[redacted]

tm 4/19-20/83
Meeting in Columbus, OH
Packet
~~For~~ ~~Folder~~
For Revision of Package

Jeff Neff, NPO
Max Blanchard, NPO
Bob Wunderlich, NPO
Leslie Casey, NPO

Virgil Lowery, DOE-HQ
Larry White, Weston

Mike Glora, ONWI
John Kircher, ONWI
Sam Matthews, ONWI
George Heim, ONWI
Ping Chen, ONWI
Larry Anderson, ONWI
Stan Goldsmith, ONWI

Hubert Miller, NRC
Lawrence Chase, NRC
Robert Johnson, NRC
Julia Corrado, NRC
Ed Rainier, NRC
Mike Weber, NRC
Ludwick Hartung, NRC
Robert Cook, NRC
Steve Frishman, TENRAC

Donna

WM Record File 106
WM Project 16
Docket No.
PDR ✓
LPDR ✓
Distribution:
(Return to WM, 623-SS)

No written narrative accompanied these viewgraphs.

10g 15

FINAL MEETING AGENDA

(First Day - April 19)

8:30 a.m.	Welcome and Introduction		J. Neff/S. Goldsmith
8:45 a.m.	NRC Introduction and Comments		H. Miller/L. Chase
9:00 a.m.	NPO/DOE Organization and Responsibility		L. Casey
9:25 a.m.	ONWI Organization and Responsibility		M. Glora
9:50 a.m.	Break		
10:00 a.m.	NRC Organization, Responsibility and Regulatory Review • 10 CFR 60 Changes and Schedules • Legislation Impacts • SCR Review Process and Schedules		H. Miller
11:00 a.m.	NPO/ONWI Information System		
	• Document Review and Clearance Process		L. Anderson
	• Document Distribution Process		L. Anderson
	• SCR Reference Library and Data Base		
	• Discussion		
12:00 noon	Lunch		
1:00 p.m.	Engineering	Function Overview Including Available Documents	S. Matthews
2:00 p.m.	Geology		G. Heim
3:00 p.m.	Systems		M. Glora J. Kircher
4:00 p.m.	Discussion		
5:00 p.m.	Adjourn		

(Second Day - April 20)

8:30 a.m.	NPO/ONWI SCR Program	
	• Waste Legislation	R. Wunderlich
	• Schedules	
	• Siting Guidelines	
	• Regulatory Guide 4.17	M. Glora
10:30 a.m.	Break	
10:40 a.m.	NRC/DOE Interaction Procedures	NPO/NRC/ONWI
	• Implementation of Agreement	
	• Meeting Arrangements	
	• Proposed Topics for Future Meetings	
12:00 noon	Lunch	
1:00 p.m.	Meeting Minutes Preparation and Finalization	NPO/NRC/ONWI
4:00 p.m.	Closeout	

See Expected Attendees in the Folder for Info. 4/19-20/83

DOE/NRC MEETING
APRIL 19-20, 1983

PURPOSE AND SCOPE

- FIRST MEETING BETWEEN NRC AND NPO PREPARATORY TO SCR/SCP SUBMITTAL
  - ORGANIZATIONAL FAMILIARIZATION AND RESPONSIBILITIES
  - SCHEDULES IN CONTEXT OF LEGISLATION
  - INFORMATION EXCHANGE PROCEDURES AND IDENTIFICATION OF TOPICS FOR FUTURE MEETINGS
- PLANNING FOR FUTURE MEETINGS

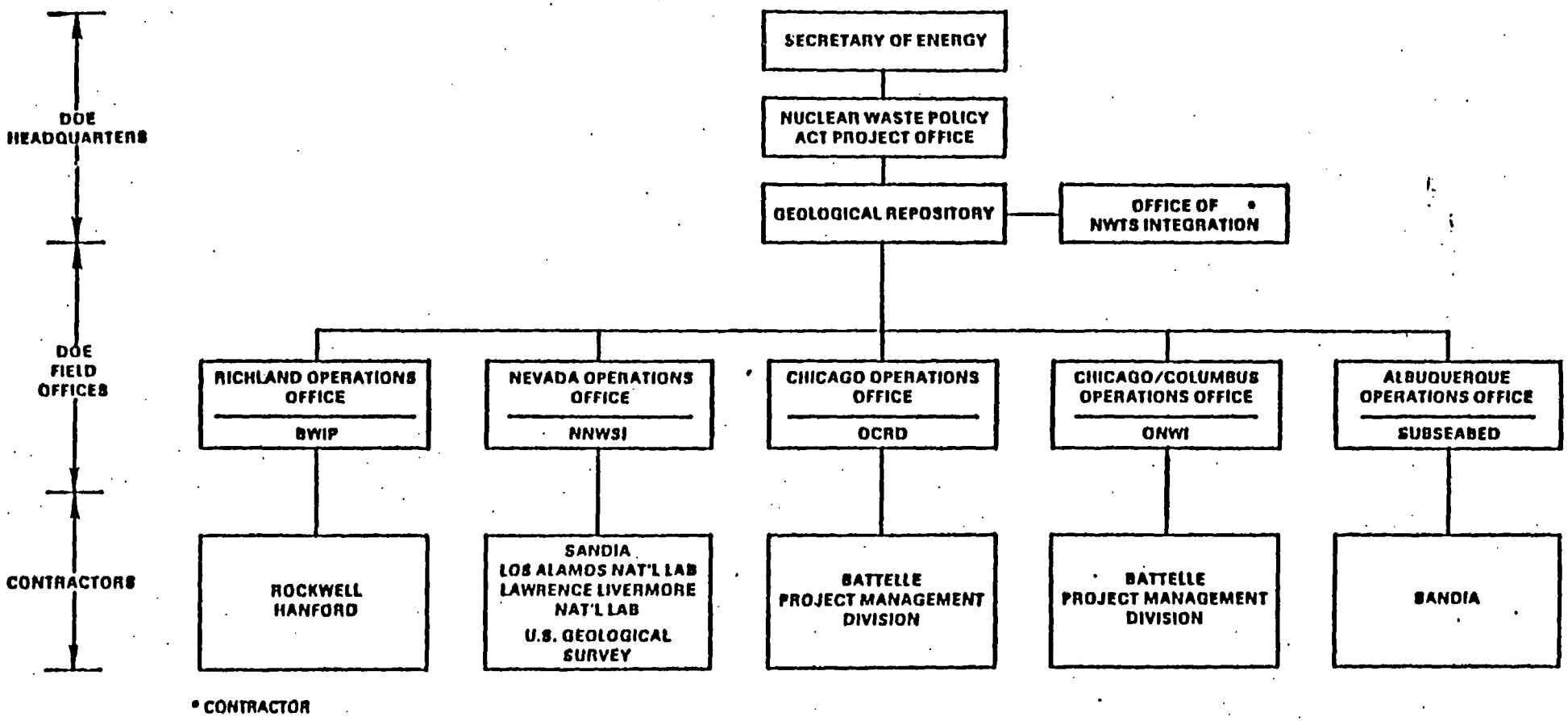
DOE/NPO

ORGANIZATION AND RESPONSIBILITY

L. A. CASEY

ONWI

BATTELLE Project Management Division



• CONTRACTOR

NWTS PROGRAM ORGANIZATION

DOE HQ C[illegible]ANIZATION

March 23, 1983

Geologic Repository Division

J. William Bennett
Director

J. Simm (S)

M. Stein
Deputy Director

J. Shaheen
E. Hiler (S)
S. Brown (S)

BWIP	Salt/Granite	Nevada Repository	Program Integration	Planning and Scheduling
H. Frei	C. George	J. Fiore	C. Cooley	E. Burton
V. Orr C. Newton R. Coleman H. Crum (S)	J. Smiley C. Hanlon V. Lowery C. Klingsberg Vacancy (Geologist) C. Bricker (S)	T. Longo J. Vlahakis F. Hinton Vacancy (Mining Engr.) G. Ginalick (S)	W. Dieter Z. Kaufman C. Brooks C. Litten (S)	B. McNutt D. Pappas D. Firkey J. Wesley (S) S. Agee (S)

Responsibilities

BWIP
TEP
Overall Budget
10 CFR 60

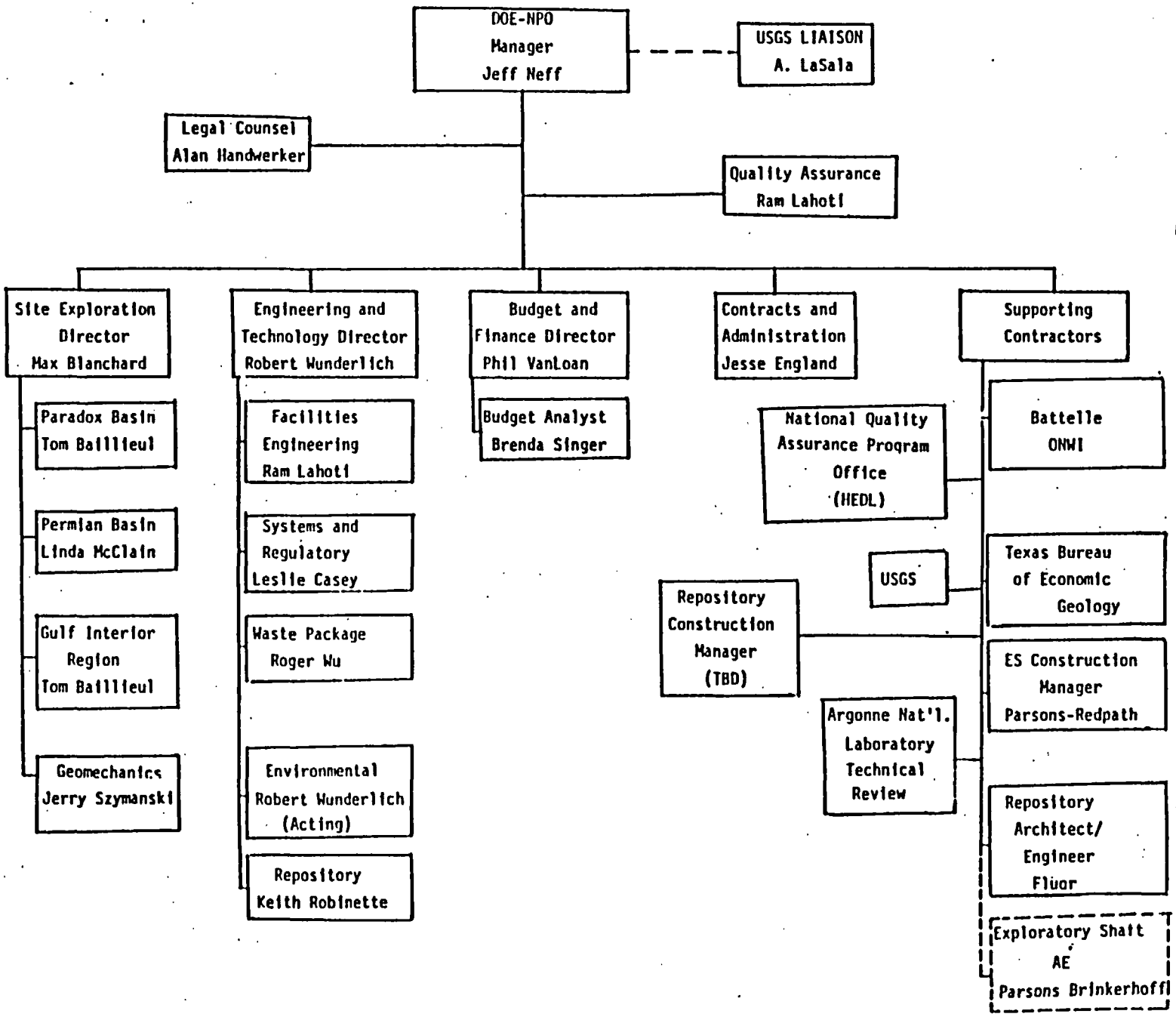
Salt
1st Repository
2nd Repository
Guidelines (Technical)
Granite and Other Media
National Siting Plan
Institutional Planning
Socioeconomic/Impact Mitigation

NNWSI
Disposal Fund Liaison
SER Process through Contract Signing

SSB
HCC/PNL
HSA
International
NRC, CEQ, USGS Interface
Waste Form and Acceptance Specifications
EPA Liaison (40 CFR 191)
HQ Technical Support Contractor
Transportation

Mission Plan
Project Decision Schedule
C&C Agreements
Grants
Alternative Management Studies

DOE NATIONAL WASTE TERMINAL STORAGE PROGRAM OFFICE



ONWI ORGANIZATION AND RESPONSIBILITY

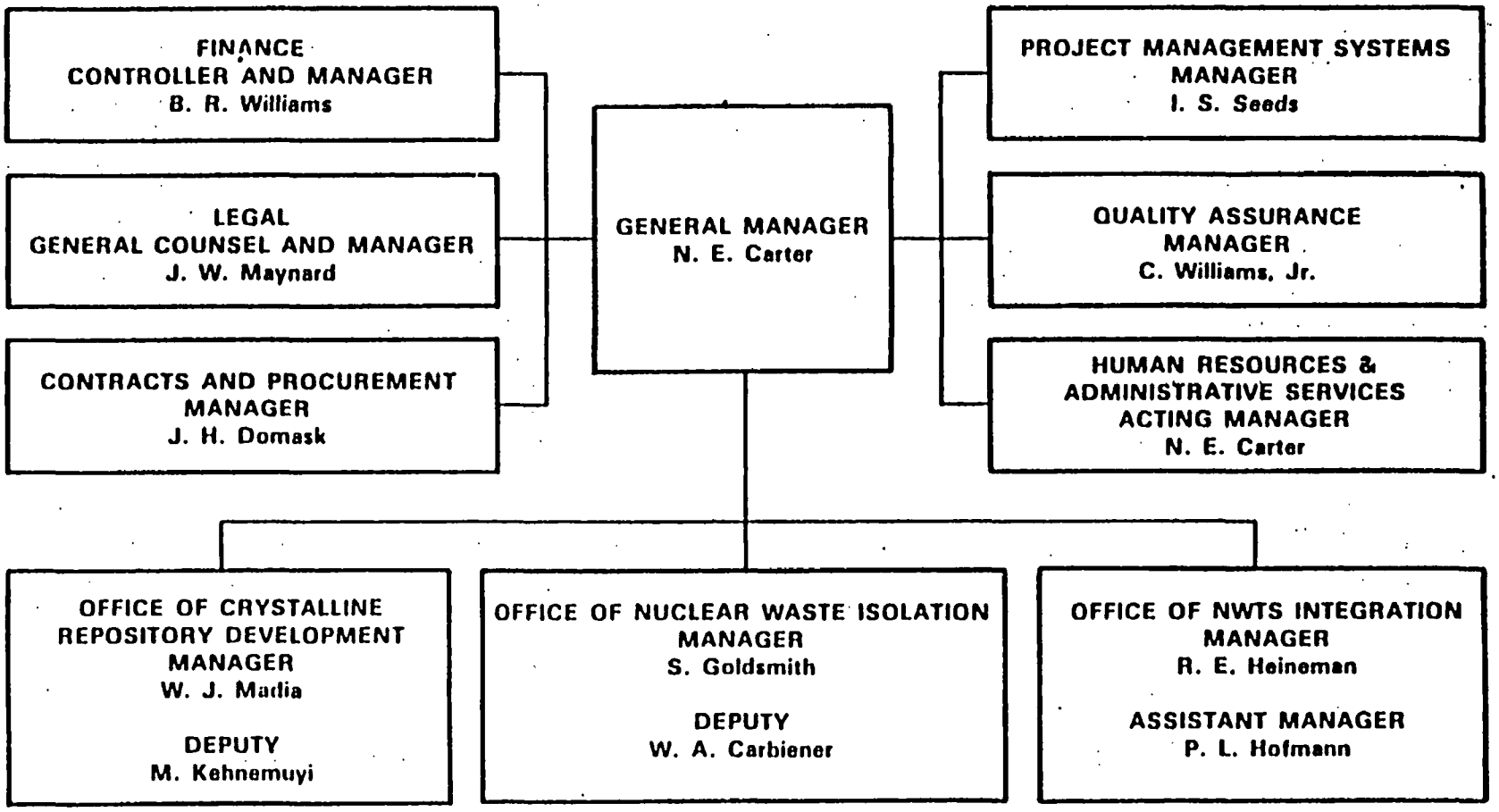
M. A. GLORA

REGULATORY DEPARTMENT

ONWI

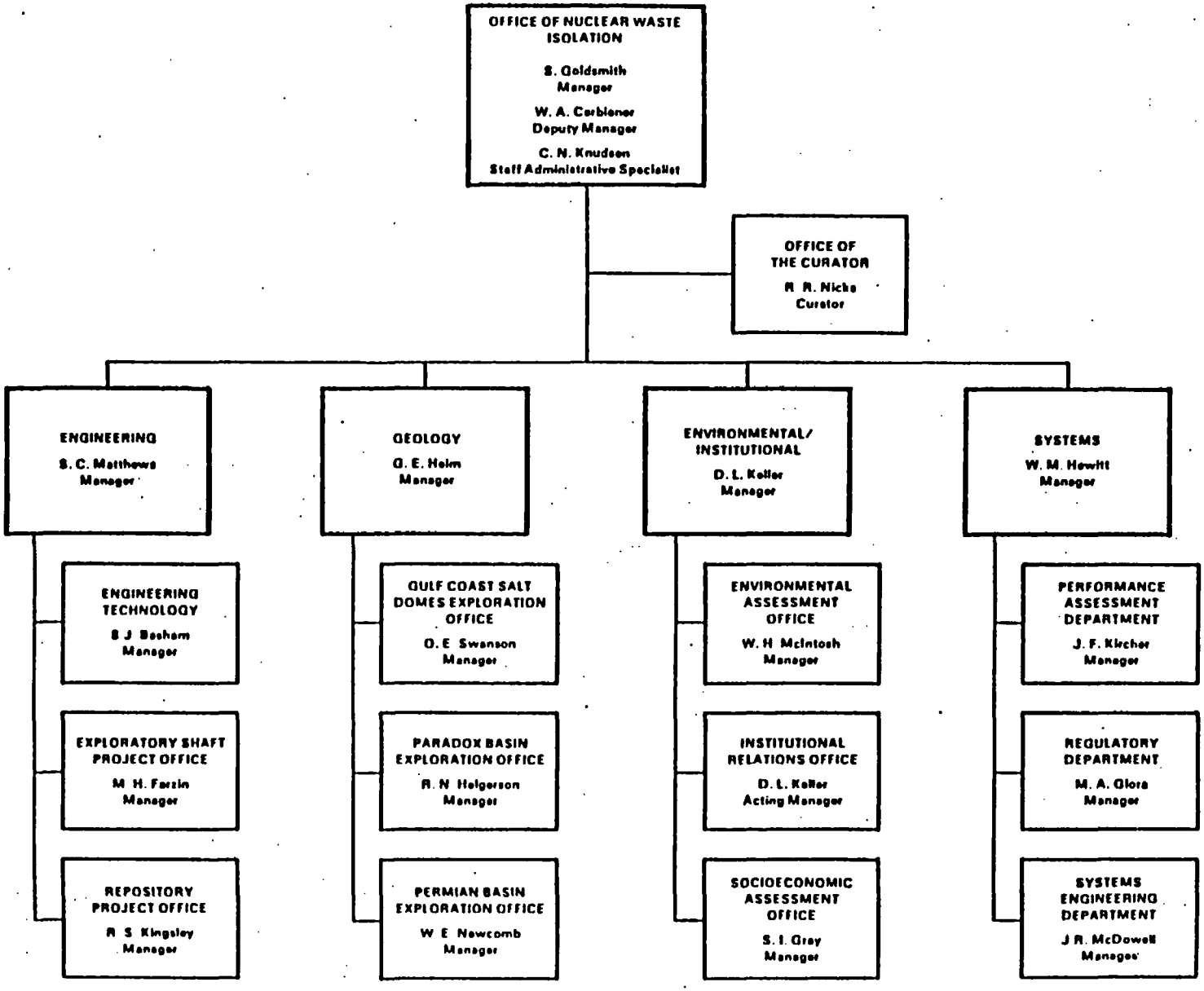
Project Management Division

BATTELLE PROJECT MANAGEMENT DIVISION



2/1/83

OFFICE OF NUCLEAR WASTE ISOLATION ORGANIZATION

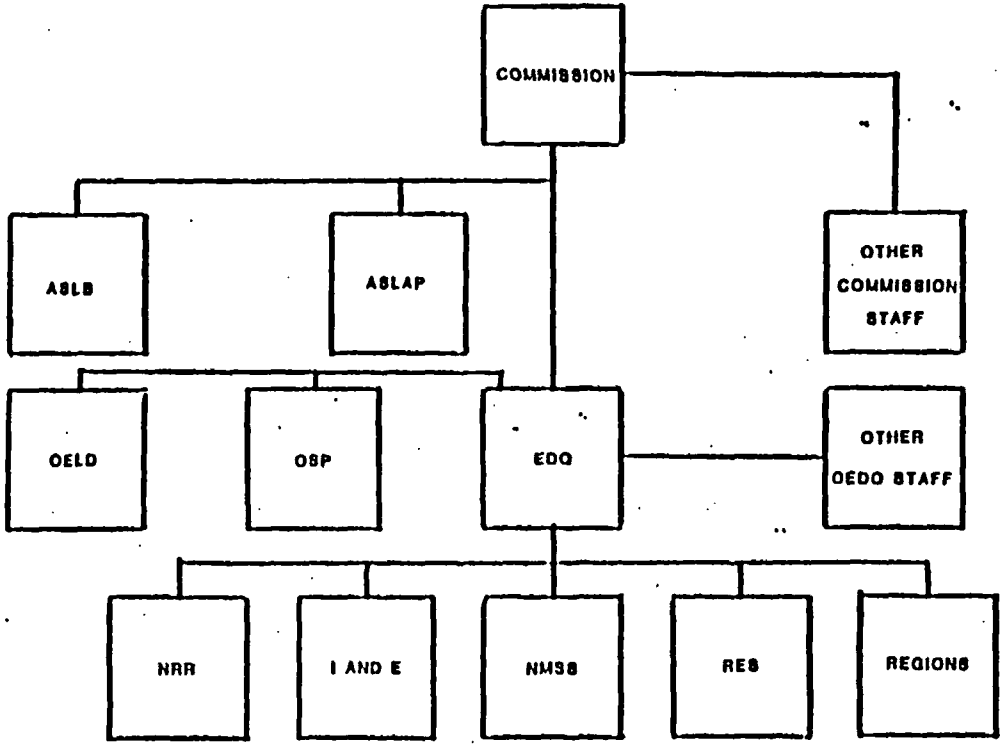


NRC HLW
SITE CHARACTERIZATION AND
PRELICENSING ACTIVITIES

BRIEFING 4/19-20/83
NPO - COLUMBUS

APRIL 19-20, 1983

NUCLEAR REGULATORY COMMISSION



NMSS:OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS

OELD:OFFICE OF THE EXECUTIVE LEGAL DIRECTOR

OSP:OFFICE OF STATE PROGRAMS

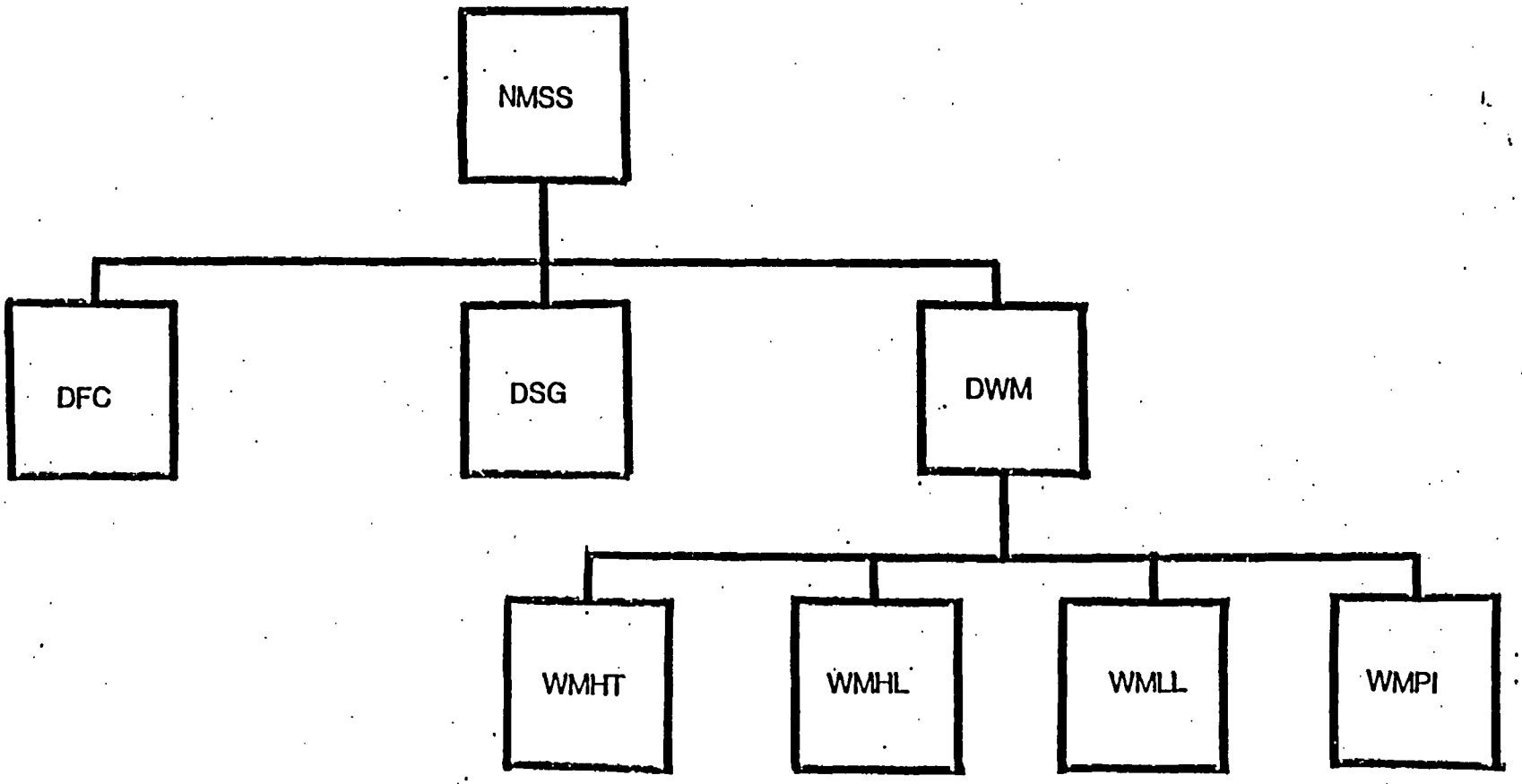
RES:OFFICE OF NUCLEAR REGULATORY RESEARCH

REGIONS:

1 – King of Prussia , Pa.
2 – Atlanta , Ga.
3 – Glen Ellyn , Il.
4 – Arlington , Texas
5 – Walnut Creek , Ca.

