106/SRG/84/12/20

- 1 -

DEC 20 1984

Distribution
WM s/f 3106
WMRP r/f
NMSS r/f
CF
REBrowning
MJBell
JOBunting
HJMiller
JLinehan
MRKnapp
LBarrett
JKennedy
SCoplan
RBoyle
RJWright
RJohnson
RCook
PPrestholt
TVerma
JGiarratana
PDR
SGrace & r/f
JPearring
FRoss
BCooke
BFord
LPDR

Mr. Jefferson O. Neff, Program Manager
Salt Repository Project Office
U.S. Department of Energy
505 King Avenue
Columbus, OH 43201-2693

Dear Mr. Neff:

Enclosed in this letter are the worksheets from the Hydrology Data Review held on May 14-17, 1984, and the Rock Mechanics Data Review held on August 21-24, 1984, in the SRPO offices in Columbus, Ohio. These worksheets consist of data inventory sheets, document review sheets and data review checklists. They document the data and reports which our staff and contractors reviewed during the course of the data reviews. At this time we have no additional observations to make other than those already included in the minutes of the data reviews and on the worksheets. As you are aware, NRC's data reviews are part of our staff preparation to review the draft EAs for salt. Therefore, observations collected during the data reviews will be combined with other review results in developing comments on the EAs and their supporting information.

If you have any questions regarding these worksheets please call Robert Johnson on 427-4785; Fred Ross on 427-4539 for hydrology data questions; or Jerry Pearring on 427-4686 for rock mechanics data questions.

Sincerely,

[redacted]

John J. Linehan, Section Leader
Repository Projects Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

WM Record File 106
WM Project 16
Docket No.
PDR ✓
LPDR ✓

Distribution:

(Return to WM, 623-SS)

OFC	:WMRP:ejc	:WMRP	:WMRP	:	:	:	:
NAME	:SGrace	:RJohnson	:JLinehan	:	:	:	:
DATE	:12/ /84	:12/ /84	:12/ /84	:	:	:	:

821

Enclosures:
1. Hydrology Data Review Worksheets
2. Rock Mechanics Data Review Worksheets
   a) Summary Data Inventory Sheets
   b) WMEG and WMGT Document Review Sheets
   c) Draft Rock Mechanics Data Review Checklists

cc: T. Verma
L. Casey
R. Forsythe, MISS
J. Friloux, LA
L. Hare, UT
S. Frishman, TX
A. LaSala, USGS

OFC	:WMRP:ejc	:WMRP RCJ	:WMRP RCJ	:	:	:	:
NAME	:SGrace SRG	:RJohnson	for :JLinehan	:	:	:	:
DATE	:12/20/84	:12/20/84	:12/20/84	:	:	:	:

Enclosure 1
12/20/84
G. Sinclair

Enclosure 1

NRC Hydrology Data Review Worksheets

May 14-18, 1984

PERMIAN BASIN

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Stone & Webster Eng. Corp., Formation Pressure Data File — Palo Duro Basin, Texas and New Mexico: Unanalyzed Data, Tech Report 1984

1a. Is this ~~interim~~ or final form? (Circle one)

1b. Is this ultimately intended for ~~internal~~ DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?
NA

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/17/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Drill Stem test inventory, See attached data sheets

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Palo Duro Basin Texas

(b) Subsurface location: (depth; formation)
—

Method of collection/analyses: (short description of method/analyses)
literature

Amount of data: (Describe - if extensive attach data listing or table)
9/8 tests

Data sources: (organization responsible)

Data documented: (reference citation)

Data storage location: (specific location)
Battelle + Stone + Webster Eng. Corp.

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Ogallala Aquifer Mapping Program Topical Report Revision 1
ONWI/SUB/83/E512-05000-T16 Oct 1983

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: GERRY WINTER
Date: 5-17-84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Groundwater

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Texas, includes Deaf Smith & Swisher Counties (17 counties)

(b) Subsurface location: (depth; formation)
Ogallala

Method of collection/analyses: (short description of method/analyses)
Water-well records & on-going monitoring programs

Amount of data: (Describe - if extensive attach data listing or table)
32 pages of well summary output

Data sources: (organization responsible)
Stone & Webster Eng. Co.

Data documented: (reference citation)
Reference list attached to report

Data storage location: (specific location)
ONWI

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)
None noted

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
TP 83-133 Modeling the Deep Basin Hydrogeology of a Potential High Level Radwaste Site in Texas (by P.D. Smith)
B3-S31130I-365

1a. Is this in draft or (final) form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or (general publication)? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: Roy Z Williams
Date: 5/17/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
B3 - 5311301 - 365 modeling the Deep Basin Hydrogeology of a Potential High Level Radwaste Site in Texas (a paper presented at 1983 mtg of Assoc of Engineering Geologist).

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Palo Duro Basin Scale

(b) Subsurface location: (depth; formation)
Surface to Basement

Method of collection/analyses: (short description of method/analyses)
Finite element flow models of cross sections through basin calibrated against heads from Drill Stem Tests.

Amount of data: (Describe - if extensive attach data listing or table)

Data sources: (organization responsible)
SWEC - Preprint for paper presented at 1983 mtg of AEG, San Diego

Data documented: (reference citation)

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)
Last paragraph, Page 5 states that entire Palo Duro Basin is undercompacted, ie, PVa depth data plot below hydrostatic pressure 45° straight line. This is almost impossible to achieve outside oil fields. Perhaps all data are affected by oil fields? Or perhaps Phil Smith is confusing pressure data with head data. This should be resolved because if these data are misinterpreted it is apparent that one might conclude erroneously that the salt sequence (between Wolfcamp and Dockum) is a confining layer. Last Pg 10 says the DST pressures are too low because the shut in times were too short for equilibration.

Permian

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Harman #2, Summary Table, drill stem Test and Analysis

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

NA

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/17/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)

Schlumberger Drill Stem Test

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

(b) Subsurface location: (depth; formation)

Method of collection/analyses: (short description of method/analyses)

Amount of data: (Describe - if extensive attach data listing or table)

Data sources: (organization responsible)

Schlumberger

Data documented: (reference citation)

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Pump test and Chem Sampling Report Sample No. 1 Well

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

I have done a check analysis on this test
AG

Name: A Brown
Date: 4/10/86

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
SANDIA ZONE PRESSURE TEST DATA

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
DELAWARE

(b) Subsurface location: (depth; formation)
SALADO & CASTILE 4285-6362'

Method of collection/analyses: (short description of method/analyses)
SAMPLING TEST

Amount of data: (Describe - if extensive attach data listing or table)
2 WELL PRESSURE DATA @ 5 MINUTE INTERVALS

Data sources: (organization responsible)
SNL

Data documented: (reference citation)

Data storage location: (specific location) SNL

Reported Qualifications: (Qualifications or uncertainties included in data document)
NO FLOW DATA

NRC Concerns: (Potential NRC concerns for further consideration)

NO FLOW DATA

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Buried faults in northern Palo Duro Basin Sketch 136 87-37-C

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES (NO)
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: Roy E Williams

Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Inferred faults in northern Palo Duro Basin

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Deaf Smith and Vicinity Counties

(b) Subsurface location: (depth; formation)
Red Cave through upper Clark Fork

Method of collection/analyses: (short description of method/analyses)
Mapping of faults from outcrops + logs

Amount of data: (Describe - if extensive attach data listing or table)

NA

Data sources: (organization responsible)

SWEC

Data documented: (reference citation)

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)
Inferred

NRC Concerns: (Potential NRC concerns for further consideration)

Too few data points

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Sketch 13697-36-A-2 Thickness / ~~Isop~~ Thick salt fnd in <SA 4 <SA

1a. Is this in draft or final ~~form~~? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use ~~or general~~ publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: Roy E Williams

Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Isopach map of a salt bed. Computer run S464CTBI, 12/1/83
Plot / Sketch 13697-36-A-2

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Deaf Smith county

(b) Subsurface location: (depth; formation)
San Andres

Method of collection/analyses: (short description of method/analyses)
Drill hole core + Geophysical logs

Amount of data: (Describe - if extensive attach data listing or table)

Data sources: (organization responsible)
SWEC

Data documented: (reference citation)

Data storage location: (specific location) ONWI Columbus

Reported Qualifications: (Qualifications or uncertainties included in data document)
none

NRC Concerns: (Potential NRC concerns for further consideration)
Limited number of data points (boreholes).

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
   BMI/ONWI - May 1984, Hydrogeologic Investigations Based on Drill Stem Test Data, Paradox Basin Area Utah & New Mexico.

   1a. Is this in draft or final form? (Circle one)

   1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

   1c. Is expected publication date earlier than June 15? YES (NO)
   If not, can this document be xeroxed and transmitted to NRC at this time?
   In part? (In total?)
   By NRC staff? By DOE/ONWI staff?

   (This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

   1d. Proceed to attached sheet.

Name: Roy E Williams

Date: 5/17/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
BMI/ONWI - (no number) Hydrogeologic Investigations Based on Drill Stem Test Data, Palo Duro Basin area, Texas and New Mexico.

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Palo Duro Basin - Regional Scale

(b) Subsurface location: (depth; formation)
Wolfcamp and Pennsylvanian aquifers

Method of collection/analyses: (short description of method/analyses)
Compilation of DST data from oil field wells + DOE wells. Data were screened statistically to eliminate manmade anomalies (oilfield pumping & oil field brine injection)

Amount of data: (Describe - if extensive attach data listing or table)
5502 DSTs but 8000 were screened out because they did not comply with shut in time & shut in pressure agreement criteria.

Data sources: (organization responsible)

SWEC

Data documented: (reference citation)

Data storage location: (specific location) ONWI & SWEC (Boston)

Reported Qualifications: (Qualifications or uncertainties included in data document)
None

NRC Concerns: (Potential NRC concerns for further consideration)

This document needs intensive review. It is the source of the potentiometric surface data for the wolfcamp & pennsylvanian aquifers + vertical flow data. THIS DOCUMENT MUST BE REVIEWED IN DETAIL PARTICULARLY THE STATISTICAL SCREENING PROCESS.

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
   Sketch no. 1369 97-37-H-E

   1a. Is this in draft or (final) form? (Circle one)

   1b. Is this ultimately intended for internal DOE/ONWI use or (general) publication? (Circle one)

   1c. Is expected publication date earlier than June 15? YES NO
   If not, can this document be xeroxed and transmitted to NRC at this time?
   In part? In total?
   By NRC staff? By DOE/ONWI staff?

   (This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

   1d. Proceed to attached sheet.

Name: Roy E Williams
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Sketch 13697-37-H-2 Wolfcamp potentiometric surface map
often calling Depressured, overpressured, + under pressured data in
Data Collection Location: Palo Duro Basin

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Deaf Smith & assoc. counties (Regional) (38 counties)
+ part of N.M.

(b) Subsurface location: (depth; formation)
Wolfcamp

Method of collection/analyses: (short description of method/analyses)
Borehole pressure measurements

Amount of data: (Describe - if extensive attach data listing or table)
79 boreholes

Data sources: (organization responsible)
~~SB~~ SNEC

Data documented: (reference citation)

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)
Limited data in vicinity of Deaf Smith County
(4 points in 3 counties)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Sketch 13697-6(B)-29 Geotechnical profile Letter no. 1-D. Friemel no. 1

1a. Is this in draft or final ~~form~~? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: Roy E Williams
Date: 5/17/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Geological profile Letter no 1-B, Friemel no. 1
Sketch 13697-B(B)-29

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Deaf Smith County

(b) Subsurface location: (depth; formation)
0 through 2840.2.

Method of collection/analyses: (short description of method/analyses)
Borehole geophysical logs + Drill rate data

Amount of data: (Describe - if extensive attach data listing or table)
4 borehole geophysical logs + Drill rate log
Specific logs are Gamma ray, caliper, Bulk density, Sonic log + Drill rate log.

