/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 9 - June 10, 1988

Thomas J. Merson **Title** Staff Member

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activities (1) Review ESF testing/design issues and drawings

(2) Issues associated with SDRD and ICWG

(3) Review activities of test plans and IDS as they affect design.

Experience:

(1) Working on NNWSI since 1981

(2) Member of ESTP Committee since 1982

(3) Participated in original development of SDRD and Generic Requirements Appendix E issues for NNWSI

(4) Currently responsible for updating Appendix A and B of ESF SDRD.

Education/Formal Qualifications:

B.S., University of California, Berkeley (Engineering Physics)

M.S., University of New Mexico (Mechanical Engineering)

Professional Engineer (New Mexico), Mechanical

Professional Society memberships:

ASME, ANS, SME

Proficiency Report Conducted and Certified by

Signature [signature] **Title** Manager, ES. Testing

Date 5/16/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 9, 1988

Name ROBERT E. STINEBAUGH (SANDIA LABS) Title STAFF MEMBER

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activites BSME, New Mexico State Univ., 1959

Employed by SNL since 1959

Registered Professional Engineer in New Mexico

Experience pertinent to NNWSI:

oAt NTS - Chief Mech. Engineer on 2 SNL designed and sponsored underground nuclear tests

oWaste Isolation Pilot Plant (WIPP)

-Principal in charge of underground design and equipment design for WIPP

-In charge of initial WIPP Land Ownership Survey

oNNWSI

-Developed initial waste handling equipment concepts

-Principal in charge of design of U/G facilities including shafts, ramps and drift layouts. In this role, responsible for:

-defining, directing and review of work performed by U/G Design A&E

-coordination of ESF/Repository Interface

TSP & QUALIFIED TO COMMENT ON ITEMS PERTINENT TO UNDERGROUND
S/PF DESIGNS, SHAFTS, RAMPS, AND MECHANICAL EQUIPMENT

Proficiency Report Conducted and Certified by

Signature Thomas E Blejwas Title Supervisor, Division 6313
Sandia Nat. Labs.

Date May 10, 1988

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 10, 1988

Name Thomas L. Lippert Title Senior Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activities Technical design and review of Civil and Geotechnical Engineering, Hydrologic Testing, and Geologic Mapping of Shafts and Drifts

Proficiency Report Conducted and Certified by

Signature [signature] Title Head, Soil & Rock Mechanics Section

Date 5/10/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date May 10, 1988

Name Robert W. Craig Title Hydrologist

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activities

Education: B.A. Phys. Science 6/73 Chico University, CA

M.A Phys. Science 8/76 Chico University, CA

Experience: 2/78 - 9/82 USGS, WRD, Geothermal research group, Menlo Park, member of Oregon Geotherman Project

9/82 -10/85 USGS, WRD, member of Yucca Mountain saturated zone, hydrology project

10/85-Present USGS, WRD, NHP, member of Yucca Mountain deep unsaturated zone project

Proficiency Report Conducted and Certified by

Signature Larry R. Hayes Title Technical Project Officer, NNWSI/USGS

Date 05/10/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date _____

Merrick Whitfield Title Hydrologist

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activities

Education:	B.S. Geology 1959 Baylor University
	M.S. Geology 1962 Lousiana Tech. University
Experience:	1/62 - 9/63 Virginia Division of Mineral Resources - Ground Water Geologist
	6/64 - 9/64 Humble Oil & Refining Co., Exploration Geologist
	6/65 - 9/65 Humble Oil & Refining Co., Production Geologist
	10/66 - 9/78 USGS, Geohydrologic investigations in Louisiana
	9/78 - 8/80 USGS, Hydrologic investigations in Paradox Basin
	8/80-Present USGS, Hydrologic investigations at Nevada Test Site, Unsaturated zone project, Exploratory Shaft testing coordination, and drilling coordination

Proficiency Report Conducted and Certified by

Signature Larry R. Hayes Title Technical Project Officer, NNWSI/USGS

Date 5/10/88

NOTE: This report should be completed on an annual basis.

Enclosure 10

WMPO PROFICIENCY REVIEW REPORT

M-QA-007
6/85

Review Date May 13, 1988

Name Richard A. Dick Title Senior Staff Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activites the individual is capable to perform are listed below.

Activities Mr. Dick is experienced in all phases of excavation blasting and has an international reputation in the field. He has done consulting work for the governments of India and Mexico, Bureau of Reclamation, Corps of Engineers, National Park Service, Mine Safety and Health Administration and Office of Surface Mining. He has several publications that are widely read internationally. He has conducted numerous blasters training courses. He has been a technical representative for Atlas Powder Co., a blasting foreman for Kennecott Copper Corp. and a blasting researcher for the Bureau of Mines. He is proficient in explosives properties and selection, use of all blast initiation systems, priming techniques, blasthole loading, geological effects on blasting, surface and underground blast design, smoothblasting and presplitting, ground vibrations, airblast, flyrock, and blasting safety procedures. In addition to blasting, Mr. Dick is generally knowledgeable on other phases of surface and underground mining.

Proficiency Report Conducted and Certified by

Signature _____ Title Research Director

Date May 13, 1988

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date 5/9/88

Name Bruce Cantrell/B of M Title Supervisor, Dust Aerosol Technology/Group

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities February 1985 to present: U.S. Bureau of Mines: Research in the formation and control of respirable dust in underground mines, physical and chemical characterization of respirable mine aerosol, development of instrumentation to monitor in-mine diesel aerosol, and laboratory evaluation of diesel exhaust control technology.

August 1977 to February 1985: Senior Atmospheric Physicist, SRI-International: Research in physical and chemical characterization of atmospheric aerosol and pollutant gases, use of tracer gas techniques for plume dispersion measurement, and atmospheric field study design on both local and regional scales.

June 1972 to August 1977: Research Associate, University of Minnesota: Research in physical characterization of atmospheric aerosol, modeling of aerosol growth in the atmosphere, and field measurement of pollutant aerosol concentrations.

August 1966 to June 1972: Assistant Professor of Physics, Portland State University, Portland, Oregon.

Education: PhD. Experimental Nuclear Physics, Indiana University, Bloomington, Indiana.

Proficiency Report Conducted and Certified by

Signature James J. Olson Title Deputy Research Director Twin Cities Research Center Minneapolis, MN

May 12, 1988

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date 5/10/88

Name Rodric M. Breland Title Supervisory Mine Inspector
(MSHA Boulder City, NV)

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities I have been in the mining field for 19 years with 8 years experience as an MSHA Metal/Nonmetal Inspector and 4 years as the MSHA Boulder City, Nevada, field office supervisor. Prior to MSHA, I was an underground mine supervisor at Magma Copper Co. in Superior, Arizona. I have a degree in Mid-Management and recently completed requirements for a Masters Degree in Safety from Marshall University. Additionally, I have received extensive training from the MSHA Mine Academy. As the lead representative for MSHA on this project, I will be reviewing all of the MSHA reviewer comments. I am most concerned with Health and Safety issues.

Particular activities include:

MSHA Regulations and Policies

Ventilation

Hoisting

Dust and Noise

Lead, Haul, and Dump

Proficiency Report Conducted and Certified by

Signature Thomas C. Dykins Title Western District Manager MSHA

to 5/11/88

NOTE: This report should be completed on an annual basis.

WMPO PROFICIENCY REVIEW REPORT

N-QA-007
6/85

Review Date 5/10/88

Name John Widows Title Mining Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities He has worked for the Mine Safety and Health Administration for 13 years.

Knowledge of:

Mining Safety

Mine Regulations and Standards

Ventilation

Health and Dust Control

Proficiency Report Conducted and Certified by

Signature Thomas C. Fuller Title Western District Manager MSHA

Date 5-12-88

NOTE: This report should be completed on an annual basis.

NNWSI PROJECT
TRAINING ATTENDANCE RECORD

N-AD-043
7/87

Title TV Tape - NNWSI Quality Assurance Plan

Conducted By Peter J. Karnoski Date August 8, 1988

Length of Training 40 minutes

Description of Training (or attach a copy, an outline or an abstract) The TV tape describes how the NNWSI Quality Assurance Plan coincides with the 18 criteria of 10CFR50, Appendix B.

List of Additional Attachments (if any)

Record of Attendance (use black ink)

	NAME	SIGNATURE	ORGANIZATION	SSN
1.	G E Barr	G E Barr	Sandia Nat'l Lab	387/36/1293
2.	S. D. Francis	S. D. Francis	LANL	585-05-9809
3.	Derrick Wagg	Derrick Wagg	Weston (Jacobs	183-46-0177
4.	D L Potter	D L Potter	Corps of Engineers Sacramento District	363-52-0861
5.	Orin L. Haworth	Orin L. Haworth	REECo	551-74-0536
6.	Roxanne D. Edwards	Roxanne D. Edwards	DOE/WMPO	518-80-4338
7.	Paul E. Talley	Paul E. Talley	MSHA	504-22-3455
8.	LEO J. FLORES	Leo J. Flores	REECo	525-72-6468
9.	Dean Brogan	Dean Brogan	DOE/NV ISD	545-40-3088
10.	Richard DeKlever	Richard DeKlever	Hlmes + Narver	200-30-8813
11.	WILLIAM A. GIRDLEY	W. A. Girdley	DOE/WMPO	307-26-5816
12.	LOUISE G. CREVELT	Louise G. Crevelt	REECo	509-24-6607
13.				
14.				
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NNWSI PROJECT
TRAINING ATTENDANCE RECORD

N-AD-043
7/87

Title OMP-02-08 Technical Assessment Review

Conducted By Peter J. Karnoski Date August 8, 1988

Length of Training 40 minutes

Description of Training (or attach a copy, an outline or an abstract)

Presentation on OMP-02-08 to explain how a Technical Assessment Review is conducted.

List of Additional Attachments (if any)

Record of Attendance (use black ink)

	NAME	SIGNATURE	ORGANIZATION	SSN
1.	R.E. STINEBAUGH	Robert E. Stinebaugh	SANDIA LABS	524-74-2643
2.	I.E. Blejwas	I E Blejwas	Sandia Nat. Labs	149-38-2899
3.	G E Barr	G E Barr	Sandia Nat'l. Lab	387/36/1293
4.	D L. Potter	D L Potter	C.O.E. CESPK-D-T-OQA	363-52-0841
5.	O.L. Haworth	Orin L Haworth	REECo	551-74-0536
6.	E.O. JENSEN	Erik O. Jensen	C.O.E., SACRAMENTO	[illegible]
7.	[illegible]	[illegible]	DOE/NTSO/SHD	[illegible]
8.	JIM GRUBB	James Grubb	STATE OF NEVADA	389-82-3729
9.	Bruce Cantrell	Bruce Cantrell	U.S. Bu Mines	306-38-6980
10.	Richard Dick	Richard Dick	Bureau of Mines	136-26-6314
11.	Roxanne D. Edwards	Roxanne D. Edwards	DOE/WMPO	518-80-4350
12.	ANDRES R. VELOSO	Andres R Veloso	DOE/NTSO	104-46-1718
13.	STEWART THOMAS	Stewart Thomas	DOE/NTSO	527-46-9531
14.	WILLIAM BOSS	[illegible]	DOE/NTSO	523-26-5730
15.	Dean Brogan	Dean Brogan	DOE/NVISD	545-40-3090

p 2 of 6

NNWSI PROJECT
TRAINING ATTENDANCE RECORD

N-AD-043
7/87

Title OMP-02-08 Technical Assessment Review

Conducted By Peter J. Karnoski Date August 8, 1988

Length of Training 40 minutes

Description of Training (or attach a copy, an outline or an abstract)

Presentation on OMP-02-08 to explain how a Technical Assessment Review is conducted.

List of Additional Attachments (if any)

Record of Attendance (use black ink)

	NAME	SIGNATURE	ORGANIZATION	SSN
1.	Tom Cremer		F&S	441-52-8304
2.	Bruce Stanley		F+S	524-68-1790
3.	LARRY BARTO		F&S	446-56-5190
4.	Richard C. Greenwold		H&N	523-52-1701
5.	DONALD W. BRECHT		H&N	444-44-0431
6.	ERIC H. ANZAI		H&N	576-56-0675
7.	RANDOLPH L. SCHREINER		H&N	440-59-3282
8.	RALPH R MUSICK JR		H&N	426-04-0636
9.	JOSEPH A. DUMAS		H&N	433-82-4852
10.	Joseph C. Calovini		H&N	295-36-8668
11.	Thomas H. Pysto		SAIC	524 70 0222
12.	J. MARSHALL DAVENPORT		SAIC	240-76-6793
13.	Stanleigh W. Phillips		SAIC	228-62-1
14.	Margaret C. Brake		SAIC	509-54-5
15.	Steve Francis		LANL	585-05-8191

NNWSI PROJECT
TRAINING ATTENDANCE RECORD

N-AD-043
7/87

Title OMP-02-08 Technical Assessment Review

Conducted By Peter J. Karnoski Date August 8, 1988

Length of Training 40 minutes

Description of Training (or attach a copy, an outline or an abstract)

Presentation on OMP-02-08 to explain how a Technical Assessment Review is conducted.

List of Additional Attachments (if any)

Record of Attendance (use black ink)

	NAME	SIGNATURE	ORGANIZATION	SSN
1.	THOMAS J. MERSON	Thomas J. Merson	LOS ALAMOS	545-48-4110
2.	Robert S. Waters	Robert S. Waters	DOE/NWPO	563-58-5315
3.	Robert W. Craig	Robert W. Craig	U.S.G.S.	572-64-8472
4.	THOMAS L. LIPPERT	Thomas L Lippert	USBR/USGS	
5.	MERRICK S. WHITFIELD	Merrick S. Whitfield	USGS	434-40-2447
6.	MAHMOOD B. MIRZA		F & S	337-40-5959
7.	JAMES D. GRENO	James D. Greno	F&S	491-30-3384
8.	Richard L Bullock	Richard L Bullock	F&S	458-28-1817
9.	MICHAEL J. REGENDA	Michael J. Regenda	F&S	182-14-3545
10.	Thomas L McCracken	Thomas L McCracken	F&S	171-52-6098
11.	PAUL B. HALE	Paul B Hale	F&S	456-06-0250
12.	IVO A. LANGE	Ivo A. Lange	F&S	563-84-4884
13.	NICK B. TAMONDONG	Nick B. Tamondong	F&S	523-88-6527
	JAREK J. MRUGALA	Jarek J. Mrugala	F&S	521-50-9025
15.	ROBERT H. KLEMENS	Robert H. Klemens	SAIC	189-12-7188

NNWSI PROJECT
TRAINING ATTENDANCE RECORD

N-AD-043
7/87

Title QMP-02-08 Technical Assessment Review

Conducted By Peter J. Karnoski Date August 8, 1988

Length of Training 40 minutes

Description of Training (or attach a copy, an outline or an abstract)

Presentation on QMP-02-08 to explain how a Technical Assessment Review is conducted.

List of Additional Attachments (if any)

Record of Attendance (use black ink)

	NAME	SIGNATURE	ORGANIZATION	SSN
1.	[illegible]	[signature]	U.S. NRC	
2.	William T. Hughes	[signature]	U.S. DOE	048-42-9446
3.	WILLIAM A. GIRDLEY	[signature]	U.S. DOE	307-26-5816
4.	Richard DeKlever	[signature]	Holmes & Narver	200-30-8818
5.	CHARLES H. WARD	[signature]	Holmes & Narver	407-26-6831
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NNWSI PROJECT
TRAINING ATTENDANCE RECORD

N-AD-043
7/87

Title OMP-02-08 Technical Assessment Review

Conducted By Peter J. Karnoski Date August 8, 1988

Length of Training 40 minutes

Description of Training (or attach a copy, an outline or an abstract)

Presentation on OMP-02-08 to explain how a Technical Assessment Review is conducted.

List of Additional Attachments (if any)

Record of Attendance (use black ink)

	NAME	SIGNATURE	ORGANIZATION	SSN
1.	ELVIN LANGSTAFF	Alvin Langstaff	T&MSS Westinghouse	521-74-9767
2.	JOHN JARDINE	John C. Jardine	SAIC	526-82-6449
3.	James McConville	James A. McConville	T&MSS HARZA	523-28-4415
4.	JUAN CUTTLE	Juan Cuttle	T&MSS-SAIC	513-90-0191
5.	EDWARD CIKANEK	Edward Cikanek	T&MSS-HARZA	314-36-0132
6.	RONALD L. TOME'	Ronald L. Tomé	T&MSS-SAIC	520-34-9147
7.	STEVED C. SMITH	Steven Smith	T&MSS-SAIC	546-66-8275
8.	[illegible]	[illegible]	" "	522-02-3376
9.	FRANK A. SPENIA	Frank A. Spenia	REECO	235-74-7954
10.	JAMES L BETTS	James L Betts	REECo	446-48-0848
11.	LEO J. FLORES	Leo J. Flores	REECo	525-72-04608
12.	LOUISE G. CREVELT	Louise G. Crevelt	REECo	509-24-6607
13.	Robert R. Rommel	Robert R. Rommel	REECo	564-42-5244
14.	WILLIAM H. GRAMS	William H. Grams	REECo	504-52-6605
15.	DANIEL L. KOSS	Daniel L. Koss	REECo	364-34-2094
16.	MONO A. FOX	Mono A. Fox	REECo	535-30-0656

NNWSI PROJECT
TRAINING ATTENDANCE RECORD

N-AD-043
7/87

Title OMP-02-08 Technical Assessment Review

Conducted By Peter J. Karnoski Date August 8, 1988

Length of Training 40 minutes

Description of Training (or attach a copy, an outline or an abstract)

Presentation on QMP-02-08 to explain how a Technical Assessment Review is conducted.

List of Additional Attachments (if any)

Record of Attendance (use black ink)

	NAME	SIGNATURE	ORGANIZATION	SSN
1.	DENNIS H. IRBY	Dennis H. Irby	DOE/NWPO	
2.	KEN BEALL	Ken Beall	SAIC	330-34-1450
3.	LEONARD J. OWENS	Leonard J. Owens	DOE/NWPO	530-30-1650
4.	DERRICK WAGG	Derrick Wagg	WESTON/Jacobs	183-46-0177
5.	DEAN STUCKER	Dean Stucker	DOE/HQ	530 38 3554
6.	James Montgomery	James Montgomery	WESTON/Jacobs	344-24-4888
7.	GARY L. FAUST	Gary L Faust	WESTON/DOE-HQ	170-40-9695
8.	HENRY L. BERMANIS	Henry Bermanis	WESTON/UETC	126-22-4133
9.	Patrick F. Phillips	Patrick F. Phillips	DOE/NV SHD	324-24-2779
10.	Dale G. Wilder	Dale G. Wilder	LLNL	561-56-5825
11.	JOHN WIDOWS	John Widows	MSHA	521-22-3053
12.	ROD M BRELAND	Rodric M Breland	MSHA	526-68-0350
13.	PAUL E TALLEY	Paul E Talley	MSHA	504-22-3
14.				
15.				

NNWSI PROJECT
TRAINING ATTENDANCE RECORD

N-AD-043
7/87

Title QMP-02-08 Technical Assessment Review

Conducted By Peter J. Karnoski P.J. Karnoski Date August 8, 1988

Length of Training 40 minutes

Description of Training (or attach a copy, an outline or an abstract)

Presentation on QMP-02-08 to explain how a Technical Assessment Review is conducted.

List of Additional Attachments (if any)

Record of Attendance (use black ink)

	NAME	SIGNATURE	ORGANIZATION	SSN
1.	R. Lindsay Mundell	R. Lindsay Mundell	US BUREAU OF MINES	183-32-8209
2.	~~Dennis R. Dolinar~~			
3.	Dennis R. Dolinar	Dennis R. Dolinar	U.S. Bureau of Mines	476-60-2579
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NNWSI PROJECT
TRAINING ATTENDANCE RECORD

N-AD-043
7/87

Title TV Tape - NNWSI Quality Assurance Plan

Conducted By Peter J. Karnoski PJ Karnoski Date August 18, 1988

Length of Training 40 minutes

Description of Training (or attach a copy, an outline or an abstract) The TV tape describes how the NNWSI Quality Assurance Plan coincides with the 18 criteria of 10CFR50, Appendix B.

List of Additional Attachments (if any)

Record of Attendance (use black ink)

	NAME	SIGNATURE	ORGANIZATION	SSN
1.	ROBERT H. KLEMENS	Robert H Klemens	Las Vegas	184-12-7188
2.	R. Lindsay Mundell	R. Lindsay Mundell	U S Bureau of Mines	183-32-8209
3.	Dennis R. Dolinar	Dennis R. Dolinar	U.S. Bureau of Mines	476-60-2579
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WMPO TRAINING RECORD

N-QA-02
6/85

Title NNWSI QA TRAINING PROGRAM

Conducted By VIDEO TAPE Date 1/12/88

Length of Training 33 min.

Description of Training (or attach a copy, an outline or an abstract) NVO-196-17; review of 18 Criteria

List of Additional Attachments (if any) N/A

Record of Attendance (use black ink)

	NAME	SIGNATURE	ORGANIZATION	SSN
1.	W.R. Kazor	W.R. Kazor	SAIC/QA	194149001
2.	R.H. Klemens	R.H. Klemens	SAIC/QASC	189-12-7188
3.	F.J. Ruth	Frederick J. Ruth	SAIC/QASC	144-32-4831
4.	Gerard Heaney	Gerard Heaney	SAIC/QA	110-50-6663
5.	Peter Karnoski	Peter Karnoski	SAIC/QA	209-16-8966
6.	C.M. Thompson	C.M. Thompson	SAIC/QA	302-38-6814
7.	S.P. Nolan	Steven P. Nolan	SAIC/QA	321.44.8040
8.	D.H. Klimas	D.H. Klimas	SAIC/QA	321448204
9.	H.F. Caldwell	H.F. Caldwell	SAIC/QA	161380073
10.	Keth Schwartztrauber	K. Schwartztrauber	SAIC/QA	560521189

ULT

NOTE: When completed, send to WMPO QA records files.

TRAINING RECORD:

TITLE: NNWSI QA TRAINING PROGRAM DATE(S) OF TRAINING: 1/12/88

CONDUCTED BY: Video Tape
Signature/Title

SCOPE OF TRAINING: NVO-196-17

DURATION OF TRAINING (HOURS): 1/2 (33 min.)

RECORD OF ATTENDANCE:

ONLY →
1.
2.
3.
4.
5.
6.

REFERENCE ANY DETAILED TRAINING PROGRAM (IF APPLICABLE):

1.
2.
3.

Note:

When completed send to WMPO QA records files

TRAINING RECORD:

TITLE: NNWSI QA TRAINING PROGRAM DATE(S) OF TRAINING: 1/12/88

CONDUCTED BY: Video Tape
Signature/Title

SCOPE OF TRAINING: NVO-196-17

DURATION OF TRAINING (HOURS): 1/2 (33 min.)

RECORD OF ATTENDANCE:

1. Steven P. Nolan
2. Daniel A. Hunnicutt
3. Amy L. Caldwell
4. Keith Schwartzlander
5.
6.

REFERENCE ANY DETAILED TRAINING PROGRAM (IF APPLICABLE):

1.
2.
3.

Note:

When completed send to WMPO QA records files

WMPO TRAINING RECORD

N-QA-020
6/85

Title QA ORIENTATION FOR Technical Assessment Review - TITLE I FS Fat 100% De

Conducted By W. R. KAZOR Date 7/22/88

Length of Training 1 1/2 hr

Description of Training (or attach a copy, an outline or an abstract)

Tape - SAIC - QA - 35:00 .

Technical Assessment Review (Technical) Plan

List of Additional Attachments (if any)

Record of Attendance (use black ink)

	NAME	SIGNATURE	ORGANIZATION	SSN
1.	FRANK A. SPENIA	Frank A. Spenia	Reeco	235-74-7954
2.	Earl J. McCarty	Earl J. McCarty	Reeco	546-32-6616
3.	Pat Phillips	Pat C Phillips	DOE Fire Prot.	324-24-2779
4.	[illegible]	[illegible]	DOE/HDE	[illegible]
5.	Jim Betts (Reeco)	Jim Betts Jim Betts	REECO	446-48-0648
6.	Bill Boss	W.G. Boss	DOE/NTSO	523-26-5130
7.	STEW THOMAS	Stewart Thomas	DOE/NTSO	527-46-9531
8.				
9.				
10.				

NOTE: When completed, send to WMPO QA records files.

10.0 Meeting Presentation Materials, including Agenda

EXPLORATORY SHAFT FACILITY (ESF)

100 PERCENT TITLE I TECHNICAL ASSESSMENT REVIEW

AUGUST 8, 1988

OPENING REMARKS

- PURPOSE
  - TO PERFORM A COMPREHENSIVE, DOCUMENTED TECHNICAL ASSESSMENT REVIEW OF THE ESF TITLE I DESIGN ACTIVITIES AT 100 PERCENT COMPLETION
  - TO DETERMINE IF WORK TO DATE MEETS PROJECT AND PROGRAM REQUIREMENTS
  - TO DETERMINE COMPLIANCE OF ESF DESIGN WITH 10CFR60 REQUIREMENTS

OPENING REMARKS

- THE WMPO HAS GIVEN THE OVERALL TECHNICAL ASSESSMENT REVIEW RESPONSIBILITY TO TECHNICAL AND MANAGEMENT SUPPORT SERVICES (T&MSS)

- THE SPECIFIC REQUEST IS TO PERFORM THE REVIEW IN ACCORDANCE WITH:

  - QMP-02-08, TECHNICAL ASSESSMENT REVIEW

  - WMPO APPROVED TITLE I REVIEW PLAN FOR THE ESF AT 100 PERCENT COMPLETION

OVERVIEW OF REVIEW

- DESIGN PRESENTATION MEETING AGENDA
- DESIGN REVIEW BOARD
- DESIGN REVIEW SCHEDULE

OVERVIEW OF REVIEW

DESIGN PRESENTATION MEETING AGENDA

SCHEDULE	ITEM	RESPONSIBILITY
8:00 - 8:05 am	OPENING REMARKS	WMPO
8:05 - 8:15	OVERVIEW OF REVIEW	T&MSS
8:15 - 8:45	TESTING REQUIREMENTS OVERVIEW	LOS ALAMOS
8:45 - 9:00	BREAK	
9:00 - 10:45	H&N DESIGN PRESENTATION	H&N
10:45 - 12:00	F&S DESIGN PRESENTATION	F&S
12:00 - 1:00 pm	LUNCH	
1:00 - 1:30	F&S DESIGN PRESENTATION (CONT.)	F&S
1:30 - 2:00	REVIEW PLAN OVERVIEW	T&MSS

OVERVIEW OF REVIEW

DESIGN PRESENTATION MEETING AGENDA
(CONTINUED)

SCHEDULE	ITEM	RESPONSIBILITY
2:00 - 2:30 pm	QA TRAINING ON COMMENT PROCEDURE	T&MSS
2:30 - 2:45	BREAK	
2:45 - 3:15	TECHNICAL ASSESSMENT PROCESS	T&MSS
3:15 - 3:30	COMMENT QUALITY	T&MSS
3:30 - 3:45	REVIEW LOGISTICS	T&MSS
3:45 - 4:00	QUESTIONS FOR CLARIFICATION	T&MSS
4:00 - 4:15	CLOSING COMMENTS AND TECHNICAL ASSESSMENT REVIEW PACKAGE DISTRIBUTION	T&MSS/WMPO
4:15 - 4:45	QUALITY ASSURANCE TRAINING FILM (NEW REVIEWERS ONLY)	T&MSS

OVERVIEW OF REVIEW

TECHNICAL ASSESSMENT REVIEW BOARD

KEN BEALL	CHAIRMAN
JOE REISER	SECRETARY
PETE KARNOSKI	QUALITY ASSURANCE

REVIEWER	DISCIPLINE
MARGE BRAKE	CIVIL/STRUCTURAL/ARCHITECTURAL
ED CIKANEK	GEOTECHNICAL
RON TOME'	MECHANICAL
IVAN COTTLE	TESTING
JIM McCONVILLE	ELECTRICAL/INSTRUMENTATION
TOM PYSTO	ENVIRONMENTAL DESIGN
STEVE SMITH	REPOSITORY/OPERATIONS
ALVIN LANGSTAFF	MINING/VENTILATION
STAN PHILLIPS	SAFETY
MARSHALL DAVENPORT	LICENSING/REGULATORY COMPLIANCE

OVERVIEW OF REVIEW

TECHNICAL ASSESSMENT REVIEW COORDINATORS

CATEGORY	PRINCIPAL COORDINATOR	SUPPORT COORDINATORS
GENERAL	I. COTTLE	S. SMITH
CIVIL/ARCHITECTURAL	M. BRAKE	I. COTTLE
MECHANICAL	R. TOME'	NONE (AS NECESSARY)
ELECTRICAL	J. McCONVILLE	NONE (AS NECESSARY)
MINING	S. SMITH	A. LANGSTAFF/ E. CIKANEK
SHAFTS	I. COTTLE	E. CIKANEK/S. SMITH
SAFETY	S. PHILLIPS	NONE (AS NECESSARY)
QA	J. JARDIN	P. KARNOSKI
REGULATORY COMPLIANCE	M. DAVENPORT	NONE (AS NECESSARY)
SPECIFICATIONS	ALL BY ABOVE CATEGORIES	

OVERVIEW OF REVIEW

ORGANIZATIONS LEAD REPRESENTATIVE

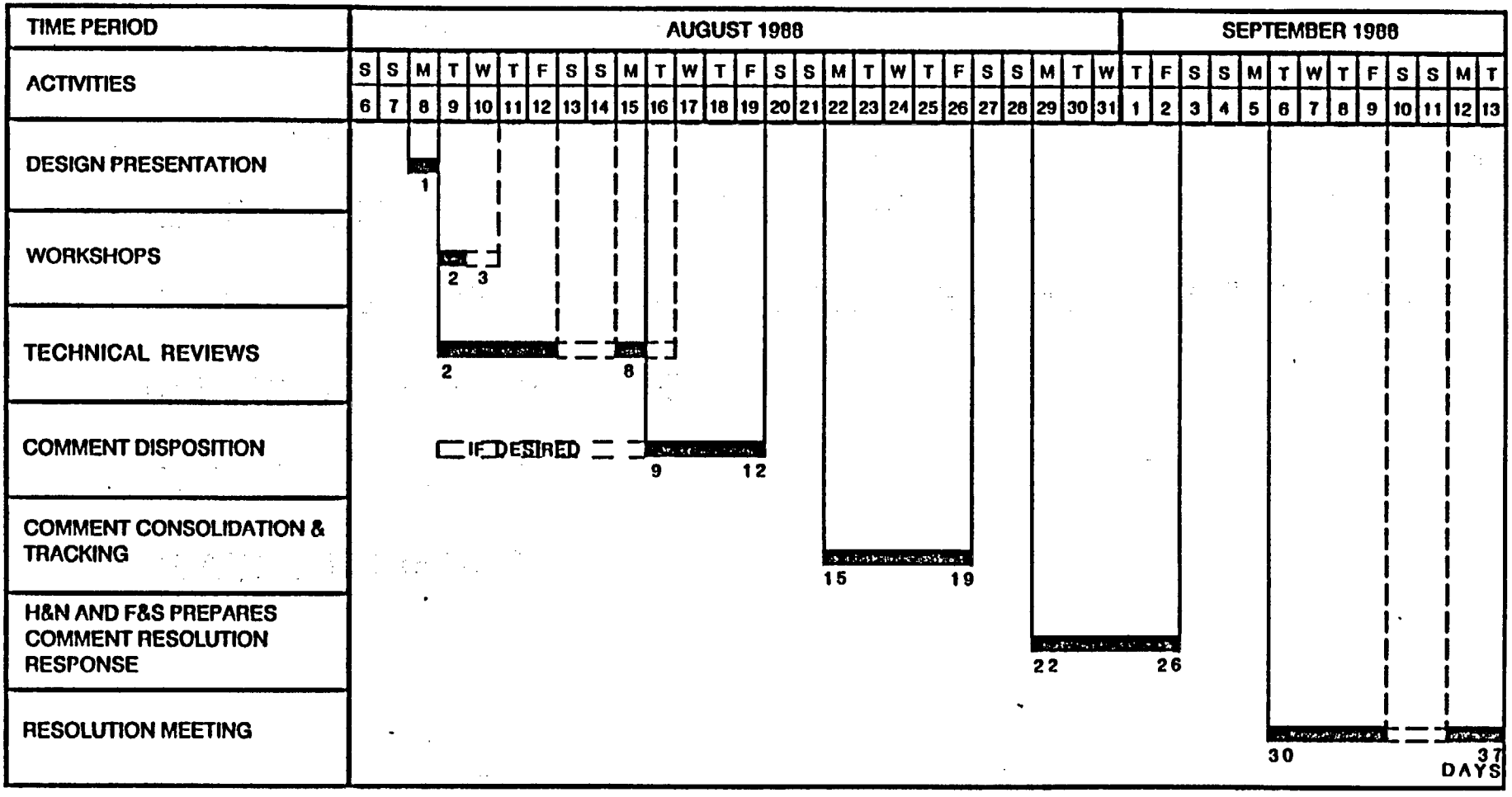
	ORGANIZATION	REPRESENTATIVE
1.	DOE/HEADQUARTERS (HQ)	D. STUCKER
2.	DOE/WASTE MANAGEMENT PROJECT OFFICE (WMPO)	D. IRBY
3.	ROY F. WESTON	J. MONTGOMERY
4.	TECHNICAL & MANAGEMENT SUPPORT SERVICES (T&MSS) - QA TECHNICAL & MANAGEMENT SUPPORT SERVICES (T&MSS) - REVIEW BOARD	J. JARDIN I. COTTLE
5.	MINE SAFETY AND HEALTH ADMINISTRATION (MSHA)	B. BRELAND
6.	UNITED STATES BUREAU OF MINES (BOM)	B. CANTRELL
7.	UNITED STATES GEOLOGICAL SURVEY (USGS)	B. CRAIG
8.	SANDIA NATIONAL LABORATORIES (SNL)	B. STINEBAUGH
9.	LAWRENCE LIVERMORE NATIONAL LABORATORY (LLNL)	D. WILDER
10.	LOS ALAMOS NATIONAL LABORATORY (LOS ALAMOS)	T. MERSON
11.	DOE/SAFETY AND HEALTH DIVISION (SHD)	D. MARTIN
12.	DOE/NEVADA TEST SITE OPERATIONS OFFICE (NTSO)	A. VELOSO
13.	DOE/HEALTH PHYSICS AND ENVIRONMENTAL DIVISION (HPED)	TBD
14.	DOE/PHYSICAL SECURITY AND SAFETY DIVISION (SSD)	TBD
15.	REYNOLDS ELECTRICAL AND ENGINEERING CO., INC. (REECo)	D. KOSS
16.	UNITED STATES ARMY CORPS OF ENGINEERS (USACE)	E. JENSEN

OVERVIEW OF REVIEW

TECHNICAL ASSESSMENT REVIEW SCHEDULE

AUG 8	DESIGN PRESENTATION MEETING
AUG 9 - 16	REVIEW AND WORKSHOPS
AUG 16 - 19	COMMENT DISPOSITIONING BY T&MSS
AUG 22 - 26	COMMENT CONSOLIDATION AND TRACKING
AUG 29	CONSOLIDATED COMMENTS DUE TO A/Es
AUG 29 - SEP 2	COMMENT RESPONSE PREPARATION BY A/Es
SEP 6 - 13	COMMENT RESOLUTION MEETING
OCT 10	REVIEW RECORD MEMORANDUM (FINAL REPORT) TO THE WMPO AND REVIEWING ORGANIZATIONS

ESF TITLE I 100 PERCENT COMPLETION TECHNICAL ASSESSEMENT REVIEW SCHEDULE



ESFT1JR.PUB 6/17/1988

REVIEW PLAN OVERVIEW

- REVIEW PURPOSE
- OVERALL TECHNICAL ASSESSMENT REVIEW RESPONSIBILITY
- PARTICIPATING ORGANIZATIONS
- REVIEW RESPONSIBILITY OF PARTICIPATING ORGANIZATIONS
- VERIFICATION OF 50 PERCENT COMMENT RESOLUTIONS
- REVIEW PROCESS
- REVIEW RECORD MEMORANDUM
- WORKSHOPS

REVIEW PLAN OVERVIEW

REVIEW PURPOSE

THE PURPOSE OF THIS TECHNICAL ASSESSMENT REVIEW IS TO ENSURE THAT THE DESIGNS BEING PREPARED ARE:

- IN COMPLIANCE WITH REQUIREMENTS AND CRITERIA
- SAFE
- CONSTRUCTIBLE
- OPERABLE
- SUPPORT SITE CHARACTERIZATION

REVIEW PLAN OVERVIEW

OVERALL TECHNICAL ASSESSMENT REVIEW RESPONSIBILITY

- THE WMPO HAS GIVEN THE OVERALL TECHNICAL ASSESSMENT REVIEW RESPONSIBILITY TO T&MSS

- THE SPECIFIC REQUEST IS TO PERFORM THE REVIEW IN ACCORDANCE WITH:

  - QMP-02-08, DOCUMENT REVIEW/ACCEPTANCE/APPROVAL

  - WMPO APPROVED TITLE I - REVIEW PLAN FOR THE ESF AT 100 PERCENT COMPLETION

REVIEW PLAN OVERVIEW

PARTICIPATING ORGANIZATIONS

1. U.S. DEPARTMENT OF ENERGY/HEADQUARTERS (DOE/HQ)
2. NEVADA OPERATIONS OFFICE, SAFETY AND HEALTH DIVISION (NVO/SHD)
3. NEVADA OPERATIONS OFFICE, HEALTH PHYSICAL AND ENVIRONMENTAL DIVISION (NVO/HPED)
4. NEVADA OPERATIONS OFFICE, PHYSICAL SECURITY AND SAFETY DIVISION (NVO/SSD)
5. NEVADA TEST SITE OPERATIONS (NTSO)
6. WASTE MANAGEMENT PROJECT OFFICE (WMPO)
7. WESTON
8. TECHNICAL & MANAGEMENT SUPPORT SERVICES (T&MSS)
9. U.S. ARMY CORPS OF ENGINEERS (USACE)
10. MINE SAFETY AND HEALTH ADMINISTRATION (MSHA)
11. BUREAU OF MINES (BOM)
12. REYNOLDS ELECTRICAL AND ENGINEERING COMPANY (REECo)
13. LOS ALAMOS NATIONAL LABORATORY (LOS ALAMOS)
14. U.S. GEOLOGICAL SURVEY (USGS)
15. SANDIA NATIONAL LABORATORIES (SNL)
16. LAWRENCE LIVERMORE NATIONAL LABORATORY (LLNL)

OBSERVING ORGANIZATIONS

1. U.S. NUCLEAR REGULATORY COMMISSION (NRC)
2. THE STATE OF NEVADA
3. UNIVERSITY OF NEVADA (UNLV AND UNR)

REVIEW PLAN OVERVIEW

REVIEW RESPONSIBILITY OF PARTICIPATING ORGANIZATIONS

ORGANIZATIONAL WORKSCOPES FOR THE TECHNICAL ASSESSMENT REVIEW ARE DEFINED IN FIGURE 4 OF THE APPROVED REVIEW PLAN

1. DOE/HQ/Weston - Review for compliance to Program Requirements, constructibility, operations, maintenance, and safety (10 CFR 60).

2. REECo - Review for constructibility, use of standard construction practices, quality control, operations, maintenance, and safety (industrial/worker).

3. SAIC - Review of general compliance with Program Requirements, standard construction practices, and environmental permitting compliance, and regulatory compliance.

4. WMPO - Review for general compliance with Program Requirements.

5. COE - Review for general compliance with regulations for site preparation and civil works, constructibility, and use of standard construction practices.

6. MSHA - Review for general compliance with MSHA regulations and standard safety practices, and for use of standard construction practices.

7. B of M - Review for mining technology applications with respect to controlled blasting and blast effect on instrumentation, dust abatement and control, diesel emissions at surface and underground works, and drift and pillar stability design.

8. USGS - Review for adequacy to support ESF in situ characterization testing needs.

9. SNL - Review for general compliance with site and engineering properties data base identified in the RIB, adequacy to support ESF in situ site characterization testing needs, and compatibility of ESF permanent items which will be incorporated into the repository. Design features of the ESF for regulatory compliance with 10 CFR 60 requirements, as defined in the DOE Generic Requirements Document, Appendix E for the ESF.

10. LLNL - Review for general compliance with the waste package interfaces and for adequacy to support ESF in situ site characterization testing needs.

11. Los Alamos - Review for adequacy to support in situ site characterization testing needs.

12. NVO/SHD - Review for compliance to health and safety regulations.

13. NTSO - Review with respect to security concerns and for compatibility/interface with present on-site utilities, buildings, roads, maintenance facilities, etc.

14. NVO/SSD - Review with respect to physical security concerns.

15. NVO/HPED - Review for environmental compliance with regulations.

FIGURE IV

SCOPE OF WORK FOR REVIEWING ORGANIZATION

REVIEW PLAN OVERVIEW

VERIFICATION OF 50 PERCENT COMMENT RESOLUTIONS

- REVIEWERS TO COMPARE CURRENT DESIGN WITH THE APPROVED RESOLUTIONS OF THEIR PREVIOUS COMMENTS
- LEAD REVIEWER TO VERIFY SATISFACTORY INCORPORATION OF RESOLUTIONS
- THE APPROVED RESOLUTIONS TO THE (ORGANIZATION NAME) COMMENTS SUBMITTED AT THE 50 PERCENT ESF TITLE I DESIGN REVIEW HAVE BEEN SATISFACTORILY INCORPORATED INTO THE ESF TITLE I DESIGN AT 100 PERCENT COMPLETION
- IF EXCEPTIONS EXIST, ADD - WITH THE FOLLOWING EXCEPTIONS: (RE-STATE INDIVIDUAL COMMENT IN EXCEPTION)

REVIEW PLAN OVERVIEW

REVIEW PROCESS

- OBTAIN DETAILED INFORMATION AND ASK QUESTIONS ABOUT SPECIFIC TECHNICAL/DESIGN TOPICS DURING WORKSHOPS

- DEVELOP COMMENTS ON THE DRAWINGS AND SPECIFICATIONS IN ACCORDANCE WITH THE APPROVED REVIEW PLAN

- COMMENTS CHECKED BY ORGANIZATIONS LEAD REPRENTATIVE FOR APPROPRIATENESS AND CONFLICTS

REVIEW PLAN OVERVIEW

REVIEW PROCESS
(CONTINUED)

- COMMENTS REVIEWED AND DISPOSITIONED BY REVIEW SECRETARY AND/OR REVIEW COORDINATOR
- ACCEPTANCE BY REVIEWER
- CONSOLIDATION BY CATEGORY
- TRANSMITTAL TO A/E FOR PROPOSED RESOLUTION
- RESOLUTION
- REVIEW RECORD MEMORANDUM

REVIEW PLAN OVERVIEW

REVIEW RECORD MEMORANDUM

THE TECHNICAL ASSESSMENT REVIEW CHAIRMAN WILL ISSUE A REVIEW RECORD MEMORANDUM (FINAL REPORT) TO THE WMPO AND REVIEWING ORGANIZATIONS 27 DAYS AFTER THE FINAL COMMENT RESOLUTION MEETING. THE REPORT WILL CONTAIN:

- ALL COMMENTS SUBMITTED ON THE REVIEWERS COMMENT SHEET (FORM N-ES-001) FOR DISPOSITIONING
- ALL COMMENTS SUBMITTED TO A/Es WITH AGREED UPON RESOLUTIONS
- SUMMARY OF MAJOR FINDINGS DURING THE REVIEW
- TECHNICAL ASSESSMENT REVIEW SUPPORTING DOCUMENTATION

REVIEW PLAN OVERVIEW

WORKSHOPS
TUESDAY, AUGUST 9, 1988, ROOM 3

TIME	SUBJECT	BY
8:00 am	COMMUNICATIONS - SURFACE AND UNDER-GROUND	H&N
10:00 am	SITE LAYOUT - SURFACE	H&N
1:00 pm	LIFE SAFETY	H&N
3:00 pm	SURFACE AND UNDERGROUND ELECTRICAL SYSTEM	H&N

REVIEW PLAN OVERVIEW

WORKSHOPS
WEDNESDAY, AUGUST 10, 1988, ROOM 3

TIME	SUBJECT	BY
8:00 am	UNDERGROUND LAYOUT	F&S
10:00 am	ROCK MECHANICS	F&S
1:00 pm	SHAFT OUTFITTING/HOISTING	F&S
3:00 pm	VENTILATION	F&S

U.S. ARTMENT OF ENERGY

OCRWM

YUCCA MOUNTAIN

YUCCA MOUNTAIN PROJECT

NNWSI

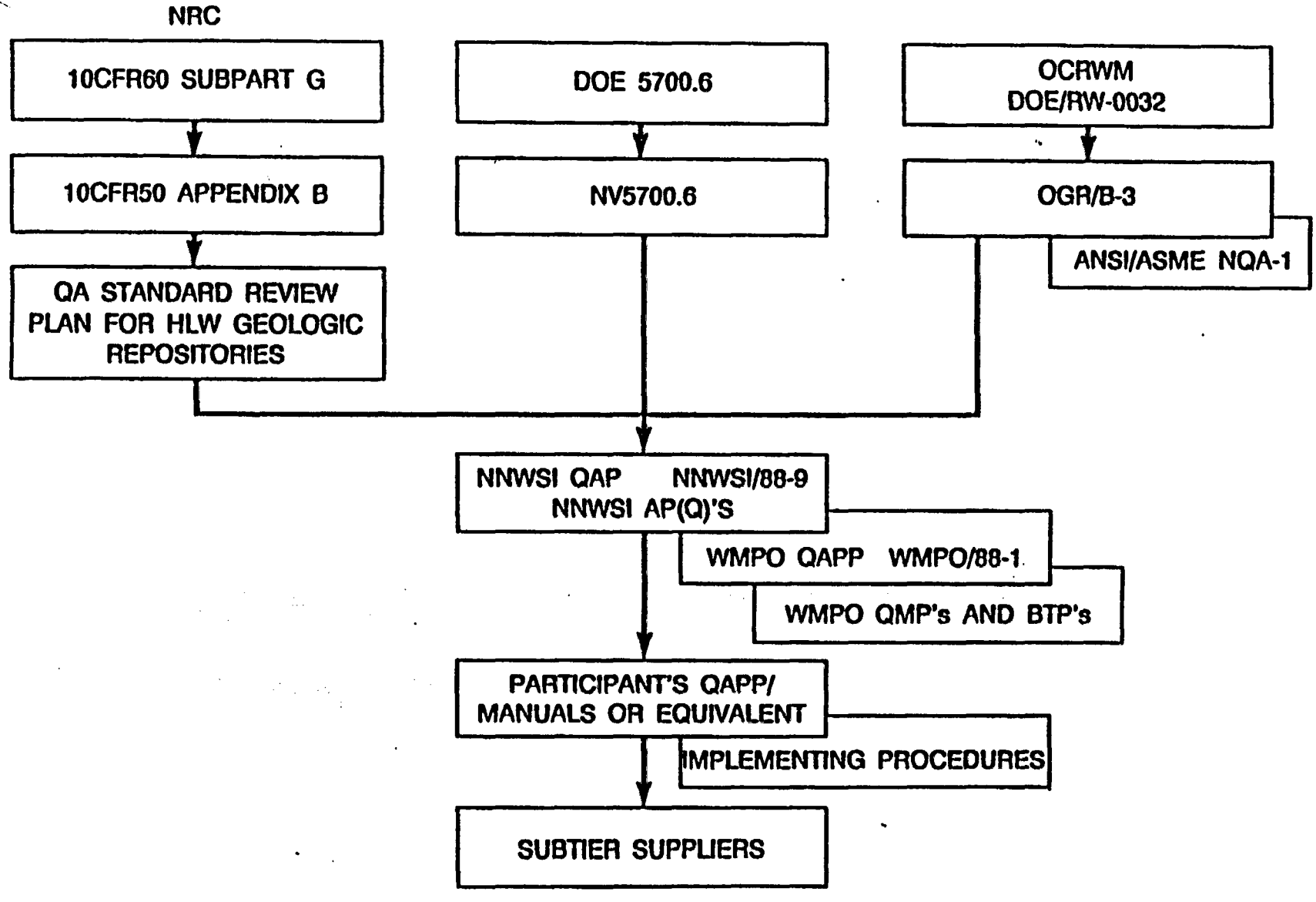
QUALITY ASSURANCE

REQUIREMENTS

AUGUST, 1988

UNITED STATES DEPARTMENT OF ENERGY
NEVADA OPERATIONS OFFICE/YUCCA MOUNTAIN PROJECT OFFICE

CRITERIA FOR QUALITY ASSURANCE



CRITQA.PUB/5-16-88

QMP-02-08

TECHNICAL ASSESSMENT REVIEW

TECHNICAL ASSESSMENT REVIEW

DEFINITION

A DOCUMENTED EVALUATION OF TECHNICAL STATUS, TECHNICAL PROGRESS, OR TECHNICAL MERIT, IN COMBINATION OR SEPARATELY

TECHNICAL ASSESSMENT REVIEW

A MANAGEMENT METHOD TO:

1. ASSESS REQUIREMENTS
2. DETERMINE DEGREE TO WHICH TECHNICAL WORK MEETS REQUIREMENTS
3. IDENTIFY TECHNICAL ISSUES IN TIMELY FASHION SUCH AS INTERFACES WITH SITE AND DESIGN EFFORTS
4. ASSESS TECHNICAL STATUS OR PROGRESS OF ACTIVITIES
5. PROVIDE BASIS TO ACCEPT TECHNICAL SERVICES RENDERED
6. DEFINE AND DIRECT NECESSARY CHANGES IN ACCORDANCE WITH WMPO PROCEDURES

TECHNICAL ASSESSMENT REVIEW PROCEDURE

WMPO BRANCH CHIEF - PLANS, SCHEDULES AND ANNOUNCES TECHNICAL ASSESSMENT REVIEW - DESIGNATES CHAIRPERSON

CHAIRPERSON

- DETERMINES TECHNICAL DISCIPLINES TO BE USED
- ESTABLISHES MINIMUM QUALIFICATIONS NEEDED BY TEAM MEMBERS
- OBTAINS AND ENSURES SUITABILITY OF DOCUMENTATION OF TEAM MEMBERS' QUALIFICATIONS
- OBTAINS INFORMATION FOR REVIEW FROM APPROPRIATE TPO

TECHNICAL ASSESSMENT REVIEW

PROCEDURE

- COMMENTS DOCUMENTED

TEAM MEMBERS

- REVIEW MATERIAL AND DOCUMENT COMMENTS

- A "NO COMMENT" IS DOCUMENTED

TECHNICAL ASSESSMENT REVIEW RESOLUTION OF COMMENTS

CHAIRPERSON

- OBTAINS RESOLUTIONS FROM TPOs
- COORDINATES TEAM'S EVALUATION OF RESOLUTIONS
- REFERS CONFLICTS (DISPUTES) TO TPOs FOR RESOLUTION
- PROVIDES DOCUMENTED RESOLUTIONS OF CONFLICTS TO REVIEWERS

REVIEWER

- EVALUATES DOCUMENTED RESOLUTION
- AGREES OR DISAGREES
- SIGNS, DATES, AND RETURNS TO CHAIRPERSON
- DOCUMENTS DISAGREEMENT BY LETTER TO OWN OR WMPO MANAGEMENT

TECHNICAL ASSESSMENT REVIEW

REVIEW RECORD MEMORANDUM

- ISSUED BY CHAIRPERSON TO WMPO BRANCH CHIEF FOR DISTRIBUTION

- DOCUMENTED SUMMARY OF TECHNICAL ASSESSMENT REVIEW INCLUDES:

  - SCOPE OF REVIEW
  - NOTICE OF REVIEW
  - REVIEW MEETING MINUTES
  - TEAM SELECTION RECORD
  - COMMENT RECORDS
  - LIST OF ATTENDEES
  - RELATED CORRESPONDENCE
  - INFORMATION PRESENTED DURING REVIEW
  - CONCLUSIONS AND RECOMMENDATIONS

TECHNICAL ASSESSMENT REVIEW

CLOSURE OF RESOLUTIONS

WMPO BRANCH CHIEF ENSURES THAT TPO SATISFIES AND CLOSES OUT COMMITMENTS MADE IN RESOLUTIONS

TECHNICAL ASSESSMENT REVIEW DOCUMENTATION

CHAIRPERSON COMPILES DATA PACKAGE

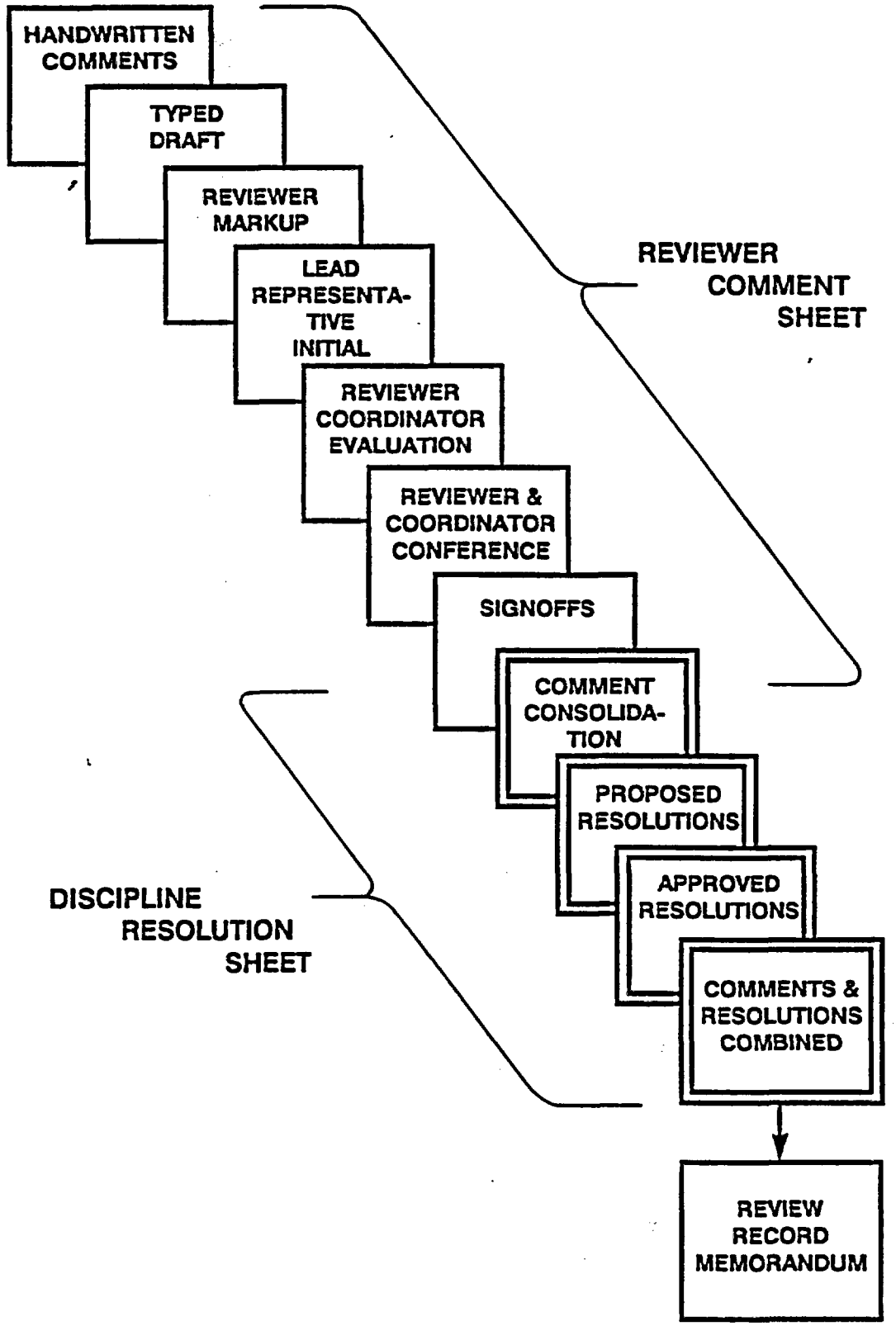
- TECHNICAL ASSESSMENT REVIEW PACKAGE (INFORMATION ASSESSED DURING REVIEW)
- REVIEW RECORD MEMORANDUM

TECHNICAL ASSESSMENT PROCESS

- FORMS
- COMMENT TRACKING
- CATEGORY AND ORGANIZATION CODES
- DEVELOPMENT OF FORMAL COMMENTS
- COMMENT RESOLUTION

TECHNICAL ASSESSMENT PROCESS

DEVELOPMENT OF FORMAL COMMENTS



ESF100%.PM3/8-8-88

REVIEWER'S COMMENT SHEET

NES0101
7/88

Document Originator _____

Date _____

Document Title _____

_____

_____

Name of Reviewer _____

TECHNICAL ASSESSMENT REVIEW

Reviewer _____ Date _____

Coordinator _____ Date _____

COMMENT NO.	PAGE	REVIEWER'S COMMENTS	RESOLUTION

REVIEWER'S COMMENT CONTINUATION SHEET

NES0102
7/88

Document Title

Name of Reviewer

COMMENT NO.	PAGE	REVIEWER'S COMMENTS	RESOLUTION

REVIEWER'S ASSESSMENT SHEET

ES0101
7/98

Document Originator _____

Date _____

Document Title _____

_____

_____

Name of Reviewer Fusston & Ignats

TECHNICAL ASSESSMENT REVIEW

Reviewer _____ Date _____

Coordinator _____ Date _____

COMMENT NO.	PAGE	REVIEWER'S COMMENTS	RESOLUTION
		JS-025-6001, E1 Add electrical power receptacles for charging electrical forklifts. FS-GA-0013, 7C Label arrestors in headframe. General Provide cross sections for all roads at 50 foot intervals.	

REVIEWER'S COMMENT SHEET

NES0101
7/88

Document Originator: Widget Work Engineering

Date: 8-8-88

Document Title: Exploratory Shaft Facility Title I Design
100 Percent Completion

Name of Reviewer: Funston Q. Ignats

TECHNICAL ASSESSMENT REVIEW

Reviewer _____ Date _____

Coordinator _____ Date _____

COMMENT NO.	PAGE	REVIEWER'S COMMENTS	RESOLUTION
		JS-025-6001 E1 Add electrical power recepticals for changing electrical forklifts. T.MI.GQI.001	
		FS-GA-0013 7C Label arrestors in headframe. T.SH.FQI.002	
		GENERAL Provide cross sections for roads at 5 foot intervals. T.CI.FQI.003	

TECHNICAL ASSESSMENT PROCESS

COMMENT TRACKING

- COMMENT IDENTIFICATION NUMBERS WILL BE ASSIGNED BY THE REVIEW SECRETARY AND/OR REVIEW COORDINATOR

- FOUR PART IDENTIFICATION NUMBER:
  - ORGANIZATION CODE (EXAMPLE : T)
  - CATEGORY CODE (EXAMPLE : CI)
  - REVIEWERS INITIALS (EXAMPLE : ECB)
  - SEQUENTIAL REVIEWER COMMENT NUMBER (EXAMPLE : O21)

T.CI.ECB.021

TECHNICAL ASSESSMENT PROCESS

CATEGORY AND ORGANIZATION CODES

CATEGORY	CODE
GENERAL/INTRODUCTION	GE
CIVIL/SURFACE	CI
PIPING & INSTRUMENTATION	PI
MECHANICAL	ME
ARCHITECTURAL	AR
ELECTRICAL	EL
SHAFTS	SH
MINING/SUBSURFACE	MI
VENTILATION	VE

ORGANIZATION	CODE
DOE/HQ	Q
NVO/SHD	N
NVO/HPED	H
NVO/SSD	D
NTSO	E
WMPO	J
WESTON	K
T&MSS	T
USACE	C
B OF M	B
MSHA	M
REECo	R
LOS ALAMOS	A
USGS	G
SNL	S
LLNL	L

REVIEWER'S COMMENT SHEET

NES0101
7/88

Document Originator: Widget Work Engineering

Date: 0-0-00

Document Title: Exploratory Shaft Facility Title I Design
100 Percent Completion

Name of Reviewer: Funston Q. Ignats

TECHNICAL ASSESSMENT REVIEW

Reviewer _____ Date _____

Coordinator _____ Date _____

COMMENT NO.	PAGE	REVIEWER'S COMMENTS	RESOLUTION
		JS-025-6001 E1 Add electrical power recepticals for ~~changing~~ electrical forklifts.F T.MI.FQI.001 EL Charging	
		FS-GA-0013 7C Label arrestors in headframe. T.SII.FQI.002	
		JS-024-6030, ALL ~~GENERAL~~ Provide cross sections for roads at 50 foot intervals. T.CI.FQI.003	
		FS-GA-107, 10M Why is the service line only 3 inches in diameter	

REVIEWER'S COMMENT SHEET

NES0101
7/88

Document Originator: Widget Work Engineering

Date: 8-8-88

Document Title: Exploratory Shaft Facility Title I Design
100 Percent Completion

Name of Reviewer: Funston Q. Ignats

TECHNICAL ASSESSMENT REVIEW

Reviewer _____ Date _____

Coordinator _____ Date _____

COMMENT NO.	PAGE	REVIEWER'S COMMENTS	RESOLUTION
		L R 8/11	

JS-025-6001 E1
Add electrical power recepticals for charging electrical forklifts.
T.MI.FQI.001

FS-GA-0013 7C
Label arrestors in headframe.
T.SH.FQI.002

JS-024-6030 ALL
Provide cross sections for roads at 50 foot intervals.
T.CI.FQI.003

FS-GA-107 10M
Why is the service line only 3 inches in diameter?
T.SH.FQI.004

REVIEWER'S COMMENT SHEET

NES0101
7/88

Document Originator: Widget Work Engineering

Date: 0-0-00

Document Title: Exploratory Shaft Facility Title I Design
100 Percent Completion

Name of Reviewer: Funston Q. Ignats

TECHNICAL ASSESSMENT REVIEW

Reviewer _____ Date _____

Coordinator _____ Date _____

COMMENT NO.	PAGE	REVIEWER'S COMMENTS	RESOLUTION
		LR 8/11	

JS-025-6001 E1
Add electrical power recepticals for charging electrical forklifts.
T.MI.FQI.001

FS-GA-0013 7C
Label arrestors in headframe.
T.SH.FQI.002

~~JS-024-6030 ALL~~
~~Provide cross sections for roads at 50 foot intervals.~~
T.CI.FQI.003
Withdrawn FQI

FS-GA-107 10M
Increase ~~Why is the~~ service line ~~only~~ to 6 inches in diameter
T.SH.FQI.004
per SDRD section 1.2.6.4.2 Constraint 4.

REVIEWER'S COMMENT SHEET

NES0101
7/88

Document Originator: Widget Work Engineering

Date: 8-8-88

Document Title: Exploratory Shaft Facility Title I Design
100 Percent Completion

Name of Reviewer: Funston Q. Ignats

TECHNICAL ASSESSMENT REVIEW

Reviewer: Funston Q Ignats Date: 8/12/88

Coordinator: Steven Smith Date: 8/12/88

COMMENT NO.	PAGE	REVIEWER'S COMMENTS	RESOLUTION
		JS-025-6001 E1 Add electrical power recepticals for changing electrical forklifts. T.MI.GQI.001	
		FS-GA-0013 7C Label arrestors in headframe. T.SII.FQI.002	
		GENERAL Provide cross sections for roads at 5 foot intervals. T.CI.FQI.003	

COMMENT RESOLUTION SHEET

NES0101
7/86

Document Originator _____

Date _____

Document Title _____

_____

_____

Coordinator _____

TECHNICAL ASSESSMENT REVIEW

Acceptance Signatures

Chairperson _____ Date _____

QA _____ Date _____

A/E _____ Date _____

WMPO _____ Date _____

COMMENT NO.	PAGE	REVIEWER'S COMMENTS	RESOLUTION

COMMENT RESOLUTION CONTINUATION SHEET

NES0102
7-88

Document Title

COMMENT NO.	PAGE	REVIEWER'S COMMENTS	RESOLUTION

COMMENT RESOLUTION SHEET

30101
/88

Document Originator: Widget Work Engineering

Date: 8-8-88

Document Title: Exploratory Shaft Facility Title I Design
100 Percent Completion

Coordinator: Chris Watson

TECHNICAL ASSESSMENT REVIEW

Acceptance Signatures

Chairperson _____ Date _____

QA _____ Date _____

A/E _____ Date _____

WMPO _____ Date _____

COMMENT NO.	PAGE	REVIEWER'S COMMENTS	RESOLUTION
20	JS-025-6000	E2 Outlet for 300 amp mig welder not shown. Add as required. Q.EL.SRB.079	
21	JS-025-6000	E3 Add external 120 v receptacles of building exterior for work when on the pad. Q.EL.PLM.080	
22	JS-025-6001	E1 Add electrical power recepticals for charging electrical forklifts. T.MI.FQI.001	

COMMENT RESOLUTION SHEET

NES0101
7/88

Document Originator: Widget Work Engineering

Date: 0-0-00

Document Title: Exploratory Shaft Facility Title I Design
100 Percent Completion

Coordinator: Chris Watson

TECHNICAL ASSESSMENT REVIEW

Acceptance Signatures

Chairperson _____ Date _____

QA _____ Date _____

A/E _____ Date _____

WMPO _____ Date _____

COMMENT NO.	PAGE	REVIEWER'S COMMENTS COMMENT	RESOLUTION
20	JS-025-6000 E2	Outlet for 300 amp mig welder not shown. Add as required. Q.EL.SUB.079	Receptacles were provided for the welders. Locations and exact numbers to be determined in Title II based on construction managers analysis of shop requirements.
21	JS-025-6000 E3	Add external 120 v receptacles of building exterior for work when on the pad. Q.EL.PLM.080	Will provide.
22	JS-025-6001 E1	Add electrical power recepticals for charging electrical forklifts. T.MI.FQI.001	Criteria has not been submitted to H&N for electrical forklift, there are to be some, the General Contractor will supply critria.

COMMENT RESOLUTION SHEET

NES0101
7/88

Document Originator: Widget Work Engineering

Date: 0-0-00

Document Title: Exploratory Shaft Facility Title I Design
100 Percent Completion

Coordinator: Chris Watson

TECHNICAL ASSESSMENT REVIEW

Acceptance Signatures

Chairperson _____ Date _____

QA _____ Date _____

A/E _____ Date _____

WMPO _____ Date _____

COMMENT NO.	PAGE	REVIEWER'S COMMENTS COMMENT	RESOLUTION
20	JS-025-6000 E2	Outlet for 300 amp mig welder not shown. Add as required. Q.EL.SRD.079	Receptacles were provided for the welders. Locations and exact numbers to be determined in Title II based on ~~construction managers~~ analysis of shop requirements. TREECo
21	JS-025-6000 E3	Add external 120 v receptacles of building exterior for work when on the pad. Q.EL.PLM.000	Will provide. by Title I 100% Completion
22	JS-025-6001 E1	Add electrical power recepticals for charging electrical forklifts. T.MI.FQI.001	Criteria has not been submitted to H&N for electrical forklift, there are to be some, the General Contractor will supply critria.

COMMENT RESOLUTION SHEET

NES0101
7/88

Document Originator: Widget Work Engineering

Date: 8-8-88

Document Title: Exploratory Shaft Facility Title I Design
100 Percent Completion

Coordinator: Chris Watson

TECHNICAL ASSESSMENT REVIEW

Acceplance Signatures

Chairperson: John L. Charif Date: 9-13-88

QA: Sam P. Careful Date: 9/13/88

A/E: William T Willgit Date: 9/13/88

WMPO: Vincent M. Voltaire Date: 15 Sept 88

COMMENT NO.	PAGE	REVIEWER'S COMMENTS COMMENT	RESOLUTION
20	JS-025-6000 E2	Outlet for 300 amp mig welder not shown. Add as required. Q.EL.SRB.079	Receptacles were provided for the welders. Locations and exact numbers to be determined in Title II based on REECo analysis of shop requirements.
21	JS-025-6000 E3	Add external 120 v receptacles of building exterior for work when on the pad. Q.EL.PLM.080	Will provide at Title I 100 percent completion.
22	JS-025-6001 E1	Add electrical power recepticals for charging electrical forklifts. T.MI.FQI.001	Criteria has not been submitted to H&N for electrical forklift, there are to be some, the General Contractor will supply critria.

ESF TITLE I 100% TECHNICAL ASSESSEMNT REVIEW

COMMENT RESOLUTION CONCURRENCE

THE REVIEW TEAM LEAD REPRESENTATIVE CONCURS WITH ALL THE RESOLUTIONS DEVELOPED FOR ALL OF THE COMMENTS SUBMITTED BY HIS ORGANIZATION DURING THE TECHNICAL ASSESSMENT REVIEW COMMENT AND RESOLUTION ACTIVITIES.

ORGANIZATION NAME: _____

LEAD REPRESENTATIVE NAME: _____

LEAD REPRESENTATIVE SIGNATURE: _____

DATE: _____

TECHNICAL ASSESSMENT PROCESS

DEVELOPMENT OF FORMAL COMMENTS

- COMMENTS MADE AND CHECKED BY REVIEWER
- HANDWRITTEN COMMENTS SUBMITTED TO T&MSS FOR TYPING
- COMMENTS DRAFT TYPED ONTO REVIEWER'S COMMENT SHEETS (FORM NES010)
- TYPED COMMENTS CHECKED BY REVIEWER; CORRECTIONS NOTED ON TYPED FORM
- LEAD REPRESENTATIVE REVIEWS COMMENTS FOR COMPLIANCE WITH COMMENT REQUIREMENTS

TECHNICAL ASSESSMENT PROCESS

DEVELOPMENT OF FORMAL COMMENTS
(CONTINUED)

- CORRECTIONS MADE BY TYPING ONTO CLEAN SHEETS; COMMENT NUMBERS ASSIGNED BY T&MSS
- TYPED COMMENTS RECHECKED BY REVIEWER
- REVIEWER SUBMITS CORRECTED COMMENT SHEETS TO DESIGN REVIEW SECRETARY OR REVIEW COORDINATOR AFTER LEAD REPRESENTATIVE INITIALS EACH SHEET ABOVE COMMENTS COLUMN

TECHNICAL ASSESSMENT PROCESS

DEVELOPMENT OF FORMAL COMMENTS
(CONTINUED)

- REVIEWER AND DESIGN REVIEW SECRETARY AND/OR REVIEW COORDINATOR AGREE ON APPROPRIATENESS OF COMMENTS (COMMENTS CAN BE REVISED OR DELETED), AND PROPOSED DISPOSITION

- REVIEWER SIGNS FRONT PAGE OF DISPOSITIONED COMMENT SHEETS

- SECRETARY AND/OR REVIEW COORDINATOR NOTES DISPOSITION ON COMMENT SHEETS AND INITIALS FRONT PAGE OF COMMENT SHEETS

TECHNICAL ASSESSMENT PROCESS

DEVELOPMENT OF FORMAL COMMENTS

- TECHNICAL ASSESSMENT REVIEW BOARD IS RESPONSIBLE FOR CONSOLIDATING ALL COMMENTS FOR TRANSMITTAL TO A/Es

- COMMENTS SUBMITTED WILL BE REVIEWED BY THE REVIEW SECRETARY AND DISCIPLINE COORDINATORS FOR APPROPRIATENESS
  - STYLE (HOW WORDED)
  - CONTENT (PERMISSIBLE REVIEW SCOPE)
  - WITHIN ORGANIZATION'S ASSIGNED SCOPE, WITHIN PERSON'S EXPERTISE

TECHNICAL ASSESSMENT PROCESS

DEVELOPMENT OF FORMAL COMMENTS
(CONTINUED)

- COMMENTS DEEMED INAPPROPRIATE BECAUSE OF:

  - STYLE - SUGGESTIONS WILL BE MADE FOR MAKING THEM APPROPRIATE

  - OTHER REASONS - DISPOSITION WILL BE TO SUGGEST THEY BE WITHDRAWN OR NOT TRANSMITTED TO THE A/Es

TECHNICAL ASSESSMENT PROCESS

COMMENT RESOLUTION

- EACH COMMENT WILL BE CONSIDERED BY THE APPROPRIATE A/E AND A RESOLUTION WILL BE PROPOSED BY THEM

- THE PROPOSED RESOLUTION CAN BE TO:

  - AGREE WITH COMMENT AND MAKE NECESSARY CHANGE

  - DISAGREE WITH COMMENT

TECHNICAL ASSESSMENT PROCESS

COMMENT RESOLUTION

- EACH PROPOSED RESOLUTION WILL BE COVERED DURING THE COMMENT RESOLUTION MEETING
  - COMMENT IS CLOSED IF REVIEWER AGREES WITH IT
  - IF REVIEWER DISAGREES, THE RESOLUTION WILL BE DISCUSSED. IF RESOLUTION CANNOT BE ACHIEVED WITHIN A REASONABLE TIME, THE DESIGN REVIEW CHAIRMAN WILL ASK THE INVOLVED PARTIES TO CONTINUE THE DISCUSSION OUTSIDE OF THE FORMAL RESOLUTION MEETING AND BRING THE AGREED TO RESOLUTION BACK TO THE RESOLUTION MEETING
  - IF RESOLUTION IS NOT ACHIEVED, THE REVIEWER SHALL DOCUMENT THE DISAGREEMENT TO SUCCESSIVELY HIGHER LEVELS OF MANAGEMENT
- LEAD REPRESENTATIVE OF EACH REVIEWING ORGANIZATION SIGNS A COMMENT RESOLUTION CONCURRENCE FORM

TECHNICAL ASSESSMENT PROCESS

COMMENT RESOLUTION

- DURING RESOLUTION MEETINGS, COMMENTS WILL BE IDENTIFIED BY CATEGORY AND NUMBER

- EACH REVIEWER WILL BE GIVEN A LISTING OF HIS COMMENTS WITH THEIR LOCATION IN THE CONSOLIDATED COMMENT SET

COMMENT QUALITY

- REQUIREMENTS FOR COMMENTS
- INSTRUCTIONS TO REVIEWERS

COMMENT QUALITY

REQUIREMENTS FOR COMMENTS

- **DO** MAKE THEM SPECIFIC AND TO THE POINT
- **DO** GIVE ENOUGH DETAIL TO COMMUNICATE THE INTENT OF THE COMMENT AND ALLOW ITS RESOLUTION
- IF THE DOCUMENT IS A SPECIFICATION, **DO** GIVE PAGE NUMBER, PARAGRAPH AND SENTENCE NUMBER (i.e., PAGE 3, 4TH PARAGRAPH, 3RD SENTENCE)
- IF THE DOCUMENT IS A DRAWING, **DO** GIVE SPECIFIC ZONE NUMBER (i.e., 2A-C-001, ZONE A-6, DETAIL 1, ETC.)