BRIEFING 4/19 – 20 , 1983 NPO – COLUMBUS

OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS (NMSS)



DWM : Division of Waste Management
DFC : Division of Fuel Cycle and Material Safety
DSG : Division of Safeguards

WMHT : High Level Waste Technical Development Branch
WMHL : High Level Waste Licensing Management Branch
WMLL : Low Level Waste Licensing Branch
WMPI : Licensing Process and Integration Branch

NRC Division of Waste Management
HLW Licensing

WMHT

- Project management
- Site investigations
- Facility design

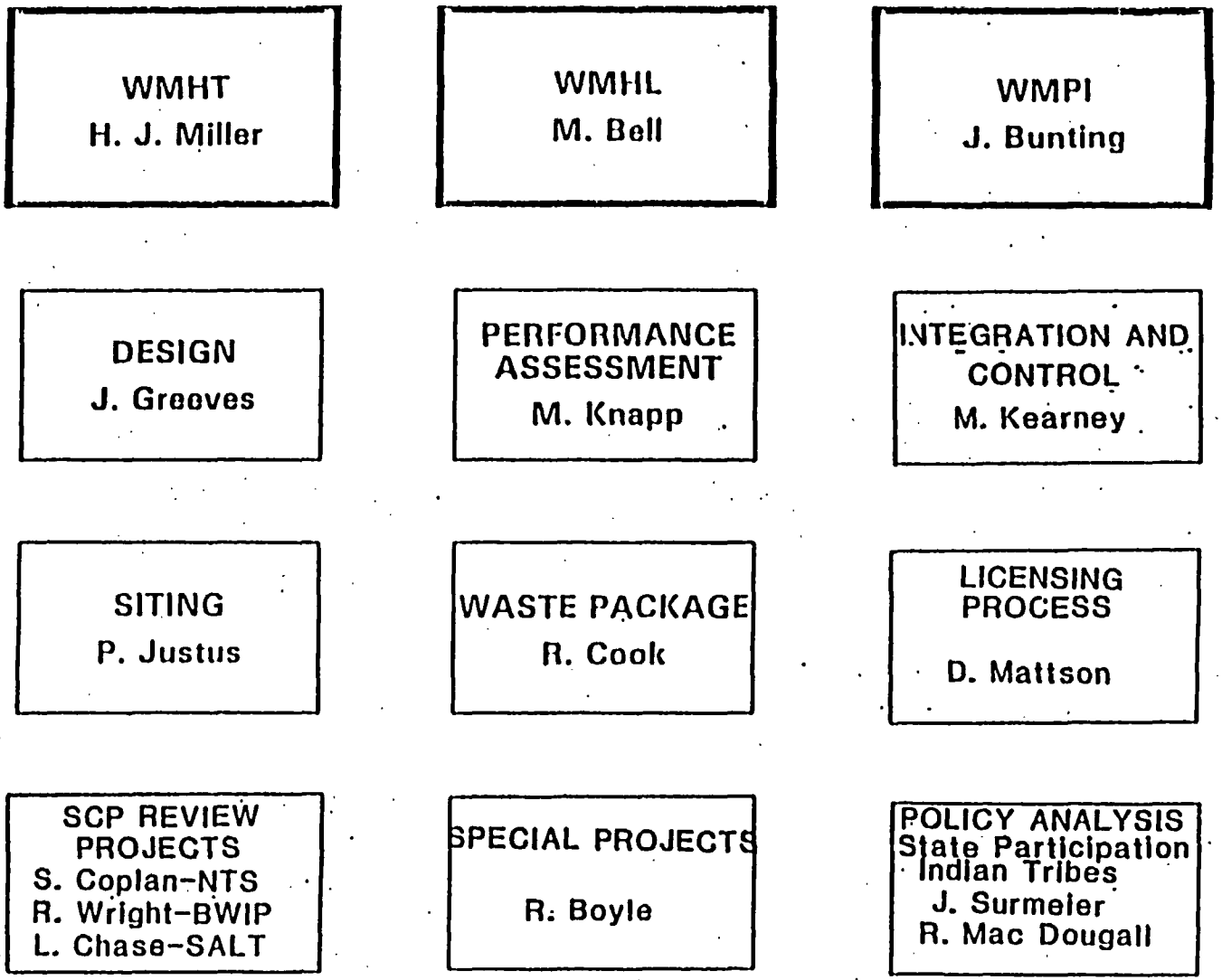
WMHL

- Regulation development
- Performance Assessment
- Waste containers
- Siting Guidelines/NEPA

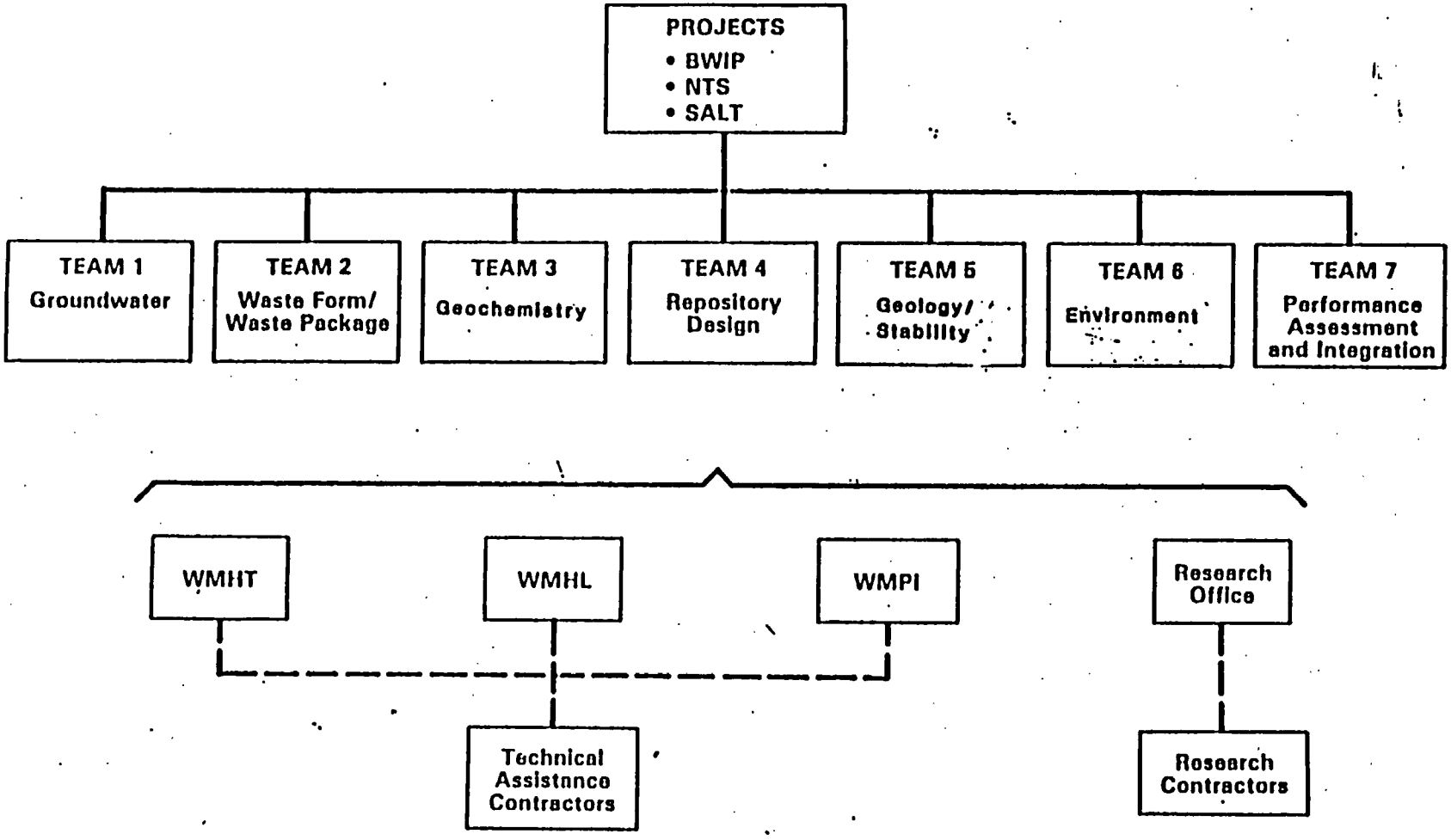
WMPI

- State participation
- Licensing Process
- Integration and Control
- Policy Analysis

NRC HLW Licensing Program



SCP REVIEW PROJECTS



CONTRACT ASSISTANCE AND RESEARCH

GROUNDWATER - GEOLOGIC INVESTIGATIONS

- Golder Assoc.
- Williams Assoc.
- Geotrans
- Lawrence Berkeley Labs
- University of Arizona
- U.S. Army Corps of Engineers

GEOCHEMISTRY

- Oak Ridge National Labs
- Lawrence Berkeley Labs
- Argonne National Labs

REPOSITORY DESIGN

- U. S. Bureau of Mines
- Golder Assoc.
- Engineers International

WASTE CONTAINERS

- Brookhaven National Labs

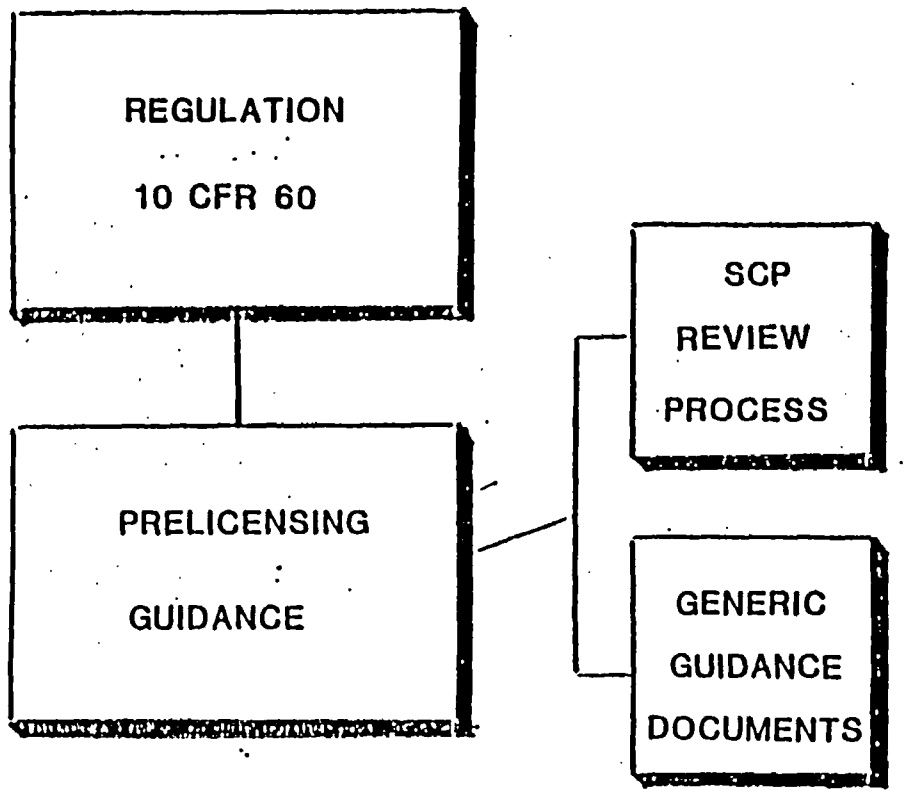
COMPUTER MODELING

- Sandia National Labs
- Tecknekron

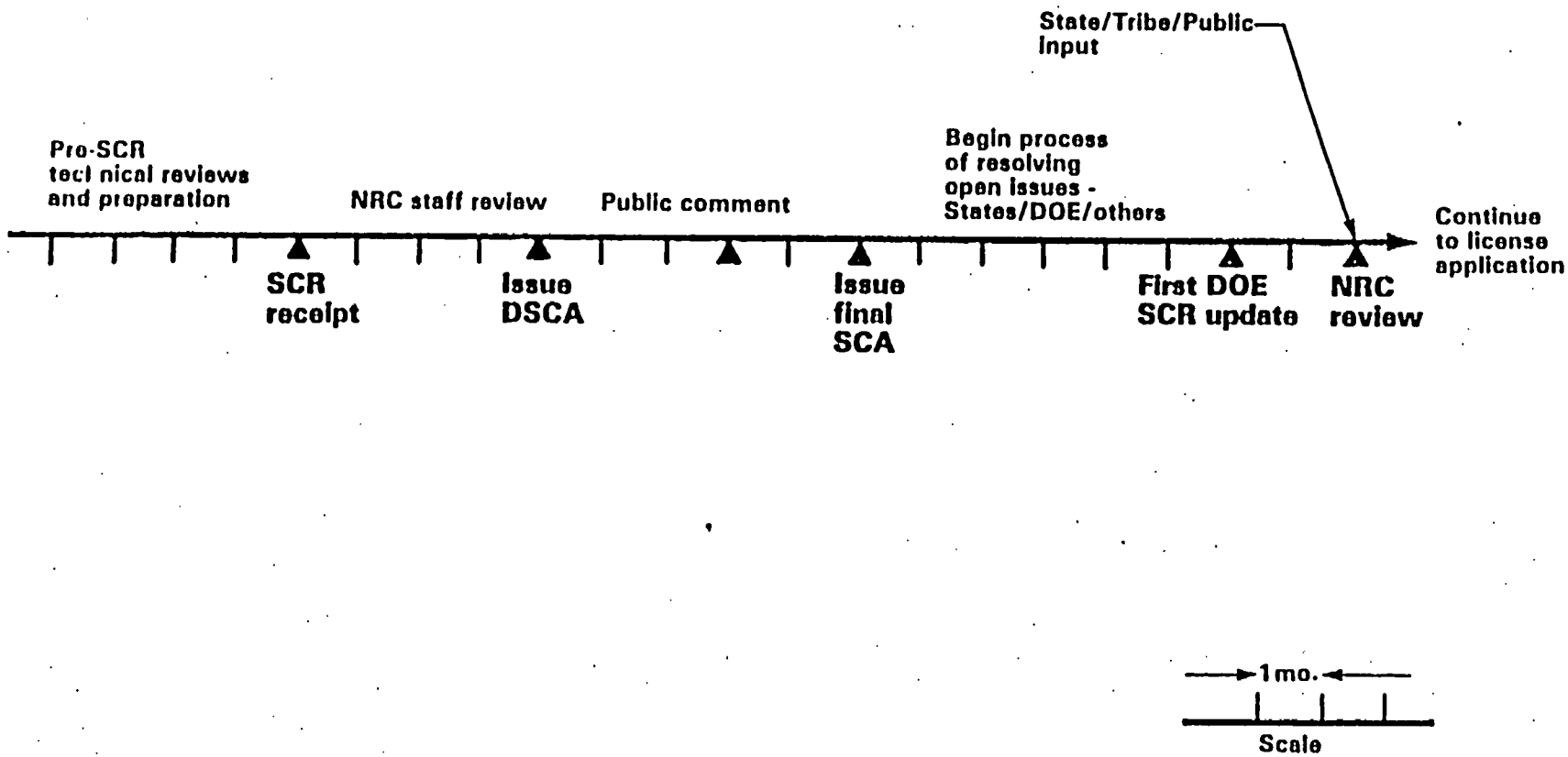
LEGISLATION/REGULATIONS

- NWPA REINFORCES NRC CHARTER AND LICENSING APPROACH
- INDIRECT IMPACTS
- PROPOSED 10 CFR 60 STATUS
  - TECHNICAL RULE
  - PROCEDURAL RULE

PRELICENSING CONSULTATION



Site Characterization Review Process



HLW REGULATORY APPROACH

- PRELICENSING NRC-DOE CONSULTATION WITH PUBLIC INVOLVEMENT
  - -- INFORMAL/FLEXIBLE/INTERACTIVE
  - -- EARLY SCOPING
  - -- ONGOING PROCESS
  - -- SITE-SPECIFIC
- WHAT ARE SPECIFIC LICENSING INFORMATION NEEDS?
- NEEDS FOR COMPLIANCE DETERMINATIONS
  - -- SPECIFIC ISSUES?
  - -- WHAT CONSTITUTES ADEQUATE PROGRAMS OF DATA GATHERING AND ANALYSIS?

SITE CHARACTERIZATION PLAN (SCP)/ SITE CHARACTERIZATION ANALYSIS (SCA)

NRC APPROACH

- 3 STEP PROCESS

STEP 1:	PRE SCP PREPARATION	DOE/NRC
STEP 2:	SCP ANALYSIS	NRC
STEP 3:	POST SCP (SITE CHARACTERIZATION)	DOE/NRC

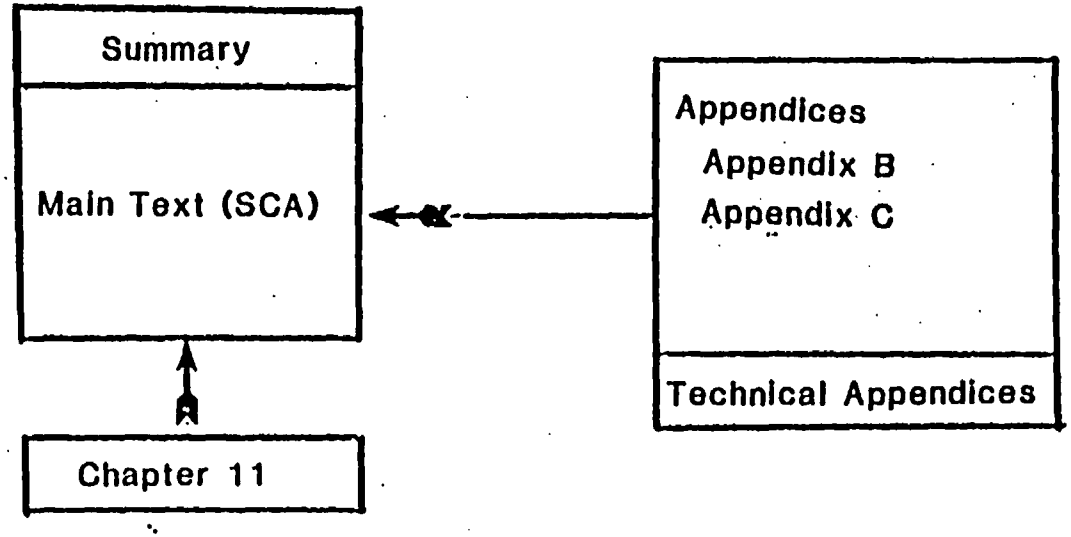
STEP 1: PRE-SCP PREPARATION

- WORKSHOPS
- INDEPENDENT ISSUE IDENTIFICATION
- TECHNICAL POSITIONS
- CONCEPTUAL MODELING
- SCENARIO ANALYSIS
- NUMERICAL MODEL DEVELOPMENT

STEP 2: SCP ANALYSIS

- LICENSING ISSUES
- STATUS OF CURRENT KNOWLEDGE AND UNCERTAINTIES
- FUTURE PLANS

SCA CONTENT


Summary
Main Text (SCA)
Chapter 11
Appendices
Appendix B
Appendix C
Technical Appendices

STEP 3: POST-SCP ANALYSIS

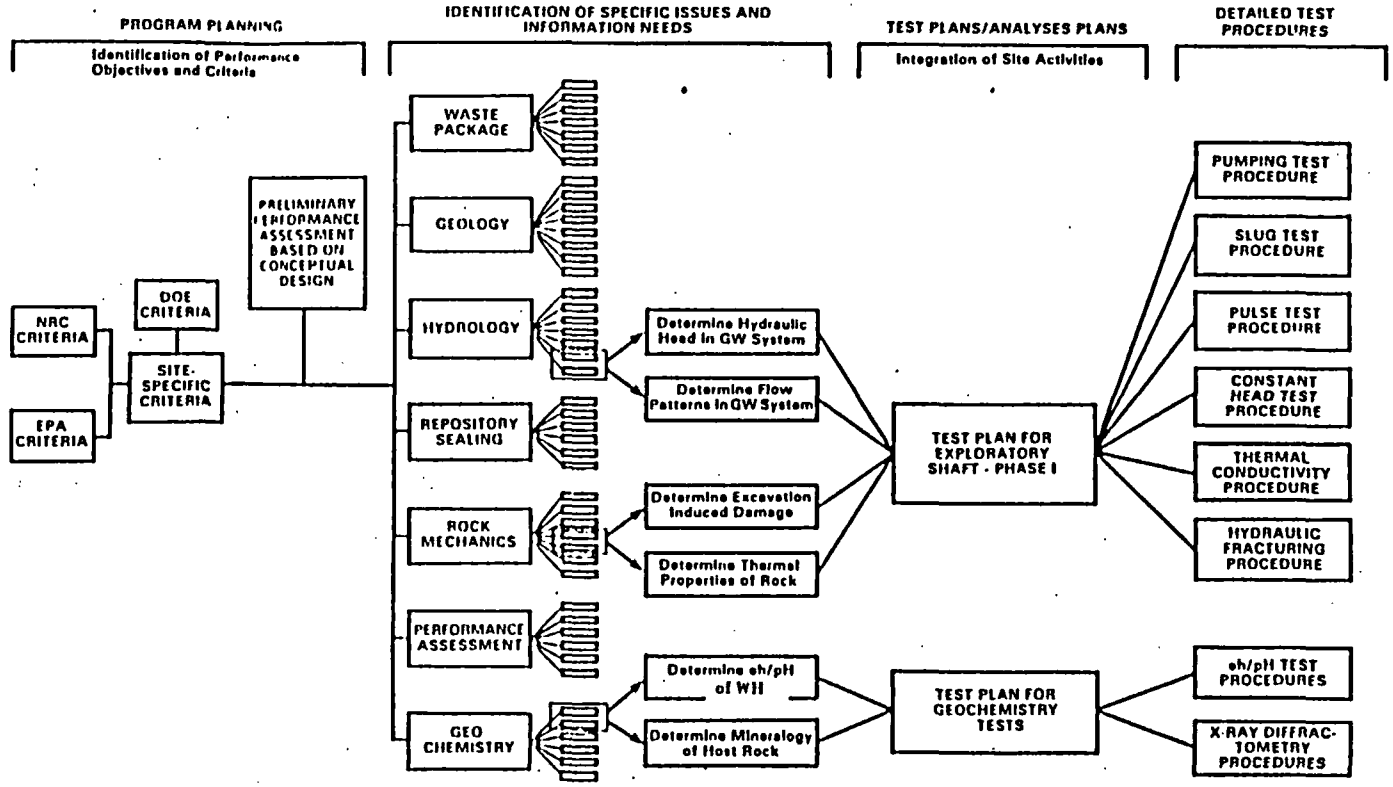
- SEMI-ANNUAL REPORTS
- CONTINUING WORKSHOPS
- UPDATES OF SCP AND SCA
- ISSUE RESOLUTION

NRC HIGH LEVEL WASTE LICENSING PROGRAM

General Discipline Area	Number of Staff	Technical Specialists
Earth Scientists	12	Geologist Groundwater Hydrologist Geochemist Geophysicist
Geotechnical and Mining Engineers	5	Geotechnical Engineer Civil Engineer Mining Engineer
Design Engineers	9	Nuclear Engineer Chemical Engineer Mechanical Engineer Materials Engineer
System Performance Analysts	6	System Analyst Radiation Health Physicists
Environmental Scientists	2	Environmental Planner Ecologist Resource Manager
Social Scientists	8	Government Relations Analyst Economist Public Policy Analyst Regulatory Affairs Specialist Information Management Specialist

11 additional staff in HLW area of NRC Research Office

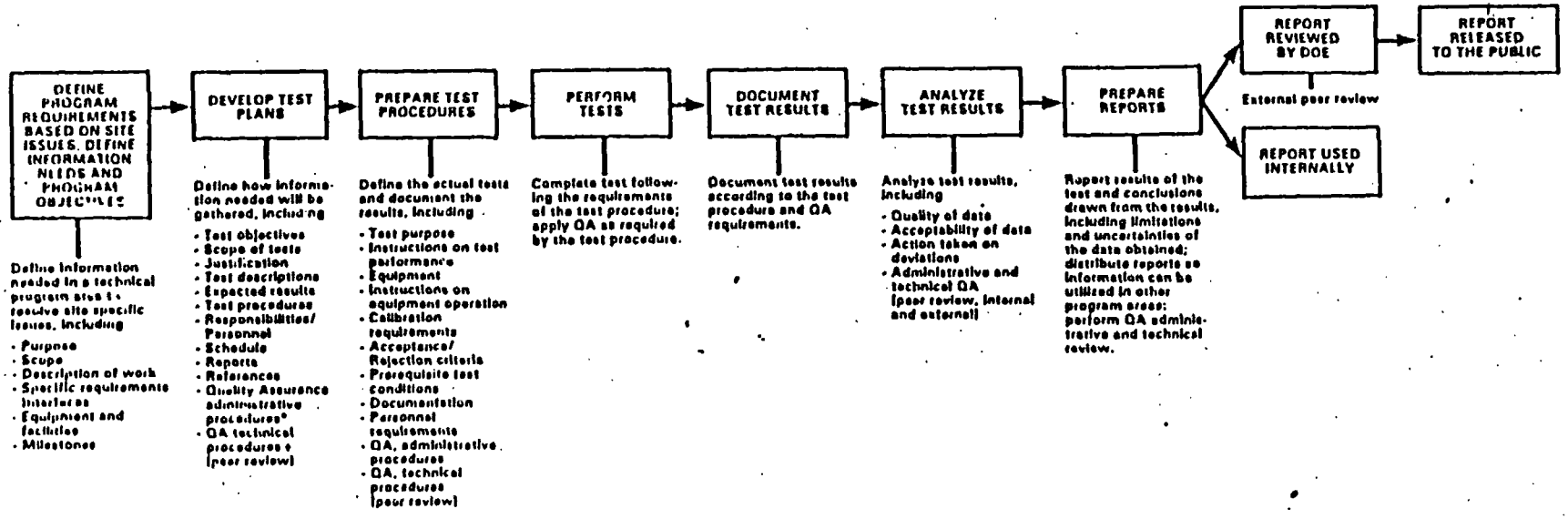
BRIEFING 4/19-20/83
NPO - COLUMBUS, OH



SCOPE OF DIAGRAM:
To show levels of detail involved in developing a technical program.

PURPOSE OF DIAGRAM:
To convey the various levels of detail in planning and controlling a technical program; to define level of detail necessary in executing a technical program properly.

Figure 10.2 Test method development (illustrative)



*QA administrative procedures include procedures for: (1) document control; (2) documented instructions, procedures, and drawings; (3) control of materials, equipment, and services; (4) use of qualified personnel; (5) inspections; (6) documented test plans; (7) control of test equipment; (8) control of samples; (9) nonconformance reports; (10) corrective action; (11) peer review (both management and technical); (12) audits.

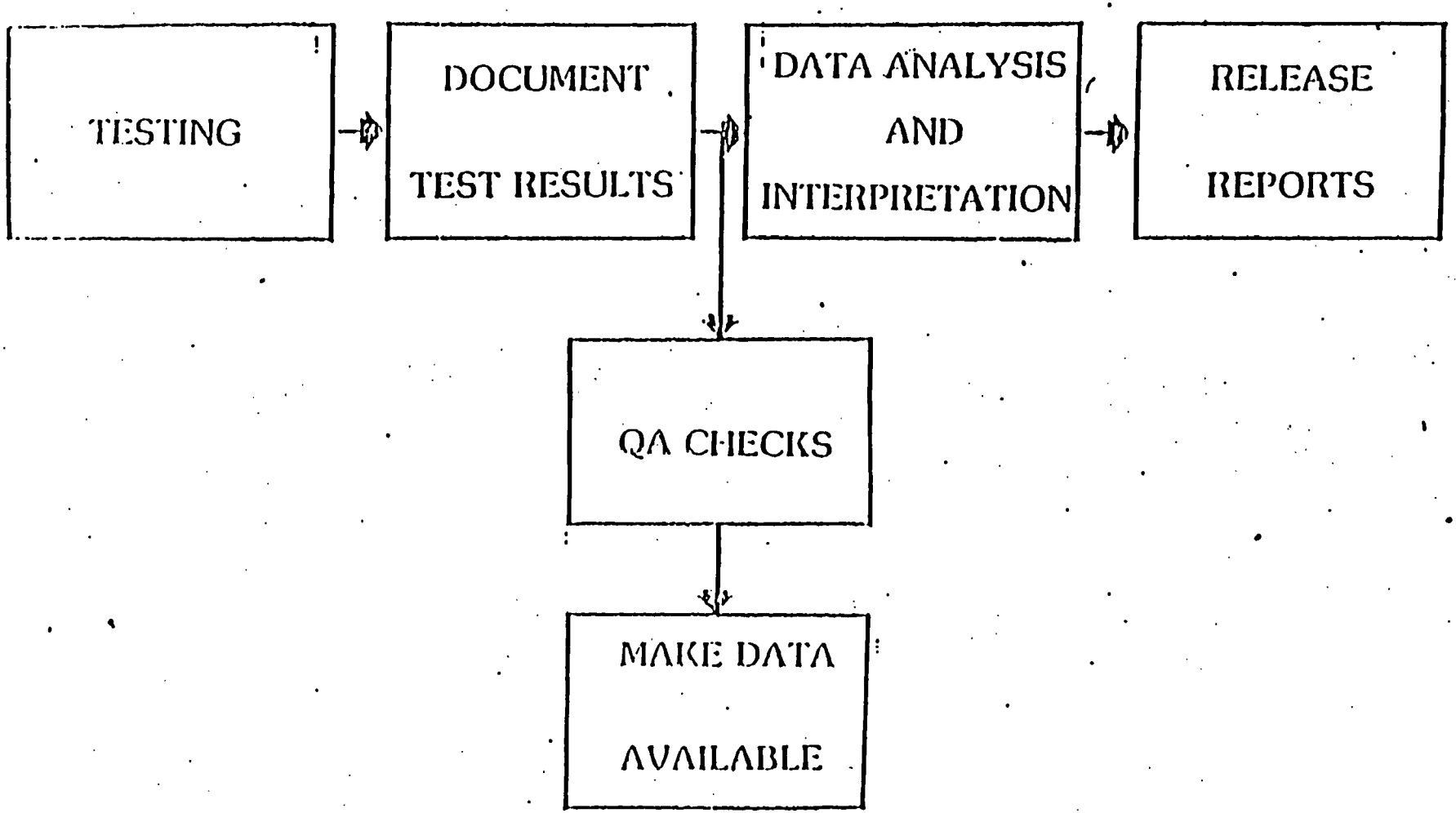
• QA technical procedures include the actual internal and external peer reviews (both management and technical).

SCOPE OF DIAGRAM:
To show chronology of events in development of a testing program.

PURPOSE OF DIAGRAM:
(1) To show a breakdown sequence of development of plans to resolve problem of timely access to data by NRC. (2) To show the involvement of QA, both administrative and technical, in each step of program.