Data sources: (organization responsible)
SWEC + logging contractor

Data documented: (reference citation)

Data storage location: (specific location) ONWI Columbus

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)
None. These logs + their interpretations are straight forward.

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
   Sketch 13697-37-F-1

   1a. Is this in draft or final form? (Circle one)

   1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

   1c. Is expected publication date earlier than June 15? YES NO
   If not, can this document be xeroxed and transmitted to NRC at this time?
   In part? In total?
   By NRC staff? By DOE/ONWI staff?

   (This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

   1d. Proceed to attached sheet.

Name: Roy E Williams

Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Sketch 13697-32-F-1 Penn. potentiometric surface after adding depressured, overpressured + under pressured data in northern

Data Collection Location: Palo Duro basin

(a) **Areal Location:** (general description with respect to basin/site, county, map location if available)
Deaf Smith + assoc. counties

(b) **Subsurface location:** (depth; formation)
Pennsylvanian

Method of collection/analyses: (short description of method/analyses)

Pressure Transducers

Amount of data: (Describe - if extensive attach data listing or table)

2 bore holes

Data sources: (organization responsible)

SWEC

Data documented: (reference citation)

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

This map is based on only 2 data points. The map covers 5 counties + part of new mexico. Very creative!!

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
W Mesa potentiometric surface maps after culling depressured, overpressured & underpressured data in northern Palo Duro Basin
Sketch 13697-37-E-1

1a. Is this in draft or (final) form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or (general) publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: RG Williams

Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Spitch 13697 -37-E-1 Wolfcamp potentiometric surface after cutting degassed, overpressured + underpressured data in within Palo Duro Basin

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Dry Smith Co + Vicinity

(b) Subsurface location: (depth; formation)
Wolfcamp

Method of collection/analyses: (short description of method/analyses)
Borehole water level + pressure measurements

Amount of data: (Describe - if extensive attach data listing or table)
7 boreholes

Data sources: (organization responsible)
~~DOE~~ SWEC

Data documented: (reference citation)
7 Boreholes

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)
limited data points

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
   Sketch 13697-37-D-1 Zone of Dissolution of Lower San Andres unit 4 ~~[illegible]~~ salt.

   1a. Is this in draft or final form? (Circle one)

   1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

   1c. Is expected publication date earlier than June 15? YES NO
   If not, can this document be xeroxed and transmitted to NRC at this time?
   In part? In total?
   By NRC staff? By DOE/ONWI staff?

   (This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

   1d. Proceed to attached sheet.

Name: Roy S. Williams

Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Zone / Dissolution / Lower San Andreas unit 4 Salt
Sketch 13697-37-D-1

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Deaf Smith and associated counties

(b) Subsurface location: (depth; formation)
Lower San Andreas

Method of collection/analyses: (short description of method/analyses)
Surface mapping + some borehole logs (mapping of salt/geologic features)

Amount of data: (Describe - if extensive attach data listing or table)
NA

Data sources: (organization responsible)
SWEC

Data documented: (reference citation)
NA

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)
None

NRC Concerns: (Potential NRC concerns for further consideration)
Basic / mapped not defined

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Report on Springs and Seeps in the Pale Dura Basin Area, Texas
December 1982

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: [illegible]
Date: 5-17-84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
spring locations, spring discharges, hydrochemistry data for springs

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Palo Duro Basin Area

(b) Subsurface location: (depth; formation)
Ogallala Aquifer

Method of collection/analyses: (short description of method/analyses)
water samples & flow measurements
water level contour maps, Piper diagrams

Amount of data: (Describe - if extensive attach data listing or table)

Data sources: (organization responsible)
Stone & Webster

Data documented: (reference citation)

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)
useful probably only for helping to explain potential conceptual models

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Sewell, M.J., 1984. Summary of Chemical & Isotopic Data produced by Bendix Field Engineering Corporation for Mansfield No. 1, Zeek No 1, Sawyer No 1, Fimmen No. 1 wells in the Texas Panhandle, ONWI Technical Report, Tables 1-4.

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES (NO)
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? (In total?)
By NRC staff? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: Leslie Peeler
Date: 17 May 1984

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Chemical analyses of brines and gas analyses of brines

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

Palo Duro { Sawyer #1, Mansfield #1, #2 } Zeus #1, Trumel #1

(b) Subsurface location: (depth; formation)

Method of collection/analyses: (short description of method/analyses)
see attached sheet

Amount of data: (Describe - if extensive attach data listing or table)
≈ 17 pages

Data sources: (organization responsible)
TBEG

Data documented: (reference citation)

[redacted]

PARADOX BASIN

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.

   see page 2

   1a. Is this in draft or final form? (Circle one)

   1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

   1c. Is expected publication date earlier than June 15? YES (NO)
   If not, can this document be xeroxed and transmitted to NRC at this time?
   In part? In total?
   By NRC staff? By DOE/ONWI staff?

   ≈ August 1984 (as per Mike Dayton)

   (This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

   1d. Proceed to attached sheet.

Name: Linda Peeler

Date: 16 May

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)

- isotopic data for carbonate and anhydrite core samples, & water samples
- chemical data for water samples
- gas data (helium, neon, argon)
- mineralogical (x-ray detection) data

Data Collection Location:

(a) **Areal Location:** (general description with respect to basin/site, county, map location if available)

primarily Paradox SD-1 also Lisbon Valley oil field and Salt Wash oil field

(b) **Subsurface location:** (depth; formation)

Elephant Canyon, Hermosa Trail, Paradox, Pinkerton Trail, Leadville Limestone,

Method of collection/analyses: (short description of method/analyses)

Amount of data: (Describe - if extensive attach data listing or table)

extensive

Data sources: (organization responsible)

UCC

Data documented: (reference citation) extensive references

Title Status Report Geochemical Interactions between Brine Aquifers & Paleozoic Strata, Paradox Basin, SE Utah; Topical Report February 1984

UCC Bryan L. McCulley, Jennie Thackston, Lynne M. Preslo

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Ground Water Resources in the Part of Canyonlands National Park East of the Colorado River and Contiguous Bureau of Land Management Lands, Ut — Submitted to National Park Service, Hunt Oaks Richter (reverse order), April 1980

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: Gerry Winter
Date: 5-16-84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Surface water (springs & seeps)
Ground Water
Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Canyonlands National Park & adjacent BLM lands east of Colorado River

(b) Subsurface location: (depth; formation)
Surface down to Honaker Trail Form.

Method of collection/analyses: (short description of method/analyses)
Surface observation and measurement of springs

Amount of data: (Describe - if extensive attach data listing or table)
Spring-seep data appears to be original but well data appears to be from other sources

Data sources: (organization responsible)
University of Wyoming

Data documented: (reference citation)
List attached

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)
Estimated seepage rates & permeabilities (from specific capacity data)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Elk Ridge No. 1 Borehole Elk Ridge Study Area of the Paradox Basin Region San Juan County, Utah. ONWI-401 August 1982

   1a. Is this in draft or final form? (Circle one)

   1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

   1c. Is expected publication date earlier than June 15? YES NO
   If not, can this document be xeroxed and transmitted to NRC at this time?
   In part? In total?
   By NRC staff? By DOE/ONWI staff?

   (This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

   1d. Proceed to attached sheet.

Name: GERRY WINTER
Date: 5-16-84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Geophysical logs & QA Procedures

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Elk Ridge, Paradox Basin

(b) Subsurface location: (depth; formation)
300 -- 3461 ft depth

Method of collection/analyses: (short description of method/analyses)
Borehole geophysical logs

Amount of data: (Describe - if extensive attach data listing or table)
Gamma, caliper, bulk density, transit time, neutron porosity, temperature, & resistivity

Data sources: (organization responsible)
Woodward-Clyde, if a service company was used it was not noted

Data documented: (reference citation)
original

Data storage location: (specific location)
Woodward-Clyde

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)
None noted.

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Preliminary Hydrologic Budget Studies, Indian Creek Watershed and Vicinity, Western Paradox Basin, Utah — no number — Sept 1983
Thackston, Mangureila, & Preslo

1a. Is this in draft or final form? (Circle one)
Rough Draft

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: Geery Winter
Date: 5-16-84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Surface water

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Indian Crk. watershed & vicinity (GD-1 in area)

(b) Subsurface location: (depth; formation)

Method of collection/analyses: (short description of method/analyses)
Estimated ET rates x area of coverage
Precip. contribution direct to river flow
Evap rate from river
Ground water discharge to river

Amount of data: (Describe - if extensive attach data listing or table)
Very little data, mainly estimates from literature for parameters.

Data sources: (organization responsible)
Woodward-Clyde

Data documented: (reference citation)
Reference list attached

Data storage location: (specific location)
Woodward-Clyde

Reported Qualifications: (Qualifications or uncertainties included in data document)
Numerous parameters (ET, etc.) are estimated

NRC Concerns: (Potential NRC concerns for further consideration)
The degree of estimation used in report.

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Second Status Report on Regional Groundwater Flow Modeling for the Paradox Basin, Utah, Intera, April 1984

1a. Is this ~~in~~ draft or final form? (Circle one)

1b. ~~Is this ultimately~~ intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: J Rowe

Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
No original data – references should be checked

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

(b) Subsurface location: (depth; formation)

Method of collection/analyses: (short description of method/analyses)

Amount of data: (Describe - if extensive attach data listing or table)

Data sources: (organization responsible)

Data documented: (reference citation)

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Status Report on Regional Groundwater Flow Modeling for the Paradox Basin, Utah, Interim, First Draft - March 1983

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one) as ONWI SOJ

1c. Is expected publication date earlier than June 15? YES NO May 1984
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: J Rees
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
No original data - references should be checked

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

(b) Subsurface location: (depth; formation)

Method of collection/analyses: (short description of method/analyses)

Amount of data: (Describe - if extensive attach data listing or table)

Data sources: (organization responsible)

Data documented: (reference citation)

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.

Laboratory Testing of Rock and Salt Samples for determination of Specific Gravity and Total Porosity, 9/20/83, Permian Basin Project, ONWI contract # 13697-611OM

1a. Is this in draft or (final) form? (Circle one)

1b. Is this ultimately intended for (internal) DOE/ONWI use or general publication? (Circle one)

1c. Is ~~expected~~ publication date earlier than June 15? YES NO
If not, can this ~~document be xeroxed and transmitted~~ to NRC at this time?
In part? ~~In total?~~
By NRC ~~staff~~? By DOE/ONWI staff?

NA

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford

Date: 5/17/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
specific gravity & total porosity of rock & salt

Data Collection Location: samples in laboratory

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Palo Duro Basin, Tex

(b) Subsurface location: (depth; formation)
variable

Method of collection/analyses: (short description of method/analyses)
drill hole / Lab

Amount of data: (Describe - if extensive attach data listing or table)
4-5 data sheets

Data sources: (organization responsible)
RET

Data documented: (reference citation)

Data storage location: (specific location)
RET, Waltham, Ma

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

DOMES DOCUMENTS

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)

PROGRAM DESCRIPTION / GEOLOGY

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

MISSISSIPPI / RICHTON

(b) Subsurface location: (depth; formation)

ALL

Method of collection/analyses: (short description of method/analyses)

SEISMIC (MAPPING)

Amount of data: (Describe - if extensive attach data listing or table)

[illegible] - [illegible] MISSING ON [illegible] TO [illegible] SAY.

Data sources: (organization responsible)

EARTH [illegible]

Data documented: (reference citation)

SEISMIC INTERPRETATIONS OF STRUCTURE

Data storage location: (specific location) [illegible]

Reported Qualifications: (Qualifications or uncertainties included in data document)

N/A

NRC Concerns: (Potential NRC concerns for further consideration)

NONE

[redacted] [redacted]

PRIORITIZATION DATA REVIEW CHECKLIST

EW-ONWI-5226

1. Name, identification number, and date of document.
   BASIN DATA [illegible] ANALYSIS, [illegible] FEBRUARY 1983 [illegible] EARTH TECHNOLOGY, MAY 5, 1984

   1a. Is this in draft or final form? (Circle one)

   1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

   1c. Is expected publication date earlier than June 15? YES NO
   If not, can this document be xeroxed and transmitted to NRC at this time?
   In part? In total?
   By NRC staff? By DOE/ONWI staff?