COMMENT QUALITY

REQUIREMENTS FOR COMMENTS
(CONTINUED)

- **DO** MAKE COMMENTS THAT CAN BE RESOLVED BY THE A/E
- **DO** STRUCTURE COMMENTS IN A PROFESSIONAL MANNER
- **DO** MAKE COMMENTS THAT CONSIDER THE STAGE OF DESIGN COMPLETION AND SCOPE OF THE REVIEW. REMEMBER, THIS IS A 100 PERCENT TITLE I DESIGN
- **DO** RESTRICT COMMENTS TO YOUR AREA OF EXPERTISE AND TO THE SCOPE OF WORK ASSIGNED BY THE WMPO TO YOUR ORGANIZATION

COMMENT QUALITY

REQUIREMENTS FOR COMMENTS
(CONTINUED)

- **DO** PROVIDE SUPPORTING EVIDENCE SUCH AS REFERENCES OR VERIFIED INFORMATION

- **DO** IDENTIFY COMMENTS BY CATEGORY ON THE APPROPRIATE FORMS BEFORE SUBMITTAL (REFER TO REVIEW PACKAGE DRAWING CATEGORY LISTING)

- **DO** RESOLVE CONFLICTING COMMENTS WITHIN REVIEWING ORGANIZATIONS BEFORE SUBMITTAL TO THE DESIGN

COMMENT QUALITY

REQUIREMENTS FOR COMMENTS
(CONTINUED)

- **DON'T** MAKE COMMENTS IN THE FORM OF QUESTIONS DIRECTED TO THE A/E
- **DON'T** MAKE COMMENTS CONSISTING ONLY OF "MORE DETAIL REQUIRED," "EXPAND," "CHANGE," OR "CLARIFY." IF THIS TYPE OF COMMENT IS NECESSARY, SPECIFY THE ADDITONAL DETAIL, CHANGE, OR CLARIFICATION REQUIRED
- **DON'T** MAKE "FOR INFORMATION ONLY" COMMENTS
- **DON'T** BASE COMMENTS ON PENDING OR DESIRED REQUIREMENTS
- **DON'T** IMPOSE PERSONAL ALTERNATIVE DESIGN CHOICES
- **DON'T** NUMBER COMMENTS
- **DON'T** MAKE COMMENTS ON THE DESIGN BASIS REQUIREMENTS DOCUMENTS (i.e., DRD, etc.)

COMMENT QUALITY

INSTRUCTIONS TO REVIEWERS

- COMPLETE FORM N-QA-007, WMPO PROFICIENCY REVIEW REPORT (REVIEWER'S QUALIFICATIONS)
- COMPLETE DRAFT OF REVIEWER'S COMMENT SHEETS (FORM NES0101). USE OF THIS FORM IS MANDATORY
- CHECK AND SIGN THE TYPED VERSION OF THE REVIEWER'S COMMENT SHEETS
- REVIEWER SIGNS REVIEWER COMMENT RESOLUTION DESIGNATION OF AUTHORITY FORM
- REVIEWER'S PARTICIPATION IS COMPLETE ONLY AFTER ALL THEIR COMMENTS ARE DISPOSITIONED AND THE ABOVE FORMS ARE COMPLETED

WMPO PROFICIENCY REVIEW REPORT

B-QA-007

Name I. A. REVIEWER

Review Date May 4, 1988

Title Senior Mining Engineer

The proficiency review is based on the experience, knowledge and training of the individual. The activities the individual is capable to perform are listed below.

Activities Based upon a review of MR REVIEWER'S education and employment history, he is fully qualified to serve on the Title II TECHNICAL Review Board. Mr. REVIEWER holds a B.S. degree in Mining Engineering from the Colorado School of Mines. He was employed by Amax Inc. at the Urad and Henderson mines in various capacities including ventilation engineer, mine planning engineer, underground surveyor, and blasting crew miner. Subsequently, MR. REVIEWER was employed by Cleveland Cliffs where he was responsible for completion of feasibility studies. Duties included design of mine layouts, ventilation system design, equipment selection and material handling system design. Prior to joining the ABC Co. team he was employed by Westinghouse Hanford on the Basalt Waste Isolation Project where he was responsible for providing mining expertise and guidance for design of the BWIP exploratory shaft facility. Assignments included leading a study group reviewing changes in mine regulations, direction of Architect Engineer contractor and team leader of a group defining design recommendations for the underground facility.

Proficiency Report Conducted and Certified by

Signature H.S. SUPERVISOR

Title Integration Mining Manager

Date MAY 4, 1988

NOTE: This report should be completed on annual basis.

FIGURE VI - WMPO PROFICIENCY REVIEW REPORT EXAMPLE

ESF TITLE I 100% TECHNICAL ASSESSMENT REVIEW

REVIEWER COMMENT RESOLUTION DESIGNATION OF AUTHORITY

THE REVIEWER, NAMED BELOW, IN HIS ABSENCE, DESIGNATES AND TRANSFERS COMMENT RESOLUTION AUTHORITY AND CONCURRENCE AUTHORITY TO HIS LEAD REPRESENTATIVE.

ORGANIZATION: _____

LEAD REPRESENTATIVE: _____

REVIEWER SIGNATURE: _____

DATE: _____

REVIEW LOGISTICS

- LIBRARY CONTENT
- CALCULATION REQUESTS
- ORGANIZATION REVIEW LOCATIONS
- LOCATION OF REVIEW SERVICES
  - TYPING
  - COPYING
  - LIBRARY

REVIEW LOGISTICS

LIBRARY

- NNWSI PROJECT REGULATORY DOCUMENT MANUAL (2)
  - 10 CFR 60
  - 10 CFR 960
  - 40 CFR 191
  - NEPA
  - NWPA
- 29 CFR 1910 W/UPDATES
- 29 CFR 1926 W/UPDATES
- 30 CFR 0-199
- FWPCA
- RIB (2)
- GRMGDS (2)
- ISSUES HIERARCHY FOR MGDS (2)
- ESF TITLE I 50 PERCENT DESIGN REVIEW REPORT
- DOE ORDERS
  - 6430.1A (2)
  - 5480.1B, CH. 11 & 12
  - 5480.2 THRU 5480.10, 5480.13
  - 5481.1
- SDRF (4)
- SCP/CDR
- SCP/CD (2)
- NQA1
- WMPO/88-1 W/QMPs (2)
- NNWSI/88-9 W/SOPs (2)
- QALAS
- DWG R07048A, ECR 4 VERSION (8)
- ECRs (2)
- CONSTRUCTION SCHEDULE (2)

REVIEW LOGISTICS

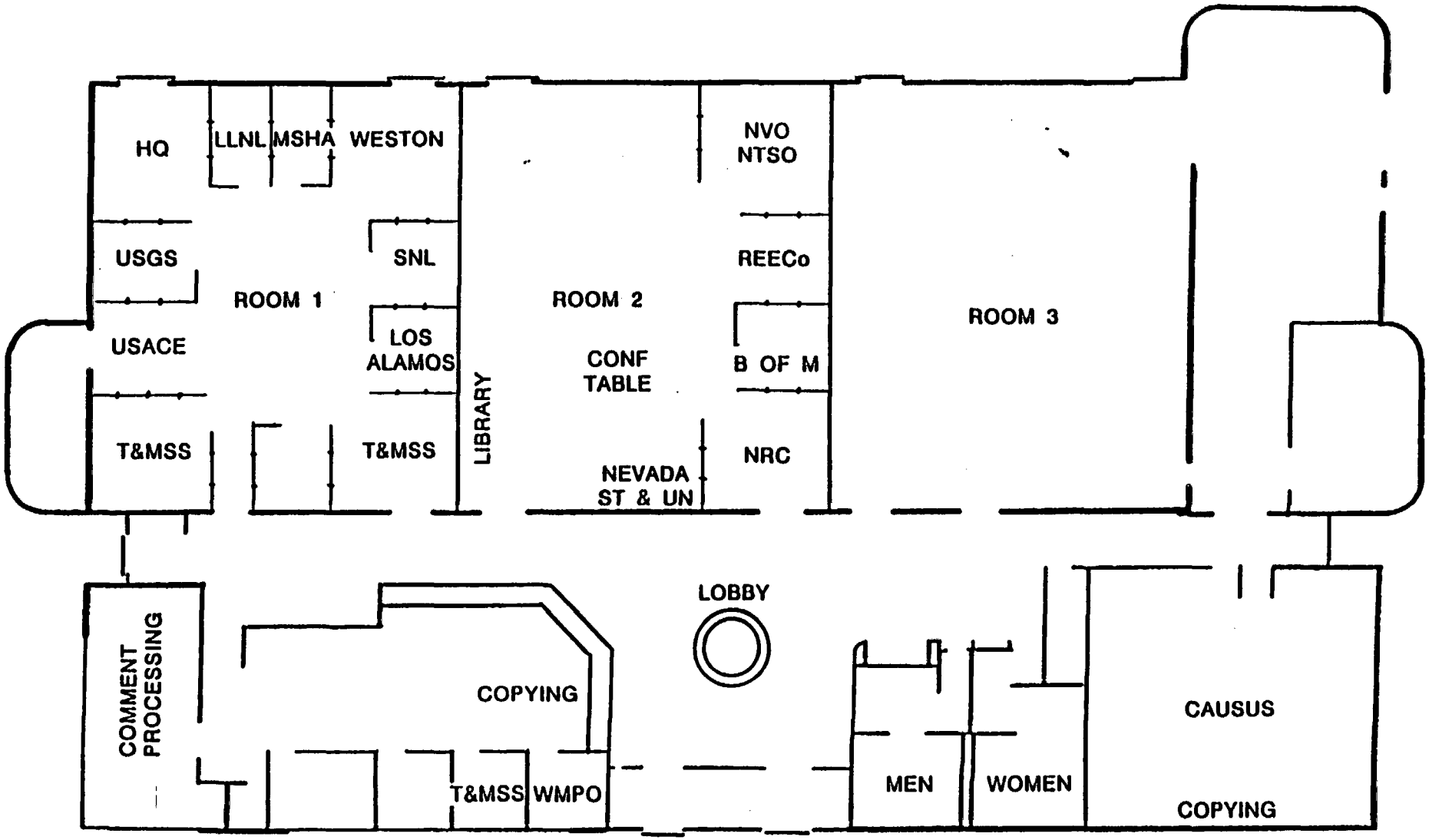
LIBRARY
(CONTINUED)

- AASHTO GDHS
- ACI 318, 318.1
- ANSI A58.1, C2
- UBC, UMC, UPC
- NFPA 70, 101
- CAC, TITLE 8, CH. 4, SUBCH. 17 AND 20
- NRS, PART 1, TITLE 40, CH. 444 AND 445
- NRS, PART 1, TITLE 46, CH. 512
- NEV DEPT OF HWYS, STD SPEC FOR ROAD AND BRIDGE CONST
- NEV DEPT OF HWYS, STD PLANS FOR ROAD AND BRIDGE CONST
- NEV DOT, ROAD DESIGN DIV, DESIGN MANUAL, PARTS 1 AND 2
- H&N SCOPE AND PLANNING BASIS DOCUMENT (10)
- H&N DESIGN BASIS DOCUMENT (10)
- H&N QA MANUAL (10)
- F&S DESIGN SCOPE AND PLANNING DOCUMENT (10)
- F&S BASIS FOR DESIGN (10)
- F&S QA MANUAL (10)

REVIEW LOGISTICS

CALCULATION REQUESTS

- REFER TO CALCULATION LIST IN REVIEW PACKAGE
- CONTACT APPROPRIATE A/E REPRESENTATIVE
  - H&N: MARGE BRAKE
  - F&S: ALVIN LANGSTAFF
- CALCULATION COPY WILL BE PROVIDED ASAP



ROOM ASSIGNMENTS

F&S

TITLE I

DRAWING LIST

7-28-88

		TRACKING CODE
I.	GENERAL/INTRODUCTION (0-9)	GE
	FS-GA-0001 Cover Sheet Vicinity & Location	
	FS-GA-0002 Title I Drawing Index	
	FS-GA-0003 Title I Legend, Sheet 1	
	FS-GA-0004 Title I Legend, Sheet 2	
	FS-GA-0005 Title I Acronyms & Abbreviations	
	FS-GA-0006 Subsurface Conceptual Arrangement	
	FS-GA-0007 Drawings by Discipline & Associated Specifications	
II.	CIVIL/SURFACE (10-49)	CI
	FS-GA-0011 Surface Plot Plan	
	FS-GA-0012 ES-1 Surface, Headframe - Operation Sections	
	FS-GA-0013 ES-1 Surface, Headframe - Operation Plan, Elevation & Section	
	FS-GA-0014 ES-1 Surface, Headframe - Sinking Sections	
	FS-GA-0015 ES-1 Surface, Headframe - Sinking Elevation & Section	
	FS-GA-0016 ES-1 Surface, Sinking Hoist Location Plan	

II. SURFACE (10-49) - CONTINUED

FS-GA-0025	ES-1 Surface, Shaft Collar -Operation Plans & Section
FS-GA-0026	ES-1 Surface, Shaft Collar - Operation Sections
FS-GA-0027	ES-1 Surface, Shaft Collar - Sinking Plans
FS-GA-0028	ES-1 Surface, Shaft Collar - Sinking Sections
FS-GA-0030	ES-2 Surface, Headframe - Operation Sections
FS-GA-0031	ES-2 Surface, Headframe - Operation Plan, Elevation & Section
FS-GA-0032	ES-2 Surface, Headframe - Sinking Sections
FS-GA-0033	ES-2 Surface, Headframe - Sinking Elevation & Section
FS-GA-0034	ES-2 Surface, Sinking Hoist Location Plan
FS-GA-0040	ES-2 Surface, Shaft Collar - Operation Plans & Section
FS-GA-0041	ES-2 Surface, Shaft Collar - Operation Sections
FS-GA-0042	ES-2 Surface, Shaft Collar - Sinking Plans
FS-GA-0043	ES-2 Surface, Shaft Collar - Sinking Sections
FS-GA-0045	ES-1 & ES-2 Surface, Hoist House Plan & Section

III. SHAFT (ES-1) (50-99) SH___

FS-GA-0050	ES-1 Shaft - General Arrangement Cross - Sections
FS-GA-0054	ES-1 Shaft Sinking Sequence Sheet 1
FS-GA-0055	ES-1 Shaft Sinking Sequence Sheet 2
FS-GA-0056	ES-1 Shaft Sinking Sequence Sheet 3
FS-GA-0057	ES-1 Shaft Elevation & Test Locations
FS-GA-0058	ES-1 Shaft Test Arrangements - Sheet 1
FS-GA-0059	ES-1 Shaft Test Arrangements - Sheet 2
FS-GA-0062	ES-1 Shaft Liner Section & Details
FS-GA-0063	ES-1 Shaft - Concrete Form Section, Plans & Detail
FS-GA-0072	ES-1 Shaft Sinking Stage Elevations & Sections
FS-GA-0085	ES-1 Shaft, UDBR Shaft Station Sections
FS-GA-0091	ES-1 Shaft, MTL Shaft Station Sections
FS-GA-0095	ES-1 Shaft, Tail Shaft Sections

IV. SHAFT (ES-2) (100-149) SH___

FS-GA-0100	ES-2 Shaft - General Arrangement Cross - Sections

IV. SHAFT (ES-2) (100-149) - CONTINUED

FS-GA-0102	ES-2 Shaft Liner Sections & Details
FS-GA-0110	ES-2 Shaft, MTL Station Sections
FS-GA-0112	ES-2 Shaft, MTL Shaft Station & Tail Shaft Sections
FS-GA-0113	ES-2 Shaft, MTL Shaft Station & Tail Shaft Vertical Sections

V. MINING/SUBSURFACE (150-199) MI___

FS-GA-0150	ES-1 UDBR Level Plan
FS-GA-0151	ES-1 UDBR Test Areas
FS-GA-0160	MTL Plan - Dimensional General Arrangement
FS-GA-0161	MTL Plan - Test Areas General Arrangement
FS-GA-0162	Main Test Level Sections & Detail
FS-GA-0163	Main Test Level - Test Alcoves Details - Sheet 1
FS-GA-0164	Main Test Level - Test Alcoves Details - Sheet 2
FS-GA-0165	Main Test Level - Test Alcoves Details - Sheet 3
FS-GA-0166	Main Test Level - Test Alcoves Details - Sheet 4
FS-GA-0171	MTL - Service & Utility Area Details - Sheet 1
FS-GA-0172	MTL - Service & Utility Area Details - Sheet 2

V. SUBSURFACE (150-199) - CONTINUED

FS-GA-0180	Subsurface Miscellaneous Typical Details
FS-GA-0194	Exploratory Drifts General Arrangement
FS-GA-0195	Imbricate Fault Exploratory Drift Plan & Sections - Sheet 1
FS-GA-0196	Imbricate Fault Exploratory Drift Plan & Sections - Sheet 2
FS-GA-0197	Ghost Dance Fault Exploratory Drift Plan & Sections - Sheet 1
FS-GA-0198	Ghost Dance Fault Exploratory Drift Plan & Sections - Sheet 2
FS-GA-0199	Drill Hole Wash Fault Exploratory Drift Plans & Sections

VI. UTILITIES (0200-0249)

ELECTRICAL EL

FS-GA-0200	Surface Electrical One Line Schematic Diagram
FS-GA-0201	Subsurface Electrical - Sheet 1 One Line Schematic Diagram
FS-GA-0202	Subsurface Electrical - Sheet 2 One Line Schematic Diagram
FS-GA-0203	Surface Electrical Plot Plan
FS-GA-0204	Subsurface Electrical Plot Plan
FS-GA-0205	UDBR, ES-1 & ES-2 B.O.S. Electrical Plot Plan
FS-GA-0206	Subsurface Electrical Arrangement Transformer & Control

VI. UTILITIES (0200-0249) CONTINUED

FS-GA-0207	Subsurface Electrical Arrangement Typical Details
FS-GA-0212	Hoist Signalling Systems One Line Schematic Diagrams
FS-GA-0213	Hoist Signalling Systems Elementary Control Diagrams
FS-GA-0214	Hoist Cage FM Radio System Schematic & Block Diagrams

PIPING & INSTRUMENTATION PI

FS-GA-0220	Air & Water Systems - Instrumentation Block Diagrams
FS-GA-0221	Hoist Systems - Instrumentation Block Diagrams
FS-GA-0222	Ventilation System - Instrumentation Block Diagrams

VENTILATION VE

FS-GA-0225	Ventilation - Schematic Flow Diagram
FS-GA-0227	Ventilation System, Phase 1&2 Flow Diagram
FS-GA-0228	Ventilation System, Phase 3 Flow Diagram

PIPING & INSTRUMENTATION PI

FS-GA-0230	Subsurface Water Supply System Schematic Flow Diagram
FS-GA-0235	Subsurface Waste Water Collection System Schematic Flow Diagram
FS-GA-0240	Compressed Air System Schematic Flow Diagram
FS-GA-0243	Surface Compressed Air System Plans & Elevation

F & S

List of 100% Outline Specifications

Item No.	Title	WBS Number	Assignment
*FS-SP-0201	ES-1 and ES-2 Collar Installation	1.2.6.3.2	J. McKenzie
*FS-SP-0202	Shaft Sinking, ES-1	1.2.6.4.1	J. McKenzie
*FS-SP-0203	Shaft Sinking, ES-2	1.2.6.5.1	J. McKenzie
*FS-SP-0204	Excavation for Stations, Drifts and Alcoves	1.2.6.6.0	J. McKenzie
*FS-SP-0205	Controlled Drilling and Blasting	1.2.6.6.0	J. McKenzie
FS-SP-0208	Rock Bolting	1.2.6.6.0	M. Mrugala
FS-SP-0213	Test Drill: Electrohydraulic Powered, Column Mounted	1.2.6.6.0	D. Coppage
FS-SP-0214	Test Drill: Electrohydraulic Powered, Track Mounted	1.2.6.6.0	D. Coppage
FS-SP-0215	Test Drill: Compressed Air Powered, Screw Feed Type	1.2.6.6.0	D. Coppage
*FS-SP-0301	Forms, Shaft Liner	1.2.6.4.1	J. McKenzie
*FS-SP-0303	Cast-in-Place Concrete	1.2.6.3.2	H. Gleser
FS-SP-0304	Grout, Materials and Placement	1.2.6.4.1	H. Gleser
FS-SP-0307	Shotcrete	1.2.6.4.1	H. Gleser
*FS-SP-0308	Shaft Liner Concrete	1.2.6.4.1	H. Gleser
*FS-SP-0501	Structural Steel	1.2.6.4.2	T. Frank
FS-SP-0502	Miscellaneous Steel	1.2.6.7.3	T. Frank
FS-SP-0503	Anchor Bolts and Embedded Items	1.2.6.7.3	S. Nordick
*FS-SP-0504	Welding	1.2.6.4.2	L. Barto
FS-SP-0701	Sump Liners	1.2.6.7.3	H. Gleser
FS-SP-0801	Underground Fire Doors	1.2.6.6.0	R. Jurani
FS-SP-0802	Stoppings, Bulkheads and Regulators	1.2.6.6.0	H. Gleser
FS-SP-0902	Painting - Equipment	1.2.6.7.2	L. Barto
FS-SP-1103	Subsurface Maintenance Shop	1.2.6.8.1	D. Coppage
FS-SP-1104	Portable Chemical Toilets	1.2.6.6.0	L. Barto
*FS-SP-1105	Drill Jumbo	1.2.6.6.0	J. McKenzie
*FS-SP-1106	LHD Vehicles	1.2.6.6.0	J. McKenzie
*FS-SP-1107	Mine Service Vehicle	1.2.6.6.0	D. Coppage
FS-SP-1109	Mobile Dust Collection Units	1.2.6.6.0	R. Jurani
FS-SP-1403	ES-1 Headframe	1.2.6.4.2	I. Lange
FS-SP-1404	ES-2 Headframe	1.2.6.5.2	I. Lange

* Developed for 50% Title I

SP-1406	Shaft Conveyance Guides	1.2.6.7.3	J. McKenzie
*FS-SP-1407	ES-1 Shaft Sinking Deck	1.2.6.7.3	J. McKenzie
*FS-SP-1408	ES-1 Conveyance	1.2.6.7.3	J. McKenzie
*FS-SP-1409	ES-2 Muck Loading System	1.2.6.6.0	N. Tamondong
FS-SP-1410	Monorail Hoists and Jib Cranes	1.2.6.6.0	H. Gleser
*FS-SP-1411	ES-2 Conveyance	1.2.6.7.4	N. Tamondong
FS-SP-1412	Sinking Collar Doors	1.2.6.3.2	N. Tamondong
FS-SP-1413	Fixed and Retractable Muck Chutes	1.2.6.4.2	N. Tamondong
FS-SP-1414	Wire Rope and Attachments	1.2.6.4.2	H. Gleser
FS-SP-1416	ES-1 Shaft Equipping	1.2.6.7.3	J. McKenzie
FS-SP-1417	ES-2 Shaft Equipping	1.2.6.7.4	J. McKenzie
FS-SP-1418	Emergency Escape Hoist	1.2.6.4.2	H. Gleser
FS-SP-1500	General Requirements, Mechanical	1.2.6.7.1	L. Barto
*FS-SP-1501	Pipe and Fittings	1.2.6.7.1	L. Barto
FS-SP-1504	Main Mine Ventilation Fans	1.2.6.7.1	R. Jurani
FS-SP-1505	Auxiliary Mine Ventilation Fans	1.2.6.7.1	R. Jurani
FS-SP-1506	Ventilation Ducting	1.2.6.7.1	H. Gleser
SP-1507	Valves	1.2.6.7.1	L. Barto
FS-SP-1509	Control & Monitoring of Mechanical Utilities	1.2.6.7.1	L. Barto
FS-SP-1510	Mine Water Supply Distribution System	1.2.6.7.1	L. Barto
FS-SP-1511	Mine Waste Water Removal System	1.2.6.7.1	L. Barto
FS-SP-1512	Compressed Air System	1.2.6.7.1	L. Barto
FS-SP-1513	Waste Water Pumps: MTL Sump	1.2.6.7.1	L. Barto
FS-SP-1514	Gathering Pumps: Diaphragm	1.2.6.7.1	L. Barto
FS-SP-1515	Gathering Pumps: Centrifugal	1.2.6.7.1	L. Barto
FS-SP-1516	Rotary Screw Air Compressors	1.2.6.7.1	L. Barto
FS-SP-1517	Booster Air Compressor Unit	1.2.6.7.1	L. Barto
FS-SP-1518	Emergency Eyewash Station	1.2.6.7.1	L. Barto
FS-SP-1519	Hydronic Specialties	1.2.6.7.1	L. Barto
FS-SP-1600	General Requirements, Electrical	1.2.6.7.1	T. Greiner
FS-SP-1602	Electrical Motors - 460 Volt	1.2.6.7.1	T. Greiner

*Developed for 50% Title I

FS-SP-1603	Electrical Motors - 4160 Volt	1.2.6.7.1	T. Greiner
FS-SP-1604	Lighting Systems	1.2.6.7.1	T. Greiner
FS-SP-1605	Ground Fault Protection	1.2.6.7.1	C. Hatcher
FS-SP-1606	Bell & Buzzer Cord Signaling System	1.2.6.7.1	T. Greiner
FS-SP-1607	Hoist/Cage Radio Communication System	1.2.6.7.1	T. Greiner
FS-SP-1609	4160/480V MTL Mine Power Center	1.2.6.7.1	T. Greiner
FS-SP-1611	Power Distribution Panels	1.2.6.7.1	C. Hatcher
FS-SP-1612	Electrical Cable	1.2.6.7.1	C. Hatcher
FS-SP-1613	Remote Control & Monitoring Systems	1.2.6.7.1	C. Hatcher
FS-SP-1614	Motor Control Center - 480V	1.2.6.7.1	C. Hatcher
FS-SP-1615	Programmable Logic Controllers	1.2.6.7.1	C. Hatcher
FS-SP-1616	Grounding & Lightning Protection Systems	1.2.6.7.1	C. Hatcher
FS-SP-1617	Subsurface and Shaft Electric Distribution	1.2.6.7.1	C. Hatcher
FS-SP-1618	Medium Voltage Controls - 5KV	1.2.6.7.1	C. Hatcher
FS-SP-1619	Electrical Shaft Heaters - 4.16kV	1.2.7.7.1	T. Greiner

Total: 76

F&S

100% Outline Specifications - BY CATEGORY

Shaft

*FS-SP-0201	ES-1 and ES-2 Collar Installation	1.2.6.3.2	J. McKenzie
*FS-SP-0202	Shaft Sinking, ES-1	1.2.6.4.1	J. McKenzie
*FS-SP-0203	Shaft Sinking, ES-2	1.2.6.5.1	J. McKenzie
*FS-SP-0301	Forms, Shaft Liner	1.2.6.4.1	J. McKenzie
*FS-SP-0308	Shaft Liner Concrete	1.2.6.4.1	H. Gleser
FS-SP-0503	Anchor Bolts and Embedded Items	1.2.6.7.3	S. Nordick
FS-SP-0701	Sump Liners	1.2.6.7.3	H. Gleser
*FS-SP-1403	ES-1 Headframe	1.2.6.4.2	I. Lange
*FS-SP-1404	ES-2 Headframe	1.2.6.5.2	I. Lange
FS-SP-1406	Shaft Conveyance Guides	1.2.6.7.3	J. McKenzie
*FS-SP-1407	ES-1 Shaft Sinking Deck	1.2.6.7.3	J. McKenzie
*FS-SP-1408	ES-1 Conveyance	1.2.6.7.3	J. McKenzie
*FS-SP-1409	ES-2 Muck Loading System	1.2.6.6.0	N. Tamondong
FS-SP-1410	Monorail Hoists and Jib Cranes	1.2.6.6.0	H. Gleser
*FS-SP-1411	ES-2 Conveyance	1.2.6.7.4	N. Tamondong
FS-SP-1412	Sinking Collar Doors	1.2.6.3.2	N. Tamondong
FS-SP-1413	Fixed and Retractable Muck Chutes	1.2.6.4.2	N. Tamondong
FS-SP-1414	Wire Rope and Attachments	1.2.6.4.2	H. Gleser
FS-SP-1416	ES-1 Shaft Equipping	1.2.6.7.3	J. McKenzie
FS-SP-1417	ES-2 Shaft Equipping	1.2.6.7.4	J. McKenzie
FS-SP-1418	Emergency Escape Hoist	1.2.6.4.2	H. Gleser

Total: 21

*Developed for 50% Title I

100% Outline Specifications
Mining

*FS-SP-0204	Excavation for Stations, Drifts and Alcoves	1.2.6.6.0	J. McKenzie
*FS-SP-0205	Controlled Drilling and Blasting	1.2.6.6.0	J. McKenzie
FS-SP-0208	Rock Bolting	1.2.6.6.0	M. Mrugala
FS-SP-0213	Test Drill: Electrohydraulic Powered, Column Mounted	1.2.6.6.0	D. Coppage
FS-SP-0214	Test Drill: Electrohydraulic Powered, Track Mounted	1.2.6.6.0	D. Coppage
FS-SP-0215	Test Drill: Compressed Air Powered, Screw Feed Type	1.2.6.6.0	D. Coppage
*FS-SP-0303	Cast-in-Place Concrete	1.2.6.3.2	H. Gleser
FS-SP-0304	Grout, Materials and Placement	1.2.6.4.1	H. Gleser
*FS-SP-0307	Shotcrete	1.2.6.4.1	H. Gleser
*FS-SP-0501	Structural Steel	1.2.6.4.2	T. Frank
FS-SP-0502	Miscellaneous Steel	1.2.6.7.3	T. Frank
FS-SP-0801	Underground Fire Doors	1.2.6.6.0	R. Jurani
FS-SP-0802	Stoppings, Bulkheads and Regulators	1.2.6.6.0	H. Gleser
P-1103	Subsurface Maintenance Shop	1.2.6.8.1	D. Coppage
*FS-SP-1105	Drill Jumbo	1.2.6.6.0	J. McKenzie
*FS-SP-1106	LHD Vehicles	1.2.6.6.0	J. McKenzie
*FS-SP-1107	Mine Service Vehicle	1.2.6.6.0	D. Coppage
FS-SP-1109	Mobile Dust Collection Units	1.2.6.6.0	R. Jurani
FS-SP-1504	Main Mine Ventilation Fans	1.2.6.7.1	R. Jurani
FS-SP-1505	Auxiliary Mine Ventilation Fans	1.2.6.7.1	R. Jurani
FS-SP-1506	Ventilation Ducting	1.2.6.7.1	H. Gleser

Total: 21

*eloped for 50% Title I

100% Outline Specifications
Mechanical

*FS-SP-0504	Welding	1.2.6.4.2	L. Barto
FS-SP-0902	Painting - Equipment	1.2.6.7.2	L. Barto
FS-SP-1104	Portable Chemical Toilets	1.2.6.6.0	L. Barto
FS-SP-1500	General Requirements, Mechanical	1.2.6.7.1	L. Barto
*FS-SP-1501	Pipe and Fittings	1.2.6.7.1	L. Barto
*FS-SP-1507	Valves	1.2.6.7.1	L. Barto
FS-SP-1509	Control & Monitoring of Mechanical Utilities	1.2.6.7.1	L. Barto
FS-SP-1510	Mine Water Supply Distribution System	1.2.6.7.1	L. Barto
FS-SP-1511	Mine Waste Water Removal System	1.2.6.7.1	L. Barto
FS-SP-1512	Compressed Air System	1.2.6.7.1	L. Barto
FS-SP-1513	Waste Water Pumps: MTL Sump	1.2.6.7.1	L. Barto
FS-SP-1514	Gathering Pumps: Diaphragm	1.2.6.7.1	L. Barto
FS-SP-1515	Gathering Pumps: Centrifugal	1.2.6.7.1	L. Barto
FS-SP-1516	Rotary Screw Air Compressors	1.2.6.7.1	L. Barto
FS-SP-1517	Booster Air Compressor Unit	1.2.6.7.1	L. Barto
FS-SP-1518	Emergency Eyewash Station	1.2.6.7.1	L. Barto
FS-SP-1519	Hydronic Specialties	1.2.6.7.1	L. Barto

Total: 17

* Developed for 50% Title I

100% Outline Specifications
Electrical

FS-SP-1600	General Requirements, Electrical	1.2.6.7.1	T. Greiner
FS-SP-1602	Electrical Motors - 460 Volt	1.2.6.7.1	T. Greiner
FS-SP-1603	Electrical Motors - 4160 Volt	1.2.6.7.1	T. Greiner
FS-SP-1604	Lighting Systems	1.2.6.7.1	T. Greiner
FS-SP-1605	Ground Fault Protection	1.2.6.7.1	C. Hatcher
FS-SP-1606	Bell & Buzzer Cord Signaling System	1.2.6.7.1	T. Greiner
FS-SP-1607	Hoist/Cage Radio Communication System	1.2.6.7.1	T. Greiner
FS-SP-1609	4160/480V MTL Mine Power Center	1.2.6.7.1	T. Greiner
FS-SP-1611	Power Distribution Panels	1.2.6.7.1	C. Hatcher
FS-SP-1612	Electrical Cable	1.2.6.7.1	C. Hatcher
FS-SP-1613	Remote Control & Monitoring Systems	1.2.6.7.1	C. Hatcher
FS-SP-1614	Motor Control Center - 480V	1.2.6.7.1	C. Hatcher
FS-SP-1615	Programmable Logic Controllers	1.2.6.7.1	C. Hatcher
FS-SP-1616	Grounding & Lightning Protection Systems	1.2.6.7.1	C. Hatcher
FS-SP-1617	Subsurface and Shaft Electric Distribution	1.2.6.7.1	C. Hatcher
FS-SP-1618	Medium Voltage Controls - 5KV	1.2.6.7.1	C. Hatcher
FS-SP-1619	Electrical Shaft Heaters - 4.16kV	1.2.7.7.1	T. Greiner

Total: 17

*eloped for 50% Title I

ACTIVITY ID	ORIG DUR	REM DUR	PCT	CODE	ACTIVITY DESCRIPTION
TI CA 0004	12	0	100	12641	ES-1 SHAFT LINER DESIGN
TI CA 0007	10	0	100	12652	ES-2 HOISTING PLAN
TI CA 0008	10	0	100	12673	ES-1 CONVEYANCE
TI CA 0009	15	0	100	12673	ES-1 SHAFT SINKING STAGE
TI CA 0011	10	0	100	12673	ES-1 CONVEYANCE OVERTRAVEL
TI CA 0018	0	0	100	12642	ES-1,2 HOISTING RATES
TI CA 0019	1	0	100	12674	ES-2 CONVEYANCE OVERTRAVEL
TI CA 0027	0	0	100	12671	VENTILATION AIR VOLUME DEMAND SCHEDULE
TI CA 0028	0	0	100	12671	AIR DISTRIBUTION & RESISTANCES
TI CA 0030	10	0	100	12671	FAN LOCATIONS / HP TYPE
TI CA 0031	0	0	100	12671	VENTILATION SYSTEM PRESSURE LOSSES
TI CA 0032	10	0	100	12671	FAN SOUND LEVELS
TI CA 0033	8	0	100	12642	HOIST RESISTOR BANK HEAT CALCULATION
TI CA 0034	4	0	100	12671	COMPRESSED AIR SYSTEM DESIGN
TI CA 0036	10	0	100	12673	SHAFT GUIDES - PRELIMINARY ANALYSIS
TI CA 0040	4	0	100	12671	COMPRESSED AIR DEMAND
[illegible]	0	0	100	12660	TEST LOCATION DETERMINATIONS
[illegible]	0	0	100	12660	TEST AREA, GRADES, COORD., & ELEVATIONS
TI CA [illegible]	8	0	100	12671	WASTE WATER SYSTEM DESIGN
TI CA 0045	0	0	100	12671	WATER SYSTEM DESIGN
TI CA 0047	10	0	100	12671	UNDERGROUND FUEL CONSUMPTION
TI CA 0054	10	0	100	12671	VENT FAN DESIGN
TI CA 0067	10	0	100	12642	DUTY CYCLE ES-1
TI CA 0068	10	0	100	12652	DUTY CYCLE ES-2
TI CA 0069	10	0	100	12641	ES-1 FLEET ANGLES
TI CA 0070	10	0	100	12651	ES-2 FLEET ANGLES
TI CA 0071	10	0	100	12660	SMOOTH BLASTING
TI CA 0072	10	0	100	12652	ES-2 1500 HP HOIST
TI CA 0073	10	0	100	12660	EXCAVATION SCHEDULE
TI CR 0001	10	0	100	12632	DESIGN CRITERIA - SINKING STAGE
TI CR 0002	10	0	100	12632	DESIGN CRITERIA - SHAFT OUTFITTING
TI DR 0001	10	0	100	12660	CREDITABLE ACCIDENT LIST
TI DR 0002	10	0	100	12660	IMPACT ANALYSIS
TI DR 0003	10	0	100	12660	COMPUTER BASED RIB D.B.
TI ST 0004	10	0	100	12642	HOIST DATA
TI ST 0011	10	0	100	12641	SHAFT SINK WINCHES/ROPE
TI ST 0015	10	0	100	12642	ES-1 HOIST PLAN
TI ST 0016	10	0	100	12642	HOIST DESIGN PLAN
TI ST 0031	0	0	100	12660	MINING EQUIPMENT SELECTION
TI ST 0032	10	0	100	12660	TEST DRILL EQUIPMENT EVALUATION
TI ST 0047	0	0	100	12671	LIGHTING SYSTEM/FIXTURE EVALUATION
TI ST [illegible]	0	0	100	12671	ELECTRICAL INTERFACE ANALYSIS
TI ST [illegible]	10	0	100	12671	INSTRUMENT/COMMUNICATION SYSTEMS
TI ST [illegible]	2	0	100	12671	ELECTRICAL SYSTEM LOAD ANALYSIS

ACTIVITY ID	ORIG DUR	REM DUR	PCT	CODE	ACTIVITY DESCRIPTION
TI ST 0053	10	0	100	12660	SEISMIC DESIGN ANALYSIS
TI ST 0054	10	0	100	12660	PILLAR STABILITY ANALYSIS
TI ST 0055	10	0	100	126	ESF/RECLAMATION PLAN
TI ST 024A	0	0	100	12660	SUBSURFACE OCCUPANCY
TI ST 024B	0	0	100	12660	DESIGN MINING OCCUPANY RATE
TI TR 0001	10	0	100	12642	EMERGENCY HOIST

H&N

TITLE I DRAWING LIST

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   JS-025-ESF-T2

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   JS-025-ESF-T3

4. Symbols and Abbreviations
   JS-025-ESF-T4

5. Symbols and Abbreviations
   JS-025-ESF-T5

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   JS-025-ESF-C3

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   JS-025-ESF-C4

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H&N 100% SPECIFICATIONS

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05210	STEEL JOISTS
05300	STEEL ROOF & FLOOR DECKING
05400	COLD FORMED METAL FRAMING

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THIS SECTION RESERVED

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07200	INSULATION
07465	PREFORMED METAL SIDING
07620	SHEET METAL FLASHING & TRIM
07631	GUTTERS & DOWNSPOUTS
07710	PREFABRICATED ROOF SPECIALTIES
07900	CAULKING & JOINT SEALANTS

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08330	OVERHEAD DOORS
08500	WINDOWS
08700	BUILDER'S HARDWARE
08800	GLASS AND GLAZING

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09260	GYPSUM BOARD SYSTEMS
09310	CERAMIC TILE
09511	SUSPENDED CEILING SYSTEMS
09650	RESILIENT FLOORING
09686	CARPETING
09900	PAINTING

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10605	WIRE MESH PARTITIONS
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DIVISION 13 - SPECIAL CONSTRUCTION

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DIVISION 14 - CONVEYING SYSTEMS

THIS SECTION RESERVED

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15480	COMPRESSED AIR SYSTEM
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15782	THROUGH THE WALL A/C AND HEATPUMP UNITS
15785	COMPUTER ROOM AIR CONDITIONING UNITS
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15865	WELDING EXHAUST SYSTEMS
15870	POWER VENTILATORS
15875	ELECTRIC UNIT HEATERS
15880	ELECTRIC INFRARED HEATING SYSTEM
15885	AIR TREATMENT EQUIPMENT
15890	DUCTWORK
15910	DUCTWORK ACCESSORIES
15936	AIR OUTLETS AND INLETS
15990	TESTING AND BALANCING

DIVISION 16 - ELECTRICAL

16010	BASIC ELECTRICAL REQUIREMENTS
16111	CONDUIT
16112	SURFACE RACEWAYS
16114	CABLE TRAYS

DIVISION 16 - ELECTRICAL (CONT.)

16120	WIRE AND CABLE
16123	IDS - DATA CABLING
16130	BOXES
16141	WIRING DEVICES
16190	SUPPORTING DEVICES
16195	ELECTRICAL IDENTIFICATION
16250	AUTOMATIC TRANSFER SWITCH
16310	SWITCHGEARS
16320	SUBSTATION TRANSFORMER
16351	OIL CIRCUIT BREAKER
16360	DISCONNECT SWITCHES AND FUSES
16401	OVERHEAD POWER DISTRIBUTION
16402	UNDERGROUND ELECTRIC SERVICE
16420	SERVICE ENTRANCE
16430	METERING
16440	SERVICE SWITCHES
16450	SECONDARY GROUNDING
16460	DISTRIBUTION TRANSFORMERS
16461	DRY TYPE TRANSFORMERS
16465	BUS DUCT
16470	PANELBOARDS
16500	LIGHTING FIXTURES
16530	SITE LIGHTING
16601	LIGHTNING PROTECTION SYSTEM
16610	EMERGENCY LIGHTING EQUIPMENT
16611	UNINTERRUPTIBLE POWER SUPPLY SYSTEM
16612	PACKAGED ENGINE GENERATOR SYSTEMS

DIVISION 16 - ELECTRICAL (CONT.)

16614	CENTRAL BATTERY SYSTEMS
16721	FIRE ALARM AND SMOKE DETECTOR SYSTEMS
16726	LIFE SAFETY & OPERATIONS CONTROL SYSTEM
16740	TELEPHONE
16741	TELEPHONE SERVICE ENTRANCE
16750	INTERCOM SYSTEM
16770	PUBLIC ADDRESS SYSTEM
16782	CLOSED CIRCUIT TELEVISION SYSTEM
16903	WATERLINE WIRELESS TELEMETRY SYSTEM

H&N 100% SPECIFICATIONS BY CATEGORY

SECTION	TITLE
GENERAL	
01005	ADMINISTRATIVE PROVISIONS
01050	FIELD ENGINEERING
01300	SUBMITTALS
01400	QUALITY ASSURANCE/CONTROL
01410	TESTING LABORATORY SERVICES
01600	MATERIALS AND EQUIPMENT
01720	PROJECT RECORD DOCUMENTS
CIVIL	
02110	SITE CLEARING
02202	ROCK REMOVAL
02211	ROUGH GRADING
02222	EXCAVATION
02223	BACKFILLING
02225	TRENCHING
02500	SITE DRAINAGE
02556	WATER LINES
02611	AGGREGATE BASE COURSE
02612	BITUMINOUS PRIME COAT
02613	BITUMINOUS TACK COAT
02614	BITUMINOUS SURFACE COURSE
02615	ROAD WORK
02720	ROADWAY APPURTENANCES
02730	SANITARY SEWERS
02731	SEWAGE DISPOSAL SYSTEMS
02740	PACKAGE SEWER LIFT STATION
02770	STORAGE LINERS

CIVIL

02831	FENCES
02990	FIRE PROTECTION SYSTEMS - WATER

ARCHITECTURAL/STRUCTURAL

03001	PLAIN & REINFORCED CONCRETE
04000	REINFORCED CONCRETE UNIT MASONRY
05120	STRUCTURAL STEEL & MISCELLANEOUS METAL
05210	STEEL JOISTS
05300	STEEL ROOF & FLOOR DECKING
05400	COLD FORMED METAL FRAMING
07175	WATER REPELLENT COATING
07200	INSULATION
07465	PREFORMED METAL SIDING
07620	SHEET METAL FLASHING & TRIM
07631	GUTTERS & DOWNSPOUTS
07710	PREFABRICATED ROOF SPECIALTIES
07900	CAULKING & JOINT SEALANTS
08100	METAL DOORS & FRAMES
08330	OVERHEAD DOORS
08500	WINDOWS
08700	BUILDER'S HARDWARE
08800	GLASS AND GLAZING
09111	METAL STUD FRAMING, FURRING, AND LATHING SYSTEMS
09260	GYPSUM BOARD SYSTEMS
09310	CERAMIC TILE
09511	SUSPENDED CEILING SYSTEMS
09650	RESILIENT FLOORING

ARCHITECTURAL/STRUCTURAL (CONT.)

09686	CARPETING
09900	PAINTING
10160	METAL TOILET COMPARTMENTS
10270	ACCESS FLOORING
10508	METAL LOCKERS AND OVERHEAD BASKETS
10605	WIRE MESH PARTITIONS
10800	TOILET ACCESSORIES
11165	DOCK BUMPERS
11180	MINE LAMP CHARGING SYSTEM
13121	PRE-ENGINEERED BUILDINGS

MECHANICAL

15140	SUPPORTS AND ANCHORS
15190	MECHANICAL IDENTIFICATION
15242	VIBRATION ISOLATION
15260	HVAC INSULATION
15300	FIRE SPRINKLER SYSTEMS
15365	HALON FIRE PROTECTION SYSTEM
15410	PLUMBING PIPING
15440	PLUMBING FIXTURES
15450	ELECTRIC BOILERS & POTABLE WATER HEATERS
15480	COMPRESSED AIR SYSTEM
15781	PACKAGED AIR CONDITIONING/HEATPUMP UNIT
15782	THROUGH THE WALL A/C AND HEATPUMP UNITS
15785	COMPUTER ROOM AIR CONDITIONING UNITS
15811	EVAPORATIVE COOLERS
15860	CENTRIFUGAL FANS
15865	WELDING EXHAUST SYSTEMS

MECHANICAL (CONT.)

15870	POWER VENTILATORS
15875	ELECTRIC UNIT HEATERS
15880	ELECTRIC INFRARED HEATING SYSTEM
15885	AIR TREATMENT EQUIPMENT
15890	DUCTWORK
15910	DUCTWORK ACCESSORIES
15936	AIR OUTLETS AND INLETS
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16402	UNDERGROUND ELECTRIC SERVICE

ELECTRICAL (CONT.)

16420	SERVICE ENTRANCE
16430	METERING
16440	SERVICE SWITCHES
16450	SECONDARY GROUNDING
16460	DISTRIBUTION TRANSFORMERS
16461	DRY TYPE TRANSFORMERS
16465	BUS DUCT
16470	PANELBOARDS
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H&N

CALCULATION AVAILABLE

90% DESIGN REVIEW

AUGUST 8, 1988

CIVIL

CALC NO.	WBS #	TITLE
C-0001	1.2.6.2.1.4	Site Drainage
C-0002	1.2.6.2.1.1	Earth Work
C-0003	1.2.6.2.2.3	Lagoon Sizing
C-0004	1.2.6.2.1.4	Settling Trough
C-0005	1.2.6.2.2.4	Pipe Size Check for Mine Waste
C-0006	1.2.6.2.1.4	Rainfall Intensity Curve for PMF
C-0007	1.2.6.2.1.4	Extra Cost of G-4 PMF
C-0008	1.2.6.2.1.4	Drainage Ditch Parallel "H" Road
C-0009	1.2.6.2.1.4	NWSI Site Hydrology
C-0010	1.2.6.2.1.4	Flood Plain for 100 Year and PMF
C-0011	1.2.6.2.2.2	Water Tank Rupture Flood Plain
C-0012	1.2.6.2.1.4	Main Pad Flood Plain
C-0013	1.2.6.2.1.4	Culvert Design
C-0014	1.2.6.2.1.4	Culvert Design
C-0015	1.2.6.2.1.4	Culvert Design
C-0016	1.2.6.2.1.4	Culvert Design
C-0017	1.2.6.2.2.2	Water Distribution System
C-0018	1.2.6.2.2.3	Sanitary Sewer System
C-0019	1.2.6.7.2.1	Mine Waste Water System
C-0020	1.2.6.2.1.1	Muck Hauling Evaluation

MECHANICAL

CALC NO.	WBS #	TITLE
M-0001	1.2.6.3.1.2	HVAC - Hoist House
M-0002	1.2.6.3.1.2	Plumbing - Hoist House
M-0001	1.2.6.3.1.3	HVAC - Shop
M-0002	1.2.6.3.1.3	Plumbing - Shop
M-0003	1.2.6.3.1.3	Comp. Air and Welding Exhaust
M-0001	1.2.6.3.1.4	HVAC - Warehouse
M-0002	1.2.6.3.1.4	Plumbing - Warehouse
M-0001	1.2.6.3.1.5	Freeze Protection - Booster Pump
M-0001.1	1.2.6.3.1.6	HVAC - Trailers
M-0002	1.2.6.3.1.6	Plumbing - Trailers
M-0001	1.2.6.3.1.6	HVAC - Change House
M-0002	1.2.6.3.1.6	Plumbing - Change House
M-0001	1.2.6.3.1.7	HVAC - Surface Data Building
M-0002	1.2.6.3.1.7	Plumbing - Surface Data Building
M-0001	1.2.6.3.1.8	HVAC - Subsurface Data Building

FIRE PROTECTION

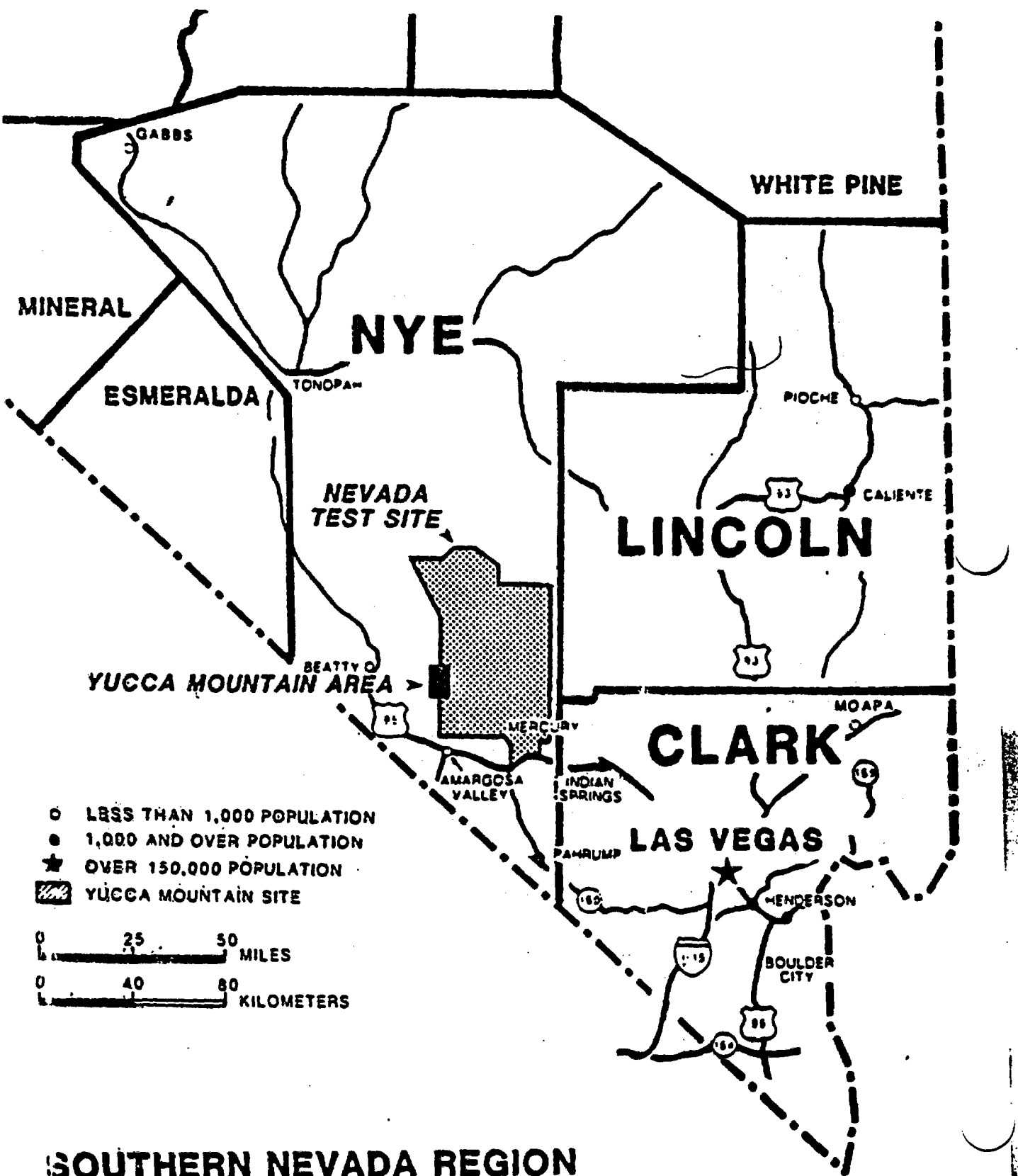
FP-0001	1.2.6.3.1.2	Sprinkler Calcs - Hoist House
FP-0001	1.2.6.3.1.3	Sprinkler Calcs - Shop
FP-0001	1.2.6.3.1.4	Sprinkler Calcs - Warehouse
FP-0001	1.2.6.3.1.6	Sprinkler Calcs - Trailers
FP-0001	1.2.6.3.1.6	Sprinkler Calcs - Change House
FP-0001	1.2.6.3.1.7	Sprinkler Calcs - Surface Data Building
FP-0001	1.2.6.3.1.8	Sprinkler Calcs - Subsurface Data Building

ELECTRICAL

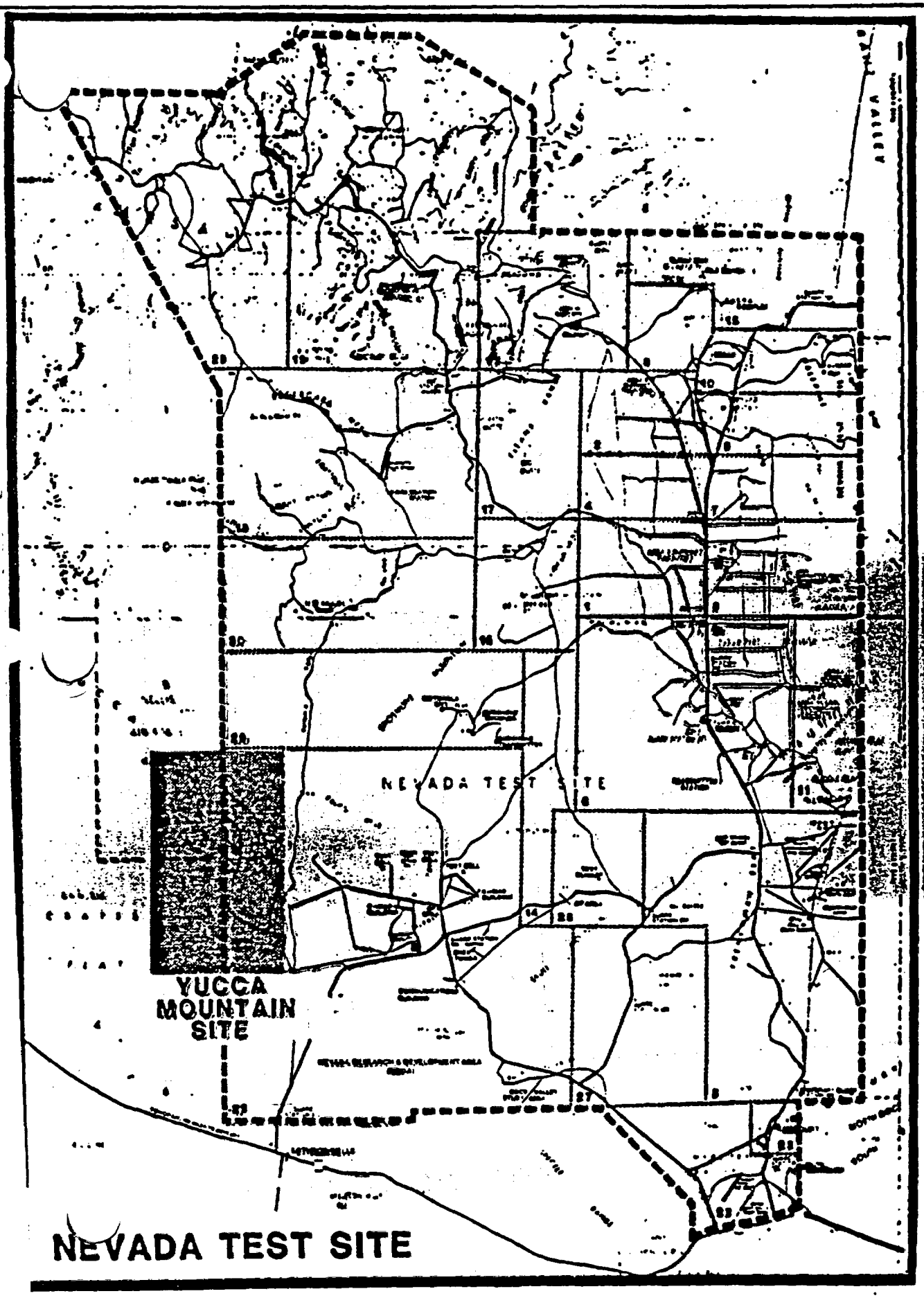
CALC NO.	WBS #	TITLE
E-0001	1.2.6.2.2.1	Switch Gear "MPP-1"
E-0002	1.2.6.2.2.1	Standby Power
E-0003	1.2.6.2.2.1	Switch Gear "MPP-4"
E-0004	1.2.6.2.2.1	Switch Gear "MPP-2"
E-0005	1.2.6.2.2.1	Switch Gear "MPP-3"
E-0006	1.2.6.2.2.1	Panel "PP-2"
E-0007	1.2.6.2.2.1	Panel "PP-1"
E-0008	1.2.6.3.1.8	Subsurface Data Building
E-0009	1.2.6.3.1.7	Surface Data Building
E-0010	1.2.6.3.1.2	Hoist House
E-0011	1.2.6.2.2.1	Compressor Pad
E-0012	1.2.6.2.2.1	Panel "PP-8"
E-0013	1.2.6.3.1.4	Warehouse
E-0014	1.2.6.3.1.5	Shop
E-0015	1.2.6.2.2.1	Panel "PP-4"
E-0016	1.2.6.3.1.6	Office Trailers
E-0017	1.2.6.3.1.6	Office Trailer Type A
E-0018	1.2.6.3.1.6	Office Trailer Type B
E-0019	1.2.6.3.1.6	Change
E-0020	1.2.6.7.1.1	Subsurface Power "UPS"
E-0021	1.2.6.3.1.5	Booster Pump Station

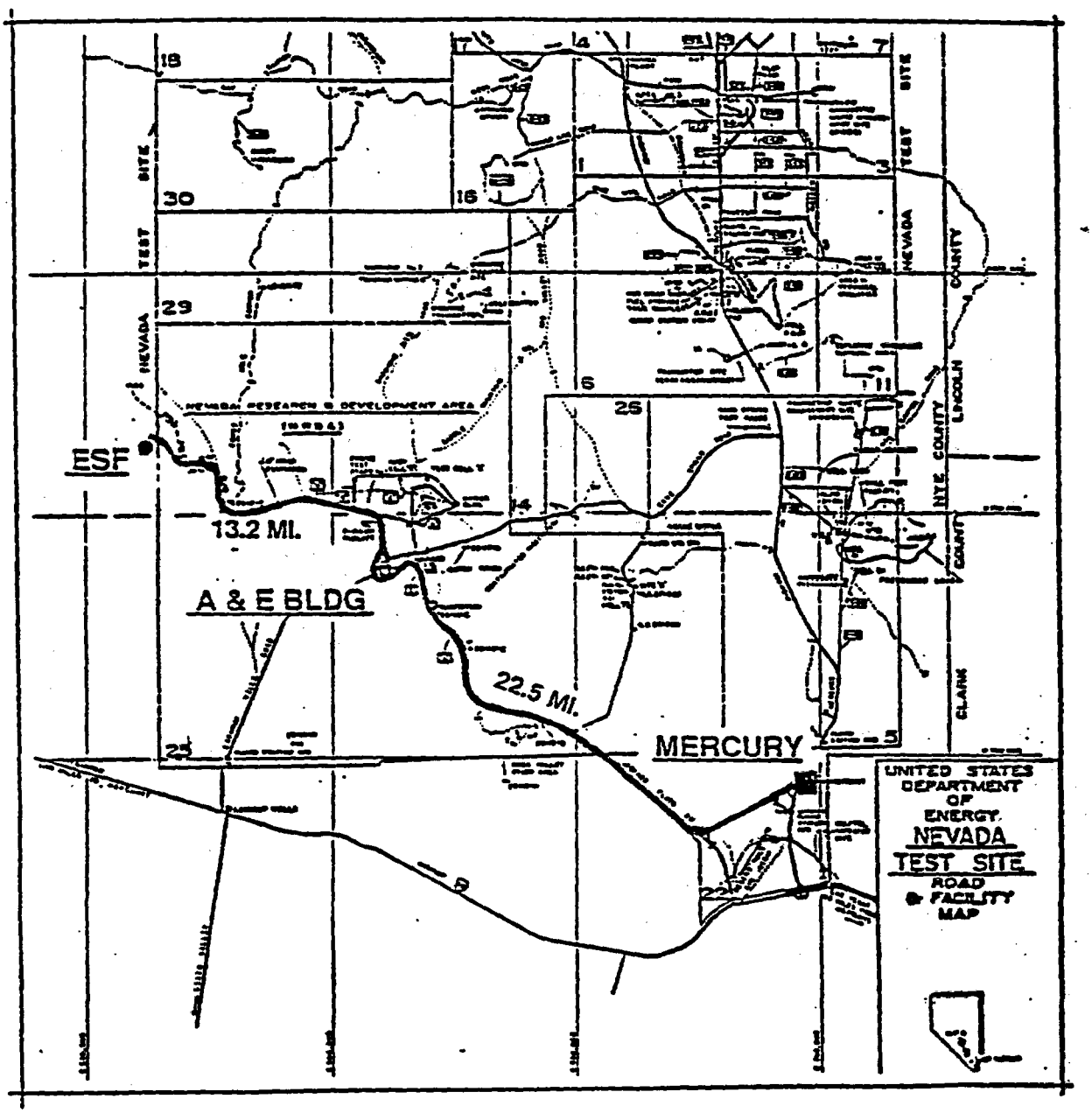
NNWSI - ESF
90% DESIGN REVIEW
PRESENTATION OUTLINE
AUGUST 8, 1988

PROJECT OVERVIEW	J.C. CALOVINI
DESIGN & TECHNICAL ASPECTS	R.L. SCHREINER
DESIGN FEATURES & INTERFACES	R.G. MUSICK
CIVIL	L.C. BRUNO
ARCH/STRUCT	R.C. GREENWOLD
MECHANICAL	B.H. ANZAI
ELECTRICAL	J.A. DUMAS
COMMUNICATIONS	M.C. SHURTLEFF
WRAP UP	J.C. CALOVINI



SOUTHERN NEVADA REGION


NEVADA TEST SITE
YUCCA MOUNTAIN SITE
NEVADA TEST SITE



SITE VICINITY MAP

DEFINITION OF TITLE I

REFERENCE:
DOE 4700.1, CHAP V, PART C.2.e.1

UTILIZING THE DESIGN CONCEPTS OR CRITERIA THAT HAVE BEEN PREPARED IN THE CONCEPTUAL DESIGN PHASE, SUFFICIENT DESIGN NEEDS TO BE PERFORMED IN TITLE I TO FIRMLY FIX THE PROJECT SCOPE AND FEATURES.

QUALITY ASSURANCE

H&N WORKS TO A WMPO APPROVED QA PROGRAM PLAN WHICH INCLUDES AN EXTENSIVE DESIGN REVIEW PROCESS.

QA DOCUMENTATION

* REGULATIONS - 10 CFR 60 subpart G
  10 CFR 50 appendix B

* HEADQUARTERS QA PLAN OGR/B-3

* PROJECT A PLAN - NNWSI 88-9

* H&N QUALITY ASSURANCE PROGRAM PLAN
  H.N. - 10471 - 1131

* H&N APPROVED PROCEDURES MANUAL

QUALITY ASSURANCE PROGRAM

H&N HAS:

* AN APPROVED QUALITY ASSURANCE PROGRAM PLAN
* APPROVED PROCEDURES FOR ALL ACTIVITIES
* QUALIFIED PERSONNEL IN ALL AREAS
* APPROPIATE INDOCTRINATION AND TRAINING FOR ALL PERSONNEL
* AN DESIGN REVIEW PROCESS
  - # INTERNAL AND INTERDISCIPLINE REVIEW
  - # QA REVIEW

H&N ENGINEERING RESPONSIBILITIES

1. SURFACE FACILITIES
2. SUBSURFACE UTILITIES AS RELATED TO TESTING
3. AREA 25 FACILITIES
4. COMMUNICATION, DATA FACILITIES AND LIFE SAFETY SYSTEMS

DESIGNS INCLUDED IN THIS REVIEW

CIVIL ENGINEERING

SHOP BUILDING

WAREHOUSE

HOIST HOUSE

TRAILERS

WATER & SEWAGE SYSTEMS

ELECTRICAL SYSTEM

SURFACE & SUBSURFACE COMM.

FIRE PROTECTION

DESIGN INPUTS

BASELINE DOCUMENTATION

SUBSYSTEM DESIGN REQUIREMENTS DOCUMENT (S.D.R.D.)

THE DESIGN BASIS DOCUMENT

GENERATED TO EXPAND ON THE PARAMETERS OF THE S.D.R.D. AND PROVIDE A CONCEPTUAL DESIGN.

THE DOCUMENT WAS SUBJECTED TO REVIEW AND WAS APPROVED BY DOE/WMPO. THE DOCUMENT IS IN ITS SECOND REVISION AND IS PROVIDED.

THE SCOPE AND PLANNING DOCUMENT

GIVES THE DELIVERABLES AND A SCHEDULE FOR COMPLETION.

THIS WAS REVIEWED AND APPROVED BY DOE/WMPO.

OTHER INPUT SOURCES

DATA WAS OBTAINED FROM APPLICABLE CODES, THE REFERENCE BASE, STUDIES AND REPORTS, AND THE EXPERIENCE OF THE DESIGN PERSONNEL.