Figure 10 1 Technical program control: test plans and procedures (Illustrative)

SEQUENCE FOR INFORMATION RELEASE



NPO/ONWI INFORMATION SYSTEM

L. ANDERSON

M. GLORA

ONWI

Project Management Division

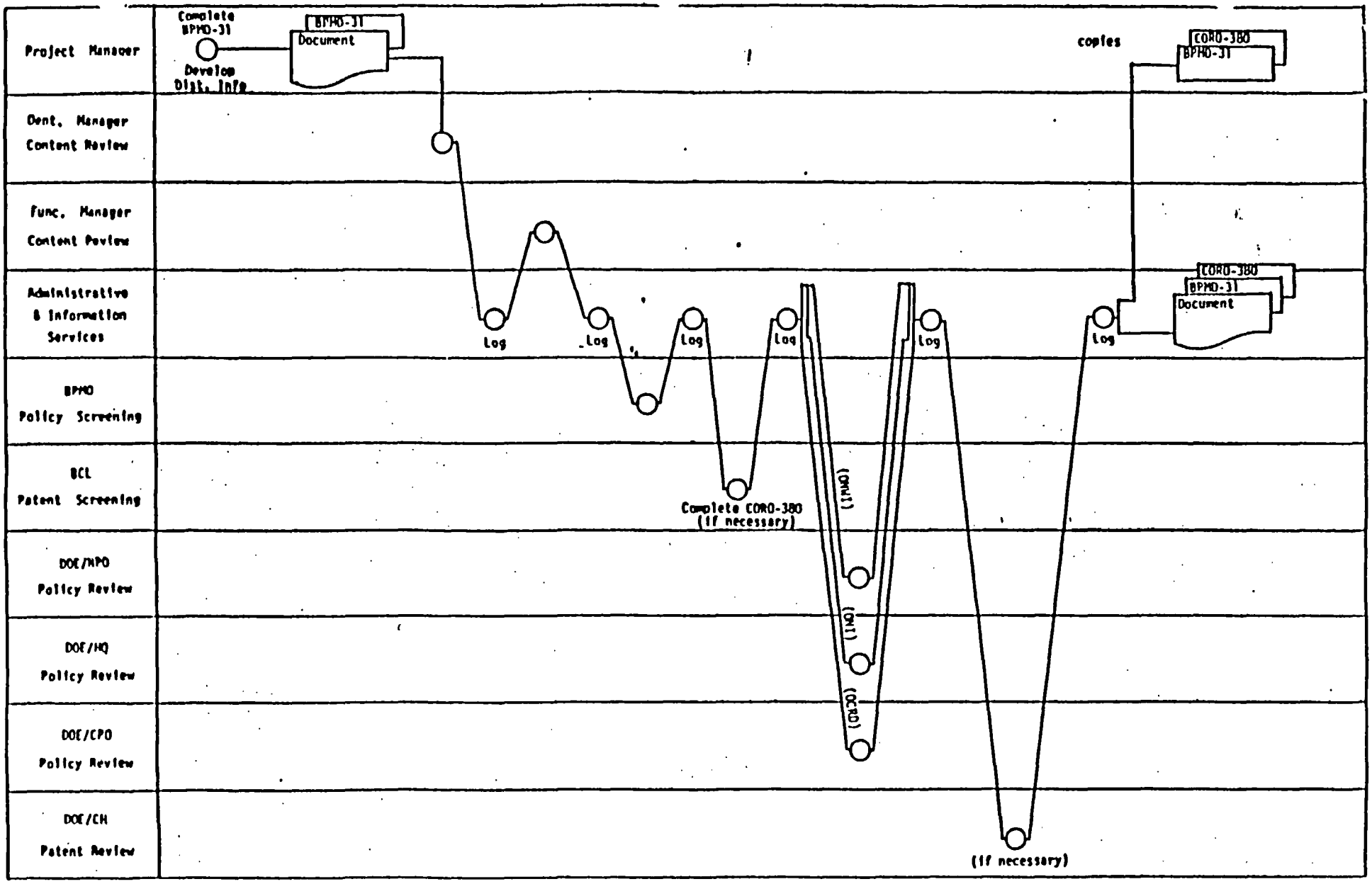
DOCUMENT REVIEW AND CLEARANCE

- FEDERAL REGULATIONS REQUIRE PATENT REVIEW
- BPMD COMBINES PATENT AND POLICY REVIEWS
- REVIEWS AND SIGN-OFFS:
  - PROJECT MANAGER
  - DEPARTMENT MANAGER
  - POLICY SCREENING
  - FUNCTIONAL MANAGER
  - PATENT SCREENING
  - NPO FINAL CONTENT REVIEW
  - DOE-CH FINAL PATENT REVIEW (IF REQUIRED)
- TYPICAL REVIEW TIME: 4 WEEKS

ONWI

Project Management Division

L.A:4/19/83



BPMO Patent/Policy Review Cycle

Battelle
Project Management Division

CLEARANCE (COORDINATION) OF REPORTS, SPEECHES AND ARTICLES FOR USE OUTSIDE BPMD

DATE | SERIAL NUMBER

CONTRACT NUMBER

TYPE OF RELEASE
- ☐ FORMAL REPORT
- ☐ SPEECH
- ☐ ARTICLE

BPMD PROJECT
Please Specify

TITLE

AUTHOR(S) AND PHONE NO.

COMPLETE THIS SECTION IF THIS IS A SPEECH OR ARTICLE FOR PUBLICATION

THE OCCASION

CITY

DATE

DATE CLEARANCE REQUIRED: ABSTRACT FOR ACCEPTANCE

FULL PAPER FOR PUBLISHING:

WILL THE PAPER APPEAR IN THE PUBLISHED PROCEEDINGS OF THE MEETING?		IF AN ABSTRACT WAS REQUIRED, HAS IT BEEN CLEARED?	
WILL THE PAPER BE HANDED OUT AT THE MEETING?			
WILL THE PAPER BE SUBMITTED FOR JOURNAL PUBLICATION?		IF YES, GIVE SERIAL NUMBER:	

PROJECT MANAGER — DATE

DEPARTMENT/PROGRAM OFFICE MANAGER — DATE

COMMENTS

BPMD POLICY REVIEW — DATE

COMMENTS

GENERAL/FUNCTIONAL MANAGER — DATE

COMMENTS

BPMD PATENT REVIEW — DATE

COMMENTS

SPONSOR COORDINATION

SPONSOR REVIEW — DATE

COMMENTS

BPMD-31 (11/82)

PROPOSED DISTRIBUTION CATEGORIES

Each report/article being submitted for clearance must include a proposed distribution list. This list may be either an actual listing of the proposed recipients, or a listing of technical interests related to the report/article. If you choose to indicate distribution by the latter method, encircle the relevant technical interest categories listed below. When the report/article is published, it will be distributed to all individuals who have indicated interest in those categories.

If neither this sheet or a listing of actual proposed recipients is attached to the clearance form BPMD-31, an explanation must be provided in the Comments block of BPMD-31.

SYSTEMS

- ☐ Systems Analysis.
- ☐ Systems Engineering.
- ☐ Socioeconomic Assessment.

Alternate Disposal Concepts:

- ☐ —General
- ☐ —Space
- ☐ —Very Deep Hole
- ☐ Performance Assessment.
- ☐ International Cooperation.
- ☐ Performance Assessment Computer Models.

WASTE PACKAGE

- ☐ Waste Package Plans and Criteria.
- ☐ Waste Form.
- ☐ Barrier Materials.

Design and Development:

- ☐ —Design
- ☐ —Testing

Performance Evaluation:

- ☐ —Modeling
- ☐ —Demonstration Testing
- ☐ —Natural Analogs

SITE

- ☐ Siting Strategy.
- ☐ Site Criteria and Issues.
- ☐ Site Characterization Plans.

Earth Sciences:

- ☐ —Geophysics
- ☐ —Geochemistry
- ☐ —Transport Properties

Geologic Characterization:

- ☐ —Generic Activities
- ☐ —Salt - Generic
- ☐ —Salt - Salina
- ☐ -Salt - Paradox
- ☐ —Salt - Permian
- ☐ —Salt - Gulf Coast Domes
- ☐ —Crystalline - Generic
- ☐ —Crystalline - Lake Superior
- ☐ —Crystalline - N. Appalachian

SITE, Continued

- ☐ —Crystalline - S. Appalachian
- ☐ —Argillaceous Rocks
- ☐ —Province Studies
- ☐ —National Screening
- ☐ Hydrologic Characterization.

Environmental Characterization:

- ☐ —Generic Activities
- ☐ —Salt - Generic
- ☐ —Salt - Salina
- ☐ —Salt - Paradox
- ☐ —Salt - Permian
- ☐ —Salt - Gulf Coast Domes
- ☐ —Crystalline - Generic
- ☐ —Crystalline - Lake Superior
- ☐ —Crystalline - N. Appalachian
- ☐ —Crystalline - S. Appalachian
- ☐ —Argillaceous Rocks
- ☐ —Province Screening
- ☐ —National Screening
- ☐ Socioeconomic Evaluation/Assessment.
- ☐ Performance Evaluation

REPOSITORY

- ☐ Repository Plans
- ☐ Reference Repository Conditions.

Repository Data Base Development:

- ☐ —Generic
- ☐ —Salt
- ☐ —Tuff
- ☐ —Basalt
- ☐ —Crystalline
- ☐ —Argillaceous
- ☐ Equipment Development
- ☐ Instrumentation Development

Repository Seal Development

- ☐ —Design
- ☐ —Materials
- ☐ —Field Tests

REPOSITORY, Continued

Generic Repository Engineering

- ☐ —Design Studies and Optimization
- ☐ —Support Studies
- ☐ —Value Engineering

Repository Conceptual Design

- ☐ —Dome Salt
- ☐ —Bedded Salt
- ☐ —Tuff
- ☐ —Basalt
- ☐ —Crystalline
- ☐ Performance Evaluation

REGULATORY AND INSTITUTIONAL

- ☐ Regulatory Plans and Criteria
- ☐ Licensing Applications
- ☐ NEPA Documents
- ☐ State Consultation

TEST FACILITIES AND EXCAVATIONS

Salt.

- ☐ —Acquisition
- ☐ —Design
- ☐ —Construction/Development
- ☐ —Operation/Maintenance

Crystalline

- ☐ —Acquisition
- ☐ —Design
- ☐ —Construction/Development
- ☐ —Operation/Maintenance
- ☐ Tuff
- ☐ Basalt.
- ☐ Argillaceous.

Support Facilities

- ☐ —Surface
- ☐ —Underground
- ☐ Exploratory Shaft
- ☐ Test and Evaluation Facility
- ☐ Land Acquisition

Battelle
Project Management Division

Project Number _____

Internal Distribution

LN Anderson

Date

To

From S. J. Richard SR

Subject Patent Clearance

Attached is a copy of the forms indicating Patent/Policy approval for the release of the document entitled:

The original of this document will be retained for Administrative and Information Services records.

To initiate publishing of a report, deliver a copy of the forms and distribution categories, along with a camera-ready copy of the report, to the Lead Editor in Administrative and Information Services.

REPORT DISTRIBUTION

- DATA BASE OF APPROXIMATELY 1900 PERSONS
  - DOE
  - NRC
  - OTHER FEDERAL, STATE, LOCAL GOVERNMENTS
  - SUBCONTRACTORS
  - INTERVENOR GROUPS
  - GENERAL PUBLIC
- EACH PERSON PROVIDES TECHNICAL INTERESTS FOR COMPUTER CODING
- TAILORED DISTRIBUTION FOR EACH REPORT
- TYPICAL DISTRIBUTION OF 900 PAPER COPIES, 150 MICROFICHE

ONWI

BATTELLE Project Management Division

LA:4/19/82

PLEASE TYPE OR PRINT YOUR NAME AND COMPLETE ADDRESS
(NOTE: If you have an organizational affiliation, please include)

Name Robert L. Johnson

Title Project Manager/Geologist

Company/Organization U.S. Nuclear Regulatory Commission

Address U.S. Nuclear Regulatory Commission
Division of Waste Management
Mail Stop 697-SS

City/State/Zip Washington, D.C. 20555

Phone FTS 427-4177

For what reasons do you need to continue to receive ONWI reports?

I am the NRC Project Manager for Salt Dome investigations.
I am a technical reviewer for NRC in hydrogeology,
stratigraphy and have special interest in
bedded salt investigations.

Would you accept microfiche instead of paper copy reports? Yes ___ No X Prefer paper
(Microfiche production and mailing costs are a fraction of those for paper copy reports.)

TECHNICAL PROFILE SELECTION

GENERAL

- [x] Program Plans and Criteria.
- [x] Quarterly Technical Reports.

SYSTEMS

- [ ] Systems Analysis.
- [ ] Systems Engineering.
- [ ] Socioeconomic Assessment.

Alternate Disposal Concepts:

- [ ] —General
- [ ] —Space
- [ ] —Very Deep Hole
- [ ] Performance Assessment.
- [ ] International Cooperation.

WASTE PACKAGE

- [ ] Waste Package Plans and Criteria.
- [ ] Waste Form.
- [ ] Barrier Materials.

Design and Development:

- [ ] —Design
- [ ] —Testing

Performance Evaluation:

- [ ] —Modeling
- [ ] —Demonstration Testing
- [ ] —Natural Analogs

SITE

- [x] Siting Strategy.
- [x] Site Criteria and Issues.
- [x] Site Characterization Plans:

Earth Sciences:

- [ ] —Geophysics
- [ ] —Geochemistry
- [x] —Transport Properties

Geologic Characterization:

- [ ] —Generic Activities
- [x] —Salt - Generic
- [x] —Salt - Salina
- [x] —Salt - Paradox
- [x] —Salt - Permian
- [x] —Salt - Gulf Coast Domes
- [ ] —Crystalline - Generic
- [ ] —Crystalline - Lake Superior
- [ ] —Crystalline - N. Appalachian
- [ ] —Crystalline - S. Appalachian
- [x] —Argillaceous Rocks
- [ ] —Province Studies
- [x] —National Screening
- [x] Hydrologic Characterization.

Environmental Characterization:

- [ ] —Generic Activities
- [ ] —Salt - Generic
- [ ] —Salt - Salina
- [ ] —Salt - Paradox
- [ ] —Salt - Permian
- [ ] —Salt - Gulf Coast Domes
- [ ] —Crystalline - Generic
- [ ] —Crystalline - Lake Superior
- [ ] —Crystalline - N. Appalachian
- [ ] —Crystalline - S. Appalachian

SITE, Continued

- [ ] —Argillaceous Rocks
- [ ] —Province Screening
- [ ] —National Screening
- [ ] Socioeconomic Evaluation/Assessment.
- [ ] Performance Evaluation.

REPOSITORY

- [ ] Repository Plans.
- [x] Reference Repository Conditions.

Repository Data Base Development:

- [ ] —Generic
- [x] —Salt
- [ ] —Tuff
- [ ] —Basalt
- [ ] —Crystalline
- [ ] —Argillaceous
- [ ] Equipment Development.
- [ ] Instrumentation Development.

Repository Seal Development:

- [ ] —Design
- [ ] —Materials
- [x] —Field Tests

Generic Repository Engineering:

- [ ] —Design Studies and Optimization
- [ ] —Support Studies
- [ ] —Value Engineering

Repository Conceptual Design:

- [ ] —Dome Salt
- [ ] —Bedded Salt
- [ ] —Tuff
- [ ] —Basalt
- [ ] —Crystalline
- [ ] Performance Evaluation.

REGULATORY AND INSTITUTIONAL

- [ ] Regulatory Plans and Criteria.
- [ ] Licensing Applications.
- [ ] NEPA Documents.
- [ ] State Consultation.

TEST FACILITIES AND EXCAVATIONS

Salt:

- [x] —Acquisition
- [x] —Design
- [x] —Construction/Development
- [x] —Operation/Maintenance

Crystalline:

- [ ] —Acquisition
- [ ] —Design
- [ ] —Construction/Development
- [ ] —Operation/Maintenance
- [ ] Tuff.
- [ ] Basalt.
- [ ] Argillaceous.

Support Facilities:

- [ ] —Surface
- [ ] —Underground
- [ ] Exploratory Shaft.
- [ ] Test and Evaluation Facility.
- [ ] Land Acquisition.

ID. NO. = 05528 04/13/83
CC LI AC
ROBERT JOHNSON
PROJECT MANAGER/GEOLOGIST
U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF WASTE MANAGEMENT

MS 697-SS

WASHINGTON, DC 20555
A=20,21
B=10
C=01,02,51,52,53,56,58,59,60,61,62,67,
69,70
D=02,04,13,61,62,63,64
E=06,60
F=09

FOURTH CLASS MAIL
ADDRESS CORRECTION REQUESTED

PAUL F. GOLDBERG
POLICY ANALYST
U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF POLICY EVALUATION
H-1013
WASHINGTON DC 20555

FOURTH CLASS MAIL
ADDRESS CORRECTION REQUESTED

ROBERT JOHNSON
PROJECT MANAGER/GEOLOGIST
U.S. NUCLEAR REGULATORY COMMISSION
DIVISION OF WASTE MANAGEMENT
MS 697-SS
WASHINGTON, DC 20555

FOURTH CLASS MAIL
ADDRESS CORRECTION REQUESTED

DR. PHILIP S. JUSTUS
U.S. NUCLEAR REGULATORY COMMISSION
HIGH-LEVEL WASTE TECHNICAL
DEVELOPMENT BRANCH, SITING SECTION
WASHINGTON DC 20555

U.S. GEOLOGICAL SURVEY - MENLO PAR
MK HALL CLYNN
U.S. GEOLOGICAL SURVEY - RESTON
I-MING CHOU
JOHN ROBERTSON
EDWIN ROEDDER
EUGENE H ROSEBOOM JR
PETER R STEVENS
DAVID B STEWART
U.S. HOUSE SUBCOMMITTEE ON ENERGY AND
THE ENVIRONMENT
MORRIS K UDALL
U.S. NUCLEAR REGULATORY COMMISSION
ENRICO P CONTI
J J DAVIS
JOSEPH F DONOGHUE
HIGH-LEVEL WASTE LICENSING BRANCH
ROBERT JOHNSON
PHILIP S JUSTUS
H E LEFEVRE
LINDA L LEHMAN
LIBRARY
JOHN B MARTIN (3)
HUBERT MILLER
THOMAS J NICHOLSON
EDWARD O'DONNELL
JAY E RHODERICK
U.S. SENATE COMMITTEE ON ENERGY AND
NATURAL RESOURCES
WILLIS D SMITH

SCR

REFERENCE LIBRARY

AND

DATA BASE

ONWI

Battelle Project Management Division

MAG:4/19/83

SCR DATA BASE APPROACH

- PRIMARY SCR/SCP REFERENCES
  - PUBLISHED REPORTS
  - SPECIFIC PAGE CITATION IDENTIFICATON WHERE APPROPRIATE
  - PROVIDES FOUNDATION FOR DEVELOPMENT OF SAR/ER DATA BASE
- ALL PRIMARY REFERENCES TO BE AVAILABLE IN LIBRARY
- COMPUTERIZATION BEING CONSIDERED PRIOR TO LICENSE APPLICATION
  - AVAILABILITY FOR SCR/P UNLIKELY

ONWI

Project Management Division

MAG:4/19/82

CURRENT STATUS OF SCR DATA BASE LIBRARY

- PILOT LIBRARY BEING ESTABLISHED AT ONWI
  - REFINE LOGISTICS AND PROCEDURES TO BE APPLIED WHEN ADDITIONAL LIBRARIES NEEDED AT SCR SUBMITTAL

ONWI

MAG:4/19/83

ANTICIPATED PLAN FOR ESTABLISHMENT AND USE OF DATA BASE LIBRARY

- REFERENCES PROVIDED BY AUTHORS DURING SCR PREPARATION
- AVAILABILITY OF DOCUMENTS IN LIBRARY
  - REFERENCE ONLY - USE OF DOCUMENTS LIMITED TO LIBRARY
- PROVISION TO BE MADE FOR NOTING USER RECOMMENDATIONS AND COMMENTS FOR SUBSEQUENT CONSIDERATION BY DOE AND ONWI
  - REFERENCE SUITABILITY/APPLICABILITY
  - ADDITIONAL REFERENCES

ONWI

BATTELLE Project Management Division

MAG:4/19/82

AVAILABILITY OF FIELD DATA

- EVALUATION UNDERWAY
- USE OF TOPICAL REPORTS TO BE MAXIMIZED
  - FROM SUBCONTRACTOR REPORTS
  - FROM WELL COMPLETION REPORTS
- CONCERNS ARE TO:
  - ASSURE TRACEABILITY
  - ASSURE APPLICABILITY AND DOE CONCURRENCE
  - ASSURE TIMELY AVAILABILITY

ONWI

Project Management Division

MAG:4/19/83

ENGINEERING FUNCTION

S. C. MATTHEWS

ONWI

Project Management Division

ENGINEERING FUNCTIONAL AREA

RESPONSIBILITIES:

- TECHNICAL DIRECTION AND MANAGEMENT OF ACTIVITIES ASSOCIATED WITH ENGINEERED SYSTEMS, STRUCTURES, AND COMPONENTS

ORGANIZATIONAL COMPONENTS:

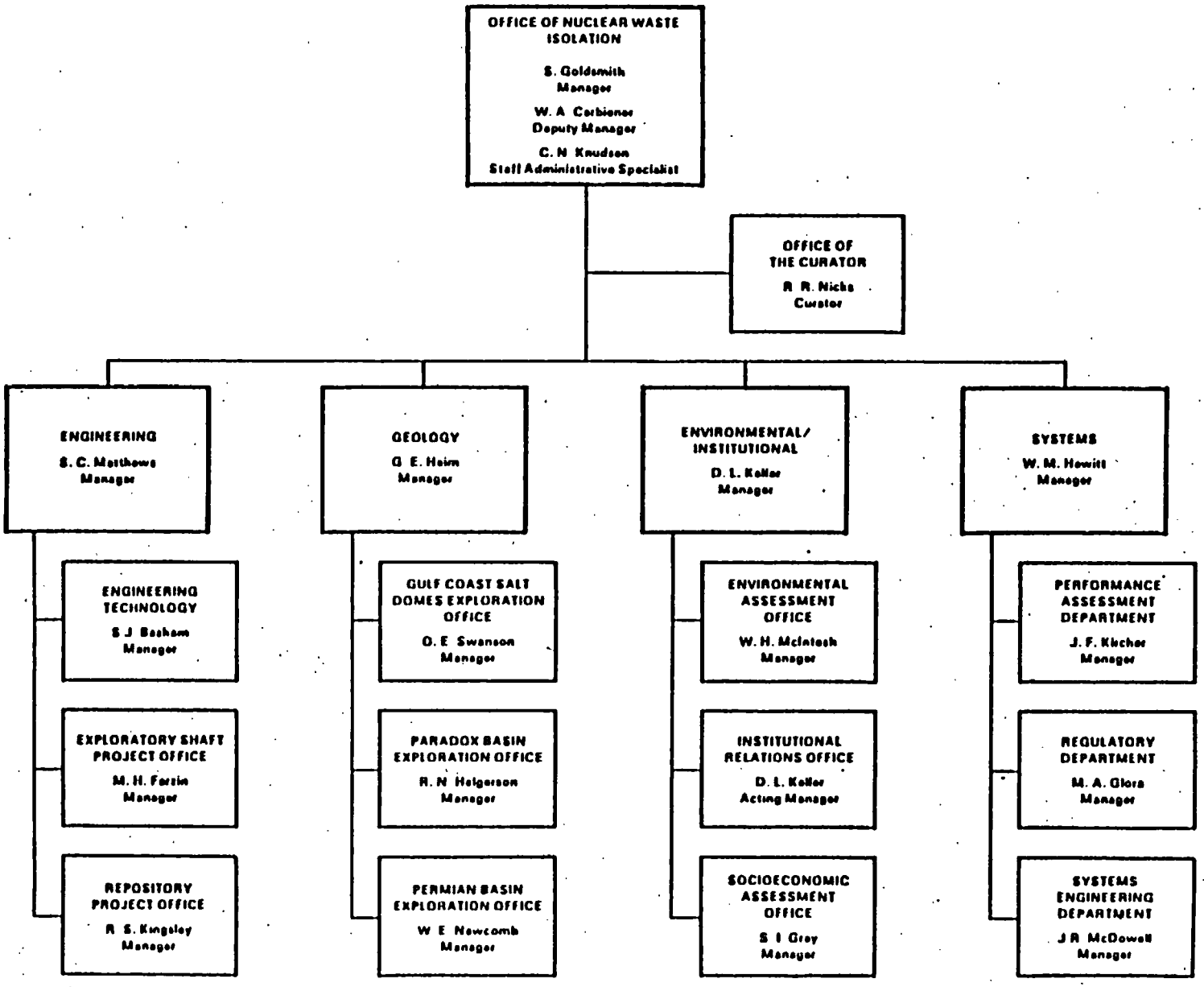
- MATERIALS DEVELOPMENT AND DESIGN ANALYSIS (ETD)
- EXPLORATORY SHAFT DESIGN, CONSTRUCTION AND TESTING (ESPO)
- REPOSITORY/PACKAGE DESIGN (RPO)

ONWI

[illegible] Project Management Division

SCM: 4/19/83

OFFICE OF NUCLEAR WASTE ISOLATION ORGANIZATION



MATERIAL DEVELOPMENT AND DESIGN ANALYSES

- DEVELOP MATERIAL PROPERTIES TO SUPPORT REPOSITORY DESIGN
- DEVELOP WASTE PACKAGE MATERIAL PROPERTIES
- DEVELOP REPOSITORY SEALING MATERIAL PROPERTIES
- DEVELOP ROCK PROPERTIES

SCM: 4/19/83

ONWI

BATTELLE Project Management Division

MATERIALS DEVELOPMENT

INFORMATION AVAILABLE:

- LEACHING OF ACTINIDES AND TECHNETIUM FROM SIMULATED HIGH-LEVEL WASTE GLASS (PNL-3152)

- SOME CHARACTERISTICS OF POTENTIAL BACKFILL MATERIALS (ONWI-449)

*- GUIDELINES FOR THE DEVELOPMENT AND TESTING OF NWTS WASTE PACKAGE MATERIALS (DOE/NWTS-34)

SCM: 4/19/83

ONWI

[illegible] Project Management Division

DESIGN ANALYSIS

INFORMATION AVAILABLE:

- THERMO/VISCOELASTIC SIMULATION OF THE SITE A HEATER TEST AT AVERY ISLAND (ONWI-216) RE/SPEC
- PARAMETRIC STUDY INVOLVING THERMO/VISCOELASTIC ANALYSIS OF A ROOM AND PILLAR CONFIGURATION (ONWI-115)
- PRELIMINARY INVESTIGATION OF THE THERMAL & STRUCTURAL INFLUENCE OF CRUSHED-SALT BACKFILL ON REPOSITORY DISPOSAL ROOMS (ONWI-138)
- *PRELIMINARY CONSTITUTIVE PROPERTIES FOR SALT AND NON-SALT ROCKS FROM FOUR POTENTIAL REPOSITORY SITES (ONWI-450)
- CREEP AND CREEP-RUPTURE OF ROCK SALT (ONWI-244)
- *REVIEW OF CONSTITUTIVE LAWS USED TO DESCRIBE THE CREEP OF SALT (ONWI-295)
- INELASTIC THERMOMECHANICAL ANALYSIS OF A GENERIC BEDDED SALT REPOSITORY (ONWI-125)

SCM: 4/19/83

ONWI

BATTELLE Project Management Division

EXPLORATORY SHAFT DESIGN, CONSTRUCTION, AND TESTING

RESPONSIBILITY:

- MANAGE DESIGN OF EXPLORATORY SHAFT
- INTEGRATE THE ACTIVITIES OF DESIGN, CM, AND TESTING
- CONDUCT IN SITU TESTING IN EXPLORATORY SHAFT
- CONDUCT FIELD TESTING

SCM: 4/19/83

ONWI

BATTELLE Project Management Division

EXPLORATORY SHAFT

INFORMATION AVAILABLE:

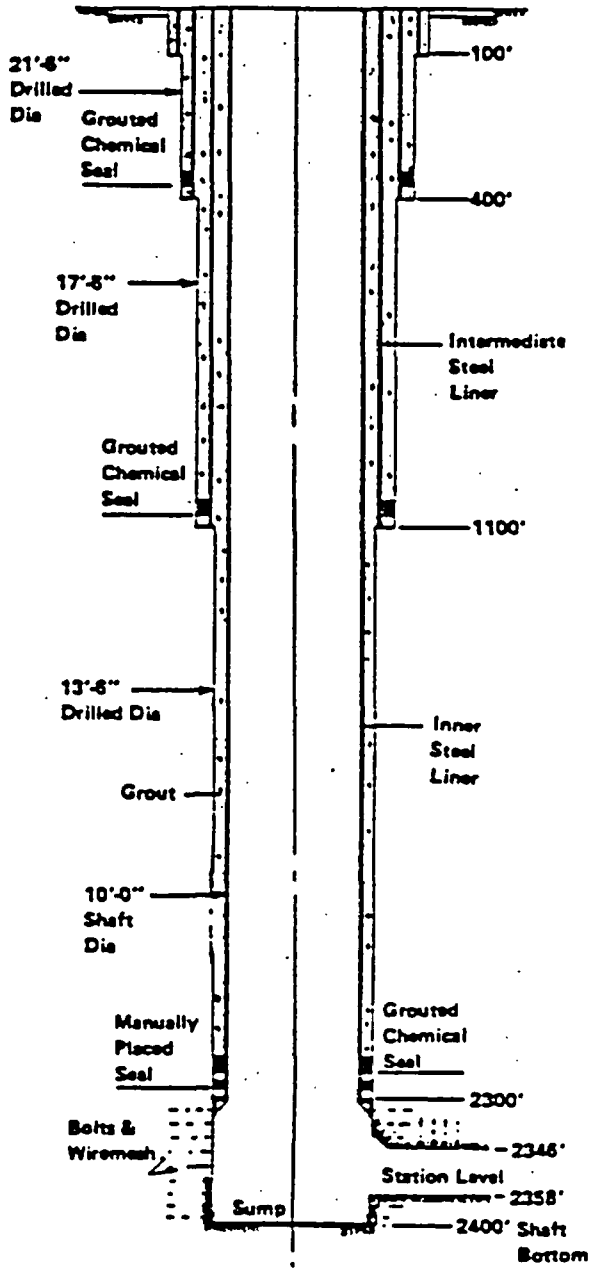
- CONCEPTUAL DESIGN REPORTS FOR EXPLORATORY SHAFT FOR PARADOX BASIN, PERMIAN BASIN, AND DOMES IN GULF INTERIOR REGION (ONWI-390, 391, 392) JUNE 1983
- FUNCTIONAL DESIGN CRITERIA FOR EXPLORATORY SHAFT DESIGN (ONWI-455) JUNE 1983
- AVERY ISLAND HEATER TESTS: DISPLACEMENT AND STRESS DATA FOR THE FIRST 300 DAYS (ONWI-190(2)) RE/SPEC
- AVERY ISLAND HEATER TESTS: MEASURED DATA FOR 1000 DAYS OF HEATING (ONWI-190(2)) RE/SPEC