   (This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

   1d. Proceed to attached sheet.

Name: A Brown

Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)

Surface & groundwater samples of ~~sand~~ major ions

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

Richton & Cypress Creek Domes

(b) Subsurface location: (depth; formation)

Various

Method of collection/analyses: (short description of method/analyses)

~~Coolers~~ —?—)

Amount of data: (Describe - if extensive attach data listing or table)

Misc papers and maps

Data sources: (organization responsible)

Some samples in 1978, other unreported

Data documented: (reference citation)

U.S.G.S.

Data storage location: (specific location)

U.S.G.S. Jackson Mississippi

Reported Qualifications: (Qualifications or uncertainties included in data document)

Who collected data prior to 1978

NRC Concerns: (Potential NRC concerns for further consideration)

How was data collected, QA concerns

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Results of Water Quality Sampling near Richton, Cypress Creek, and Lampton Salt Domes Mississippi; Open File Report 80-443, ~~[illegible]~~ U.S.G.S

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is ~~expected publication~~ date earlier than June 15? YES NO
If not, can this document ~~be xeroxed and transmitted to NRC~~ at this time?
In ~~part? In~~ total?
By NRC staff? By DOE/ONWI staff? NA

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Monthly water level measurements of shallow wells around Richton
Data Collection Location: & Cypress Domes & Vacherie Dome

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Domes see above

(b) Subsurface location: (depth; formation)
Shallow a few deep wells

Method of collection/analyses: (short description of method/analyses)
Various

Amount of data: (Describe - if extensive attach data listing or table)
1 year, monthly

Data sources: (organization responsible)
Field, [redacted] Law Engineering

Data documented: (reference citation)
IERTEC, Inc.

Data storage location: (specific location)
CNWI

Reported Qualifications: (Qualifications or uncertainties included in data document)
method of data collection

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Potentiometric-Level Monitoring Program - Mississippi and Louisiana: Annual Status Report for Fiscal Year 1983, Tech. Report, March 1984, BMI/ONWI-525

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? ~~In total?~~
By ~~NRC~~ staff? By DOE/ONWI staff?

NA

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)

U.S. G.S. Aquifer tests Transmissivity + aquifer Storage Coeff.

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

Mississippi

(b) Subsurface location: (depth; formation)

Various

Method of collection/analyses: (short description of method/analyses)

compilation of file reports

Amount of data: (Describe - if extensive attach data listing or table)

400 aquifer tests

Data sources: (organization responsible)

U.S.G.S + State of Mississippi

Data documented: (reference citation)

U.S.G.S

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

No raw data from tests

NRC Concerns: (Potential NRC concerns for further consideration)

Useful for area consideration may wish to see specific test, data for those tests of special interest.

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Results of Aquifer Tests in Mississippi by Roy Newcome, Sr. U.S.G.S. Water Resources Div. Bulletin 71-2, 1971

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

NA

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Water Quality, Stratigraphy, flow velocities

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Cypress Creek & Richton domes, Mississippi

(b) Subsurface location: (depth; formation)
Salt dome cap rocks and side deposits of miocene age

Method of collection/analyses: (short description of method/analyses)
Water chemistry, [redacted] and stratigraphy, literature and field well data

Amount of data: (Describe - if extensive attach data listing or table)
overview of site characteristics

Data sources: (organization responsible)
DOE wells and U.S. G.S. data

Data documented: (reference citation)
See 1A, Various Preliminary Report of the Geohydrology Near Cypress Creek and Richton Salt Domes, Perry County, Mississippi.

Data storage location: (specific location) Water Resources Div., U.S.G.S. 100 W. Capitol St., Suite 710, Jackson, Miss. 39269 (601) 960-4500, Open File U.S.G.S Lakewood

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Preliminary Report of the Geohydrology Near Cypress Creek and Richton Salt Domes, Perry County, Miss. Water Resources Investigations, Report 83-4169 USGS & USDOE, by C.B. Bently — Open File Report

1a. Is this in draft or ~~final~~ form? (Circle one)

1b. Is this ultimately intended for ~~internal~~ DOE/ONWI use or general publication? (Circle one)
general

1c. ~~Is expected publication date earlier than June 15? YES NO~~
~~If not, can this document be xeroxed and transmitted to NRC at this time?~~
~~In part? In total?~~
~~By NRC staff? By DOE/ONWI staff?~~
NA

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/89

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Surface water flow and water quality data + groundwater levels & quality

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Mississippi

(b) Subsurface location: (depth; formation)
Various

Method of collection/analyses: (short description of method/analyses)
Standard U.S.G.S. QA

Amount of data: (Describe - if extensive attach data listing or table)
One year

Data sources: (organization responsible)
U.S.G.S.

Data documented: (reference citation)
U.S.G.S.

Data storage location: (specific location)
Jackson, Mississippi

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Water Resources Data Mississippi, Water Year 1981
U.S.G.S. Water Supply Data Report MS-81-1

1a. Is this in draft or (final) form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or (general publication)? (Circle one)

1c. Is ~~expected~~ publication date earlier than June 15? YES NO
If not, can this ~~document be~~ xeroxed and transmitted to NRC at this time?
In ~~part? In total~~?
By NRC staff? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)

water use map

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

Mississippi

(b) Subsurface location: (depth; formation)

various

Method of collection/analyses: (short description of method/analyses)

records of public suppliers & estimated

Amount of data: (Describe - if extensive attach data listing or table)

one map and table for 1980

Data sources: (organization responsible)

U.S.G.S. & State of Miss. Dept of Natural Resources, Bureau of Land and Water Resources

Data documented: (reference citation)

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

data collection

NRC Concerns: (Potential NRC concerns for further consideration)

uses of G.W near sites and source of water

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
   Water use in Mississippi, 1980, U.S.G.S. by J.A. Callahan

   1a. Is this in draft or final form? (Circle one)

   1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

   1c. Is expected publication date earlier than June 15? YES NO
   If not, can ~~this document~~ be xeroxed and transmitted to NRC at this time?
   In part? In total?
   By NRC ~~staff?~~ By DOE/ONWI staff?
   N/A

   (This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

   1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)

SURFACE WATER

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

WILLISTON, ND

(b) Subsurface location: (depth; formation)

N/A

Method of collection/analyses: (short description of method/analyses)

GAGING STATION

Amount of data: (Describe - if extensive attach data listing or table)

EXTENSIVE

Data sources: (organization responsible)

USGS

Data documented: (reference citation)

Data storage location: (specific location) WILES

Reported Qualifications: (Qualifications or uncertainties included in data document)

—

NRC Concerns: (Potential NRC concerns for further consideration)

NONE

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
LOW FLOW CHARACTERISTICS OF MISSISSIPPI STREAMS
THARPE, 1975 USGS

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

LOW FLOW FOR REG OR DISCHARGE WATER LAWS

0 - 3.5 CFS/SQ MI 0-6"/HR

Name: A BROWN

Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
location of oil field production data

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
mississippi

(b) Subsurface location: (depth; formation)
variable

Method of collection/analyses: (short description of method/analyses)
Survey

Amount of data: (Describe - if extensive attach data listing or table)
map of well fields & production data from fields

Data sources: (organization responsible)
State of mississippi

Data documented: (reference citation)
~~Mississippi~~ mississippi Oil & Gas Production Annual Report, 1982

Data storage location: (specific location)
Oil & Gas Board, mississippi

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)
how does oil and gas production & injection effect ground water flow direction around domes

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Mississippi Oil & Gas Production Annual Report, 1982, Mississippi State Oil and Gas Board

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

NA

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford

Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)

injection data Shell Oil Company, Onshore

Data Collection Location: Wilcox reservoir, Well # 8-6

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

Wilcox Reservoir, Mississippi

(b) Subsurface location: (depth; formation)

— ? —

Method of collection/analyses: (short description of method/analyses)

volume of injected fluids & pressures

Amount of data: (Describe - if extensive attach data listing or table)

~10 sheets of injection well data

Data sources: (organization responsible)

Shell Oil Company via Miss. State

Data documented: (reference citation)

Mississippi State Oil & Gas Board rec. Report.

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

Injection effects on G.W. flow and dense & aquifer permeabilities.

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Mississippi State Oil & Gas Board, Monthly Report on Fluids Injected, Producer Shell Oil Co.

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is ~~expected publication date earlier than June 15? YES NO~~
~~If not, can this document be xeroxed and transmitted to NRC at this time?~~ NA
In part? In total?
By NRC staff? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)

[illegible] INVENTORY

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

[illegible]

(b) Subsurface location: (depth; formation)

[illegible]

Method of collection/analyses: (short description of method/analyses)

[illegible]

Amount of data: (Describe - if extensive attach data listing or table)

[illegible]

Data sources: (organization responsible)

[illegible]

Data documented: (reference citation)

[illegible]

Data storage location: (specific location)

[illegible]

Reported Qualifications: (Qualifications or uncertainties included in data document)

N/A

NRC Concerns: (Potential NRC concerns for further consideration)

[illegible]

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
   Plotter [illegible] list from IES/CSU [illegible]
   [illegible] @ [illegible] from CSU [illegible]

   1a. Is this in draft or final form? (Circle one)

   1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

   1c. Is expected publication date earlier than June 15? YES NO
   If not, can this document be xeroxed and transmitted to NRC at this time?
   In part? In total?
   By NRC staff? By DOE/ONWI staff?

   (This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

   1d. Proceed to attached sheet.

Name: [illegible]

Date: 5/6/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)

brine chemistry

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

Big Star

(b) Subsurface location: (depth; formation)

Paradox Formation + Mississippian

Method of collection/analyses: (short description of method/analyses)

caveat: "obviously very few brine samples have been assayed completely and it must be remembered that these brines were inadvertently drawn and because of existing conditions at the time of the brine flows very few of any were accurately sampled."

Amount of data: (Describe - if extensive attach data listing or table)

≈15 chemical water analyses

Data sources: (organization responsible)

Analyses were performed by chemists of USGS and by those of various company and commercial laboratories

Data documented: (reference citation)

document copied

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

see caveat under Method of collection/analyses

NRC Concerns: (Potential NRC concerns for further consideration)

Document was primarily addressing the potential for commercial brine production.

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document. Second Symposium on Salt, Vol. I
Complex Salts & Brines of the Paradox Basin
Mayfield, E. J. and Mayerson, E. B. 1966

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: Linda Porter

Date: 17 May 1984

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Brief description of geology, location of salt wells

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Mississippi, State wide

(b) Subsurface location: (depth; formation)

Method of collection/analyses: (short description of method/analyses)
[redacted] State data

Amount of data: (Describe - if extensive attach data listing or table)
tables + maps

Data sources: (organization responsible)
Mississippi State

Data documented: (reference citation)

Data storage location: (specific location)
Jackson, Miss

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Salt Water Disposal Wells in Mississippi by A.R. Bicker, Jr. Information Series MGS-72-4, Miss. Geological, Economic & Topographical Survey

1a. Is this in draft or (final) form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or (general publication)? (Circle one)

1c. Is expected publication date earlier than June 15? ~~YES~~ NO
If not, can this document be xeroxed and ~~transmitted~~ to NRC at this time?
In part? ~~In total?~~
By NRC staff? ~~By DOE/ONWI staff?~~ N/A

(This question may need to be answered/~~verified~~/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
3 Brine tests were performed in domal salt at the Avery Island Salt mine. Primary measurements included temperature, moisture collection, pre & post test permeability

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Avery Island Salt mine

(b) Subsurface location: (depth; formation)
—

Method of collection/analyses: (short description of method/analyses)
well

Amount of data: (Describe - if extensive attach data listing or table)
detailed

Data sources: (organization responsible)
RE/SPEC Inc.