R.L. SCHREINER
DESIGN SECTION CHIEF

TECHNICAL ASPECTS OF THE DESIGN

TOPICS FOR DISCUSSION

- BASIC DESIGN PHILOSOPHY
- H&N SCOPE OF WORK
- 50% TITLE I AND BEYOND
- ENGINEERING CHANGE REQUESTS
- DESIGN/DRAWING CONTROL
- 90% TITLE I SUBMITTAL
- CALCULATIONS AND DESIGN ANALYSES
- OTHER ITEMS FOR TITLE I

BASIC DESIGN PHILOSOPHY

- PROVIDE A SAFE, HEALTHFUL AND PRODUCTIVE WORKING ENVIRONMENT
- SUPPORT SITE CHARACTERIZATION
- TO PROVIDE MAXIMUM USEAGE OF LIMITED RESOURCE WITH MAXIMUM FLEXIBILITY
- GENERAL NEEDS OF THE USERS
- BASED ON RECOGNIZED AND APPROVED DOCUMENTS
- FIRMLY FIX THE PROJECT SCOPE AND FEATURES

H&N SCOPE OF WORK

20 WORK PACKAGES

- MAIN PAD
- AUXILIARY PADS
- ROADS
- SITE DRAINAGE
- POWER SYSTEM
- WATER SYSTEM
- SEWAGE SYSTEM
- MINE WASTEWATER SYSTEM
- SURFACE COMMUNICATIONS
- HOIST HOUSE
- SHOP
- WAREHOUSE
- BOOSTER STATION
- TEMPORARY FACILITIES
- SURFACE DATA BUILDING
- SUBSURFACE DATA BUILDING
- LIFE SAFETY SYSTEM
- SUBSURFACE COMMUNICATIONS
- INTEGRATED DATA SYSTEMS

DESIGN REVIEW COMMENTS
50% TITLE I SUBMITTAL

- 9 GENERAL
- 154 CIVIL
- 18 ARCHITECTURAL/STRUCTURAL
- 21 MECHANICAL/FIRE PROTECTION
- 38 ELECTRICAL

TOTAL 240

COMMENTS REQUIRING FURTHER DEVELOPMENT

GENERAL COMMENT #8 SPECIFICATIONS NOTED ON THE DRAWINGS

CIVIL COMMENT #130 TRACER AND INJECTOR SYSTEM

ENGINEERING CHANGE REQUEST (ECR)

• ECR 010	H&N	TRAILERS TO TEMP. FACILITIES	JULY 8
• ECR 028	H&N	FLOOD CONTROL ON AUXILIARY PADS	JULY 11
• ECR 026	REECO	DELETE WAREHOUSE FROM MAIN PAD	JULY 8
• ECR 027	REECO	DELETE GFE BLDG FROM WAREHOUSE	JULY 8
• ECR 013 & 014	SAIC	DELETE A/E BLDG FROM ESF	JULY 8
• ECR 020	F&S	GROUNDING SYSTEM	JULY 8
• ECR 008	LANL	ADD IDS REQUIREMENTS TO APPENDIX B	JUNE 30

ECR'S PENDING

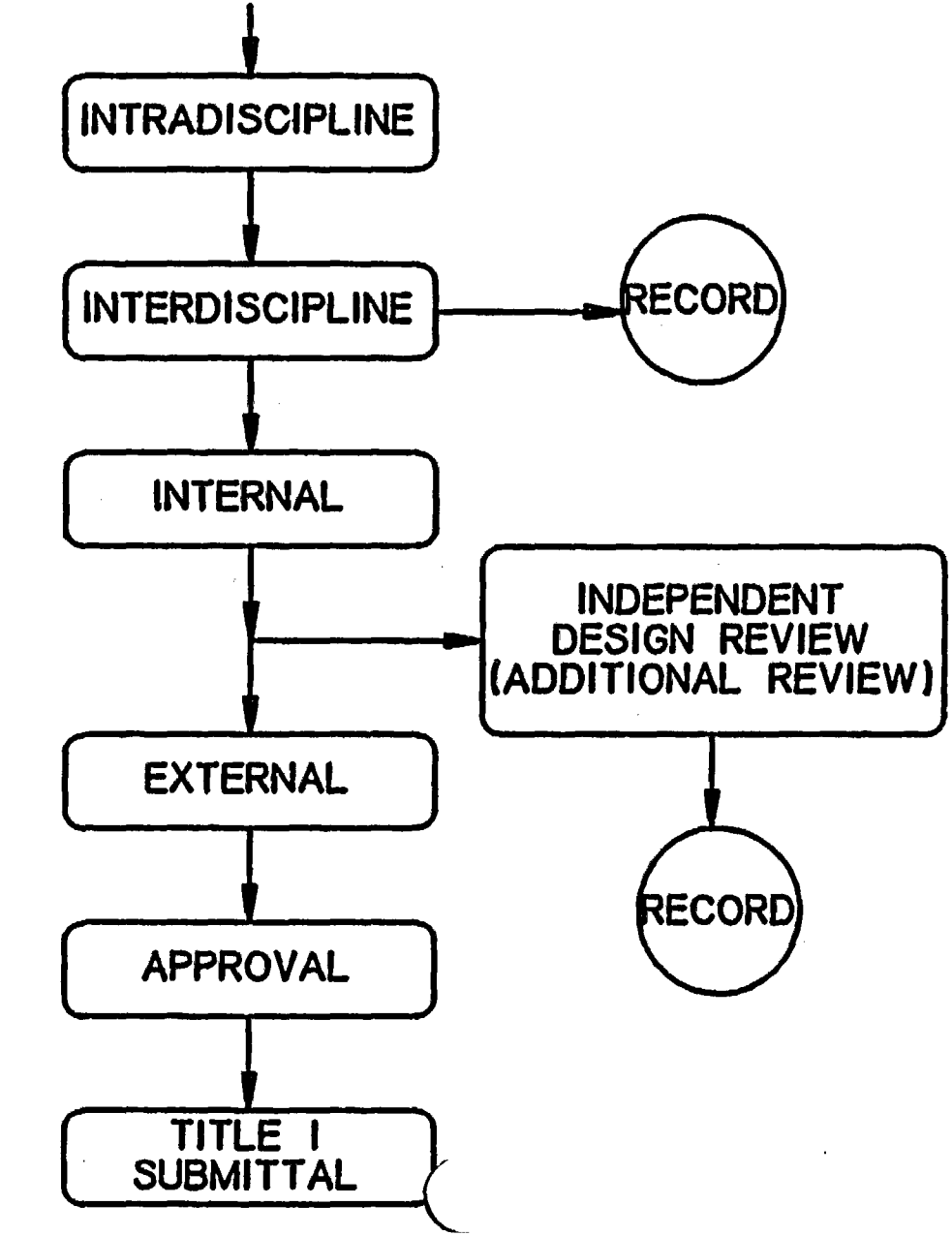
- MODIFY SHOP REQUIREMENTS
- UNDERGROUND FUEL SUPPLY AND/OR STORAGE
- LLNL MACHINE SHOP

BASIS FOR DESIGN

- GENERIC REQUIREMENTS FOR A MINED GEOLOGIC DISPOSAL SYSTEM
- SITE CHARACTERIZATION PLAN (SCP)
- SUBSYSTEM DESIGN REQUIREMENTS DOCUMENT (SDRD)
- REFERENCE INFORMATION BASE (RIB)
- H&N DESIGN BASIS DOCUMENT (DBD)
- H&N SCOPE AND PLANNING BASIS DOCUMENT (SPBD)

- H&N SPECIAL STUDIES
- 50% TITLE I DESIGN REVIEW COMMENTS

DESIGN/DRAWING CONTROL



DRAWINGS FOR REVIEW

	TITLE I	50% TITLE I
GENERAL	5	3
CIVIL	28	29
ARCHITECTURAL	15	7
MECHANICAL	14	10
FIRE PROTECTION	24	8
ELECTRICAL	18	11
COMMUNICATIONS	25	NONE
TOTAL	129	68

SPECIFICATIONS FOR REVIEW

7	GENERAL
20	CIVIL
33	ARCHITECTURAL/STRUCTURAL
24	MECHANICAL/FIRE PROTECTION
40	ELECTRICAL/COMMUNICATIONS

TOTAL 124

- DOE 4700.1 SECTION 5 PART C 2.e.2.(c)

"THE OUTLINE SPECIFICATIONS SHOULD BE SUFFICIENTLY DETAILED TO PERMIT DETERMINATIONS OF COMPLIANCE WITH DOE 6430.1A"

TITLE I SUBMITTALS

TITLE I ESTIMATES

PRELIMINARY SAFETY ANALYSIS REPORT

DESIGN SUMMARY REPORT

90% TITLE I COMMENTS

CONCLUSION

- 50% TITLE I DESIGN REVIEW COMMENTS
- ANTICIPATE HIGH CALIBER COMMENTS

H&N/NNWSI/ESF TITLE I 90% REVIEW

AUGUST 8, 1988

RALPH G. MUSICK

ADDITIONAL DESIGN FEATURES

AND INTERFACE CONTROL

CONCURRENT H&N ACTIVITIES

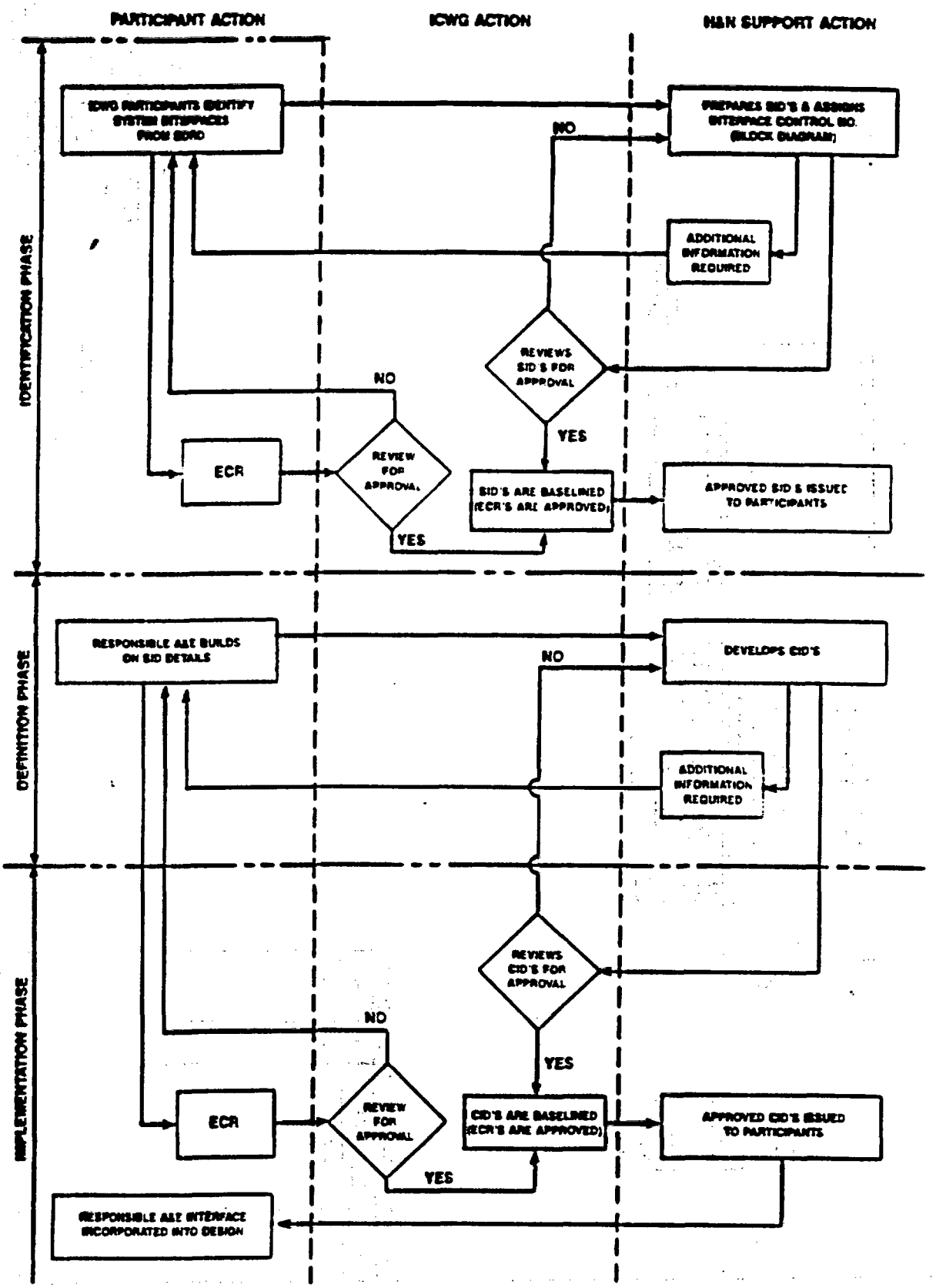
- TITLE II SCHEDULE
- TITLE III PLANNING, TRAINING AND PROCEDURES
- INTERFACE CONTROL

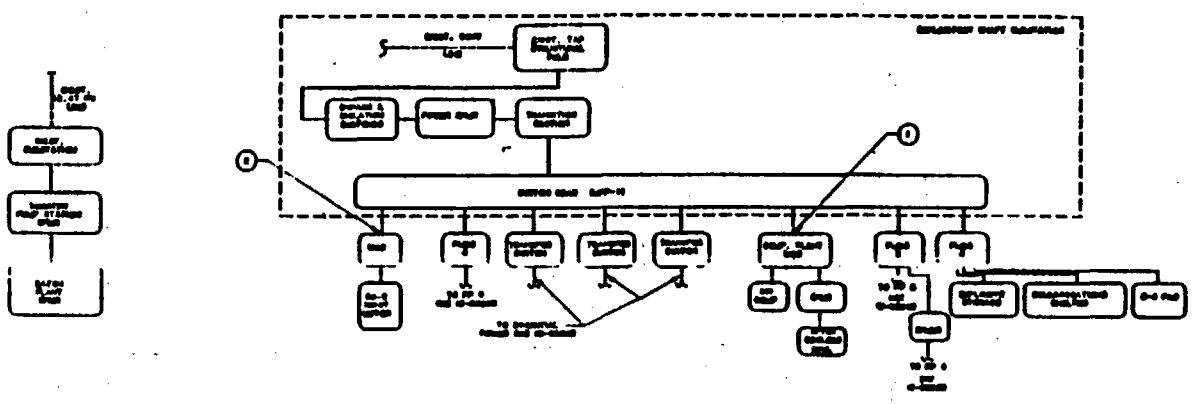
INTERFACE CONTROL

IDENTIFICATION, DEFINITION, CONTROL AND APPROVAL OF ALL FUNCTIONAL AND PHYSICAL INTERFACES FOR THE E.S.F. DESIGN.

ESF/ICWG DESIGN INTERFACE CONTROL PROCESS

FLOW DIAGRAM





ⓘ			
ⓘ			

FOR QUALITY LEVEL ASSIGNMENT SEE SPECIFIC COMPONENT INTERFACE DRAWING

U.S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATION

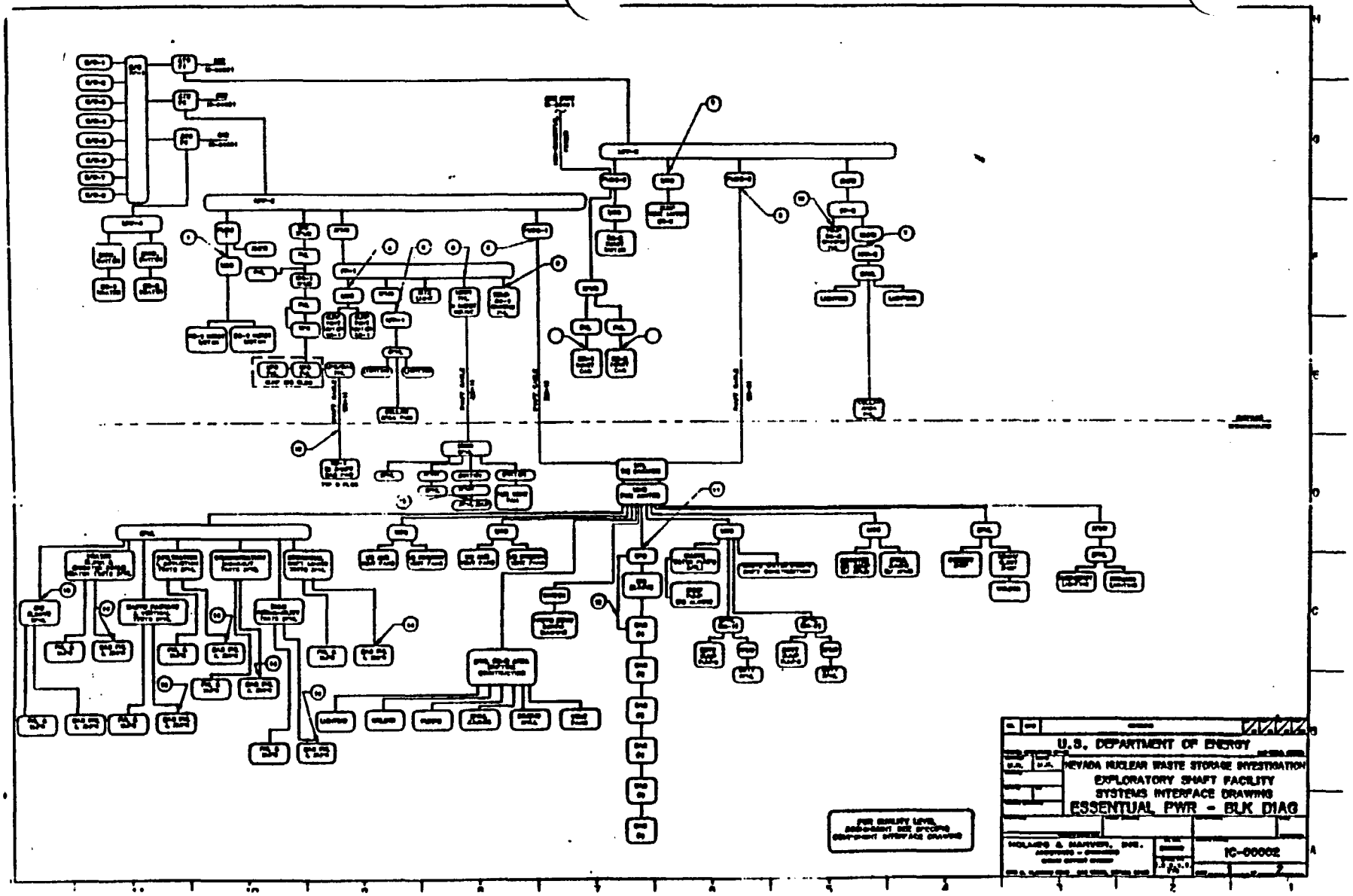
EXPLORATORY SHAFT FACILITY

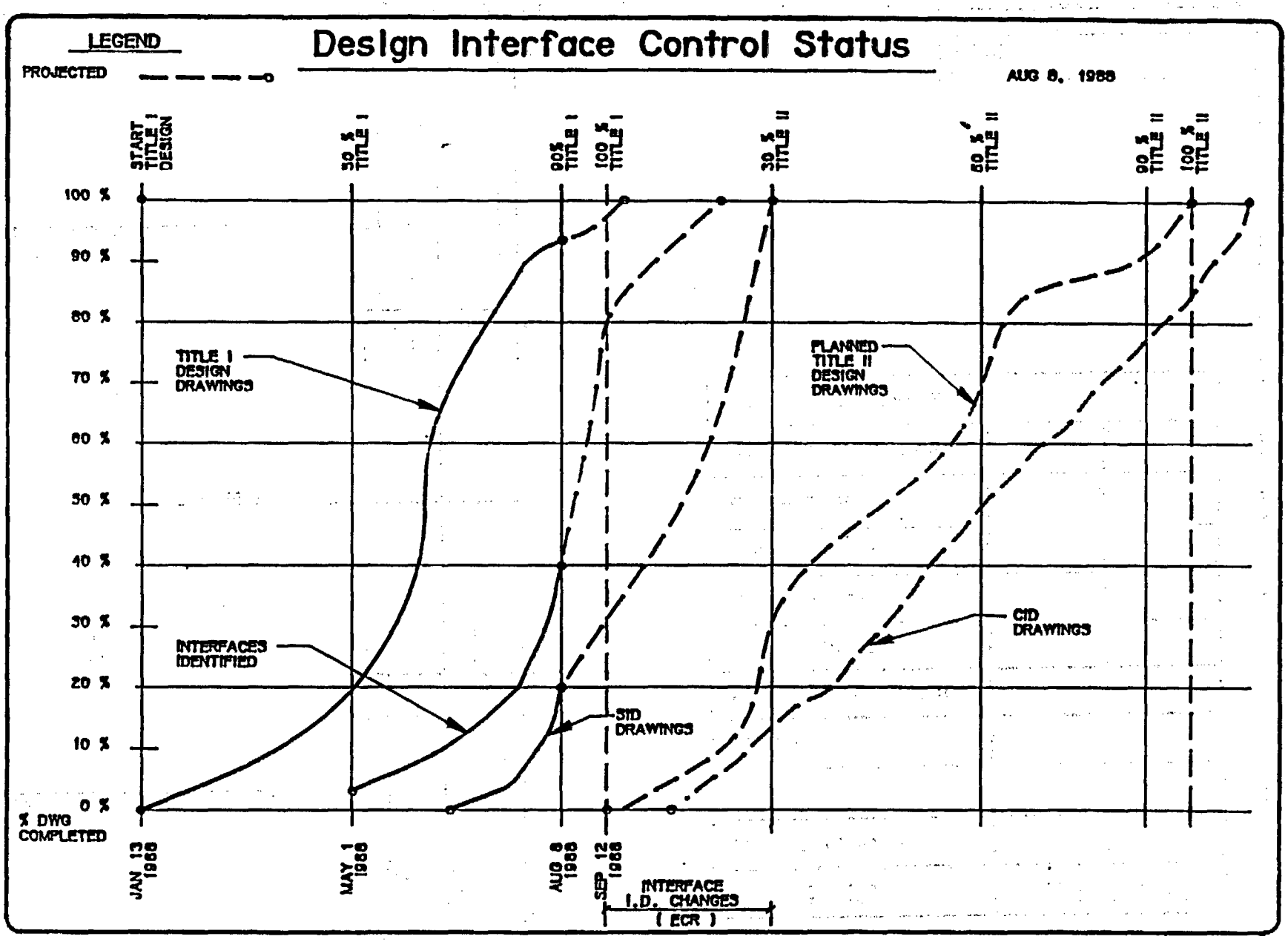
SYSTEMS INTERFACE DRAWING

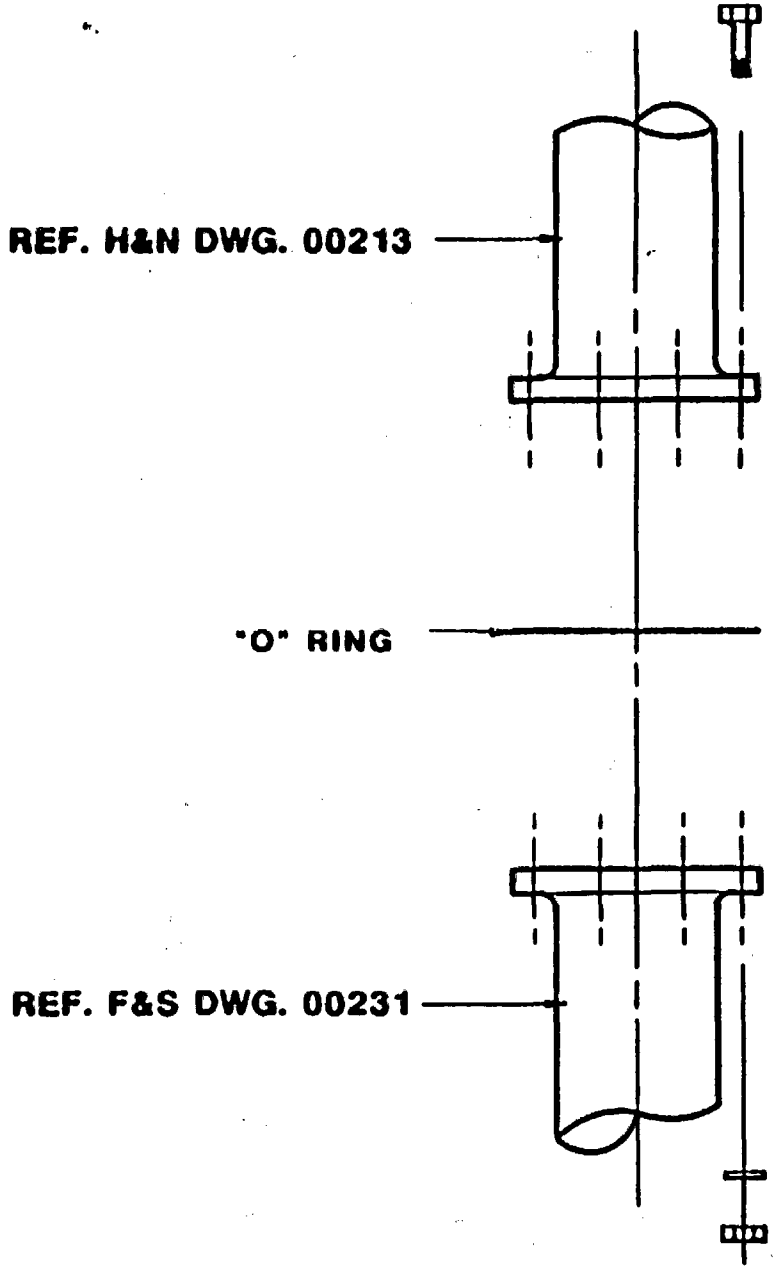
PRIM POWER - BLK DIAGRAM

HOLMES & NARVER, INC.

IC-00001


U.S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
SYSTEMS INTERFACE DRAWING
ESSENTIAL PWR - BLK DIAG
IC-00002


LEGEND
PROJECTED
Design Interface Control Status
AUG 8, 1988
START TITLE I DESIGN
30 % TITLE I
90% TITLE I
100 % TITLE I
30 % TITLE II
60 % TITLE II
90 % TITLE II
100 % TITLE II
100 %
90 %
80 %
70 %
60 %
50 %
40 %
30 %
20 %
10 %
0 %
% DWG COMPLETED
TITLE I DESIGN DRAWINGS
PLANNED TITLE II DESIGN DRAWINGS
INTERFACES IDENTIFIED
CID DRAWINGS
SID DRAWINGS
JAN 13 1988
MAY 1 1988
AUG 8 1988
SEP 12 1988
INTERFACE I.D. CHANGES (ECR)



ITEM	H&N	F&S
NOM. PIPE SIZE		
MATERIAL		
CLASS		
DIA. OF BOLT CIRCLE		
DIA. OF BOLTS		
NO. OF BOLTS		
BOLT LENGTH		
"O" RING DIA.		
"O" RING THICKNESS		
"O" RING MATERIAL		

EXAMPLE OF CID

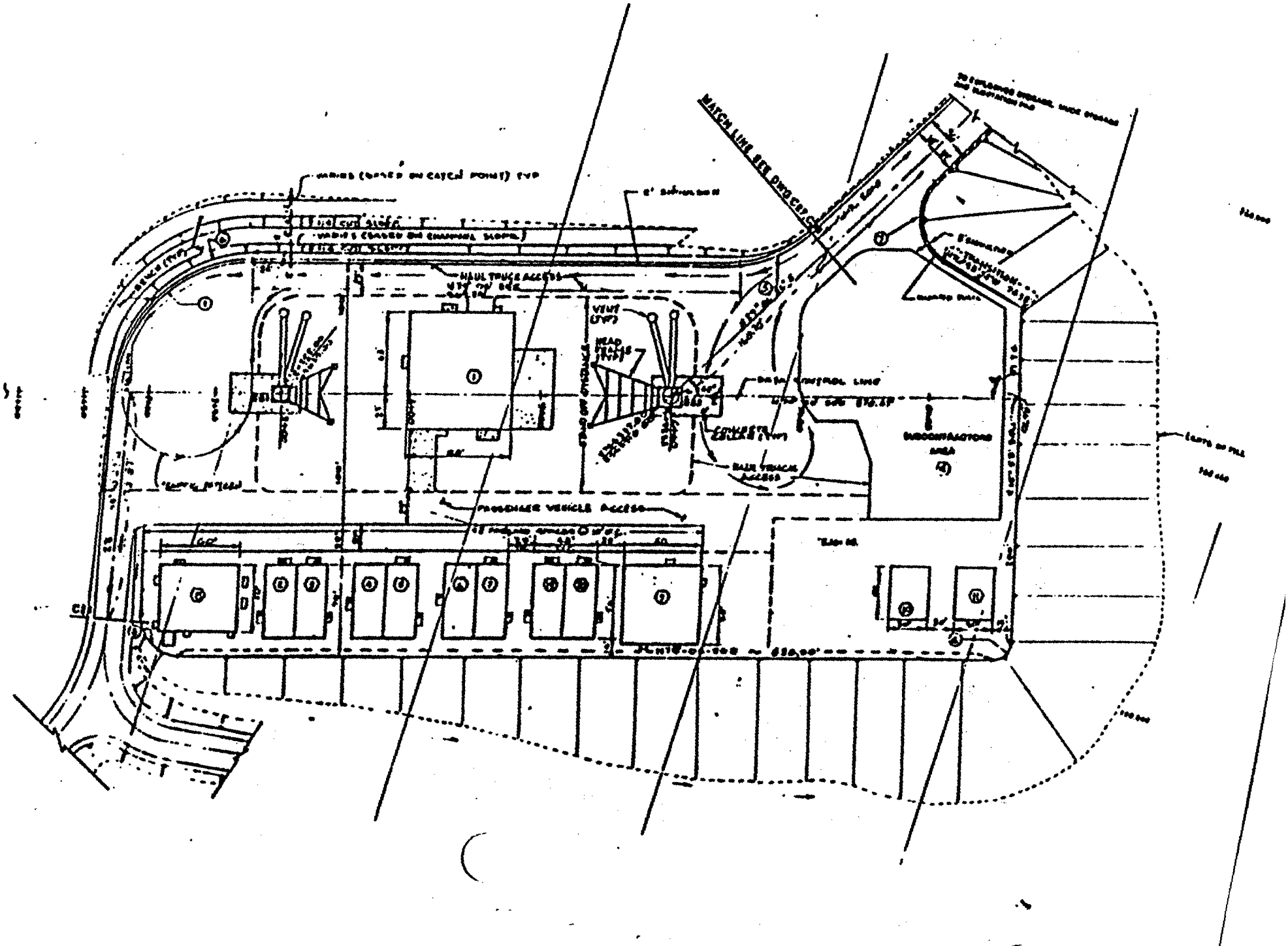
U.S. DEPARTMENT OF ENERGY

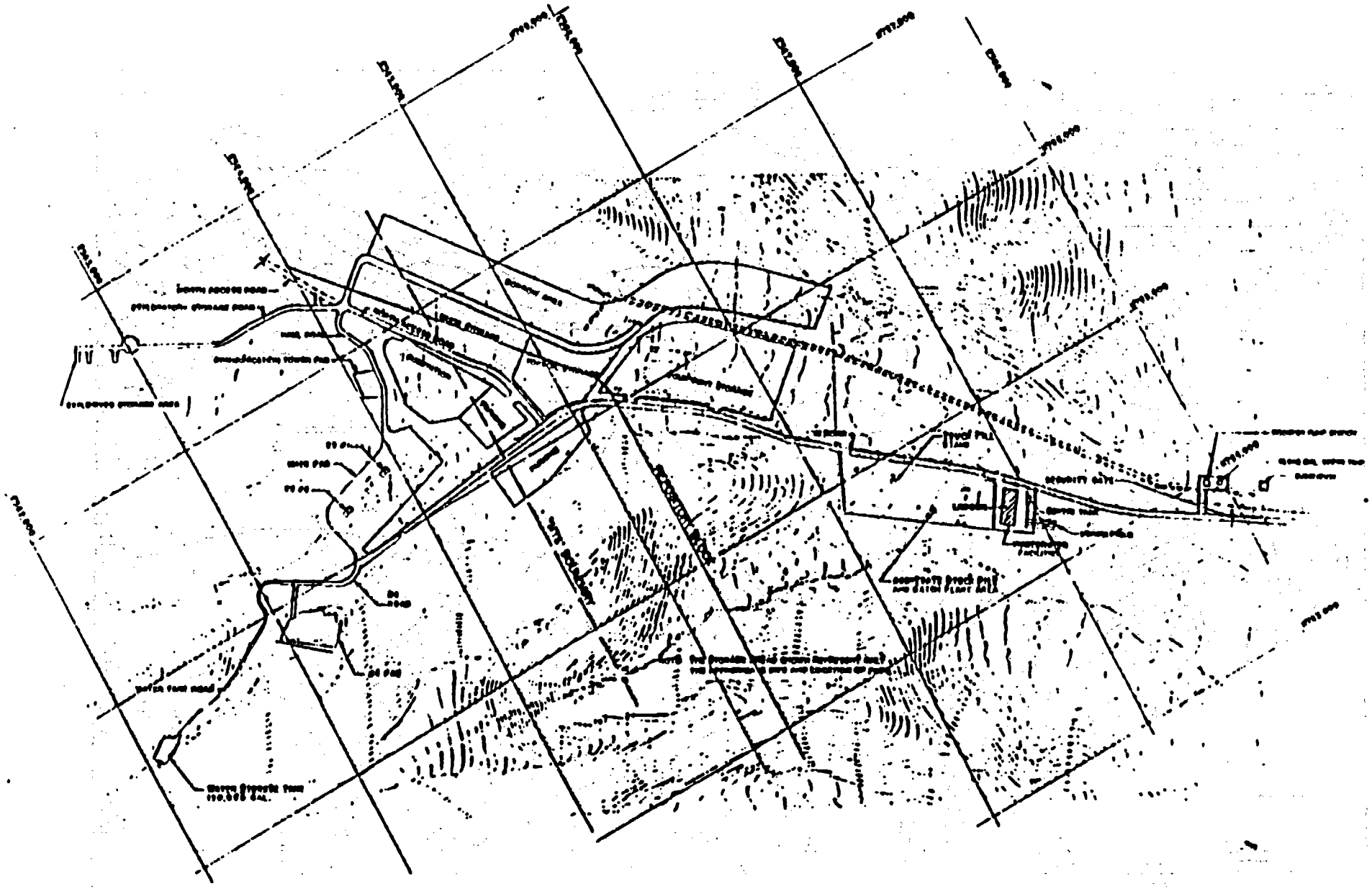
PIPE CONNECTION DETAILS

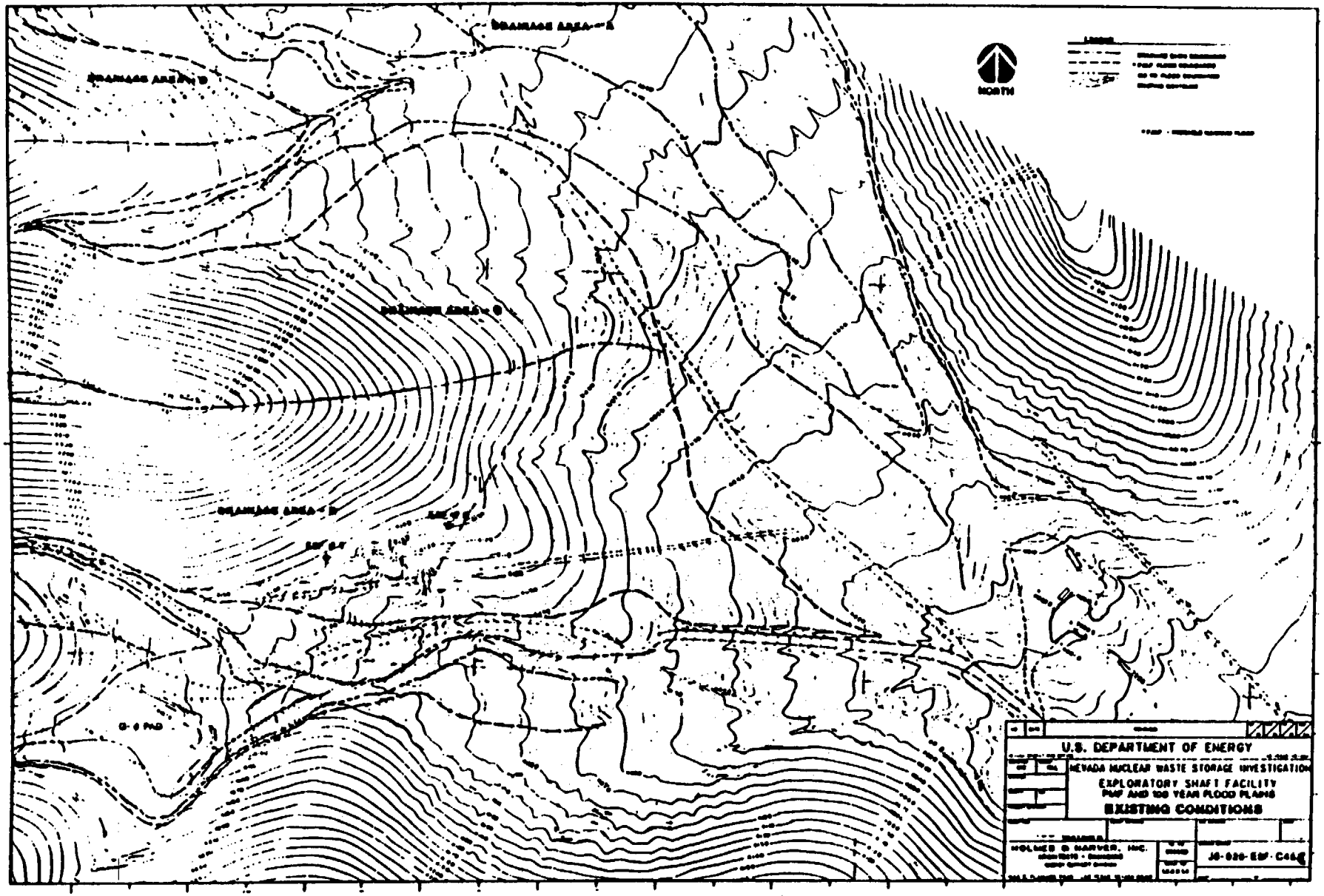
Underground openings shall be developed to meet the needs of in situ site characterization, including basic needs for the initially planned tests. Additionally an allowance for uncertainties for the test area needs at the main test level has been set at 100 percent; i.e., all major systems for ventilation, utilities, emergency egress, rock handling, personnel support, and others shall be analyzed to determine the need for and the impact associated with this uncertainty allowance. If it can be demonstrated that critical parts of the allowance would require excessive costs, schedule, test disruption, or other program impacts to design, procurement, and/or construction later (after the basic test plan needs are completed), consideration shall be given to designing, procuring, and/or constructing these critical items as part of the initial facility. The uncertainty allowance for each of the major ESF systems shall be determined by an analysis of the following systems:

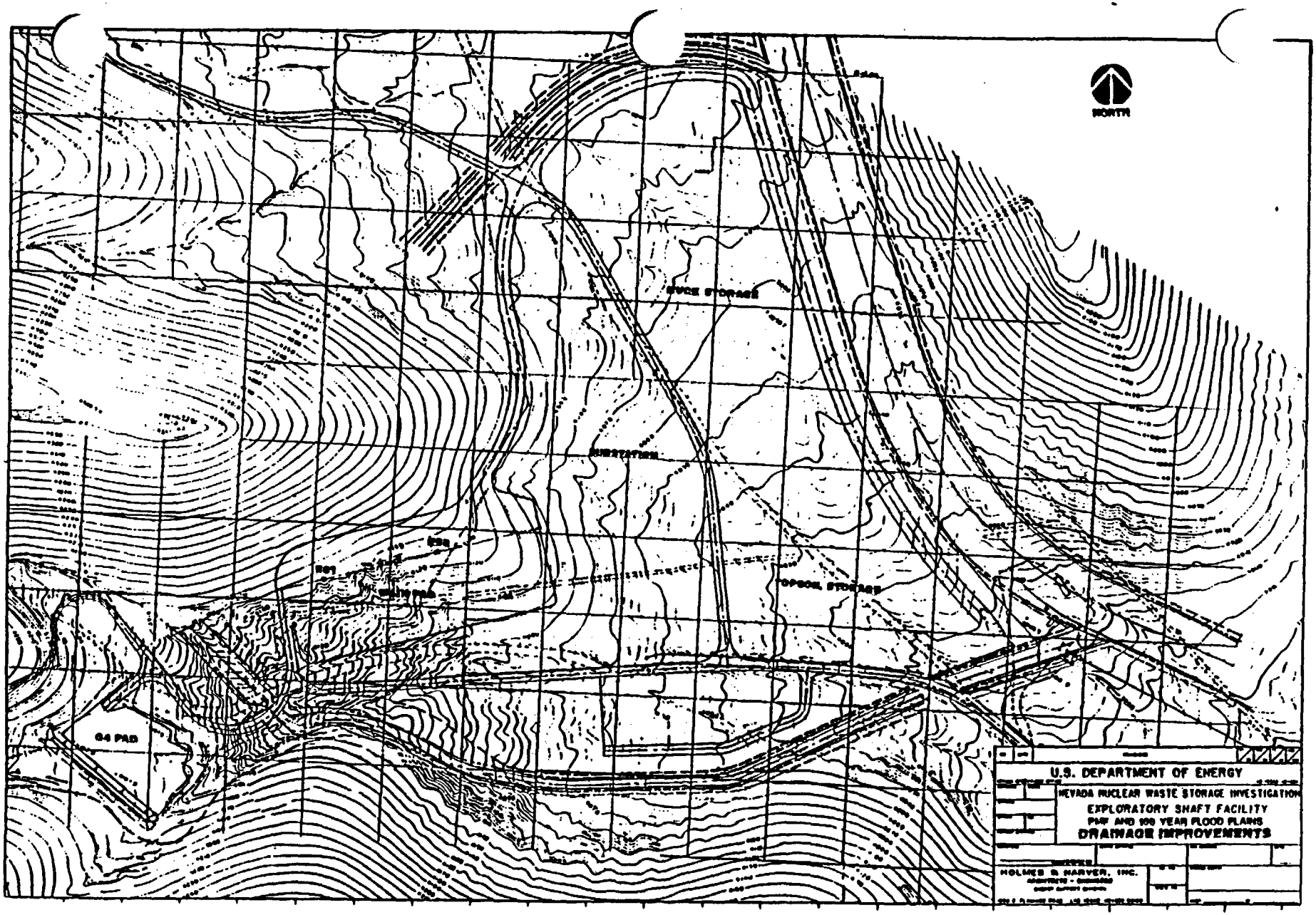
Description	Uncertainty Allowance
Underground test area at the main test level	100 percent
Systems	
- Site	DETERMINED BY ANALYSES IN THE TITLE I DESIGN PHASE
- Utilities	
- Surface facilities	
- First shaft	
- Second shaft	
- Underground excavations	
- Underground utility systems	
- Underground tests	

Specific allowances for each major system shall be identified and incorporated prior to the start of Title II design (detailed design).


MATCH LINE SEE DWG C2P
HAUL TRUCK ACCESS
PASSENGER VEHICLE ACCESS
BASIN CONTROL LINE
DEMONSTRATIONS AREA




NORTH
U.S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
PMF AND 100 YEAR FLOOD PLAINS
EXISTING CONDITIONS
HOLMES & NARVER, INC.
J6-020-EBF-C46


NORTH
SPOIL STORAGE
TOPSOIL STORAGE
64 PAD
U.S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
PMP AND 100 YEAR FLOOD PLAINS
DRAINAGE IMPROVEMENTS
HOLMES & NARVER, INC.

NNWSI/ESF TITLE I 90% REVIEW

AUGUST 8, 1988

LEONARD BRUNO

CIVIL DESIGN

DESIGN BASIS AND CRITERIA

- BASE LINE DOCUMENTS
  1. SUBSYSTEM DESIGN REQUIREMENT DOCUMENT (SDRD).
  2. REFERENCE INFORMATION BASE (RIB).

- HOLMES & NARVER DOCUMENTS
  1. DESIGN BASIS DOCUMENT (DBD).
  2. SCOPE AND PLANNING BASIS DOCUMENT (SPBD).

- HOLMES & NARVER CONCEPTUAL STUDIES
  1. STUDY 1.
  2. STUDY 2.
  3. STUDY 3.
  4. STUDY 4.
  5. STUDY 5.
  6. STUDY 6.

CODES AND STANDARDS

- TITLE 30 CFR, PART 57, MSHA.
- DOE ORDERS.
  1) 6430.1A.
  2)5480.4.
- NEVADA DEPARTMENT OF TRANSPORTATION STANDARDS (NDOT).
- NATIONAL PLUMBING CODE (UPC).
- UNIFORM BUILDING CODE (UBC).
- AMERICAN SOCIETY OF TESTING MATERIALS (ASTM).
- AMERICAN WATER WORKS ASSOCIATION (AWWA).
- BUREAU OF ALCOHOL, TOBACCO AND FIREARMS (BATF).
- NEVADA REVISED STATUTES (NRS).
- TEN STATES STANDARDS.
- AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO).

SIGNIFICANT CHANGES

1. KEY MAP.

2. MUCK STORAGE.

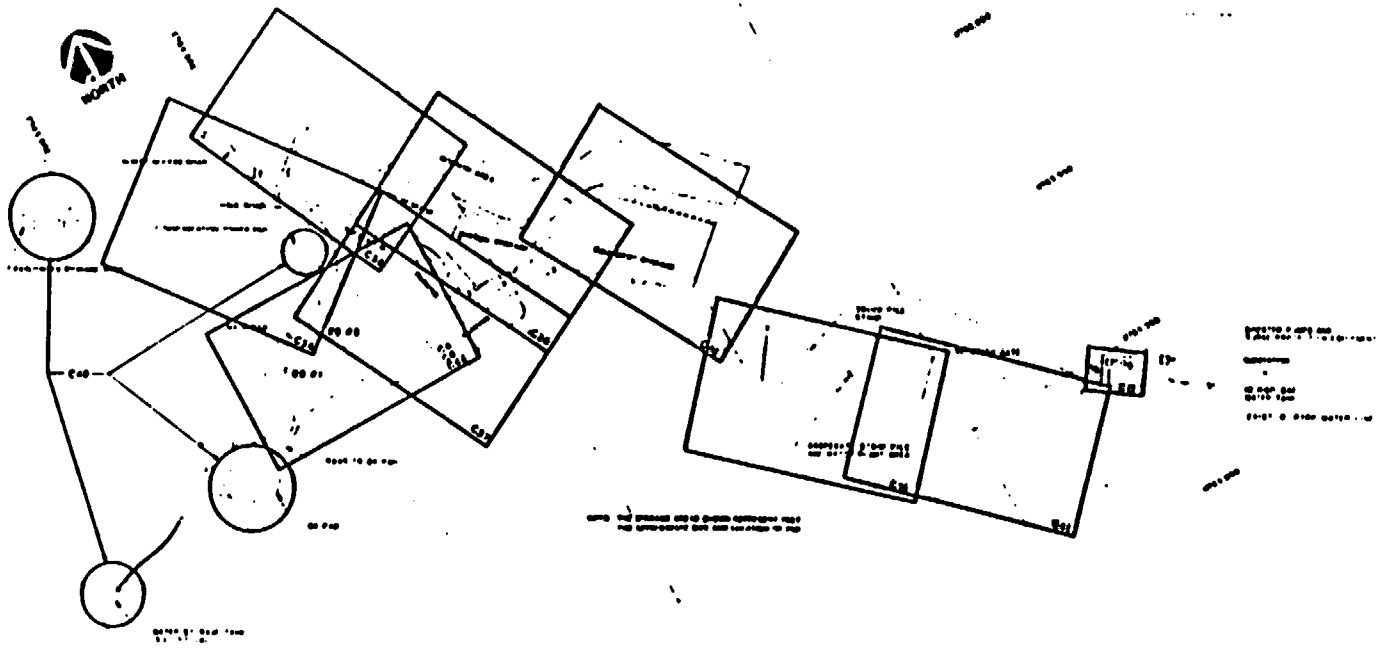
3. HAUL ROAD.

4. BORROW PIT.

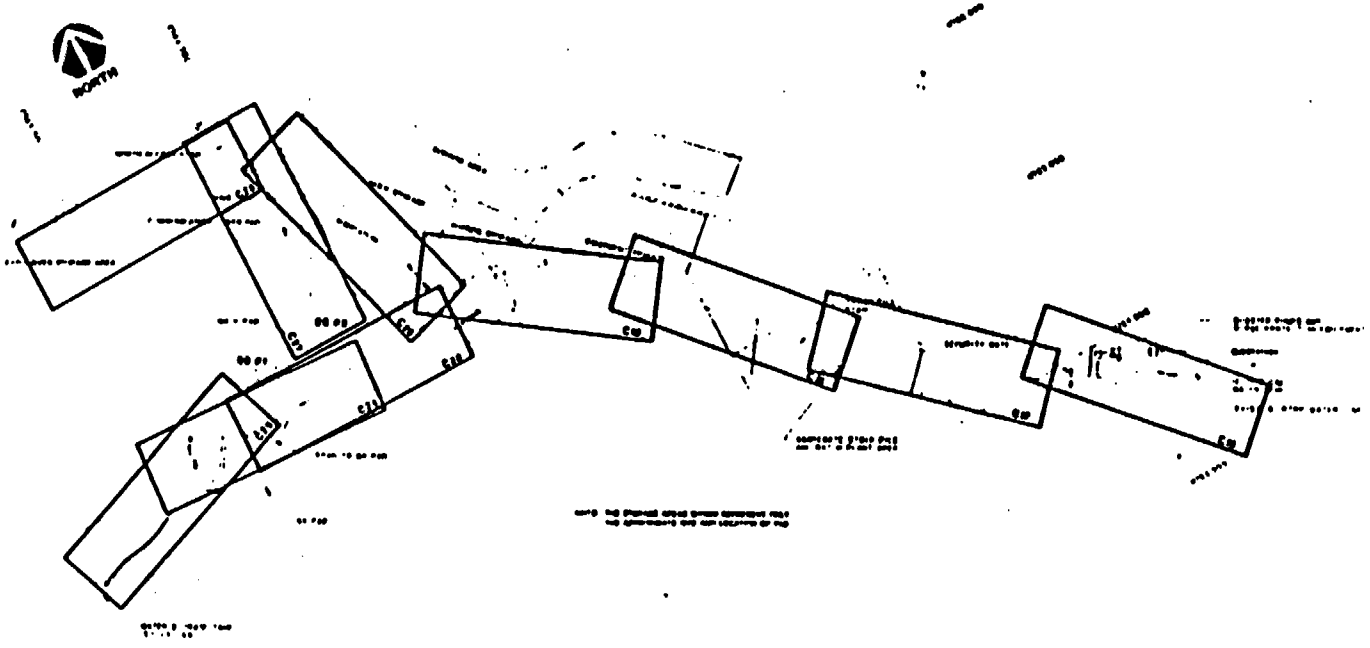
5. G-4 ROAD.

6. MAIN PAD LAYOUT.

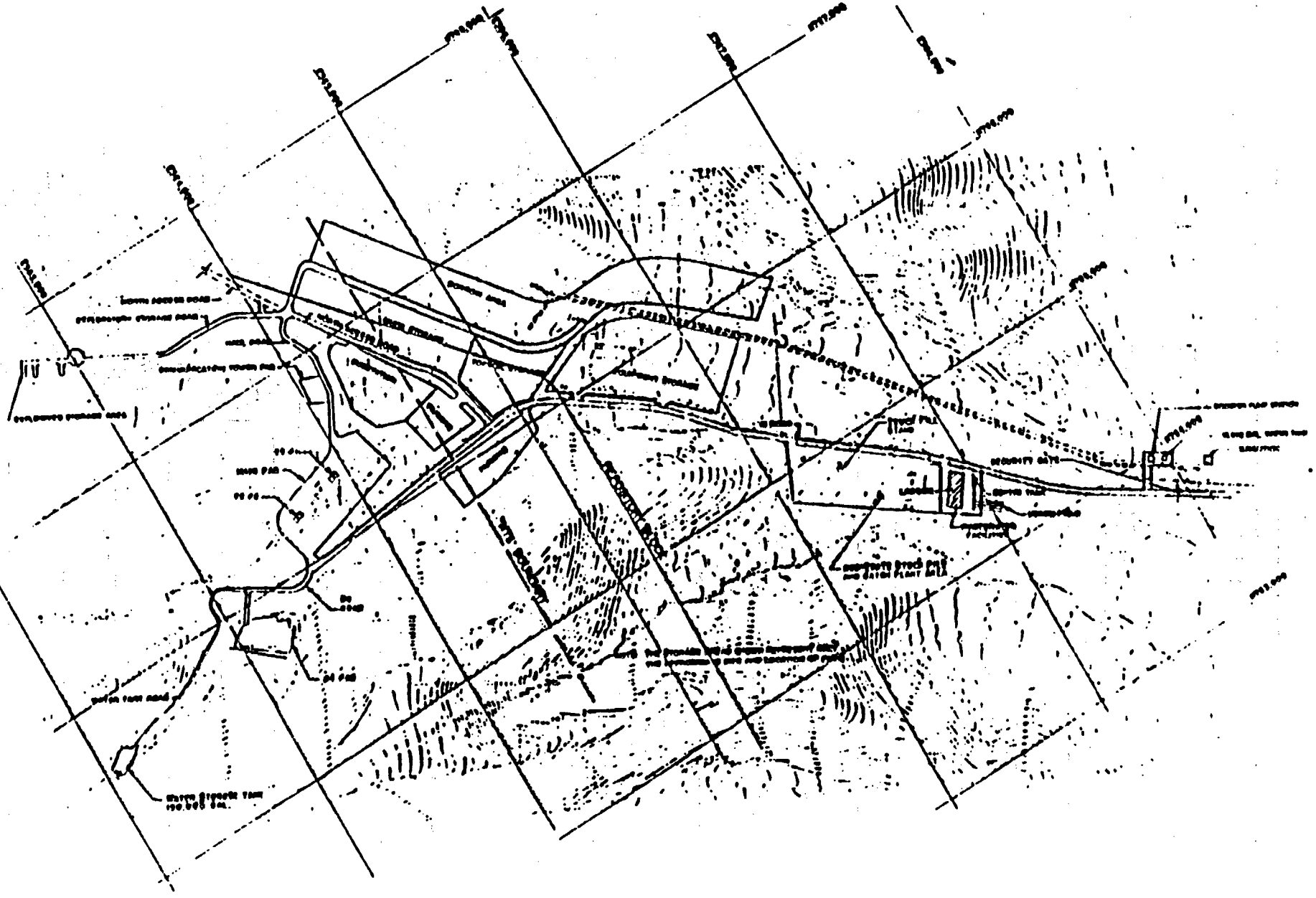
7. PARKING.

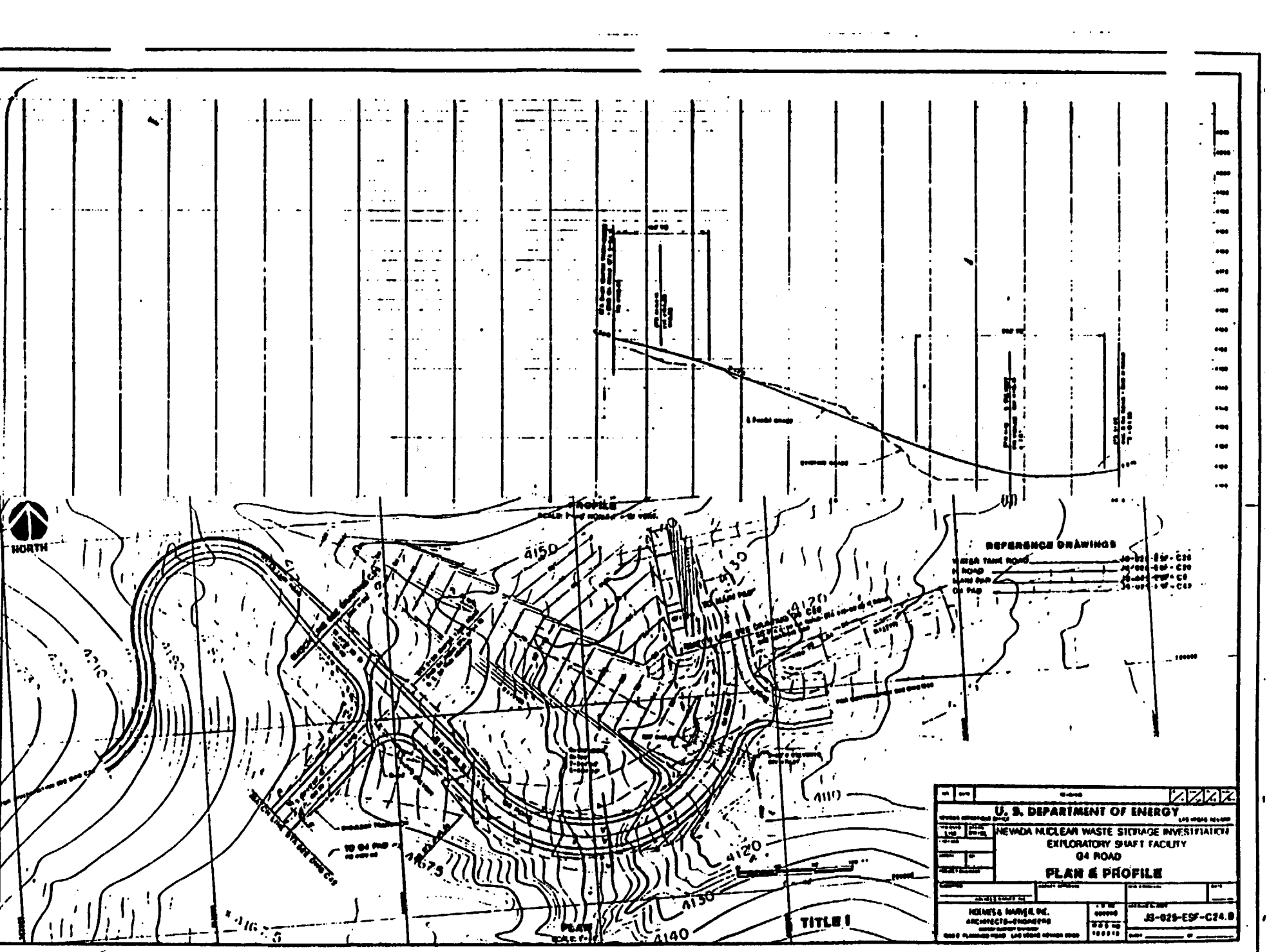


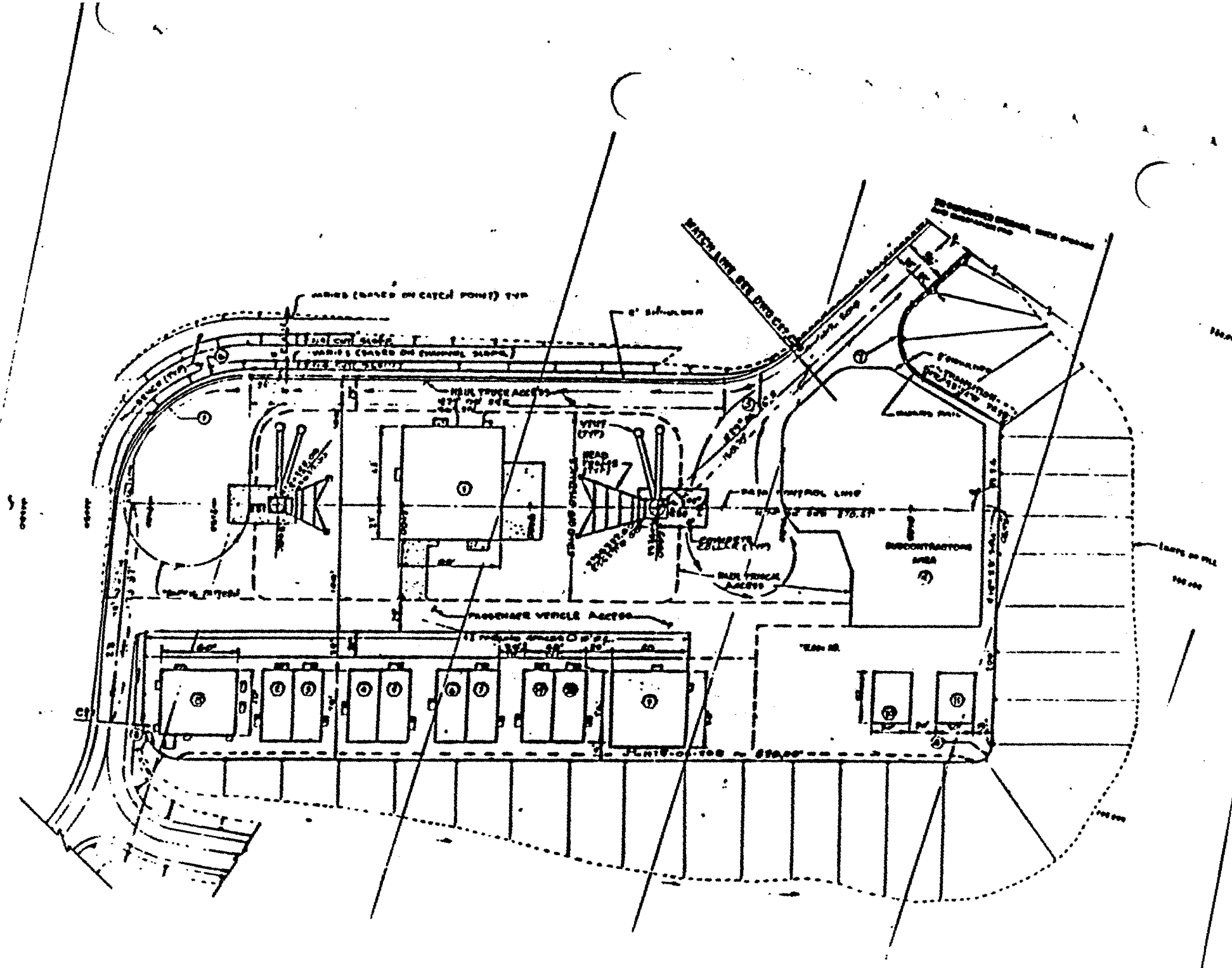
SITE & GRADING PLANS



PLAN & PROFILE SHEETS




NORTH
PROFILE
REFERENCE DRAWINGS
4150
4130
4120
4110
4140
4175
U. S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
G4 ROAD
PLAN & PROFILE
HOWES NAIMI INC.
ARCHITECTS-ENGINEERS
J3-025-ESF-C24.0
TITLE I



NNWSI/ESF TITLE I 90% REVIEW

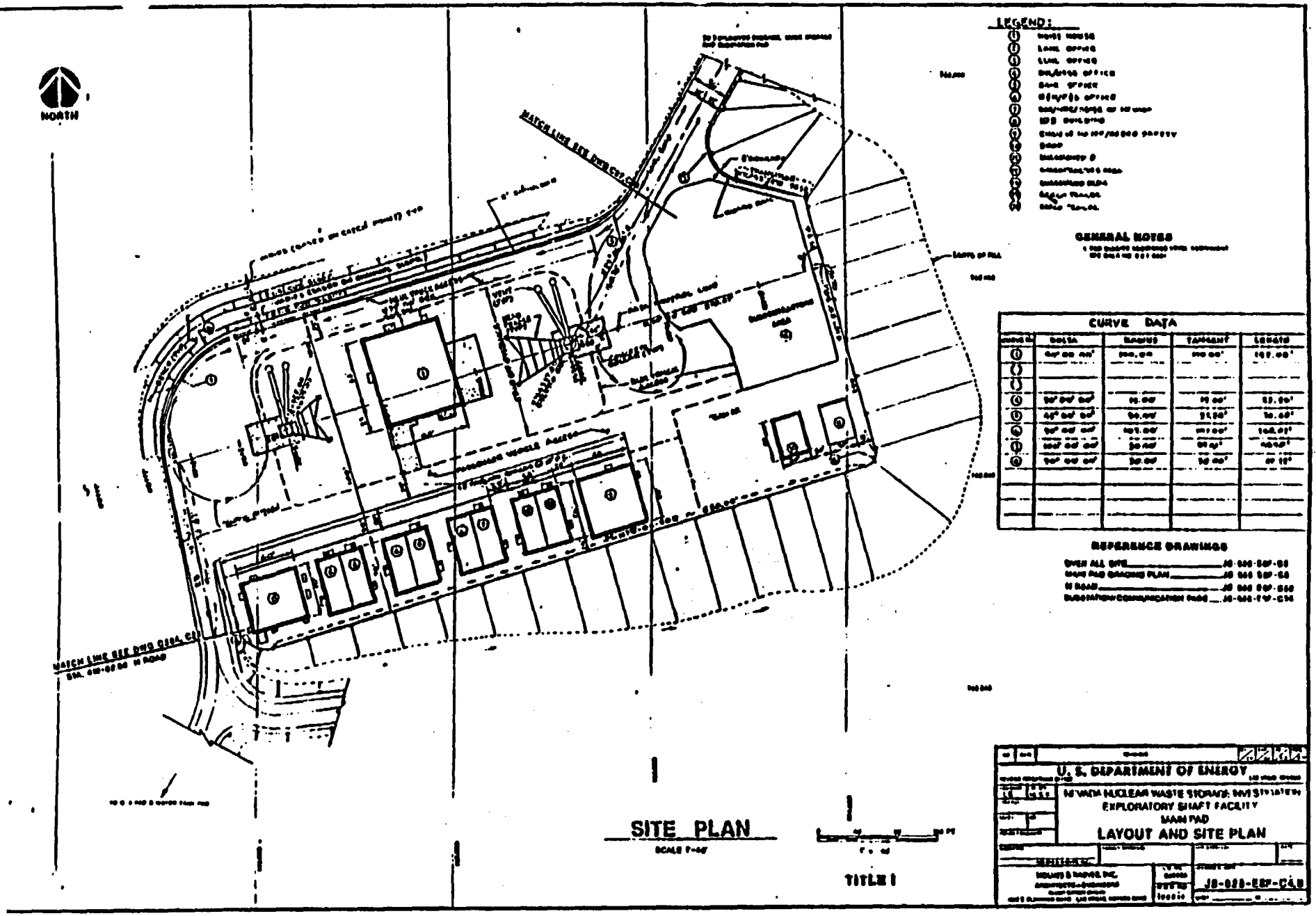
AUGUST 8, 1988

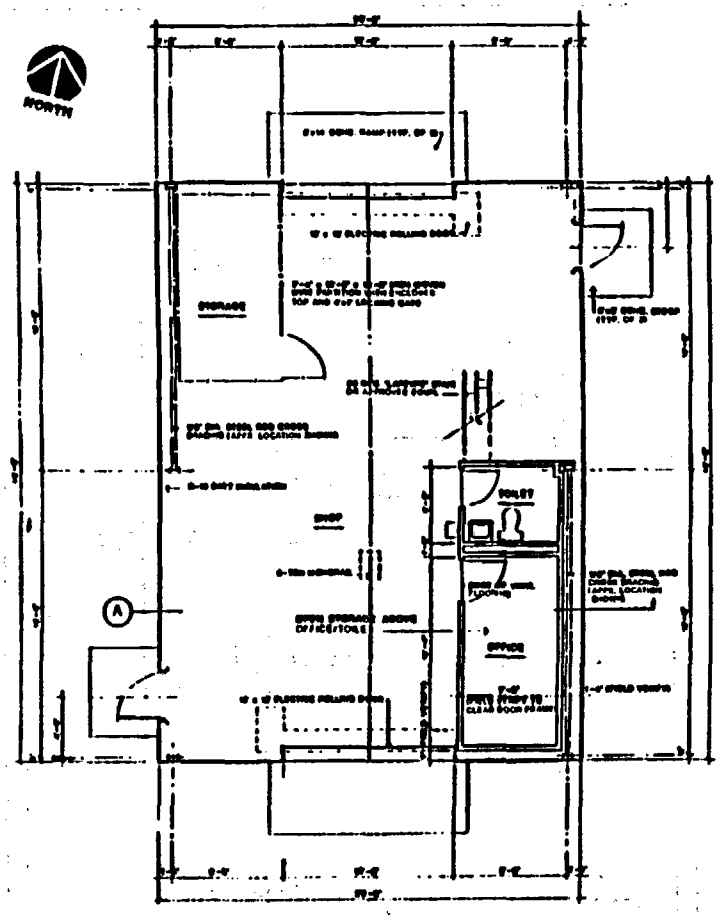
RICHARD GREENWOLD

ARCHITECTURAL DESIGN

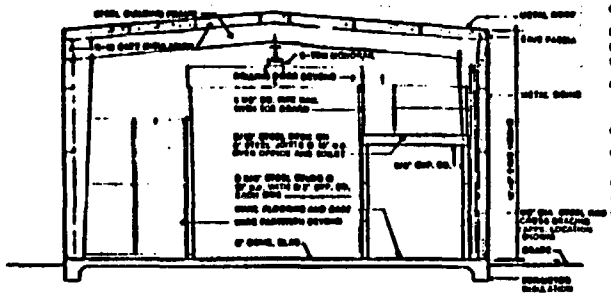
CODES AND STANDARDS

- DOE 6430 "GENERAL DESIGN CRITERIA MANUAL".
- DOE/EV-0043 "STANDARD ON FIRE PROTECTION FOR PORTABLE STRUCTURES".
- DOE/EP-0108 "STANDARD FOR FIRE PROTECTION OF DOE ELECTRONIC COMPUTER/DATA PROCESSING SYSTEMS".
- NFPA 101 "LIFE SAFETY CODE".
- UNIFORM BUILDING CODE - 1985.

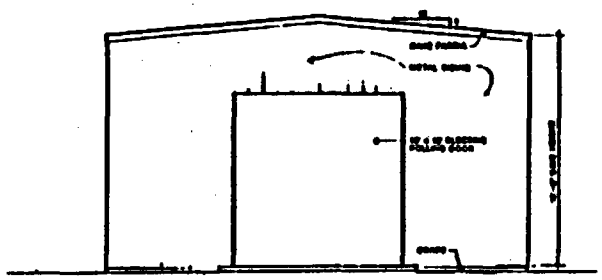

NORTH
LEGEND:
GENERAL NOTES
CURVE DATA
REFERENCE DRAWINGS
SITE PLAN
SCALE 1"=40'
TITLE I
U.S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
EXPLORATORY SHAFT FACILITY
MAIN PAD
LAYOUT AND SITE PLAN
J6-025-EDY-C4.0



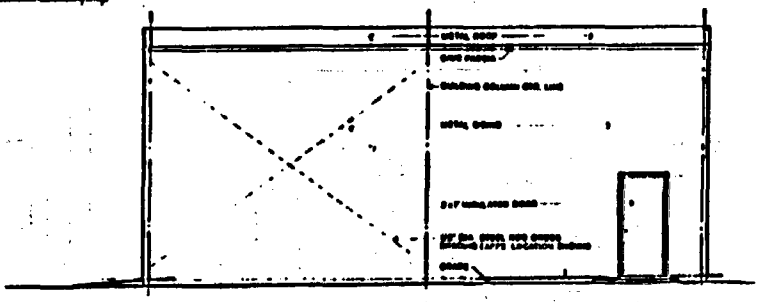
FLOOR PLAN



SECTION A



END ELEVATION (TYP.)



SIDE ELEVATION (TYP.)