ONWI

Project Management Division

SCM:4/19/83

BLIND DRILLING METHOD



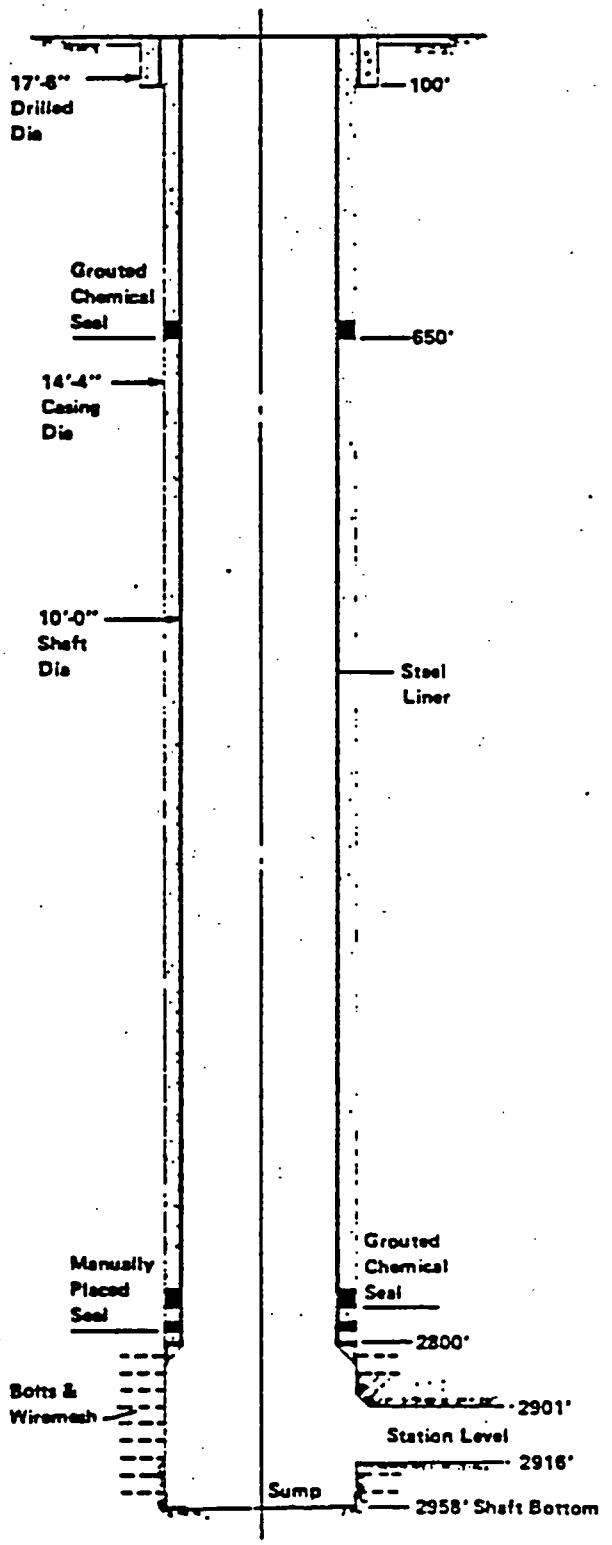
(NOT TO SCALE)

SKETCH OF SHAFT CONSTRUCTION METHOD FROM
PERMIAN BASIN PRELIMINARY DESIGN

SCM: 4/19/83

ONWI

BLIND DRILLING METHOD

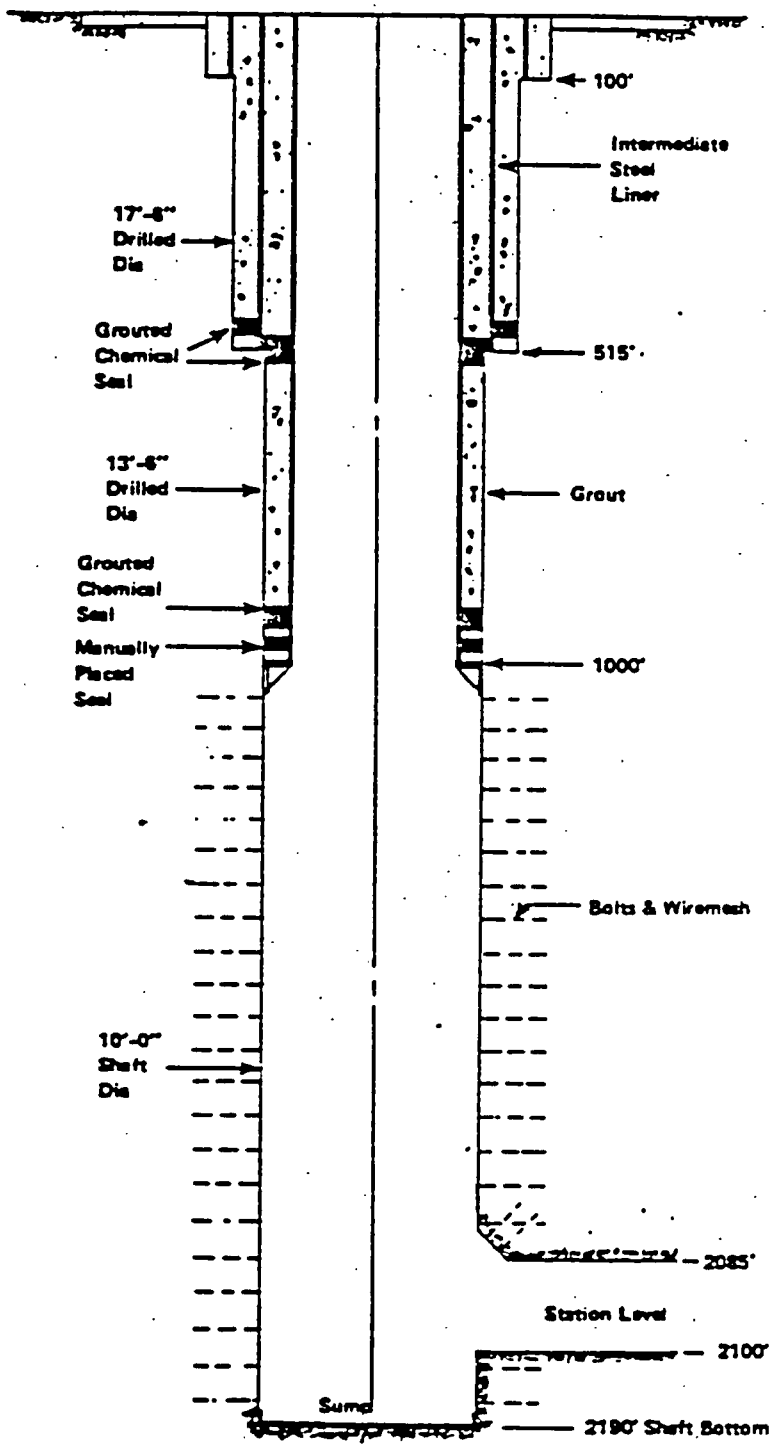


SCM: 4/19/83

SKETCHES OF SHAFT CONSTRUCTION METHOD
FROM PARADOX BASIN PRELIMINARY DESIGN

ONWI

BLIND DRILLING METHOD

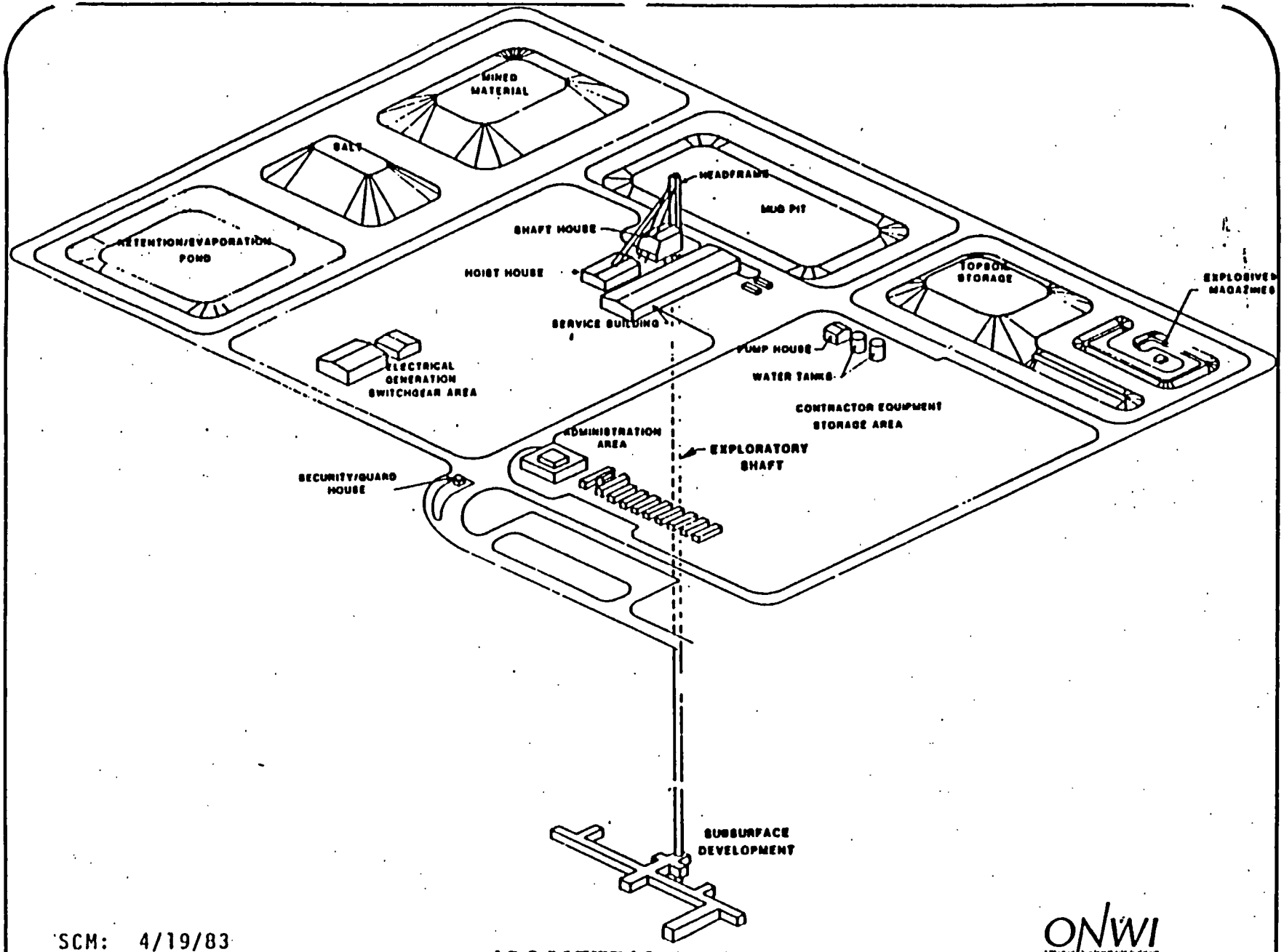


(NOT TO SCALE)

SCM: 4/19/83

SKETCH OF SHAFT CONSTRUCTION METHOD FROM GULF INTERIOR REGION PRELIMINARY DESIGNS

ONWI



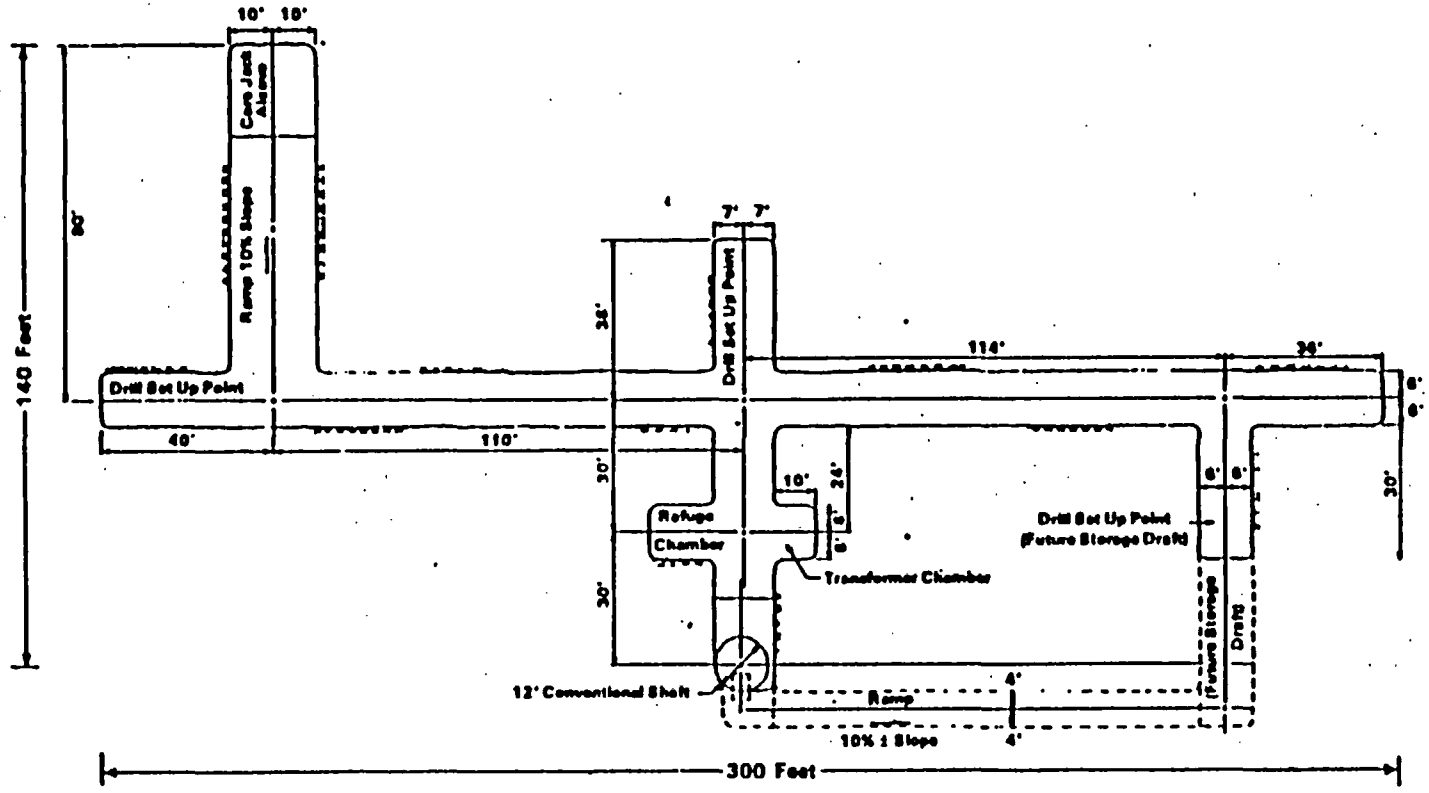
SCM: 4/19/83

ISOMETRIC DRAWING OF EXPLORATORY SHAFT FACILITY

ONWI

BATTELLE Project Management Division

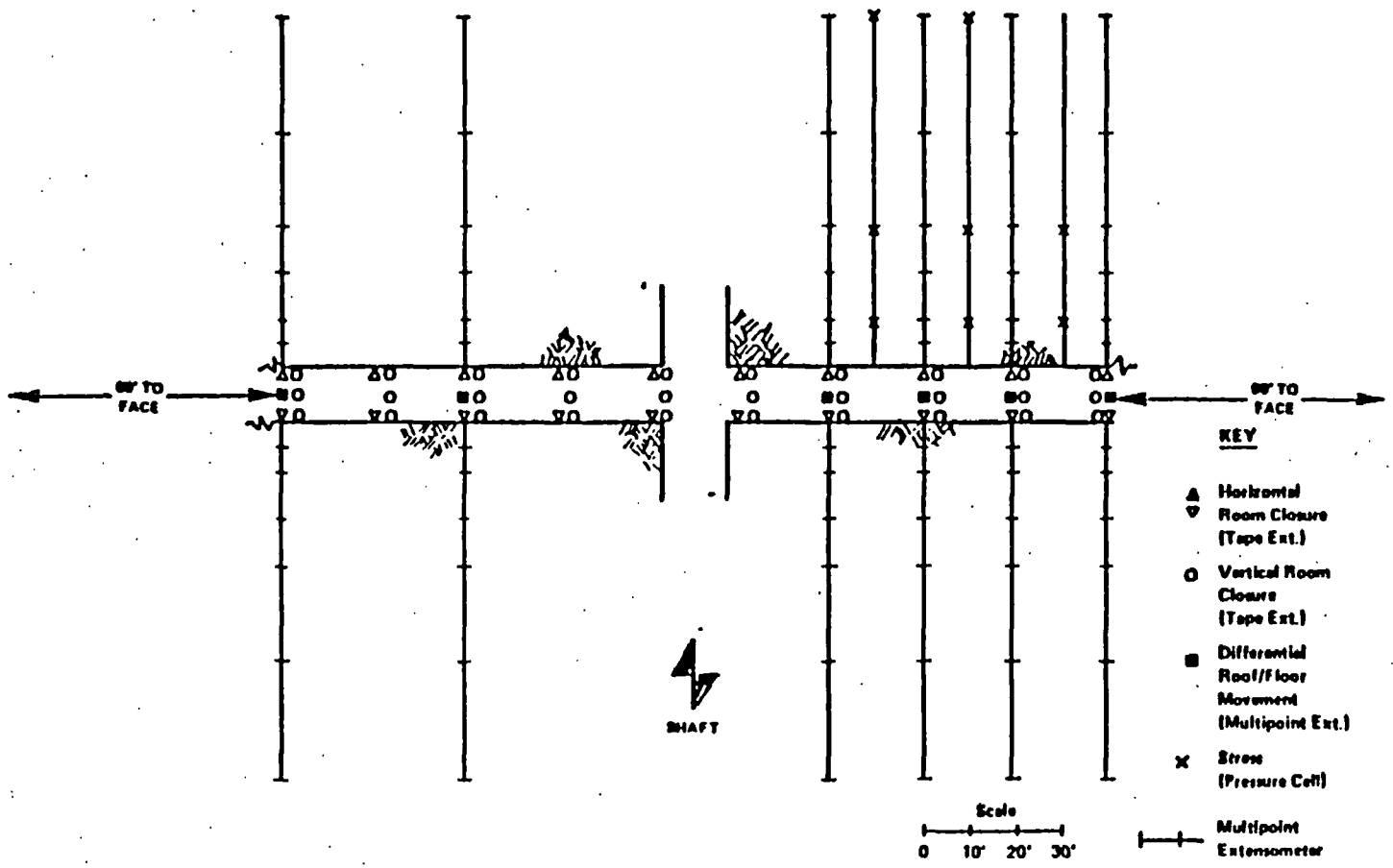
PRELIMINARY EXPLORATORY SHAFT SUBSURFACE LAYOUT



SCM: 4/19/83

ONWI

BATTELLE Project Management Division

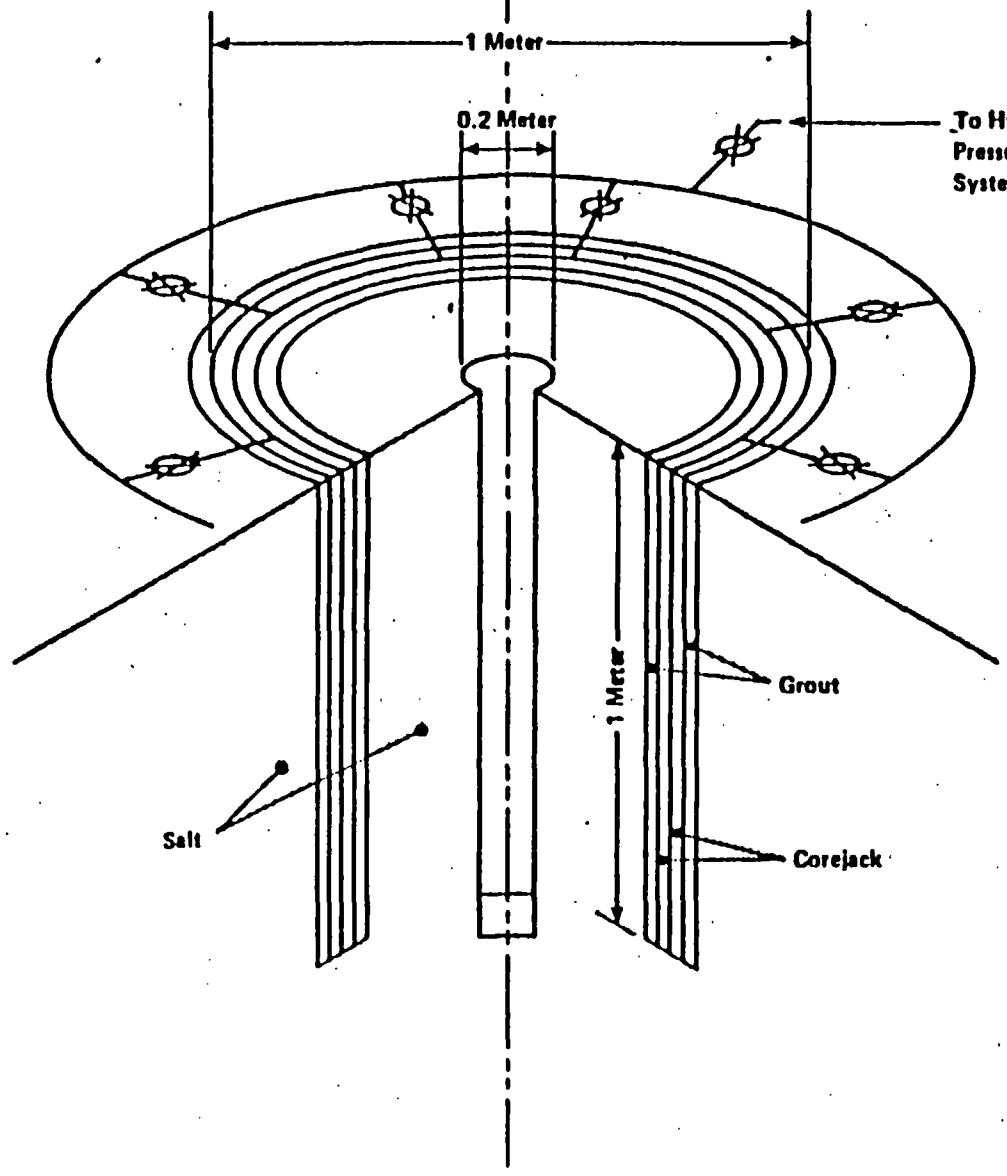


PLAN VIEW OF ES FACILITY MAIN DRIFT SHOWING
ROOM DEFORMATION INSTRUMENTATION

SCM: 4/19/83

ONWI

Battelle Project Management Division



SCHEMATIC OF COREJACK SALT DEFORMATION EXPERIMENTS

SCM: 4/19/83

ONWI

REPOSITORY DESIGN

RESPONSIBILITY:

- MANAGEMENT OF DESIGN FOR REPOSITORY FACILITIES
- MANAGEMENT OF DESIGN/DEVELOPMENT TESTING OF PACKAGE CONFIGURATIONS
- TECHNICAL DIRECTION AND INTEGRATION OF VARIOUS PARTICIPANTS IN THE DESIGN OF THE REPOSITORY

SCM: 4/19/83

ONWI

BATTELLE Project Management Division

REPOSITORY DESIGN

INFORMATION AVAILABLE:

*● ENGINEERED WASTE PACKAGE CONCEPTUAL DESIGN - DHLW, CHLW, SF DISPOSAL IN SALT, ONWI-438, JUNE 1983

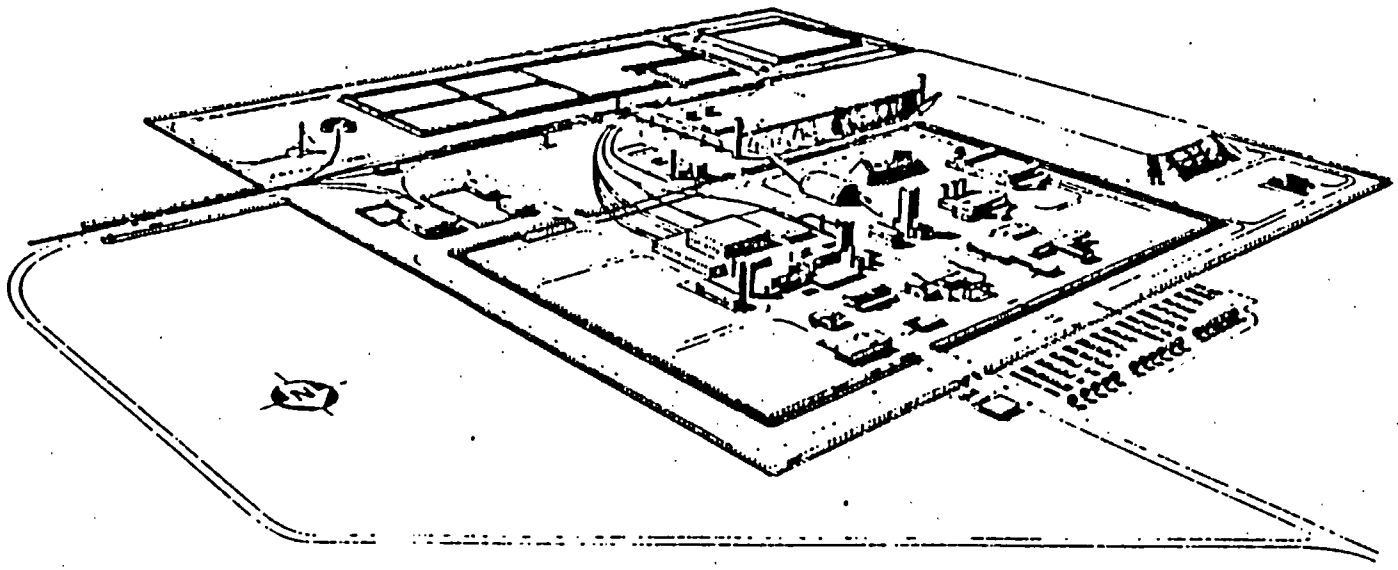
● NWTS CONCEPTUAL REFERENCE REPOSITORY DESCRIPTION (CRRD), ONWI-258, 1981

*● SCHEMATIC DESIGNS FOR PENETRATION SEALS FOR A REFERENCE REPOSITORY IN BEDDED SALT, ONWI-405, DECEMBER 1982

ONWI

[illegible] Project Management Division

SCM:4/19/83

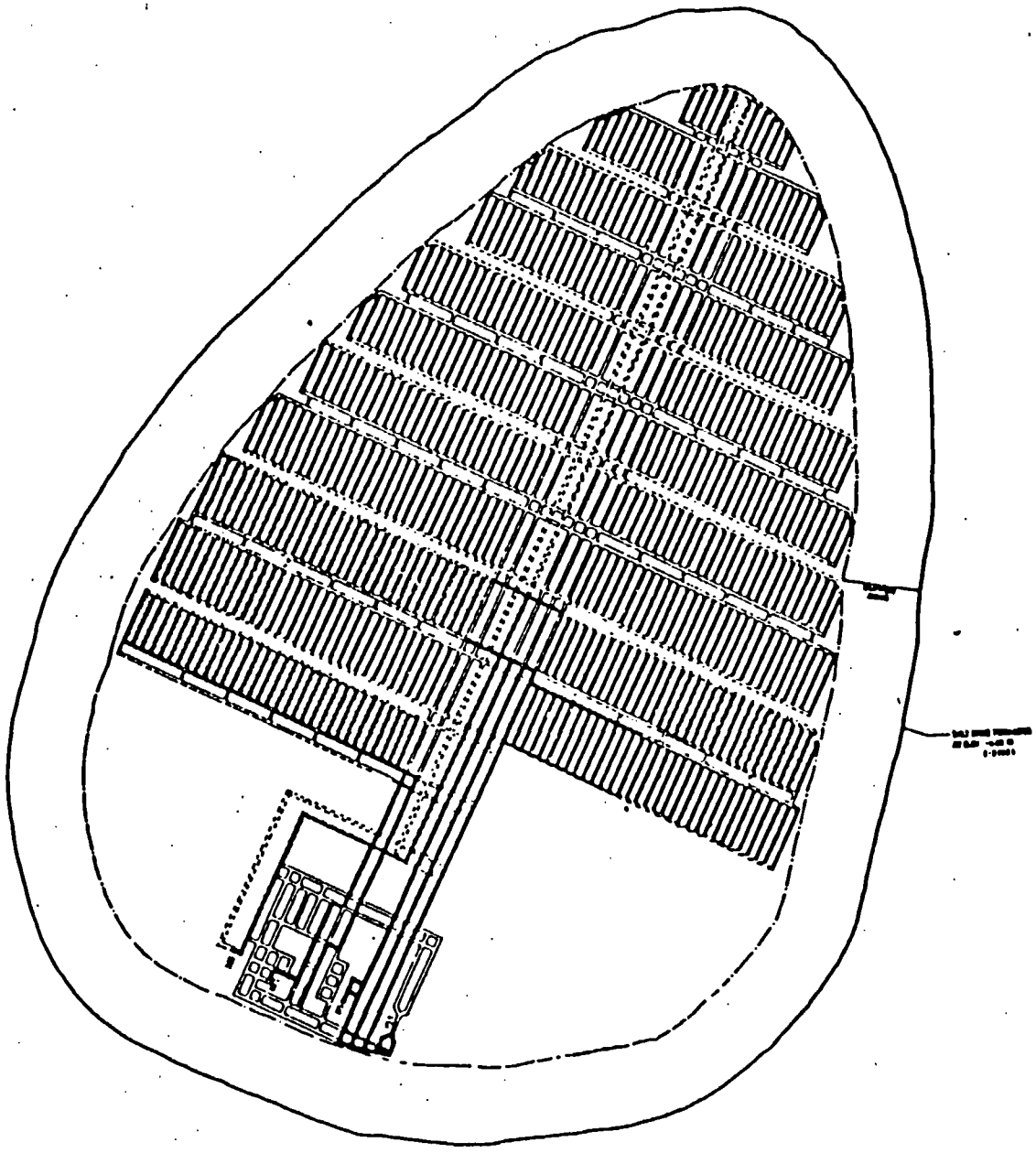


PLANT FACILITIES PERSPECTIVE

SCM: 4/19/83

ONWI

Project Management Division

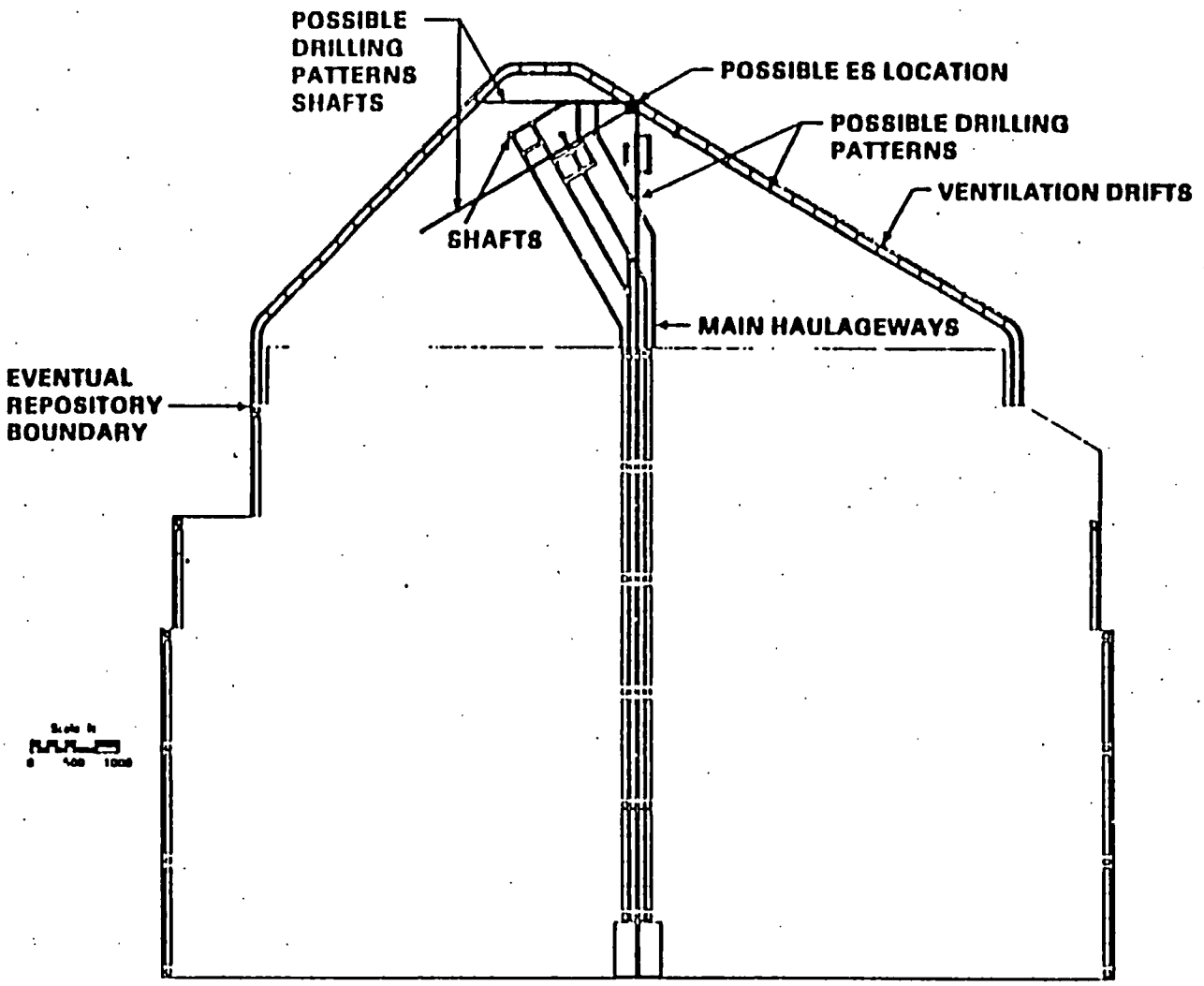


SCM: 4/19/83

FLANK SHAFT DEVELOPMENT PLAN,
YEAR 26

ONWI

SCHEMATIC LAYOUT OF EXPLORATORY BOREHOLES



SCM: 4/19/83

ONWI

Project Management Division

PRINCIPAL SUBCONTRACTORS

ENGINEERING

RE/SPEC INC.	SUBSURFACE ANALYSIS ON THERMAL, MECHANICAL, THERMOMECHANICAL, ROOM REINFORCEMENT, AND BRINE MIGRATION DATA FOR USE IN CONCEPTUAL DESIGN OF THE REPOSITORY
STEARNS-ROGER	CONCEPTUAL REPOSITORY DESIGN INCLUDING SURFACE AND SUBSURFACE FACILITIES, VENTILATION SYSTEMS, TRANSPORTATION, AND UTILITIES; COST ESTIMATION AND SCHEDULING FOR REPOSITORY CONSTRUCTION AND OPERATION
PENN STATE UNIVERSITY MATERIALS RESEARCH LABORATORY	LABORATORY EXPERIMENTS ON AND PERFORMANCE ASSESSMENT OF THE LONG-TERM DURABILITY OF REPOSITORY SEAL MATERIALS IN SALT
PARSONS BRINCKERHOFF/PB-KBB, A JOINT VENTURE	ARCHITECT ENGINEER FOR THE EXPLORATORY SHAFT FACILITY IN SALT: DEVELOPMENT OF THE PRELIMINARY AND FINAL DESIGN (DRAWINGS, SPECIFICATIONS, COST AND SCHEDULE ESTIMATES AND PERMITTING ACTIVITIES); PROVISION OF TITLE III INSPECTION SERVICES DURING CONSTRUCTION

SCM: 4/19/83

ONWI

BATTELLE Project Management Division

PRINCIPAL SUBCONTRACTORS

ENGINEERING, CONTINUED

WESTINGHOUSE	DEVELOPMENT OF THE CONCEPTUAL AND PRELIMINARY DESIGNS OF SPENT FUEL, COMMERCIAL HIGH LEVEL WASTE, AND DEFENSE HIGH LEVEL WASTE PACKAGES FOR A SALT REPOSITORY
D'APPOLONIA CONSULTING ENGINEERING, INC.	DOCUMENTATION ON PLUGGING, SEALING AND BACKFILL REQUIREMENTS FOR REPOSITORY DECOMMISSIONING AND SEALING; PRELIMINARY DESIGN WORK FOR PLUGS AND SEALS
TERRA TEK, INC.	PERFORMANCE MEASUREMENT OF BOREHOLE PLUGS IN BENCH-SCALE SIZE SAMPLES OF EVAPORATES; FLOW AND TRACER TESTING TO DETERMINE HYDRAULIC CONDUCTIVITY OF PLUGGED SALT SAMPLES

SCM: 4/19/83

ONWI

BATTELLE Project Management Division

PRINCIPAL SUBCONTRACTORS

ENGINEERING, CONTINUED

SANDIA NATIONAL LABORATORIES	QUANTIFY CORROSION AND METALLURGICAL BEHAVIOR OF CANDIDATE HLW CANISTER AND OVERPACK MATERIALS UNDER EXPECTED ENVIRONMENTAL CONDITIONS IN SALT; STUDIES INCLUDE MECHANISMS, LONG-TERM TESTING, ACCELERATED TESTING
U.S. ARMY CORPS OF ENGINEERS	RECOMMENDATION OF MATERIALS AND SPECIFIC MIXTURES FOR USE IN CONCEPTUAL SEAL DESIGNS; CONSIDERATIONS: WORKABILITY OF MATERIALS (PLACEMENT TECHNIQUES, SETTING AND CURING TIMES, LIFT THICKNESS), GEOLOGIC COMPATIBILITY, DURABILITY

SCM: 4/19/83

ONWI

BATTELLE Project Management Division

PRINCIPAL CONSULTANTS

ENGINEERING

JOHN ABLE	PROVIDES DATA ANALYSIS ON ROCK MECHANICS AND UNDERGROUND STABILITY FOR REPOSITORY AND EXPLORATORY SHAFT DESIGN
DENNIS LACHEL	DESIGN AND CONSTRUCTION OF UNDERGROUND FACILITIES FOR EXPLORATORY SHAFT
TOM CONNOLLY	MINING DEVELOPMENT AND OPERATIONS FOR EXPLORATORY SHAFT
J. SHUSTER	SHAFT CONSTRUCTION, FREEZE WALLS FOR EXPLORATORY SHAFT
NEVILLE COOK	ROCK MECHANICS AND DESIGN WORK FOR EXPLORATORY SHAFT
DOUG BALL	SUBSURFACE EXPLORATION FOR EXPLORATORY SHAFT
CHRISTOPHER J. HALL	UNDERGROUND VENTILATION DESIGN FOR EXPLORATORY SHAFT

SCM: 4/19/83

ONWI

[illegible] Project Management Division

POSSIBLE TOPICS FOR FUTURE DISCUSSION

- SALT CREEP BEHAVIOR ONWI-450, ONWI-295
- SEAL DESIGNS ONWI-405
- WASTE PACKAGE CONCEPTUAL DESIGNS ONWI-438
- MATERIALS TESTING DOE/NWTS-34

SCM: 4/19/83

ONWI

BATTELLE Project Management Division

GEOLOGY FUNCTIONAL OVERVIEW

G. HEIM

ONWI

BATTELLE Project Management Division

GEOLOGIC REVIEW GROUP

MEMBER	AFFILIATION	SPECIALITY
DR. ARTHUR L. BLOOM	PROFESSOR CORNELL UNIVERSITY	GEOLOGICAL SCIENCES, GEOMORPHOLOGY
DR. WILLIAM W. HAMBLETON	DIRECTOR KANSAS GEOLOGICAL SURVEY	GEOLOGY
DR. KONRAD KRAUSKOPF	PROFESSOR AMERITUS STANFORD UNIVERSITY	GEOCHEMISTRY
DR. IRWIN REMSON	PROFESSOR STANFORD UNIVERSITY	HYDROLOGY, ENVIRONMENTAL EARTH SCIENCES
DR. HOWARD P. ROSS	UNIVERSITY OF UTAH RESEARCH INSTITUTE	SENIOR GEOPHYSICIST, GEOTHERMAL EXPLORATION
DR. CHARLES I. SMITH	CHAIRMAN DEPARTMENT OF GEOLOGY UNIVERSITY OF TEXAS AT ARLINGTON	PHYSICAL STRATIGRAPHY, SEDIMENTATION
MR. WILLIAM R. JUDD	CHAIRMAN GEOTECHNICAL ENGINEERING PURDUE UNIVERSITY	ENGINEERING GEOLOGY, ROCK MECHANICS

MEETINGS: AS REQUIRED

SCOPE: CRITICALLY REVIEW AND PROVIDE EXPERT INDEPENDENT TECHNICAL ASSESSMENT OF ACTIVITIES IN THE AREA OF GEOLOGIC EXPLORATION/ CHARACTERIZATION IN SUPPORT OF QUALIFICATION OF SITES FOR THE SAFE DISPOSAL OF RADIOACTIVE WASTES

ONWI

BATTELLE Project Management Division

GULF COAST SALT DOME

PRINCIPAL GEOLOGIC SUBCONTRACTORS

CONTRACTOR	RESPONSIBILITY
EARTH TECHNOLOGY CORPORATION (LAW ENGINEERING TESTING COMPANY)	GULF COAST SALT DOME GEOLOGIC PROJECT MANAGER--GATHERING, ANALYSIS, AND REPORTING GEOLOGIC DATA TO ADDRESS SITE GEOMETRY, GEOHYDROLOGY, GEOCHEMISTRY, ROCK CHARACTERISTICS, TECTONIC ENVIRONMENT, HUMAN INTRUSION.
U.S. GEOLOGICAL SURVEY (DOE PRIME)	HYDROLOGIC AND GEOCHEMICAL ANALYSIS OF TESTING AND SAMPLES FROM NWTS GULF COAST BOREHOLES TO ADDRESS GEOCHEMISTRY AND HYDROLOGY IN LOUISIANA AND MISSISSIPPI.
U.S. ARMY CORPS OF ENGINEERS (DOE PRIME)	OBTAIN AND MAINTAIN LAND ACCESS FOR LOUISIANA FIELD STUDIES RELATED TO GEOLOGY, HYDROLOGY, AND GEOPHYSICS.
LOUISIANA STATE UNIVERSITY - INSTITUTE FOR ENVIRONMENTAL STUDIES (DOE AND ONWI)	LOUISIANA SALT DOME GATHERING, ANALYSIS, AND REPORTING GEOLOGIC AND HYDROLOGIC DATA TO ADDRESS GEOMETRY, HYDROLOGIC STABILITY, GEOENGINEERING ASPECTS, AND GEOCHEMISTRY.

ONWI

BATTELLE Project Management Division

GULF COAST SALT DOME (CONTINUED)

PRINCIPAL GEOLOGIC SUBCONTRACTORS

CONTRACTOR	RESPONSIBILITY
TEXAS BUREAU OF ECONOMIC GEOLOGY (DOE PRIME)	EAST TEXAS SALT DOME GATHERING, ANALYSIS, AND REPORTING GEOLOGIC AND HYDROLOGIC DATA TO ADDRESS SITE GEOMETRY, HYDROLOGIC STABILITY, GEOENGINEERING ASPECTS, AND GEOCHEMISTRY.

ONWI

BATTELLE Project Management Division

GULF COAST SALT DOMES MAJOR REPORTS

OFFICE OF NUCLEAR WASTE ISOLATION, 1979. SUMMARY CHARACTERIZATION AND RECOMMENDATION OF STUDY AREAS FOR THE GULF INTERIOR REGION, ONWI-10.

BECHTEL NATIONAL, INC., 1983. ENVIRONMENTAL CHARACTERIZATION REPORT FOR THE GULF INTERIOR REGION LOUISIANA, MISSISSIPPI, AND TEXAS STUDY AREAS, ONWI-192 THROUGH 194, PREPARED FOR OFFICE OF NUCLEAR WASTE ISOLATION.

LAW ENGINEERING TESTING COMPANY, 1981, GEOLOGIC EVALUATION OF GULF COAST SALT DOMES: OVERALL ASSESSMENT OF THE GULF INTERIOR REGION, ONWI-106, PREPARED FOR OFFICE OF NUCLEAR WASTE ISOLATION.

* OFFICE OF NUCLEAR WASTE ISOLATION, 1982, EVALUATION OF AREA STUDIES OF THE U.S. GULF COAST SALT DOME BASINS: LOCATION RECOMMENDATION REPORT, ONWI-109.

LAW ENGINEERING TESTING COMPANY, 1982, GULF COAST SALT DOMES GEOLOGIC AREA CHARACTERIZATION REPORTS, VOLUMES I THROUGH IV, ONWI-117 THROUGH 120 AND APPENDICES, PREPARED FOR OFFICE OF NUCLEAR WASTE ISOLATION.

ONWI

BATTELLE Project Management Division

GULF COAST SALT DOMES SUPPORTIVE REPORTS

U.S. GEOLOGICAL SURVEY, 1980. BASE OF FRESH GROUND WATER, NORTHERN LOUISIANA SALT DOMES BASIN AND VICINITY, NORTHERN LOUISIANA AND SOUTHERN ARKANSAS, ONWI-131, PREPARED FOR OFFICE OF NUCLEAR WASTE ISOLATION.

LAW ENGINEERING TESTING COMPANY, 1982. PETROGRAPHIC AND GEOCHEMICAL CHARACTERISTICS OF THE RICHTON SALT CORE, ONWI-277, PREPARED FOR OFFICE OF NUCLEAR WASTE ISOLATION.

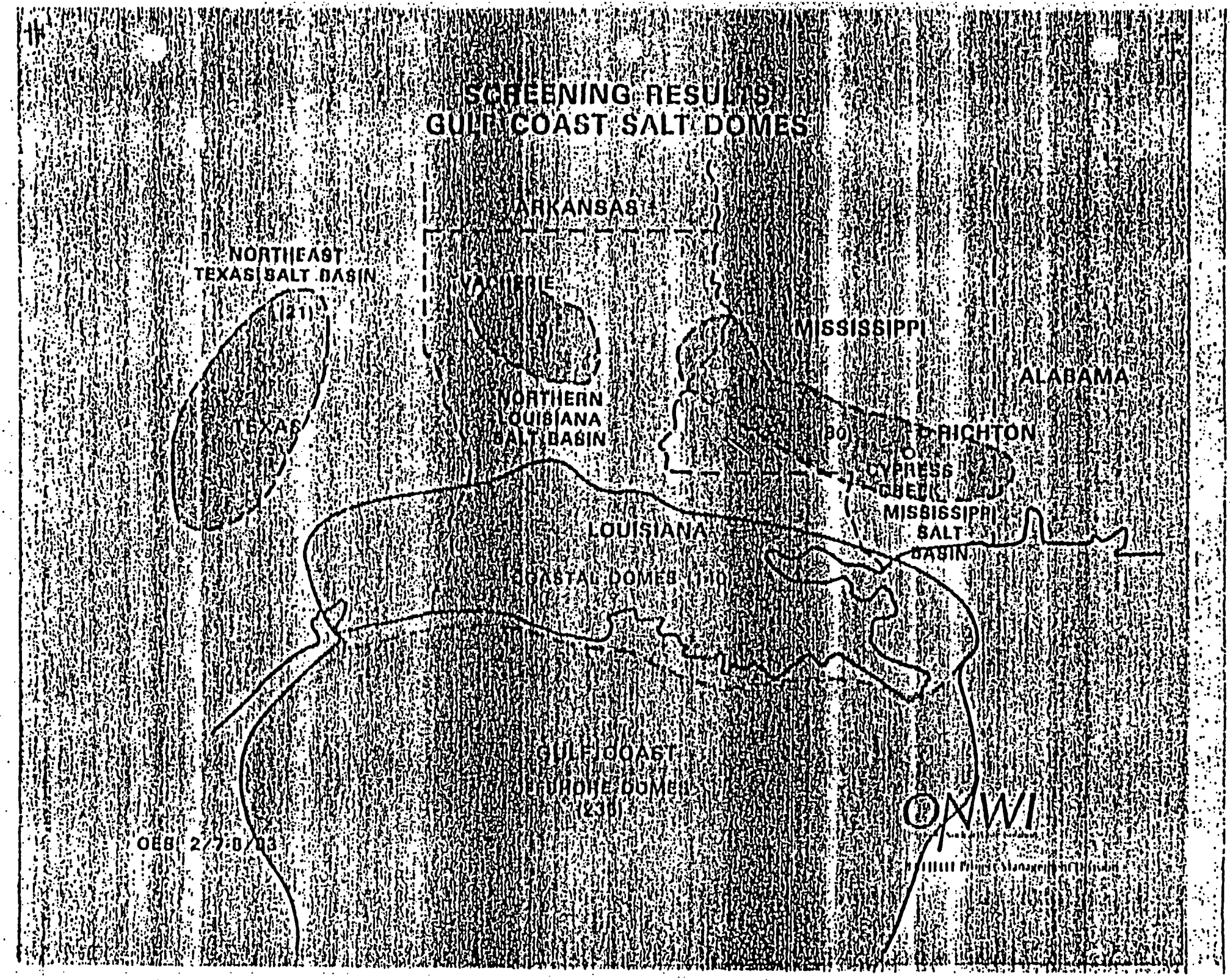
LAW ENGINEERING TESTING COMPANY, 1982. MAXIMUM POTENTIAL EROSION AND INUDATION OF SEVEN INTERIOR SALT DOMES, ONWI-278, PREPARED FOR THE OFFICE OF NUCLEAR WASTE ISOLATION.

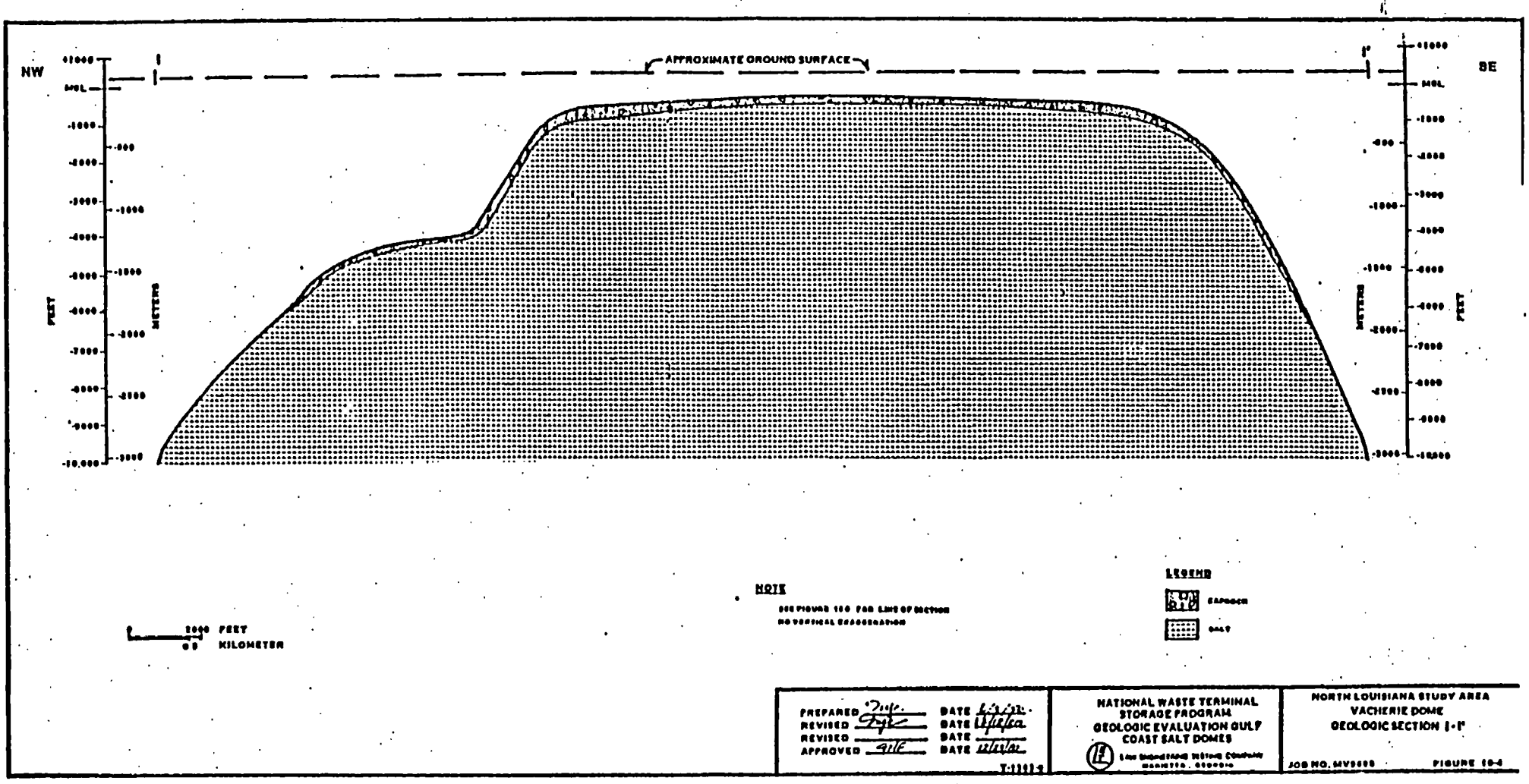
LAW ENGINEERING TESTING COMPANY, 1983. GEOTHERMAL STUDIES FOR SEVEN INTERIOR SALT DOMES, OWNI-289, PREPARED FOR OFFICE OF NUCLEAR WASTE ISOLATION.

LAW ENGINEERING TESTING COMPANY, 1983. SALT, CAPROCK, AND SHEATH STUDY, ONWI-355, PREPARED FOR OFFICE OF NUCLEAR WASTE ISOLATION.

ONWI

BATTELLE Project Management Division


SCREENING RESULTS
GULF COAST SALT DOMES
ARKANSAS
NORTHEAST
TEXAS SALT BASIN
(21)
VACHERIE
MISSISSIPPI
ALABAMA
NORTHERN
LOUISIANA
SALT BASIN
TEXAS
(8)
RICHTON
CYPRESS
CREEK
MISSISSIPPI
SALT
BASIN
LOUISIANA
COASTAL DOMES (1-10)
GULF COAST
JERUSHE DOME
(23)
OEB 2/7:0/03

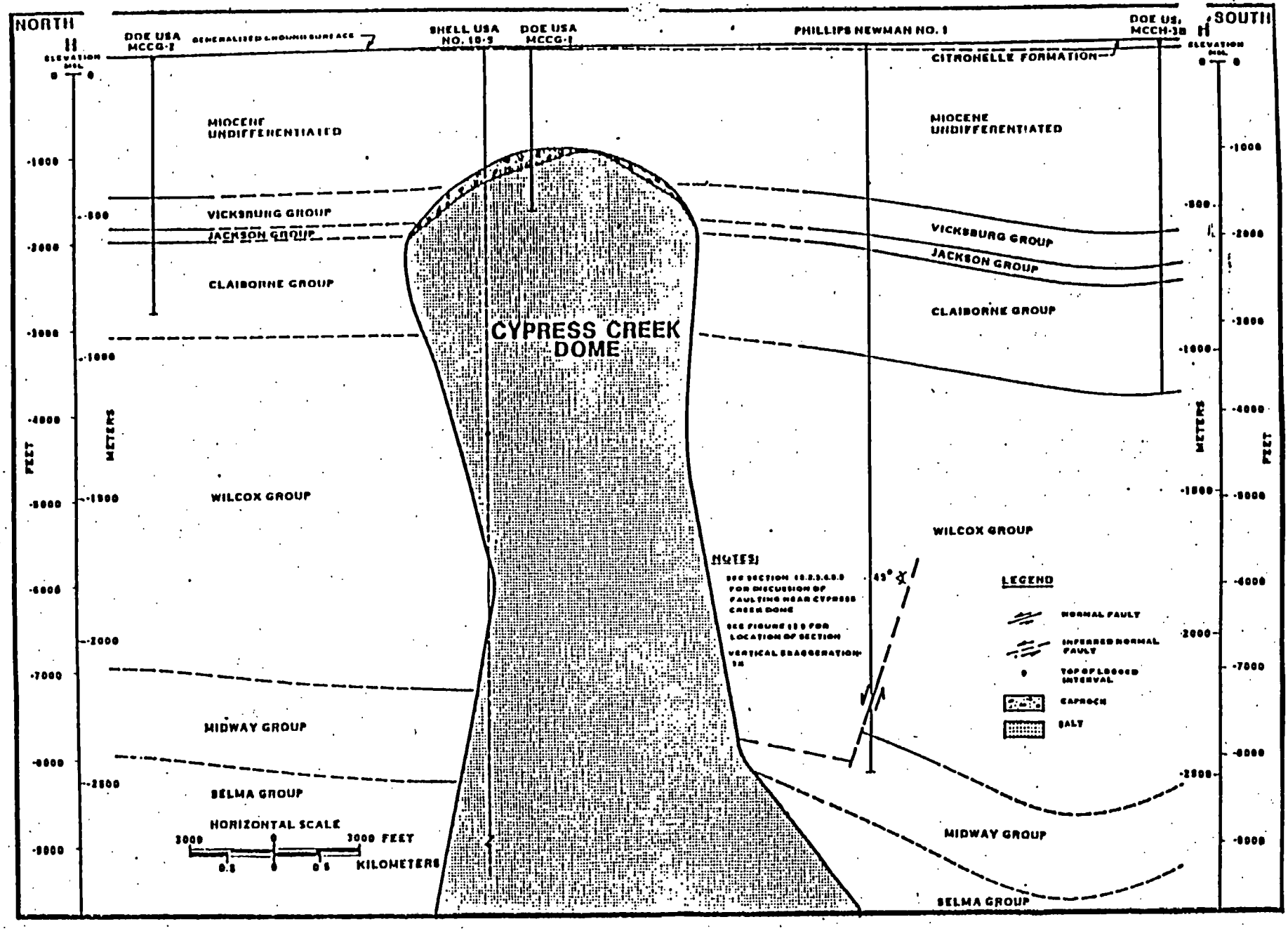


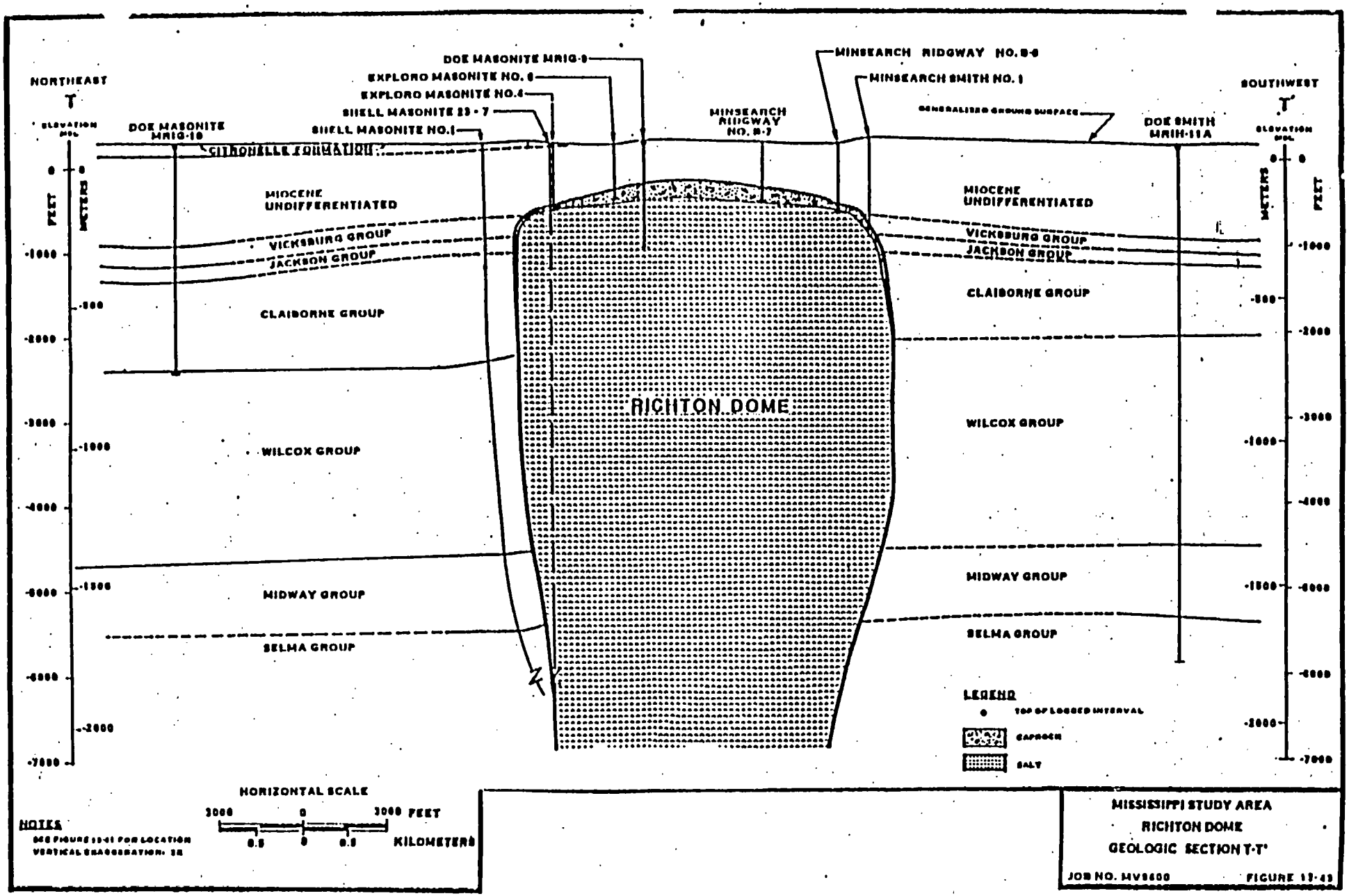
PREPARED	DATE	NATIONAL WASTE TERMINAL STORAGE PROGRAM GEOLOGIC EVALUATION GULF COAST SALT DOMES
REVISED	DATE	
REVISED	DATE	
APPROVED	DATE	