Data documented: (reference citation)

Data storage location: (specific location)
ONWI

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)
Thermal effects on salt

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Avery Island Brine Migration Tests: Installation, operation, Data Collection and Analysis, Wayne B. Krause of RE/SPEC Inc. ONWI-190(4), Tech report, 1983

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?
N/A

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)

Cross Section & structure maps

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

Mississippi, State wide

(b) Subsurface location: (depth; formation)

Wirona - Tallahatta Aquifer

Method of collection/analyses: (short description of method/analyses)

drill ⊗ holes & wells

Amount of data: (Describe - if extensive attach data listing or table)

Summary maps & regional cross sections

Data sources: (organization responsible)

U.S.G.S - Mississippi Board of Water Commissioners

Data documented: (reference citation)

Data storage location: (specific location)

U.S.G.S Jackson, Miss.

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
The Winona-Tallahatta Aquifer in Mississippi by C.A. Spiers, U.S.G.S. Water Resource Inv. 77-125, Jackson, Miss. 1977, Openfile Report

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

N/A

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Faul
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Potentiometric

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Mississippi statewide

(b) Subsurface location: (depth; formation)
Wilcox - Tallahatta Aquifer.

Method of collection/analyses: (short description of method/analyses)
Wells

Amount of data: (Describe - if extensive attach data listing or table)
Summary Map

Data sources: (organization responsible)
U.S.G.S + State of Mississippi

Data documented: (reference citation)

Data storage location: (specific location)
U.S.G.S. Jackson Mississippi

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Potentiometric Map of the Winona-Tallahatta Aquifer in Northwestern Mississippi, Fall 1979, By B.E. Wasson, U.S.G.S. Open file report 82-595

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can ~~this document be xeroxed and transmitted~~ to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?
N/A

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Near Surface geologic and isotopic study of cap rock

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Rayburn SaltDome, La

(b) Subsurface location: (depth; formation)
Shallow

Method of collection/analyses: (short description of method/analyses)
Drill hole

Amount of data: (Describe - if extensive attach data listing or table)
Cross section and isotopic dating

Data sources: (organization responsible)
LSU

Data documented: (reference citation)

Data storage location: (specific location)
Battelle

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
The Quaternary Geology of Rayburn's Salt Dome, Northern Louisiana Salt Dome Basin, Tech Report, 1983

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

NA

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Charles R. Kolb
Joseph C. Holmes
Institute of Environmental Studies
Louisiana State University
ONWI-416

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Potentiometric with Seasonal Variations

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
State wide

(b) Subsurface location: (depth; formation)
Meridan - Upper Wilcox Aquifer

Method of collection/analyses: (short description of method/analyses)
Wells

Amount of data: (Describe - if extensive attach data listing or table)
Summary map + charts

Data sources: (organization responsible)
U.S.G.S + State of Mississippi

Data documented: (reference citation)

Data storage location: (specific location)
U.S.G.S. Jackson Miss

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Potentiometric Map of The Meridian-Upper Wilcox Aquifer in Mississippi, Fall 79, by B E. Wasson, U.S.G.S., Water Resources Inv. Open File Report 80-590

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is ~~expected~~ publication date earlier than June 15? YES NO
If not, can this ~~document be xeroxed and transmitted to NRC at~~ this time?
In part? ~~In total?~~
By NRC staff? By DOE/ONWI staff?

NA

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Palynological, Tilt-meter, saline springs, Surface water study

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Various in Mississippi

(b) Subsurface location: (depth; formation)

Method of collection/analyses: (short description of method/analyses)
literature & field

Amount of data: (Describe - if extensive attach data listing or table)

Data sources: (organization responsible)

Data documented: (reference citation)

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)
Mixed studies, hydrology aspects & bibliography
but with no summary.

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Topical Reports on Louisiana Salt Domes, ONWI-417
Tech. Report, Sept. 1983, Inst. for Env. Studies Louisiana State Univ,

1a. Is this in draft or final form? (Circle one) ~~ONWI-417~~

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, ~~can this document be xeroxed and transmitted to NRC at this time?~~
In part? In total?
By NRC staff? ~~By DOE/ONWI staff?~~
NA

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)

Water level

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

Richland, Cypress, Vachar Dome

(b) Subsurface location: (depth; formation)

Various, formations around domes

Method of collection/analyses: (short description of method/analyses)

Grab

Amount of data: (Describe - if extensive attach data listing or table)

One year quarterly samples

Data sources: (organization responsible)

ERTEC Dm

Data documented: (reference citation)

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Potentiometric-Level monitoring Program - Mississippi & Louisiana Annual Status Report for Fiscal Year 1983, Tech. Report, March 1984 Enviro Inc. WMI/ONWI-525

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected ~~publication~~ date earlier than June 15? YES NO
If not, can this document ~~be xeroxed and transmitted~~ to NRC at this time?
In part? In total?
By NRC staff? ~~By DOE/ONWI staff?~~ NA.

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/17/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Cross section, maps, Water Quality table

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Mississippi

(b) Subsurface location: (depth; formation)
Miocene aged aquifers

Method of collection/analyses: (short description of method/analyses)

Amount of data: (Describe - if extensive attach data listing or table)

Data sources: (organization responsible)
U.S.G.S & Mississippi Board of Water Commissioners

Data documented: (reference citation)
U.S.G.S

Data storage location: (specific location)
U.S.G.S. Jackson, Mississippi

Reported Qualifications: (Qualifications or uncertainties included in data document)
general overview.

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
The Miocene Aquifer System in Mississippi, by Roy Newcome Jr., U.S.G.S. Water Resources Investigations 76-75 Openfile Report

1a. Is this in (draft) or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or (general publication)? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If ~~not~~, can this document be xeroxed and transmitted ~~to NRC~~ at this time? NA
In part? In total?
By NRC staff? ~~By~~ DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
regional cross section maps and regional structure map

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
State wide

(b) Subsurface location: (depth; formation)
Oligocene aged aquifer

Method of collection/analyses: (short description of method/analyses)
Summary maps

Amount of data: (Describe - if extensive attach data listing or table)
Some hydraulic conductivity data attached,

Data sources: (organization responsible)
U.S.G.S. & State literature

Data documented: (reference citation)

Data storage location: (specific location)
U.S.G.S. Openfile, Mississippi

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
The Oligocene Aquifer System in Mississippi, Lynnette A. Gandl, U.S.G.S. Water-Resources Inv. 79-28, Jackson Miss. 1979

1a. Is this in draft or final form? (Circle one) open file report

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. ~~Is expected publication date earlier than June 15? YES NO~~
~~If not, can this document be xeroxed and transmitted to NRC at this time?~~
~~In part? In total?~~
~~By NRC staff? By DOE/ONWI staff?~~ N/A

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)

Potentiometric

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

statewide

(b) Subsurface location: (depth; formation)

Lower Wilcox Aquifer.

Method of collection/analyses: (short description of method/analyses)

Wells

Amount of data: (Describe - if extensive attach data listing or table)

summary map

Data sources: (organization responsible)

U.S. G.S. & State of Mississippi

Data documented: (reference citation)

Data storage location: (specific location)

U.S.G.S., Jackson miss.

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Potentiometric Map of the Lower Wilcox Aquifer in Mississippi. Fall 1979, W.E Wasson; U.S.G.S. Open File Report 83-597

1a. Is this in draft or ~~final form~~? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is ~~expected~~ publication date earlier than June 15? YES ~~NO~~
If not, can this ~~document be xeroxed and transmitted~~ to NRC at this time?
In part? In total?
By NRC staff? ~~By~~ DOE/ONWI staff?
N/A

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
lateral extent of aquifers with cross section & some water quality data

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Mississippi

(b) Subsurface location: (depth; formation)
near surface

Method of collection/analyses: (short description of method/analyses)
Various, wells, drill hole, L.T.

Amount of data: (Describe - if extensive attach data listing or table)
Summary map

Data sources: (organization responsible)
U.S.G.S. & State of Mississippi Board of Water Commissioners,

Data documented: (reference citation)

Data storage location: (specific location)
U.S.G.S. Jackson, Miss,

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
The Citronelle Aquifers in Mississippi, E. H. Boswell U.S.G.S. Water Resources Investigations, 78-131, Open file report

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, ~~can this document be xeroxed~~ and transmitted to NRC at this time?
In part? In total?
By NRC staff? ~~By DOE/ONWI staff?~~ NA

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Water Quality, Water use, transmissivity, freshwater limits of aquifer

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
State wide

(b) Subsurface location: (depth; formation)
large subsurface aquifer

Method of collection/analyses: (short description of method/analyses)
Literature, U.S.G.S. & State of Mississippi

Amount of data: (Describe - if extensive attach data listing or table)
Summary maps

Data sources: (organization responsible)
U.S.G.S. State of Mississippi

Data documented: (reference citation)

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Sources for Water Supplies in Mississippi, U.S.G.S., Mississippi Research and Development Center, Jackson Miss, 1980

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?
N/A

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
ground water flows, facies changes, geological structure, recharge + discharge
Data Collection Location: fresh water - salt water interface

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Southern Mississippi

(b) Subsurface location: (depth; formation)
Deep Sections

Method of collection/analyses: (short description of method/analyses)
Literature

Amount of data: (Describe - if extensive attach data listing or table)
cross sections, structure maps, water quality data

Data sources: (organization responsible)
U.S.G.S.

Data documented: (reference citation)

Data storage location: (specific location)
U.S.G.S. Jackson, Miss.

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.

A preliminary Report of the Geohydrology of the Mississippi Salt-Dome Basin, U.S.G.S. Water-Resources Invest. Open-File Report 80-595

1a. Is this in (draft) or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or (general publication)? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?

NA

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford

Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)

Potentiometric with seasonal variations

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

State wide

(b) Subsurface location: (depth; formation)

Sparta Aquifer

Method of collection/analyses: (short description of method/analyses)

Wells

Amount of data: (Describe - if extensive attach data listing or table)

Summary map and charts

Data sources: (organization responsible)

U.S.G.S. and state of Mississippi

Data documented: (reference citation)

Data storage location: (specific location)

U.S.G.S. State of Mississippi

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Potentiometric Map of the Sparta Aquifer System in Mississippi, Fall 1980, by B.E. Wasson, U.S. G.S. Water Resources Invest. Open file report 81-1051 1982

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can ~~this document be xeroxed and transmitted to NRC at this time?~~ N/A
In part? In total?
By NRC ~~staff?~~ By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Potentiometric and seasonal variations

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
State wide

(b) Subsurface location: (depth; formation)
Cockfield Aquifer.

Method of collection/analyses: (short description of method/analyses)
Wells

Amount of data: (Describe - if extensive attach data listing or table)
Summary map and charts

Data sources: (organization responsible)
U.S.G.S. + State of Mississippi

Data documented: (reference citation)

Data storage location: (specific location)
U.S.G.S. Jackson, Miss.

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Potentiometric Map of the Cockfield Aquifer in Mississippi, by B.E. Wasson, U.S.G.S. Water-Resources Inv. Open File report 81-1053 1981

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff?
NA

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)

MODBUNS

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

MBS

(b) Subsurface location: (depth; formation)

AR

Method of collection/analyses: (short description of method/analyses)

Coulometric Analyses

Amount of data: (Describe - if extensive attach data listing or table)

Data sources: (organization responsible)

Data documented: (reference citation)

Data storage location: (specific location)

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
ONWI/ES12-02[illegible]/ TR-30 410C-00G-08B
Second Status Report on Regional + Local Groundwater Flow Modeling for Richton + Cypress Creek Dome, MS
1a. Is this in draft or final form? (Circle one) 3rd Draft, May 3, Intera

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES (NO)
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? (In total?)
By NRC staff? ~~By DOE/ONWI staff?~~

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: A. Brown
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)

input overview, [redacted] geophysical logs

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

Southern East Texas Basin

(b) Subsurface location: (depth; formation)

deep

Method of collection/analyses: (short description of method/analyses)

literature + geophysical logs

Amount of data: (Describe - if extensive attach data listing or table)

maps and logs

Data sources: (organization responsible)

Data documented: (reference citation)

Data storage location: (specific location) ?