GENERAL NOTES

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2. [illegible]
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7. [illegible]
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10. [illegible]
11. [illegible]
12. [illegible]
13. [illegible]

REFERENCE DRAWINGS

CIVIL	JS-025-EPP-C4
STRUCTURAL	NOT USED IN TITLE I
MECHANICAL	JS-025 6000-M4
FIRE PROTECTION	JS-025-6000-FP1
ELECTRICAL	JS-025-6000-E3
COMMUNICATION	TBD

DRAWING SCALE

TITLE I

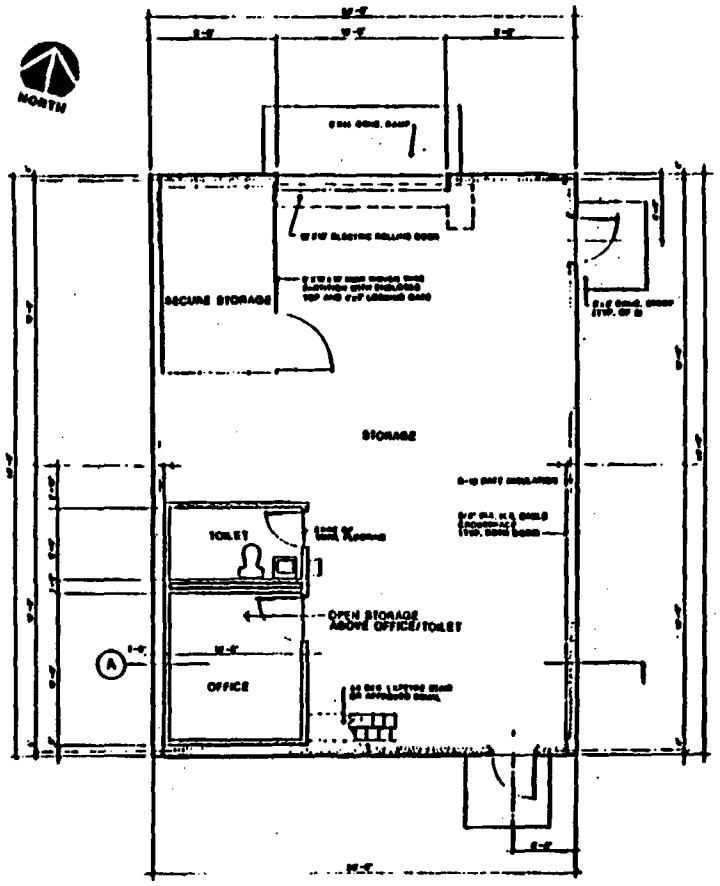
U. S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
SHOP BUILDING 6000

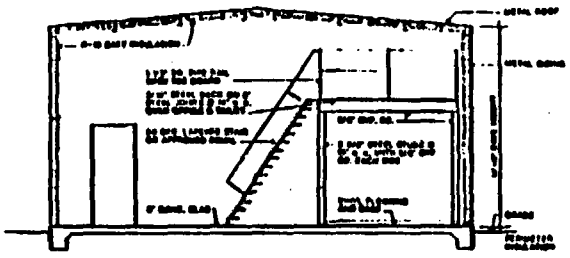
PLAN, SECTION, & ELEVATIONS

HOWARD, BARNES INC.
ARCHITECTS-ENGINEERS

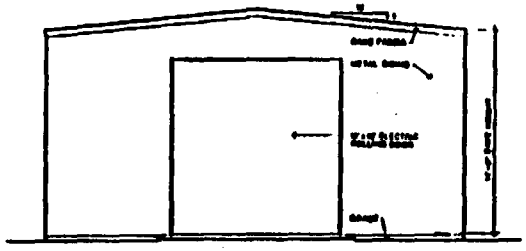
JS-025-6000-A1



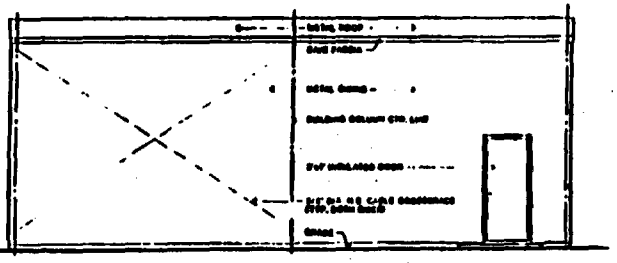
FLOOR PLAN
SCALE: 1/4"=1'-0"



SECTION
SCALE: 1/4"=1'-0"



NORTH ELEVATION
SCALE: 1/4"=1'-0"



EAST ELEVATION
SCALE: 1/4"=1'-0"

SCALE

TITLE I

GENERAL NOTES

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]
8. [illegible]
9. [illegible]
10. [illegible]
11. [illegible]
12. [illegible]
13. [illegible]
14. [illegible]

REFERENCE DRAWINGS

CIVIL	JS-025-ESF-C4
STRUCTURAL	NOT USED IN TITLE I
MECHANICAL	JS-025-6001-M1
FIRE PROTECTION	JS-025-6001-FP1
ELECTRICAL	JS-025-6001-E1
COMMUNICATION	TBD

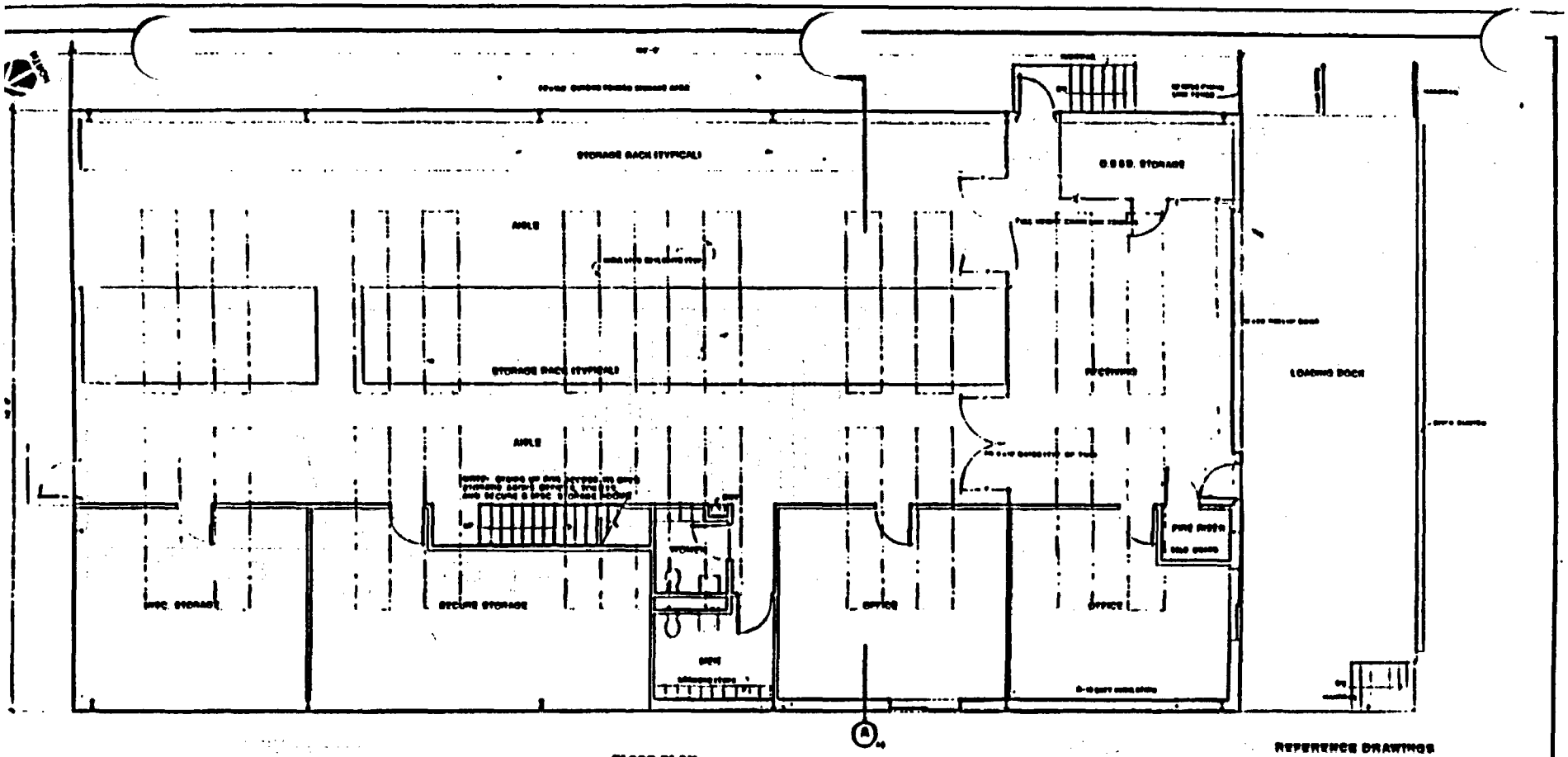
U. S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
WAREHOUSE BUILDING 6001

PLAN, SECTION, & ELEVATIONS

HOLMES & NARVER INC.
ARCHITECTS-ENGINEERS

JS-025-6001-A1



FLOOR PLAN
SCALE 1/4"=1'-0"

GENERAL NOTES

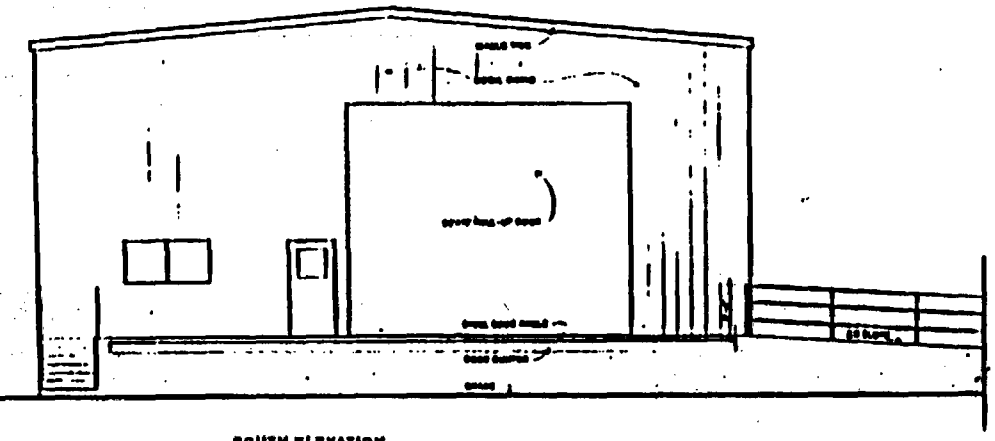
- [illegible]
- [illegible]

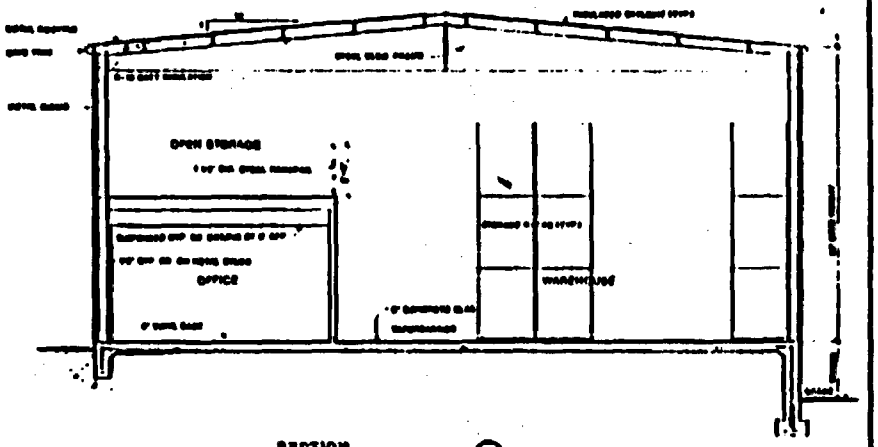
REFERENCE DRAWINGS

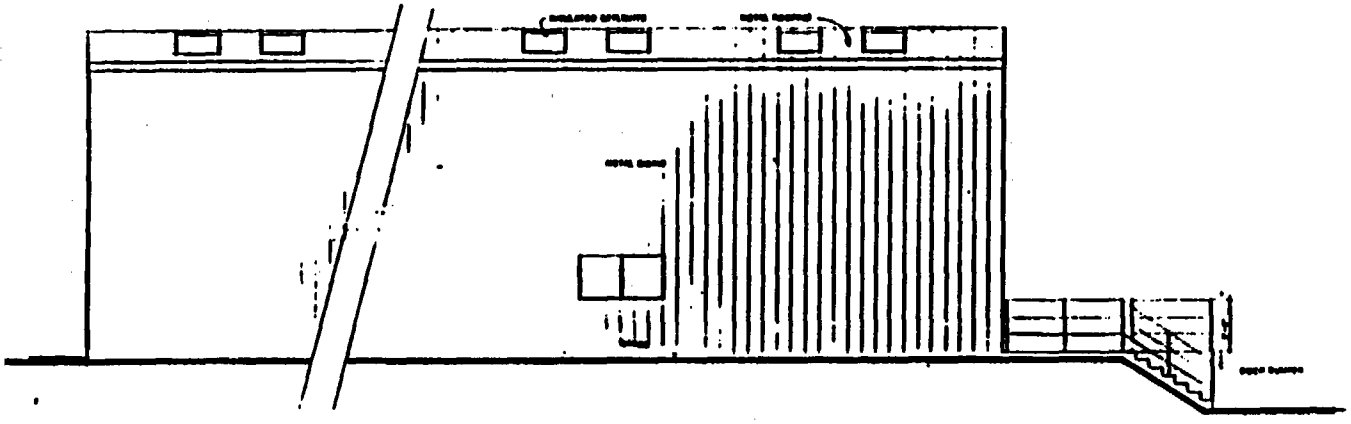
CIVIL	NOT USED IN TITLE I
STRUCTURAL	NOT USED IN TITLE I
ARCHITECTURAL	
SECTION & ELEVATIONS	JS-025-0001 A2
MECHANICAL	NOT USED IN TITLE I
FIRE PROTECTION	NOT USED IN TITLE I
ELECTRICAL	NOT USED IN TITLE I
COMMUNICATION	NOT USED IN TITLE I

TITLE I

U. S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
WAREHOUSE BUILDING 6001
PLAN & GENERAL NOTES
JS-025-0001-A2.A







FOR REFERENCE DRAWINGS AND GENERAL NOTES
SEE DRAWING A2

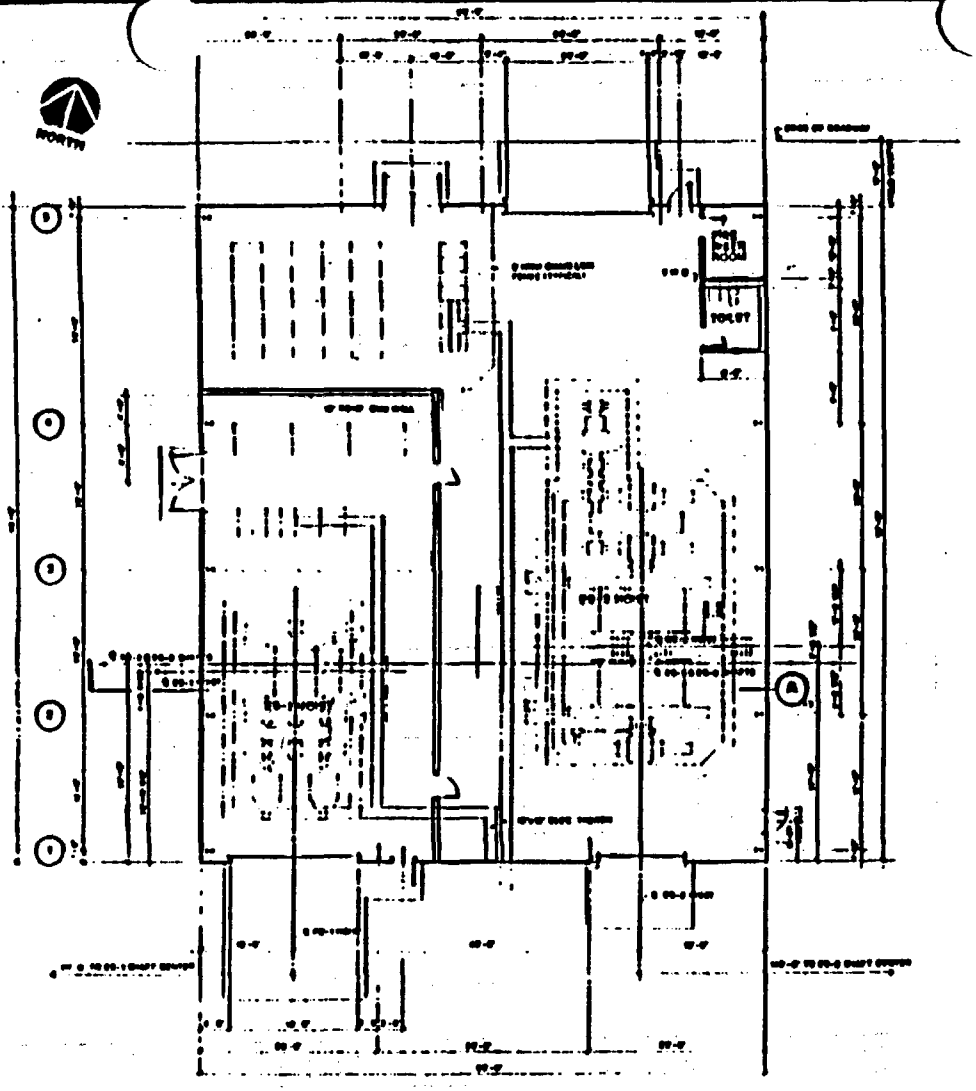
TITLE I

U. S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
WAREHOUSE BUILDING 6001

SECTION & ELEVATIONS

JS-025-6001-A3.A



FLOOR PLAN
SCALE: 1/8" = 1'-0"

GENERAL NOTES

1. [illegible]
2. [illegible]

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

3. [illegible]
4. [illegible]
5. [illegible]
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7. [illegible]
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9. [illegible]
10. [illegible]
11. [illegible]

REFERENCE DRAWINGS

CIVIL	[illegible]
STRUCTURAL	[illegible]
ARCHITECTURAL	
ELEVATIONS & SECTION	[illegible]
MECHANICAL	[illegible]
FIRE PROTECTION	[illegible]
ELECTRICAL	[illegible]
COMMUNICATIONS	[illegible]

DRAWING SCALE
1/8" = 1'-0"

TITLE I

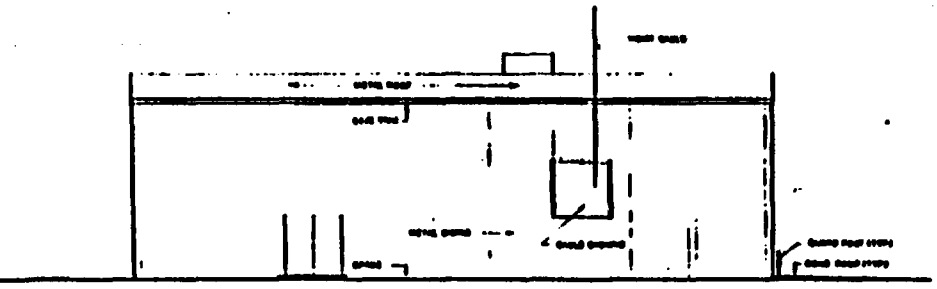
U. S. DEPARTMENT OF ENERGY

YUCCA MOUNTAIN NUCLEAR WASTE STORAGE INVESTIGATIONS
EXPLORATORY SHAFT FACILITY
ES-1 & ES-2 HOIST HOUSE PLOG 0007

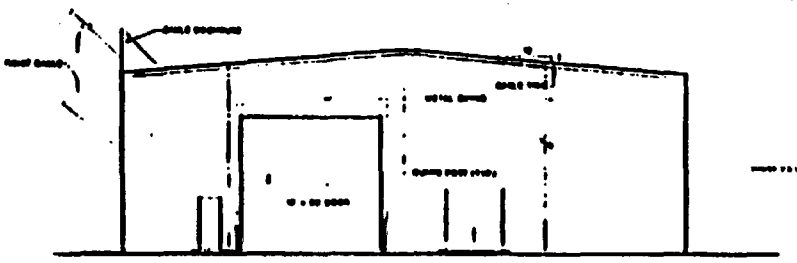
FLOOR PLAN & GEN. NOTES

HOWARD HANNA PYE
ARCHITECTS-ENGINEERS

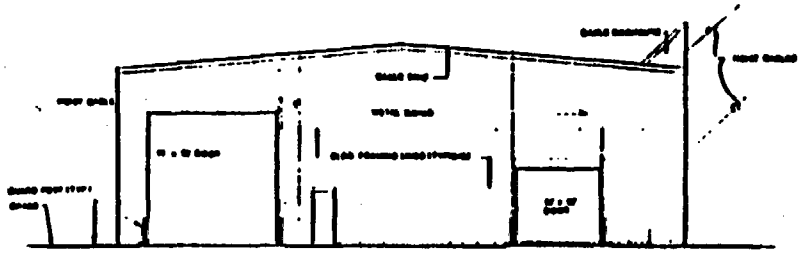
JS-025-0002-A1 R



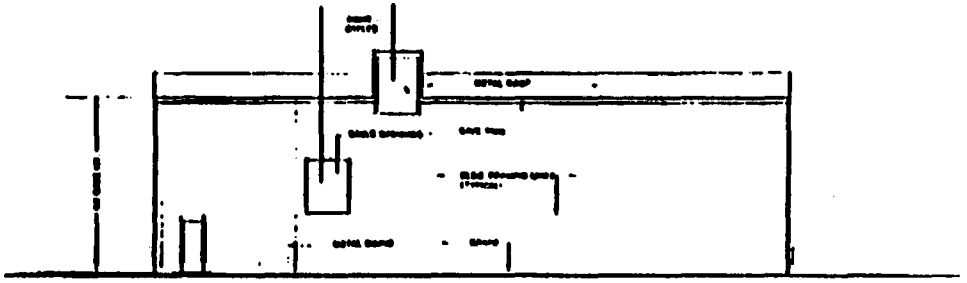
WEST ELEVATION
SCALE 3/8" = 1'-0"



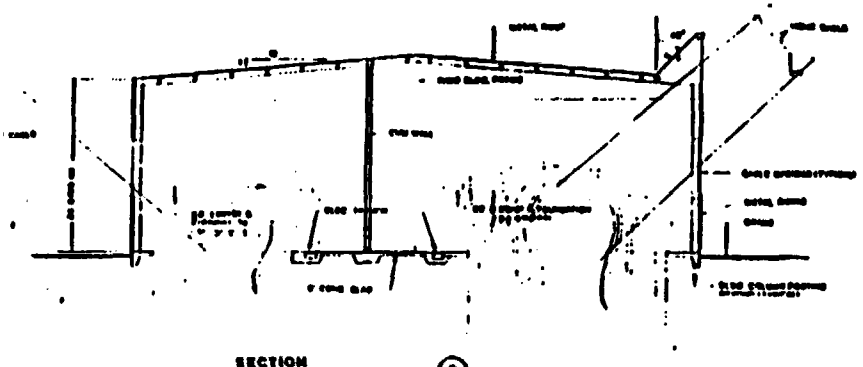
NORTH ELEVATION
SCALE 3/8" = 1'-0"



SOUTH ELEVATION
SCALE 3/8" = 1'-0"



EAST ELEVATION
SCALE 3/8" = 1'-0"



SECTION A
SCALE 3/8" = 1'-0"

FOR REFFRENCE DRAWINGS AND GENERAL NOTES SEE DWG A1

DRAWING SCALE
0 4 8 16 32"
1/4"=1'-0"

TITLE I

U.S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
EXPLORATORY SHAFT FACILITY
ES 1 & ES-2 HOIST HOUSE BLDG 6002
ELEVATIONS & SECTION
HERMES NAMER PE.
ARCHITECTS-ENGINEERS
JS-025-6002-A2.A

GENERAL NOTES

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3. [illegible]
4. [illegible]

[illegible]	[illegible]
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[illegible]	[illegible]
[illegible]	[illegible]

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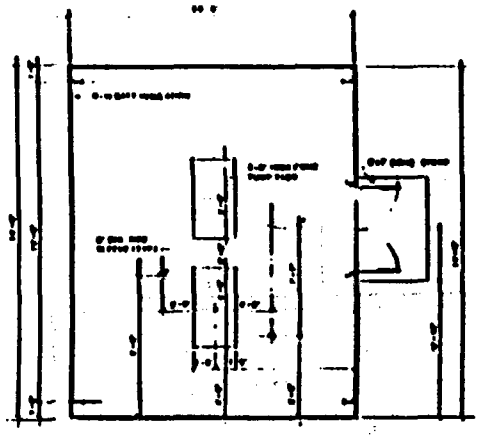
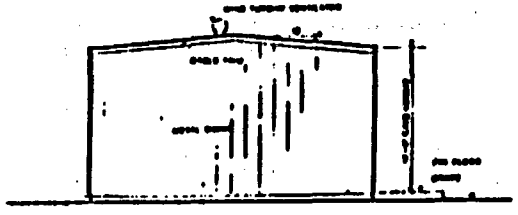
6. [illegible]
7. [illegible]
8. [illegible]



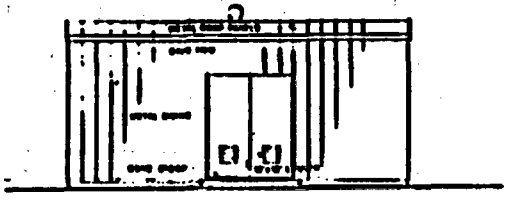
FLOOR PLAN
SCALE 1/4"=1'-0"

REFERENCE DRAWINGS

CIVIL	JS-025-ESF-CN
STRUCTURAL	NOT USED ON THIS S
MECHANICAL	NOT USED ON THIS S
FIRE PROTECTION	NOT USED ON THIS S
ELECTRICAL	JS 025 6004-E1
COMMUNICATIONS	JS 025 6[illegible]



SIDE ELEVATION
SCALE 1/4"=1'-0"

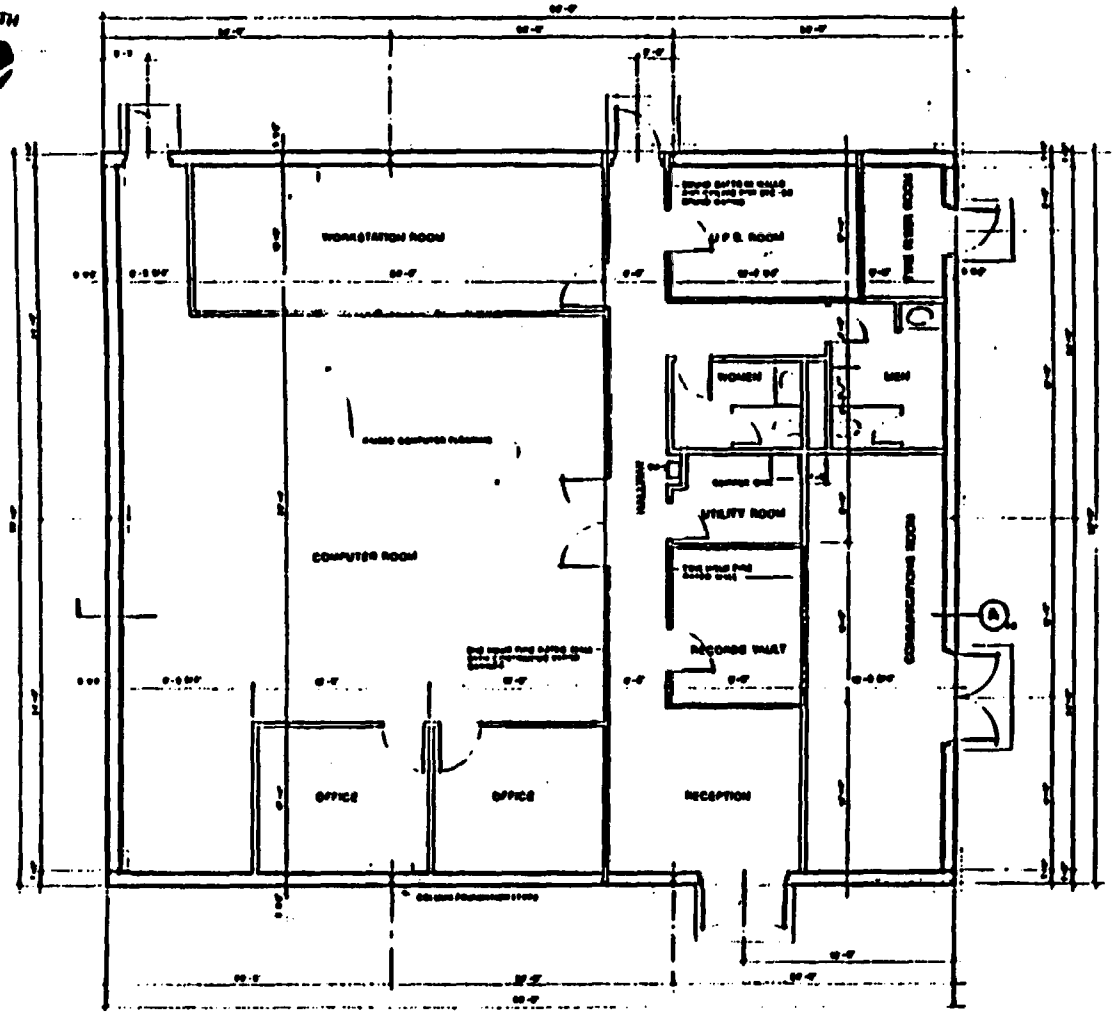


FRONT ELEVATION
SCALE 1/4"=1'-0"

GRAPHIC SCALE
0 1 2 4
1/4"=1'-0"

TITLE I

U. S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
EXPLORATORY SHAFT FACILITY
BOOSTER PUMP STATION, BLDG. 6004
PLAN, ELEV., & GEN. NOTES
JS 025 6004-A1B



FLOOR PLAN

GENERAL NOTES

REFERENCE DRAWINGS

CIVIL	
STRUCTURAL	
ARCHITECTURAL	
MECHANICAL	
FIRE PROTECTION	
ELECTRICAL	

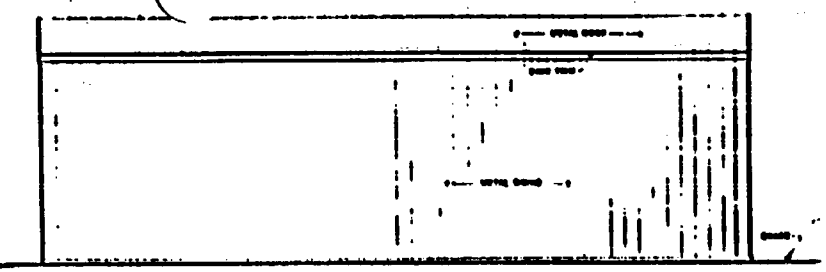
U.S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
EXPLORATORY SHAFT FACILITY
SURFACE DATA BUILDING 6006

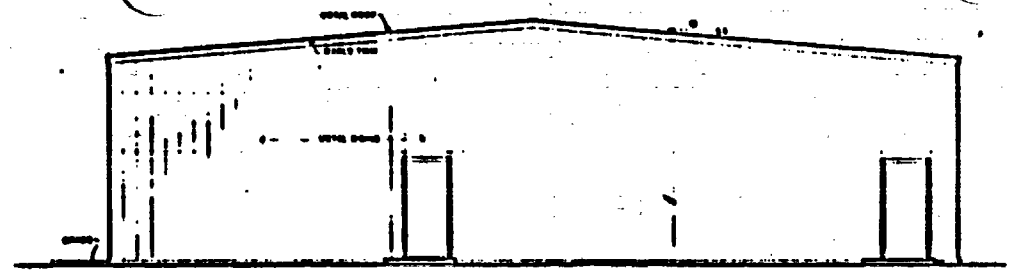
FLOOR PLAN & GENERAL NOTES

NEVADA 6006 A1B

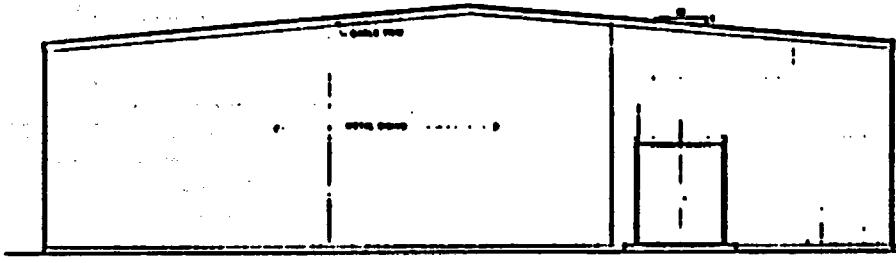
TITLE I



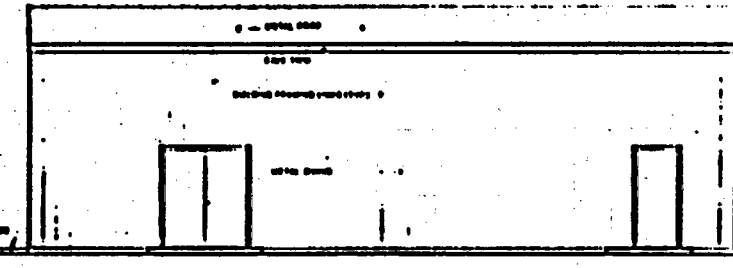
WEST ELEVATION
SCALE 1/4" = 1'-0"



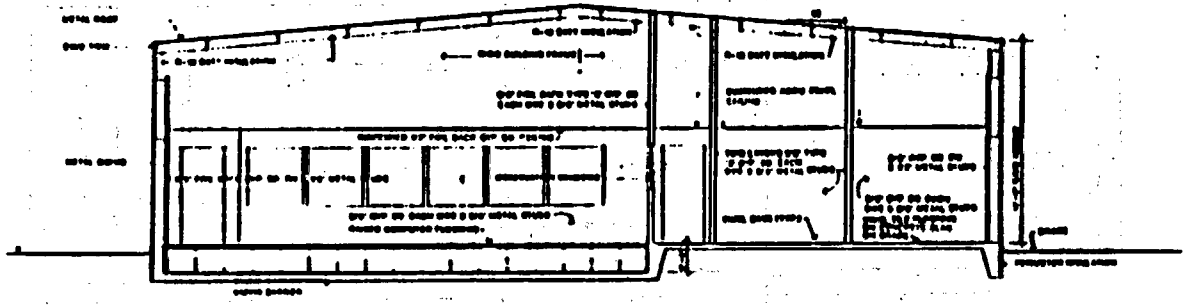
SOUTH ELEVATION
SCALE 1/4" = 1'-0"



NORTH ELEVATION
SCALE 1/4" = 1'-0"



EAST ELEVATION
SCALE 1/4" = 1'-0"



SECTION (A)
SCALE 1/4" = 1'-0"

FOR REFERENCE DRAWINGS AND GENERAL NOTES SEE DRAWING A1

TITLE I

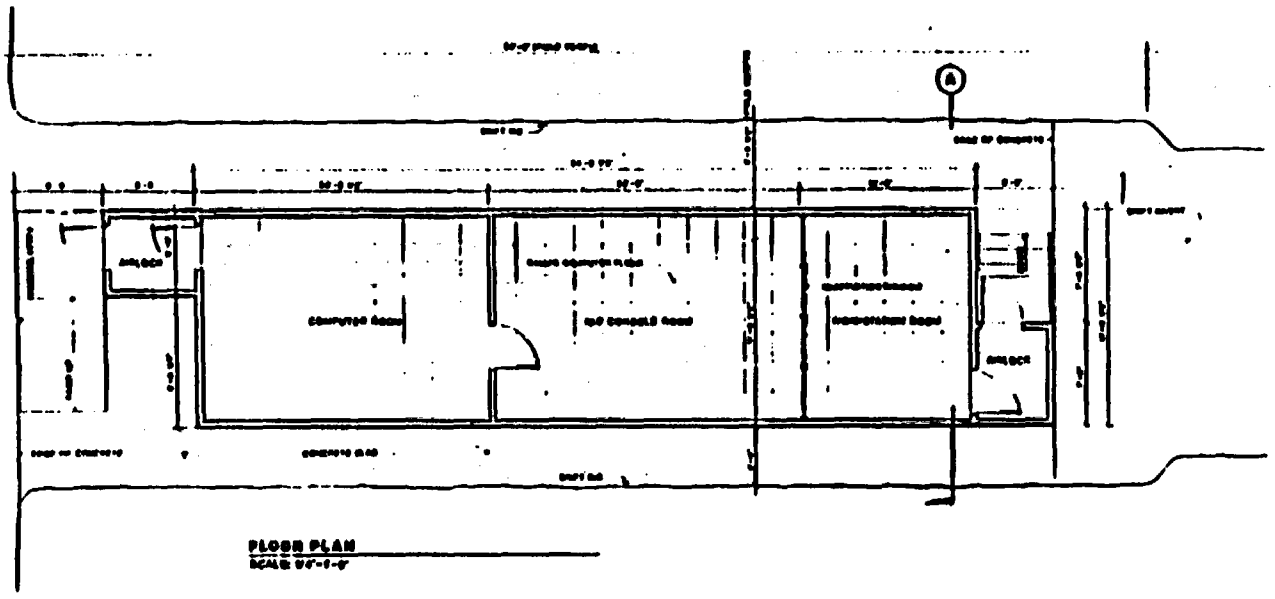
U.S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
EXPLORATORY SHAFT FACILITY
SURFACE DATA (MAIN) 8406

SECTION & ELEVATIONS

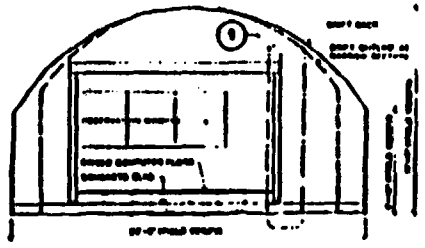
NEVINS & MARKS PC.
ARCHITECTS-ENGINEERS

DRAWING
JS 679 9000 A2 A



FLOOR PLAN
SCALE: 1/4"=1'-0"

LOCATION PLAN AT -1020 FT. LEVEL
NOT TO SCALE



SECTION A
SCALE: 1/4"=1'-0"

GENERAL NOTES

- [illegible]
- [illegible]
  - [illegible]
  - [illegible]
  - [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

REFERENCE DRAWINGS

CIVIL	NOT USED IN TITLE I
STRUCTURAL	NOT USED IN TITLE I
MECHANICAL	[illegible]
FIRE PROTECTION	[illegible]
ELECTRICAL	[illegible]
COMMUNICATION	[illegible]

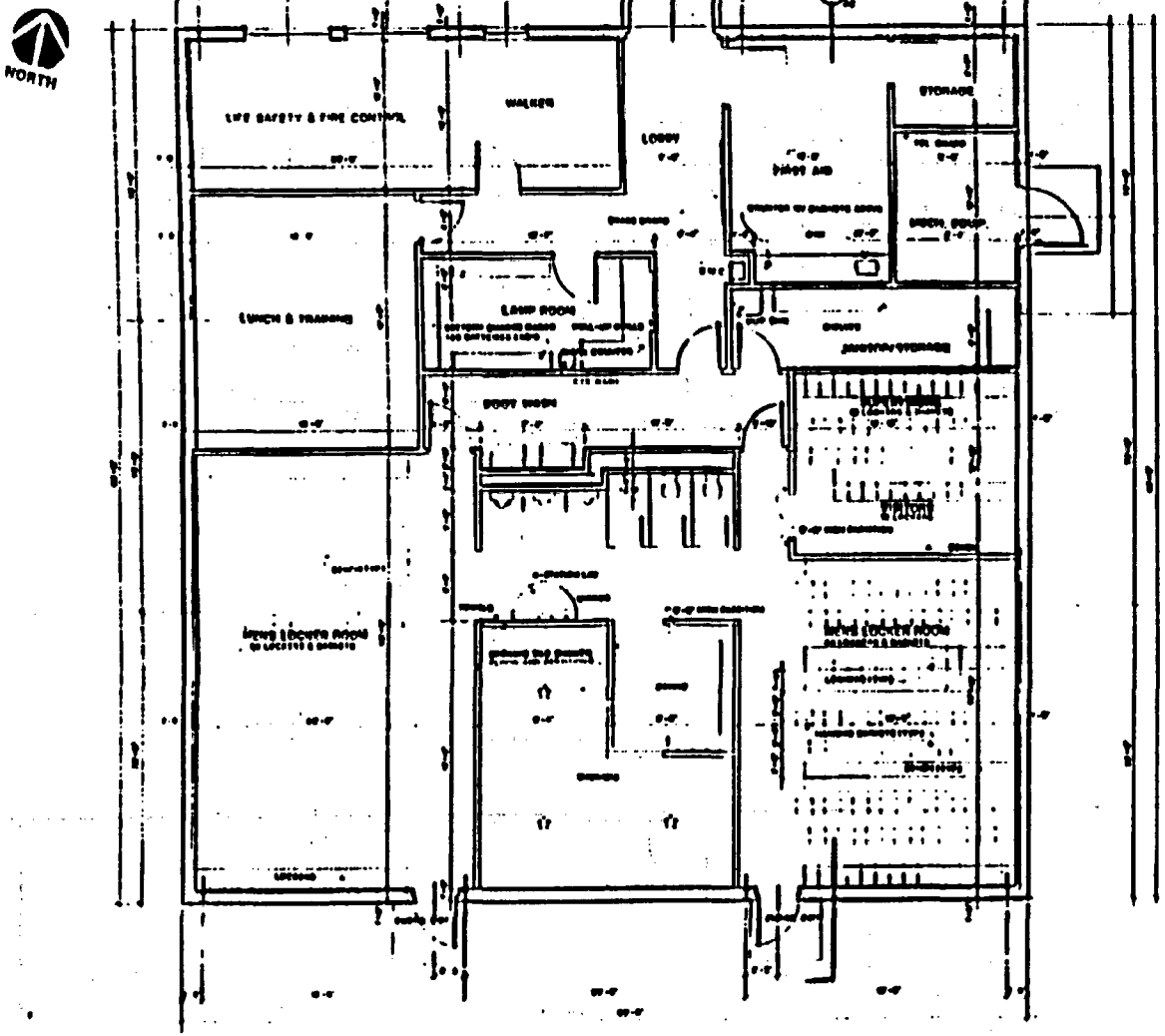
[illegible] SECTION
[illegible]

TITLE I

U. S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
SUBSURFACE DATA BUILDING 6087
PLANS, SECTIONS, & GEN. NOTES

HARRIS & NAMER PC
[illegible]

JF 029 6087 A1.0



FLOOR PLAN

SCALE 1"=1'-0"

GENERAL NOTES

- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]
- [illegible]

REFERENCE DRAWINGS

CIVIL	JS-025-E1F-C4
STRUCTURAL	NOT USED IN TITLE I
ARCHITECTURAL	
SECTION & ELEVATIONS	JS 025 0008 A2
MECHANICAL	JS 025 0008 M1
FIRE PROTECTION	JS 025 0008 FP1
ELECTRICAL	JS 025 0008 E1
COMMUNICATION	JS 025 0008 M1

TITLE I

U. S. DEPARTMENT OF ENERGY

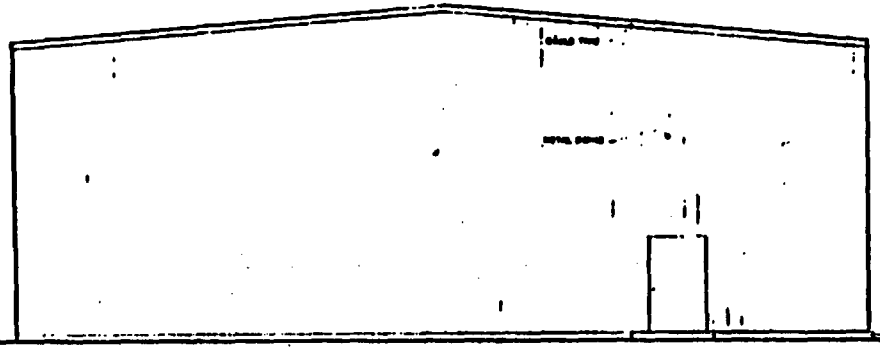
NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS

EXPLORATORY SHAFT FACILITY

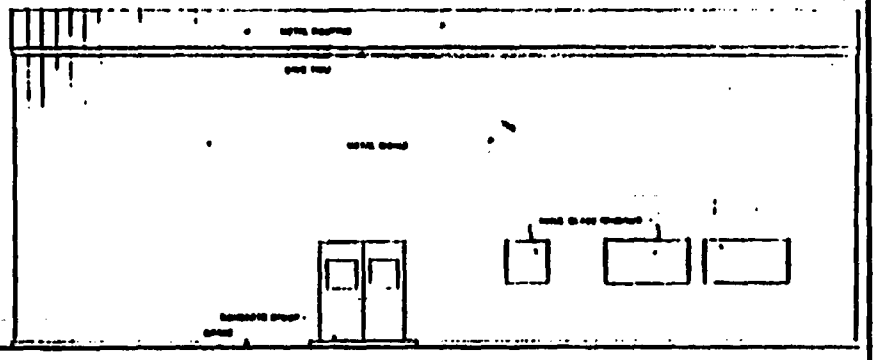
CHANGE HOUSE BLDG. 6008

FLOOR PLAN & GENERAL NOTES

JS-025-6008-A1A

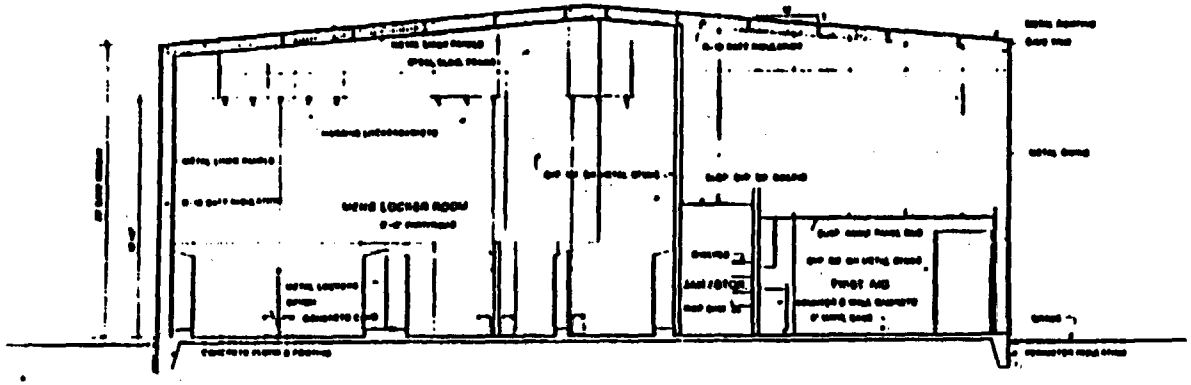


EAST ELEVATION (WEST ELEV. SIMILAR)



NORTH ELEVATION

FOR REFERENCE DRAWINGS AND GENERAL NOTES SEE DWG A1



SECTION A

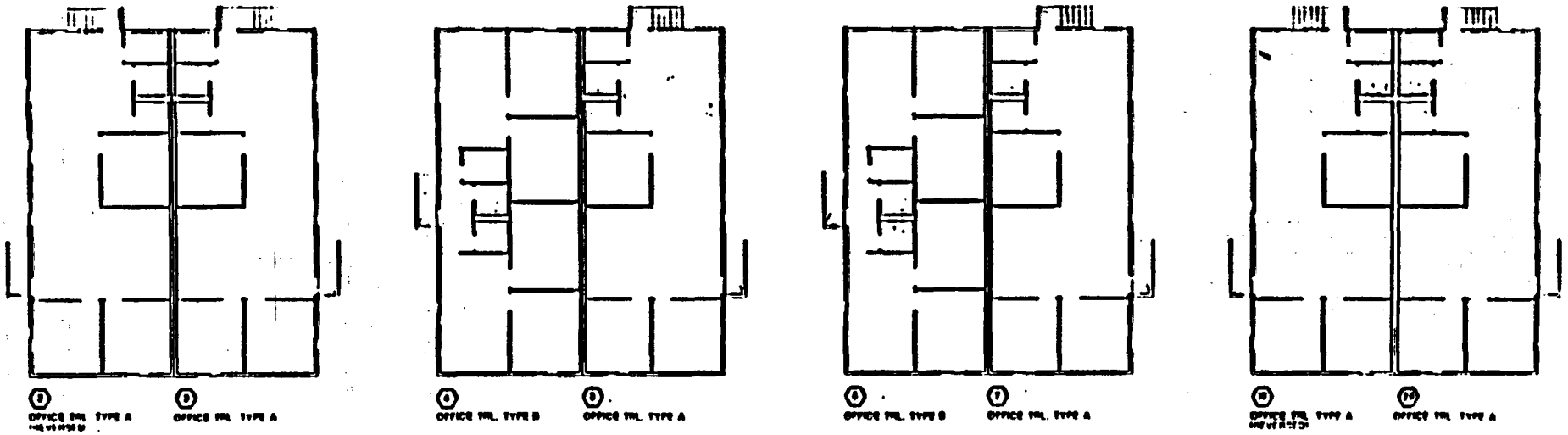
TITLE I

U. S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
EXPLORATORY SHAFT FACILITY
CHANGE HOUSE BLDG. 6008

SECTION & ELEVATIONS

JS-025-6008-A2 A



TRAILER COMPLEX PLAN
SCALE 1/8"=1'-0"

GENERAL NOTES

-
-
-
-
-
-
-
-
-
-
-
-
-
-

FOR REFERENCE DRAWINGS, SEE DRAWING 12

DRAWING SCALE

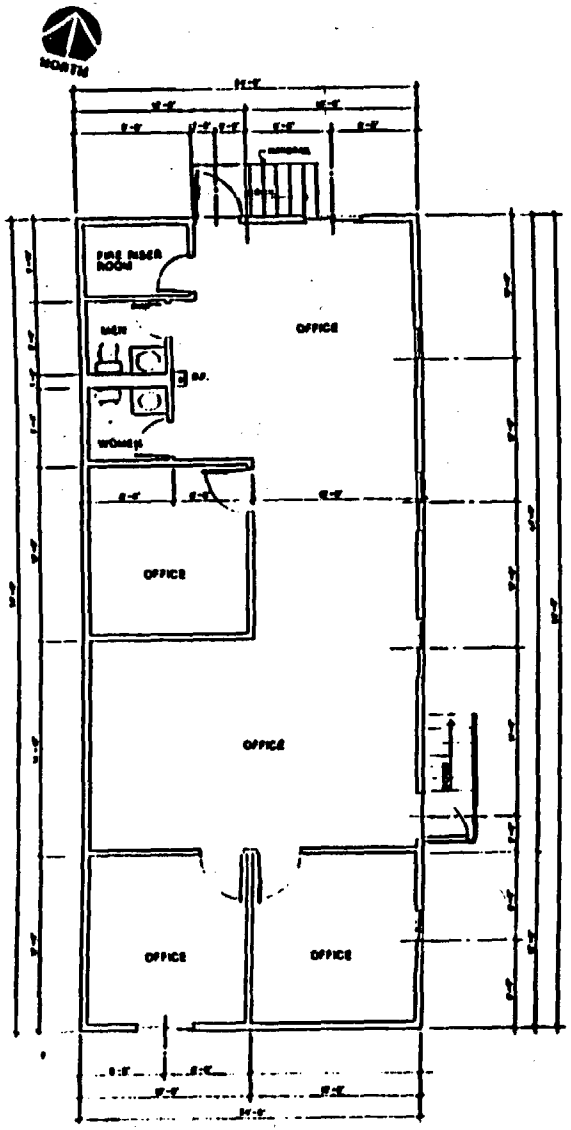
TITLE I

U. S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
TRAILER COMPLEX

PLAN AND GENERAL NOTES

JS-025-ESF-A1A



FLOOR PLAN
SCALE: 1/4" = 1'-0"

GRAPHIC SCALE
1/4"=1'-0"

TITLE I

REFERENCE DRAWINGS

CIVIL	JS-025-050-C-1
STRUCTURAL	NOT USED IN TITLE I
ARCHITECTURAL	JS-025-050-A-1
MECHANICAL	JS-025-050-1-M1
FIRE PROTECTION	JS-025-050-1-FP1
ELECTRICAL	JS-025-050-1-E1
COMMUNICATION	TBD

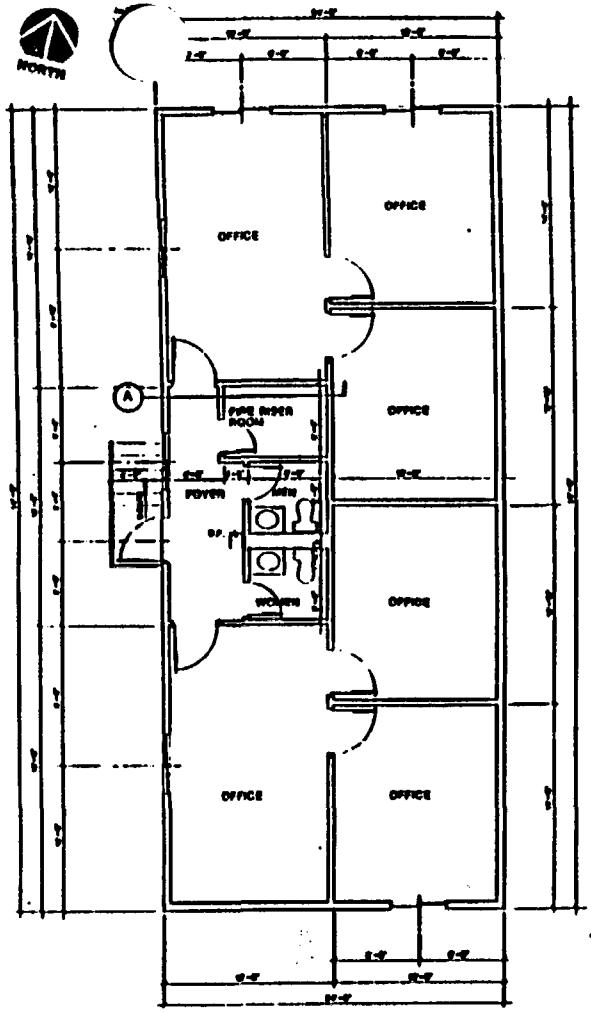
U. S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
EXPLORATORY SHAFT FACILITY
OFFICE TRAILER - TYPE A

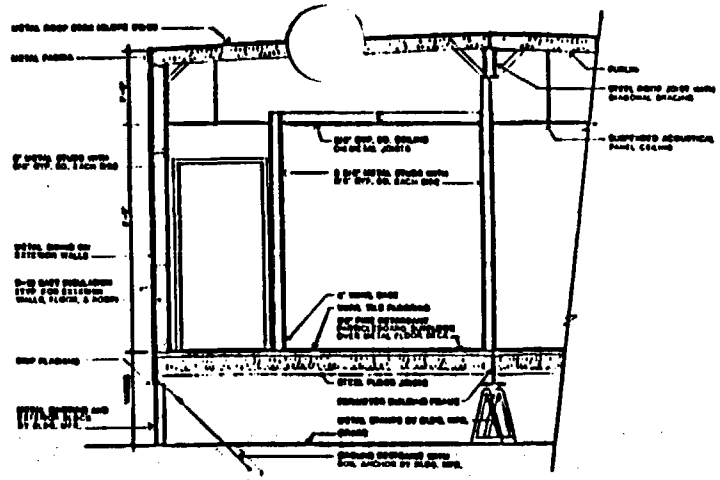
FLOOR PLAN

REAMES & BARKER INC.
ARCHITECTS-ENGINEERS

JS-025-050-1-A1



FLOOR PLAN
SCALE: 1/4" = 1'-0"



SECTION A
SCALE: 1/2"=1'-0"

REFERENCE DRAWINGS

CIVIL	JS-025-ESF-C4
STRUCTURAL	NOT USED IN TITLE I
ARCHITECTURAL	JS-025-ESF-A1
MECHANICAL	JS-025-058-2-M1
FIRE PROTECTION	JS-025-058-2-FP1
ELECTRICAL	JS-025-058-2-E1
COMMUNICATION	TBD

GRAPHIC SCALE
1/2"=1'-0"
1/4"=1'-0"

TITLE I

U. S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
OFFICE TRAILER - TYPE B
FLOOR PLAN & SECTION
HOMES & HARPER INC.
ARCHITECTS-ENGINEERS
JS-025-058-2-A1

NNWSI/ESF TITLE I 90% REVIEW

AUGUST 8, 1988

BERT ANZAI

MECHANICAL DESIGN

CODES AND STANDARDS

DOE 6430.1A "GENERAL DESIGN CRITERIA MANUAL"

DOE/EV-0043 "STANDARD ON FIRE PROTECTION FOR PORTABLE STRUCTURES"

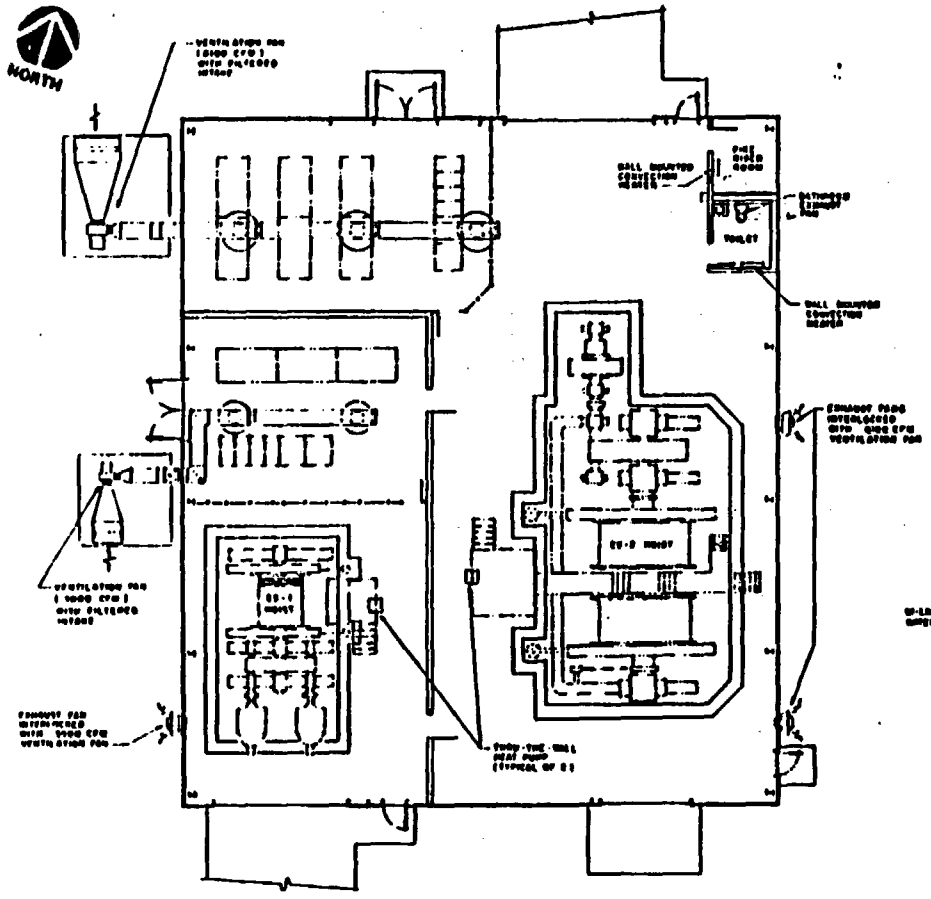
DOE/EV-0108 "STANDARD FOR FIRE PROTECTION OF DOE ELECTRONIC COMPUTER/DATA PROCESSING SYSTEMS"

AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR CONDITIONING ENGINEERS, INC. (ASHRAE) STDS

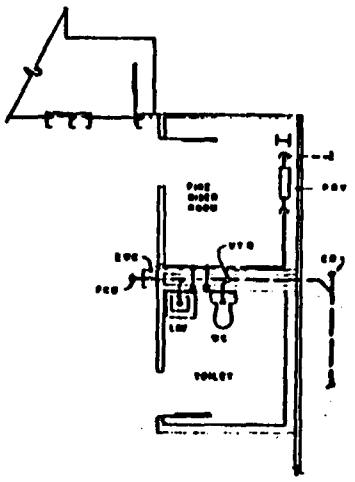
SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION (SMACNA) STANDARDS

UNIFORM PLUMBING CODE - 1985

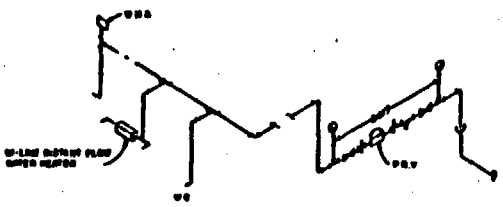
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS



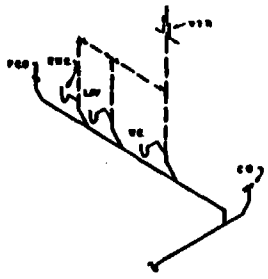
HVAC PLAN



PARTIAL PLUMBING PLAN



DOMESTIC WATER ISOMETRIC
NOT TO SCALE



WASTE AND VENT ISOMETRIC
NOT TO SCALE

GENERAL NOTES

1. [illegible]
2. [illegible]
3. [illegible]

REFERENCE DRAWINGS

CIVIL	JS-025-ESF-C4
STRUCTURAL	NOT USED ON TITLE I
ARCHITECTURAL	JS 025 F002-A1
FIRE PROTECTION	JS-025 F002 FP1
ELECTRICAL	JS 025 F002-E3
COMMUNICATION	JS 025 6002-M1

U. S. DEPARTMENT OF ENERGY

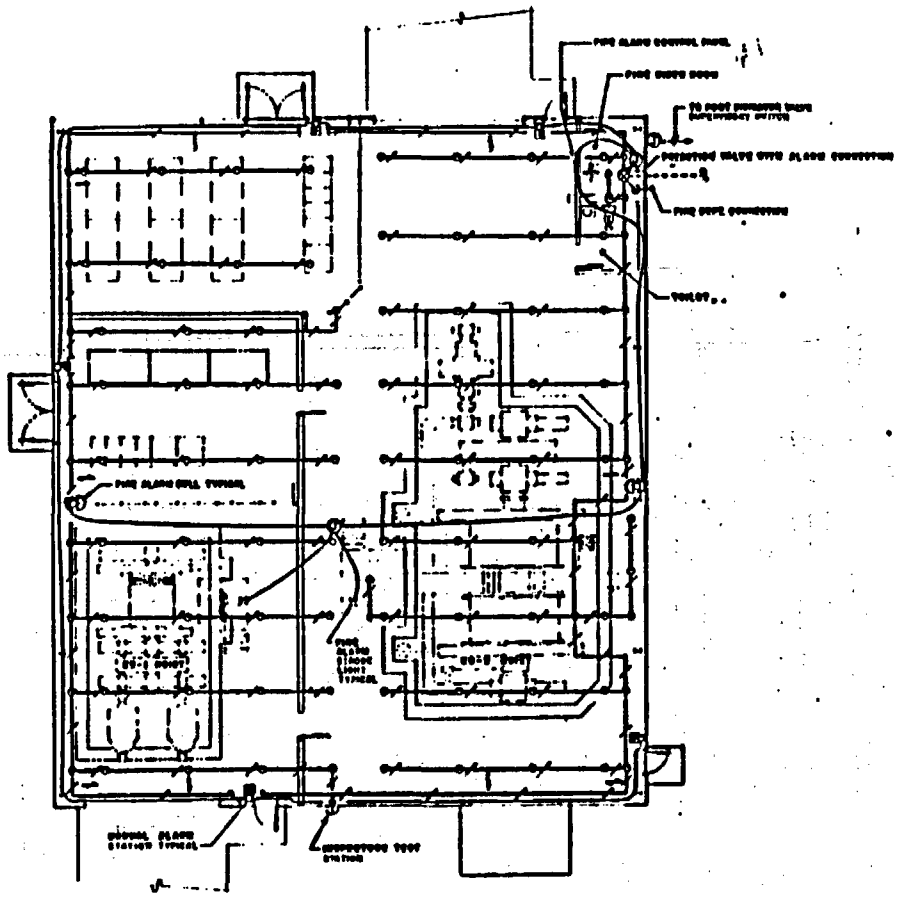
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
ES-1 & ES-2 HOIST HOUSE BLDG. 6002

HVAC AND PLUMBING PLAN

HERMES NUMAR INC.
ARCHITECTS-ENGINEERS

JS-025-6002-M4 B

TITLE I



FIRE PROT. & FIRE ALARM PLAN

SCALE: 1/8" = 1'-0"

GENERAL NOTES

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]

REFERENCE DRAWINGS

CIVIL	JS-025-ESF-C4
STRUCTURAL	NOT USED IN TITLE I
ARCHITECTURAL	JS-025-6002-A1
MECHANICAL	JS-025-6002-M1
ELECTRICAL	JS-025-6002-E2
COMMUNICATION	JS-025-6002-W1

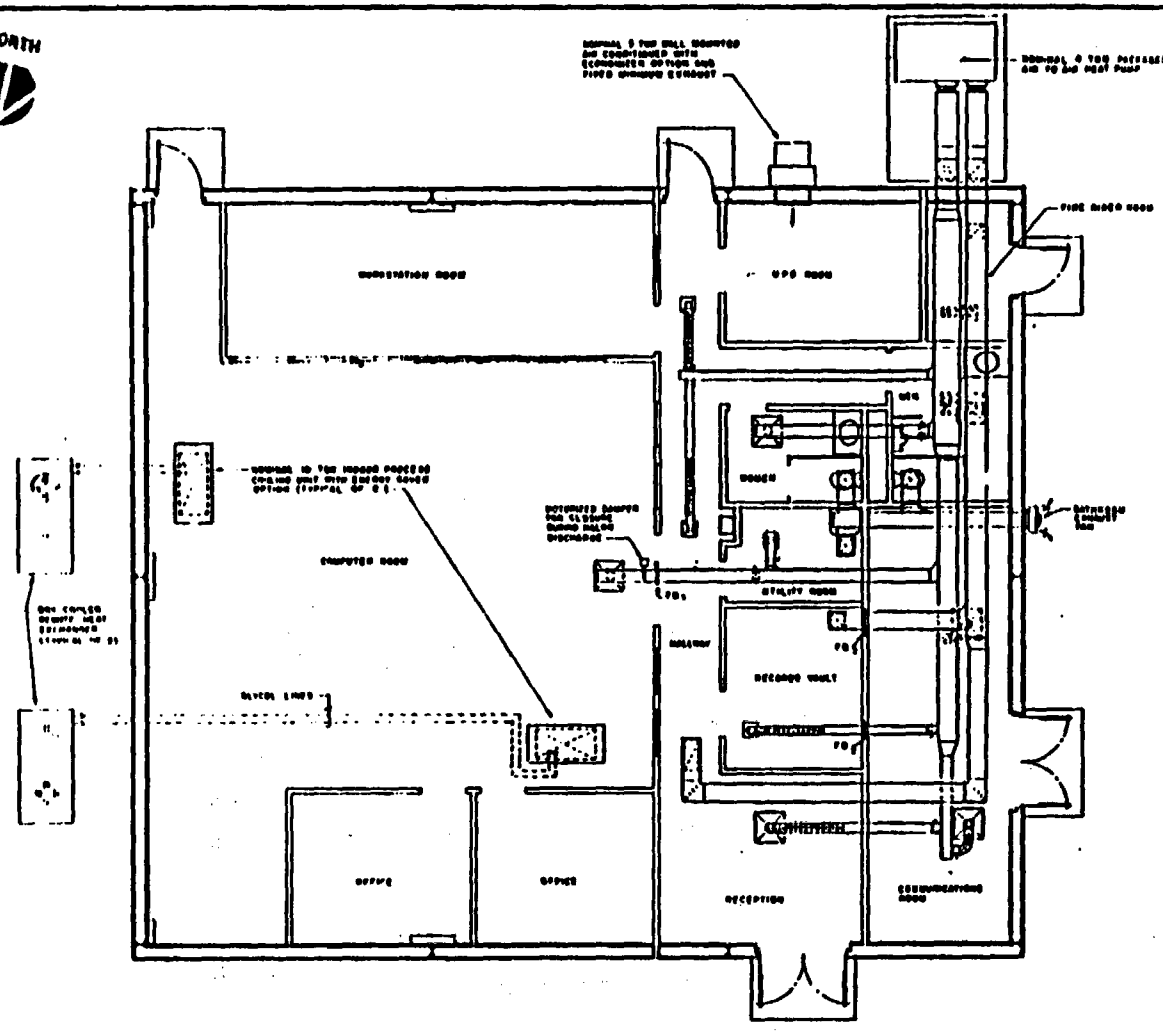
U. S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
ES-1 & ES-2 HOIST HOUSE BLDG. 6002

FIRE PROT. & FIRE ALARM PLAN

JS-025-6002-FPL6

TITLE I



HVAC PLAN

SCALE: 1/4" = 1'-0"

GENERAL NOTES

1. THIS TITLE I DRAWING REFLECTS ONLY THE MAJOR DESIGN FEATURES OF THIS PROJECT AND DOES NOT COMPREHENSIVELY DESCRIBE ALL SPECIAL INSTRUCTIONS WHICH MAY BE DEVELOPED DURING THE FINAL DESIGN.
2. FOR QUALITY LEVEL, REFER TO THE QUALITY ASSURANCE LEVEL AND PROGRAM PLAN VOLUME OF THE SAR.
3. FOR ABBREVIATIONS AND SYMBOLS SEE SHEET JS-025-EV-T0

REFERENCE DRAWINGS

CIVIL	JS-025-ESF-C4
STRUCTURAL	NOT USED IN TITLE I
ARCHITECTURAL	JS-025-6006-A1
MECHANICAL	
PLUMBING PLAN	JS-025-6006-M2
FIRE PROTECTION	JS-025-6006-FP1
ELECTRICAL	JS-025-6006-E1
COMMUNICATION	JS-025-6006-W1

DRAWING SCALE

1/4"=1'-0"

TITLE I

U. S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATION

EXPLORATORY SHAFT FACILITY

SURFACE DATA BUILDING 6006

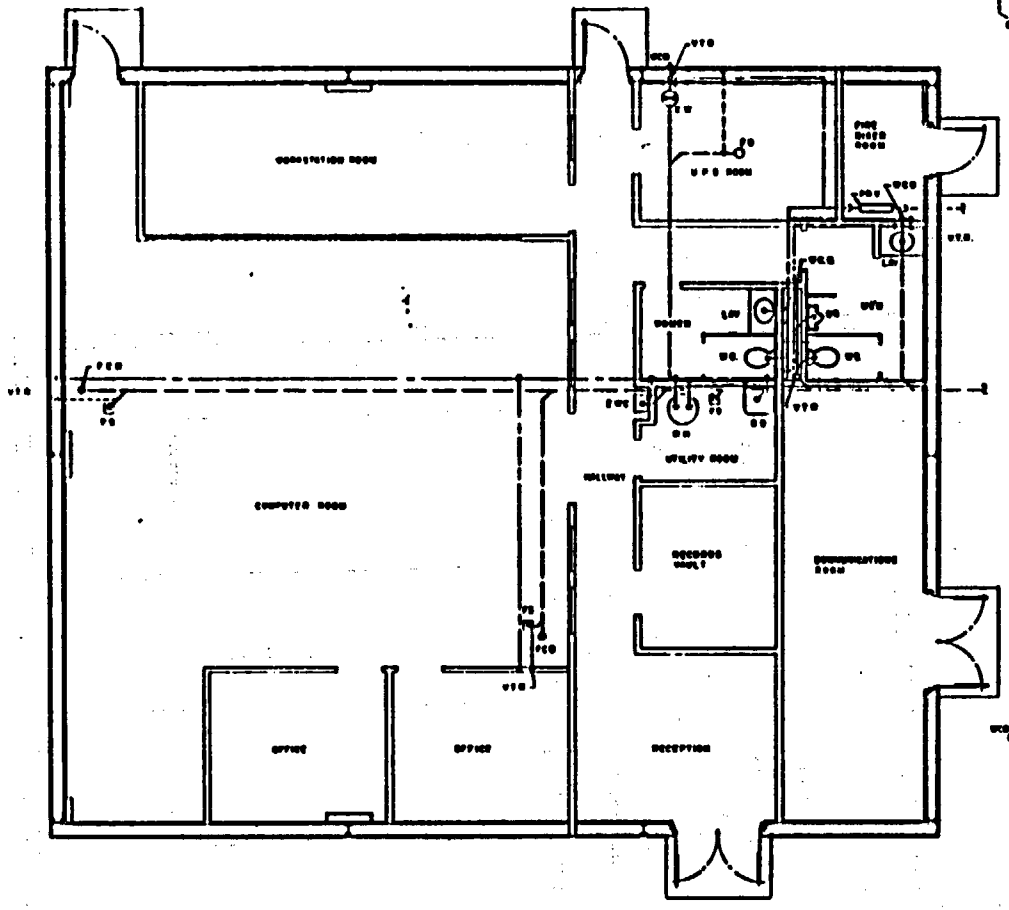
HVAC PLAN

HOLMES & NARVER INC.

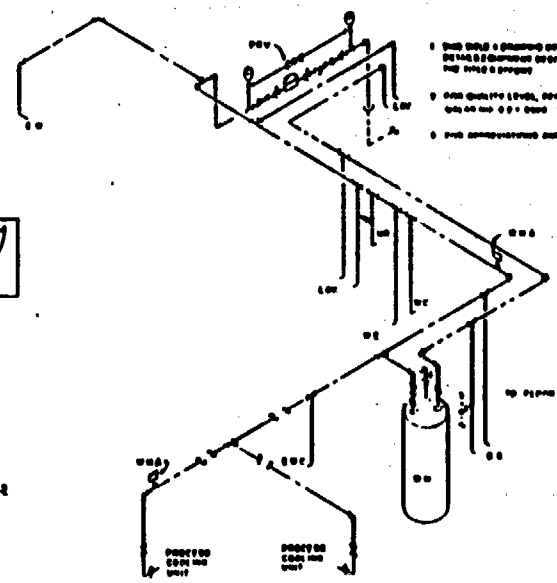
ARCHITECTS-ENGINEERS

JS-025-6006-M1

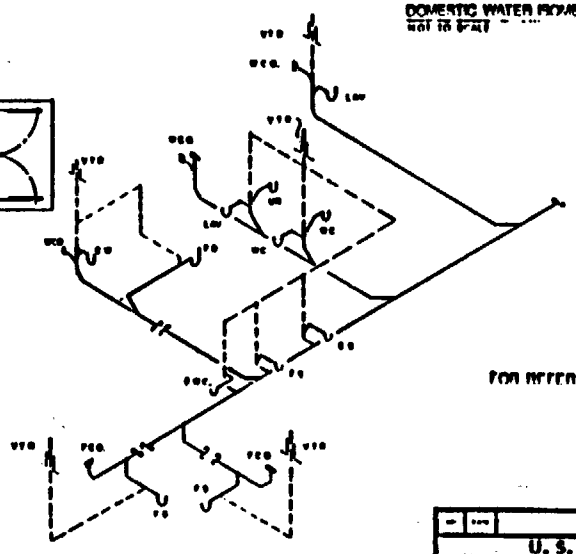
NORTH



PLUMBING PLAN
SCALE: 1/4" = 1'-0"



DOMESTIC WATER ISOMETRIC
NOT TO SCALE



WASTE & VENT ISOMETRIC
NOT TO SCALE

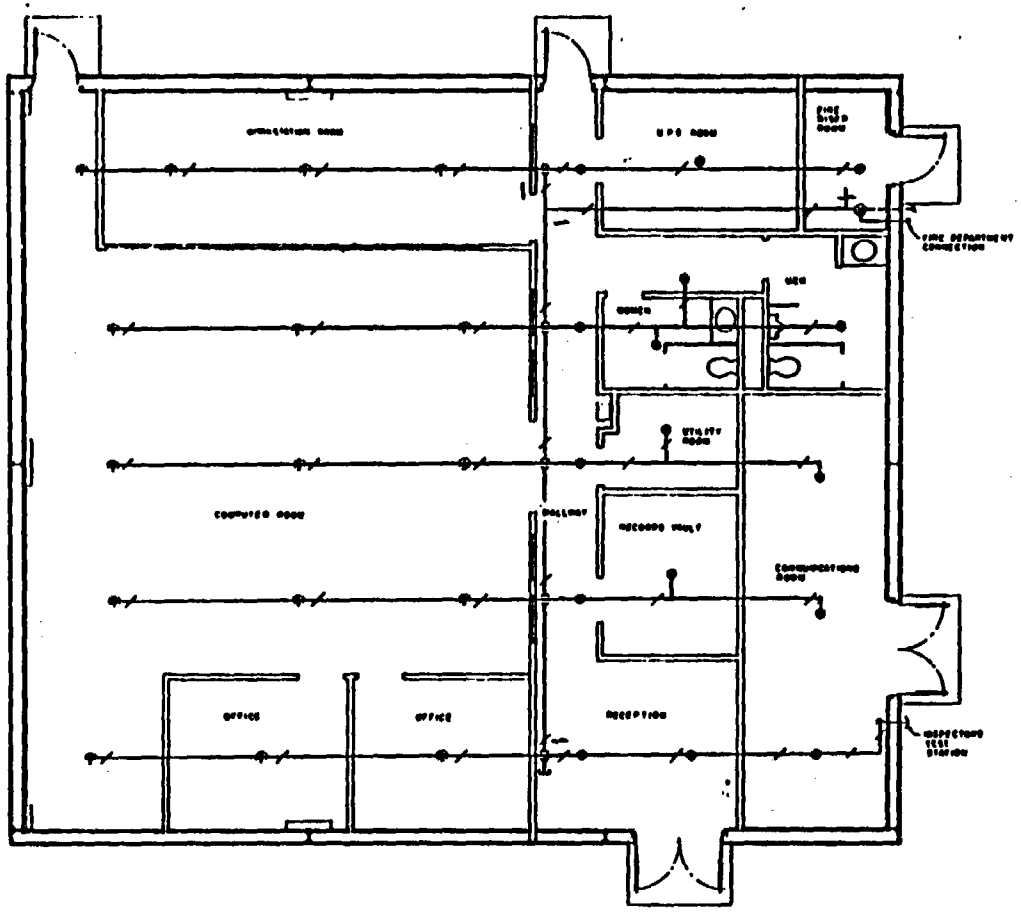
FOR REFERENCE DRAWINGS, SEE DRAWING M

DRAWING SCALE
1/4"=1'-0"

TITLE 1

U. S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
EXPLORATORY SHAFT FACILITY
SURFACE DATA BUILDING 6000
PLUMBING PLAN
HOWARD, NAPIER INC.
ARCHITECTS-ENGINEERS
JS-025-6006-M2.1

NORTH



FIRE PROTECTION PLAN
SCALE: 1/4" = 1'-0"

GENERAL NOTES

1. THIS TITLE I DRAWING DEPICTS ONLY THE SPECIFIC FIRE PROTECTION FEATURES OF THIS PROJECT. FOR GENERAL EQUIPMENT DESCRIPTIONS AND SPECIFIC CONSTRUCTION REQUIREMENTS SHALL BE OBTAINED DURING THE TITLE II EFFORT.
2. ALL PERSONNEL ENTERING CERTAIN AREAS OF THIS SURFACE FACILITY SHALL BE INSTRUCTED IN THE LOCATION AND USE OF FIRE EXTINGUISHERS THROUGHOUT THE BUILDING.
3. CONTROL DEVICES INCLUDING ON-OFF SWITCHES AND VALVES SHALL BE CLEARLY MARKED AND LOCATED WHERE READILY ACCESSIBLE.
4. A HOUSE FIRE ALARM AND DETECTION SYSTEM SHALL BE PROVIDED IN ACCORDANCE WITH NFPA 72E. THE SYSTEM SHALL BE CAPABLE OF MANUAL AND AUTOMATIC ACTUATION AND SHALL BE ARRANGED TO PROVIDE AUDIBLE AND VISUAL ALARM SIGNALS THROUGHOUT THE BUILDING. THE SYSTEM SHALL BE CONNECTED TO THE [illegible] AND SHALL BE SUPERVISED AND TESTED IN ACCORDANCE WITH NFPA 72E.
5. FIRE EXTINGUISHERS SHALL BE PROVIDED AND SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 10.
6. FIRE DEPARTMENT CONNECTIONS SHALL BE PROVIDED AS SHOWN ON THE DRAWINGS AND SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 13.