T-1151-3

NORTH LOUISIANA STUDY AREA
VACHERIE DOME
GEOLOGIC SECTION 1-1'

JOB NO. MV5000 FIGURE 10-4


NORTH
SOUTH
DOE USA MCCG-2
GENERALIZED GROUND SURFACE
SHELL USA NO. 18-3
DOE USA MCCG-1
PHILLIPS NEWMAN NO. 1
DOE USA MCCH-3B
CITRONELLE FORMATION
MIOCENE UNDIFFERENTIATED
VICKSBURG GROUP
JACKSON GROUP
CLAIBORNE GROUP
CYPRESS CREEK DOME
WILCOX GROUP
MIDWAY GROUP
SELMA GROUP
FEET
METERS
NOTES:
LEGEND
NORMAL FAULT
INFERRED NORMAL FAULT
TOP OF LOGGED INTERVAL
CAPROCK
SALT
HORIZONTAL SCALE
3000 FEET
KILOMETERS


NORTHEAST
T
DOE MASONITE MRIG-10
EXPLORO MASONITE NO. 6
EXPLORO MASONITE NO.4
SHELL MASONITE 23 - 7
SHELL MASONITE NO.1
DOE MASONITE MRIG-9
MINSEARCH RIDGWAY NO. 8-6
MINSEARCH SMITH NO. 1
MINSEARCH RIDGWAY NO. 8-7
GENERALIZED GROUND SURFACE
DOE SMITH MRIH-11A
SOUTHWEST
T'
ELEVATION DATUM
FEET
METERS
CITRONELLE FORMATION ?
MIOCENE UNDIFFERENTIATED
VICKSBURG GROUP
JACKSON GROUP
CLAIBORNE GROUP
WILCOX GROUP
MIDWAY GROUP
SELMA GROUP
RICHTON DOME
LEGEND
TOP OF LOGGED INTERVAL
CAPROCK
SALT
HORIZONTAL SCALE
3000 0 3000 FEET
0.5 0 0.5 KILOMETERS
NOTES
SEE FIGURE 13-41 FOR LOCATION
VERTICAL EXAGGERATION: 5X
MISSISSIPPI STUDY AREA
RICHTON DOME
GEOLOGIC SECTION T-T'
JOB NO. MV8600
FIGURE 13-43

PARADOX BASIN

PRINCIPAL GEOLOGIC SUBCONTRACTORS

CONTRACTOR	RESPONSIBILITY
WOODWARD-CLYDE CONSULTANTS	PARADOX BASIN GEOLOGIC PROJECT MANAGER--GATHERING, ANALYSIS, AND REPORTING GEOLOGIC DATA TO ADDRESS SITE GEOMETRY, GEOHYDROLOGY, GEOCHEMISTRY, ROCK CHARACTERISTICS, TECTONIC ENVIRONMENT, HUMAN INTRUSION.
U.S. GEOLOGICAL SURVEY (DOE PRIME)	MINERALOGIC AND GEOCHEMICAL ANALYSIS OF CORE FROM NWTS PARADOX BASIN BOREHOLES TO ADDRESS GEOCHEMISTRY. GEOPHYSICAL INVESTIGATIONS TO ADDRESS TECTONIC ENVIRONMENT AND SITE GEOMETRY.
UTAH GEOLOGICAL AND MINERAL SURVEY	LITERATURE SURVEY AND GEOLOGIC MAPPING TO ADDRESS TECTONIC ENVIRONMENT AND HUMAN INTRUSION.

ONWI

BATTELLE Project Management Division

PARADOX BASIN MAJOR REPORTS

WOODWARD-CLYDE CONSULTANTS, 1980. OVERVIEW OF THE REGIONAL GEOLOGY OF THE PARADOX BASIN STUDY REGIONS. PREPARED FOR THE OFFICE OF NUCLEAR WASTE ISOLATION, ONWI-92.

BECHTEL GROUP, INC., AND WOODWARD-CLYDE CONSULTANTS, 1981. SUMMARY CHARACTERIZATION AND RECOMMENDATION OF STUDY AREAS FOR THE PARADOX BASIN STUDY REGION. PREPARED FOR THE OFFICE OF NUCLEAR WASTE ISOLATION, ONWI-36.

* WOODWARD-CLYDE CONSULTANTS, 1981. GEOLOGIC CHARACTERIZATION REPORT FOR THE PARADOX BASIN STUDY AREAS. PREPARED FOR THE OFFICE OF NUCLEAR WASTE ISOLATION, ONWI-290.

* BECHTEL GROUP, INC., AND WOODWARD-CLYDE CONSULTANTS, 1982. PARADOX BASIN AREA CHARACTERIZATION SUMMARY AND LOCATION RECOMMENDATION REPORT. PREPARED FOR THE OFFICE OF NUCLEAR WASTE ISOLATION, ONWI-291.

ONWI

BATTELLE Project Management Division

PARADOX BASIN
SUPPORTING DOCUMENTS

BECHTEL GROUP, INC. AND WOODWARD-CLYDE CONSULTANTS, 1982. PARADOX BASIN SITE CHARACTERIZATION REPORT PREPARATION PAPERS GIBSON DOME LOCATION. PREPARED FOR THE OFFICE OF NUCLEAR WASTE ISOLATION, ONWI-301.

DOELLING, H. H., 1982. GEOLOGIC STUDIES OF THE SALT VALLEY ANTICLINE-PROGRESS REPORT. UTAH GEOLOGICAL AND MINERAL SURVEY OPEN-FILE REPORT NO. 30.

HITE, R. J., 1982 'POTASH DEPOSITS IN THE GIBSON DOME AREA, SOUTHEASTERN UTAH. U.S. GEOLOGICAL SURVEY, OPEN-FILE REPORT NO. 82-1067.

RUSH, E. F. ET AL, 1982. REGIONAL HYDROLOGY OF THE GREEN RIVER-MOAB AREA, NORTHWESTERN PARADOX BASIN, UTAH. U.S. GEOLOGICAL SURVEY, OPEN-FILE REPORT NO. 82-107.

WOLLITZ, L. E., 1982. RESULTS OF HYDROLOGIC TESTS IN U.S. DEPARTMENT OF ENERGY'S WELLS DOE-4, 5, 6, 7, 8, AND 9, SALT VALLEY, GRAND COUNTY, UTAH. U.S. GEOLOGICAL SURVEY, OPEN-FILE REPORT NO. 82-346.

WOODWARD-CLYDE CONSULTANTS, 1982. GIBSON DOME NO. 1 BOREHOLE (COMPLETION REPORT). PREPARED FOR THE OFFICE OF NUCLEAR WASTE ISOLATION, ONWI-388.

WOODWARD-CLYDE CONSULTANTS, 1982. IN SITU AND LABORATORY GEOTECHNICAL TEST RESULTS FROM BOREHOLE GD-1 IN SOUTHEAST UTAH. PREPARED FOR THE OFFICE OF NUCLEAR WASTE ISOLATION, ONWI-400.

ONWI

BATTELLE Project Management Division

PARADOX BASIN
SUPPORTING DOCUMENTS (CONTINUED)

WOODWARD-CLYDE CONSULTANTS, 1982. ELK RIDGE NO. 1 BOREHOLE (COMPLETION REPORT). PREPARED FOR THE OFFICE OF NUCLEAR WASTE ISOLATION, ONWI-401.

WOODWARD-CLYDE CONSULTANTS, 1982. E. J. KUBAT BOREHOLE (COMPLETION REPORT). PREPARED FOR THE OFFICE OF NUCLEAR WASTE ISOLATION, ONWI-403.

DANIELS, J. J. ET AL, 1981. GEOPHYSICAL WELL-LOG MEASUREMENTS IN THREE DRILL HOLES AT SALT VALLEY, UTAH. U.S. GEOLOGICAL SURVEY, OPEN-FILE REPORT NO. 81-36.

RUSH, F. E. ET AL, 1980. RESULTS OF HYDRAULIC TESTS IN WELLS DOE-1, 2 AND 3, SALT VALLEY, GRAND COUNTY, UTAH. U.S. GEOLOGICAL SURVEY, OPEN-FILE REPORT NO. 80-205.

MERRELL, H. W., AND UTAH GEOLOGICAL AND MINERAL SURVEY, 1979. MINERAL RESOURCE INVENTORY OF THE PARADOX SALT BASIN, UTAH AND COLORADO. PREPARED FOR THE OFFICE OF NUCLEAR WASTE ISOLATION, UTAH GEOLOGICAL AND MINERAL SURVEY REPORT OF INVESTIGATION NO. 143.

WOODWARD-CLYDE CONSULTANTS, 1979. A THREE HOLE DRILLING AND TESTING PROGRAM, SALT VALLEY ANTICLINE, GRAND COUNTY, UTAH (COMPLETION REPORT). PREPARED FOR THE OFFICE OF NUCLEAR WASTE ISOLATION, ONWI-34.

FRIEDMAN, J. D. AND SIMPSON, S. L., 1978. LANDSAT INVESTIGATIONS OF THE NORTHERN PARADOX BASIN, UTAH AND COLORADO: IMPLICATIONS FOR RADIOACTIVE WASTE EMPLACEMENT, PART I, LINEAMENTS AND ALIGNMENTS. U.S. GEOLOGICAL SURVEY, OPEN-FILE REPORT NO. 78-900.

ONWI

BATTELLE Project Management Division

PARADOX BASIN
SUPPORTING DOCUMENTS (CONTINUED)

STOCKTON, S. L. AND BALCH, A. H., 1978. THE UTILITY OF PETROLEUM SEISMIC EXPLORATION DATA IN DELINEATING STRUCTURAL FEATURES WITHIN SALT ANTICLINES. U.S. GEOLOGICAL SURVEY, OPEN-FILE REPORT NO. 78-591.

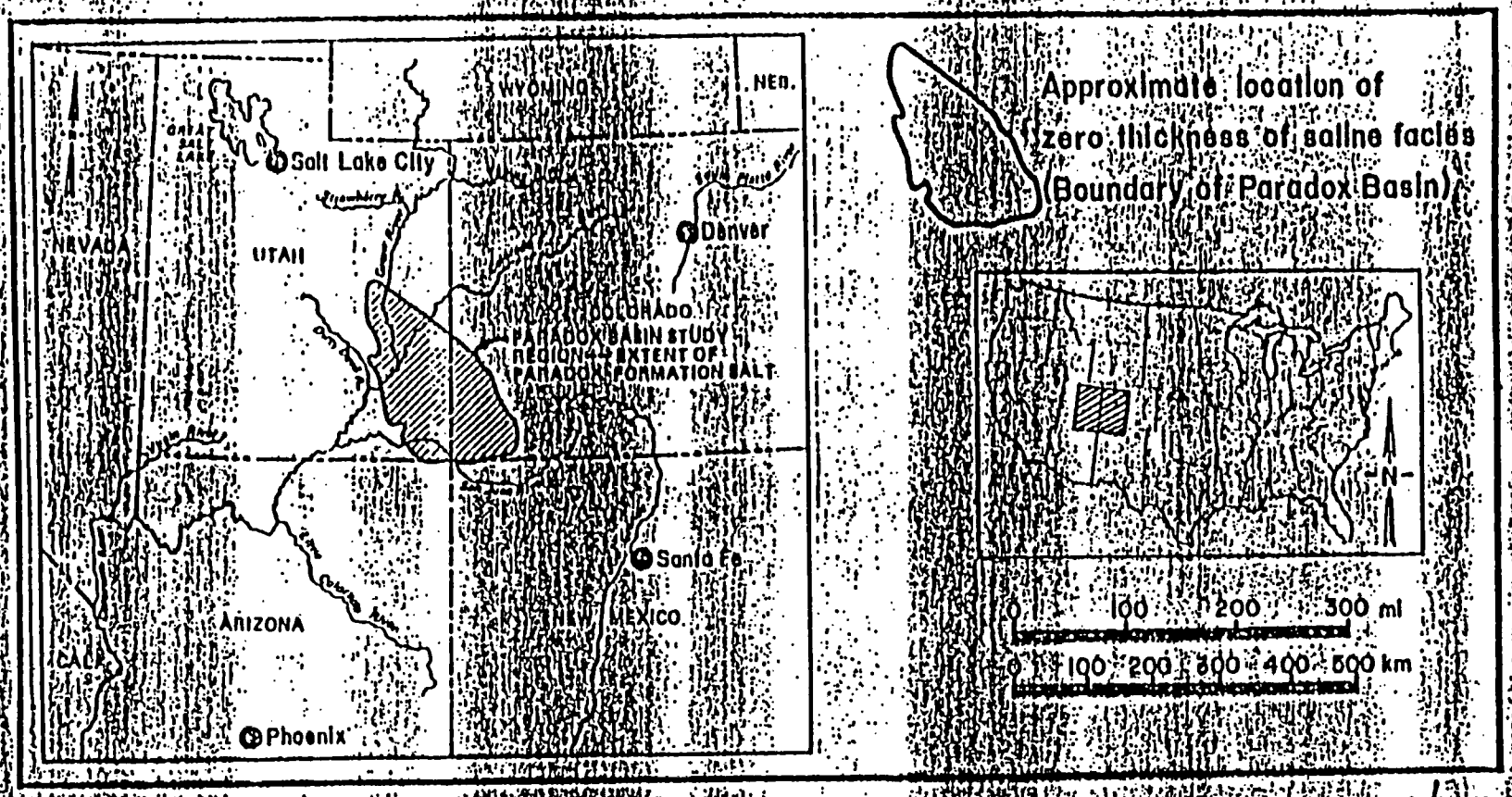
HITE, R. J., 1977. SUBSURFACE GEOLOGY OF A POTENTIAL WASTE EMPLACEMENT SITE, SALT VALLEY ANTICLINE, GRAND COUNTY, UTAH. U.S. GEOLOGICAL SURVEY, OPEN-FILE REPORT NO. 77-761.

GARD, L. M., 1976. GEOLOGY OF THE NORTH END OF THE SALT VALLEY ANTICLINE, GRAND COUNTY, UTAH. U.S. GEOLOGICAL SURVEY, OPEN-FILE REPORT NO. 76-303.

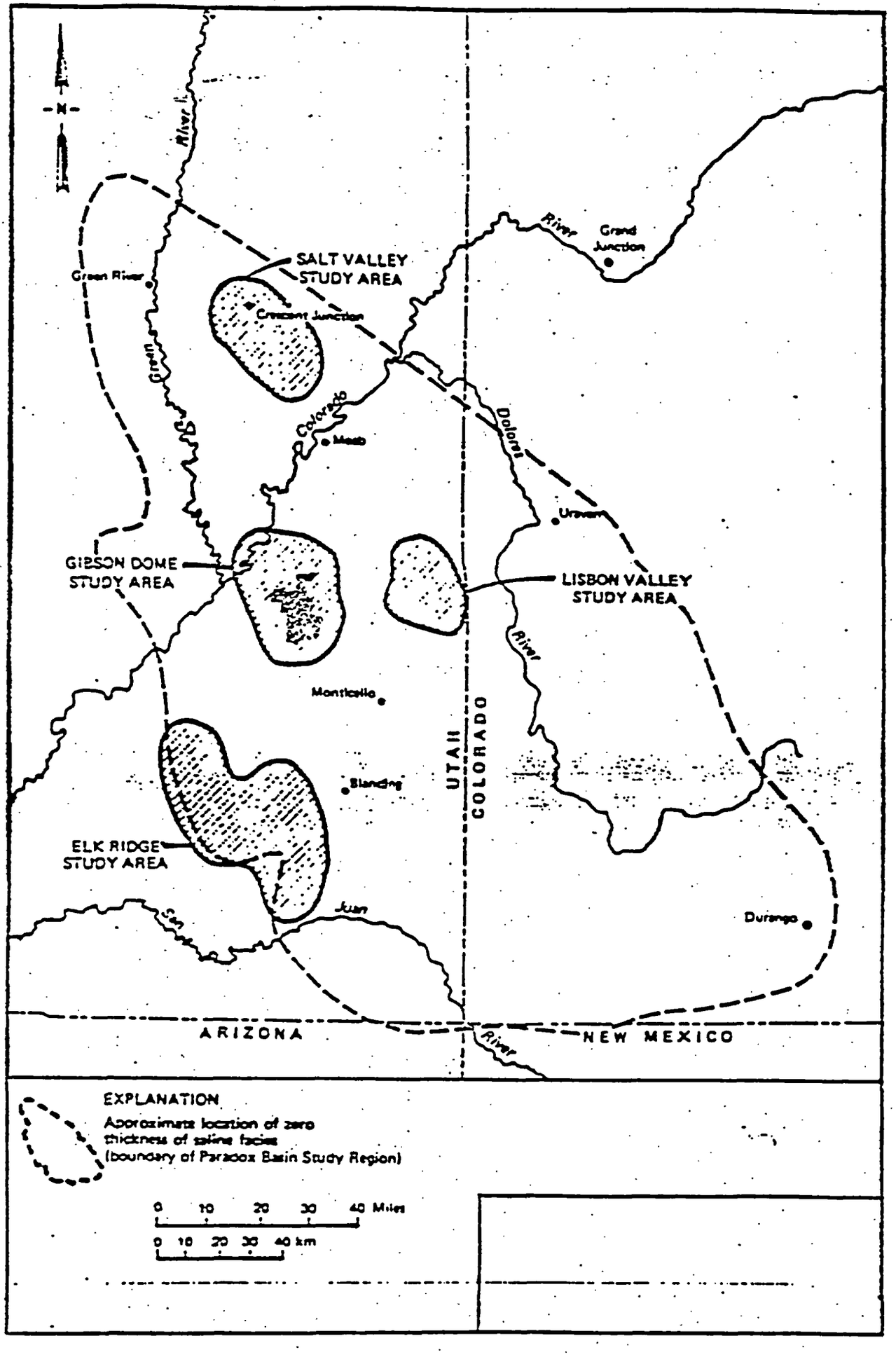
HITE, R. J. AND LOHMAN, S. W., 1973. GEOLOGIC APPRAISAL OF PARADOX BASIN SALT DEPOSITS FOR WASTE EMPLACEMENT. U.S. GEOLOGICAL SURVEY, OPEN-FILE REPORT NO. 4339-6.

ONWI

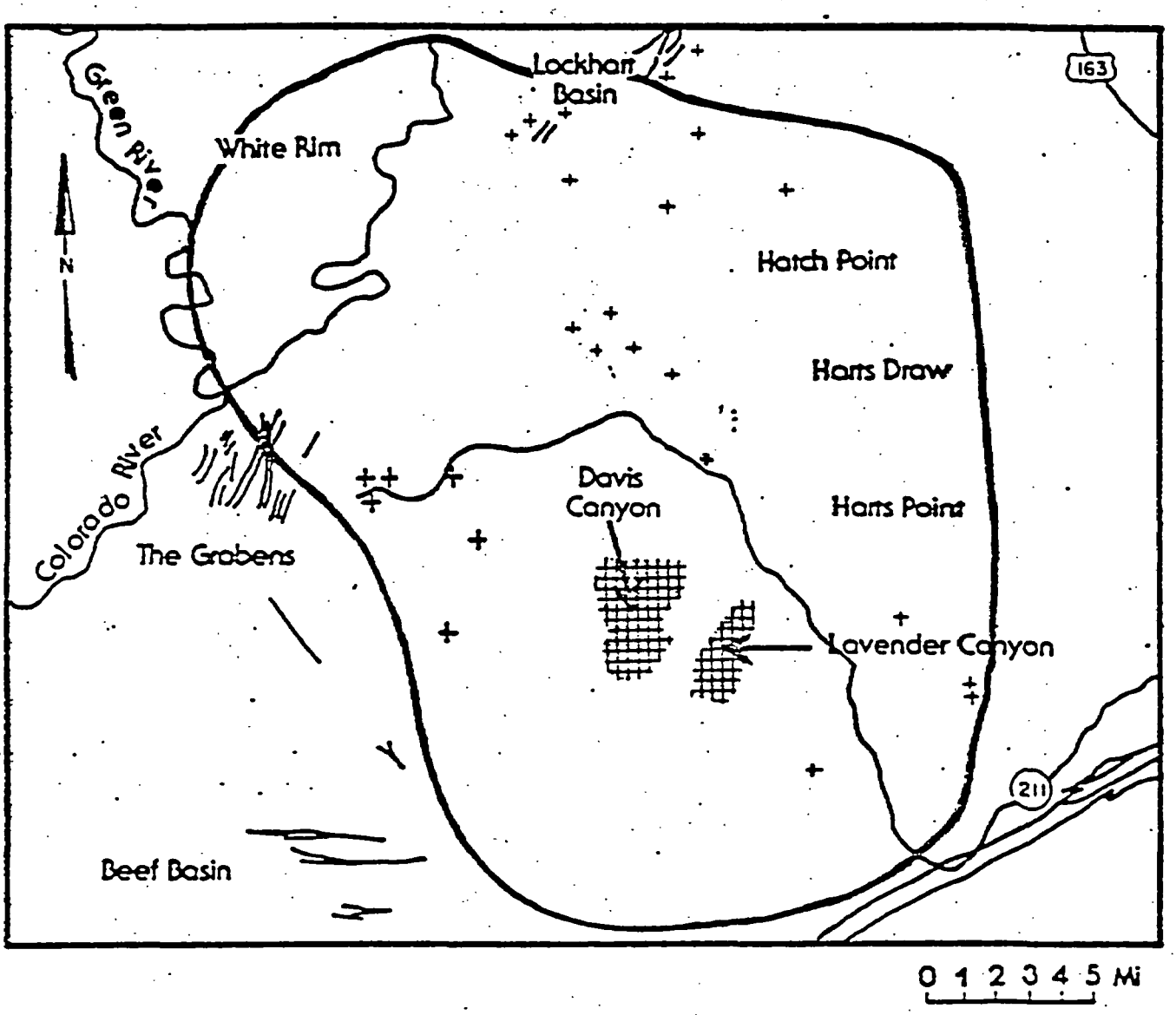
BATTELLE Project Management Division



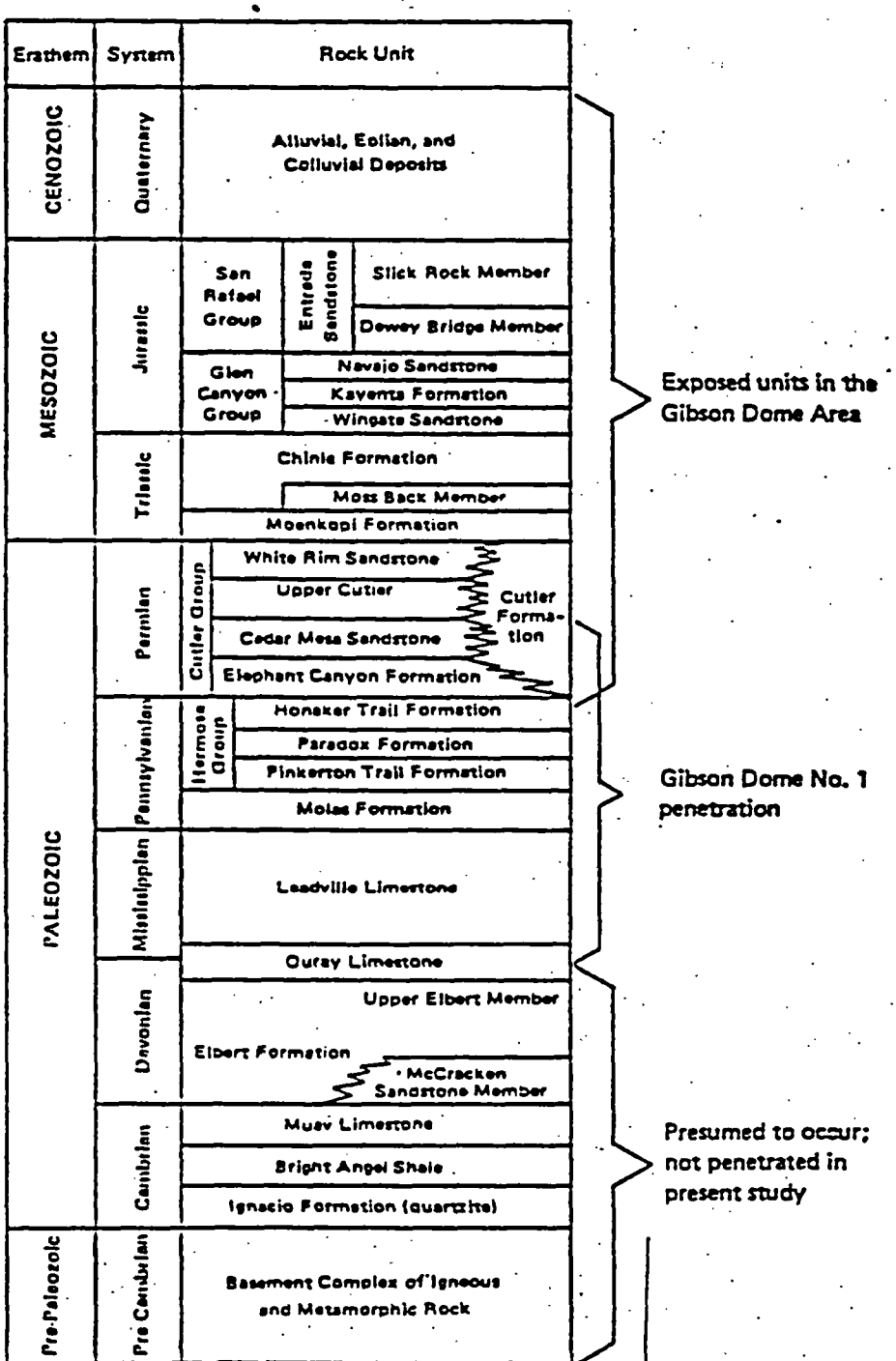
LOCATION MAP OF THE PARADOX BASIN (STUDY REGION)