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

[redacted]

[redacted]

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Wilcox Cox Facies and Syndepositional Salt Dome Growth, Southern East Texas Basin, S.J. Seni and G.E. Fogg

1a. Is this in (draft) or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or (general publication)? (Circle one)

1c. ~~Is expected publication date earlier than June 15? YES NO~~
~~If not, can this document be xeroxed and transmitted to NRC at this time?~~
~~In part? In total?~~
~~By NRC staff? By DOE/ONWI staff?~~
NA

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
Cross Section & structure map

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
Trinity River Valley, Leon County, Texas

(b) Subsurface location: (depth; formation)
[redacted]

Method of collection/analyses: (short description of method/analyses)
field & literature

Amount of data: (Describe - if extensive attach data listing or table)
small amount

Data sources: (organization responsible)
Texas Bureau of Economic Geology
Univ. of Texas

Data documented: (reference citation)

Data storage location: (specific location)
Austin Texas

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

[redacted]

[redacted]

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Quaternary Faulting in East Texas, Geological Circ. 80-1, E. W. Collins, W. K. Hobday, ~~C~~ G. W. Kreitler, 1980

1a. Is this in draft or (final) form? (Circle one) Bureau of Economic Geology, U. of Texas

1b. Is this ultimately intended for internal DOE/ONWI use or (general publication)? (Circle one)

1c. Is ~~expected~~ publication date earlier than June 15? YES NO
If not, can this ~~document~~ be xeroxed and transmitted ~~to NRC~~ at this time? NA
In part? In total?
By ~~NRC staff~~? By DOE/ONWI staff?

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Name: William Ford
Date: 8/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)
philosophy or raises issues

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)
East Texas Basin

(b) Subsurface location: (depth; formation)
NA

Method of collection/analyses: (short description of method/analyses)

NA

Amount of data: (Describe - if extensive attach data listing or table)

philosophy or raises issue

Data sources: (organization responsible)

literature

Data documented: (reference citation)

Data storage location: (specific location)
Univ. of Texas at Austin

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Studies of the Suitability of Salt Domes in East Texas Basin for Geologic Isolation of Nuclear Wastes by Charles W Kreitler

1a. Is this in draft or ~~final form~~? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? ~~YES~~ NO
If ~~not~~, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/~~ONWI staff~~? NA

(This question may ~~need to be answered/verified/authorized~~ by DOE/ONWI staff for each document. Therefore ~~you~~ may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Bureau of Economic Geol.
Univ. of Texas at Austin
1980
Geological Circ. 80-5

Name: William Ford
Date: 5/16/84

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: (Data inventory index identifier plus specific subclass of data)

Hydrology, geochemistry, geology, petrology, Isotopic dating

Data Collection Location:

(a) Areal Location: (general description with respect to basin/site, county, map location if available)

East Texas Basin

(b) Subsurface location: (depth; formation)

surface & deep

Method of collection/analyses: (short description of method/analyses)

field & literature, summary of on going studies.

Amount of data: (Describe - if extensive attach data listing or table)

Summary

Data sources: (organization responsible)

Bureau of economic geology

Data documented: (reference citation)

Data storage location: (specific location)

Univ. of Texas at Austin

Reported Qualifications: (Qualifications or uncertainties included in data document)

NRC Concerns: (Potential NRC concerns for further consideration)

PRIORITIZATION DATA REVIEW CHECKLIST

1. Name, identification number, and date of document.
Geology and Geohydrology of the East Texas Basin, A Report on the Progress of Nuclear Waste Isolation Feasibility ~~Factors~~ Studies (1979) Geol. Circ. 80-2

1a. Is this in draft or final form? (Circle one)

1b. Is this ultimately intended for internal DOE/ONWI use or general publication? (Circle one)

1c. Is expected publication date earlier than June 15? YES NO
If not, can this document be xeroxed and transmitted to NRC at this time?
In part? In total?
By NRC staff? By DOE/ONWI staff? NA

(This question may need to be answered/verified/authorized by DOE/ONWI staff for each document. Therefore you may be directed to leave this question blank.)

1d. Proceed to attached sheet.

Bureau of Economic Geol.
The Univ. of Texas at Austin
C.W. Kreitler, et al

Name: William Ford
Date: 5/16/84

Enclosure 2

NRC Rock Mechanics Data Review Worksheets

August 21-24, 1984

J. R. Pennington

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: STANDARD PENETRATION TESTING IN 42 BORINGS IN CYPRESS CREEK DOME AREA 1979-1980.

Data Documented: ONWI-165 "GULF COAST SALT DOMES SHALLOW BORINGS REPORT, CYPRESS CREEK DOME".

Data Collection Location: Cypress Creek Dome Area, Mississippi

(a) Areal Location: T 3N - R 11W, T 3N - R 10W, T 2N - R 11W, T 2N - R 10W, within cypress creek dome area

(b) Subsurface location: Most Borings 100 - 200 FT deep, some as shallow as 20 feet

Method of collection/analyses: ASTM D 1586 - 67 "STANDARD METHOD FOR PENETRATION TEST & SPLIT BARREL SAMPLING OF SOILS" (SEE NEXT PAGE FOR TEST Method uncertainties)

Amount of data: ST RESULTS IN 16 BORINGS MADE IN 1979 AND 26 BORINGS MADE IN 1980.

*If an item is not applicable to a particular review, write N/A next to the item.

Data sources: 42 BORINGS IN SOIL IN CYPRESS CREEK DOME AREA.

Data Interpreted By: DRILL RIG OPERATOR

Data storage location: INFORMATION IS REPORTED IN ONWI-165. BORING LOG BOOK AND NOTES ARE IN ETI, LONG BEACH, CA OFFICES.

Data related uncertainties: IT IS REPORTED IN ONWI-165 THAT THERE IS A LACK OF CALIBRATION OF HAMMER WEIGHT AND OF DROP HEIGHT FOR THE SPT TESTING ACCOMPLISHED IN 16 HOLES THAT WERE PERFORMED IN 1974 (THEY ARE IDENTIFIED AS THE 100 SERIES HOLES). ONWI-165 RECOMMENDS THAT THE RESULTS OF THIS TESTING IN THE 100 SERIES NOT BE USED FOR ENGINEERING EVALUATION.

*If an item is not applicable to a particular review, write N/A next to the item.

J. R. PERKINS

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: STANDARD PENETRATION TEST IN 35 SHALLOW BORINGS AT RICHTON DOME AREA IN MISSISSIPPI.

Data Documented: ONWI-167. "GULF COAST SALT DOMES SHALLOW BORINGS REPORT: RICHTON DOME AUGUST 1982.

Data Collection Location: RICHTON DOME AREA MISSISSIPPI

(a) Areal Location: R 10 W - T 5 N, R 10 W - T 4 N WITHIN RICHTON DOME AREA MISSISSIPPI.

(b) Subsurface location: 5 FOOT INTERVALS TO A DEPTH OF 100 FT. BELOW 100 FEET TESTING WAS PERFORMED IN 10 FT. INTERVALS (MOST BORINGS WERE DRILLED TO 200' - SOME TO 500')

Method of collection/analyses: ASTM D 1586-67 "STANDARD METHOD FOR PENETRATION TEST AND SPLIT BARREL SAMPLING OF SOILS" 2 INCH O.D. SPLIT SPOON SAMPLER WAS USED.

Amount of data: ALTHOU 35 BORINGS WERE REPORTED ONWI-167 (THE COPY AVAILABLE) ONLY PRESENTED 27 BORING LOGS.

*If an item is not applicable to a particular review, write N/A next to the item.

Data sources: BORINGS WERE DRILLED by LAW Engineering Testing company. Reported in ONWI-167. Some raw data (logs) are available in ETI Long Beach, CA. offices

Data Interpreted By: DRILL RIG OPERATOR AS REPORTED IN ONWI-167

Data storage location: ONWI-167 AND Some Logs stored at ETI Long Beach CA offices.

Data related uncertainties: NO UNCERTAINTIES REPORTED.

*If an item is not applicable to a particular review, write N/A next to the item.

A Brown

Salt Repository Project

Summary Data Inventory Sheet

Type of Data:

IN SITU [illegible] — PERMIAN SALT

Data Documented:

IN SITU [illegible] DETERMINATION BY HYDRAULIC FRACTURING, HOLTZCLAW #1 WELL, [illegible] N, BARTON, TERRA TECH, JUNE 1983 (DRAFT)

Data Collection Location:

(a) Areal Location:

PERMIAN — HOLTZCLAW #1

(b) Subsurface location:

VARIOUS — 1750' — 2750'

Method of collection/analyses:

HYDROFRAC TESTS

Amount of data:

5 TESTS

*If an item is not applicable to a particular review, write N/A next to the item.

Data sources:

ABSTRACT REPORT

Data Interpreted By:

A. [illegible]

[illegible]

Data storage location:

[illegible]

Data related uncertainties:

[illegible]

DATA SUMMARY

RATIO σ_H/σ_v TERRA	RATIO σ_H/σ_v [illegible]	ORIENTATION OF σ_{Hmax}	DEPTH (FT)	[illegible]	MIN HORIZONTAL STRESS (PSI) [illegible]	MIN HORIZONTAL STRESS (PSI) REVIEWER
0.36	0.66	N30°E	1350-1358	[illegible]	1110	1560
—	0.[illegible]	N25.5°E	2330-2338	ANHYDRITE	—	1700
1.04	[illegible]	[illegible]	2430-2438	SALT	2915 *	2715
[illegible]	[illegible]	N60°E	2581-2584	SALT	3550 *	[illegible]
0.60	[illegible]	N45°E	2790-2798	LIMESTONE	19[illegible]	2055

* TOTAL

*If an item is not applicable to a particular review, write N/A next to the item.

BJ/84/08/13/0

8

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: In situ Borehole Closure Data from Vacherie Dome (on microfilm)

Data Documented:

"Borehole Closure in Salt Domes" by E.L. Thoms & M. Hogharrebi
Data on Tape 55 (1-4085) from ONWI library of LSU record
Turnover Package

Data Collection Location:

(a) Areal Location:

Vacherie Dome

(b) Subsurface location:

Single borehole drilled to depth of ~1524 m in Vacherie Dome

Method of collection/analyses:

Borehole closure measured by caliper logging device measuring diameter in two directions & by overall volumetric closure by monitoring fluid level in borehole w.r.t. time.

Amount of data:

closure data readings over a period of ~ 1 year. - 16 mo.

*If an item is not applicable to a particular review, write N/A next to the item.

BJ/84/08/13/0

Data sources:

Data Interpreted By:

LSU - R.L. Thoms and M. Moghaddasi

Data storage location:

LSO Record Turnover Package at ONWI - Columbus

Data related uncertainties:

How does this field measured creep behavior relate to developed creep models for Gulf Dome salts. what is effect of anhydrites on closure.
It is suggested different initial states of stress around the dome may account for higher closure rates of Vacherie when compared to Raymond Dome ~ 20 miles away.

*If an item is not applicable to a particular review, write N/A next to the item.

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: Borehole closure for borehole located concentrically with curved jacks

Data Documented: Results of an Accelerated Borehole Closure Testing Program at Avery Island; Topical Report RSI-0211 from RESPEC; CNWI Number to be assigned. DRAFT REPORT

Data Collection Location:

(a) Areal Location:

(b) Subsurface location: Avery Island

Method of collection/analyses: Manual Recording Preliminary analysis based on creep law

Amount of data: Eleven closure curves

*If an item is not applicable to a particular review, write N/A next to the item.

Data sources: RE/SPEC

Data Interpreted By: RE/SPEC

Data storage location: RE/SPEC

Data related uncertainties:

large relative errors in initial displacement measurements

limited data on temperature distribution

*If an item is not applicable to a particular review, write N/A next to the item.