REFERENCE DRAWINGS

CIVIL	JS-025-FBF-C4
STRUCTURAL	NOT USED ON TITLE I
ARCHITECTURAL	JS 025 6008-A1
MECHANICAL	JS 025 6008-M1
FIRE PROTECTION	
FIRE ALARM PLAN	JS 025 6008-FP2
ELECTRICAL	JS 025 6008-E1
COMMUNICATION	JS-025-6008-W1

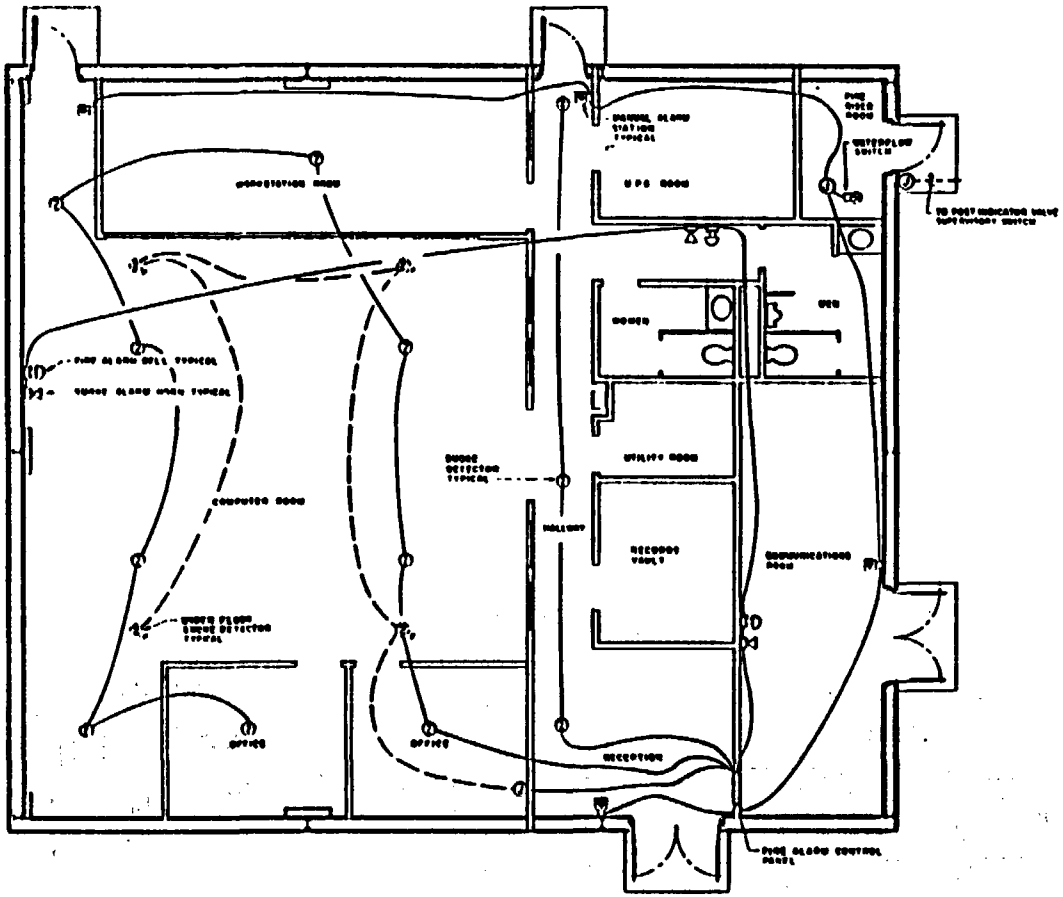
GRAPHIC SCALE
0 0 1FT
1/4" = 1'-0"

TITLE I

U. S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
SURFACE DATA BUILDING 6008
FIRE PROTECTION PLAN
NEBEKER HARMER INC.
ARCHITECTS-ENGINEERS
JS-025 6008-FP1 1

10 9 8 7 6 5 4 3 2 1
H G F E D C B A

NORTH



GENERAL NOTES

1. THIS TITLE I DRAWING DEPICTS ONLY THE ALARM DEVICES PROVIDED BY THIS PROJECT AND DETAILS COMPONENT MOUNTING AND SHOWS INSTRUCTIONS SHALL BE DEVELOPED DURING THE TITLE II EFFORT.
2. SPACING DEVICES PROVIDED FROM SHALL BE PERFORMED IN THE CALCULATIONS SHOWN FOR EARLY WARNING PROTECTION.
3. LOCATIONS SHOWN DETECTORS SHALL BE PERFORMED IN THE RAISED FLOOR AND PLENUM FOR EARLY WARNING PROTECTION.
4. [illegible] SHALL BE PERFORMED IN THE RAISED FLOOR AND PLENUM FOR EARLY WARNING PROTECTION.
5. [illegible]

FOR REFERENCE DRAWINGS, SEE DRAWING FP1

FIRE ALARM PLAN

SCALE: 1/4" = 1'-0"

GRAPHIC SCALE

TITLE I

U. S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS

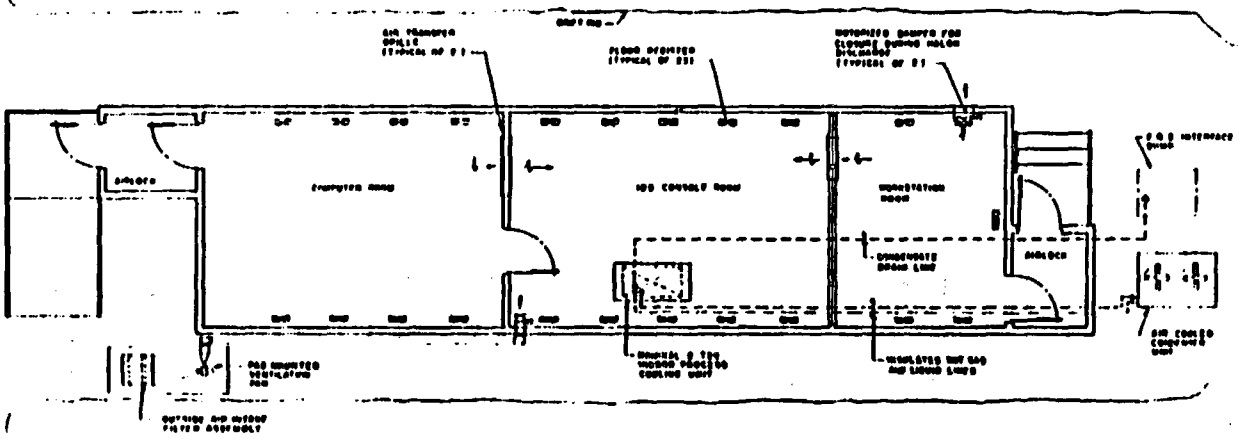
EXPLORATORY SHAFT FACILITY

SURFACE DATA BUILDING 6009

FIRE ALARM PLAN

HOWARD, NEEMAN PE, ARCHITECTS-ENGINEERS

J5-025-6009-FP2



HVAC PLAN

GENERAL NOTES

1. [illegible]
2. [illegible]
3. [illegible]

REFERENCE DRAWINGS

STRUCTURAL	NOT USED IN TITLE I
ARCHITECTURAL	JS 025 6007-A1
FIRE PROTECTION	JS 025 6007 FP1
ELECTRICAL	JS 025 6007 E1
COMMUNICATION	JS 025 6007 W1

GRAPHIC SCALE

TITLE I

U. S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
SUBSURFACE DATA BUILDING 6007

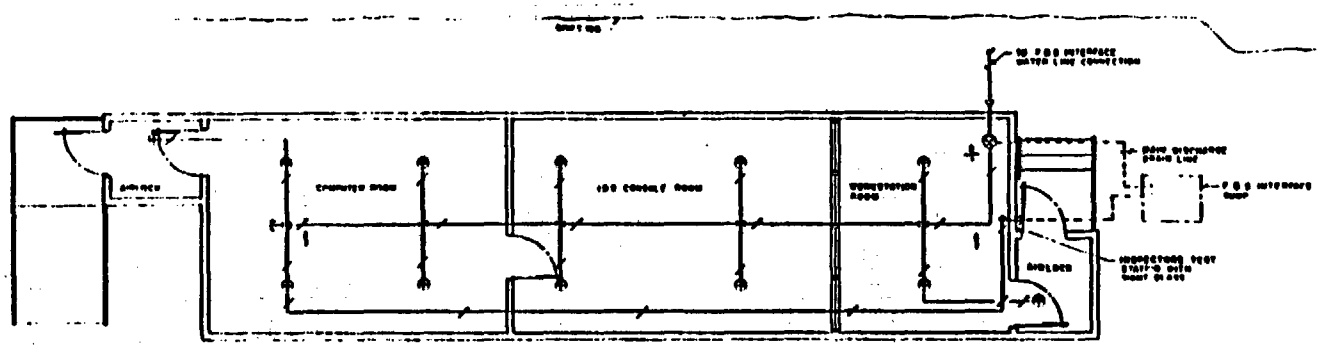
HVAC PLAN

HERMES, NAMER INC.
ARCHITECTS-ENGINEERS

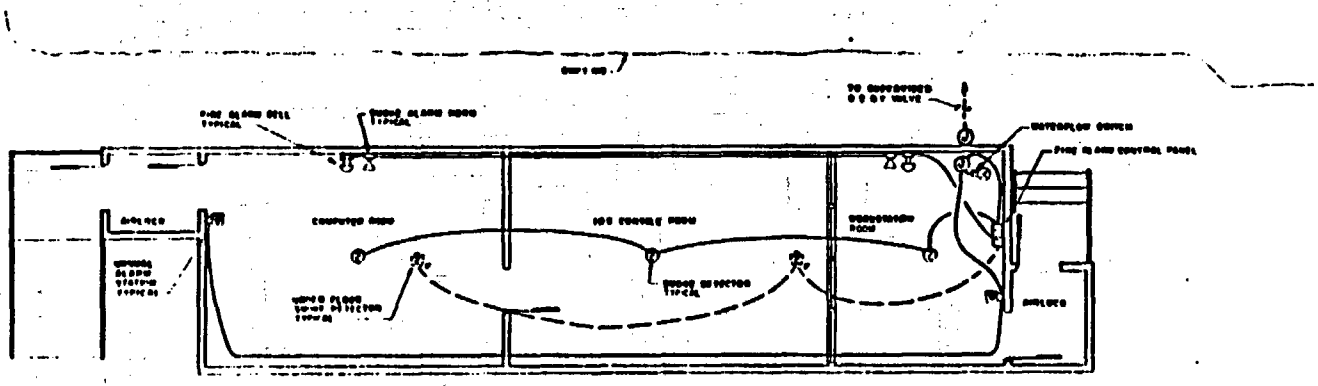
JS-025-6007-M 1

GENERAL NOTES

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]
8. [illegible]



FIRE PROTECTION PLAN
SCALE: 1/8" = 1'-0"



FIRE ALARM PLAN
SCALE: 1/8" = 1'-0"

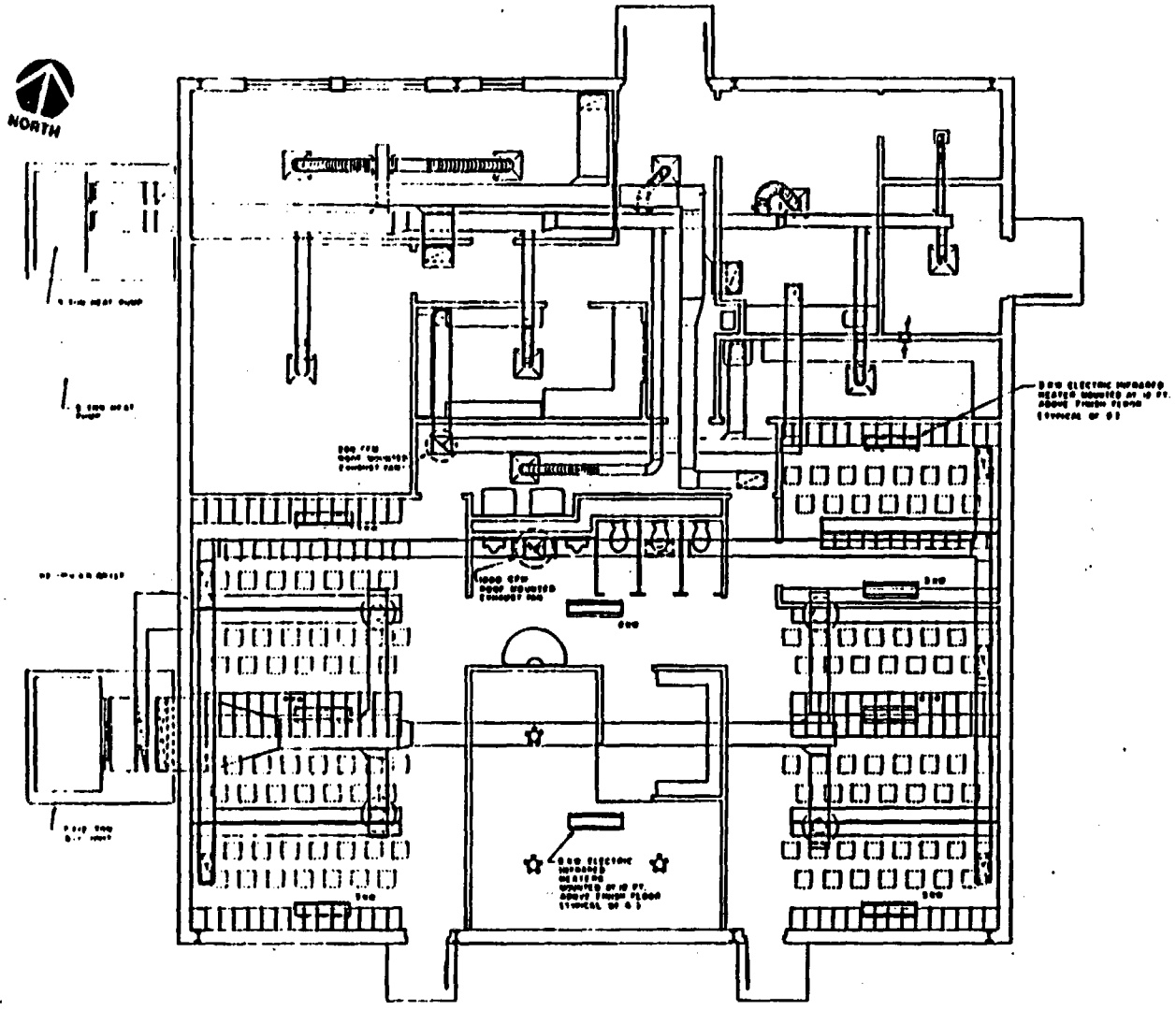
REFERENCE DRAWINGS

STRUCTURAL	NOT USED IN TITLE I
ARCHITECTURAL	JS-025-6007-A1
MECHANICAL	JS-025-6007-M1
ELECTRICAL	JS-025-6007-E1
CIVIL/GRADING	JS-025-6007-W1

DRAWING SCALE
0 1/8" 1'-0"

TITLE I

U. S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
SUBSURFACE DATA BUILDING #137
FIRE PROT. & FIRE ALARM PLAN
JS-025-6007-FP1



HVAC PLAN

SCALE: 1/4" = 1'-0"

GRAPHIC SCALE

TITLE I

GENERAL NOTES

1. [illegible]
2. [illegible]
3. [illegible]

REFERENCE DRAWINGS

CIVIL	JS-025-ESF-C4
STRUCTURAL	NOT USED IN TITLE I
ARCHITECTURAL	JS-025-6008-A1
MECHANICAL	
PLUMBING PLAN	JS-025-6008-M9
FIRE PROTECTION	JS-025-6008-FP1
ELECTRICAL	JS-025-6008-E1
COMMUNICATION	JS-025-6008-W1

U. S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATION

EXPLORATORY SHAFT FACILITY

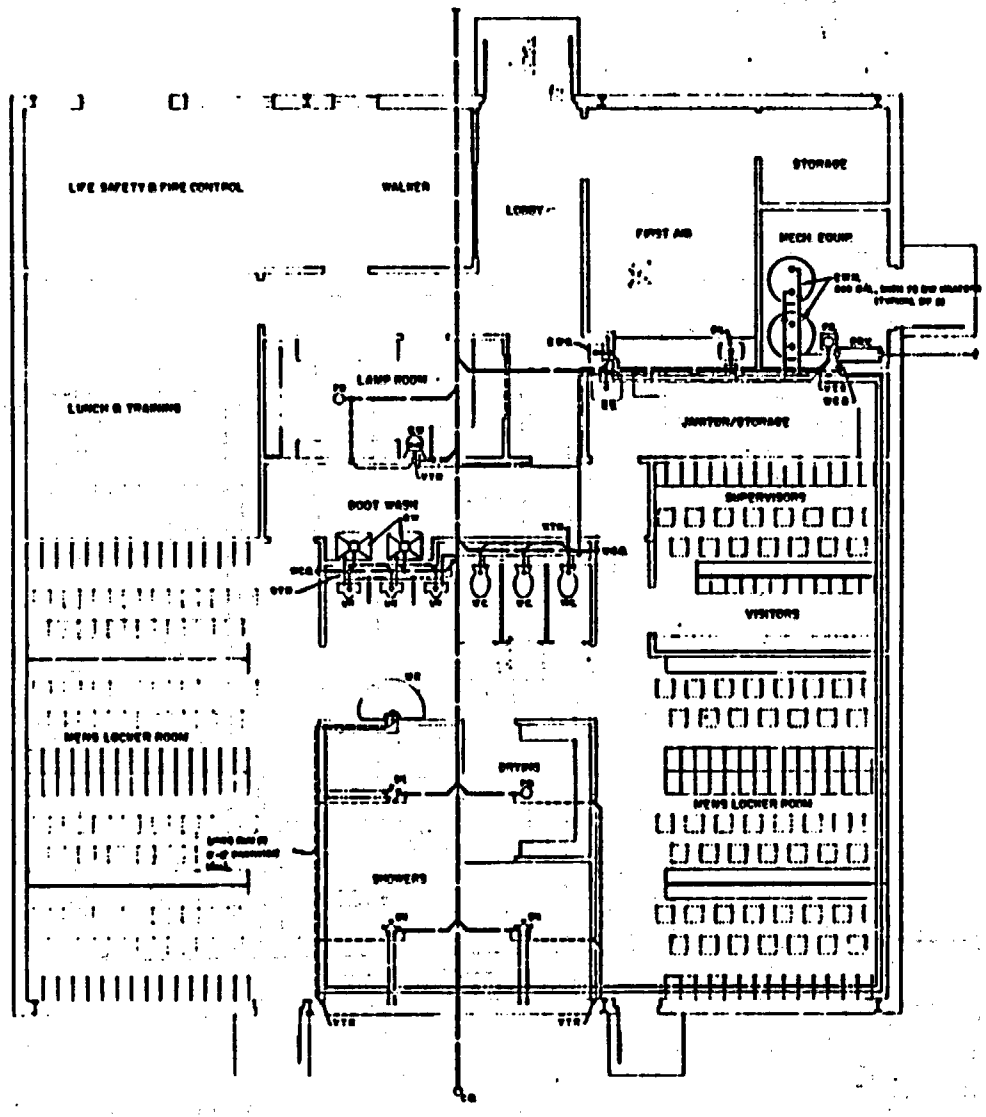
CHANCE HOUSE BLDG 6008

HVAC PLAN

HERMES NAMER INC.

ARCHITECTS-ENGINEERS

JS-025-6008-M1 1



PLUMBING PLAN

SCALE: 1/4" = 1'-0"

GENERAL NOTES

1. THIS SHEET IS DRAWING DIRECTLY OVER THE ARCHITECTURAL DESIGN FEATURES OF THIS PROJECT AS DO NOT DO DIMENSIONS, DESCRIPTIONS AND SPECIAL NOTES FROM THIS SHEET. DRAWING THIS SHEET IS PURPOSE.
2. FOR QUALITY LEVEL, REFER TO QA QUALITY ASSURANCE LEVEL ASSIGNMENT SHEET, DALAD NO. 0 0 1-0001.
3. FOR ABBREVIATIONS AND SYMBOLS SEE DWG. JS-025-000-M1.

FOR REFERENCE DRAWINGS, SEE DRAWING M1

STAGING SCALE

1/4" = 1'-0"

TITLE I

U. S. DEPARTMENT OF ENERGY

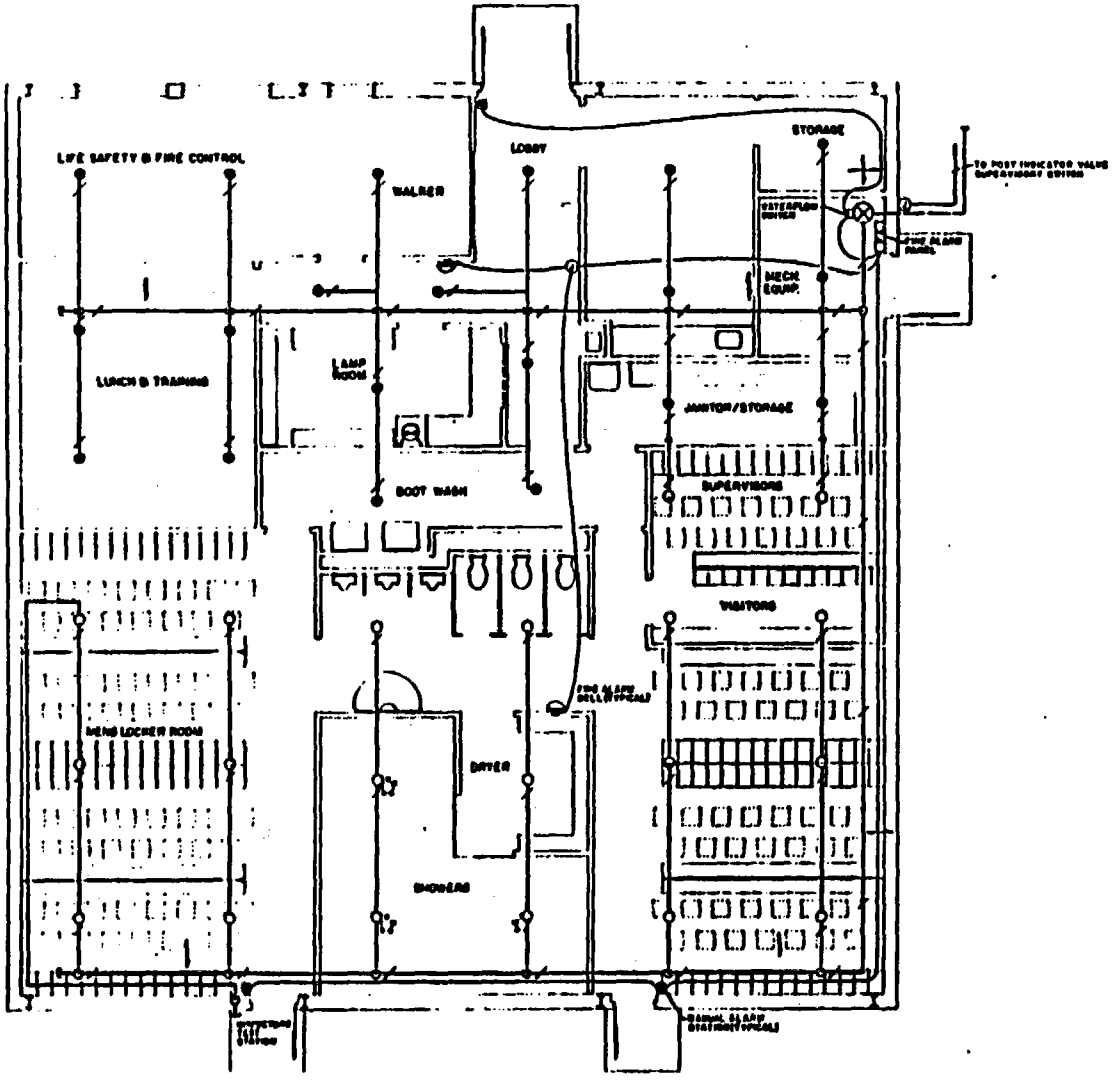
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION

EXPLORATORY SHAFT FACILITY

CHANGE HOUSE BLDG. 6008

PLUMBING PLAN

JS-025-6008 M2.8



FIRE PROTECTION AND FIRE ALARM PLAN

SCALE: 1/4" = 1'-0"

GENERAL NOTES

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]

REFERENCE DRAWINGS

CIVIL	JS-025-E97-C4
STRUCTURAL	NOT USED IN TITLE I
ARCHITECTURAL	JS-025-6008-A1
MECHANICAL	JS-025-6008-M1
ELECTRICAL	JS-025-6008-E1
COMMUNICATION	JS-025-6008-W1

DRAWING SCALE

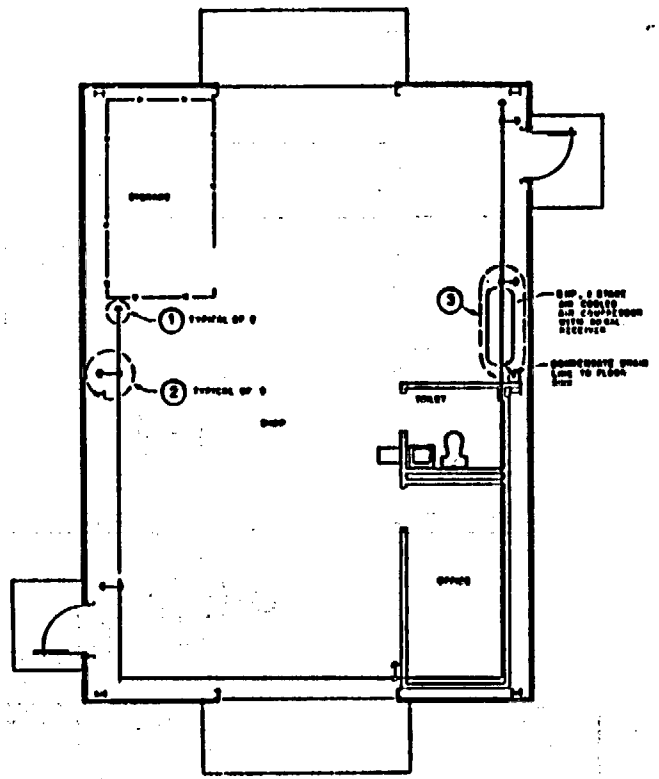
TITLE I

U. S. DEPARTMENT OF ENERGY

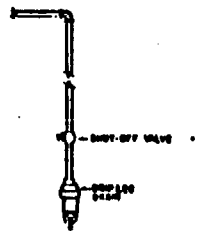
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
CHANGE HOUSE BLDG. 6008
FIRE PROT. & FIRE ALARM PLAN

JS-025-6008-FP1.0

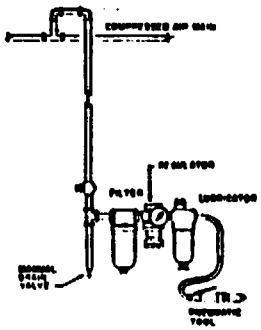
NORTH



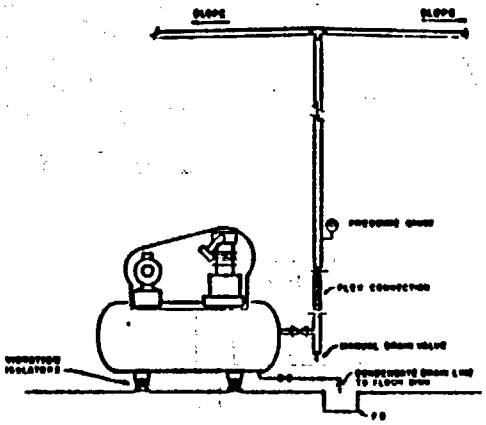
COMPRESSED AIR SYSTEM PLAN
SCALE : 1 0 = 1 - 0"



DRIP LEG DETAIL (1)
NOT TO SCALE



DROP LEG DETAIL (2)
NOT TO SCALE



AIR COMPRESSOR DETAIL (3)
NOT TO SCALE

GENERAL NOTES

1. THIS SHEET DRAWING DEPICTS ONLY THE MAJOR FEATURES OF THE PROJECT. SEE DETAILS, DRAWINGS, SPECIFICATIONS AND SPECIAL INSTRUCTIONS SHALL BE INVESTIGATED BEFORE THIS SHEET IS BUILT.
2. FOR QUALITY LEVEL REFER TO QUALITY ASSURANCE LEVEL ASSIGNMENT SHEET
3. FOR ABBREVIATIONS AND SYMBOLS SEE DWG
4. THIS DRAWING REFLECTS DESIGNATED MODIFICATIONS FROM THE AES DESIGN REVIEW BUT MAY BE REVISED PENDING AT PHASE OF

FOR REFERENCE DRAWINGS, SEE DRAWING M4

GRAPHIC SCALE
1/4" = 1'-0"

TITLE 1

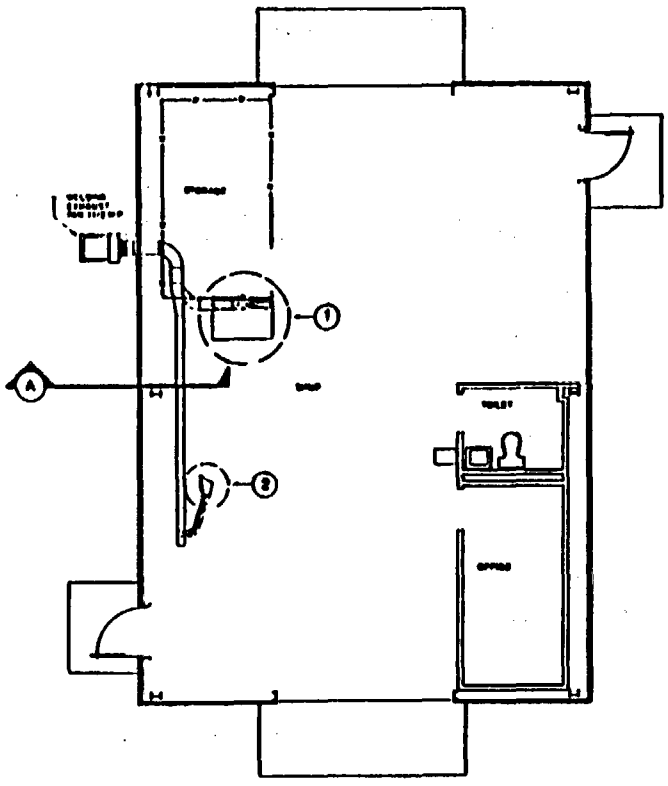
U. S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
SHOP BUILDING 6000
COMPRESSED AIR SYSTEM PLAN
NEWMAN & HANKER INC.
ARCHITECTS-ENGINEERS
JS-025-6000-M8.1

12 11 10 9 8 7 6 5 4 3 2 1
H G F E D C B A

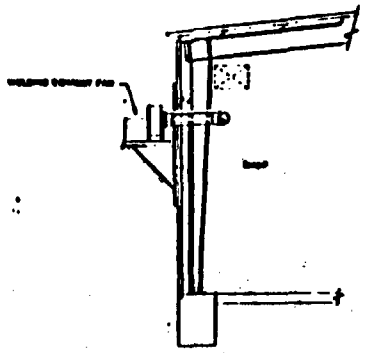
NORTH

GENERAL NOTES

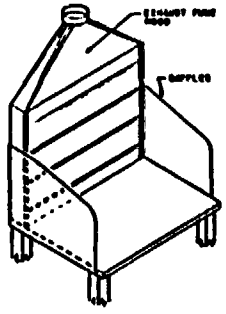
1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]



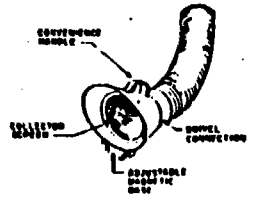
WELDING EXHAUST SYSTEM PLAN
SCALE: [illegible]



SECTION A
SCALE: [illegible]



WELDING BENCH DETAIL 1
NOT TO SCALE



CONE FUME RECEPTOR DETAIL 2
NOT TO SCALE

FOR REFERENCE DRAWINGS, SEE DRAWING M4

U. S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
SHOP BUILDING 6000
WELDING EXHAUST SYSTEM PLAN

HOLMES & NARVER INC.
ARCHITECTS-ENGINEERS

JS-025-6000-M7 R

SHEET SCALE
0 0 0FT
1/4"=1'-0"

TITLE 1

H G F E D C B A

2 11 10 9 8 7 6 5 4 3 2 1

NNWSI/ESF TITLE I 90% REVIEW

AUGUST 8, 1988

JOSEPH DUMAS

ELECTRICAL DESIGN

DESIGN BASIS AND CRITERIA

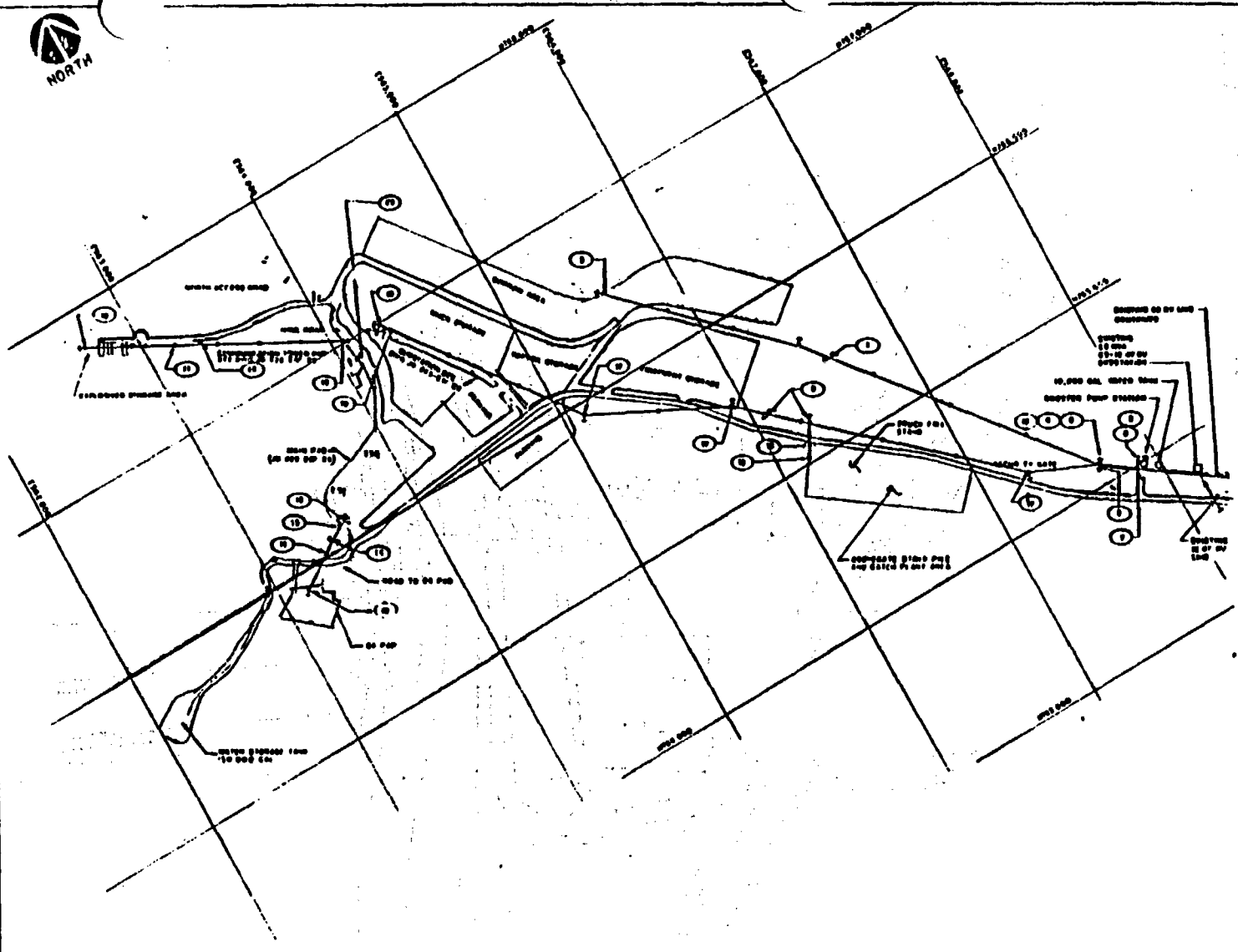
- SUBSYSTEM DESIGN REQUIREMENTS DOCUMENT
- DESIGN BASIS DOCUMENT

CODES AND STANDARDS

- NATIONAL ELECTRICAL CODE, NFPA 70.
- NATIONAL ELECTRICAL SAFETY CODE, ANSI C2.
- ILLUMINATING ENGINEERING SOCIETY REFERENCE AND HANDBOOK.
- LIFE SAFETY CODE, NFPA 101.
- DOE ORDER 6430.1A "GENERAL DESIGN CRITERIA MANUAL".
- MINE SAFETY AND HEALTH ADMINISTRATION, CODE OF FEDERAL REGULATION, TITLE 30.
- DOE OVERHEAD POWERLINE STANDARDS.
- INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS STANDARDS.

POWER SYSTEMS REQUIREMENTS

- ELECTRICAL POWER SYSTEM
- STANDBY POWER SYSTEM
- UNINTERRUPTED POWER SYSTEM(S)



GENERAL NOTES

KEYED NOTES

FOR REFERENCE DRAWINGS, SEE DRAWING T2

ESF ELECTRICAL SITE PLAN

TITLE I

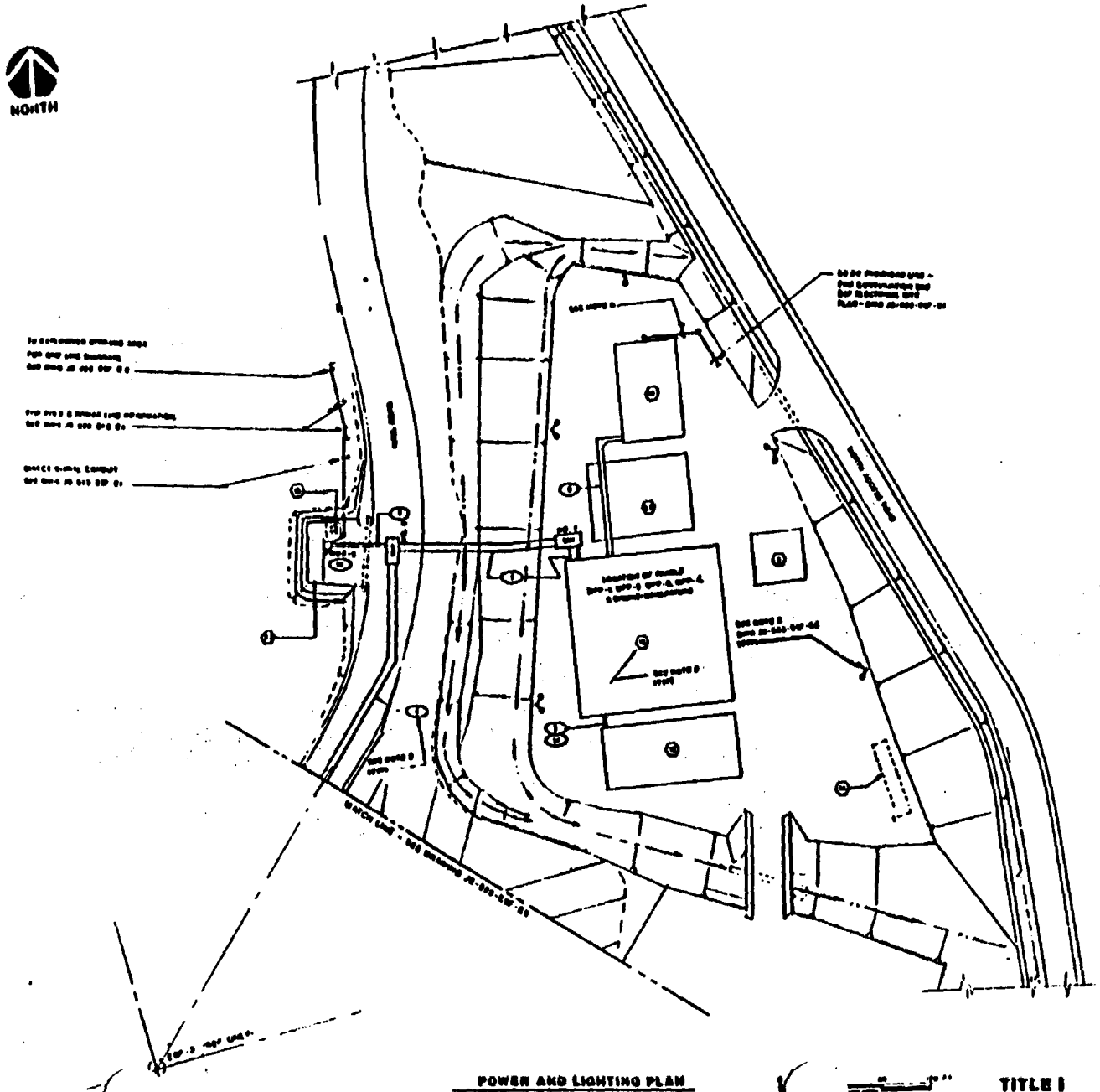
U.S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS

EXPLORATORY STUDIES FACILITY

ESF ELECTRICAL SITE PLAN

JS-025-ESF-E1.A



NOTES:

FOR REFERENCE DRAWINGS, SEE DRAWING 12

POWER AND LIGHTING PLAN

TITLE I

U. S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS

EXPLORATORY SHAFT FACILITY

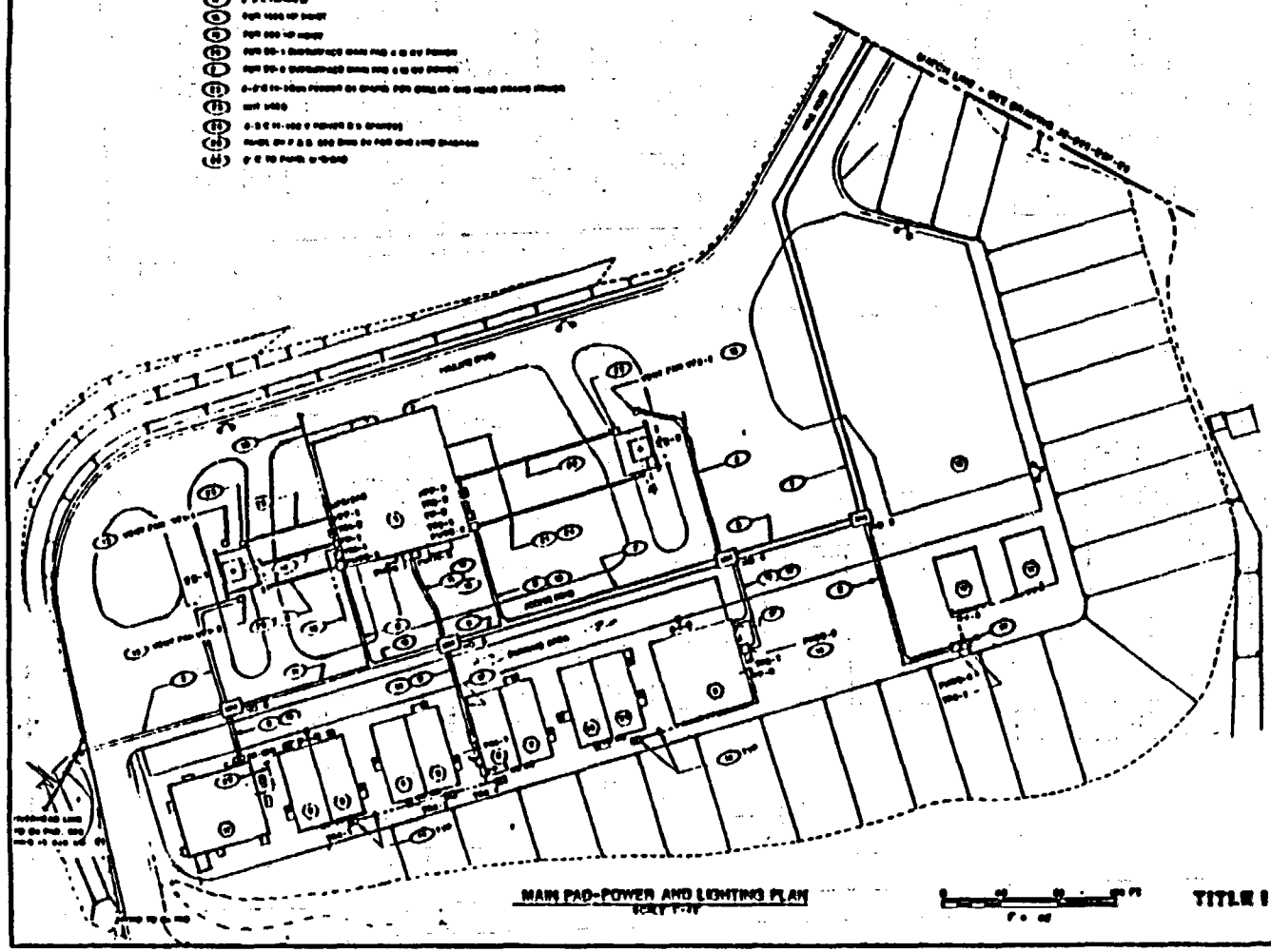
SUBSTATION PAD

POWER AND LIGHTING PLAN

S-ESF-E00

KEYED NOTES:

LEGEND:



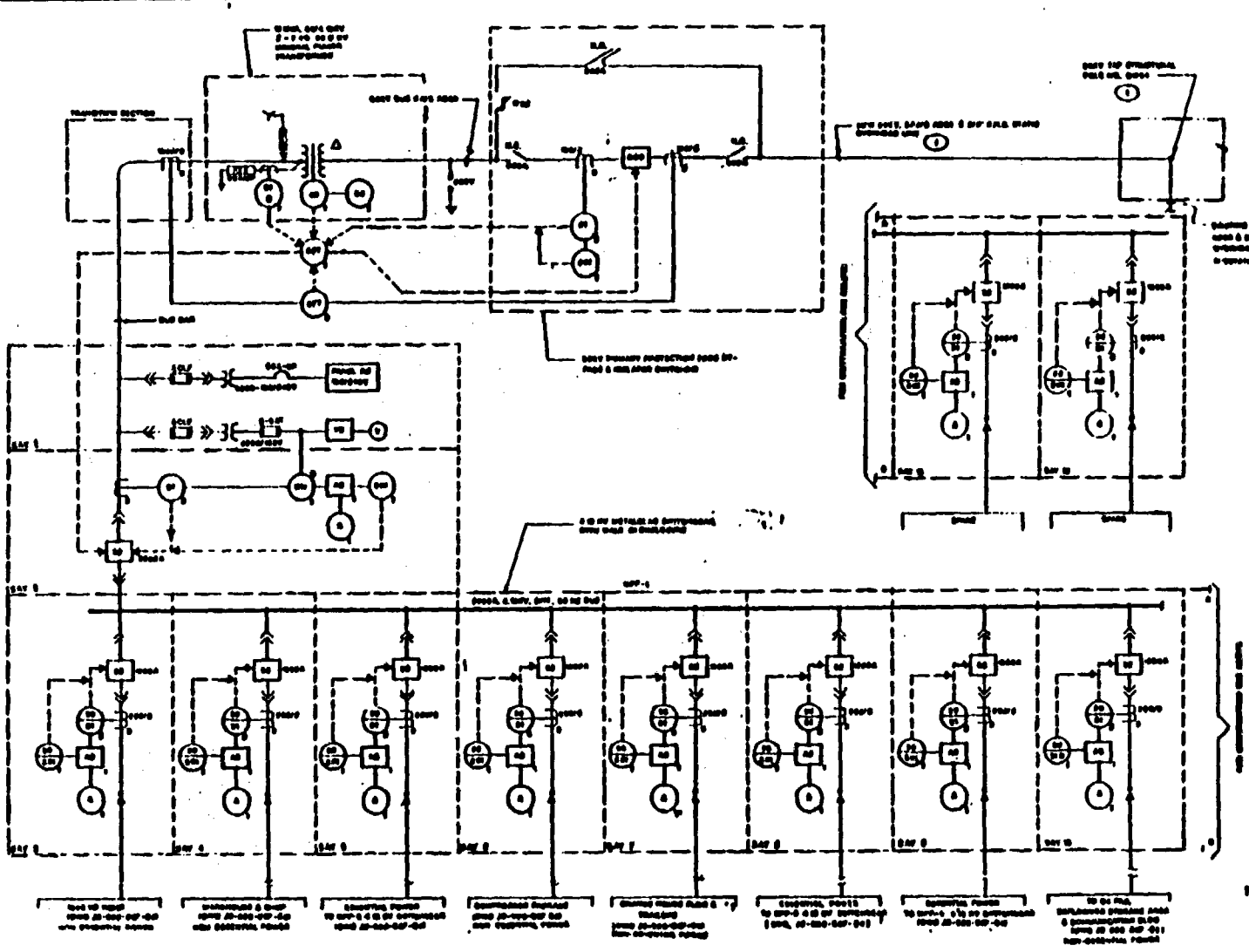
NOTES:

FOR REFERENCE DRAWINGS, SEE DRAWING T2

U. S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
MAIN PAD
POWER AND LIGHTING PLAN

JS-025-ESF-ES.B



KEYED NOTES

FOR REFERENCE DRAWINGS, SEE DRAWING T2

MAIN SWITCHGEAR ONE LINE DIAGRAM

TITLE I

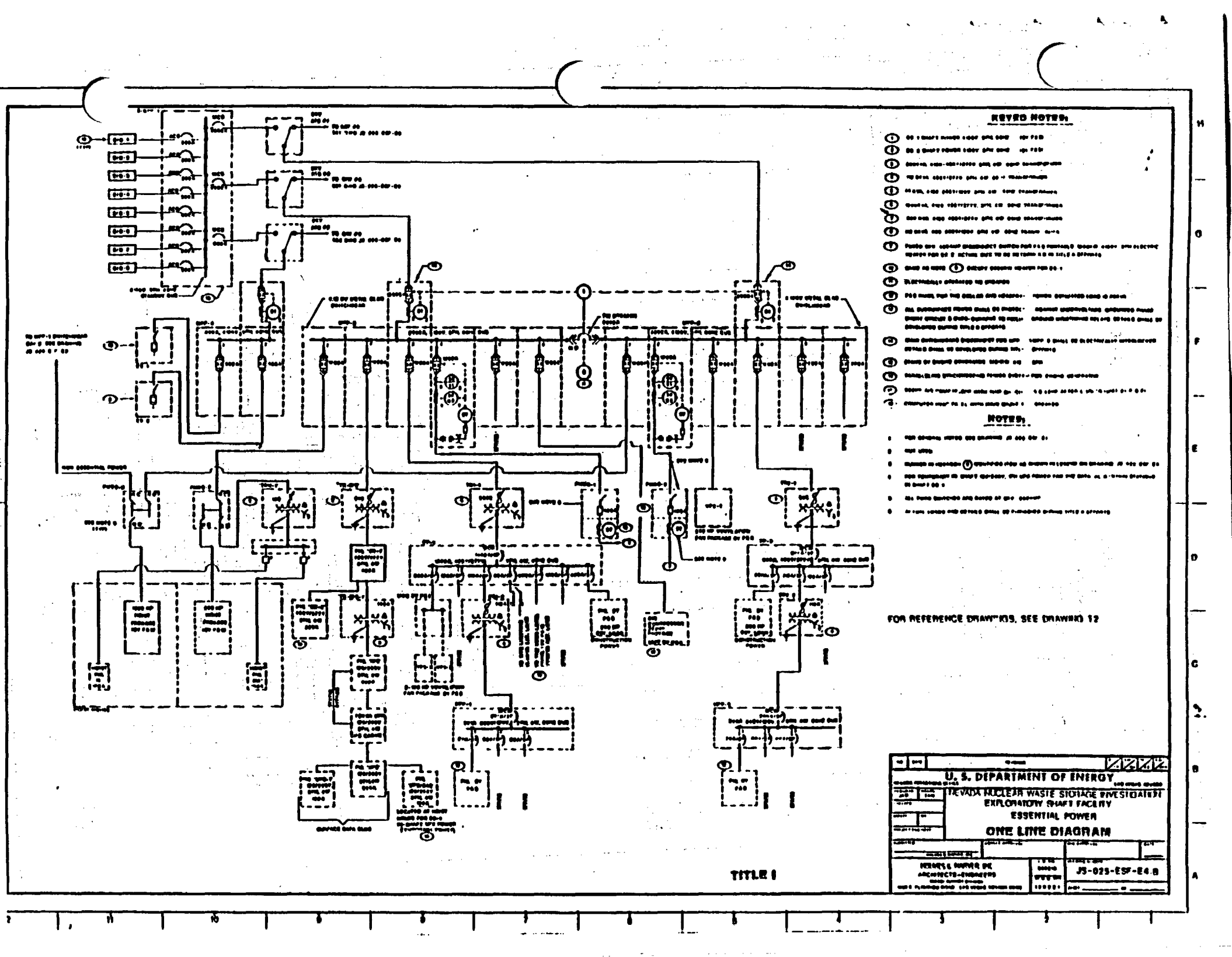
U. S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY

MAIN SWGR-ONE LINE DIAGRAM

HOWARD NAMES INC.
ARCHITECTS-ENGINEERS

-025-ESF-E2.A



REVED NOTES:

NOTES:

FOR REFERENCE DRAWINGS, SEE DRAWING 12

TITLE I

U. S. DEPARTMENT OF ENERGY

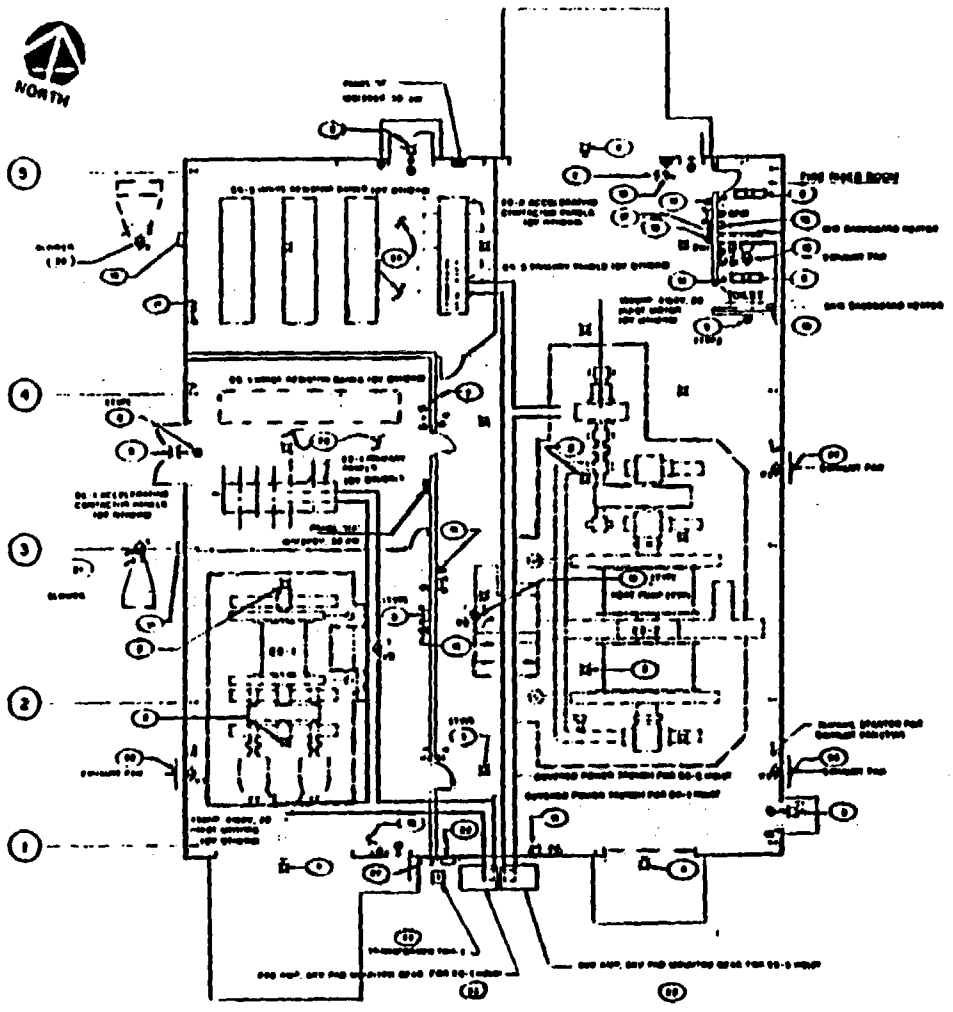
NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS

EXPLORATORY SHAFT FACILITY

ESSENTIAL POWER

ONE LINE DIAGRAM

JS-025-ESF-E4.8



LIGHTING AND POWER PLAN

KEYED NOTES:

GENERAL NOTES

ONE LINE DIAGRAM

REFERENCE DRAWINGS

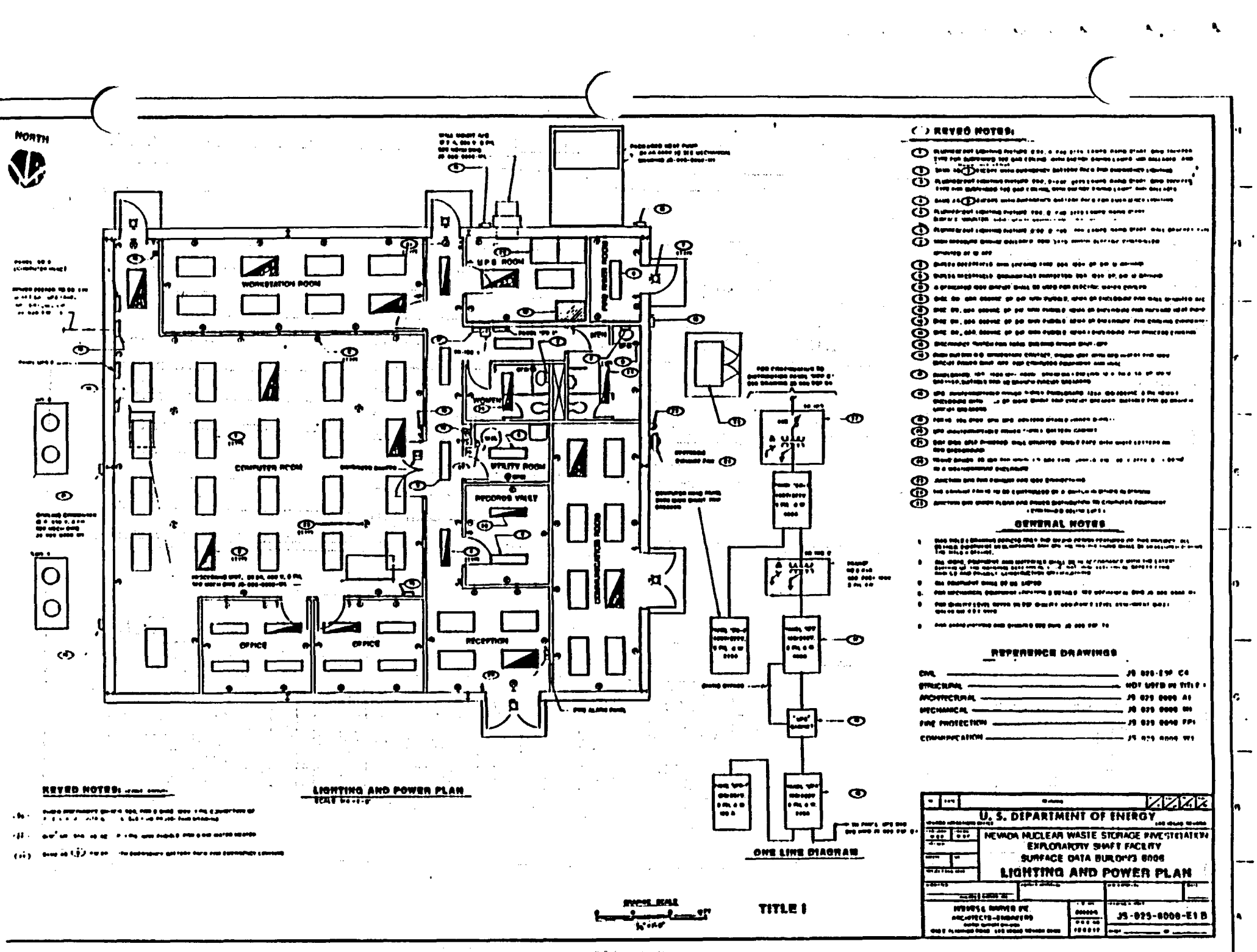
CIVIL	
STRUCTURAL	
ARCHITECTURAL	
MECHANICAL	
FIRE PROTECTION	
COMMUNICATION	

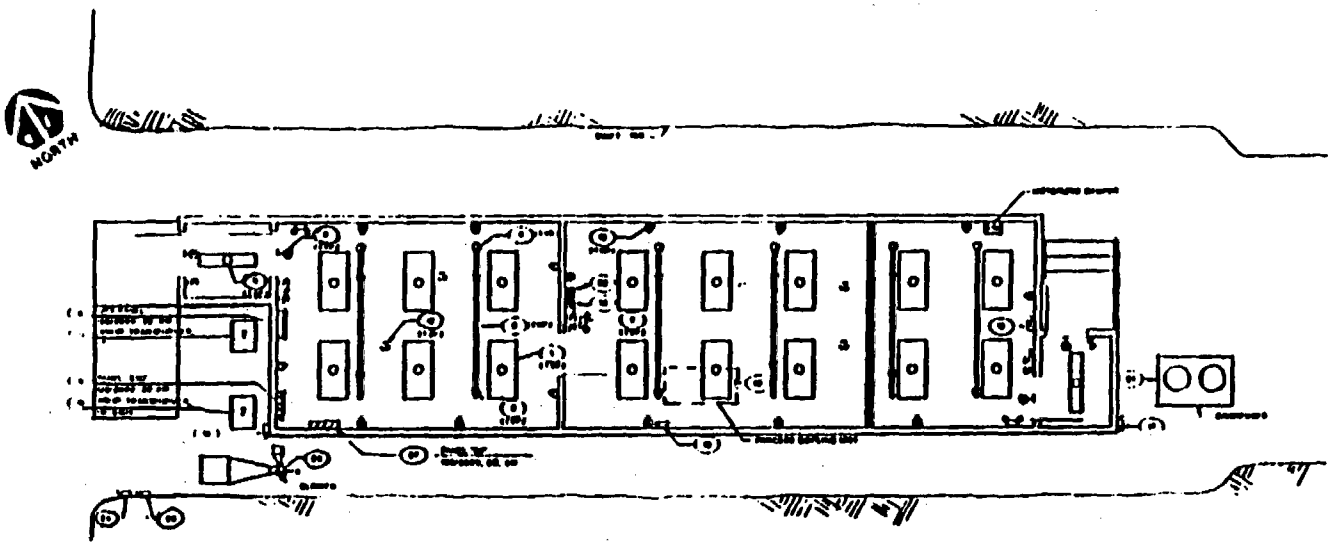
TITLE I

U. S. DEPARTMENT OF ENERGY

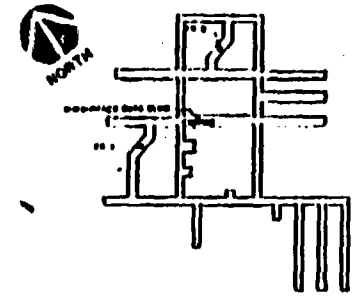
NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
EXPLORATORY SHAFT FACILITY
ES-1 & ES-2 HOIST HOUSE BLDG 6002
LIGHTING AND POWER PLAN

25 6002 E3.


NORTH
WORKSTATION ROOM
UPS ROOM
COMPUTER ROOM
UTILITY ROOM
RECORDS VAULT
OFFICE
OFFICE
RECEPTION
LIGHTING AND POWER PLAN
ONE LINE DIAGRAM
REVED NOTES:
GENERAL NOTES
REFERENCE DRAWINGS
U. S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
EXPLORATORY SHAFT FACILITY
SURFACE DATA BUILDING 6006
LIGHTING AND POWER PLAN
TITLE I



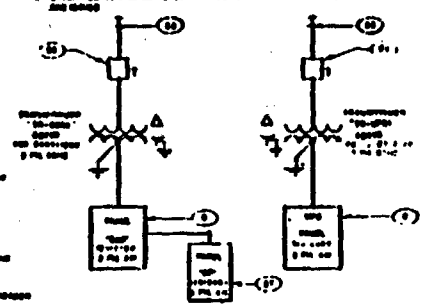
LIGHTING AND POWER PLAN



LOCATION PLAN AT-1030 LEVEL

KEYED NOTES:

GENERAL NOTES



ONE LINE DIAGRAM

REFERENCE DRAWINGS

STRUCTURAL	NOT USED IN THIS
ARCHITECTURAL	
MECHANICAL	
FIRE PROTECTION	
COMMUNICATIONS	

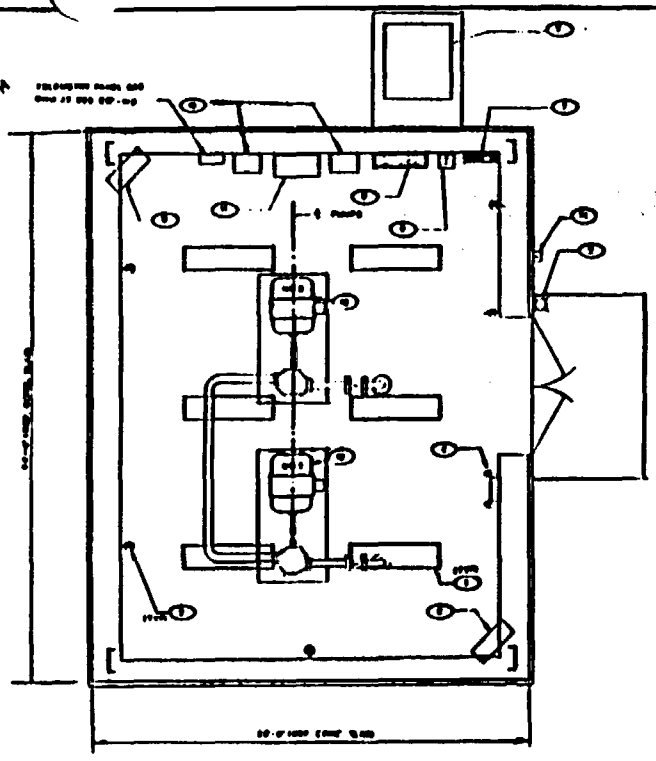
U. S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
EXPLORATORY SHAFT FACILITY
SUBSURFACE DATA BUILDING 6007

LIGHTING AND POWER PLAN

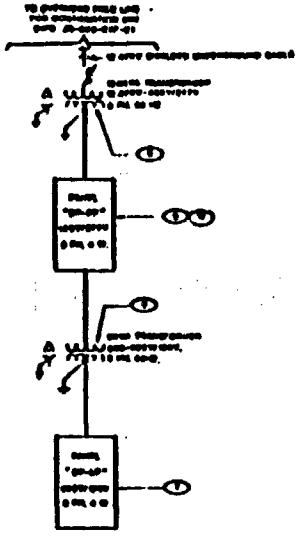
JS-025-6007 E1 B

TITLE 1



LIGHTING AND POWER PLAN

SCALE 3/8"-1'-0"



ONE LINE DIAGRAM

NOT TO SCALE

KEYED NOTES

GENERAL NOTES

REFERENCE DRAWINGS

CIVIL	J6-025 ESF-C31
STRUCTURAL	NOT USED IN TITLE I
ARCHITECTURAL	J6-025-6004-A1
MECHANICAL	NOT USED IN TITLE I
FIRE PROTECTION	NOT USED IN TITLE I
COMMUNICATION	

TITLE I

U. S. DEPARTMENT OF ENERGY

N. VADA NUCLEAR WASTE STORAGE INVESTIGATION

EXPLORATORY SHAFT FACILITY

BOOSTER PUMP STATION BUILDING 6004

LIGHTING AND POWER PLAN

J6-025-6004-E1.B

NNWSI/ESF TITLE I 90% REVIEW

AUGUST 8, 1988

MARTIN SHURTLEFF

LIFE SAFETY DESIGN

COMMUNICATIONS DESIGN

LIFE SAFETY SYSTEM
REFERENCE PUBLICATIONS

- GENERIC REQUIREMENTS FOR A MINED GEOLOGICAL DISPOSAL SYSTEM (GRMGDS) APPENDIX E.
- SUBSYSTEM DESIGN REQUIREMENTS DOCUMENTS (SDRD).
- OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT (OCRWM) SAFETY PLAN.
- ESF LIFE SAFETY/FIRE PROTECTION SUBCOMMITTEE RECOMMENDATIONS.
- BUREAU OF MINES INFORMATION CIRCULARS.
- H & N SPECIAL STUDY NO. 6A, REVISION 2.

LIFE SAFETY SYSTEM
CODES AND STANDARDS

- DOE 6430.1A "GENERAL DESIGN CRITERIA MANUAL".

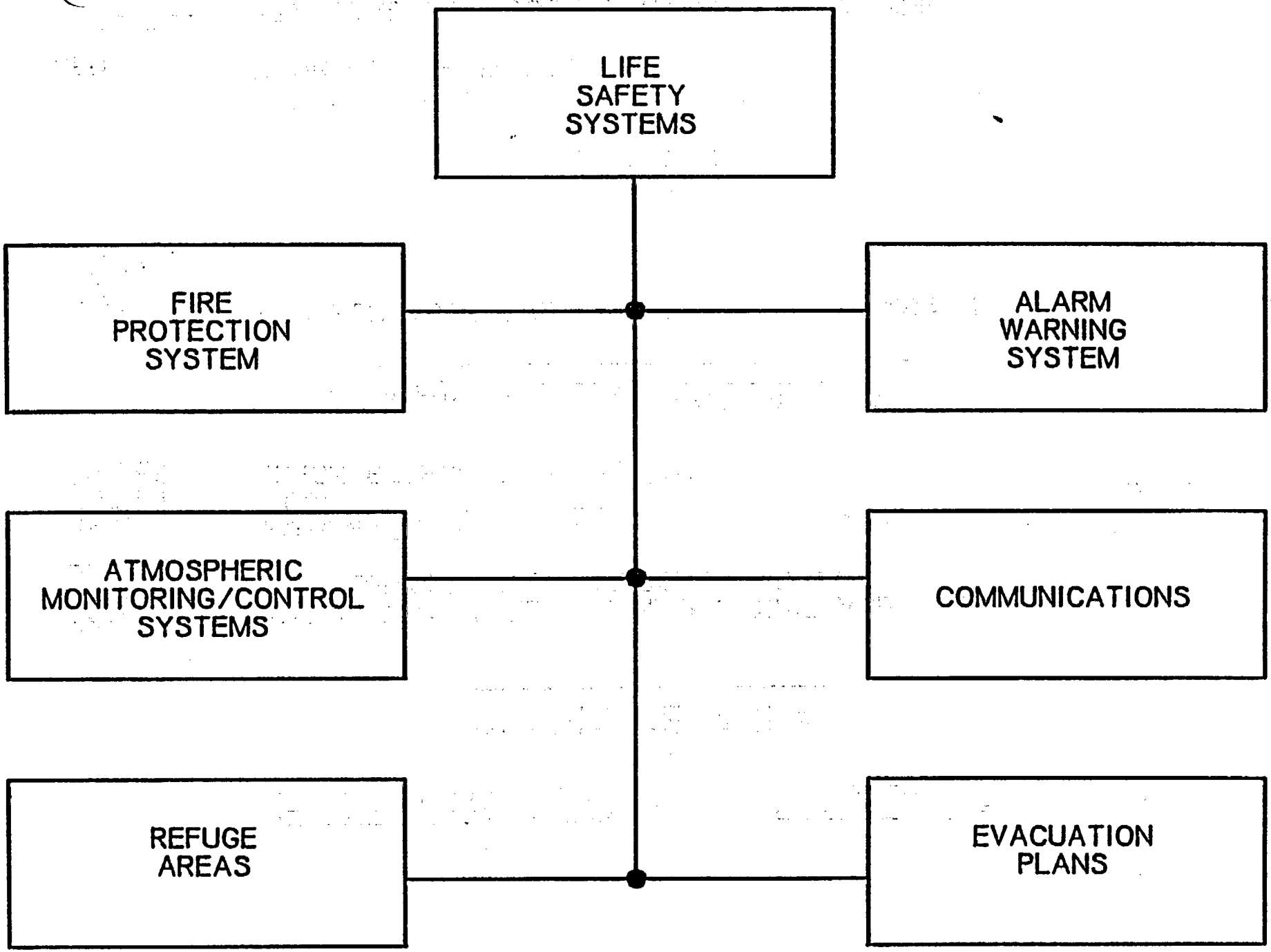
- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) STANDARDS.