N
Green River
Grand Junction
SALT VALLEY STUDY AREA
Crescent Junction
Colorado
Moab
Dolores
Uravan
GIBSON DOME STUDY AREA
LISBON VALLEY STUDY AREA
Monticello
Blanding
UTAH
COLORADO
ELK RIDGE STUDY AREA
Durango
ARIZONA
NEW MEXICO
EXPLANATION
Approximate location of zero thickness of saline facies (boundary of Paradox Basin Study Region)
0 10 20 30 40 Miles
0 10 20 30 40 km

Recommended Location for Further Study at Gibson Dome



STRATIGRAPHIC COLUMN
GIBSON DOME AREA



ONWI

FORMATION DEPTHS GD-1 BOREHOLE

ERATHEM	SYSTEM	FORMATION	DEPTH
PALEOZOIC	PERMIAN	White Rim Sandstone (Cutler Group)	Exposed
		Upper Cutler Formation (Organ Rock equivalent) (Cutler Group)	0-679 feet
		Cedar Mesa Formation (Cutler Group)	
		Elephant Canyon Formation (Cutler Group)	679-1,239 feet
	PENNSYLVANIAN	Hermosa Group — Honaker Trail Formation	1,239-2,618 feet
		Hermosa Group — Paradox Formation	2,618-5,507 feet
		Hermosa Group — Pinkerton Trail Formation	5,507-5,715 feet
		Molas Formation	5,715-5,861 feet
	MISSISSIPPIAN	Leadville Limestone	5,861-6,332 feet
		Ouray Limestone	6,332-6,384 feet
			Not penetrated
	DEVONIAN	Elbert Formation — Upper Elbert Member; McCracken Sandstone Member	Not penetrated
		Aneth Formation	Not penetrated

PERMIAN BASIN

PRINCIPAL GEOLOGIC SUBCONTRACTORS

CONTRACTOR	RESPONSIBILITY
STONE & WEBSTER ENGINEERING	PERMIAN BASIN GEOLOGIC PROJECT MANAGER--GATHERING, ANALYSIS, AND REPORTING GEOLOGIC DATA TO ADDRESS SITE GEOMETRY, GEOHYDROLOGY, GEOCHEMISTRY, TECTONIC ENVIRONMENT, AND HUMAN INTRUSION
TEXAS BUREAU OF ECONOMIC GEOLOGY (DOE PRIME)	TO PROVIDE INPUT TO SITE GEOMETRY, GEOHYDROLOGY, GEOCHEMISTRY, TECTONIC ENVIRONMENT, AND HUMAN INTRUSION
U.S. GEOLOGICAL SURVEY (DOE PRIME)	TO PROVIDE INPUT TO ROCK MECHANICS
ARIZONA STATE UNIVERSITY	TO PROVIDE INPUT TO GEOCHEMISTRY
BENDIX FEC	TO PROVIDE INPUT TO GEOCHEMISTRY
PACIFIC NORTHWEST LABORATORIES	TO PROVIDE INPUT TO GEOCHEMISTRY
K. S. JOHNSON, CONSULTANT	GENERAL GEOLOGY

ONWI

BATTELLE Project Management Division

PERMIAN BASIN MAJOR REPORTS

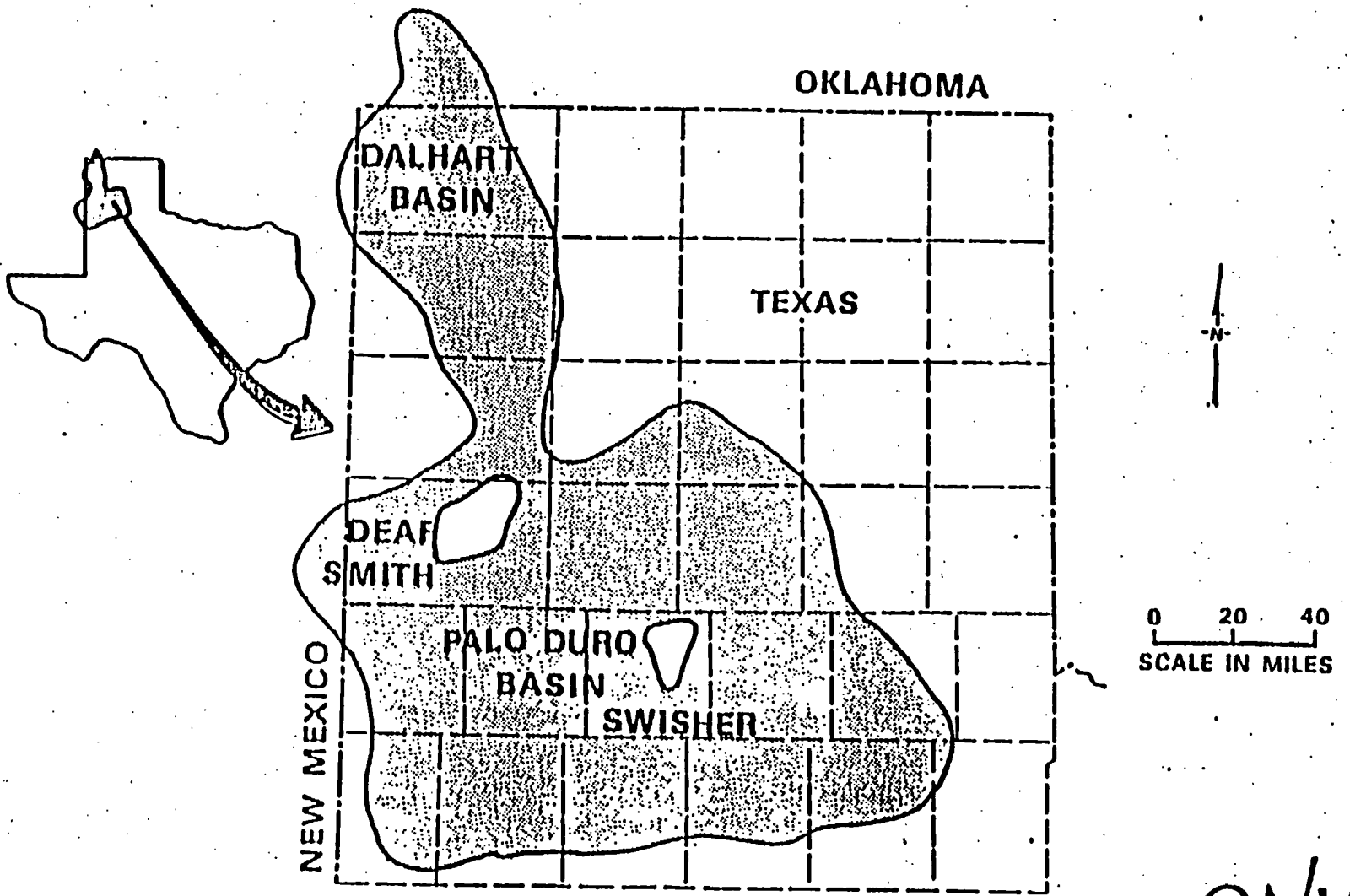
JOHNSON, K. S., AND GONZALES, S., 1970. SALT DEPOSITS OF THE UNITED STATES AND REGIONAL GEOLOGIC CHARACTERISTICS IMPORTANT FOR STORAGE OF RADIOACTIVE WASTE

* STONE & WEBSTER ENGINEERING. AREA GEOLOGIC CHARACTERIZATION REPORT - DALHART AND PALO DURO BASINS DOE/CH/10140-1 (AVAILABLE JUNE 1983)

ONWI

BATTELLE Project Management Division

GEOLOGIC EXPLORATION — PERMIAN BASIN



WEN: 2/7-8/83

ONWI
Office of Nuclear Waste Isolation
Battelle

STRATIGRAPHIC COLUMN
PERMIAN BASIN

SYSTEM	GROUP	FORMATION
QUATERNARY		RECENT FLUVIAL & LUCUSTRINE DEPOSITS
TERTIARY		OGALLALA
TRIASSIC	DOCKUM	
PERMIAN		DEWEY LAKE
		ALIBATES
	ARTESIA/WHITEHORSE	SALADO
		YATES
		SEVEN RIVERS
		QUEEN/GRAYBURG
		SAN ANDRES
	CLEAR FORK	GLORIETA
		UPPER CLEAR FORK
		TUBB
		LOWER CLEAR FORK
		RED CAVE
	WICHITA	
	WOLFCAMP	
PENNSYLVANIAN	UNNAMED SANDSTONE, CARBONATE, AND SHALE	
PRECAMBRIAN	UNDIFFERENTIATED RHYOLITE	

SALT BEARING

SYSTEMS FUNCTION

M. A. GLORA

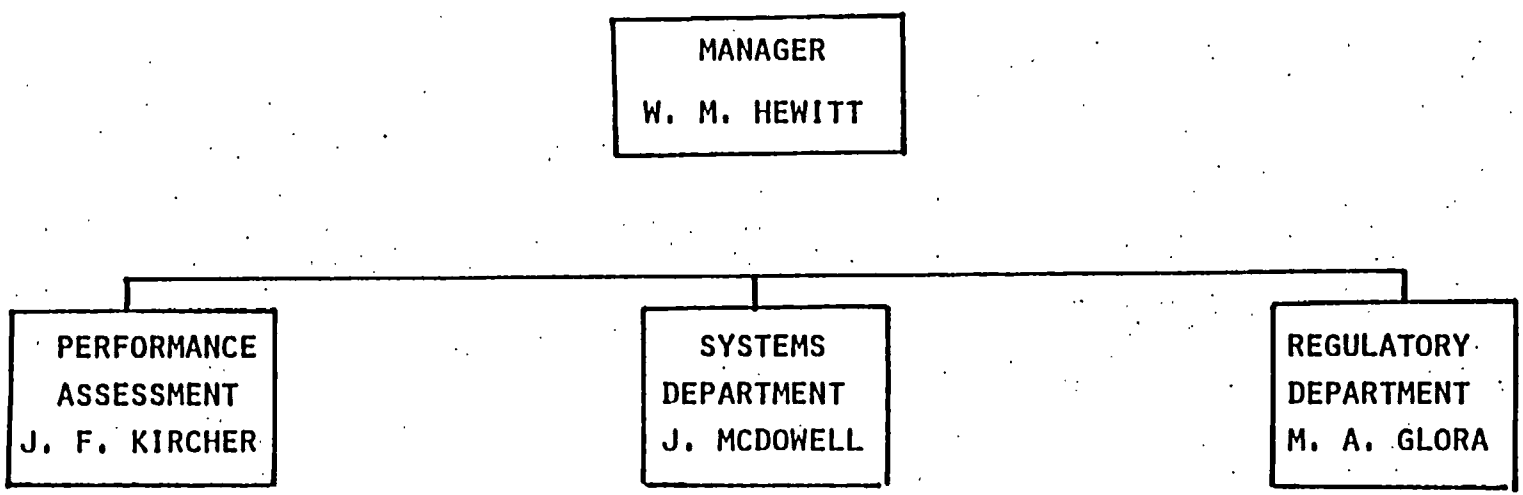
J. F. KIRCHER

ONWI

Project Management Division

MAG:4/19/83

SYSTEMS FUNCTION ORGANIZATION



ONWI

BATTELLE Project Management Division

MAG:4/19/83

SYSTEMS FUNCTIONAL RESPONSIBILITY

RESPONSIBLE FOR PLANNING, IMPLEMENTATION AND MANAGEMENT OF ACTIVITIES ASSOCIATED WITH PERFORMANCE ASSESSMENT, REGULATORY, AND TECHNICAL BASELINE DEVELOPMENT

PERFORMANCE ASSESSMENT DEPARTMENT

- CODE DEVELOPMENT AND DOCUMENTATION
  - NATURAL SYSTEM
  - ENGINEERED SYSTEM
- ANALYTICAL SUPPORT

REGULATORY DEPARTMENT

- LICENSE DOCUMENT PREPARATION
- SUPPORT DOE/NRC INTERACTIONS
- LICENSING BASELINE EVALUATION

SYSTEMS ENGINEERING DEPARTMENT

- PROGRAM IMPLEMENTATION CONSISTENCY
- DATA BASE MANAGEMENT

ONWI

BATTELLE Project Management Division

MAG:4/19/83

REGULATORY DEPARTMENT
RESPONSIBILITIES

- REGULATORY INTEGRATION
  - ONWI PROGRAM COMPLIANCE INTEGRATION
  - REGULATORY REVIEW
  - LICENSING ISSUE IDENTIFICATION
  - LICENSING PROCEDURES
  - NRC INTERACTION SUPPORT
- LICENSING
  - LEAD ONWI RESPONSIBILITY FOR LICENSING DOCUMENT PREPARATION (SCR/P, SAR, ER)
  - FORMAT AND CONTENT GUIDANCE
- SAFETY
  - SAFETY DEMONSTRATION STRATEGY
  - SUPPORT OR PROVIDE ANALYSES TO DEMONSTRATE SAFETY (RADIOLOGICAL, NONRADIOLOGICAL, ALARA)
  - SUPPORT RESOLUTION OF IDENTIFIED ISSUES AS REQUIRED
  - DEFINE AND COORDINATE INTEGRATED SAFETY ASSESSMENTS (ENGINEERED AND NATURAL SYSTEM ADEQUACY, OVERALL SYSTEM ADEQUACY)

ONWI

Project Management Division

MAG:4/19/83

REGULATORY DEPARTMENT

SUBCONTRACTORS

- EMPHASIS PLACED ON REVIEWING AND APPLYING DATA AND CONCEPTS GENERATED BY OTHER ONWI COMPONENTS AND DOE CONTRACTORS
  - BECHTEL GROUP, INC.
  - NUS
  - EBASCO

ONWI

BATTELLE Project Management Division

MAG:4/19/83

SYSTEMS ENGINEERING

ENGINEERING/INTEGRATION

- INTEGRATED SYSTEMATIC TECHNICAL DEVELOPMENT PROCESS
  - DEFINED/CONTROLLED BY SYSTEMS ENGINEERING MANAGEMENT PLAN (SEMP)
- CONTROLLED TECHNICAL BASELINE
  - CRITERIA, MAJOR ASSUMPTIONS, SPECIFICATIONS, PLANNING BASES
- CONTROLLED TECHNICAL DATA
  - KEY PARAMETRIC DATA, SUBJECT AREAS
  - OVERALL TECHNICAL DATA MANAGEMENT SYSTEM
- SYSTEM REQUIREMENTS/SPECIFICATION

ANALYSES

- SITE SELECTION COMPARATIVE ANALYSES
- REQUIREMENTS ANALYSES
- OPERATIONAL ANALYSES
- TRADE STUDIES

ONWI

BATTELLE Project Management Division

MAG:4/19/82

SYSTEMS ENGINEERING
AVAILABLE DOCUMENTATION

- NWTS/ONWI 33 SERIES DOCUMENT INTEGRATION INTO ONWI PROGRAM BASELINE

  - NWTS-33(1)
    PROGRAM OBJECTIVES, FUNCTIONAL REQUIREMENTS, AND SYSTEM PERFORMANCE CRITERIA

  - NWTS-33(2)
    SITE PERFORMANCE CRITERIA

  - NWTS-33(3)
    REPOSITORY PERFORMANCE AND DEVELOPMENT CRITERIA

  - NWTS-33(4A)
    FUNCTIONAL REQUIREMENTS AND PERFORMANCE CRITERIA FOR WASTE PACKAGES FOR SOLIDIFIED HIGH-LEVEL WASTE AND SPENT FUEL

ONWI

PERFORMANCE ASSESSMENT

J. F. KIRCHER

APRIL 1983

ONWI
Office of Nuclear Waste Isolation
BATTELLE Project Management Division

SCOPE OF PERFORMANCE ASSESSMENT ACTIVITIES

- OVER 50% OF WORK BEING PERFORMED IN-HOUSE BY ONWI INCLUDING CUSTODIANSHIP OF ALL CODES
- METHODOLOGY DEVELOPMENT ACTIVITIES
  - SELECTION AND EVALUATION OF EXISTING CODES
  - MODIFICATION AND IMPROVEMENT OF EXISTING CODES
  - DEVELOPMENT OF NEW CODES AND MODELS
  - VERIFICATION OF COMPUTER CODES
  - VALIDATION OF MATHEMATICAL MODELS
  - DOCUMENTATION IN CONFORMANCE WITH NRC GUIDELINES
  - PEER REVIEW AND ACCEPTANCE OF CODES AND MODELS
- PRECLOSURE ASSESSMENTS
  - RADIOLOGICAL AND NONRADIOLOGICAL
  - FOR ACCIDENTS AND NORMAL OPERATION
  - FOR PUBLIC AND WORKERS' HEALTH AND SAFETY
- POSTCLOSURE ASSESSMENTS
  - RADIOLOGICAL
  - FOR LONG-TERM PROCESSES AND SHORT-DURATION EVENTS
  - FOR PUBLIC HEALTH AND SAFETY

ONWI

BATTELLE Project Management Division

FY 83 PERFORMANCE ASSESSMENT SUBCONTRACTORS

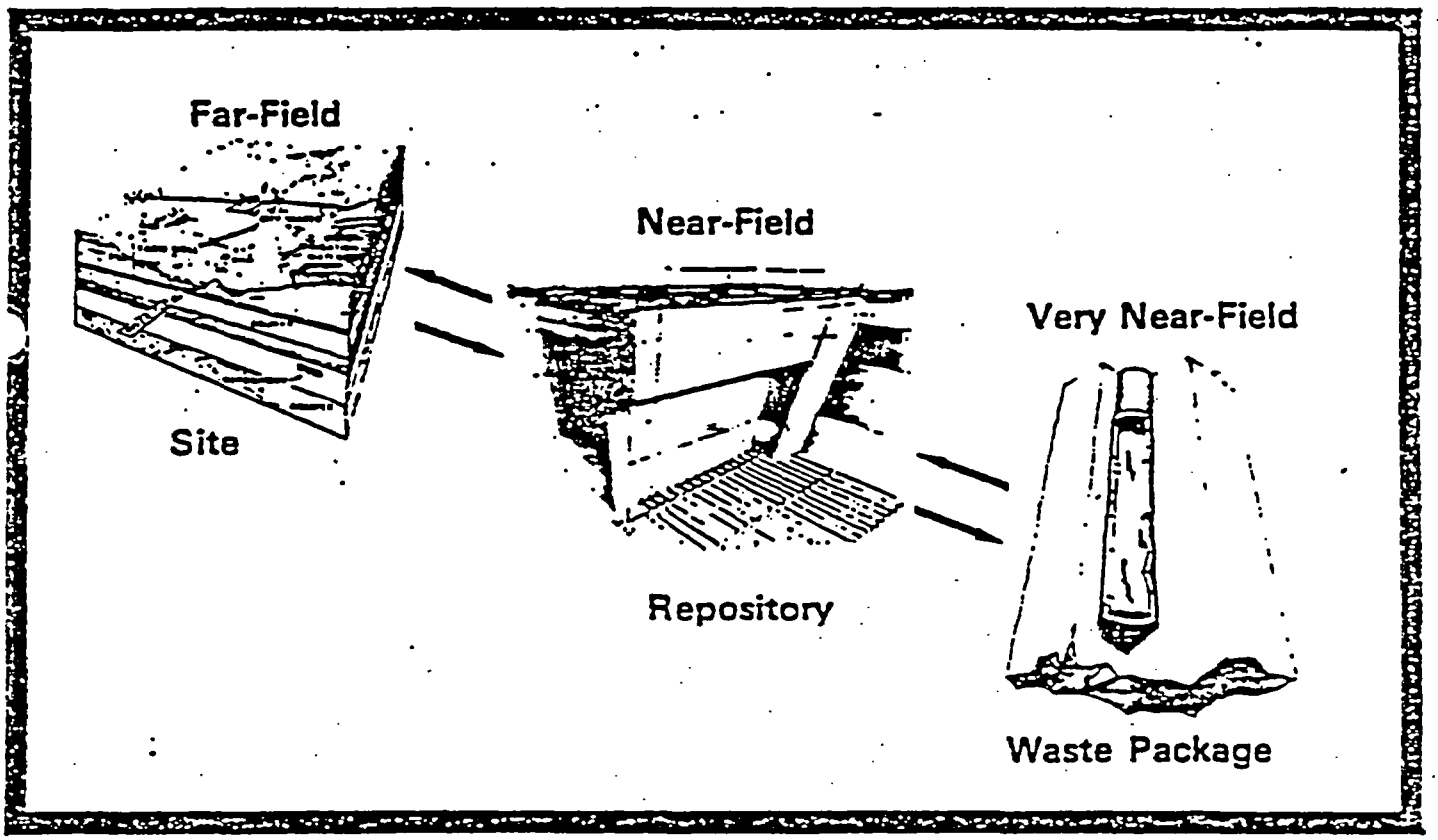
NAME	SCOPE OF WORK
INTERA ENVIRONMENTAL CONSULTANTS	PA METHODOLOGY IMPROVEMENTS, VALIDATION AND DOCUMENTATION
	SENSITIVITY AND UNCERTAINTY METH. DEVELOPMENT
	ENGINEERING SYSTEMS PERFORMANCE ASSESSMENT
	SITE PERFORMANCE ASSESSMENT
OAK RIDGE NATIONAL LABORATORY	DEMONSTRATION OF ADJOINT UNCERTAINTY ANALYSIS TECHNIQUES
PACIFIC NORTHWEST LABORATORY	GEOSTATISTICAL UNCERTAINTY ANALYSIS
	BASELINING AND BENCHMARKING SALT SITE CODES
BATTELLE COLUMBUS LABORATORIES	TECHNICAL ASSISTANCE ON ADJOINT UNCERTAINTY ANALYSIS TECHNIQUES
	COMPUTER PROGRAMMING ASSISTANCE

ONWI

BATTELLE Project Management Division

ONWI

Preliminary Performance Assessment Plan for a Nuclear Waste Repository in Salt

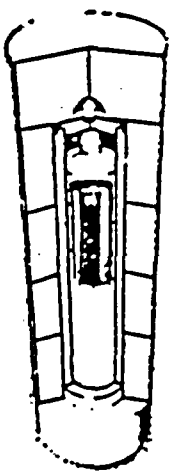


Performance Assessment Department
Office of Nuclear Waste Isolation
Battelle Project Management Division
Columbus, Ohio

TO BE ISSUED IN FY 83

Performance Assessment Measures

- Effective Confinement Period Provided by Structures and Barriers
- Annual Radionuclide Transport Release Rates Not to Exceed One Part in 100,000 in Undeground Facility After 1,000 Years



Detailed Individual Process Analyses for Waste Package Performance Assessment

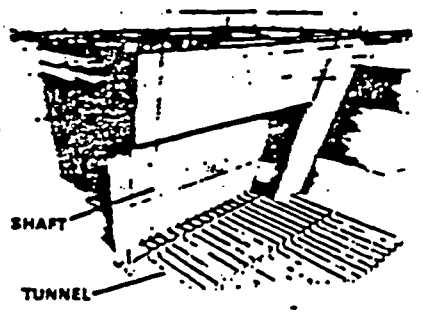
- Waste Package Thermal Boundary Analyses
- Temperature Analyses Within Waste Package Components
- Waste Package Thermomechanical Stress Boundary Analyses
- Stress and Strain in Various Components of Waste Package
- Geochemical Reactions Affecting the Waste Package
- Corrosion of Metallic Canister and Overpack
- Fluid Flow in the Vicinity of the Waste Package
  - Brine Migration
  - Convective Currents
  - Others
- Radionuclide Leach Rate From Waste Form and Release Rate From the Waste Package

Detailed Individual Process Analyses for Waste Package Performance Assessment

Performance Assessment Plan

Radionuclides Release

Taking Into Account the Effects of Heat, Mechanical Stress, and Chemical Reactions Within Engineering System, Host Rock and Site Should Provide Adequate Isolation for at Least 10,000 Years with Acceptable Isolation Beyond that Time



Artist's Concept of a Geologic Repository

Proposed Analyses for Repository Subsystem Performance Assessment

2.1 Assessment of Thermal Environment

2.2 Thermomechanical Response in the Repository Regime

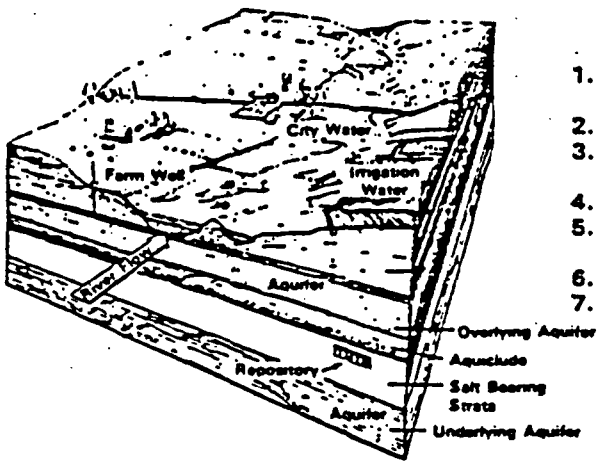
2.3 Fluid Flow Conditions in the Repository Regime

2.4 Geochemical Reactions Affecting Radionuclide Transport in the Repository Regime

2.5 Radionuclide Transport Within Repository Regime

Proposed Analysis for Repository
Subsystem Performance Assessment

Analyses Proposed for Site Subsystem Assessment



1. Site Data Compilation, Evaluation and Geostatistical Analyses
2. Ground-Water Flow Rate and Hydrologic Budget
3. Geochemical Reactions Affecting Radionuclide Transport in Site Domains
4. Radionuclide Transport from Repository Boundary to Biosphere
5. Radiation Doses to Human Through Various Environmental Pathways
6. Long-Term Natural Processes and Events
7. Evaluation of Potential Human Interference

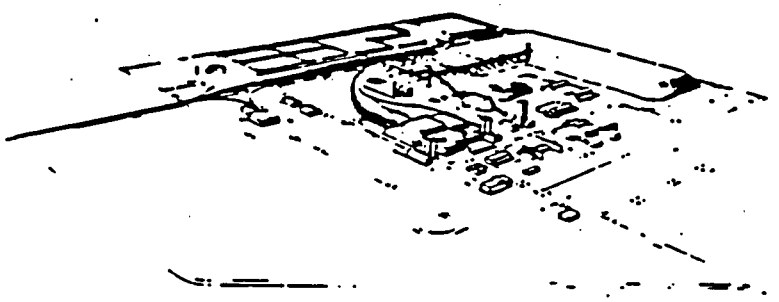
Performance Measures

Ground-Water and Radionuclide Travel Times and Rates From Repository to Accessible Environment

Analyses Proposed for Site Subsystem Assessment

Performance Measures

1. Occupational Exposures
2. Maximum Exposed Individual and Population



Normal Operations

1 Occupational Radiological Exposures From Normal Operations

2 Maximum Exposed Individual and Population (Environmental) Radiological Doses From Normal Operations

Accidents

3 Occupational Radiological Exposures From Accidents

4 Maximum Radiological Exposed Individual and Population (Environmental) Doses From Accidents

Operational Phase Radiological Safety
Performance Assessment Plan

COMPUTER TAPES AND DOCUMENTATION*
TRANSMITTED TO
USNRC (JAMES A. SHIELDS)
ON 4/30/81

PATHS
VTT
FE3DGW
MMT
PABLM

---

* THE SELECTION PROCESS WAS NOT COMPLETED AT TIME OF TRANSMITTAL. PATHS AND VTT ARE NOT NOW INCLUDED IN THE SUITE OF CODES OF INTEREST IN THE SALT PROGRAM.

ONWI

COMPUTER CODE DOCUMENTATION
REPORTS EXPECTED BACK
FROM PRINTERS IN APRIL 1983

DACRIN	ONWI-431
DOT	ONWI-420
FFSM	ONWI-436
FTRANS	ONWI-426
GEOTHER	ONWI-434
GETOUT	ONWI-433
GSM	ONWI-447
MATLOC	ONWI-421
MMT	ONWI-432
NETFLO	ONWI-425
PABLM	ONWI-446
PHREEQE	ONWI-435
SALT4	ONWI-429
STAFAN	ONWI-427
STFLO	ONWI-428
SWENT	ONWI-457
UTAH2	ONWI-430
VERTPAK-1	ONWI-451
VISCOT	ONWI-437
WAPPA	ONWI-452

ONWI

OTHER REPORTS ON GENERIC SALT SITE

AND SYSTEM PERFORMANCE ASSESSMENT METHODOLOGY APPLICATIONS

JAN 1980	PNL-2782	TEST CASE RELEASE CONSEQUENCE ANALYSIS FOR A SPENT FUEL REPOSITORY IN BEDDED SALT
DEC 1980	PNL-3356	AN ANALYSIS ON THE USE OF ENGINEERED BARRIERS FOR GEOLOGIC ISOLATION OF SPENT FUEL IN A REFERENCE SALT SITE REPOSITORY
DEC 1980	PNL-3548	SUMMARY OF FOUR RELEASE CONSEQUENCE ANALYSES FOR HYPOTHETICAL NUCLEAR WASTE REPOSITORIES IN SALT AND GRANITE
JUN 1981	ONWI-320(1)	PRELIMINARY EVALUATION OF SOLUTION-MINING INTRUSION INTO A SALT DOME REPOSITORY
AUG 1981	PNL-3530	A REFERENCE ANALYSIS ON THE USE OF ENGINEERED BARRIERS FOR ISOLATION OF SPENT NUCLEAR FUEL IN GRANITE AND SALT

ONWI

Project Management Division

METHODOLOGY APPLICATIONS, CONT'D

JUN 1982	PNL-2955	REFERENCE SITE INITIAL ASSESSMENT FOR A SALT DOME REPOSITORY
SEP 1982	PNL-4129	A TECHNOLOGY DEMONSTRATION: GEOSTATISTICAL AND HYDROLOGIC ANALYSIS OF SALT AREAS
FEB 1983	ONWI-286	ENGINEERED COMPONENTS FOR RADIOACTIVE WASTE ISOLATION SYSTEMS--ARE THEY TECHNICALLY JUSTIFIED?