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: Density, steady-state thermal conductivity, thermal expansion, specific heat

Data Documented: ONWI Warehouse

Data Collection Location:

(a) Areal Location: Vacherie, Cypress Creek, Palo Duro, Salt Valley, Richton, Gibson,

(b) Subsurface location: Holes - depths given in report

Method of collection/analyses:

Amount of data:

*If an item is not applicable to a particular review, write N/A next to the item.

Data sources: ONWI Records Roll 50284 D.K. (Fiber Materials Inc.) Microfilm received at ONWI Data Review Meeting 8/21-24/81, Columbus

Data Interpreted By: (Some data as ONWI-522)

Data storage location: ONWI Warehouse

Data related uncertainties:

*If an item is not applicable to a particular review, write N/A next to the item.

Salt Repository Project

Summary Data Inventory Sheet

Type of Data: - Triaxial Creep Tests
- Petrofabric studies: fracture patterns, fluid inclusions, dislocations: microphotographs

Data Documented: Deformation Mechanisms of Experimentally Deformed Bedded Salt - Topical Report RSI-0235, Draft RE/SPEC to ONWI, ONWI Number to be issued

Data Collection Location:

(a) Areal Location: Ohio

(b) Subsurface location: Salt samples from Cleveland Salt Mine

Method of collection/analyses:

Amount of data: - Ten triaxial creep tests

*If an item is not applicable to a particular review, write N/A next to the item.

Data sources: RE/SPEC

Data Interpreted By:

Data storage location: RE/SPEC

Data related uncertainties:

*If an item is not applicable to a particular review, write N/A next to the item.

WMEG AND WMGT DOCUMENT REVIEW SHEET*

FILE NUMBER: 413.2

DOCUMENT: Nuclear Waste Repository Simulation Experiments
Asse Salt Mine - FRG - Annual Report 1982 Draft

REVIEWER: J. Duncan

DATE REVIEW COMPLETED: 8/24/84

DATE APPROVED:

SIGNIFICANCE TO NRC WASTE MANAGEMENT PROGRAM:
Full Scale In Situ Repository Simulation

BRIEF SUMMARY OF DOCUMENTS:
- Brine Migration Tests
- Stress Measurements
- Room Closure
- Floor Cracking

PROBLEMS, DEFICIENCIES OR LIMITATIONS OF REPORT:

DATA CONTENT*

- Average mineralogical components/water content for 12 samples
- Rock mechanics: ultimate stress; creep limit stress; shear strength, modulus
- Temperature during reading
- Brine volumes collected in brine migration test
- Borehole gas pressure build up in brine migration test

ACTION TAKEN*

- Room closure data, extensometer readings
- Floor heave data
- Stressmeter calibrations
- Stress measurement

ACTION RECOMMENDED:

Asse and WIPP experiments probably will remain, for the foreseeable future, the main data basis for evaluating salt repository performance.

Need to be followed very closely and reviewed very critically including acquisition of data base up data to the greatest possible extent.

*If an item is not applicable to a particular review, write N/A next to the item.

[redacted]

A. Brown

FILE NUMBER: 413.2

DOCUMENT: IN SITU STRESS DETERMINATION BY HYDRAULIC FRACTURING, HOLZCLAW #1 WELL, B-D.D. BASIN & N. BARTON, TERRA TEK (DRAFT) JUNE 1984

REVIEWER: A BROWN DATE REVIEW COMPLETED: 8/21/84

DATE APPROVED: (WMEG Only)

SIGNIFICANCE TO NRC WASTE MANAGEMENT PROGRAM:

REPORT ONLY STRESS TESTING IS DONE IN HLW PROGRAM IN PERMIAN BASIN. STRESSES ARE A KEY VARIABLE IN EVALUATION OF PERFORMANCE OF REPOSITORY

BRIEF SUMMARY OF DOCUMENT:

DESCRIBES PROCEDURES & RESULTS OF
FIVE HYDROFRAC TESTS; ONE IN SILTSTONE
ONE IN ANHYDRITE & THREE IN SALT
CONCLUDES THAT IN SALT STRESS IS
APPROXIMATELY LITHOSTATIC, WHILE
IN SILTSTONE & ANHYDRITE MINOR PRINCIPAL
HORIZONTAL STRESS IS ABOUT 0.6-0.7 TIMES
LITHOSTATIC. MINIMUM PRINCIPAL STRESS DIRECTIONS
ARE N30°E IN ROCK, N60°E IN SALT

PROBLEMS, DEFICIENCIES OR LIMITATIONS OF REPORT:

OVERLY ACADEMIC APPROACH CLOUDS ESSENTIAL
SIMPLICITY OF RESULTS.

ACTION TAKEN:

IT IS UNDERSTOOD THAT THIS OVERALL REVIEW
IS BEING REINTERPRETED BY DWMEC

ACTION RECOMMENDED:

NONE

*If an item is not applicable to a particular review, write N/A next to the item.

WMEG AND WMGT DOCUMENT REVIEW SHEET*

FILE NUMBER: 413.2

DOCUMENT: Transient Creep of Repository Rocks - Final Report
DRAFT - Mechanistic Creep laws for Rocksalt, by
J. Handin, N.L. Carter, J.E. Russell Texas A&M, to ONWI
REVIEWER: J. Daemen ONWI Number to be assigned

DATE REVIEW COMPLETED: 8-22-84

DATE APPROVED:

SIGNIFICANCE TO NRC WASTE MANAGEMENT PROGRAM:

A comprehensive detailed assessment of the adequacy (or inadequacy) of salt creep laws. Very important two-page abstract and 3 1/2 page conclusions deserves wide-spread attention among people making decisions about salt repository

BRIEF SUMMARY OF DOCUMENTS: Triaxial constant strain-rate creep tests at 100°C to 200°C, confining pressures of 3.4 and 20 MPa. Comparison of results with others. New creep law proposed

PROBLEMS, DEFICIENCIES OR LIMITATIONS OF REPORT:

Conclusions - comparison with very narrow range of model; why not assess more creep laws!
- limited number of tests (14)
- none of the (admittedly controversial) standard mining engineering rock salt design tests (R-1, Rate Dreyer) have been monitored

DATA CONTENT - Fourteen constant strain rate "creep" tests
- Creep law "constants" for several creep laws and experiments described here as well as in other ONWI reports on Avery Island

ACTION TAKEN

ACTION RECOMMENDED:

- Assess whether proposed law can be used successfully for other tests on Avery Island salt (e.g. accelerated borehole closure tests)
- Assess whether proposed law can be used to describe behavior of other salts

*If an item is not applicable to a particular review, write N/A next to the item.

WMEG AND WMGT DOCUMENT REVIEW SHEET*

FILE NUMBER: 413.2

DOCUMENT: ONWI Records Roll -0284 D.K. (For Materials Inc.)
Microfilm received at ONWI Data Review Meeting 8/21-24/84, Columbus, OH

REVIEWER: J. Daemen

DATE REVIEW COMPLETED: 8/22/84

DATE APPROVED:

SIGNIFICANCE TO NRC WASTE MANAGEMENT PROGRAM:
Complete back-up records for BME/ONWI-522

BRIEF SUMMARY OF DOCUMENTS:
Raw data, QA procedures, Test procedures

PROBLEMS, DEFICIENCIES OR LIMITATIONS OF REPORT:

DATA CONTENT Density, steady-state conductivity, enthalpy, specific heat, heat capacity, thermal diffusivity, linear thermal expansion - salt: {Vacherie dome, Cypress Creek, Palo Duro, Salt Valley, Richton, gypsum dome
basalt - Pomona

ACTION TAKEN

ACTION RECOMMENDED:

*If an item is not applicable to a particular review, write N/A next to the item.

WMEG AND WMGT DOCUMENT REVIEW SHEET*

FILE NUMBER: 413.2

DOCUMENT: Results of an accelerated borehole closure testing program at Avery Island. Topical Report RSI-0211, RELSPEC - CNWI Number to be assigned DRAFT

REVIEWER: J. Dieman

DATE REVIEW COMPLETED: 8-15-84

DATE APPROVED:

SIGNIFICANCE TO NRC WASTE MANAGEMENT PROGRAM:

Provides experimental data on a different configuration from usual test, thereby providing excellent data to allow checking creep laws.

BRIEF SUMMARY OF DOCUMENTS:

Hollow cylinder loaded externally, heated to induce closure of the central hole

PROBLEMS, DEFICIENCIES OR LIMITATIONS OF REPORT:

Limitations: - low temperature for most data
- transient temperature data only for slightly elevated temperatures
- insufficient detail about displacements at failure at jacks

DATA CONTENT Borehole closure data as a function of external pressure, temperature, time.

ACTION TAKEN

ACTION RECOMMENDED:

Use data to assess predictability of borehole closure on the basis of available creep data for Avery Island salt and using various creep models.

*If an item is not applicable to a particular review, write N/A next to the item.

WMEG AND WMGT DOCUMENT REVIEW SHEET*

FILE NUMBER: 413.2

DOCUMENT: Deformation Mechanisms of Experimentally - Deformed Bedded Salt. Draft Topical Report RSI-0255, RE/SPEC TO ONWI, ONWI Number to be assigned.

REVIEWER: J. Duncan

DATE REVIEW COMPLETED: 8-23-84

DATE APPROVED:

SIGNIFICANCE TO NRC WASTE MANAGEMENT PROGRAM:

Fundamental research on salt deformation preliminary results. Might become of importance if followed up by more comprehensive studies. Explains some of the difficulties in developing creep laws.

BRIEF SUMMARY OF DOCUMENTS:

Petrofabric studies to describe microscopic deformation patterns in rock salt.

Triaxial creep tests on salt ~~with~~ ~~out~~ with anhydrite stringers / beds.

PROBLEMS, DEFICIENCIES OR LIMITATIONS OF REPORT:

Limitations: salt from Cleveland salt mine

DATA CONTENT - Petrography and structure before and after experimental deformation
- Ten creep tests: triaxial, constant axial stress, confining stress 5-15 MPa, Temp 25-200 °C

ACTION TAKEN

ACTION RECOMMENDED:

*If an item is not applicable to a particular review, write N/A next to the item.

Reviewer Roger Hart
Date 5/23/84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Quasi-Static Elastic & Strength Tests on Vacherie & Richton domes (ONWI-450) - July 1983

1a. What is the overall objective of the test?
Determine elastic and strength parameters of salt and non-salt deposits

1b. What specific parameters are to be determined by the test?
Elastic constants and unconfined strength and tensile strength of non-salt. Elastic constants exponential Mises-Schleicher criterion parameters & indirect tensile strength. Mises-Schleicher: $\sqrt{J_2'} = k + \alpha\{1 - \exp(-\beta J_1)\}$

1c. What criteria were used for test site (or sample) selection?
Not known - For Richton samples supplied by LETCo for salt and by GRTEC for non-salt. For Vacherie samples supplied by LSU

1d. How is the rock at the test site characterized?
Only described by general rock type. Salt is not specifically characterized in this study.

1e. How many of these tests have been performed?
For Richton: 6 triaxial tests on salt, 15 uniaxial tests on non-salt
For Vacherie: 6 " " " " , 15 " " " "

1f. How many tests are planned?
No more tests are planned at present.

1g. Comments.

Reviewer Roger Hart
Date 5/23/94

2. Is the procedure documented and complete, and is it in written form?

Yes

2a. Is it a standard (ASTM) procedure? If yes, provide reference.

Yes

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?

None noted.

2d. How are any deviations from the established procedures that occur during testing documented?

None noted

2e. Comments.

Reviewer Roger Hart
Date 5/23/12

3. What instrumentation is used for the test?

3a. How were the reliabilities* of the instruments specified?

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?

Yes

3c. Are the calibrations traceable to national or industrial standards?

Traceable to NBS

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer Roy Post
Date 9/27/82

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

Elastic constants from unload - reload portion of test.
Failure criteria established using 24 °C test results
~~Constant~~ Empirical fit to exponential exponential criterion

4a. How can the raw numerical data be retrieved?