- 30 CFR CHAPTER I - "MINE SAFETY AND HEALTH ADMINISTRATION"
  1) PART 32 - MOBILE DIESEL-POWERED EQUIPMENT FOR NON COAL MINES.
  2) PART 57 - SAFETY AND HEALTH STANDARDS FOR UNDERGROUND METAL AND NONMETAL MINES.

- 29 CFR CHAPTER XVII - "OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION".
  1) PART 1910 -- OCCUPATIONAL SAFETY AND HEALTH STANDARDS
  2) PART 1926 - SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION.

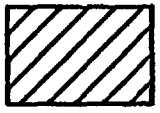
- CALIFORNIA ADMINISTRATIVE CODE, TITLE 8, CHAPTER 4 - DIVISION OF INDUSTRIAL SAFETY.
  1) SUBCHAPTER 17, MINE SAFETY ORDERS.
  2) SUBCHAPTER 20, TUNNEL SAFETY ORDERS.

- NEVADA REVISED STATUTE, TITLE 46, CHAPTER 512 - INSPECTION AND SAFETY OF MINES.

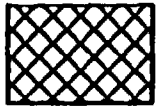

LIFE
SAFETY
SYSTEMS
FIRE
PROTECTION
SYSTEM
ALARM
WARNING
SYSTEM
ATMOSPHERIC
MONITORING/CONTROL
SYSTEMS
COMMUNICATIONS
REFUGE
AREAS
EVACUATION
PLANS

FIRE PROTECTION SYMBOLS

COVERAGE AREA



AUTOMATED WATER SPRINKLER COVERAGE AREA
WITH ON/OFF QUICK RESPONSE HEADS

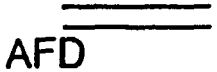


AUTOMATIC FOAM/WATER SPRINKLER COVERAGE AREA USING AQUEOUS FILM-FOAMING (AFFF) CONCENTRATES WITH ON/OFF QUICK RESPONSE HEADS

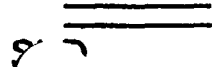
MANUAL EXTINGUISHERS

ABC PORTABLE FIRE EXTINGUISHERS IN CABINET

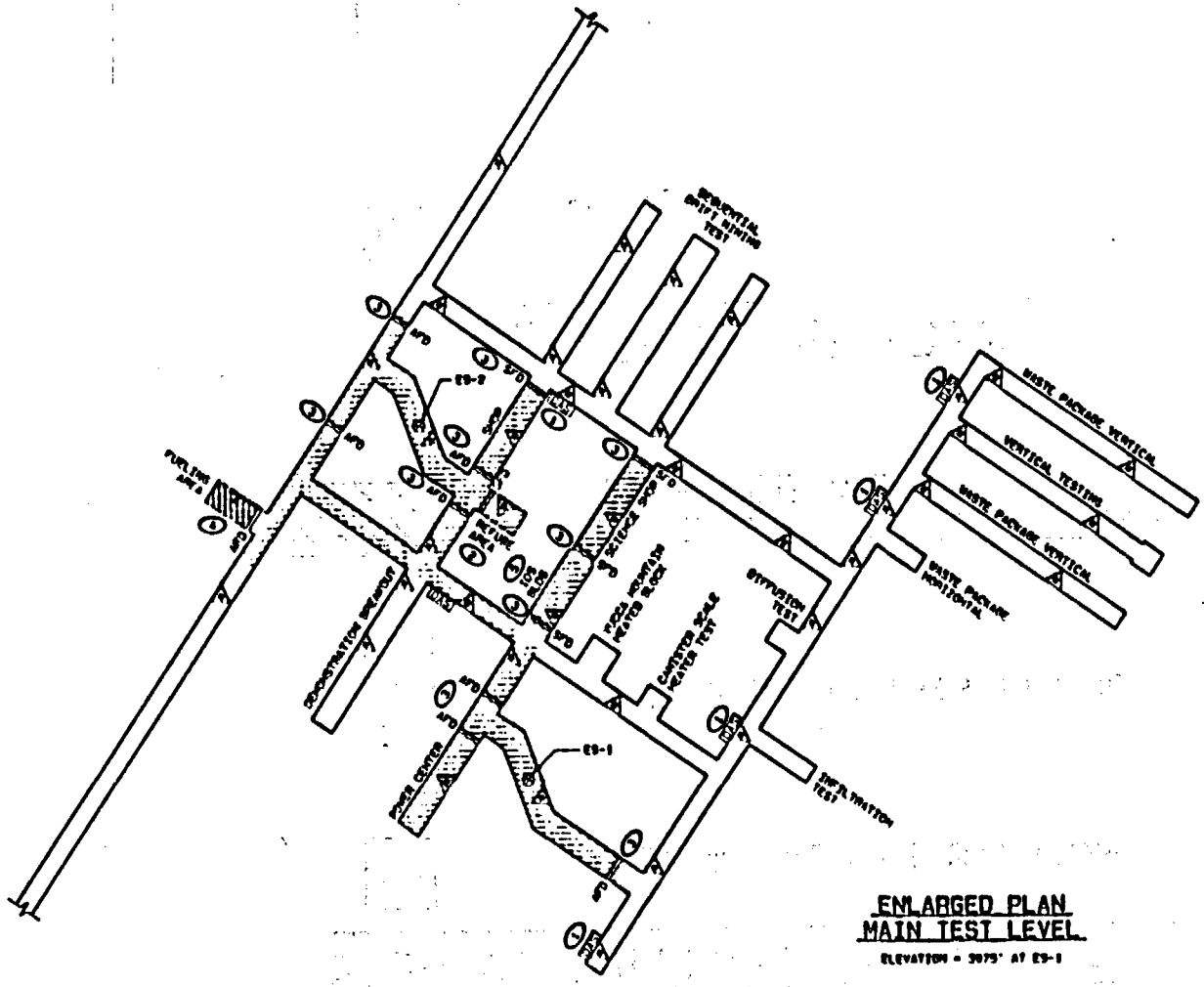
DAMPERS



AUTOMATED FIRE DOORS WITH REMOTE CLOSURE
DOOR DESIGN BY F&S



STANDARD FIRE DOOR WITH MANUAL CLOSURE
DESIGN BY F&S



ENLARGED PLAN
MAIN TEST LEVEL

ELEVATION = 3075' AT ES-1

GRAPHIC SCALE

50' 0' 50' 100' 150'

1" = 50'

TITLE I

GENERAL NOTES:

1. THIS TITLE I DRAWING DEPICTS ONLY THE MAJOR DESIGN FEATURES OF THIS PROJECT. ALL DETAILS, EQUIPMENT DESCRIPTIONS AND SPECIAL INSTRUCTIONS SHALL BE DEVELOPED DURING TITLE II EFFORT.
2. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWING JS-025-ESF-13.
3. FOR DRAWING INDEX SEE DRAWING JS-025-ESF-12
4. FOR QUALITY ASSURANCE LEVEL ASSIGNMENT SEE QA-AP-NO 6.7.1 REV 4

KEYED NOTES:

1. THE EXACT LOCATION OF ALL DATA ACQUISITION STATIONS SHALL BE DETERMINED BY OTHERS.
2. THE EXACT LOCATION AND SIZE OF THE REFUGE AREA SHALL BE DETERMINED BY OTHERS.
3. THE EXACT LOCATION OF ALL FIRE DOORS SHALL BE DETERMINED BY OTHERS
4. THE EXACT LOCATION AND SIZE OF THE FUELING AREA SHALL BE DETERMINED BY OTHERS.
5. FOR FIRE PROTECTION INSIDE THE BLDG. SEE SHEET JS 025 ROOF-FP1 PROTECTION SHOWN IS FOR ALCOVE

REFERENCE DRAWINGS

SEE EXTENSION SHEETS

U.S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
EXPLORATORY SHAFT FACILITY
FIRE PROTECTION SYSTEMS

MAIN TEST LEVEL PLAN

HOLMES & NARVER INC.
ARCHITECTS-ENGINEERS

JS-025-ESF-FP3.8

H G F E D C B A

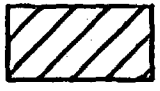
12 11 10 9 8 7 6 5 4 3 2 1

ALARM WARNING SYMBOLS

SIGNAL INITIATING DEVICES

MANUAL ALARM STATION

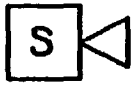
ALARM REPORTING PHONE



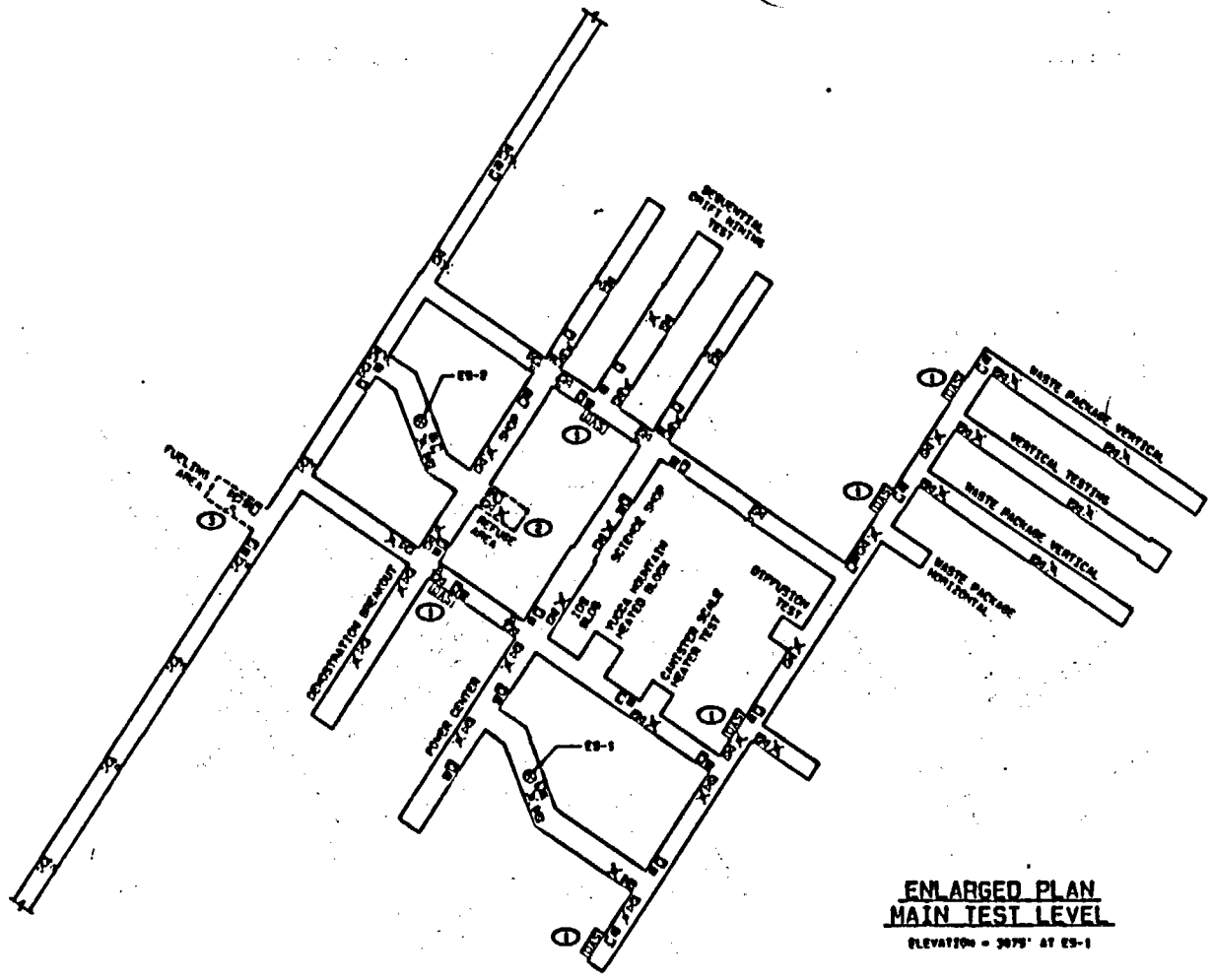
AUTOMATIC SMOKE DETECTION
COVERAGE AREA

ALERTING DEVICES

STROBE



SPEAKER



ENLARGED PLAN
MAIN TEST LEVEL

ELEVATION = 3075' AT ES-1

GRAPHIC SCALE

50' 0' 50' 100' 150'

1" = 50'

TITLE I

GENERAL NOTES:

1. THIS TITLE I DRAWING DEPICTS ONLY THE MAJOR DESIGN FEATURES OF THIS PROJECT. ALL DETAILS, EQUIPMENT DESCRIPTIONS, AND SPECIAL INSTRUCTIONS SHALL BE DEVELOPED DURING THE TITLE II EFFORT.
2. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWING JS-025-ESF-T2.
3. FOR DRAWING INDEX SEE DRAWING JS-025-ESF-T2.
4. FOR QUALITY ASSURANCE LEVEL ASSIGNMENT SEE DALAS NO. 8.7.1-0010.
5. ALL FIRE ALARM CIRCUITS, EQUIPMENT AND DEVICES SHALL HAVE UL - LISTED COMPONENTS OR BE FM APPROVED. THE FIRE ALARM SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH NFPA CODES AS APPLICABLE

KEYED NOTES:

1. THE EXACT LOCATION OF ALL DATA ACQUISITION STATIONS (DAS) SHALL BE DETERMINED BY OTHERS.
2. THE EXACT LOCATION AND SIZE OF THE REFUGE AREA SHALL BE DETERMINED BY OTHERS
3. THE EXACT LOCATION AND SIZE OF THE FUELING AREA SHALL BE DETERMINED BY OTHERS

REFERENCE DRAWINGS

MTL EXTENSION DRIFTS----------FP9

U.S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
LIFE SAFETY - ALARM WARNING SYSTEM

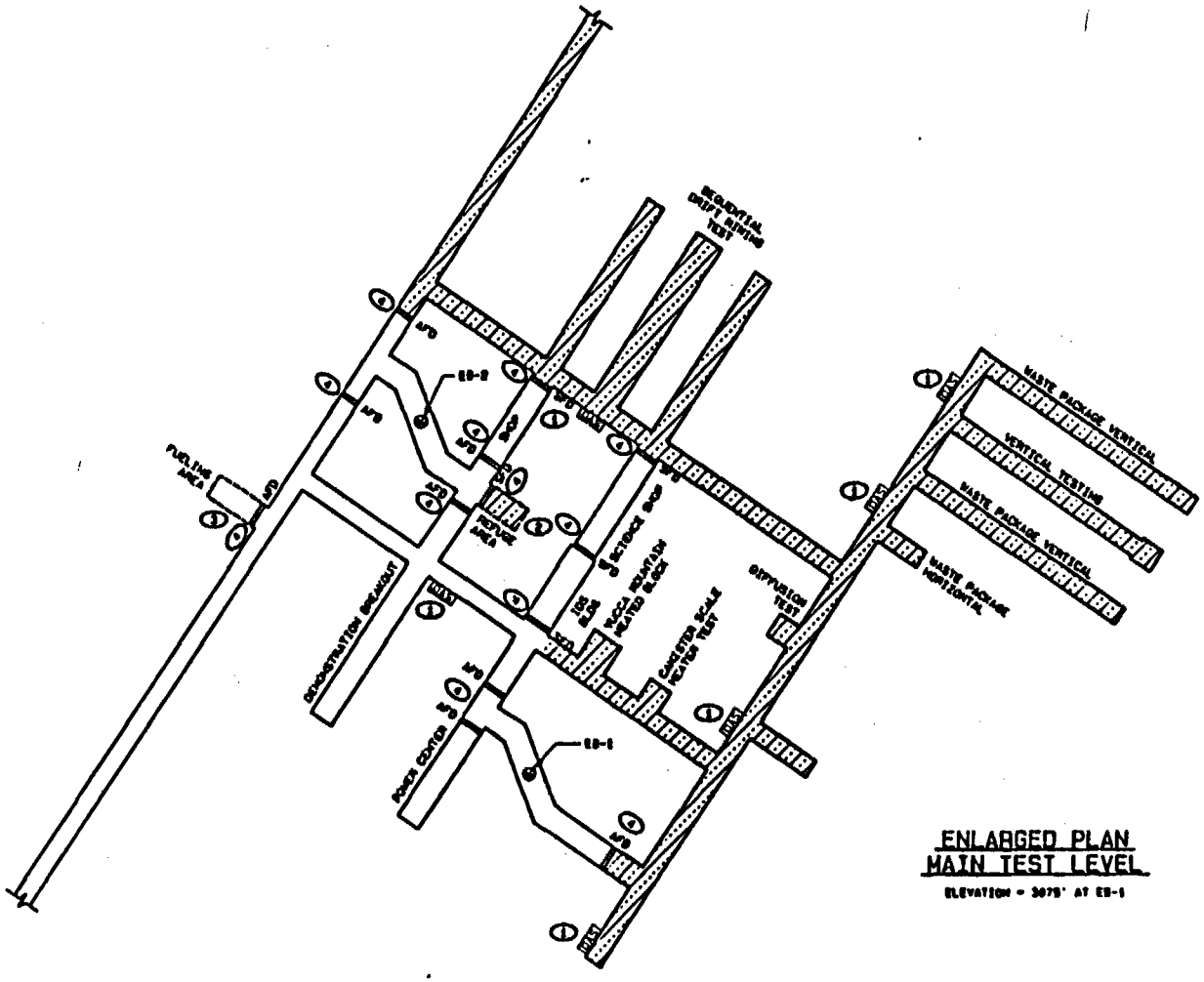
MAIN TEST LEVEL PLAN

HOLMES & NARVER INC.
ARCHITECTS-ENGINEERS

JS-025-ESF-FP8.A

12 11 10 9 8 7 6 5 4 3 2 1

H G F E D C B A



ENLARGED PLAN
MAIN TEST LEVEL

ELEVATION = 3075' AT EB-1

GRAPHIC SCALE

50' 0' 50' 100' 150'

1" = 50'

TITLE I

GENERAL NOTES:

1. THIS TITLE I DRAWING DEPICTS ONLY THE MAJOR DESIGN FEATURES OF THIS PROJECT. ALL DETAILS, EQUIPMENT DESCRIPTIONS, AND SPECIAL INSTRUCTIONS SHALL BE DEVELOPED DURING THE TITLE II EFFORT.
2. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWING JS-025-ESF-T3.
3. FOR DRAWING INDEX SEE DRAWING JS-025-ESF-T2.
4. FOR QUALITY ASSURANCE LEVEL ASSIGNMENT SEE DALAS NO. 8.7.1-0010.
5. ALL FIRE ALARM CIRCUITS, EQUIPMENT AND DEVICES SHALL HAVE UL - LISTED COMPONENTS OR BE FM APPROVED. THE FIRE ALARM SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH NFPA CODES AS APPLICABLE.
6. AUTOMATIC SMOKE DETECTION WILL BE PROVIDED IN ALL AREAS NOT COVERED BY WATER SPRINKLER SYSTEM

KEYED NOTES:

1. THE EXACT LOCATION OF ALL DATA ACQUISITION STATIONS (DAS) SHALL BE DETERMINED BY OTHERS
2. THE EXACT LOCATION AND SIZE OF THE REFUGE AREA SHALL BE DETERMINED BY OTHERS.
3. THE EXACT LOCATION AND SIZE OF THE FUELING AREA SHALL BE DETERMINED BY OTHERS.
4. THE EXACT LOCATION OF ALL FIRE DOORS SHALL BE DETERMINED BY OTHERS.

REFERENCE DRAWINGS

MTL EXTENSION DRIFTS----------FP13

REVISIONS

U.S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
LIFE SAFETY - AUTOMATIC FIRE DETECTION

MAIN TEST LEVEL PLAN

HOLMES & NARVER INC.
ARCHITECTS-ENGINEERS

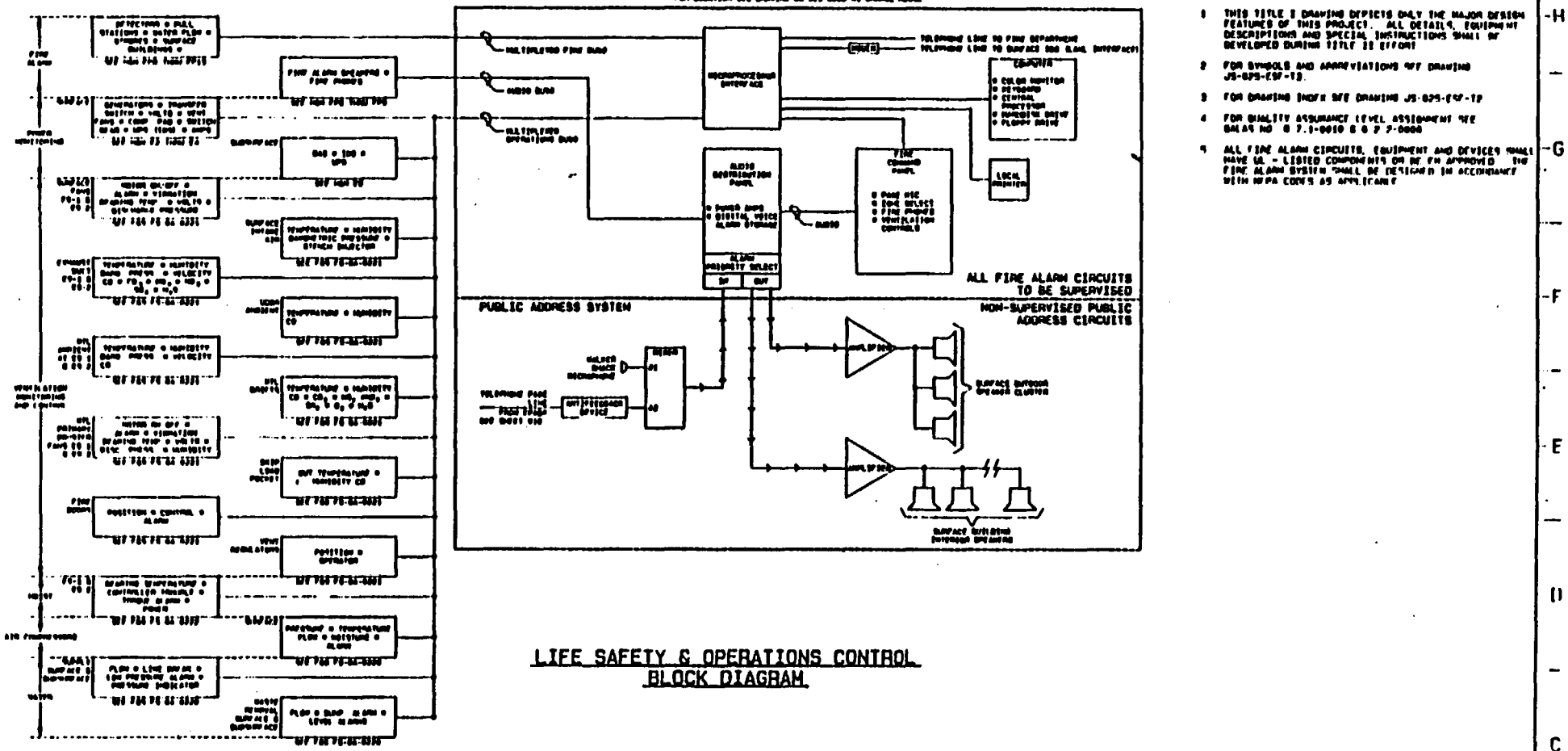
JS-025-ESF-FP12.1

12 11 10 9 8 7 6 5 4 3 2 1

H G F E D C B A

LIFE SAFETY - OPERATIONS CONTROL

- ALARM WARNING SYSTEM
- POWER MONITORING
- VENTILATION MONITORING AND CONTROL
- HOIST SYSTEMS MONITORING
- AIR COMPRESSOR SYSTEMS MONITORING AND CONTROL
- WATER SYSTEMS MONITORING



LIFE SAFETY & OPERATIONS CONTROL BLOCK DIAGRAM

GENERAL NOTES:

1. THIS TITLE I DRAWING DEPICTS ONLY THE MAJOR DESIGN FEATURES OF THIS PROJECT. ALL DETAILS, EQUIPMENT DESCRIPTIONS AND SPECIAL INSTRUCTIONS SHALL BE DEVELOPED DURING TITLE II EFFORT.
2. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWING JS-025-ESF-T1.
3. FOR DRAWING INDEX SEE DRAWING JS-025-ESF-T2
4. FOR QUALITY ASSURANCE LEVEL ASSIGNMENT SEE DALAP NO. B T1-0010 B G P 2-0000
5. ALL FIRE ALARM CIRCUITS, EQUIPMENT AND DEVICES SHALL HAVE UL - LISTED COMPONENTS OR BE FM APPROVED. THE FIRE ALARM SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH NFPA CODES AS APPLICABLE.

TITLE I

U.S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATIONS
EXPLORATORY SHAFT FACILITY
LIFE SAFETY - OPERATIONS CONTROL
BLOCK DIAGRAM

HOLMES & NARVER INC.
ARCHITECTS-ENGINEERS

JS-025-ESF-FP5.B

CENTRAL CONTROL ROOM

- FIRE CONTROL CENTER
  1. PAGE MICROPHONE WITH ZONE SELECT.
  2. FIRE PHONES.
  3. VENTILATION CONTROLS.

- COMPUTER INFORMATION CENTER
  1. COLOR CRT MONITOR WITH GRAPHICS.
  2. KEYBOARD.
  3. CENTRAL PROCESSOR.
  4. PROGRAM STORAGE.
  5. PRINTER.

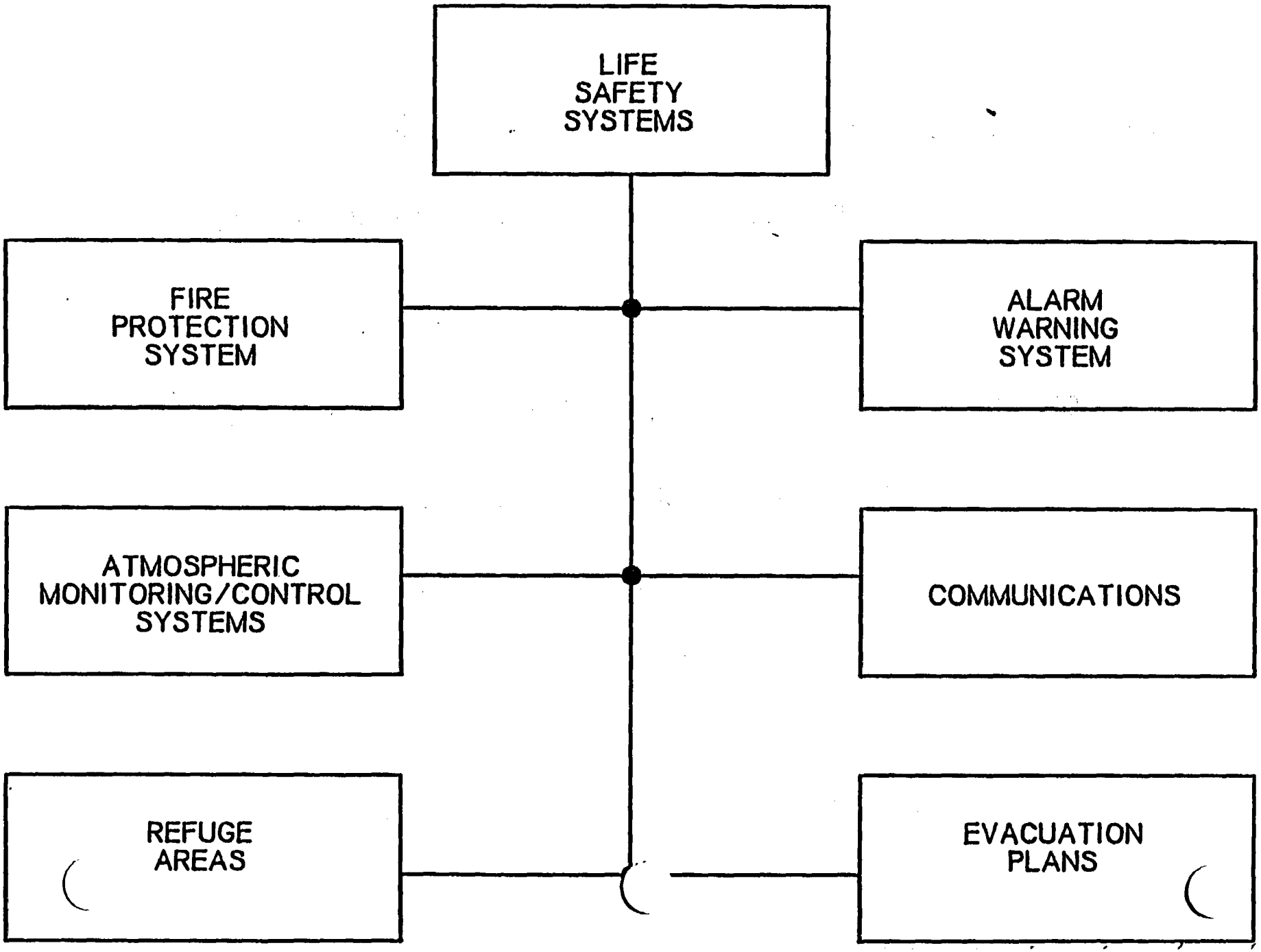
REFUGE AREA

- PROVIDES STAGING AREA FOR PERSONNEL AWAITING HOIST FOR EVACUATION.

- CENTRAL LOCATION FOR COMMUNICATIONS TO FIRE CONTROL CENTER.

EVACUATION SEQUENCE

- HAZARDOUS CONDITIONS DETECTED.
- ALARM SOUNDS. EVACUATION STARTS.
- COMMUNICATIONS TO THE FIRE CONTROL CENTER.
- VENTILATION CONTROLS MANUALLY SET TO THE FIRE MODE.
- EVACUATION SEQUENCE CONTINUES AS DIRECTED BY THE FIRE CONTROL CENTER.
- FIRE DEPARTMENT/MINE RESCUE RESPONSE.
- PERSONNEL REMAIN IN REFUGE AREA OR HOISTED TO SURFACE AS DIRECTED BY THE FIRE CONTROL CENTER.


LIFE SAFETY SYSTEMS
FIRE PROTECTION SYSTEM
ALARM WARNING SYSTEM
ATMOSPHERIC MONITORING/CONTROL SYSTEMS
COMMUNICATIONS
REFUGE AREAS
EVACUATION PLANS

COMMUNICATION SYSTEMS

- INTEGRATED DATA SYSTEM CABLE PLANT
- WATERLINE TELEMETRY
- HOIST OPERATORS CCTV
- TELEPHONE
- MINE PLANT - EXPERIMENTER INTERCOM
- PUBLIC ADDRESS

COMMUNICATION SYSTEMS REFERENCE PUBLICATIONS

- GENERIC REQUIREMENTS FOR A MINED GEOLOGIC DISPOSAL SYSTEM (GRMGDS) APPENDIX E
- SUBSYSTEM DESIGN REQUIREMENT DOCUMENT (SDRD)
- IDS 1011-007-00 REVISION 0, TITLE I PRELIMINARY DESIGN
- H&S SPECIAL STUDY 6B REVISION I COMMUNICATION SYSTEMS
- RURAL ELECTRIFICATION ADMINISTRATION (REA) BULLETINS
- INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)
- BELL SYSTEMS PRACTICES
- MILITARY STANDARDS
- ELECTRONICS INDUSTRIES ASSOCIATION (EIA)
- NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
- INTERNATIONAL ELECTROTECHNICAL COMMISSION (IEC)

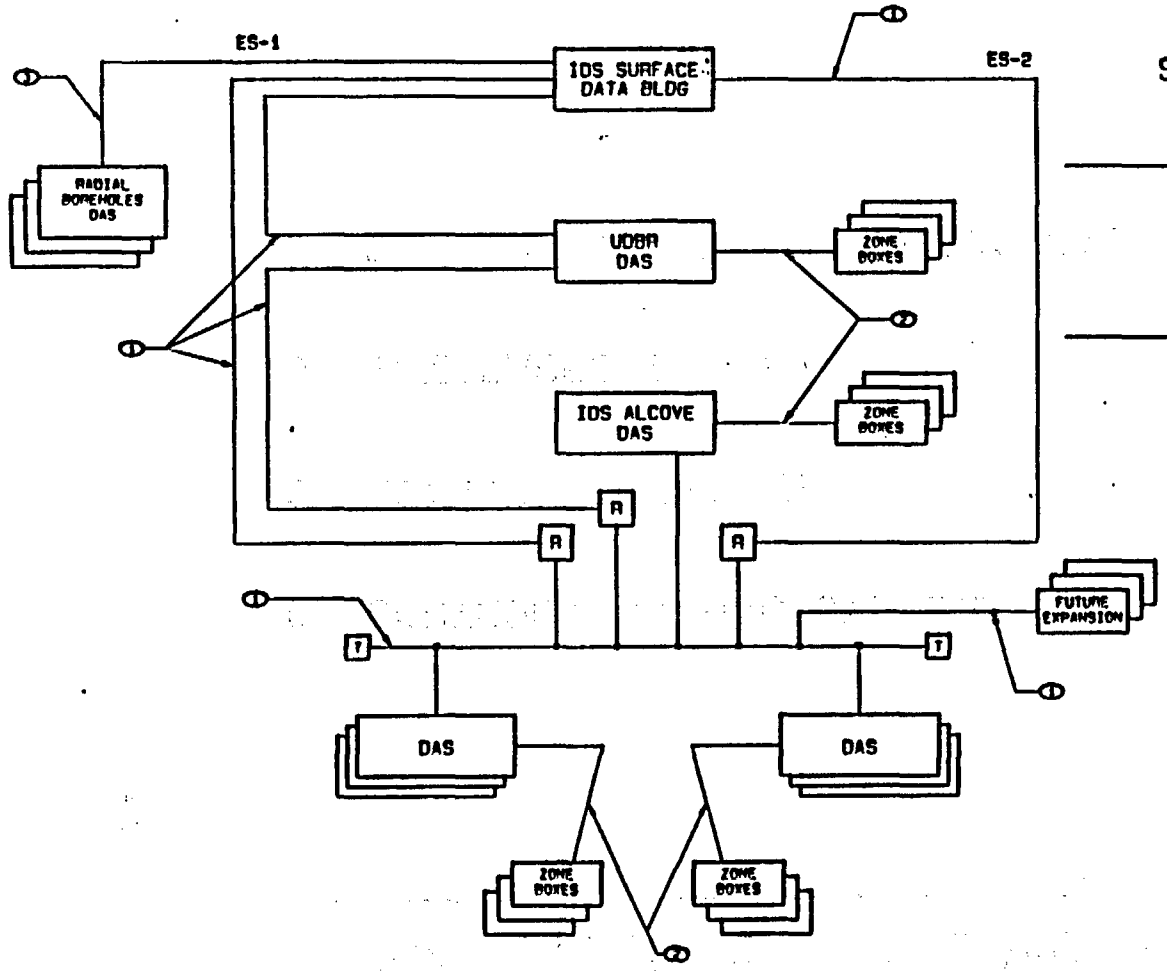
COMMUNICATION SYSTEMS CODES AND STANDARDS

- DOE 6430.1A "GENERAL DESIGN CRITERIA MANUAL"
- DOE 5300.1A "TELECOMMUNICATIONS"
- DOE NEVADA STANDARD TEST MEHTODS FOR CABLE
- NFPA 70 "NATIONAL ELECTRICAL CODE"
- 30 CFR CHAPTER I-"MINE SAFETY AND HEALTH ADMINISTRATION"
  PART 57-SAFETY AND HEALTH STANDARDS FOR UNDERGROUND METAL AND NONMETAL MINES
- CALIFORNIA ADMINISTRATIVE CODE. TITLE 8. CHAPTER 4-DIVISION OF INDUSTRIAL SAFETY
  1)SUBCHAPTER 17. MINE SAFETY ORDERS
  2)SUBCHAPTER 20. TUNNEL SAFETY ORDERS
- NEVADA REVISED STATUTE. TITLE 46. CHAPTER 512-INSPECTION AND SAFETY OF MINES
- AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

INTERGRATED DATA SYSTEM CABLE PLANT

DESIGN INCLUDES:

- CABLES
  1) FIBEROPTIC
  2) COAXIAL
  3) TWISTED SHIELDED PAIR
- CONNECTORS
- ZONE BOXES



GENERAL NOTES

1. THIS TITLE I DRAWING DEPICTS ONLY THE MAJOR DESIGN FEATURES OF THIS PROJECT. ALL DETAILS, EQUIPMENT DESCRIPTIONS AND SPECIAL INSTRUCTIONS SHALL BE DEVELOPED DURING TITLE II EFFORT.
2. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWING JS-025-ESF-14.
3. FOR DRAWING INDEX SEE DRAWING JS-025-ESF-12.
4. FOR QUALITY ASSURANCE LEVEL ASSIGNMENT SEE QALA NO. B.7.1.0001, B.7.1-0005, B.7.1-0007.

KEYED NOTES:

1. THESE CABLES ARE FOR ETHERNETS A, B, AND C AND IRIG-B 01 AND 02. THE CABLES TO ES-2 ARE REDUNDANT AND ARE TO BE CONNECTED AS NEEDED.
2. THESE CABLES ARE TO BE "ZONE BOX MULTI-PAIR"
3. THESE CABLES ARE TO BE FOR "MAIN DRIFT MDF NETWORK".

REFERENCE DRAWINGS

FACILITY DIAGRAM----------M2
TYP. INSTALLATION DETAILS----------M3

TITLE I

U.S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
INTEGRATED DATA SYSTEM CABLE PLANT
SIMPLIFIED BLOCK DIAGRAM
HOLMES & NARVER INC. ARCHITECTS-ENGINEERS
JS-025-ESF-M1.8

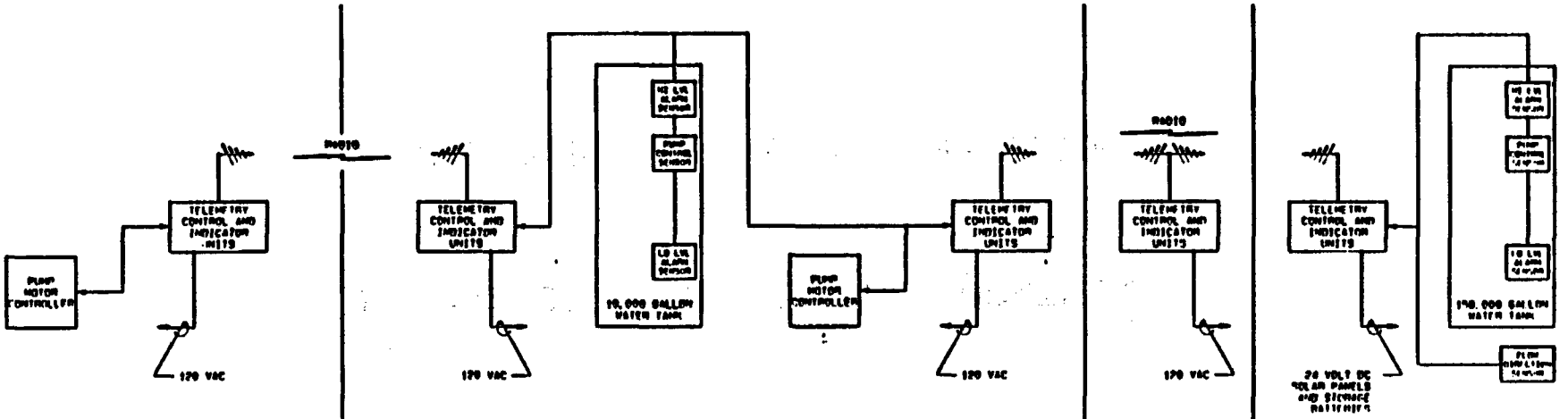
11 10 9 8 7 6 5 4 3 2 1
H G F E D C B A

WATERLINE TELEMETRY

- CONTROLS PUMPING SYSTEMS
- WIRELESS OPERATION
- INTERFACES TO NTS
- SOLAR POWERED AT 150,000 GALLON TANK

GENERAL NOTES:

1. THIS TITLE I DRAWING DEPICTS ONLY THE MAJOR DESIGN FEATURES OF THIS PROJECT. ALL DETAILS, EQUIPMENT DESCRIPTIONS, AND SPECIAL INSTRUCTIONS SHALL BE DEVELOPED DURING THE TITLE II EFFORT.
2. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWING JS-025-ESF-14.
3. FOR DRAWING INDEX SEE DRAWING JS-025-ESF-12.
4. FOR QUALITY ASSURANCE LEVEL ASSIGNMENT SEE SALAS NO. 8 2 2-0008



WATER WELL J-13 PUMPING STATION

10,000 GALLON FOREBAY TANK AND BOOSTER PUMPING STATION

WATERLINE MONITOR STATION LOCATED IN CHANGE HOUSE

150,000 GALLON WATER TANK

TITLE I

U.S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
WATER SYSTEM

TELEMETRY BLOCK DIAGRAM

HOLMES & NARVER INC.
ARCHITECTS-ENGINEERS

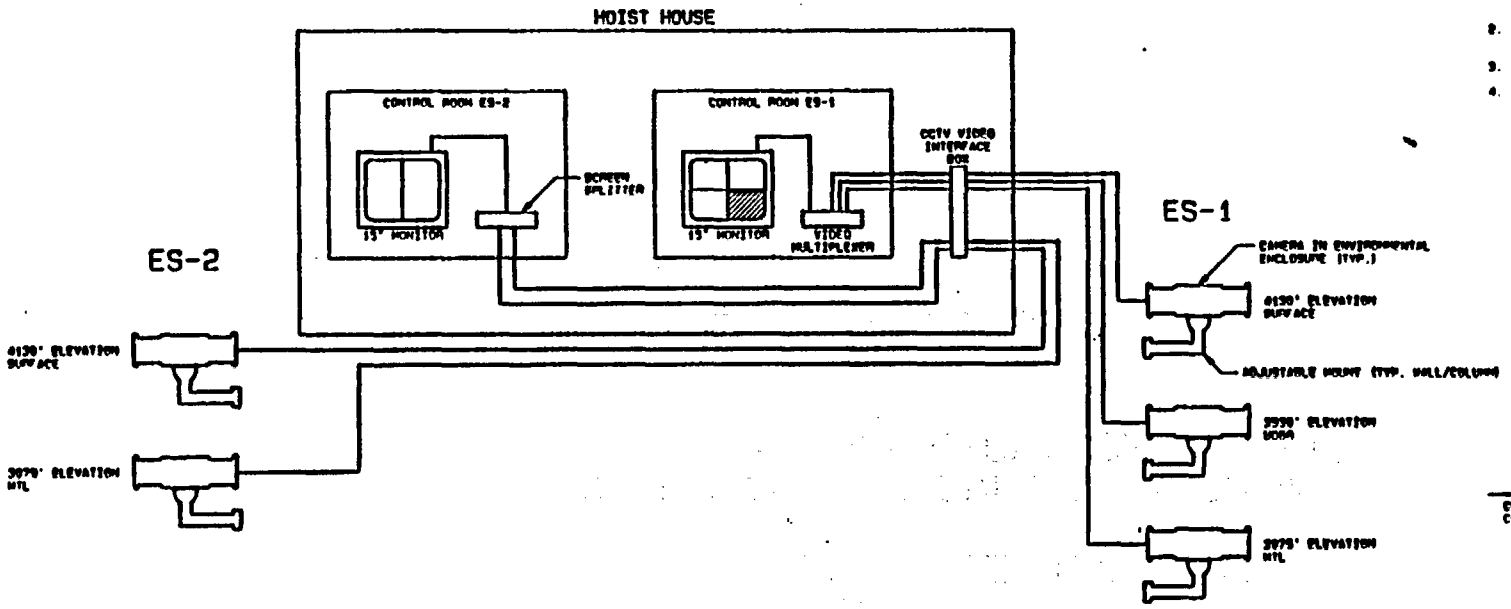
JS-025-ESF-W5.8

12 11 10 9 8 7 6 5 4 3 2 1

H G F E D C B A

HOIST OPERATORS CCTV

- MONITORING AT CRITICAL LOCATIONS
- COMBINES CAMERAS TO ONE SCREEN



GENERAL NOTES:

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2. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWING JS-025-ESF-T4.
3. FOR DRAWING INDEX SEE DRAWING JS-025-ESF-T7
4. FOR QUALITY ASSURANCE LEVEL ASSIGNMENT SEE QALA NO 0.2.2-0008 G 0 7 1-0004

REFERENCE DRAWINGS

CCTV SURFACE BLOCK DIAGRAM----------MB
CCTV EQUIPMENT LAYOUT----------MB

TITLE I

U.S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
CCTV SYSTEM
BLOCK DIAGRAM
HOLMES & NARVER INC.
ARCHITECTS-ENGINEERS
JS-025-ESF-W7.B

12 11 10 9 8 7 6 5 4 3 2 1
H G F E D C B A

TELEPHONE

- MICROWAVE SYSTEM
  1) AREA 25
  2) OFFSITE NETWORKS
- ELECTRONIC PRIVATE AUTOMATIC BRANCH EXCHANGE (EPABX)
- TELEPHONE OUTLETS

GENERAL NOTES:

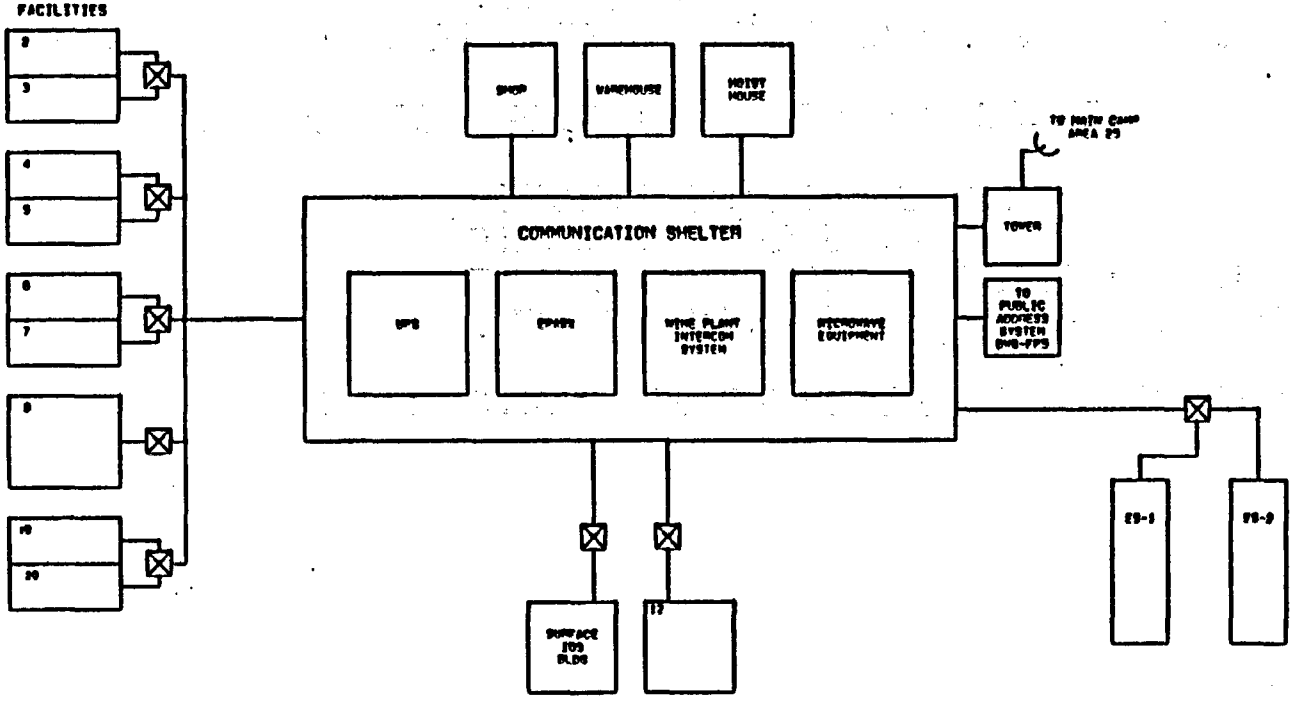
1. THIS TITLE I DRAWING DEPICTS ONLY THE MAJOR DESIGN FEATURES OF THIS PROJECT. ALL DETAILS, EQUIPMENT DESCRIPTIONS AND SPECIAL INSTRUCTIONS SHALL BE DEVELOPED DURING TITLE II EFFORT.
2. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWING JS-025-ESF-T4.
3. FOR DRAWING INDEX SEE DRAWING JS-025-ESF-T2.
4. FOR QUALITY ASSURANCE LEVEL ASSIGNMENT SEE QALAS NO. 8.2.2-0006 & 8.7.1-0004.

FACILITIES:

TITLE	
2	LOS ALAMOS TRAILER
3	LAWRENCE LIVERMORE TRAILER
4	SNL/USGS TRAILER
5	SAIC TRAILER
6	M&O/TES TRAILER
7	DOE/NRC/STATE OF NEVADA TRAILER
8	CHANGE HOUSE BUILDING
18	SUBCONTRACTORS AREA
19	PEECo TRAILER
20	PEECo TRAILER

REFERENCE DRAWINGS

ELEVATION & PLAN DETAIL----------PD
LIFE SAFETY & OPERATIONS CONTROL-------FPS
MAIN PAD SITE PLAN----------C4
COMMUNICATIONS PAD SITE PLAN----------C8



TITLE I

U.S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
SURFACE TELEPHONE SYSTEM
BLOCK DIAGRAM

HOLMES & NARVER INC.
ARCHITECTS-ENGINEERS

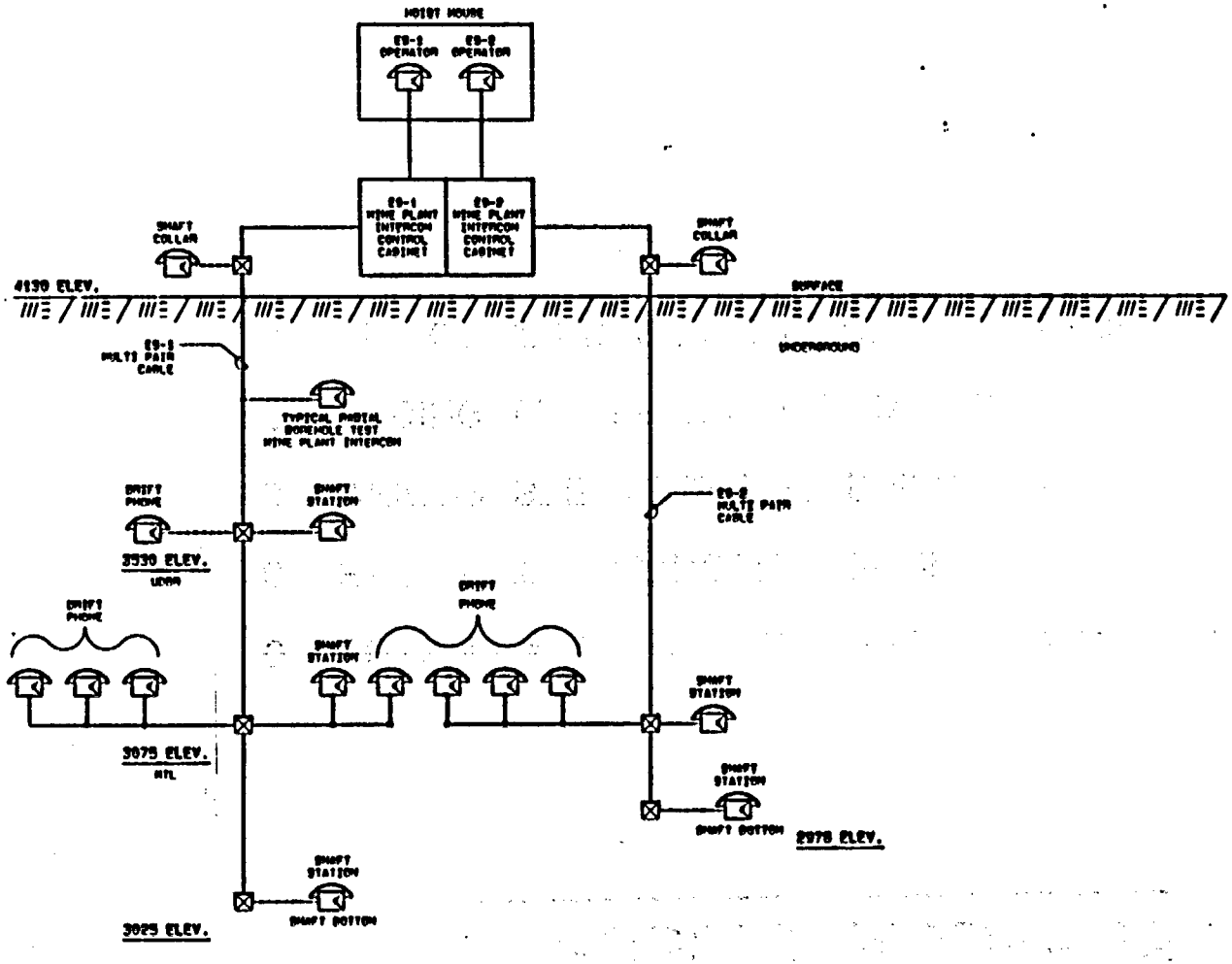
JS-025-ESF-M10.8

12 11 10 9 8 7 6 5 4 3 2 1

H G F E D C B A

MINE PLANT-EXPERIMENTERS INTERCOM

- FUNCTIONALLY SEPARATE COMMUNICATIONS
  1) ES-1 HOIST OPERATOR/SHAFT STATIONS
  2) ES-2 HOIST OPERATOR/SHAFT STATIONS
  3) MINING OPERATIONS
  4) EXPERIMENTER OPERATIONS
- CONNECTS TO TELEPHONE SYSTEM
- INDEPENDANT CONVERSATIONS USING COMMON CONTROL UNIT



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2. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWING JS-025-ESF-14.
3. FOR DRAWING INDEX SEE DRAWING JS-025-ESF-12
4. FOR QUALITY ASSURANCE LEVEL ASSIGNMENT SEE SALAS NO. 8.2.2-0008 & 8.7.1-0004.
5. INTERCOM SETS ARE EQUIPPED WITH DIAL 0 AND SPEAKING FOR DIAL ACCESS AND PAGING

REFERENCE DRAWINGS

TITLE I

U.S. DEPARTMENT OF ENERGY

NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
MINE PLANT-EXPERIMENTERS INTERCOM

BLOCK DIAGRAM

HOLMES & NARVER INC.
ARCHITECTS-ENGINEERS

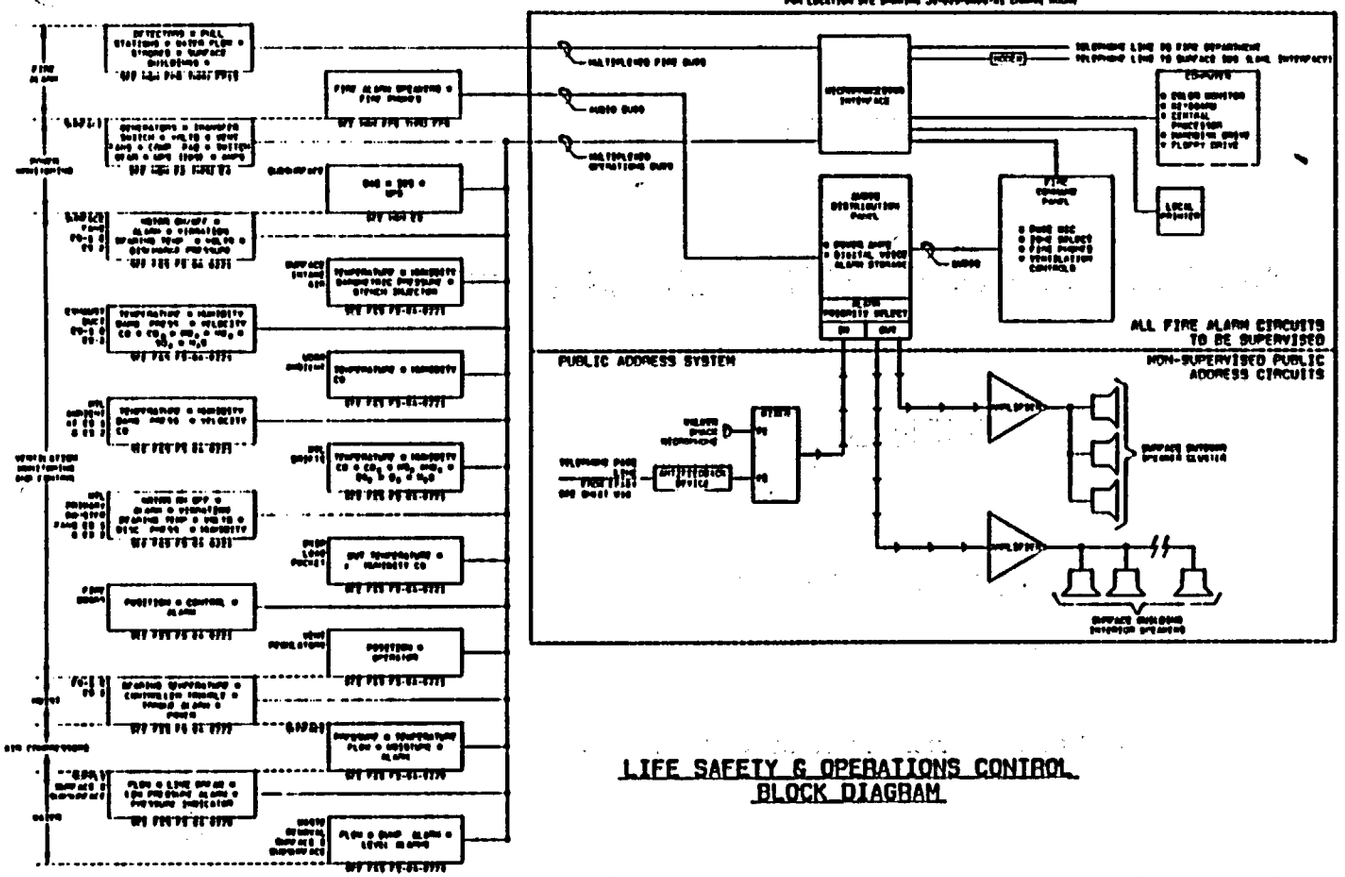
JS-025-ESF-M12.8

12 11 10 9 8 7 6 5 4 3 2 1

H G F E D C B A

PUBLIC ADDRESS

- SUBSURFACE SPEAKERS PROVIDED BY ALARM SYSTEM
- PAGING TO OUTDOOR AREAS
- INDOOR SPEAKERS FOR BUILDINGS
- PAGING VIA TELEPHONE SYSTEM
- ALARM MESSAGES OVERRIDES PAGING



LIFE SAFETY & OPERATIONS CONTROL BLOCK DIAGRAM

GENERAL NOTES:

1. THIS TITLE I DRAWING DEPICTS ONLY THE MAJOR DESIGN FEATURES OF THIS PROJECT. ALL DETAILS, EQUIPMENT DESCRIPTIONS AND SPECIAL INSTRUCTIONS SHALL BE DEVELOPED DURING TITLE II EFFORT
2. FOR SYMBOLS AND ABBREVIATIONS SEE DRAWING JS-025-ESF-T2
3. FOR DRAWING INDEX SEE DRAWING JS 025 ESF-T2
4. FOR QUALITY ASSURANCE LEVEL ASSIGNMENT SEE QAP&S NO. QAP 7.1-0010 & QAP 7.3-0006
5. ALL FIRE ALARM CIRCUITS, EQUIPMENT AND DEVICES SHALL HAVE UL - LISTED COMPONENTS OR BE FM APPROVED. THE FIRE ALARM SYSTEM SHALL BE DESIGNED IN ACCORDANCE WITH NFPA CODES AS APPLICABLE

TITLE I

U.S. DEPARTMENT OF ENERGY
NEVADA NUCLEAR WASTE STORAGE INVESTIGATION
EXPLORATORY SHAFT FACILITY
LIFE SAFETY - OPERATIONS CONTROL
BLOCK DIAGRAM
HOLMES & NARVER INC.
ARCHITECTS-ENGINEERS
JS-025-ESF-FP5 B

12 11 10 9 8 7 6 5 4 3 2 1
H G F E D C B A

COMMUNICATION SYSTEMS

- INTEGRATED DATA SYSTEM CABLE PLANT
- WATERLINE TELEMETRY
- HOIST OPERATORS CCTV
- TELEPHONE
- MINE PLANT - EXPERIMENTER INTERCOM
- PUBLIC ADDRESS

WORKSHOPS

* COMMUNICATIONS
  SURFACE AND SUBSURFACE

* SITE LAYOUT
  SURFACE

* LIFE SAFETY

* ELECTRICAL SYSTEMS
  SURFACE AND SUBSURFACE
  (JOINT WORKSHOP WITH F&S)

F S

engineering
construction
management

NNWSI

EXPLORATORY SHAFT FACILITY

FENIX & SCISSON, INC.

TITLE I DESIGN COMPLETION

PRESENTATION

AUGUST 8, 1988

FENIX & SCISSON

TITLE I DESIGN COMPLETION

PROJECT OVERVIEW

DICK BULLOCK

AUGUST 8, 1988

SUMMARY OF ACTIONS REQUIRED BY 50% TITLE I DESIGN REVIEW COMMENTS

- TOTAL NUMBER OF COMMENTS (FOR F & S) = 582
- COMMENTS REQUIRING ACTION = 418
- ACTION ON 408 RESOLVED COMMENTS COMPLETED
- ACTION ON REMAINING 10 COMMENTS HAS BEEN INITIATED. WORK IN PROGRESS
- COPIES OF TRACKING DOCUMENT SHOWING DISPOSITION OF RESOLVED COMMENTS ARE AVAILABLE

COMMENTS NEEDING ADDITIONAL WORK

THREE AREAS OF COMMENTS NEED ADDITIONAL WORK

- DRAFT SEISMIC CRITERIA REPORT HAS BEEN BASELINED AND IS BEING IMPLEMENTED. REVISIONS ARE BEING CONTEMPLATED

- FINAL DECOMMISSIONING SEAL DESIGN AND LOCATIONS WILL BE COMPLETED BY THE REPOSITORY A/E. WE HAVE COMPLETED PRELIMINARY ANALYSIS OF ESF ABANDONMENT & RECLAMATION.

- A SAFETY ANALYSIS CONSULTING FIRM IS BEING SUBCONTRACTED TO PERFORM SAFETY ANALYSIS. WE HAVE PREPARED A LIST OF HAZARDS ---- RISK ANALYSIS WORK IS IN PROGRESS.

- ICWG APPROVED BASELINE CHANGES RELATING TO:
  - INTEGRATED DATA SYSTEM REQUIREMENTS
  - ES SEISMIC DESIGN BASIS
  - ELECTRICAL GROUNDING SYSTEM
  - CALICO HILL REFERENCES

WORK DONE TO COMPLETE ACTION ON REVIEW COMMENTS

- 23 ADDITIONAL STUDIES/ANALYSES COMPLETED

- HELD MEETINGS WITH REECo, LANL, H & N, SNL TO RESOLVE:
  - AREAS FOR STORAGE & CONSTRUCTION SUPPORT
  - POTENTIAL DISRUPTIVE IMPACTS OF EXCAVATIONS ON SHOPS/IDS.
  - DEFINITION OF VARIOUS FUNCTIONS & RESPONSIBILITY FOR PREPARATION & CONTENTS OF SPECIFICATIONS AND ANNOTATED OUTLINES OF BID PACKAGES.
  - INCLUSION OF MEASUREMENT & PAYMENT CLAUSES WITH SPECIFICATIONS.

SCOPE OF F & S WORK

- SHAFT COLLARS
- SHAFT EXCAVATION & LINING
- HOISTS & HEADFRAMES
- SUBSURFACE EXCAVATIONS
- SHAFT INTERNALS AND CONVEYANCES
- IN-SHAFT & UNDERGROUND UTILITIES
  - UNDERGROUND VENTILATION SYSTEM
  - UNDERGROUND WATER AND MINE WASTE REMOVAL
  - SUPPLY & DISTRIBUTION OF COMPRESSED AIR
  - ELECTRICAL DISTRIBUTION UNDERGROUND
  - PORTIONS OF UNDERGROUND INSTRUMENTATION & COMMUNICATION SYSTEMS

QA PROGRAM

- SPECIAL EMPHASIS HAS BEEN PLACED ON QA FOR TITLE I DESIGN. THERE WILL BE A SEPARATE PRESENTATION ON QA

- THE PURPOSE OF FENIX & SCISSON QA PROGRAM IS TO PROVIDE CONFIDENCE THAT F & S WILL CONTINUALLY ACHIEVE SATISFACTORY QUALITY PERFORMANCE

- THE PROGRAM CONTROLS:
  - DESIGN INTERFACES
  - DESIGN VERIFICATION
  - DESIGN CHANGES
  - USE OF APPROPRIATE DESIGN INPUTS AND STANDARDS.

TITLE I REQUIREMENTS PER DOE ORDER 4700.1 AND PRESENT STATUS

- PREPARATION OF PRELIMINARY PLANNING AND ENGINEERING STUDIES . COMPLETE
- PRELIMINARY DRAWINGS AND OUTLINE SPECIFICATIONS COMPLETE
- LIFE-CYCLE COST ANALYSIS COMPLETE
- PRELIMINARY COST ESTIMATES & SCHEDULES THEY ARE IN PROGRESS AND THE RESULTS OF THIS REVIEW WILL BE INCORPORATED AND SUBMITTED THIS MONTH.
- IDENTIFICATION OF LONG LEAD ITEMS — COMPLETE
- RISK ANALYSIS-IN PROGRESS. PRELIMINARY REPORT TO BE AVAILABLE IN TWO WEEKS
- ALL TASKS ARE ESSENTIALLY COMPLETE AND WE WILL BE READY TO START TITLE II BY THE END OF THIS REVIEW PROCESS

ORDER OF PRESENTATION

1. MIKE REGENDA — TITLE I QUALITY ASSURANCE PROGRAM
2. JIM GRENIA — TECHNICAL OVERVIEW
3. BRUCE STANLEY — SHAFT & SUBSURFACE DESIGN
4. MAREK MRUGALA — GROUND STABILITY
5. ROMEO JURANI — VENTILATION DESIGN
6. IVO LANGE — SHAFT OUTFITTING/HOISTING DESIGN
7. LARRY BARTO — MECHANICAL UTILITIES
8. TOM GREINER — UNDERGROUND ELECTRICAL DESIGN

FENIX & SCISSON

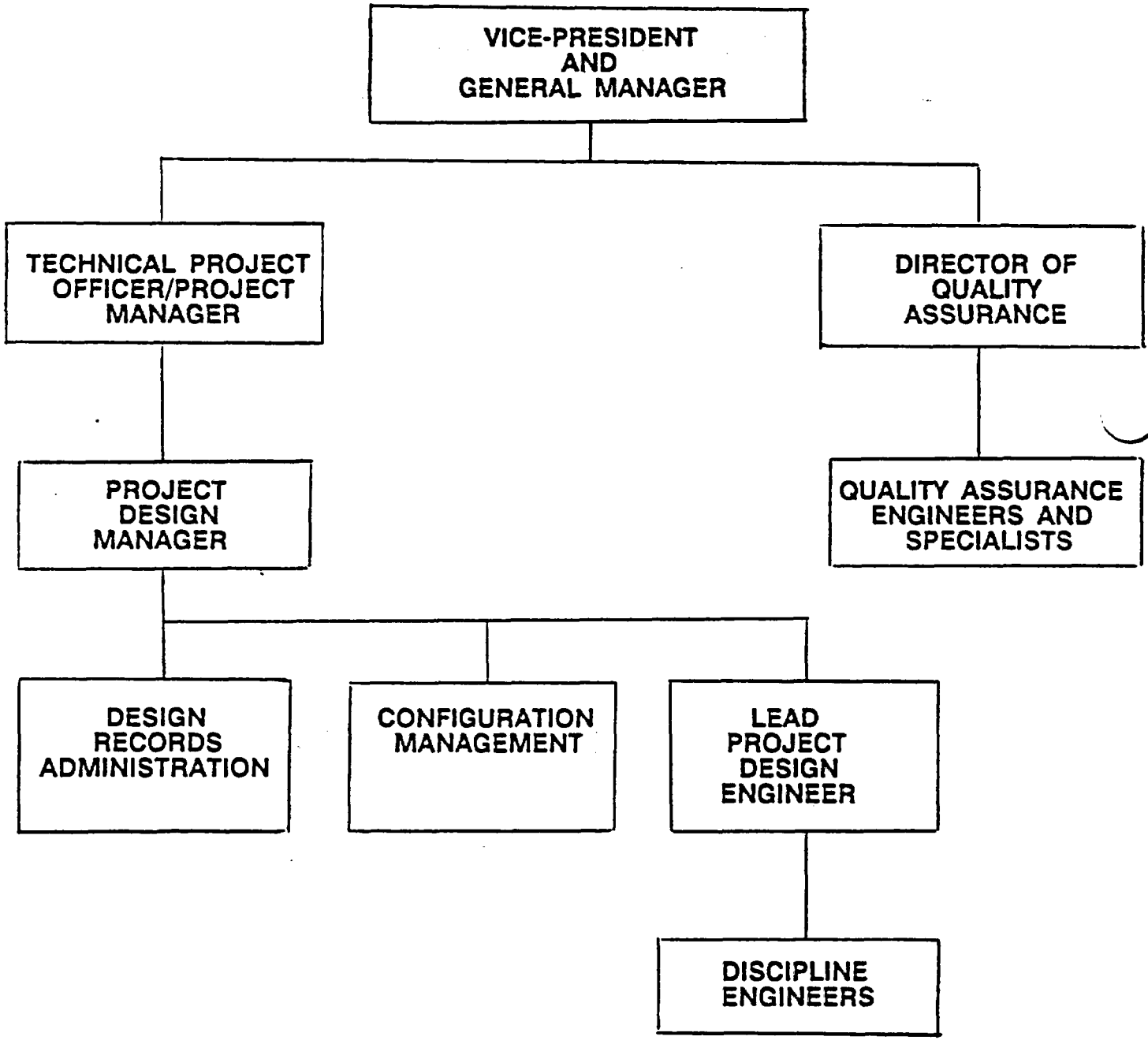
TITLE I DESIGN COMPLETION

QUALITY ASSURANCE

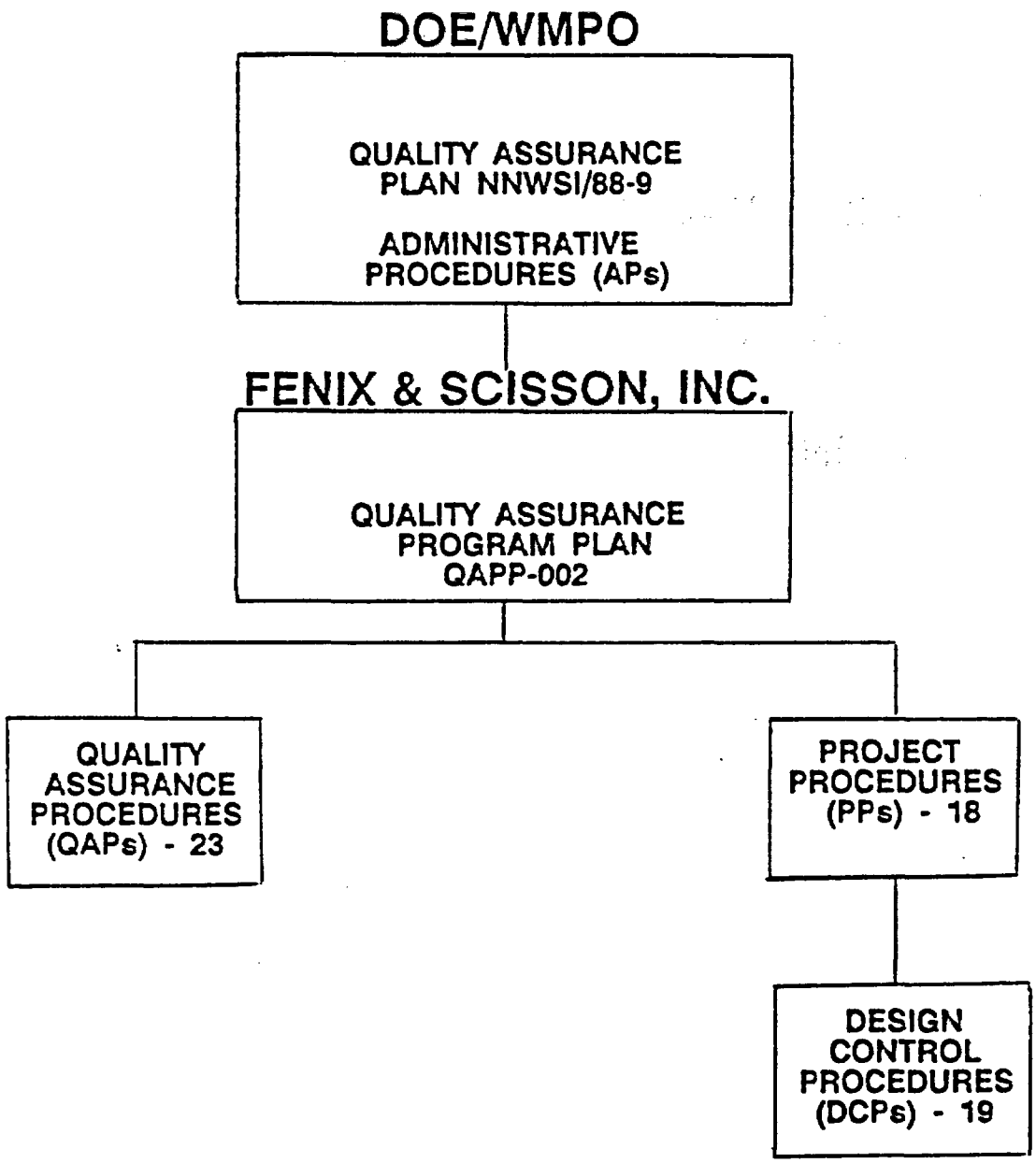
MIKE REGENDA

AUGUST 8, 1988

ORGANIZATION



CRITERIA FOR QUALITY ASSURANCE



QA DESIGN REVIEW

TITLE I

1. DESIGN ANALYSES

2. SPECIFICATIONS

3. DRAWINGS

QA DESIGN REVIEW

TITLE I

DESIGN ANALYSES

REQUIREMENTS	QA VERIFICATION
DC-02 - DESIGN METHODOLOGY	QAP-3.3 - DESIGN ANALYSIS
DC-03 - DESIGN ANALYSIS	CHECKLIST

FENIX & SCISSON, INC.
LAS VEGAS BRANCH

QUALITY ASSURANCE DESIGN ANALYSIS CHECKLIST

ANALYSIS NO.	REVISION	ANALYSIS TITLE	QA LEVEL	WBS NO.