ONWI

BATTELLE Project Management Division

NPO/ONWI SCR PROGRAM

R. W. WUNDERLICH

M. A. GLORA

ONWI

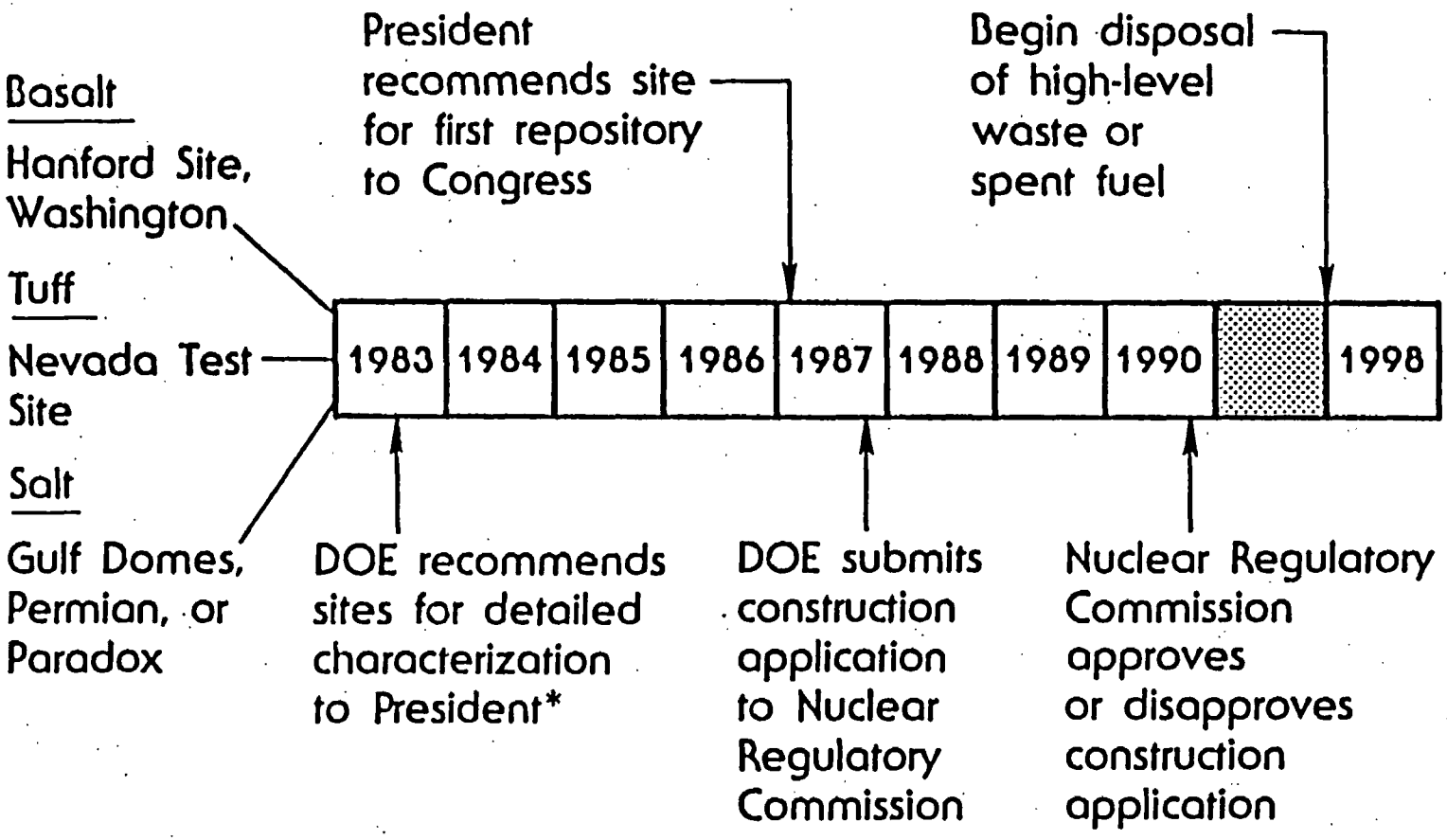
BATTELLE Project Management Division

NPO/ONWI SCR PROGRAM

- WASTE LEGISLATION
- SCHEDULES
- SITING GUIDELINES

RW/NPO:4/20/83

Schedule for First Repository



Steps in Selecting the First Repository Site

- DOE develops guidelines for recommending sites—draft guidelines issued 2/7/83.
- DOE nominates at least 5 sites as suitable for characterization.
- DOE prepares environmental assessments for 5 sites.
- DOE recommends to the President at least 3 of the 5 sites for detailed site characterization and prepares site characterization plans.
- DOE characterizes at least 3 sites, including construction of exploratory shafts.
- DOE prepares environmental impact statement and site characterization report as part of site recommendation.
- DOE recommends at least one site from those characterized to the President.
- The President recommends repository site to Congress by 3/31/87.*
- DOE applies to Nuclear Regulatory Commission (NRC) for repository construction authorization.
- The NRC makes decision on first license application by 6/30/90.*
- Repository operation begins by 1/31/98.

REPOSITORY SCHEDULE

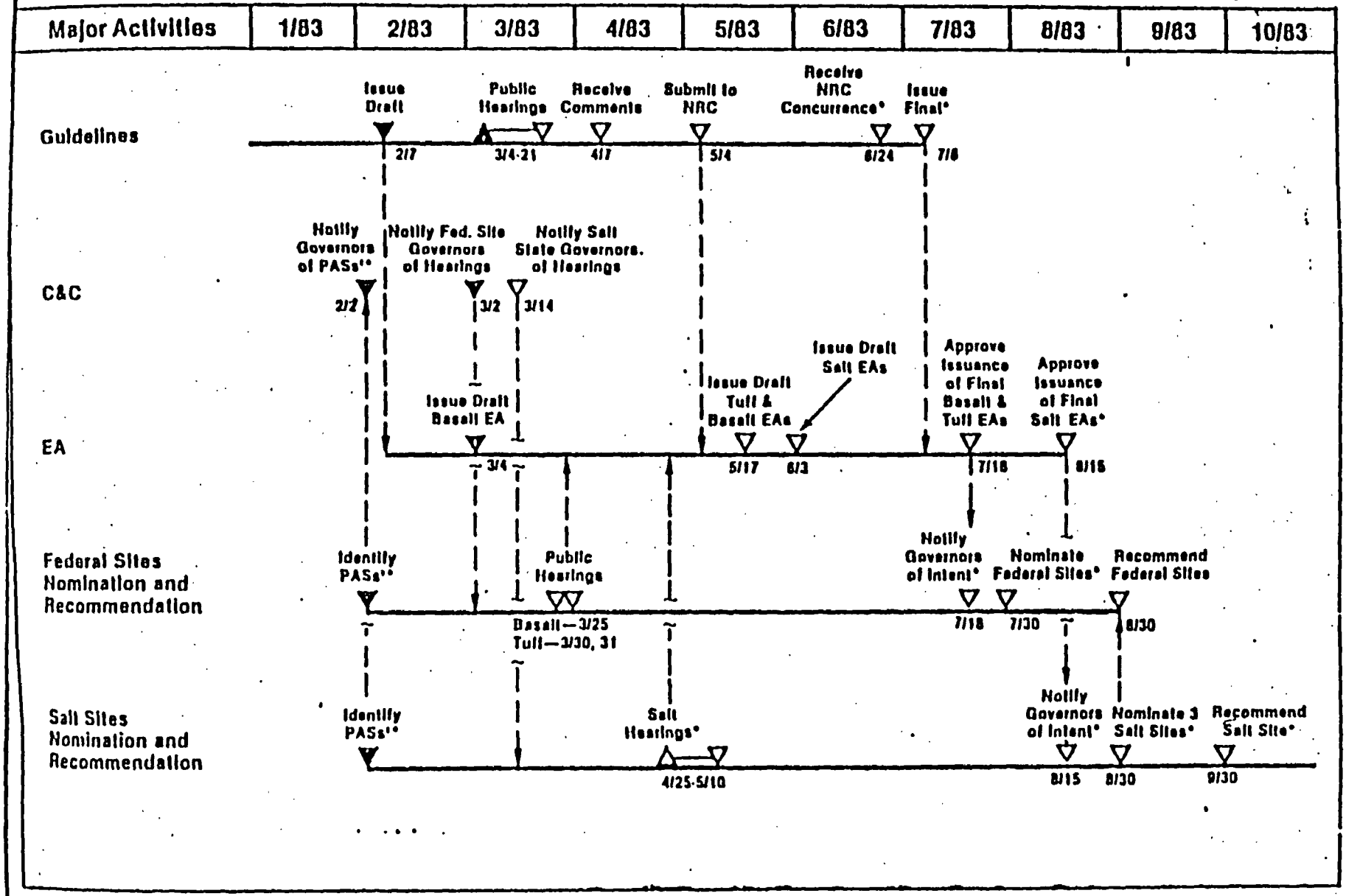
PHASE I - LEGISLATION ENACTMENT TO NOMINATION

PHASE II - NOMINATION TO EXPLORATORY SHAFT BREAK-OUT

PHASE III - EXPLORATORY SHAFT BREAK-OUT TO REPOSITORY SITE SELECTION

RW/NPO:4/20/83

PHASE I
FIRST REPOSITORY—RECOMMENDATION FOR CHARACTERIZATION



April 4, 1983

△ — Start

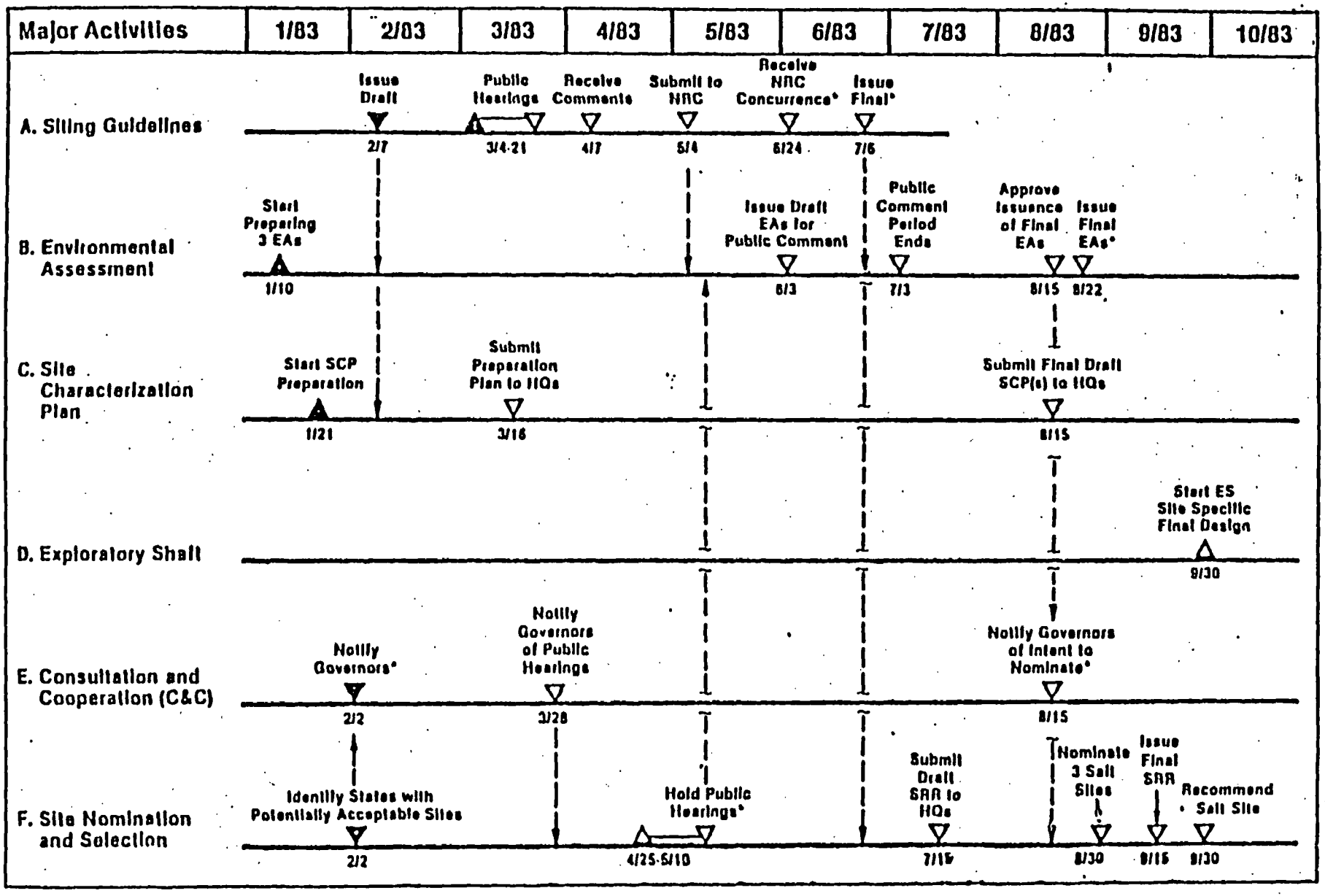
▽ — Complete

• — Statutory Requirement

▼ — Actual

'Potentially Acceptable Sites (PAS)

PHASE I
SALT—LEVEL I



April 4, 1983

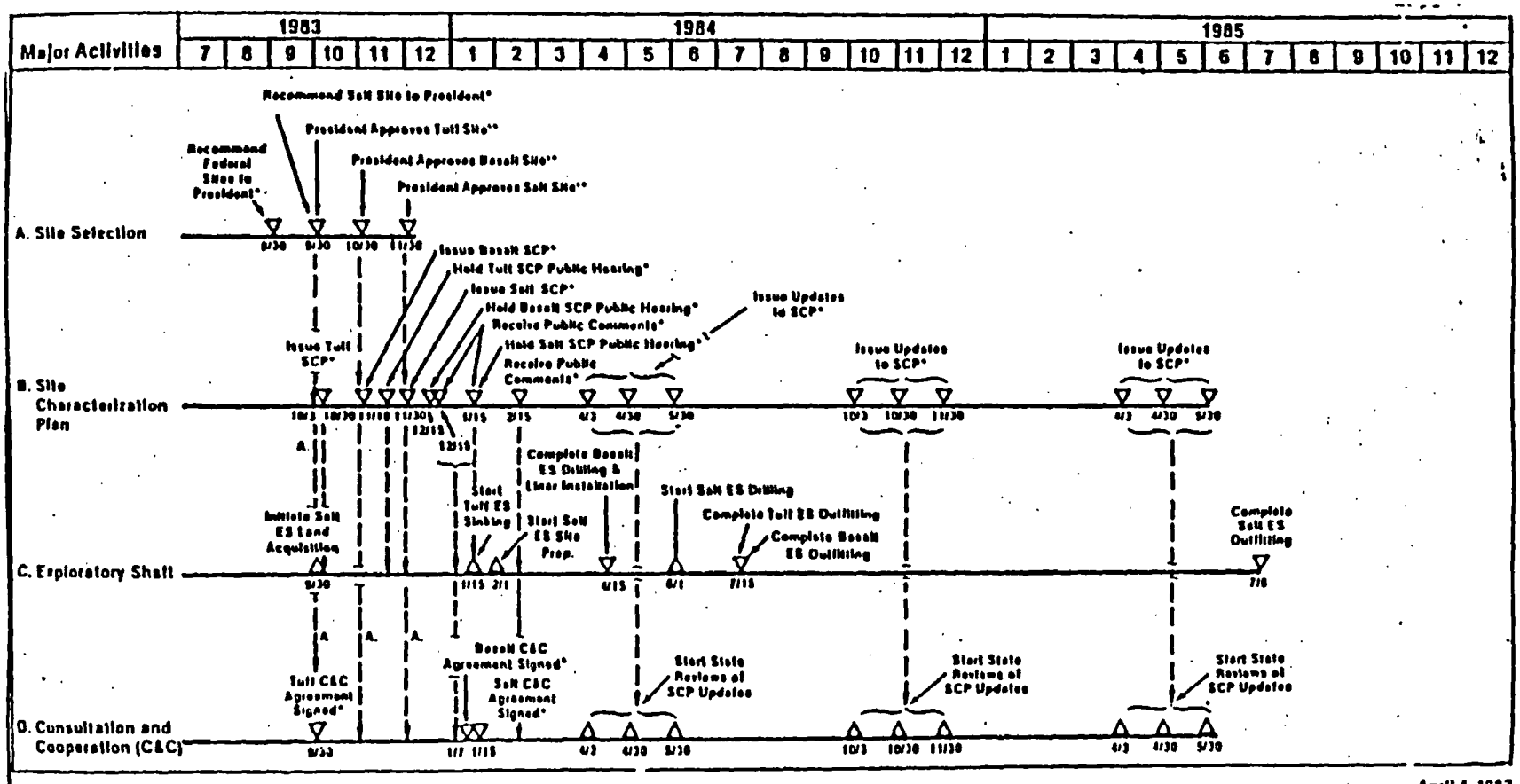
△ — Start

▽ — Complete

• — Statutory Requirement

▼ — Actual

PHASE II
FIRST REPOSITORY—COMPLETION OF EXPLORATORY SHAFTS



April 4, 1983

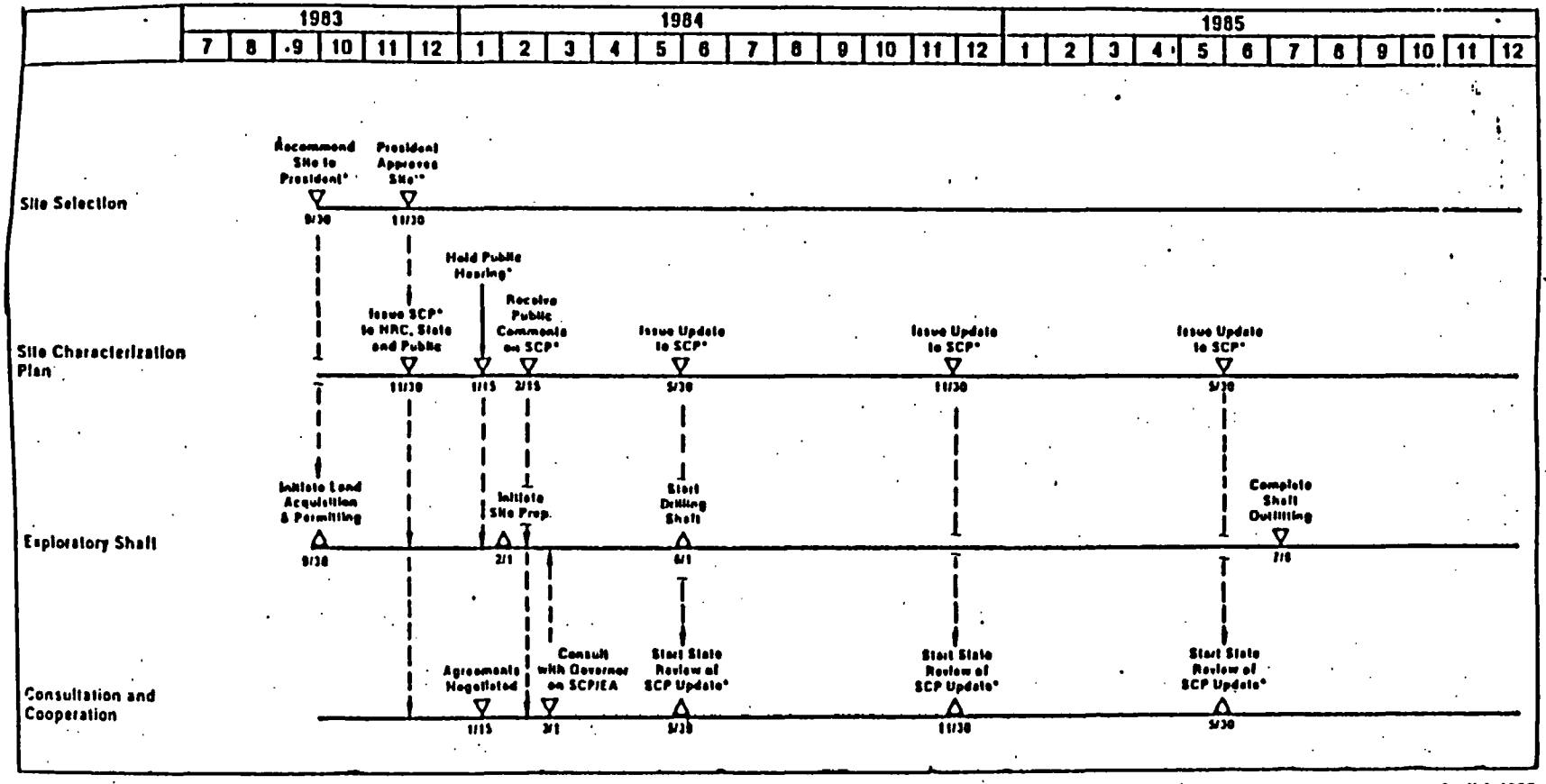
Δ — Start

∇ — Complete

• — Statutory Requirement

*Assumes President Does Not Delay or Disapprove Site.

PHASE II
SALT—LEVEL I



April 4, 1983

Δ — Start

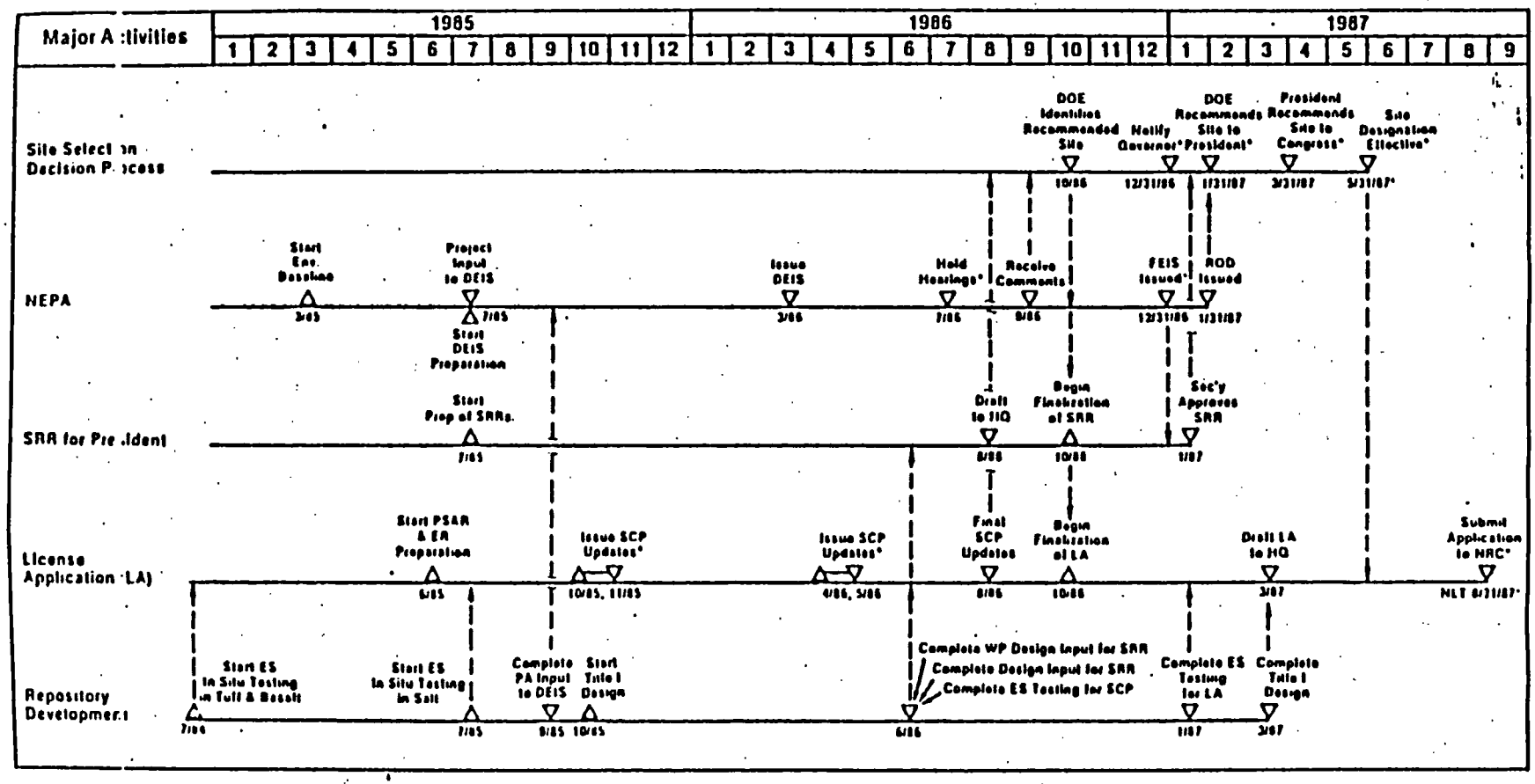
▽ — Complete

• — Statutory Requirement

▼ — Actual

*Assumes President Does Not Delay or Disapprove Site.

PHASE III
FIRST REPOSITORY—SITE SELECTION AND SUBMISSION OF LA



△ — Start

▽ — Complete

• — Statutory Requirement

▼ — Actual

April 4, 1983

*Assumes No State Objection

ONWI/NPO SCR/SCP PROGRAM

REGULATORY GUIDE 4.17

ONWI

Battelle Project Management Division

MAG:4/19/83

ONWI/NPO SCR/SCP STRATEGY

- SCR REPRESENTS LEGISLATED SITE CHARACTERIZATON PLAN WHEN SUPPLEMENTED
  - DECONTAMINATION AND DECOMMISSIONING
- MAXIMUM USE OF REFERENCES TO BE MADE TO ADDRESS NWPA REQUIREMENTS
  - EA'S
  - TOPICAL REPORTS
  - PROGRAMMATIC REPORTS
- REGULATORY GUIDE 4.17 FORMAT
  - USE OF APPENDICES (TYPICAL DECONTAMINATION AND RESTORATION, PERFORMANCE ASSESSMENT PLAN)

ONWI

[illegible] Project Management Division

MAG:4/19/83

SCR/NWPA COMPARISON

NWPA SEC. 113(B)(1)		SCR SECTIONS
(A) (i)	A DESCRIPTION OF CANDIDATE SITE	3.0 - 7.0
(ii)	A DESCRIPTION OF SUCH SITE CHARACTERIZATION ACTIVITIES INCLUDING THE FOLLOWING:	10.3 - 10.5
	• THE EXTENT OF PLANNED EXCAVATIONS	10.3 - 10.5
	• PLANS FOR ANY ON SITE TESTING WITH RADIOACTIVE OR NONRADIOACTIVE MATERIAL	10.3 - 10.5
	• PLANS FOR ANY INVESTIGATION ACTIVITIES THAT MAY AFFECT THE CAPABILITY OF SUCH CANDIDATE SITE TO ISOLATE HIGH-LEVEL RADIOACTIVE WASTE AND SPENT NUCLEAR FUEL, AND	10.3 - 10.5
	• PLANS TO CONTROL ANY ADVERSE, SAFETY-RELATED IMPACTS FROM SUCH SITE CHARACTERIZATION ACTIVITIES.	9.5
(iii)	PLANS FOR THE DECONTAMINATION AND DECOMMISSIONING OF SUCH SITE, AND FOR THE MITIGATION OF ANY SIGNIFICANT ADVERSE ENVIRONMENTAL IMPACTS CAUSED BY SITE CHARACTERIZATION ACTIVITIES, IF IT IS DETERMINED UNSUITABLE FOR APPLICATION FOR A CONSTRUCTION AUTHORIZATION FOR A REPOSITORY	APP.

ONWI

BATTELLE Project Management Division

MAG:4/19/83

SCR/NWPA COMPARISON, CONTINUED

		SCR SECTIONS
(iv)	CRITERIA TO BE USED TO DETERMINE THE SUITABILITY OF SUCH CANDIDATE SITE FOR THE LOCATION OF A REPOSITORY DEVELOPED PURSUANT TO SECTION 112(a)	2.5
(v)	ANY OTHER INFORMATION REQUIRED BY THE COMMISSION	RG 4.17
(B)	A DESCRIPTION OF THE POSSIBLE FORM OR PACKAGING FOR THE HIGH-LEVEL RADIOACTIVE WASTE AND SPENT NUCLEAR FUEL TO BE EMPLACED IN SUCH REPOSITORY, A DESCRIPTION, TO THE EXTENT PRACTICABLE, OF THE RELATIONSHIP BETWEEN SUCH WASTE FORM, OR PACKAGING AND THE GEOLOGIC MEDIUM, OF SUCH SITE, AND A DESCRIPTION OF THE ACTIVITIES BEING CONDUCTED BY THE SECRETARY WITH RESPECT TO SUCH POSSIBLE WASTE FORM OR PACKAGING OR SUCH RELATIONSHIP, AND	9.0
(C)	A CONCEPTUAL REPOSITORY DESIGN THAT TAKES INTO ACCOUNT LIKELY SITE SPECIFIC REQUIREMENTS.	8.0

ONWI

BATTELLE Project Management Division

MAG:4/19/83