Data on tape at Re Spec

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

Yes

4c. Are the data keyed to geological, environmental, and other experimental conditions?

No

4d. Comments.

Reviewer Roy Hart
Date 8/23/84

5. What are the acceptance/rejection criteria for the test data?

Not stated

5a. Were these criteria established prior to test development?

Not stated

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

- Data Handling

- Review Procedure

- Corrective Action

Reviewer Ron Hart
Date 5/23/94

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

Elastic & Strength results are simply listed in tabular form. No attempt made to establish relationship among different tests. Only mention is to strengths being nearly identical at Vaderie and Richton.

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

Reviewer Roger Hart
Date 8/22/84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Salt Creep Tests for Vacherie & Richton domes (ONWI-450) — July 1983

1a. What is the overall objective of the test?
Develop preliminary creep parameters for salt dome deposits.
Parameters picked to fit form of creep law selected by ReSpec. [Exponential-time creep law.]
Form of creep law defined to ~~include~~ reach steady state.

1b. What specific parameters are to be determined by the test?
creep law: $\varepsilon_c = \dot{\varepsilon}_{ss} t + \varepsilon_a \{1 - \exp(-\beta t)\}$ Empirical law
$\dot{\varepsilon}_{ss} = A \sigma^n \exp(-Q/RT)$
parameters determined: A, n, Q/R ~~complete~~
Creep tests performed over period of one month

1c. What criteria were used for test site (or sample) selection?
Not known - Samples for Richton supplied by LETCO, samples for Vacherie supplied by LSU.

1d. How is the rock at the test site characterized?
Rock characterized by Let Co. & LSU I assume - ~~don't know how~~ No record of how only described by general rock type

1e. How many of these tests have been performed?
Three tests on Richton & Three on ~~many~~ Vacherie

1f. How many tests are planned?
No more tests are planned at present

1g. Comments.
~~Only~~ ~~three~~ ~~tests~~
Creep tests at 100°C & 200°C
and at 5 MPa and 10 MPa deviatoric stress
(15 MPa confining pres.)
Constant stress rate test.
I don't believe the results from these tests can be considered sufficient to describe creep behavior of dome salts.

Reviewer Rosa Hart
Date 8/22/84

2. Is the procedure documented and complete, and is it in written form?
creep test internally documented by Re/Spec.
Report - TP 04b - Quasi-static & Creep Triaxial Test

2a. Is it a standard (ASTM) procedure? If yes, provide reference.
Non-Standard

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.
Internal development currently being revised.
~~[illegible]~~

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?
1st revision - Aug 1984

2d. How are any deviations from the established procedures that occur during testing documented?
~~No~~ Deviations in test procedure documented in reports (none documented for these tests)

2e. Comments.

Reviewer Roger Hart
Date 8/22/84

3. What instrumentation is used for the test?
instrumentation described on page 22 (ONWI-450)

stress manually adjusted (computer control recently)

3a. How were the reliabilities* of the instruments specified?
Not defined.
This is a difficult question for long-term tests.
Equipment calibrated before & after tests

3b. Is there a calibration system ar were calibrations systematically carried out according to approved procedure?
load cells - complete system calibrated before - after each test

3c. Are the calibrations traceable to national or industrial standards?
Traceable to NBS

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer Roger Hart
Date 8/20/89

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

~~least square error~~ straight line fitting to data (2 points at 2 different stress levels & 2 different temp.) data collected on cassette tape

4a. How can the raw numerical data be retrieved?

Data on cassette tape has been transfered to mag. tape & are stored in engr. units.
Calibration constants in Rx/spec Q.A. system

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

Test results (strain / time) presented in appendix

4c. Are the data keyed to geological, environmental, and other experimental conditions?

No - no attempt made to interpret creep in terms of affecting conditions

4d. Comments.

Deformation data are collected either at specified deformation interval or time interval (1 hr), whichever comes first.

Reviewer Zoya Hart
Date 8/22/84

5. What are the acceptance/rejection criteria for the test data?

Only based on equipment failure, such as data acquisition system.

5a. Were these criteria established prior to test development?

No criteria

isolated data points thrown out based on experimentors perogative

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

[redacted] Engr. running test picks out data. Reviewed by Paul Sensenay

- Data Handling

- Review Procedure

- Corrective Action

Reviewer Roger Hart
Date 8/22/84

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

No correlation to index properties.

It is not clear what the condition of the samples were at testing - how long out of the hole, how disturbed, moisture change.

There is no correlation between data or between results from other sites other than showing curves on one plot.

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

Actual data was not received. Data on tape in engr. units at Re Spec. I don't think review of this data is warranted since there is so little.

Reviewer J. Dacnen
Date 8-27-84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.

Specific Heat Measurement

1a. What is the overall objective of the test?

1b. What specific parameters are to be determined by the test?

1c. What criteria were used for test site (or sample) selection?

1d. How is the rock at the test site characterized?

1e. How many of these tests have been performed?

1f. How many tests are planned?

1g. Comments.

Reviewer Dorman
Date 3-24-84

2. Is the procedure documented and complete, and is it in written form?

yes ONWI-522, Appendix B

2a. Is it a standard (ASTM) procedure? If yes, provide reference.

ASTM D-2766 + modifications/ refinements

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?

2d. How are any deviations from the established procedures that occur during testing documented?

2e. Comments.

Reviewer Daemen
Date 8-24-84

3. What instrumentation is used for the test?
Electric Heater/Calorimeter

3a. How were the reliabilities* of the instruments specified?

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?
yes

3c. Are the calibrations traceable to national or industrial standards?
yes NBS

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer Daemen
Date 5-24-84

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

4a. How can the raw numerical data be retrieved?
Roll 50284 D.K. (Fiber Materials Inc.), ONWI Microfilm

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

4c. Are the data keyed to geological, environmental, and other experimental conditions?

4d. Comments.

Reviewer _____
Date _____

5. What are the acceptance/rejection criteria for the test data?

5a. Were these criteria established prior to test development?

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

- Data Handling

- Review Procedure

- Corrective Action

Reviewer _____
Date _____

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

Reviewer J. Duncan
Date 7-22-84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Thermal Expansion

1a. What is the overall objective of the test?
Determine linear thermal expansion

1b. What specific parameters are to be determined by the test?
Coefficient of linear thermal expansion as a function of temperature

1c. What criteria were used for test site (or sample) selection?
Some samples rejected because no acceptable size samples could be prepared

1d. How is the rock at the test site characterized?
Salt or caprock

1e. How many of these tests have been performed?
5 for Vacherie Dome, 4 for Cypress Creek Dome
10 for Richton Dome

1f. How many tests are planned?
None - contract finished

1g. Comments.
Data reported in ONWI-522
All raw data in Records Turnover Package,
Complete microfiche record at ONWI

Reviewer Darmen
Date 8-22-14

2. Is the procedure documented and complete, and is it in written form?

yes, Appendix A, CAU I 522

2a. Is it a standard (ASTM) procedure? If yes, provide reference.

ASTM Specification E-228, with a number of refinements

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?

No

2d. How are any deviations from the established procedures that occur during testing documented?

2e. Comments.

Reviewer J. Duncan
Date 8-22-74

3. What instrumentation is used for the test?
Orton Recording Quartz Dilatometer | Temperature - Measuring Instrument
Micrometer Calipers
Electric Furnace
Liquid Baths

3a. How were the reliabilities* of the instruments specified?

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?

Yes

3c. Are the calibrations traceable to national or industrial standards?

Yes - NBS

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer J. D Siemon
Date 8-24-84

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

Plot of thermal expansion vs. time

4a. How can the raw numerical data be retrieved?

Micro f-lm

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

yes

4c. Are the data keyed to geological, environmental, and other experimental conditions?

Yes - Hole, depth given

4d. Comments.

Reviewer J. Daemen
Date 8 24-84

5. What are the acceptance/rejection criteria for the test data?

No

5a. Were these criteria established prior to test development?

No - qualified operator is called for in procedures

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

- Data Handling

- Review Procedure

- Corrective Action

Reviewer J. Daemen
Date 1-24-84

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

Several tests repeated

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

None - complete microfilm copy has been provided for NRC use.

Reviewer J. Diemen
Date 2-22-84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Thermal Conductivity — April 1979 through Jul 1, 1981

1a. What is the overall objective of the test?
Measurement of thermal conductivity

1b. What specific parameters are to be determined by the test?
Thermal conductivity as a function of temperature

1c. What criteria were used for test site (or sample) selection?
Three salt, one caprock - ~~about~~ , ft length, per letter from Patrick, ONWI, to Martinez; May 21, 1979 -

1d. How is the rock at the test site characterized?
Salt or caprock

1e. How many of these tests have been performed?
6 for Vacherie dome, 4 for Cypress Creek dome, 8 for Palo Duro, 5 for Salt Valley, Utah, 4 for Richton

1f. How many tests are planned?
Contract Completed) 12 for Gibson dome

1g. Comments.

Reviewer J. Duncan
Date x

2. Is the procedure documented and complete, and is it in written form?

Yes, ONWI - 522, Appendix C
Roll 50284 D.K. (Fibers Materials Inc.), ONWI Microfilm

2a. Is it a standard (ASTM) procedure? If yes, provide reference.

ASTM C-518

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?

yes, ONWI-522, p. 68, added second heat flow meter

2d. How are any deviations from the established procedures that occur during testing documented?

Documented in ONWI-522
Not found in Roll 50284 D.K.

2e. Comments.

Reviewer Duncan
Date 8-22-84

3. What instrumentation is used for the test?

Heat source, Heat-flow meter, Heat Sink + power supplies, coolants, thermocouples, vacuum chambers, recorders, etc...

3a. How were the reliabilities* of the instruments specified?

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?

Described in Appendix C, Section 6., ONWI-522

3c. Are the calibrations traceable to national or industrial standards?

NBS, ANSI

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer Daemen
Date 8-22-84

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

Tabulate, plot, fit curve

$$\lambda = \frac{q}{A} \cdot \frac{\alpha}{\Delta T}$$

4a. How can the raw numerical data be retrieved?

Microfilm and hard originals in ONWI warehouse

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

yes

4c. Are the data k[illegible]ed to geological, environmental, and other experimental conditions?

hole, depth given from which sample is taken

4d. Comments.

Reviewer Daemen
Date 8-22-84

5. What are the acceptance/rejection criteria for the test data?

5a. Were these criteria established prior to test development?

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

Qualifier in last part of Experimental Procedure

- Data Handling

- Review Procedure

- Corrective Action

Reviewer Dacmen
Date 8-22-84

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

Repeated two tests after adding redundant instrumentation - repeated very well

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

None requested
Complete Microfilm of Records Turnover Package has been provided for NRC use.

Reviewer B. Jagannath
Date 8-22-84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Triaxial comp. Creep tests — Salt specimens from Woods-Holtzclaw well in Palo Duro Basin, Samples selected by ONWI, Texas Bureau of Economic Geology & SNEC
Samples from Unit 4 and Unit 5 of the Lower San Andreas Formation.

1a. What is the overall objective of the test?
To assess the influence of impurity content on creep deformation.

1b. What specific parameters are to be determined by the test?
Creep data : Strain vs time data fitted to exponential-time creep law. Fitting parameters were used to evaluate the effect of the sample impurity on creep deformation of samples.

1c. What criteria were used for test site (or sample) selection?
Samples selected on the basis of estimated impurity level.
3 samples each of: Salt, Salt with 10% anhydrite, Salt with 10 percent mud, and Salt with 20 percent mud.
(100 mm dia, 200 mm Long) Sample size
Depth 2450 ft - 2650 ft

1d. How is the rock at the test site characterized?
Samples from Salt portion of core.