ITEMS FOR REVIEW	YES	NO	N/A
1. Are the objectives of the analysis clearly defined?			
2. Are design inputs and their sources identified?			
3. Are referenced materials identified?			
4. Are codes and standards correctly identified, including issue date or revision number?			
5. Are assumptions and the bases for their use identified?			
6. If there are assumptions that must be verified as design proceeds, have these been identified?			
7. Are calculations, if any, identified by subject, signed and dated by originator and checker, and pages annotated with correct information?			
8. Have all comments been resolved between originator and checker?			
9. Has the design analysis been reviewed, approved, signed and dated by the appropriate personnel?			
10. Are all parts of the design analysis legible and reproducible?			
11. If any QA Level I computer programs are used, have requirements of NNWSI-DC-12 been met?			
12. Has the design analysis been performed, documented, and approved in accordance with requirements of NNWSI-DC-03?			

COMMENTS:

ANALYSIS APPROVED ☐ ANALYSIS NOT APPROVED ☐

QUALITY ASSURANCE REPRESENTATIVE

DATE

Form LV-328

QA DESIGN REVIEW

TITLE I

SPECIFICATIONS

REQUIREMENT	QA VERIFICATION
DC-07 - DEVELOPMENT OF TECHNICAL SPECIFICATIONS	QAP-3.2 - TECHNICAL SPECIFICATIONS
	CHECKLIST

FENIX & SCISSON, INC.
LAS VEGAS BRANCH

NNWSI QUALITY ASSURANCE SPECIFICATION REVIEW CHECKLIST

SPECIFICATION NO.	REVISION	SPECIFICATION TITLE	QA LEVEL ASSIGNMENT	WBS NO.

ITEMS FOR REVIEW	YES	NO	N/A
1. Is the QALA identified and correct?			
2. Is the Scope of Work clearly stated?			
3. Is required information entered for: Title, unique specification & revision number, date, pagination and attachment?			
4. Does the specification reference the WBS numeral(s)?			
5. Are the following specified, as applicable?			
5.1 Materials, equipment and/or services to be supplied			
5.2 Materials			
5.2.1 Material specification (and certifications if required)			
5.2.2 Size/thickness			
5.2.3 Number of items/quantity			
5.3 Welding			
5.3.1 Applicable code			
5.3.2 Welding Procedure Specification (WPS) qualification requirements			
5.3.3 Welder qualification requirements			
5.3.4 Weld acceptance criteria			
5.4 Nondestructive Examination (NDE)			
5.4.1 Applicable codes/standards/practices			
5.4.2 NDE Procedure qualification requirements			
5.4.3 NDE personnel certification requirements			
5.4.4 NDE acceptance criteria			
5.5 Dimensions			
5.6 Tolerances			
5.7 Traceability requirements, if any			
5.8 Environmental requirements, if any			
5.9 Handling, storage, and shipping requirements			
5.10 Acceptance criteria and/or testing requirements			
5.11 Required submittals (for information or status) and time of submittal			
5.12 Personnel qualification/certification requirements			
5.13 Quality requirements and codes and standards (e.g., painting, material finishes)			
5.14 Requirements for Quality Plan/Program			
6 Are all parts of the specification included, and legible, reproducible and free from conflicting requirements?			
7. Has the specification been prepared per procedural and QA requirements?			
8. For revisions, are the following requirements met?			
8.1 Changes identified			
8.2 Changes justified			
8.3 Revisions reviewed and approved equivalent to original?			

COMMENTS:

SPECIFICATION APPROVED YES ☐ NO ☐

QUALITY ASSURANCE REPRESENTATIVE

DATE

QA DESIGN REVIEW

TITLE I

DRAWINGS

REQUIREMENT	QA VERIFICATION
DC-13 - DRAFTING PROCEDURES AND STANDARDS	QAP-3.1 - ENGINEERING DRAWINGS
	CHECKLIST

FENIX & SCISSON, INC.
LAS VEGAS BRANCH

NNWSI
QUALITY ASSURANCE
DRAWING REVIEW CHECKLIST

DRAWING NO.	REVISION	DRAWING TITLE	QA LEVEL ASSIGNMENT

ITEMS FOR REVIEW	YES	NO	N.A.
1. Is the QALA identified and correct?			
2. Is required information entered for: Title, unique drawing no., revision no., scale, date and sheet no.?			
3. Does the drawing reference the appropriate-WBS number(s)?			
4. Are the following appropriately specified, as applicable?			
4.1 Materials			
4.1.1 Material Spec (and certifications if required)			
4.1.2 Size/thickness			
4.1.3 Number of items/quantity			
4.2 Welding			
4.2.1 Applicable code			
4.2.2 Weld symbols			
4.2.3 Welding Procedure Specification qualification requirements			
4.2.4 Welder qualification requirements			
4.2.5 Weld acceptance criteria			
4.3 Nondestructive Examination (NDE)			
4.3.1 Applicable codes/standards/practices			
4.3.2 NDE symbols			
4.3.3 NDE procedure qualification requirements			
4.3.4 NDE personnel certification requirements			
4.3.5 NDE acceptance criteria			
4.4 Dimensions			
4.5 Tolerances			
4.6 Other applicable codes and standards (e.g., painting, material finishes)			
4.7 Reference to continuation or interfacing drawings, if any			
4.8 Traceability requirements, if any			
5. For revisions, are the following requirements met?			
5.1 Changes identified			
5.2 Changes justified			
5.3 Revision reviewed and approved equivalent to original			
6. Are all parts of the drawing legible and reproducible?			
7. Has drawing been prepared per procedural and QA requirements?			

COMMENTS:

DRAWING APPROVED YES ☐ NO ☐

QUALITY ASSURANCE REPRESENTATIVE _____ DATE _____

Form LV-305

FENIX & SCISSON

TITLE I DESIGN COMPLETION

TECHNICAL OVERVIEW

JIM GRENIA

AUGUST 8, 1988

- GENERAL REVIEW
- PROGRESS SINCE 50%
- DESCRIPTION OF THE PAYCOST
- WORK PROGRESS ON TITLE II

o GENERAL REVIEW OF THE ESF DESIGN

CONSIDERATIONS OF 10 CFR 60 IN THE ESF DESIGN

1) Q A REQUIREMENTS

- ITEMS AND ACTIVITIES POTENTIALLY IMPORTANT TO SAFETY ARE ADDRESSED

- Q A MEASURES APPLIED TO THE DESIGN ARE:
  - o CONTROL OF INTERFACES
  - o DESIGN VERIFICATION
  - o DESIGN CHANGE CONTROL
  - o APPROPRIATE STANDARDS

- DESIGN CRITERIA

2) DESIGN BASIS REQUIREMENTS

- SITE CHARACTERIZATION
  - o ABILITY TO OBTAIN THE REQUIRED INFORMATION AND LIMIT THE ADVERSE EFFECTS ON LONG TERM PERFORMANCE OF THE REPOSITORY.
  - o ALL TESTING AND DEVELOPMENT WORK IS PLANNED AND COORDINATED WITH THE REPOSITORY DESIGN
- CONSIDERATION OF POTENTIALLY ADVERSE CONDITIONS
  - o POTENTIAL FOR FLOODING SHAFTS
  - o FUTURE REPOSITORY DRAINAGE
- ES-1 & ES-2 ARE BEING DESIGNED TO REPOSITORY SHAFT STANDARDS

o PROGRESS SINCE 50% REVIEW

1) WORK ITEMS COMPLETED FOR THIS REVIEW

- RESOLUTION OF 586 COMMENTS FROM 50% REVIEW
- DEVELOPED AND COMPLETED 84 DRAWINGS
- DEVELOPED AND COMPLETED 76 OUTLINE SPECIFICATIONS
- DEVELOPED AND COMPLETED 53 CALCULATIONS, REPORTS, STUDIES, AND ANALYSIS
- DEVELOPED A PLAN AND SCHEDULE FOR THE CERTIFICATION OF THE GFE HOISTS
- REQUESTS FOR QUALIFICATIONS, A SCREENING AND SELECTION OF A HOIST CONSULTANT TO PERFORM HOIST CERTIFICATION HAS BEEN MADE
- A SAFETY/RISK ANALYSIS CONSULTANT (ARTHUR D. HITLE INC.) HAS BEEN RETAINED
- STAFF SAFETY ENGINEERS ARE BEING INTERVIEWED AND JOB OFFERS ARE BEING MADE
- DEVELOPED A CREDIBLE ACCIDENT LIST FOR THE ENTIRE ESF OPERATION. THIS IS PRELIMINARY INPUT INTO THE SAFETY ANALYSIS.

o DESCRIPTION OF TITLE I REVIEW PACKAGE

- DRAWINGS

- OUTLINE SPECIFICATIONS

- CALCULATIONS, REPORTS, STUDIES AND ANALYSIS

o PLANNING PROGRESS ON TITLE II

- SCEDULE (SUMMARY)
- SCHEDULE ALTERNATIVES (SUMMARY)
- DRAWING LIST
- CALCULATION LIST

FENIX & SCISSON

TITLE I DESIGN COMPLETION

SHAFT & SUBSURFACE DESIGN

BRUCE STANLEY

AUGUST 8, 1988

DESIGN GOALS

- SAFETY
- TEST SUPPORT
- CONSTRUCTABILITY
- FLEXIBILITY
- COMPLIANCE WITH CRITERIA SOURCES

TECHNICAL CRITERIA SOURCES

1. SDRD

   1.2.6.0 GENERAL

   1.2.6.4 FIRST SHAFT

   1.2.6.5 SECOND SHAFT

   1.2.6.6 UNDERGROUND EXCAVATIONS

   1.2.6.8 UNDERGROUND TESTS

   APPENDIX A ESF SKETCHES

   APPENDIX B TEST AND ID REQUIREMENTS

   APPENDIX C TEST HOLE REQUIREMENTS

2. REFERENCE INFORMATION BASE

3. BASIS FOR DESIGN

4. DESIGN SCOPE AND PLANNING DOCUMENT

5. GENERIC REQUIREMENTS DOCUMENT

6. STATE AND FEDERAL REGULATIONS AND STANDARDS

CODES AND STANDARDS

- STATE OF NEVADA
  - MINE SAFETY AND HEALTH STANDARDS
- CALIFORNIA ADMINISTRATIVE CODE
  - TUNNEL SAFETY ORDERS
  - MINE SAFETY ORDERS
- CODE OF FEDERAL REGULATIONS
  - 30 CFR57
  - 10 CFR60
- D.O.E. ORDERS
- VARIOUS STANDARDS AND RECOMMENDED PRACTICES
- REPOSITORY DESIGN TO THE EXTENT CURRENTLY KNOWN (CDSCP)

ES-1 AND ES-2 SHAFT

- COLLAR
- LINER (includes ground support)
- EXCAVATION
- SUMP

COLLAR FEATURES

- o SIMPLE - MONOLITHIC
- o UTILITY ACCESS
- o FUNCTIONAL
  - HEADFRAME SUPPORT
  - MUCK DUMPING
  - MATERIALS HANDLING
  - VENTILATION ACCOMMODATION

LINER DESIGN FEATURES

- o NON - HYDROSTATIC
- o STATIC LOADS
- o DYNAMIC LOADS
- o CONSTRUCTABILITY
- o DESIGN LIFE
- o TEST SUPPORT
- o MAINTAINABLE
- o CLOSURE

SHAFT EXCAVATION

- CONTROLLED DRILL AND BLAST
- TEST SUPPORT
- SAFETY FOR CONTRACTOR AND PRINCIPAL INVESTIGATOR

SUMP AND TAILSHAFT

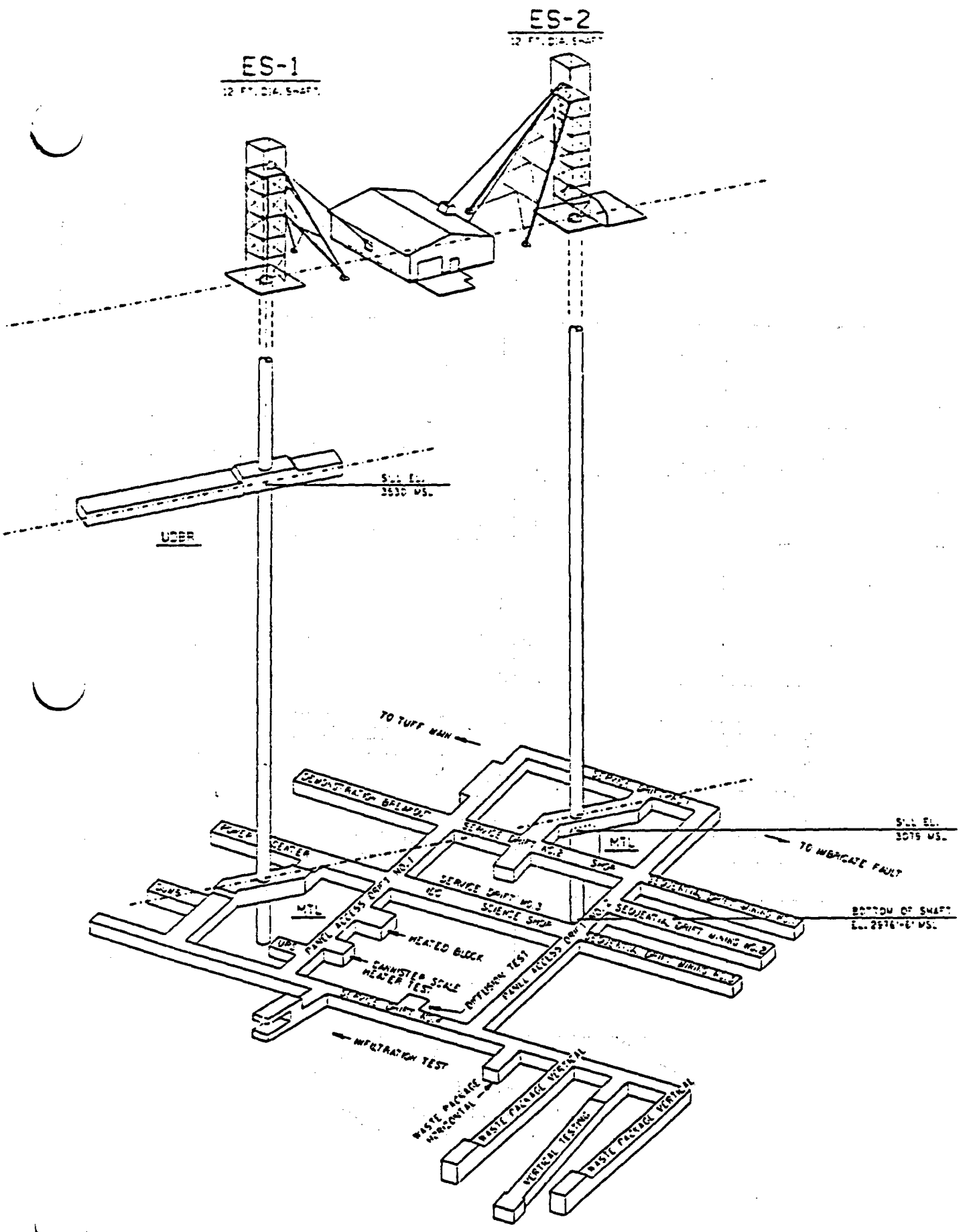
- SIMPLE - HYDROSTATIC
- ES-2 MUCK LOADOUT FACILITIES
- ES-1 NO SKIP LOADING

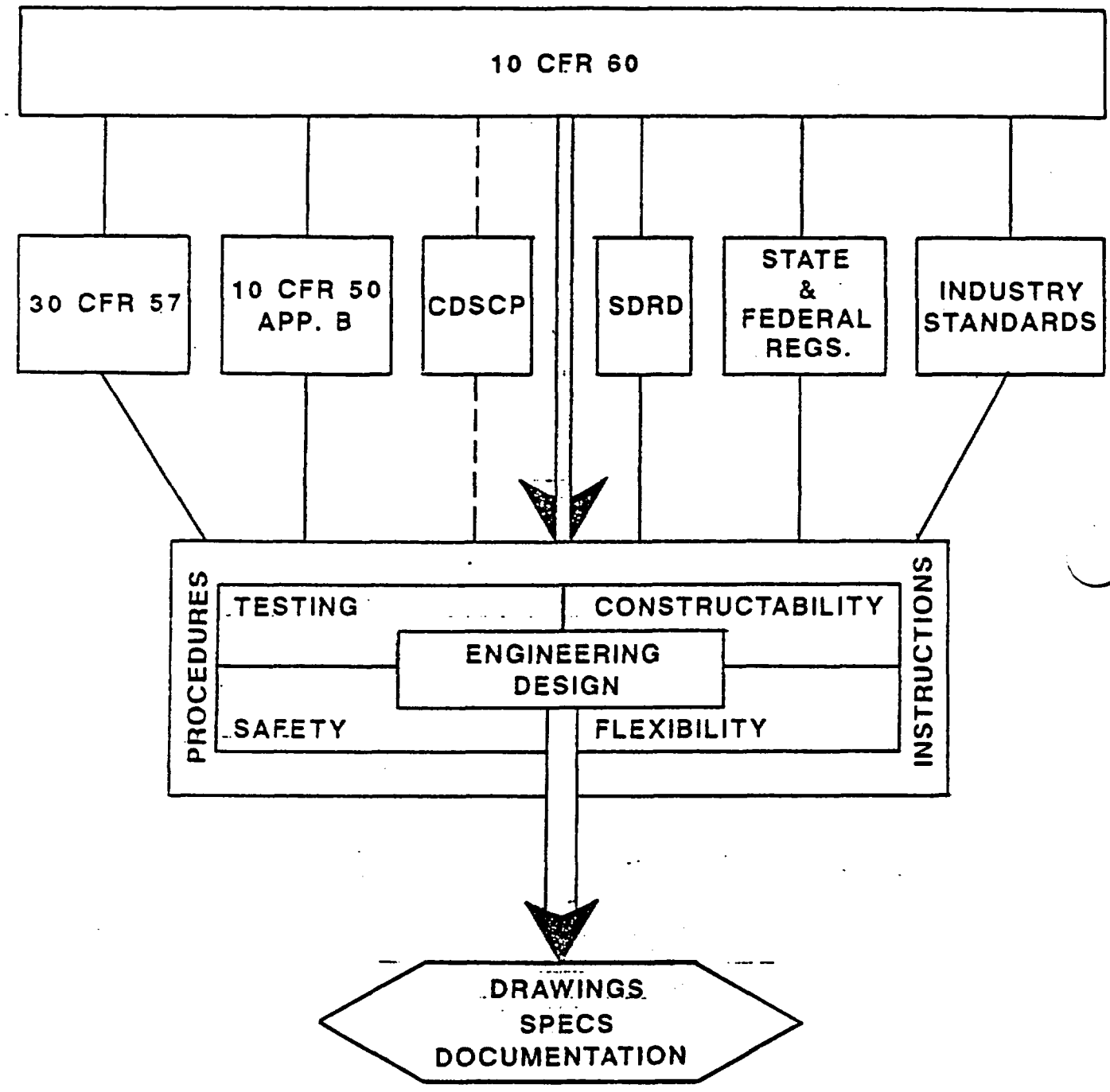
SUBSURFACE LAYOUT

- TEST AREAS
- SUPPORT AREAS
- EXPLORATION DRIFTS
- AREAS OF FUTURE EXPANSION

NEW ITEMS 50 - 100 % TITLE I

- LINER DESIGN
- GROUND SUPPORT
- VENTILATION CONCERNS - FANS, NOISE, ETC.
- DESIGN COORDINATION – A/E'S, DISCIPLINES
- DEFINITION OF GEOTECHNICAL PARAMETERS AFFECTING THE DESIGN
- SPECIALTY ITEMS – PROCUREMENT ITEMS
  - HOIST QUALIFICATION
  - RISK ANALYSIS


ES-2
ES-1
UDER
TO TUFF MAIN
TO WAHRGATE FAULT
MTL
MTL
HEATED BLOCK
DIFFUSION TEST
INFILTRATION TEST
WASTE PACKAGE HORIZONTAL
WASTE PACKAGE VERTICAL
WASTE PACKAGE VERTICAL
VERTICAL TESTING


10 CFR 60
30 CFR 57
10 CFR 50 APP. B
CDSCP
SDRD
STATE & FEDERAL REGS.
INDUSTRY STANDARDS
PROCEDURES
TESTING
CONSTRUCTABILITY
ENGINEERING DESIGN
SAFETY
FLEXIBILITY
INSTRUCTIONS
DRAWINGS
SPECS
DOCUMENTATION

FENIX & SCISSON

TITLE 1 DESIGN

FINAL REVIEW

ROCK MECHANICS

MAREK MRUGALA

AUGUST 1988

GENERAL

INPUT

- RIB
- RELEVANT PUBLICATIONS
- DESIGN STUDIES

CONSTRAINTS

- SUBSYTEM DESIGN REQUIREMENTS (SDRD)
- STATE AND FEDERAL REGULATIONS

GOALS

SHORT-TERM

- TO ESTABLISH THE METHODOLOGY IN THE ROCK MECHANICS AREA
- PROVIDE MEANS BY WHICH COMPARISONS CAN BE MADE

LONG TERM

- TO PROVIDE AN UNDERGROUND LAYOUT THAT WILL BE SAFE AND WHICH WILL SATISFY REQUIREMENTS ASSOCIATED WITH VARIOUS TESTING ACTIVITIES

EFFORTS EXTENDED

RIB

- ADAPTATION TO FIT THE NEEDS OF THE DESIGNERS

SEISMIC DESIGN INPUT

- VERIFICATION OF METHODS PROPOSED IN THE REPORT BY THE WORKING GROUP

PILLAR DESIGN AND STABILITY

ANALYSIS

- REVIEW OF METHODS AVAILABLE
- PRELIMINARY ANALYSES USING 5 MOST COMMON APPROACHES TO PILLAR DESIGN
- ESTABLISHING CRITERIA FOR THE PILLAR STABILITY ASSESSMENT

APPROACH

MINING PRACTICE

- ADAPTATION OF PROVEN METHODS
  (E.G. PILLAR-DESIGN FORMULAS)

STATE-OF-THE-ART TECHNIQUES

- COMPUTER SIMULATIONS
  (E.G. FINITE ELEMENT METHOD)

ENGINEERING JUDGMENT

- SUPPORTED BY:

  CASE HISTORIES AVAILABLE

  OBSERVATIONS

  (E.G. N-TUNNEL, G-TUNNEL)

  DESIGN ANALYSES

AREAL EXTRACTION RATIO

DEFINITION

$$R_E = \frac{A_E}{A_T} * 100\ (\%)$$

WHERE:

R_E - EXTRACTION RATIO

A_E - EXTRACTED AREA

A_T - TOTAL AREA

PILLAR

SAFETY FACTOR

(FS)

DEFINITION

$$FS = \frac{\text{PREDICTED PILLAR STRENGTH}}{\text{PREDICTED PILLAR STRESS}}$$

E X A M P L E

Uniaxial Compressive Strength (Laboratory), (psi)	14,645
Uniaxial Compressive Strength (Rock Mass), (psi)	7,207
Rock Unit Weight, [2.32*62.5], (pcf)	145
Entry Width, (ft)	21
Pillar Width, (ft)	50
Depth, (ft)	1,055

Calculated Factor of Safety, [FS1(lab)]	6.84
Calculated Factor of Safety, [FS2(rock mass)	3.28
Extraction Ratio, (Re), (%)	50.40

NOTE: N O S C A L I N G ! ! !

NOT CONSIDERED
- o GEOMETRY (W/H RATIO)
- o ROCK PROPERTIES (ROCK MATERIAL STRENGTH vs ROCK MASS STRENGTH)

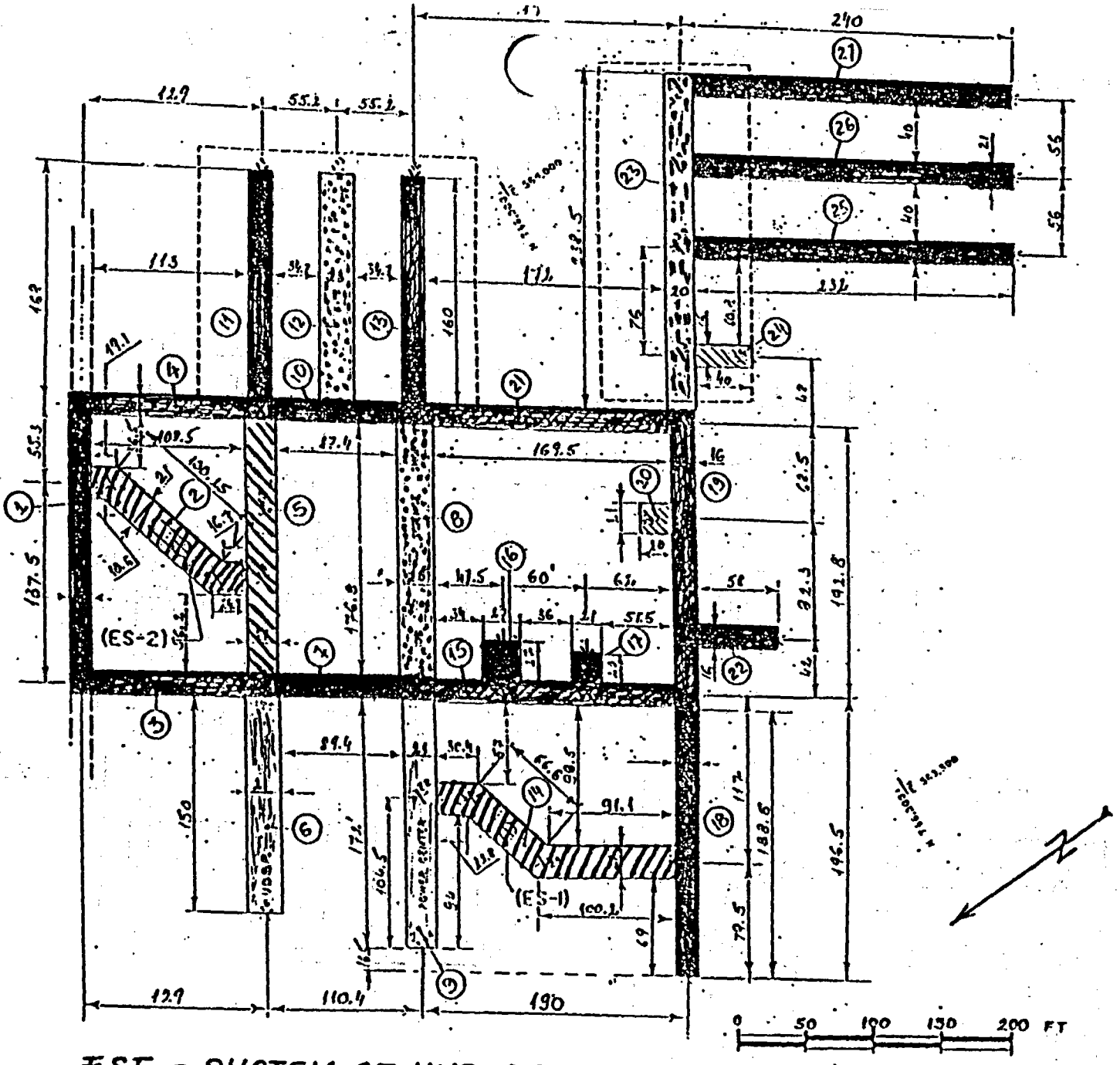
EXAMPLE

CRITICAL PILLAR SIZE

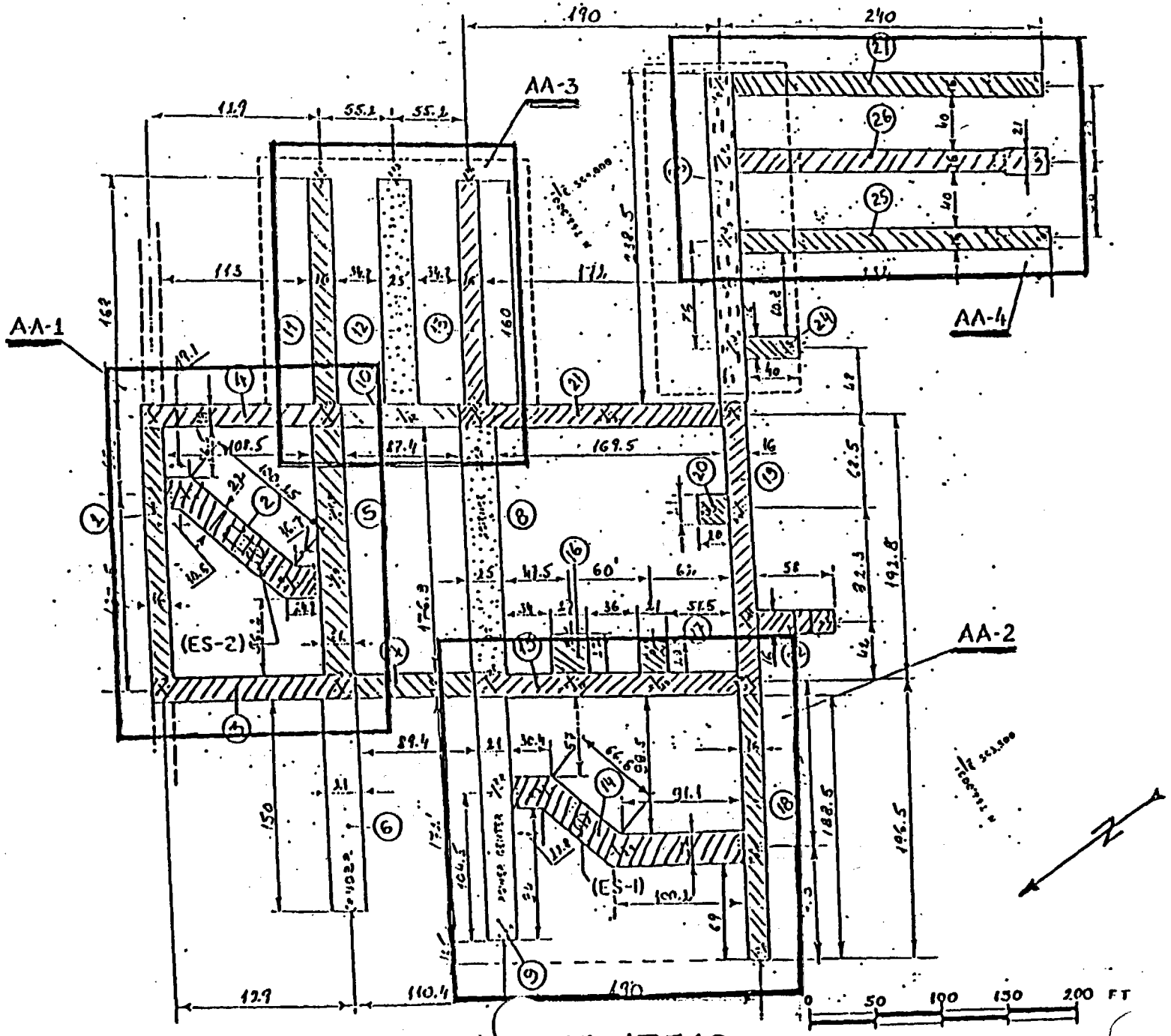
(FS PILLAR = 1.0)

ENTRY WIDTH = 21 ft

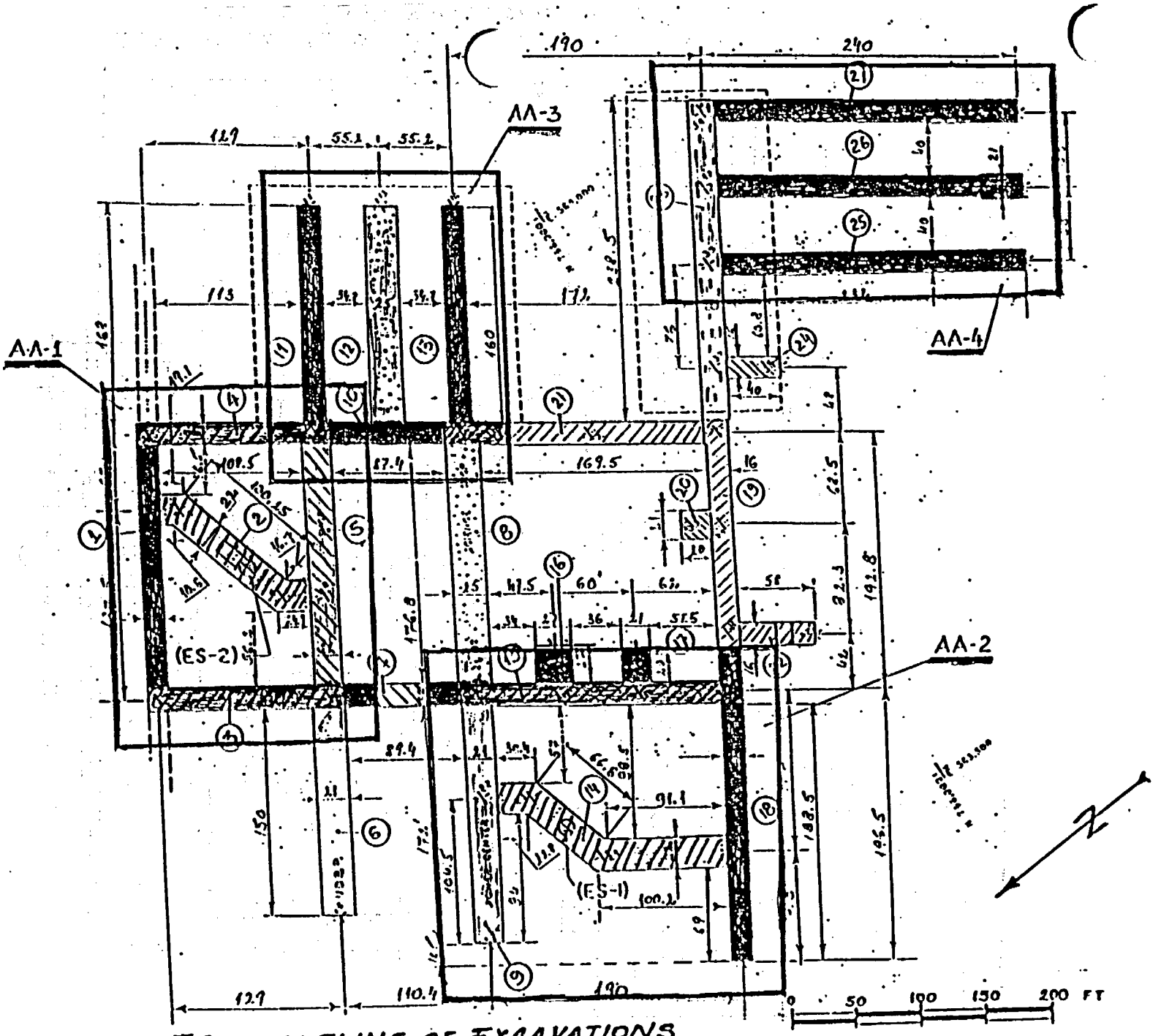
MEDIUM	UNIAXIAL COMPRESSIVE STRENGTH (psi)	CRITICAL PILLAR WIDTH (ft)	CRITICAL EXTRACTION RATIO (%)
ROCK MATERIAL	14,645	7.74	92.75
ROCK MASS	7,207	13.09	85.26



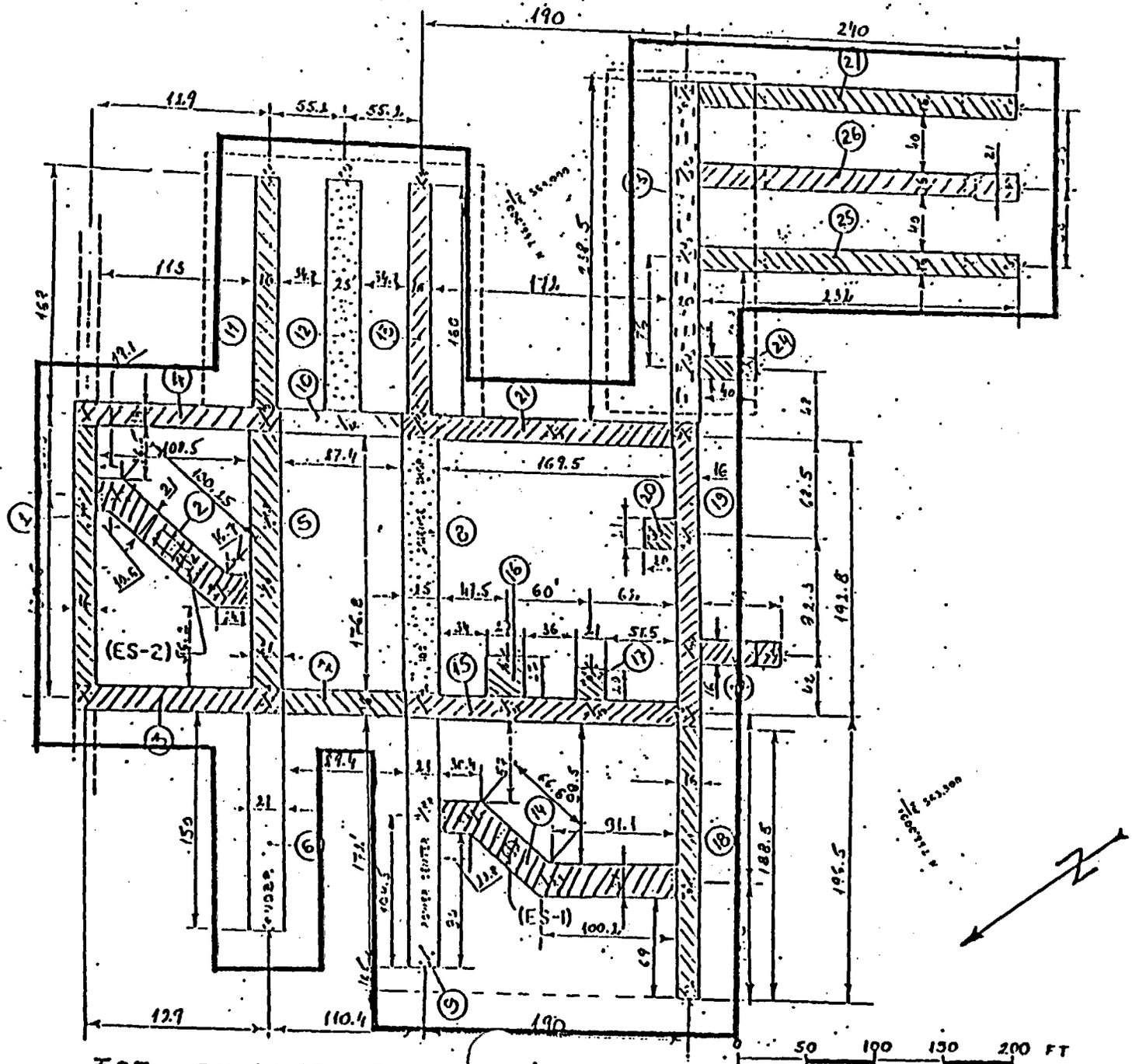
ESF - SYSTEM OF UNDERGROUND OPENINGS



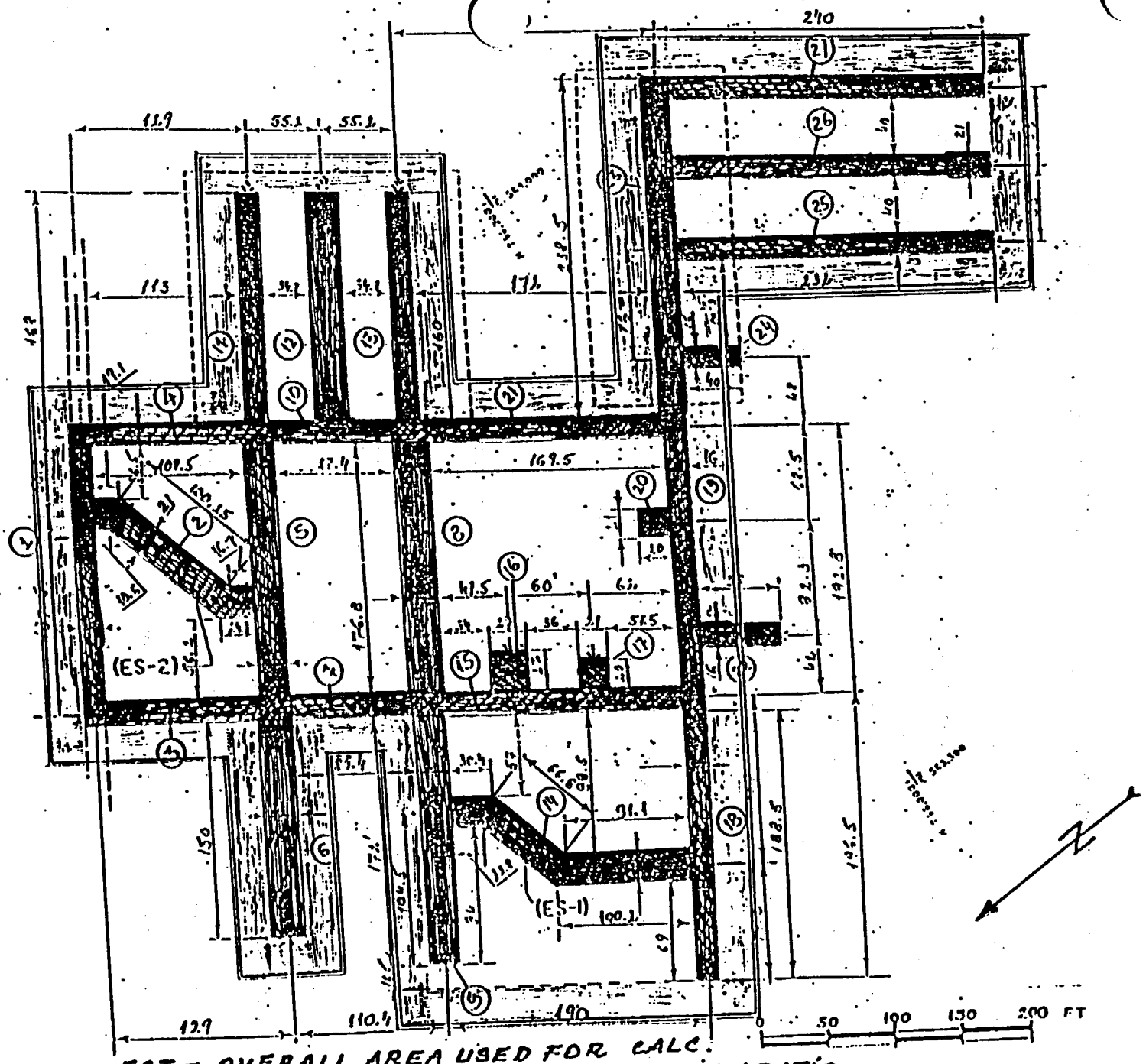
ESF - SELECTED ACTIVITY AREAS



ESF - OUTLINE OF EXCAVATIONS
INCLUDED IN EACH ACTIVITY AREA



ESF - OUTLINE OF THE [illegible] IRE ESF AREA
USING 25 FT ENVELOPE "RULE"



ESF - OVERALL AREA USED FOR CALC.
OF THE OVERALL AREAL EXTRACTION RATIO

EXTRACTION RATIO FOR THE SELECTED UNDERGROUND ACTIVITY AREAS

TOTAL AREA (A_T) (ft^2)	EXTRACTED AREA (A_E) (ft^2)	PILLAR AREA (A_P) (ft^2)	EXTRACTION RATIO (R_E) (%)
ACTIVITY AREA #1 (AA-1)			
50,595	15,841	34,754	31.3
ACTIVITY AREA #2 (AA-2)			
65,788	16,550	49,238	25.2
ACTIVITY AREA #3 (AA-3)			
39,866	13,204	26,662	33.1
ACTIVITY AREA #4 (AA-4)			
53,400	14,196	39,204	26.6
OVERALL AREAL EXTRACTION RATIO - ENTIRE ESF AREA			
272,671	73,000	199,671	26.8

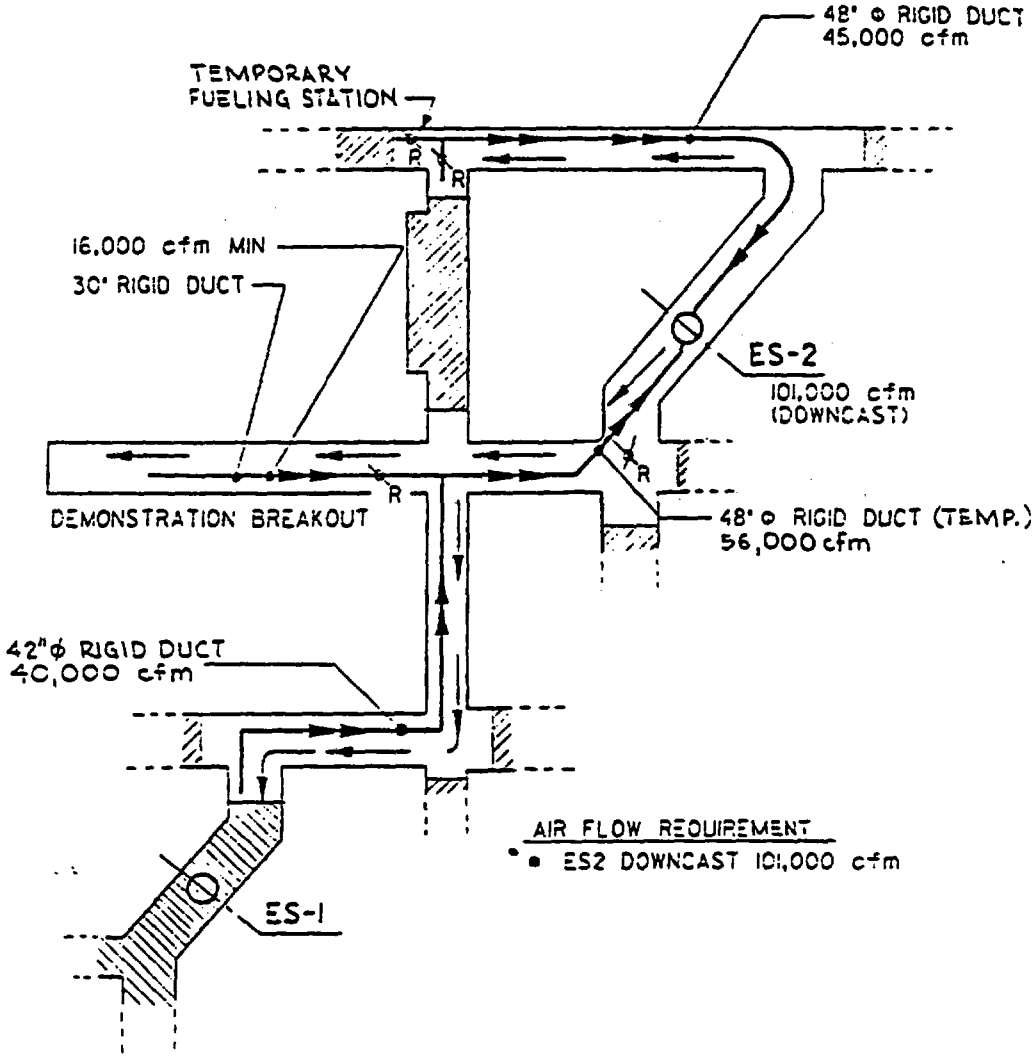
FENIX & SCISSON

TITLE I DESIGN COMPLETION

UNDERGROUND VENTILATION

ROMEO JURANI

AUGUST 8, 1988

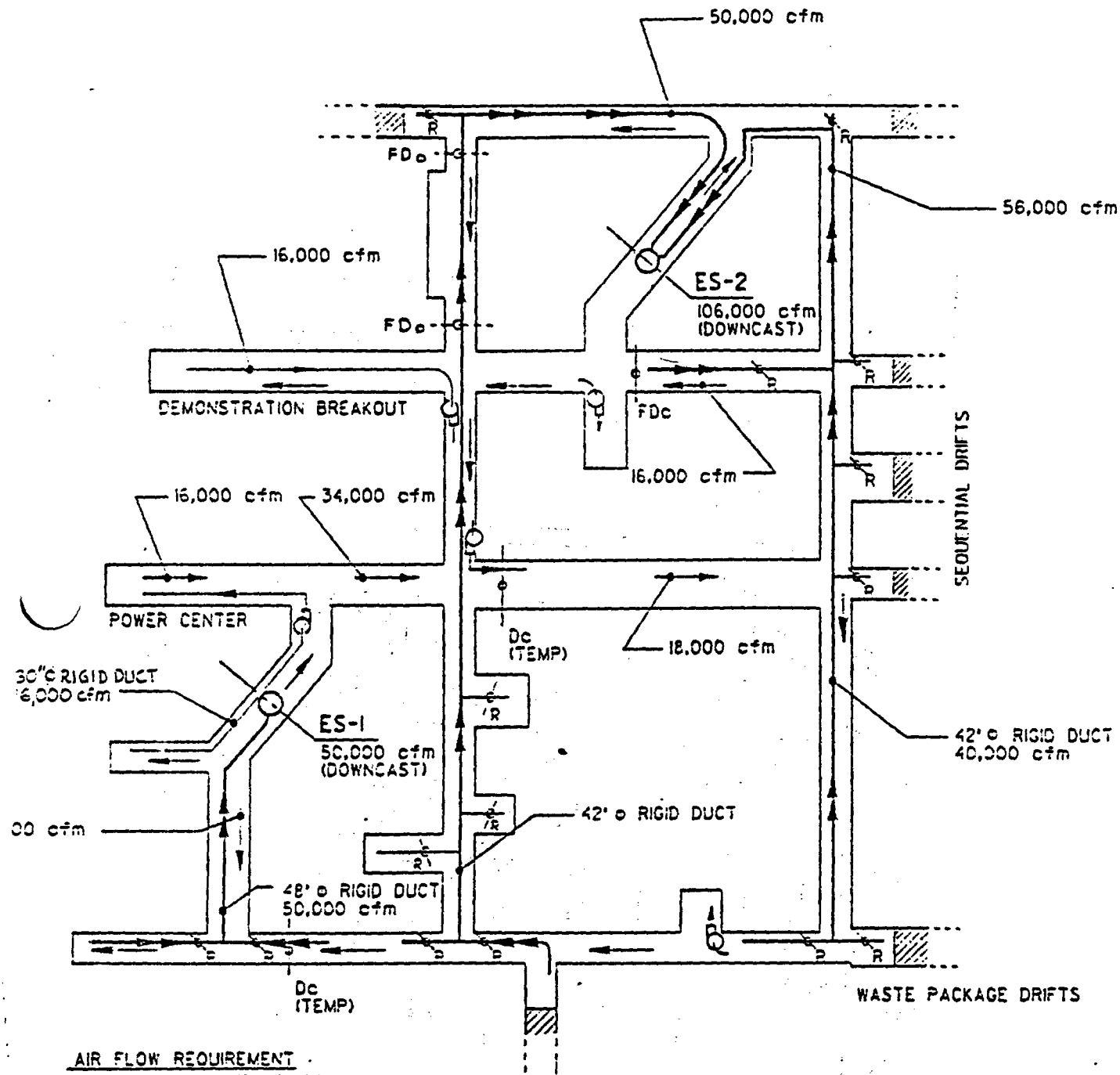


VENTILATION

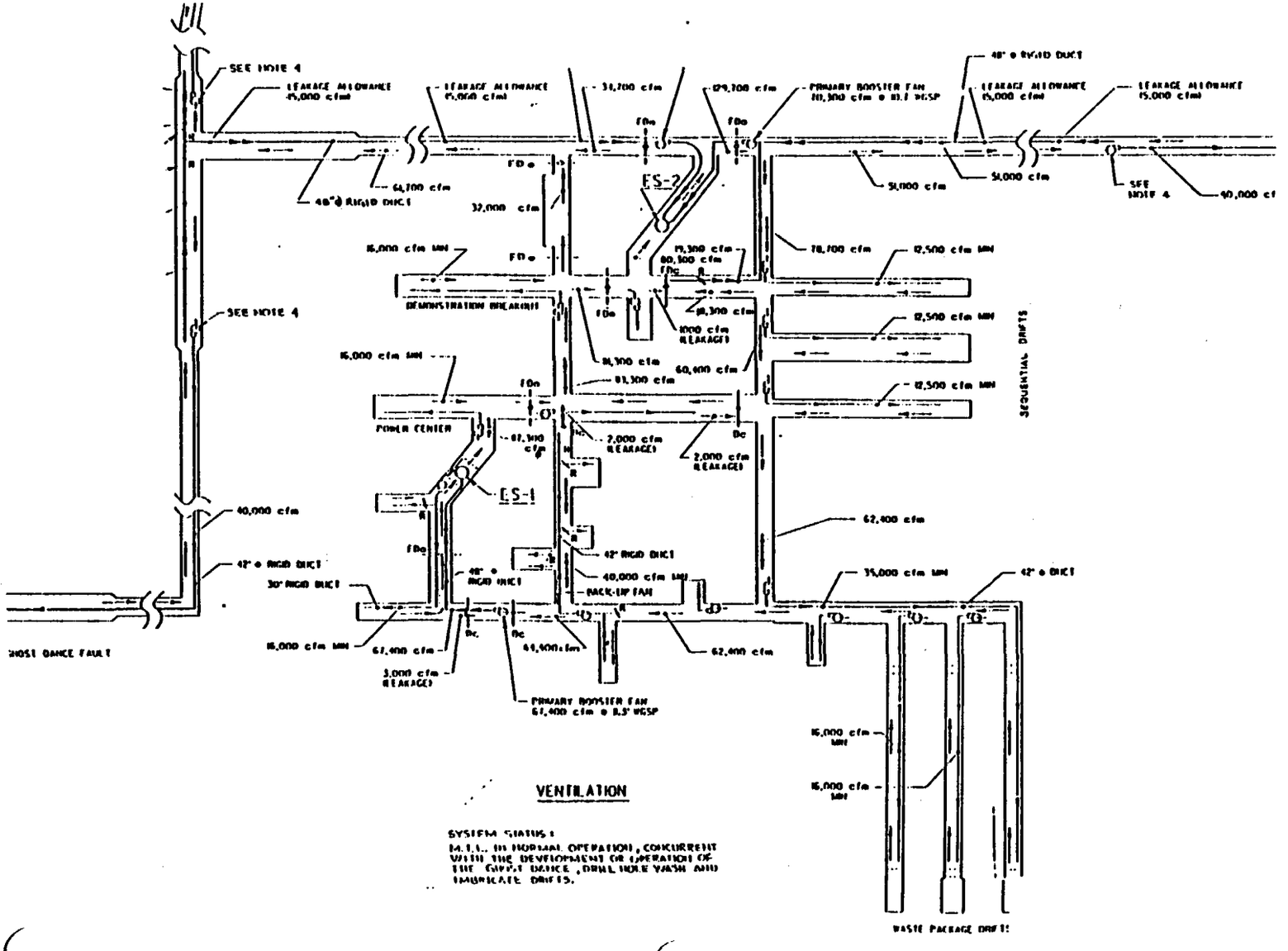
MTL DEVELOPMENT

(BEFORE SHAFT CONNECTION)

PHASE I



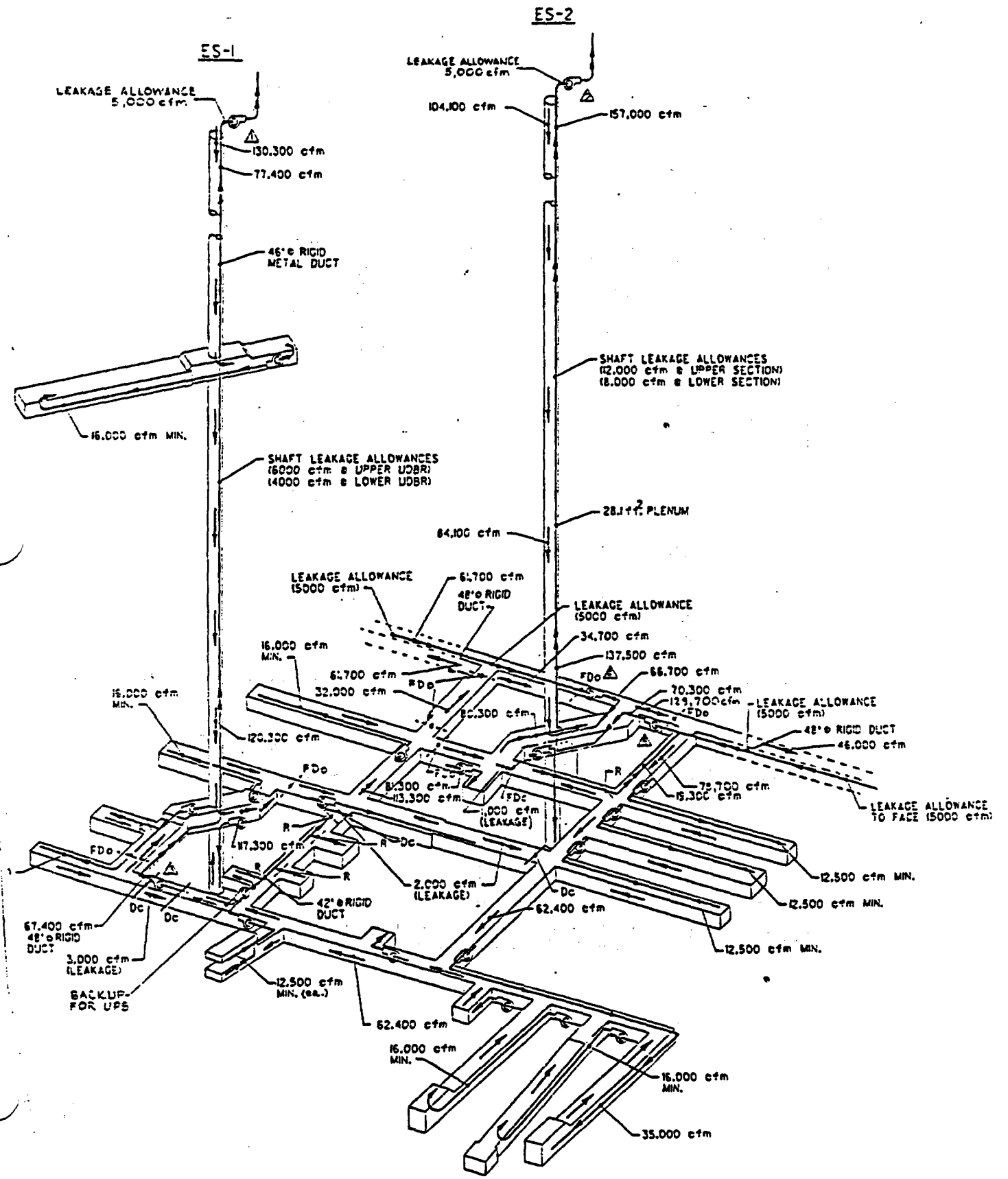
VENTILATION
MTL DEVELOPMENT
PHASE 2

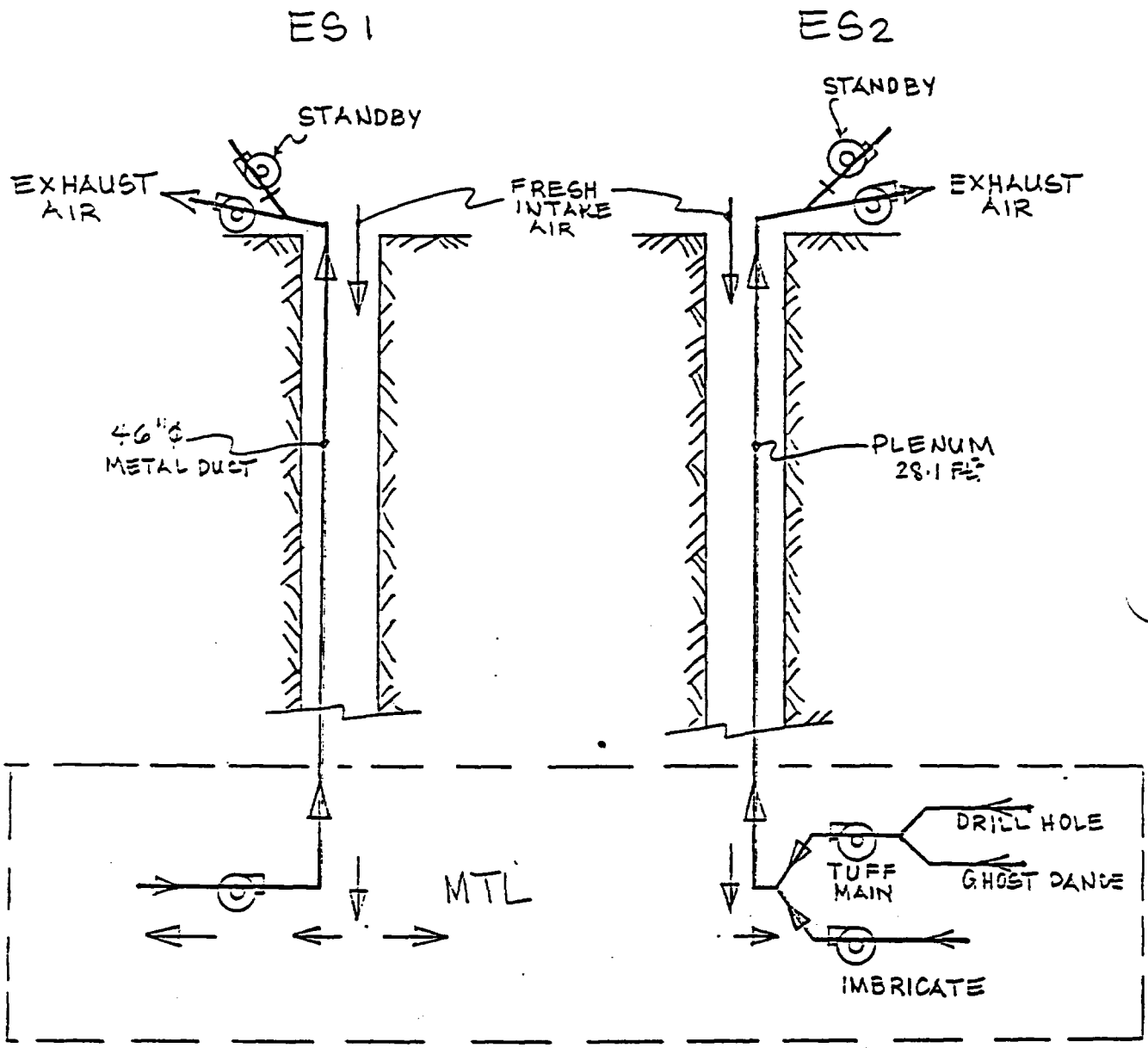


VENTILATION

SYSTEM STATUS:

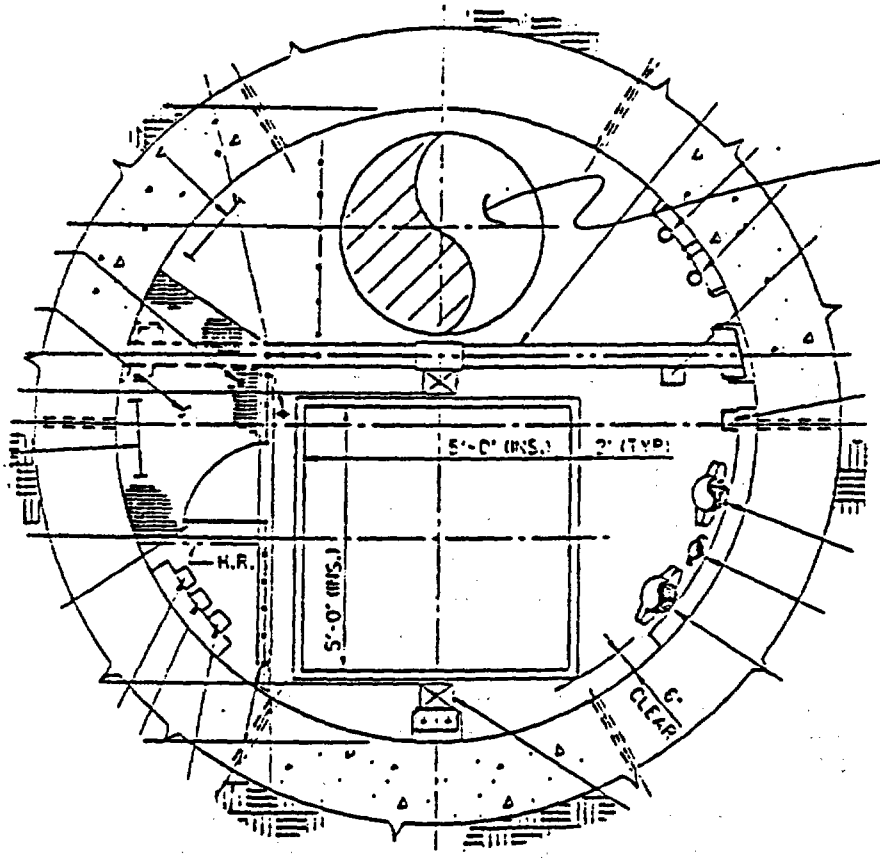
M.I.F. IN NORMAL OPERATION, CONCURRENT WITH THE DEVELOPMENT OR OPERATION OF THE GAP-1 DRIFT, DRILL HOLE WASH AND EMPLACEMENT DRIFTS.


ES-1
ES-2
LEAKAGE ALLOWANCE 5,000 cfm
130,300 cfm
77,400 cfm
48"ø RIGID METAL DUCT
16,000 cfm MIN.
SHAFT LEAKAGE ALLOWANCES (6000 cfm @ UPPER UDBR) (4000 cfm @ LOWER UDBR)
LEAKAGE ALLOWANCE 5,000 cfm
104,100 cfm
157,000 cfm
SHAFT LEAKAGE ALLOWANCES (12,000 cfm @ UPPER SECTION) (8,000 cfm @ LOWER SECTION)
28 sq.ft. PLENUM
84,100 cfm
LEAKAGE ALLOWANCE (5000 cfm)
64,700 cfm
48"ø RIGID DUCT
LEAKAGE ALLOWANCE (5000 cfm)
34,700 cfm
137,500 cfm
16,000 cfm MIN.
64,700 cfm
32,000 cfm
FDo
66,700 cfm
70,300 cfm
129,700 cfm
LEAKAGE ALLOWANCE (5000 cfm)
48"ø RIGID DUCT
46,000 cfm
16,000 cfm MIN.
120,300 cfm
FDo
R
75,700 cfm
15,300 cfm
LEAKAGE ALLOWANCE TO FACE (5000 cfm)
FDc
(LEAKAGE)
R
Dc
12,500 cfm MIN.
FDo
67,400 cfm
48"ø RIGID DUCT
Dc
Dc
3,000 cfm (LEAKAGE)
42"ø RIGID DUCT
2,000 cfm (LEAKAGE)
Dc
62,400 cfm
12,500 cfm MIN.
12,500 cfm MIN.
BACK-UP FOR UPS
12,500 cfm MIN. (ea.)
62,400 cfm
16,000 cfm MIN.
16,000 cfm MIN.
35,000 cfm

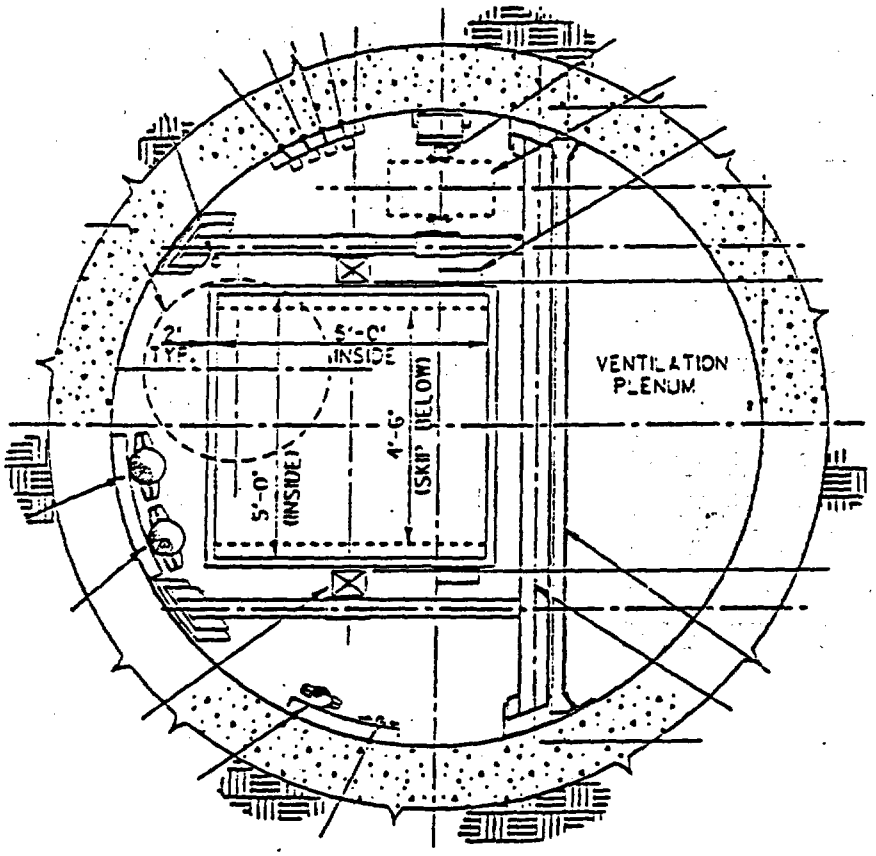


ESF VENTILATION SCHEMATIC

JURANI/PAGE


46" ϕ
METAL DUCT
5'-0" (INS.)
2' (TYP.)
H.R.
5'-0" (INS.)
6"
CLEAR

ES-1


2'
TYP.
5'-0"
INSIDE
4'-6"
(SKID BELOW)
5'-0"
(INSIDE)
VENTILATION
PLENUM

ES-2

TOTAL AIR SUPPLY (FT^3/MIN.)

- SHAFT COLLAR

ES-1	130,300
ES-2	104,100
TOTAL	234,400

TOTAL RETURN (FT^3/MIN.)

SHAFT COLLAR

• ES-1 DUCT	77,400
• ES-2 PLENUM	157,000
TOTAL	234,400

PRIMARY FAN DUTY REQUIREMENT

ID	LOCATION	STATIC PRESSURE (INCH WATER GAUGE)	AIR QUANTITY (FT^3/MIN.)
1	SURFACE ES-1	10.8	82,400
2	SURFACE ES-2	9.6	162,000
3	UNDERGROUND BOOSTER ES-1	11.3	67,400
4	UNDERGROUND BOOSTER ES-2	11.5	66,700
5	UNDERGROUND BOOSTER ES-2	10.7	70,300

TABLE 8.2 Summary List of Recommended Vane Axial Fans

	Number of Units			Fan Duty Specification		
	Operating	Spare	Total	CFM	Total Pressure	BHP
PRIMARY FAN MODEL						
60-36-1770	1	1	2	162000	9.8	350
48-30-1770	4	1	5	82400	11.0	200
AUXILIARY FAN MODEL						
42-26-1770	3	1	4	45000	10.0	100
42-26-1770HB	2	1	3	45000	5.0	50
32-17-1770	12	1	13	28000	1.5	15
32-17-1170	4	1	5	18000	0.9	5
TOTAL	26	6	32			

NOISE

○ FAN NOISE

- COMPLETED CALCULATION
- MOST FANS EXCEED ACGIH LIMIT

  85 dBA -- 8 HR. EXPOSURE
- ATTENUATORS WILL BE PROVIDED
- FAN MANUFACTURING CONTACT TO PROVIDE ATTENUATORS WITH GUARANTEED FAN NOISE REDUCTION 80 dBA, MEASURED 10' AWAY

○ MINING EQUIPMENT NOISE

- SPECIFICATION CASE BY CASE

  TITLE II EFFORT

DUST CONTROL

○ SPECIFICATION OF DUST COLLECTION UNIT

1. MOBILE TO GO WITH MINING ACTIVITY
   - DRILLING
   - BOLTING
   - AFTER BLASTING
   - MUCKING

2. CRITERIA
   - MINE PROVEN/COMMERCIALLY AVAILABLE
   - MSHA TESTED (RI 1150, 1984)
   - FIVE STAGE DUST REMOVAL & DISPOSAL
   - COLLECTION EFFICIENCY
     a.) 99% PARTICLES > 3.0 um
     b.) 96% PARTICLES DOWN TO 1.0 um
     (TESTED TO 0.79 um)
   - AIR QUANTITY PROCESSED 10,000 TO 15,000 cfm.

DUST CONTROL (CONTINUED)

- STATIONARY DUST CONTROL, TITLE II, WHEN DUST SOURCE DETAILS ARE ESTABLISHED.
  - -- SHAFT STATION DUMPING/MUCKING
  - -- LOADING POCKETS
  - -- HOISTING

- AE WAITING FOR DATA AIRBORNE DUST COMPOSITION

HEATING & COOLING

○ SHAFT AIR HEATING

5° F ----> 42° F

a.) ES-1 1700 kw

b.) ES-2 1300 kw

USE PROPANE OR ELECTRIC BLAST HEATER (MOBILE)
-- TITLE II

○ COOLING

- VIRGIN ROCK TEMPERATURE (MTL) $\leq 80°$ F
- EXPECTED AIR TEMPERATURE $< 80°$ Fwb
- SDRD REQUIREMENT 400 w/m 2

  AIR COOLING POWER MEANS MAINTAINING UNDERGROUND TEMPERATURES BELOW 66° Fwb. (OVERLY RESTRICTIVE)

- ECR SUBMITTED, CHANGE SDRD TO

  260 w/m 2 -- CONSERVATIVE MINING INDUSTRY PRACTICE EQUIVALENT TO 82° Fwb AT 60 FPM WIND VELOCITY

VENTILATION LIFE SAFETY AND MONITOR

- IDENTIFIED TOTAL NUMBER GAS AND TEMPERATURE SENSORS
- IDENTIFIED LOCATION OF FIRE DOORS
- CONSERVATIVE SIZING/INSTALLATION OF PRIMARY FANS
  - a.) EFFECT EMERGENCY AIRFLOW REVERSAL
  - b.) PREVENT COMPLETE LOSS OF VENTILATION EVEN IF ONE OR TWO PRIMARY FANS FAIL.
- ACTIVITY INTERFACE WITH H & N

FENIX & SCISSON

TITLE I DESIGN COMPLETION

STRUCTURAL DESIGN

HOISTING SYSTEM

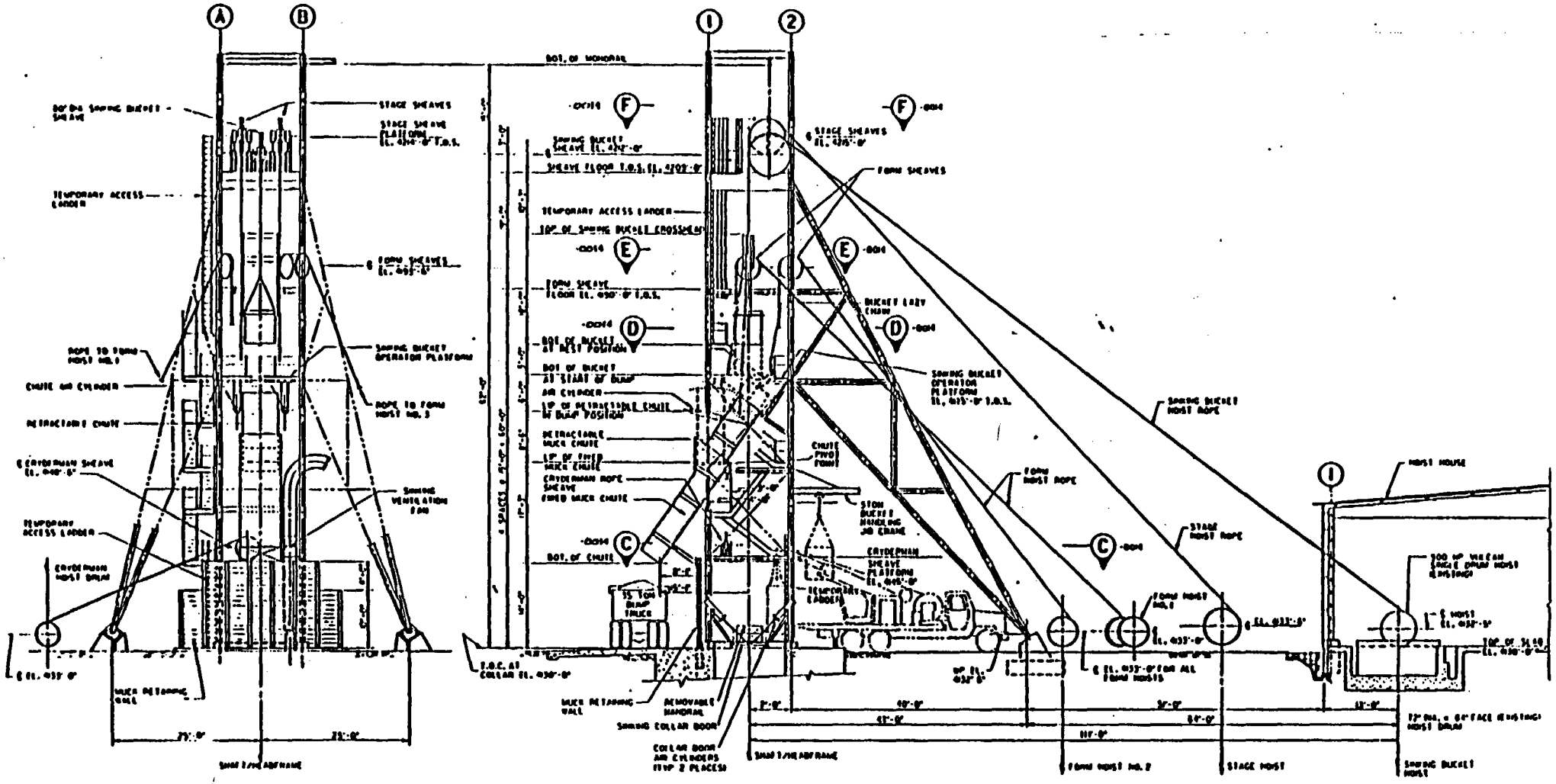
IVO LANGE

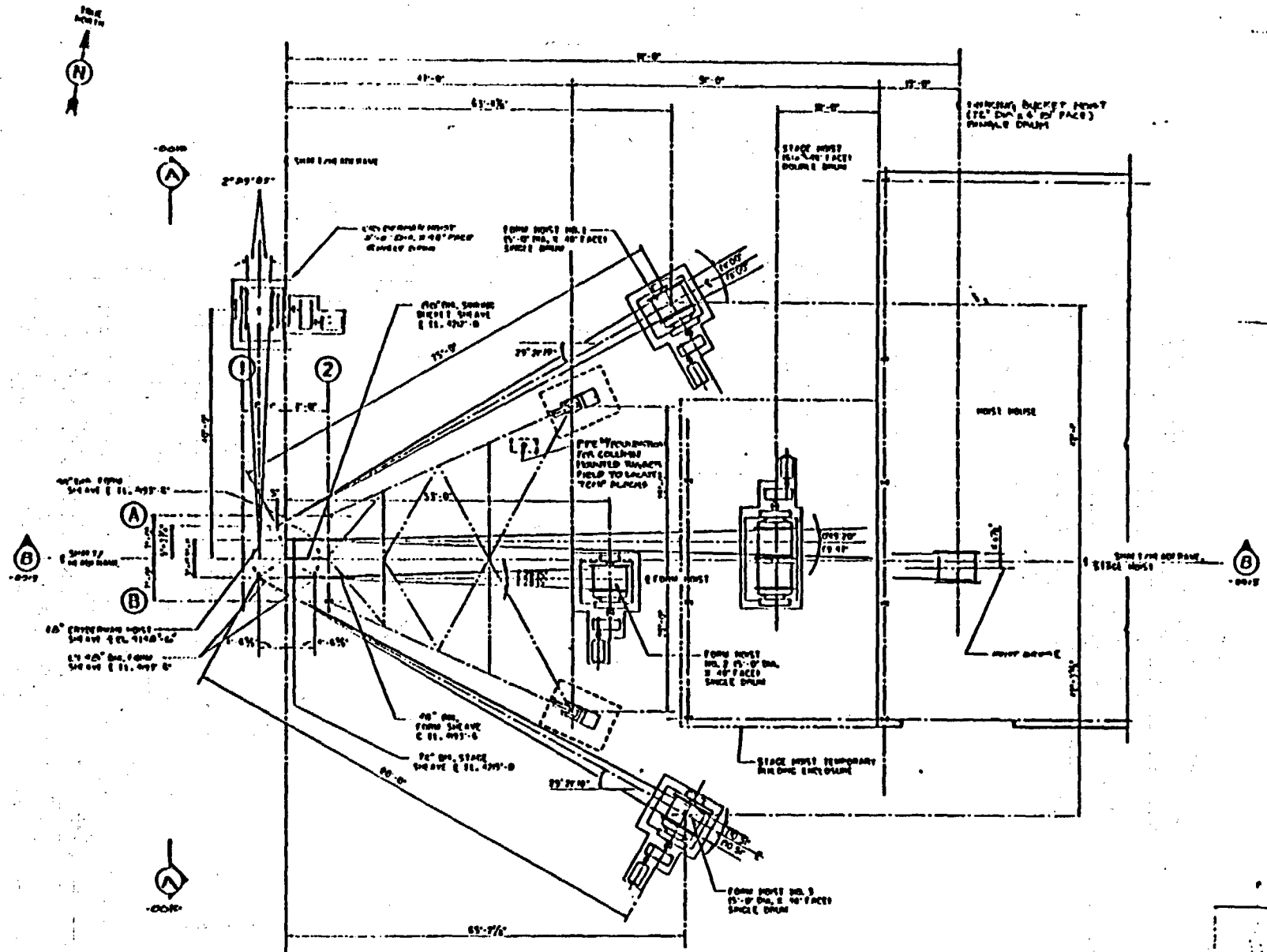
AUGUST 8, 1988

ESF DESIGN -- TITLE I

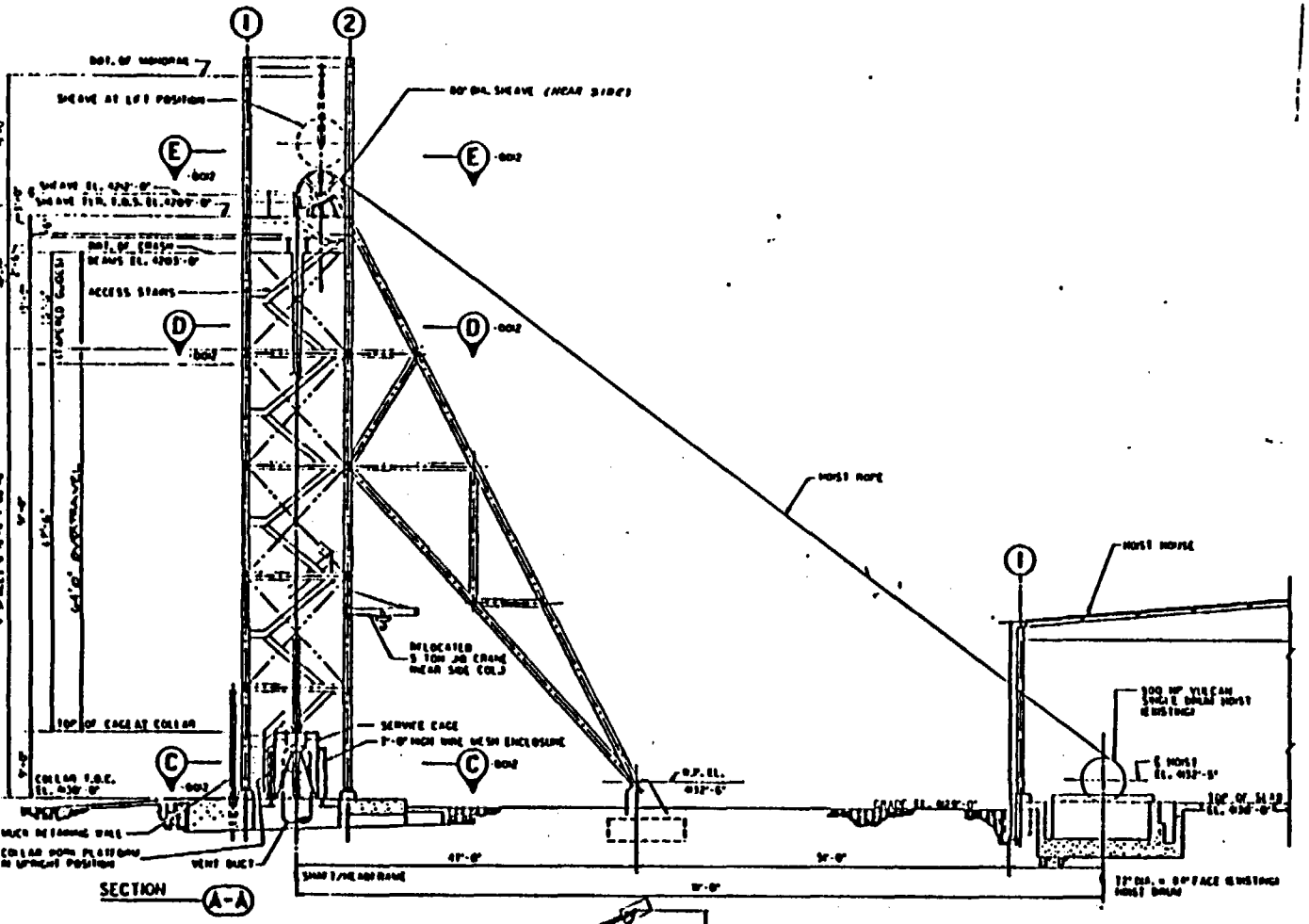
GENERAL ARRANGEMENT OF — HOISTING SYSTEMS

- -- OPERATIONAL HOISTING SYSTEM FOR SH-1 & SH-2
- -- CONSTRUCTION (SINKING PHASE) HOISTING SYSTEMS FOR SH-1 & SH-2
- -- SUPPORT CALCULATIONS
- -- DESIGN GUIDELINES FOR TITLE II

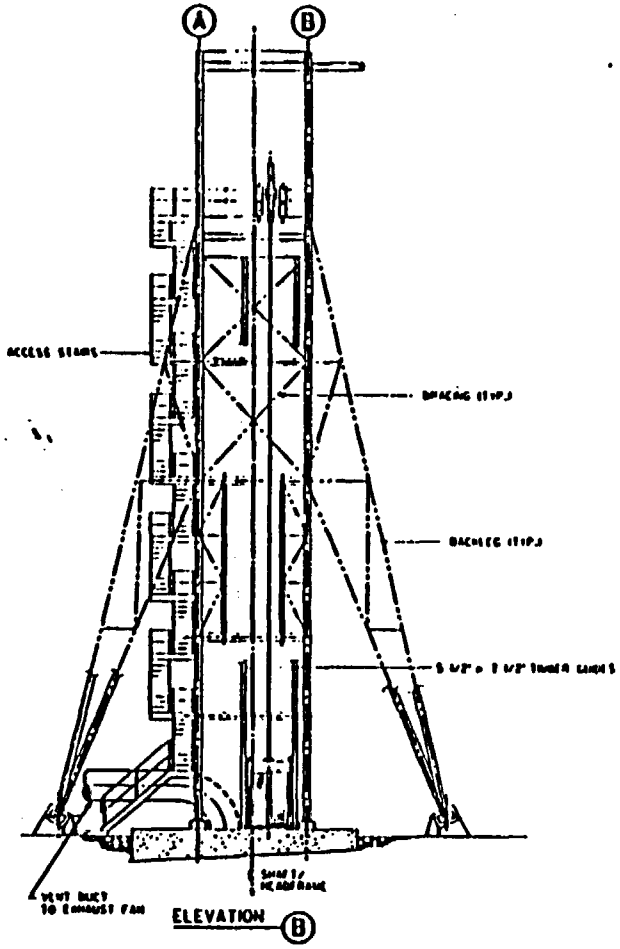

A
B
1
2
F
E
D
C
STAGE SHEAVES
TEMPORARY ACCESS LADDER
FORM SHEAVES
SKIMMING BUCKET OPERATION PLATFORM
CHUTE AIR CYLINDER
RETRACTABLE CHUTE
SKIMMING VENTILATION FAN
TEMPORARY ACCESS LADDER
SHAFT HEADFRAME
SKIMMING BUCKET SHEAVE
SHEAVE FLOOR T.O.S. EL. 492'-0"
TOP OF SKIMMING BUCKET CROSSBEAM
FORM SHEAVE FLOOR EL. 450'-0" T.O.S.
BOT. OF BUCKET AT REST POSITION
BOT. OF BUCKET AT START OF DUMP
AIR CYLINDER
TOP OF RETRACTABLE CHUTE IN DUMP POSITION
RETRACTABLE MUCK CHUTE
TOP OF FIXED MUCK CHUTE
CAYDERMAN ROPE SHEAVE
FIXED MUCK CHUTE
BOT. OF CHUTE
55 TON DUMP TRUCK
MUCK RETAINING WALL
REMOVABLE HANDRAIL
SKIMMING COLLAR DOOR
COLLAR DOOR AIR CYLINDERS (TYP 2 PLACES)
BUCKET LADY CHAIN
SKIMMING BUCKET OPERATION PLATFORM EL. 615'-0" T.O.S.
CHUTE PIVOT POINT
STONE BUCKET HANDLING JIB CRANE
CAYDERMAN SHEAVE PLATFORM EL. 605'-0"
FORM HOIST ROPE
SKIMMING BUCKET HOIST ROPE
STAGE HOIST ROPE
FORM HOIST NO. 2
STAGE HOIST
SKIMMING BUCKET HOIST
HOIST HOUSE
ELEVATION A
SECTION B-B



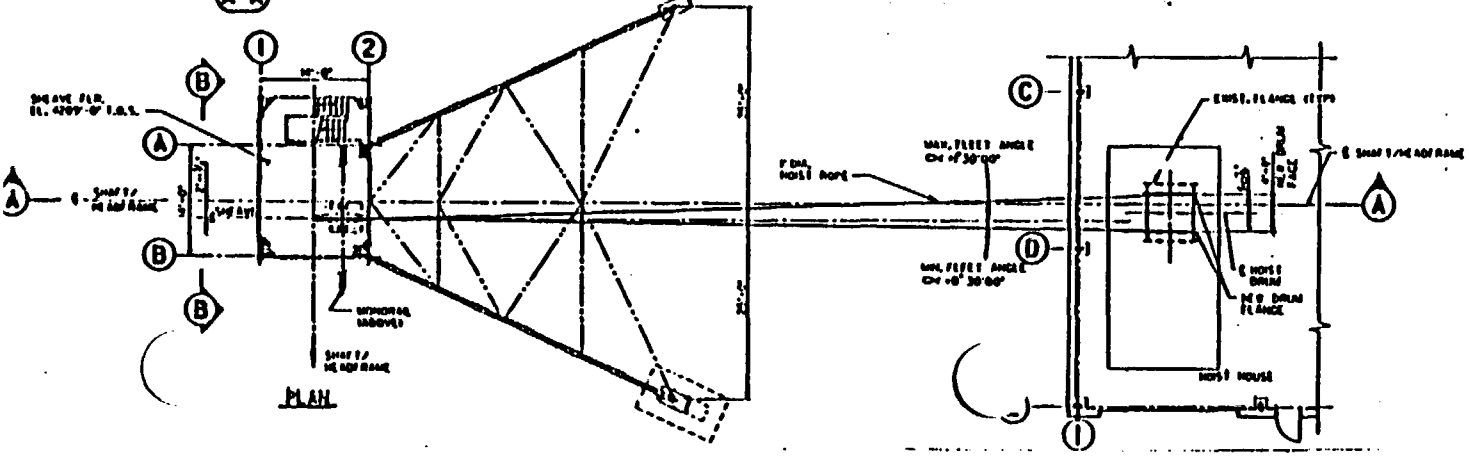
PLAN



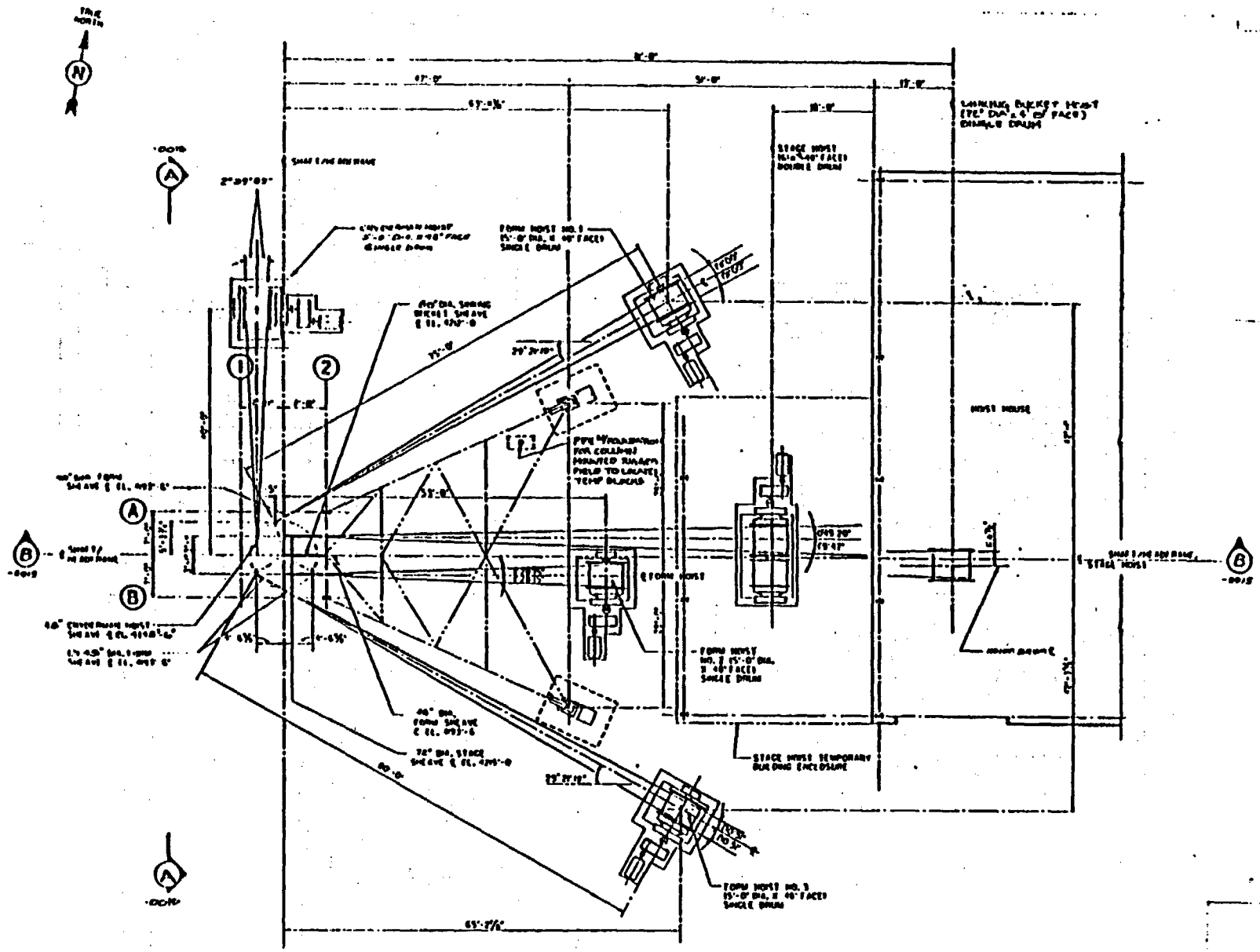
SECTION A-A



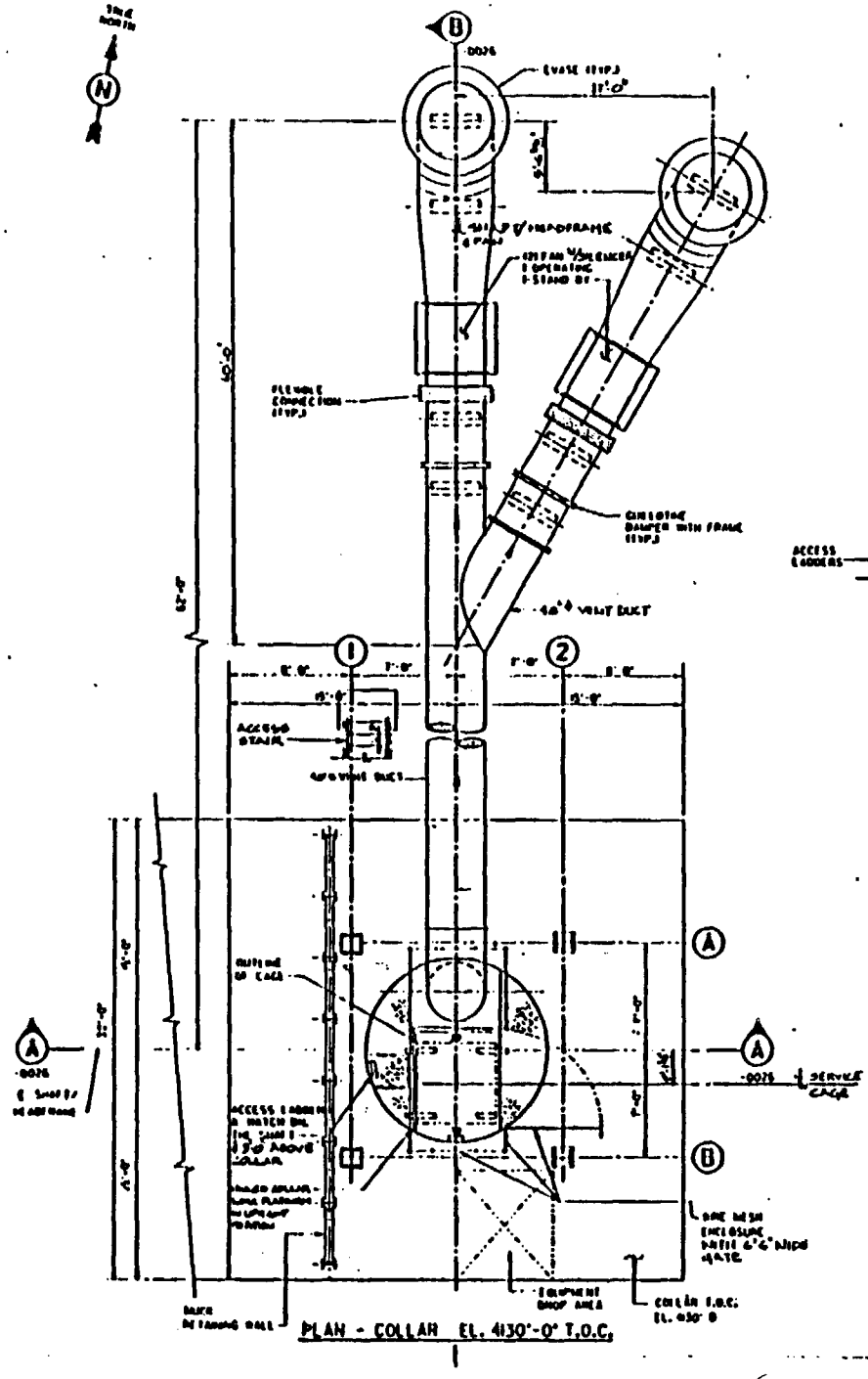
ELEVATION B



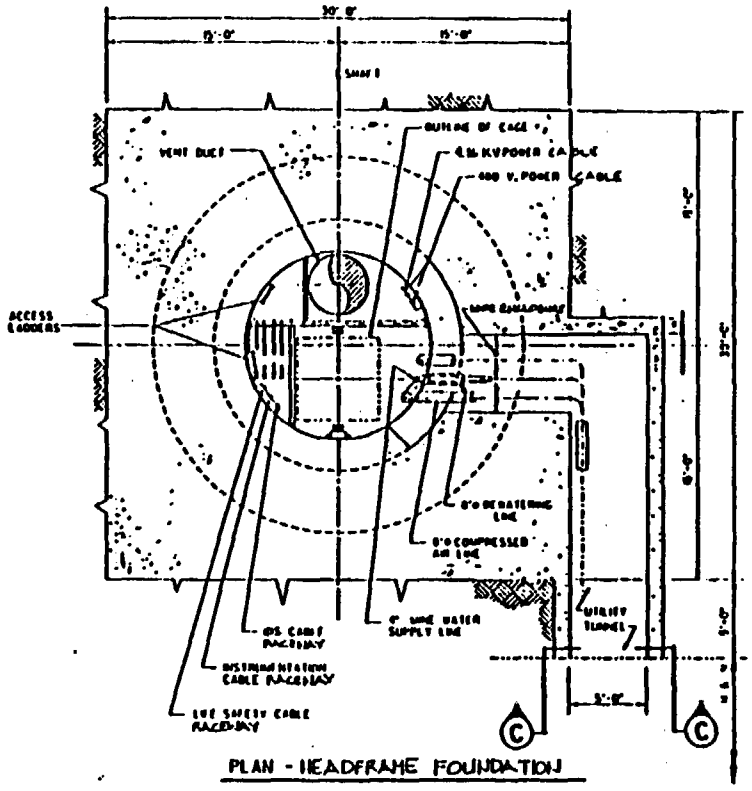
PLAN



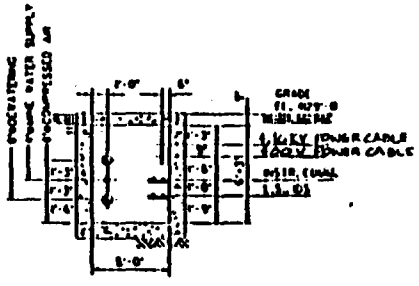
PLAN



PLAN - COLLAR EL. 4130'-0" T.O.C.



PLAN - HEADFRAME FOUNDATION



SECTION C-C

SUBSURFACE MECHANICAL UTILITIES

- MINE SUPPLY WATER DISTRIBUTION SYSTEM
- MINE WASTE WATER REMOVAL SYSTEM
- COMPRESSED AIR SYSTEM

DESIGN CRITERIA - NVO - 309 REV. 1

FENIX & SCISSON

TITLE I DESIGN COMPLETION

MECHANICAL UTILITIES

LARRY BARTO

AUGUST 8, 1988

MINE WATER DISTRIBUTION SYSTEM

DESIGN PROGRESS SINCE 50% TITLE I REVIEW

- ELIMINATE CHDR COMPONENTS
- RE-EVALUATE SERVICE TO EXPLORATORY DRIFTS
- PRIMARY LINE SIZES DETERMINED
- DESIGN ANALYSIS REINFORCES CONCEPTS
- RE-EVALUATE PEAK DEMAND REQUIREMENTS
- INTERFACE POINTS BETTER DEFINED
- ADDITIONAL COMPONENTS FOR RELIABILITY

SUMMARY OF ESSENTIAL INFORMATION

- DESIGN USER PRESSURE — 80 psi
- DESIGN PIPING VELOCITY LIMIT — 4 to 10 fps
- DESIGN PEAK DEMAND — 500 gpm
- UNCERTAINTY ALLOWANCE — 35%
- SYSTEM SERVES MINE WATER AND FIRE PROTECTION NEEDS
- SYSTEM UTILIZES A DISTRIBUTION LOOP
- INCLUDES FAILSAFE FEATURES - EXCESS FLOW CONTROL VALVES.
- NON POTABLE

MINE WASTE WATER REMOVAL SYSTEM

DESIGN PROGRESS SINCE 50% TITLE I REVIEW

- ELIMINATE CHDR COMPONENTS
- RE-EVALUATE INFLOW FROM EXPLORATORY DRIFTS
- PRIMARY LINE SIZES DETERMINED
- DESIGN ANALYSIS REINFORCES CONCEPTS
- RE-EVALUATE TOTAL INFLOW TO MTL SUMP
- INTERFACE POINTS BETTER DEFINED
- LIST OF PUMP REQURIEMENTS DEVELOPED
- PRIMARY MTL SUMP PUMP SELECTED
- PRIMARY MTL SUMP RELOCATED
- PRIMARY MTL SUMP CONFIGURATION DEVELOPED

SUMMARY OF ESSENTIAL INFORMATION

- DESIGN PIPING VELOCITY LIMIT 8 fps
- PRIMARY MTL PUMP
  - -- DESIGN FLOWRATE 500 gpm
  - -- DESIGN HEAD PRESSURE 1150 ft. H_2O
- FULLY REDUNDANT MTL PUMP/PIPING CAPACITY 1000 gpm
- ESTIMATED NORMAL INFLOW TO MTL SUMP 100 gpm
- SYSTEM DESIGN LIMITS WATER HAMMER

COMPRESSED AIR SYSTEM

DESIGN PROGRESS SINCE 50% TITLE I REVIEW

- ELIMINATE CHDR COMPONENTS
- RE-EVALUATE SERVICE TO EXPLORATORY DRIFTS
- PRIMARY LINE SIZES DETERMINED
- DESIGN ANALYSIS REINFORCES CONCEPTS
- RE-EVALUATE PEAK DEMAND REQUIREMENTS
- RECEIVER SIZE DETERMINED
- BOOSTER AIR COMPRESSOR REQUIREMENTS ESTABLISHED

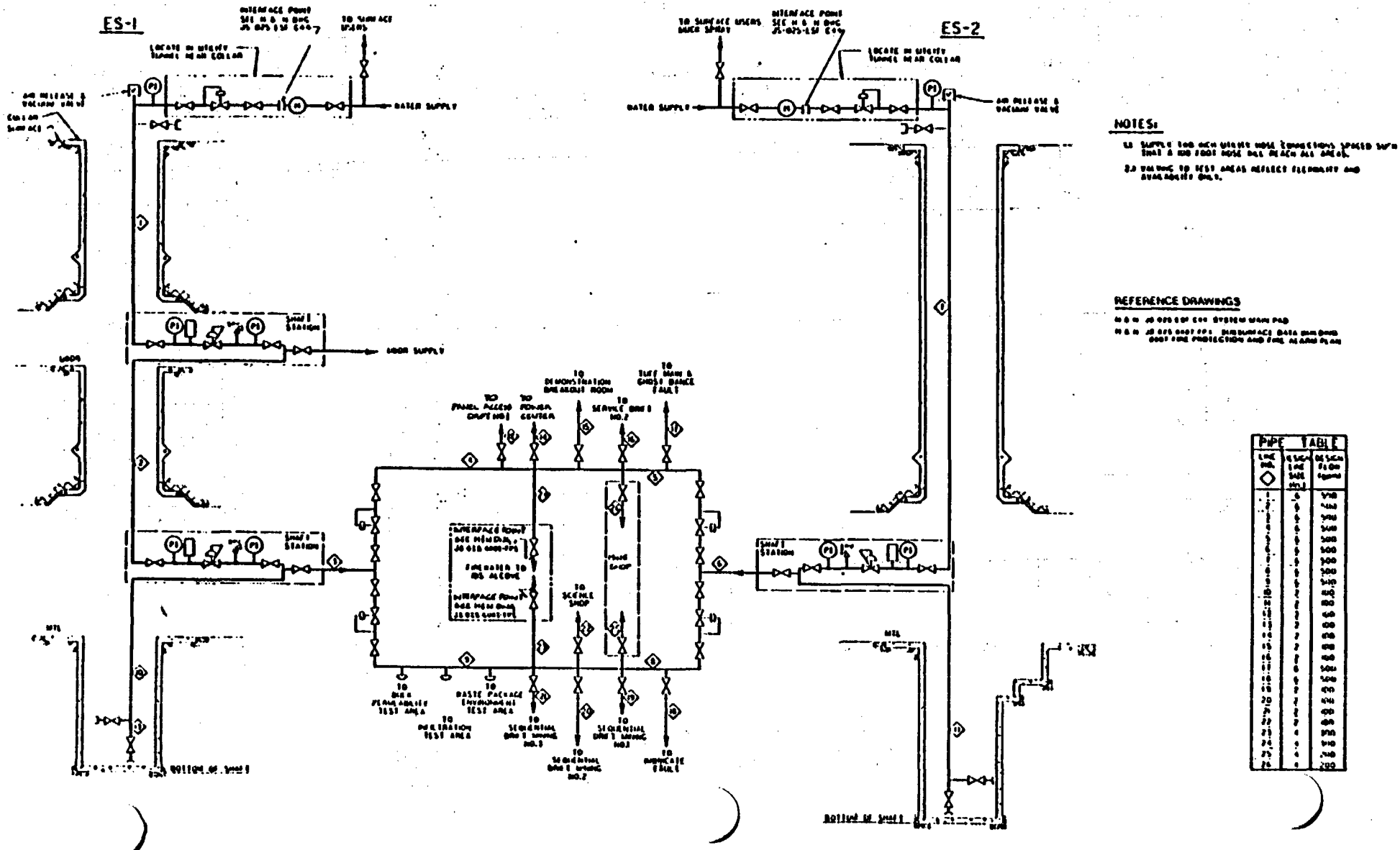
COMPRESSED AIR SYSTEM (CONTINUED)

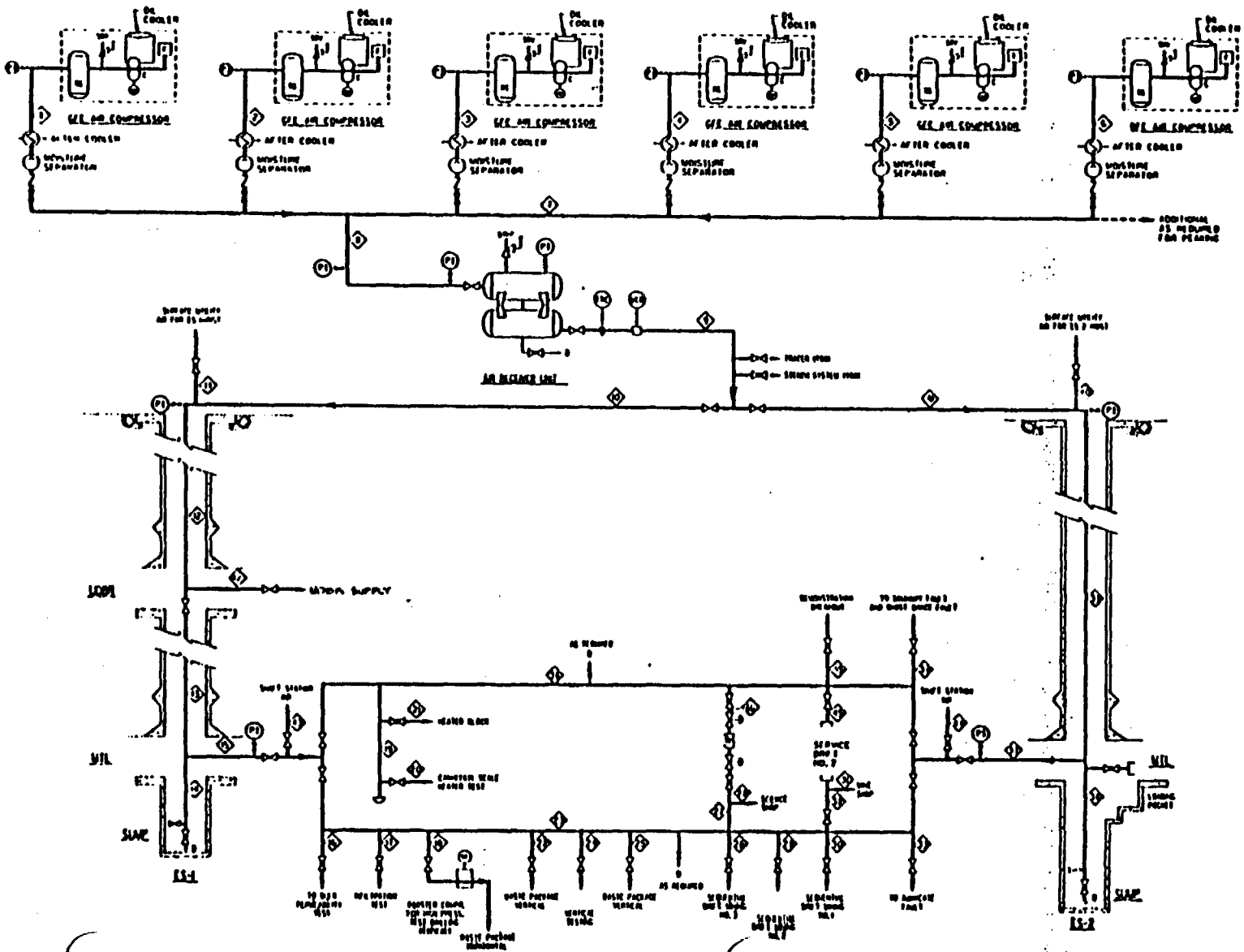
SUMMARY OF ESSENTIAL INFORMATION

- DESIGN SUPPLY PRESSURE AT COMPRESSOR — 125 psi
- DESIGN USER PRESSURE — 100 psi
- TOTAL ACCEPTABLE PRESSURE DROP — 25 psi
- ESTIMATED PRESSURE DROP
  - --MOISTURE SEPARATOR/HEADER — 4 psi
  - --LONGEST RUN OF PIPE, VALVES & FITTINGS — 6 psi
- DESIGN PIPING VELOCITY LIMIT
  - --MAIN — 2000 fpm
  - --BRANCH — 3000 fpm

DESIGN USER TEMPERATURE LIMIT — 130
(REQUIRES AFTERCOOLER)

- DESIGN PEAK DEMAND — 10,000 scfm
  - --CONSTRUCTION & TESTING
- REQUIRED COMPRESSOR UNITS
  (@ 1250 scfm ea.)
  - --FOR SHAFT SINKING PHASE — 2
  - --FOR CONSTRUCTION & TESTING PHASE — 6
  - --FOR PEAKING — 8
- SYSTEMS UTILIZES DISTRIBUTION LOOP
- UNCERTAINTY ALLOWANCE — 35%


ES-1
ES-2
NOTES:
REFERENCE DRAWINGS
PIPE TABLE



REFERENCE DRAWING

[illegible] SURFACE COMPRESSED AIR SYSTEM PLANS & ELEVATION

NOTES:

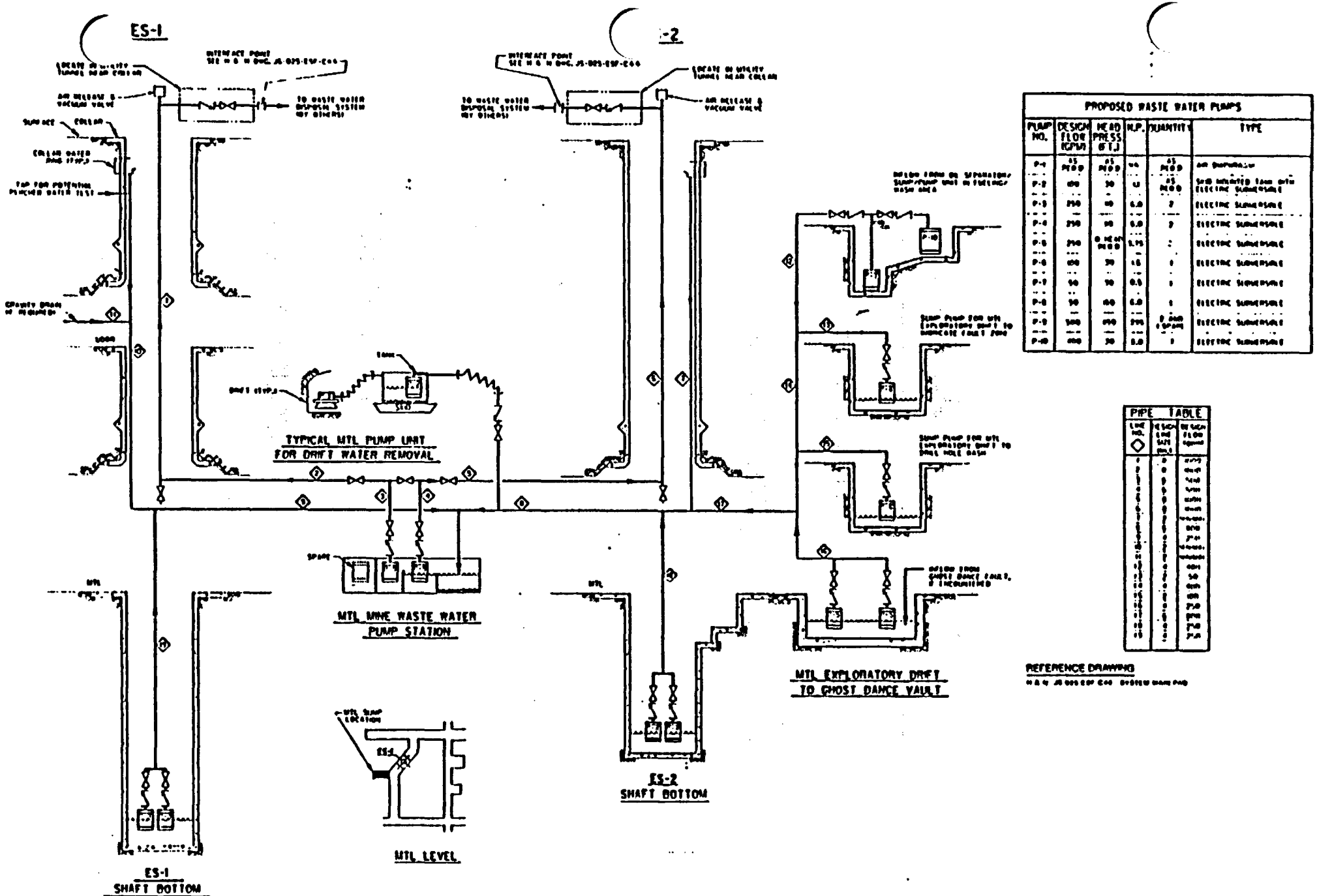
1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]

PIPE TABLE

LINE NO. ◇	DESIGN LINE SIZE IN.	DESIGN FLOW SCFM	LINE NO. ◇	DESIGN LINE SIZE IN.	DESIGN FLOW SCFM

LEGEND

F	AIR INTAKE FILTER
C	ROTARY SCREW COMPRESSOR
M	ELECTRIC MOTOR
RS	AIR RECEIVER OR SEPARATOR
FRC	FLOW RECORDER/CONTROLLER
MCR	MOISTURE CONTENT RECORDER
D	LOW POINT DRAIN
R	AIR RECEIVER
SRV	SAFETY RELIEF VALVE



PROPOSED WASTE WATER PUMPS

PUMP NO.	DESIGN FLOW (GPM)	HEAD PRESS (FT.)	H.P.	QUANTITY	TYPE
P-1	AS REQ'D	AS REQ'D	NA	AS REQ'D	AIR DIAPHRAGM
---	---	---	---	---	---
P-2	600	30	5	AS REQ'D	SKID MOUNTED TANK WITH ELECTRIC SUBMERSIBLE
---	---	---	---	---	---
P-3	250	60	5.0	2	ELECTRIC SUBMERSIBLE
---	---	---	---	---	---
P-4	250	60	5.0	2	ELECTRIC SUBMERSIBLE
---	---	---	---	---	---
P-5	250	0 HEAD REQ'D	5.75	2	ELECTRIC SUBMERSIBLE
---	---	---	---	---	---
P-6	600	30	15	1	ELECTRIC SUBMERSIBLE
---	---	---	---	---	---
P-7	50	30	0.5	1	ELECTRIC SUBMERSIBLE
---	---	---	---	---	---
P-8	50	60	0.5	1	ELECTRIC SUBMERSIBLE
---	---	---	---	---	---
P-9	500	450	275	2 (1 SPARE)	ELECTRIC SUBMERSIBLE
---	---	---	---	---	---
P-10	600	30	5.0	1	ELECTRIC SUBMERSIBLE

PIPE TABLE

LINE NO. ◇	SIZE (IN.)	DESIGN FLOW (GPM)
1	6	600
2	6	600
3	6	600
4	6	600
5	6	600
6	6	600
7	6	600
8	6	600
9	6	600
10	6	600
11	6	600
12	6	600
13	6	600
14	6	600
15	6	600
16	6	600
17	6	600
18	6	600
19	6	600
20	6	600
21	6	600
22	6	600
23	6	600
24	6	600
25	6	600
26	6	600
27	6	600
28	6	600
29	6	600
30	6	600
31	6	600
32	6	600
33	6	600
34	6	600
35	6	600
36	6	600
37	6	600
38	6	600
39	6	600
40	6	600
41	6	600
42	6	600
43	6	600
44	6	600
45	6	600
46	6	600
47	6	600
48	6	600
49	6	600
50	6	600
51	6	600
52	6	600
53	6	600
54	6	600
55	6	600
56	6	600
57	6	600
58	6	600
59	6	600
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67	6	600
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74	6	600
75	6	600
76	6	600
77	6	600
78	6	600
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80	6	600
81	6	600
82	6	600
83	6	600
84	6	600
85	6	600
86	6	600
87	6	600
88	6	600
89	6	600
90	6	600
91	6	600
92	6	600
93	6	600
94	6	600
95	6	600
96	6	600
97	6	600
98	6	600
99	6	600
100	6	600

REFERENCE DRAWING

FENIX & SCISSON

TITLE I DESIGN COMPLETION

ELECTRICAL DESIGN

TOM GREINER

AUGUST 8, 1988

ELECTRICAL UTILITY SYSTEMS

- POWER
- CONTROL / INSTRUMENTATION
- LIGHTING
- COMMUNICATIONS
- MONITORING AND WARNING SYSTEM
- GROUNDING

DESIGN BASIS AND CRITERIA

- **GENERAL CRITERIA**
  - SAFETY
  - ECONOMY
- **SUBSYSTEMS DESIGN REQUIREMENT DOCUMENT (SDRD)**
- **BASIS FOR DESIGN (BFD)**
- **REFERENCE INFORMATION BASE (RIB)**

APPLICABLE CODES AND STANDARDS

- o REGULATIONS
  - DOE 6430.1A, SECTION 16-ELECTRICAL
  - 30 CFR PART 57
  - 10 CFR PART 60
- o CODES
  - NEC NFPA 70
  - NESC
  - LOCAL AND NTS CODES
- o STANDARDS
  - IEEE
  - ANSI
  - NEMA

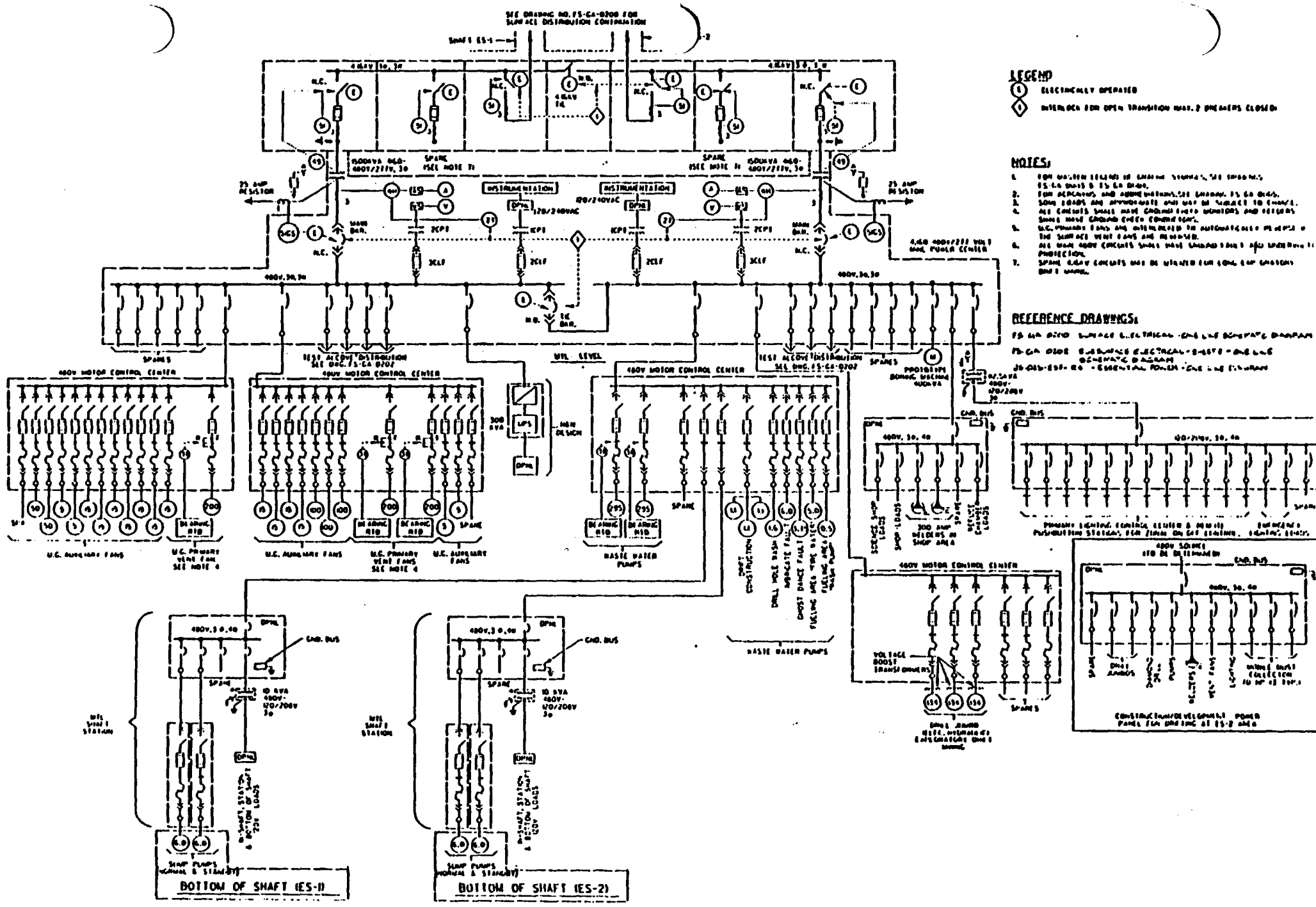
ANALYSIS AND CALCULATIONS

- ANALYSIS
  - LIGHTING SYSTEMS
  - ELECTRICAL SYSTEM LOADS
  - ELECTRICAL SYSTEMS INTERFACE
  - INSTRUMENTATION / CONTROL AND COMMUNICATION SYSTEMS

- CALCULATIONS
  - HOIST RESISTOR BANK HEAT LOADS

TECHNICAL DRAWINGS

- ONE-LINE SCHEMATIC DIAGRAMS
- ELECTRICAL PLOT PLAN
- HOIST SIGNALLING SYSTEMS
- HOIST / CAGE RADIO SYSTEM
- INSTRUMENTATION / CONTROL BLOCK DIAGRAMS


LEGEND
ELECTRICALLY OPERATED
INTERLOCK FOR OPEN TRANSITION MAX. 2 BREAKERS CLOSED
NOTES:
REFERENCE DRAWINGS:
480V MOTOR CONTROL CENTER
MTL LEVEL
BASIE WATER PUMPS
BOTTOM OF SHAFT (ES-1)
BOTTOM OF SHAFT (ES-2)

OUTLINE SPECIFICATIONS

- 17 TOTAL SPECS.
  - POWER DISTRIBUTION PANELS
  - MOTOR CONTROL CENTERS
  - MEDIUM VOLTAGE STARTERS
  - UNIT SUBSTATIONS
  - CABLE, ETC.

11.0 Attendance Lists

MEETING: ESF Technical Assessment Review at 100 Percent Design Completion

DATE: August 8, 1988

ATTENDANCE LIST (PLEASE PRINT)

Name Include M.I.	Organization	Location	Telephone	Attendance Purpose
Thomas L Urgent	USBR/USGS	DENVER	FTS 776-0662	
Joseph C. Gloyna	H&N	~~LAS~~ VBC	794-7079	—
R.L. Bullock	F&S	VBC	794-7014	—
J.D. GRENIO	F&S	VBC	794-7985	—
M.B. Mirza	F&S	VBC	794-7015	—
L.J. FLORES	REECO	LV	—	
DAVID JACKSON	SAIC	LV	794 7657	—
LOUISE G. CREVELT	REECO	LV	295-7605	
LARRY BARTO	F&S	LV	876-5984	PRESENTATION
Tom Greiner	"	"	794-7063	"
PAUL HALE	F&S	LV	794-7092	—
JIM GRUBB	STATE OF NV	CARSON CITY	885-3744	OBSERVER
Richard Greenwalt	H&N	LV	794-7049	PRESENTATION
Tom McCracken	F&S	LV	794-7093	Observer
Richard DeKlever	H&N	LV	794-7108	Observer
Thomas E. Blejwas	SNL	LV	846-0541	Reviewer
ERIKO. LEWSEAL	COE	SACRAMENTO	(916) 557-2339	(L.R.) REVIEWER
Dennis N. Gray	DOE/NWPO	LV	544-7932	"
Roxanne D. Edwards	DOE/NWPO	LV	544-7999	"
J LAWLER	P.B	LV	794-7051	PRESENT,
Romeo Juarni	F&S	LV	794-7991	"
N. TAMONDONG	P.B	LV	794-7031	OBSERVER

MEETING: ESF Technical Assessment Review at 100 Percent Design Completion

DATE: August 8, 1988

ATTENDANCE LIST (PLEASE PRINT)

Name Include M.I.	Organization	Location	Telephone	Attendance Purpose
D. D. Brogan	DOE/NVISD	Las Vegas	295-1111	Reviewer
F.A. Spenia	Reeco	Las Vegas	295-3549	Reviewer
R.L. Tome'	SAIC	Las Vegas	733-9958	Review Board
Juan Cottle	"	"	794-7857	"
Patrick E. Phillips	DOE/Fire Prot	Las Vegas	295-0907	"
Robert H. Klemens	SAIC	Las Vegas	794-7734	"
Tom Merson	Los Alamos	Los Alamos	FTS843-5726	Reviewer
Steven C. Smith	SAIC	Las Vegas	794-7789	Review Board
Jerry Myrick	H&N	LV/VBC	794-7086	—
Pete Karivoski	SAIC	LV	794-7736	Review Board
J. Marshall Davenport	SAIC	Las Vegas	794-7661	Review Board
W.L. Rowe	H&N	LV	794-7105	OBS.
Robert W Craig	USGS	Denver	FTS 776-8817	Reviewer
Bert Anzai	H&N	LV	794-7050	Presenter
Orin L Haworth	Reeco	LV	295-7221	Review
William A. Boss	DOE/NTSO	NTS	295-4010	Review
Edward Bruno	~~H&N~~/HCN	LV	794-7051	Presenter
Joseph A. Dumas	H&N	LV	794-7073	Presenter
Edward M Cikanek	SAIC/Hanley	LV	794-7803	Reviewer
Daniel L. Koss	Reeco	Mercury	295-6717	Reviewer
Alvin L. Langstaff	Tamss/Westinghouse	LV	794-7833	Review Board
Darrel McPherson	DOE/NTSO	LV	295-6790	Reviewer

MEETING: ESF Technical Assessment Review at 100 Percent Design Completion

DATE: August 8, 1988

ATTENDANCE LIST (PLEASE PRINT)

* Name Include M.I.	Organization	Location	Telephone	Attendance Purpose
James A McConnell	HARZA	L.V.	794-7825	Reviewer
Thomas H Pyato	SAIC	LV	794 7820	Reviewer
Marge Brake	SAIC	LV	7947643	Reviewer
Stewart Thomas	DOE/NTSO	MERCURY	295-4010	"
Martin Shuttleff	H&N	L.V.	794-7076	Reviewer
BOB STINEBAUGH	SNL	ABQ	846-9648	REVIEWER
RANDOLPH L. SCHROEDER	H&N	L.V.	794-7071	A&E
William H Grams	REECo	Mercury	295-7511	Reviewer
MEL J. REGENDA	FTSINC	L.V.	295-6582	PRESENTER
Stanleigh W. Phillips	SAIC	L.V.	794-7868	Reviewer
Robert R. Rommel	REECo	Mercury	295-7511	Reviewer
JOE B. RELSER	SAIC	LV	794-7891	REVIEW COMMITTEE SECTY REVIEWER
Bruce T. Stanley	F+S	LV	794-7989	A+E
RRICK S. WHITFIELD	USGS	DENVER	FTS 776-5191	REVIEWER
MAREK J. MRUGALA	F&S /PB	HOUSTON	794-7979	A & E
MONO A. FOX	REECo	Mercury	295-7425	REVIEWER
J KEPLOGLE	H&N	LV	794-7091	ASE
Charles H. WARD	H & N	LV	794-7171	ASE
[illegible]	[illegible]	LV	794-7775	Reviewer
Jack L. Potter	Corps of Engrs.	Sac.	916-551-2245	Reviewer
Bill Narrows	SAIC	LV	794-7788	Reviewer
Andres R. Velasco	~~SAIC~~ NTSO	LV	295-4090	Reviewer

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ATTENDANCE LIST (PLEASE PRINT)

Name Include M.I.	Organization	Location	Telephone	Attendance Purpose
Rodric M Breland	MSHA	DC.	(702)293-8197	Reviewer
HENRY L. BERGANIS	WESTON/UEC		(202)646-6664	REVIEWER
GARY L. FAUST	WESTON/DOE-HQ	D.C.	(202)646-6644	HQ-SURVEILLANCE
JAMES MONTGOMERY	WESTON/Jacobs	D.C.	202-646-6897	Reviewer
KEN BOEHLE	SAIC	L.V.	702-794-7849	Reviewer
Jim Betts	REECo	L.V.	702 295-1409	Reviewer
H. N. Kalia	LANL	LV	702 794-7045	Observer
Bruce Cantrell	U.S. BoM	Mpls.	612-725-4607	Rev.
Richard Dick	US BM	Mpls	612-725-4502	Reviewer
Paul Prestholt	US NRC	LV	3886125	Observer
John Gardner	SAIC	LV	794-7749	REVIEWER

MEETING: ESF Technical Assessment Review at 100 Percent Design Completion

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ATTENDANCE LIST (PLEASE PRINT)

Name Include M.I.	Organization	Location	Telephone	Attendance Purpose
John (none) Wilbows	MSHA	Oakland CA.	415 273-7457	Reviewer
Jim Owens	USDOE	Las Vegas Nev	702 794-7934	Reviewer
Dean Stucker	DOE/HQ	WASH DC	202 586-2279	REVIEWER (1)
Derrick (None) A Wagg	WESTON	WASH DC	202 646 6699	REVIEWER
DERMOT ROSS-BROWN	SAIC	COLUMBUS	614 451 0515	"
Paul E. Talley	NWHA	DENVER	276-2788	REVIEWER
Dale D. Wilke	LLNL	LIVERMORE	632-6908	Reviewer
Ian Cottle	TMSS	LV	702-794-2658	REVIEWER
Note (1) 8-11-88 IC				
Per telephone conversation, D. Stucker to I. Cottle this a.m., Mr. Stucker directed that his attendance purpose be changed from Reviewer to Observer.	Ian Cottle			

MEETING: ESF Technical Assessment Review at 100 Percent Design Completion

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ATTENDANCE LIST (PLEASE PRINT)

Name Include M.I.	Organization	Location	Telephone	Attendance Purpose
John E Shaler	T&MSS	LV	702 794 7602	OBSERVER
Chris G Pflum	T&MSS/SAIC	LV	794-7682	observer
Collin L. Stewart	T&MSS	LV	702 794-7612	OBSERVER
D.L. Lockwood	F&S	TULSA	918 748.5000	observer
J. A. Cross	F&S	LV	702 295-3627	OBSERVER
G E Barr	SNL	Alb	844-8532 (FTS)	Rec. Reviewer
Lynn Francis	LANL	LA	FTS 843-4512	REVIEWER.
ARCH GIRDLEY	DOE	LV		QA OBSERVER
William T. Hughes	DOE/NWPO	LV	702 794-7959	OBS/QA

MEETING: ESF Technical Assessment Review at 100 Percent Completion

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ATTENDANCE LIST (PLEASE PRINT)

Name Include M.I.	Organization	Location	Telephone	Attendance Purpose
Stanleigh W Phillips	SAIC	Las Vegas	794-7868	Reviewer
Thomas H Pyste	"	"	794-7890	"
DAN KOSS	REECO	MERCURY	295-6717	LEAD REP.
Marge Brake	SAIC	LV	794-7643	Reviewer
James H. McConville	TMSS/HANF	LV	794-7835	Reviewer
Robert R. Bonnell	REECO	Mercury	295-2511	Reviewer
Bill Boss	DOE/NTSO	NTS	295-4010	Reviewer
ERIK O. JENSEN	COE	SACTO, CA	(916) 551-2339	Reviewer
[illegible] R. LARAUNAY	COE	SAC. CA.	(916) 551-2400	Reviewer
ALVIN L. LANGSTAFF	TMSS	LV	794-7833	Review Board
PAUL B HALE	F&S	LV	794-7092	
Tom Greiner	"	"	794-7063	
Martin Shuntleff	H&N	LV	794-7076	
Richard Greenwalt	H&N	LV	794-7049	
B.R. Chytrowski	F&S	LV		A/E
DERMOT ROSS-BROWN	SAIS	COLUMBUS	614 451 0515	Reviewer
JIM GRUBB	STATE OF NEVADA	CARSON CITY	702-885-3744	OBS.
JOSEPH G. REISER	T&MSS	LV	FTS 544-7891	TARC
Joe Calvini	H&N	LV	794-7079	Presenter
P. T. Phillips	DOE	LV	295-0907	Fire & Safety
John K. Robson	DOE/R.O.	LV	794-7933	
Roxanne Edwards	DOE/RO	LV	794-7999	reviewer

MEETING: ESF Technical Assessment Review at 100 Percent Completion

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ATTENDANCE LIST (PLEASE PRINT)

Name Include M.I.	Organization	Location	Telephone	Attendance Purpose
John A. Jardine	SAIC/QA	LV, NV	794-7749	REVIEWER.
D D Brown	DOE/NV/ITD	LV, NV	295-1111	Reviewer
Roger L. Mundell	USBOM	Denver, Co.	FTS 776-0774	Reviewer
Ron Beall	SAIC	LV. NV	794-7829	Reviewer
Wm Stuckless	DOE/HQ	Wash DC	(202) 568-2277	Reviewer
Harry Barr	FES	L.V.	794-7992	AE
Mahmood Mirzo	FES	L.V	794-7015	
Tim Gunn	FES	LV.	794-7985	
JANET MONTGOMERY	WESTON Hercos	Wash D.C.	202-646-6744	Reviewer
KEN BRELAND	MSHA	Boulder City	294-1677	REVIEWER
Tom Tailey	MSHA	Denver	(303) 236-2194	Reviewer
Dale Wilder	LLNL	Livermore	FTS 532-3908	Reviewer

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ATTENDANCE LIST (PLEASE PRINT)

Name Include M.I.	Organization	Location	Telephone	Attendance Purpose
IVAN R COTTLE	SAIC	LV	794-7837	REVIEWER
Steven C. Smith	TEMSS/SAIC	LV	794-7789	Reviewer
J. MARSHALL DAVENPORT	TYMSS/ SAIC	LAS VEGAS	794-7661	REVIEWER
Robert W. Craig	USGS	Denver	776-5017	Reviewer
Bruce K. Cantrell	US BOM	Mpls, MN	FTS 725-4607	Reviewer
Robert S. WATERS	DOE	LV	794-7935	Reviewer
Bob STINEBAUGH	SNL	ABQ	846-3648	REVIEWER
RONALD L. TOME'	TEMSS/ SAIC	LV	733-9958	REVIEW COMMITTEE
[illegible]	H&N	LV	794-7086	PRESENTERS
JOSEPH A. DUMAS	H&N	LV	794-7073	PRESENTERS
RANDOLPH L. SCHRINER	H&N	LV	794-7071	"
BERT H. ANZAI	H&N	LV	794-7050	PRESENTER
ROBERT H. KLEMENS	SAIC	LV	794-7734	REVIEWER
TOM MERSON	LOS ALAMOS	N.M.	FTS 843-5726	REVIEWER
R L Bullock	RE&S	LV	794-7014	Presenter
EDWARD CHANOK	TIMSS	LV	794 7003	REVIEWER
Steve Francis	LANL	Los Al.	843-[illegible]	Reviewer
STEW THOMAS	DOE	MERCURY	295-4010	REVIEWER
PETE KARNOSKI	SAIC	LV	794-7756	REVIEWER
Esther R. Vidoso	DOE	Mercury	295-4010	Lead "
THOMAS LIPPERT	USBR/USGS	DENVER	FTS 776-0662	REVIEWER
LETA BRUNO	H&N	VEGAS	795 7051	PRESENTER

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ATTENDANCE LIST (PLEASE PRINT)

Name Include M.I.	Organization	Location	Telephone	Attendance Purpose
LARRY W. BARTO	F&S	L.V	794-7992	
Tom Greiner	"	"	794-7063	
Len Sher	"	"	794-7037	
DEBMOT ROSS-BROWN	SAIC	COLUMBUS	(614) 451 0515	
Dean Stuckless	DOE/HQ	WASH DC	202 4886708	
DAN KOSS	REECo	MERCURY	295-6717	LEAD REP.
Robert S. WHITELAW	NAC	LV	794-7935	
Joseph C. Colarusso	H&N	LV	794-7079	
Romeo S Juarez	F&S	LV	794-7991	
Dick Coppridge	F&S	LV	794-7986	
ROBERT H. KLEMENS	SAIC	LV	794-7734	
PETER J. KWIECINSKI	SAIC	LV	794-7756	
PAUL B. RACE	F&S	LV	794-7227	
TIM CLIPPERT	USBR/USGS	DENVER	FTS 776-0662	
R.L. Bullock	F&S	LV	794-7614	
Bruce Stanley	F&S	LV	794-7989	
Charles H Ward	H&N	LV	794-7171	
D.L. LOCKWOOD	F&S	TULSA	918 749-5000	observer
JACK A. CROSS	F&S	LV	702 295-3627	OBSERVER
Roger L. Mundell	USBOM	Denver	FTS 776-0774	Reviewer
Bruce Cantrell	USBOM	Mpls, MN	FTS 725-4607	Reviewer
Robert W. Craig	USGS	Denver	FTS 776-307	Reviewer

MEETING: ESF Technical Assessment Review at 100 Percent Completion

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ATTENDANCE LIST (PLEASE PRINT)

Name Include M.I.	Organization	Location	Telephone	Attendance Purpose
S. D. Francis	LANL	LA	843-0050	Review
Thomas A. Pysto	SAIC	LV	794-7592	Reviewer
Dick East	F&S	LV	794-7979	

12.0 Design Basis Library

REVIEW LOGISTICS

LIBRARY

- NNWSI PROJECT REGULATORY DOCUMENT MANUAL (2)
  - 10 CFR 60
  - 10 CFR 960
  - 40 CFR 191
  - NEPA
  - NWPA
- 29 CFR 1910 W/UPDATES
- 29 CFR 1926 W/UPDATES
- 30 CFR 0-199
- FWPCA
- RIB (2)
- GRMGDS (2)
- ISSUES HIERARCHY FOR MGDS (2)
- ESF TITLE I 50 PERCENT DESIGN REVIEW REPORT
- DOE ORDERS
  - 6430.1A (2)
  - 5480.1B, CH. 11 & 12
  - 5480.2 THRU 5480.10, 5480.13
  - 5481.1
- SDRD (4)
- SCP/CDR
- SCP/CD (2)
- NQA1
- WMPO/88-1 W/QMPs (2)
- NNWSI/88-9 W/SOPs (2)
- QALAS
- DWG R07048A, ECR 7 VERSION (8)
- ECRs (2)
- CONSTRUCTION SCHEDULE (2)
- SEMP

REVIEW LOGISTICS

LIBRARY
(CONTINUED)

- AASHTO GDHS
- ACI 318, 318.1
- ANSI A58.1, C2
- UBC, UMC, UPC
- NFPA 70, 101
- CAC, TITLE 8, CH. 4, SUBCH. 17 AND 20
- NRS, PART 1, TITLE 40, CH. 444 AND 445
- NRS, PART 1, TITLE 46, CH. 512
- NEV DEPT OF HWYS, STD SPEC FOR ROAD AND BRIDGE CONST
- NEV DEPT OF HWYS, STD PLANS FOR ROAD AND BRIDGE CONST
- NEV DOT, ROAD DESIGN DIV, DESIGN MANUAL, PARTS 1 AND 2
- H&N SCOPE AND PLANNING BASIS DOCUMENT (10)
- H&N DESIGN BASIS DOCUMENT (10)
- H&N QA MANUAL (10)
- F&S DESIGN SCOPE AND PLANNING DOCUMENT (10)
- F&S BASIS FOR DESIGN (10)
- &S QA MANUAL (10)