1e. How many of these tests have been performed?
12

1f. How many tests are planned?
12

1g. Comments.
12 tests completed, Inconclusive results

Source: Influence of Impurities on the Creep of Salt from the Palo Duro Basin, Topical Report RSI-0279
Paul E Senseny, Terry Pfeifle, July 84,
RE/SPEC Inc.
P.O. Box 725, Rapid City, SD 57709 for ONWI

not published yet

Temp 75° $(\sigma_1 - \sigma_3) = 15$ mpa $T = 3 \times 10^5$ s (35 days)

Test environment close to that in the Repository Rooms.
2

Reviewer B.J

Date 8-22-84

2. Is the procedure documented and complete, and is it in written form?

Yes,

2a. Is it a standard (ASTM) procedure? If yes, provide reference.

NO, But developed and used for Creep tests reported in other reports.

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?

2d. How are any deviations from the established procedures that occur during testing documented?

NO

2e. Comments.

Acceptable procedure

Reviewer B. J
Date 8-22-91

3. What instrumentation is used for the test?
Triaxial load frame designed by DR W.K. University of Sandia National Lab. (Documented in publication by ONWI-250)

3a. How were the reliabilities* of the instruments specified?
Not Specified as per the definition below

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?
Yes.

3c. Are the calibrations traceable to national or industrial standards?
Yes. - to National Bureau of Standards

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer
Date

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)
Computerized, Digital Read out.

4a. How can the raw numerical data be retrieved?
Yes, at RE/SPEC. facility. Data has not yet been turned over to Battelle.

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)
Yes., Standard presentation.

4c. Are the data keyed to geological, environmental, and other experimental conditions?
Yes., experimental conditions are monitored. Specific identification ties the samples to exact depth in the boring.

4d. Comments.
Data presentation is acceptable

Reviewer
Date

5. What are the acceptance/rejection criteria for the test data?
Successful completion at the end of 35 days. Test stopped after 4 days because of leak. Test duration (35 days) is not long enough, but provides a basis for evaluating the effect of impurities.

5a. Were these criteria established prior to test development?
yes. - Running the test for 35 days. Data monitored automatically (computer monitoring)

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

- Data Handling

- Review Procedure

- Corrective Action N A

Reviewer B. Jagannadh
Date 8/22/84

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

The program has limited scope and within the tested condition the variation in creep parameters for samples of identical impurity was of the same order of magnitude as the variation in creep parameters between samples of different impurities. The hypothesis that there is no difference in creep deformation caused by impurity content can be rejected with only about 50 percent confidence.

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

None

Permian

Reviewer R. Cummings
Date 24 AUG 84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Thermophysical properties on Permian Basin salt (conductivity, diffusivity, coefficient of linear expansion) UCRL-numbered reports (LLL) vary confining stress.

1a. What is the overall objective of the test?
Measurement of (preliminary) thermophysical properties for conceptual thermomechanical modeling of salt repositories; development of experimental methodologies.

1b. What specific parameters are to be determined by the test?
Thermal conductivity, thermal diffusivity, coefficient of linear thermal expansion; Specific heat is calculated from the other data.

1c. What criteria were used for test site (or sample) selection?
Unknown--samples were shipped to labs from various sources.

1d. How is the rock at the test site characterized?
Geophysical/geological logs; in some cases correlative petrographic analyses, core photographs, or point load tests exist.

1e. How many of these tests have been performed?
13

1f. How many tests are planned?
Unknown

1g. Comments.
Data sources are ONWI-522 and UCRL-53476

Reviewer R. CUMMINGS
Date 24 AUG 84

2. Is the procedure documented and complete, and is it in written for

Not all procedures are thoroughly documented. Procedures in CRWI-522 are included as appendices

2a. Is it a standard (ASTM) procedure? If yes, provide reference.

No

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.

Procedures for measurements at pressure and temperature are in development. Measurement techniques such as steady-state conventional methods are internally-approved.

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?

No specific information available

2d. How are any deviations from the established procedures that occur during testing documented?

Mention of major deviations are identified in the reports. Minor deviations are presumably identified in data sheets, but this is unknown

2e. Comments.

It should be remembered that these procedures are largely developmental.

Reviewer R. CUMMINGS
Date 24 AUG 84

3. What instrumentation is used for the test?
Thermocouples, resistance-wire heaters, pressure transducers, LVDTs, pressure cells, and servo systems are used for the measurements under containment. Techniques relative to ONWI-522 have been reviewed by J. Daemen

3a. How were the reliabilities* of the instruments specified?
Calibration against Pyroceram - 9606 roughly indicates reliability. No apparent formal reliability assessment.

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?
yes - against Pyroceram 9606

3c. Are the calibrations traceable to national or industrial standards?
yes

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer R. CUMMINGS
Date 24 AUG 84

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

Data from the pressure tests are collected and plotted automatically.
Data from ONWI-522 may be hand-collected for some data types.

4a. How can the raw numerical data be retrieved?

Play the tapes back.

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

yes -- as plots vs. temperature and pressure

4c. Are the data keyed to geological, environmental, and other experimental conditions?

ONWI-522, yes.

UCRL-53476

4d. Comments.

Reviewer R. CUMMINGS
Date 24 AUG 84

5. What are the acceptance/rejection criteria for the test data?
ONWI-522 -- see review by Daemen.
UCRL-53476 -- All data are reported.

5a. Were these criteria established prior to test development?

N/A

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

N/A

- Data Handling

- Review Procedure

- Corrective Action

Reviewer R. CUMMINGS
Date 24 AUG 84

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

No standardized method of measuring site-specific thermophysical properties has apparently been established. Methods of specimen selection, preparation, and properties measurement seem to still be largely developmental. Care should be taken in comparing or using these preliminary data. Some methods, for example, measure properties in a radial direction; others axial.

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

Specimen handling and preparation documentation relating to the somewhat lengthy and rigorous process of preparation, would be desirable. Also, post-test analyses (such as petrographic, petrofabric, microstructure, and spectrographic, as well as density and moisture content) would be useful to assess variability in results.

Perman

Reviewer R. CUMMINGS
Date 23 AUG 84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Triaxial constant stress-rate tests (and constant strain-rate). Various dates, testing laboratories.
RE/SPEC: constant stress-rate. A.R.A.: Constant strain-rate

1a. What is the overall objective of the test?
Determination of linear and nonlinear failure envelopes and elastic properties. Elevated temperatures may be incorporated (RE/SPEC only)

1b. What specific parameters are to be determined by the test?
Compressive strength (at various levels of confinement) elastic modulus, Poisson's ratio, derived nonlinear and linear failure envelopes. In addition, A.R.A determines moisture content, density, and sonic velocities / dynamic elastic properties during their tests.

1c. What criteria were used for test site (or sample) selection?
RE/SPEC uses tests for input parameters for creep/aw determination; thus avoids anomalous core components. A.R.A. samples (pulled from core by SWEC) are for index testing and are more comprehensive. Core is selected visually.

1d. How is the rock at the test site characterized?
Geological/geophysical logs; occasionally point-load tests or petrographic studies may be correlative if ordered by SWEC for its tests.

1e. How many of these tests have been performed?
From Perman, 36 by RE/SPEC (RSI-0221⅔; ONWI-450⅔; ONWI-314) and 34 (0-1261) by SWEC (A.R.A.) SU

1f. How many tests are planned?
SWEC tests are ongoing.

1g. Comments.
Numbers of tests are uncertain because of need to include unreleased, unanalyzed data by GPMs.

Reviewer R. Cummings
Date 23 AUG 84

2. Is the procedure documented and complete, and is it in written for
Labs do have written procedures.

2a. Is it a standard (ASTM) procedure? If yes, provide reference.
Procedures vary from lab to lab in specimen handling, test set-up, and test procedure details.

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.
Procedures were developed at individual labs and are the results of evolutionary processes. Methods of strain measurement have changed

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?
RE/SPEC underwent formal revision summer 1984 to allow for computer-control of load. S.R.H. began using extensometry (formerly strain gages) in November 1983. There may have been changes at greater levels of detail. Procedural changes apparently receive internal (within the lab) review.

2d. How are any deviations from the established procedures that occur during testing documented?
Noted on testing records. Reports make no special mention of deviated data.

2e. Comments.
Much of the information reviewed has not been formally accepted by ONWI. These reports exhibit substantial and probably significant differences in key procedure elements between labs.

Reviewer R. CUMMINGS
Date 23 AUG 84

3. What instrumentation is used for the test?
Instrumentation has varied. At one time or another, instruments have included LVDTs, pressure transducers, dilatometers, strain gages, signal conditioners, and load cells. Data collection is also automatic.

3a. How were the reliabilities* of the instruments specified?

No formal process.

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?
Equipment is calibrated between each series of tests. Reports are sketchy as to the comprehensiveness of the calibrations in some cases.

3c. Are the calibrations traceable to national or industrial standards?

Unclear from these preliminary reports.

3d. Comments.
Earlier RE/SPEC tests determined lateral strain through a dilatometer measuring fluid volume changes within the cell. It was assumed that the specimen remained cylindrical throughout the test. Corrections were applied through calibration with steel, brass, and copper standards to establish machine stiffnesses.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Later RE/SPEC tests use a deformation jacket wholly contained within the cell.

Reviewer R. CUMMINGS
Date 23 AUG 84

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)
Specimen deformability is measured with a deformation jacket arrangement (present practice) the nature of which varies from lab to lab. Data are collected, calibration constants applied, and plots are generated automatically. Data collection intervals vary.

4a. How can the raw numerical data be retrieved?
Playback of tapes or discs.

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)
Data are given in standard stress-strain, strain-strain, etc., graphs.

4c. Are the data keyed to geological, environmental, and other experimental conditions?
SWEC data are keyed to moisture content, density, and sonic velocity. RE/SPEC data are traceable to geologic logs but no specific correlations are given to the data in either case.

4d. Comments.
Labs report pure testing results.

Reviewer R. Cummings
Date 23 AUG 84

5. What are the acceptance/rejection criteria for the test data?
Spurious data points on these tests are rare. None were noted during spot checks. Those that do occur are rejected/accepted under the judgement of the analyst.

5a. Were these criteria established prior to test development?

N/A

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

- Data Handling
Spurious data may not be explainable. Obviously strange data points are not included in the derivation of the various properties.
- Review Procedure
Reports are reviewed by subcontractor management.
- Corrective Action

Reviewer R. CUMMINGS
Date 23 AUG 84

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

Reports reviewed, which are preliminary, do not in several cases provide sufficient info to evaluate the significance of variations in procedures between labs. It is possible that these differences could introduce significant, systematic variations in properties ~~that~~ as measured by different labs. This situation needs to be resolved through standardization of the entire specimen retrieval, handling, and testing process.

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

Recommend that the formation average properties be assessed for each lab's findings to see if any systematic errors can be related to non-geologic influences. This can be done with data released through normal channels. However, actual lab data sheets may be required to establish procedures in sufficient detail for a full evaluation.

Permian

Reviewer K. CUMMINGS
Date 22 AUGUST 84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Constant-stress, triaxial compression on salt from Salt Cycles, Permian Basin. (Creep tests)

1a. What is the overall objective of the test?
Development of exponential constitutive laws -- determination of creep-law parameters -- to support design and siting activities in the reference horizon.

1b. What specific parameters are to be determined by the test?
$A, n, Q/R, \dot{\varepsilon}_{ss}^{*}, \varepsilon_a, B, \beta,$ [redacted] ξ, at temperatures of 20C - 200C, confining pressures uniform @ 15 MPa.

1c. What criteria were used for test site (or sample) selection?
Attempts to characterize major lithologies with the objective of reproducibility of data, since regression analysis is used to define creep laws. Visual specimen selection.

1d. How is the rock at the test site characterized?
Geologic logs, geophysical logs, systematic point load testing, done by others.

1e. How many of these tests have been performed?
30 on Permian Basin (15 on Cycle 5, 15 on Cycle 4)
RSI-221, RSI-252, ONWI-450.

1f. How many tests are planned?
Unknown -- depends on site selection decision. No further tests of this type are planned prior to site characterization.

1g. Comments.
Specimen selection is careful to avoid apparently anomalous layers (see 1.c. above for purpose of tests), as contrasted with index testing

Reviewer R. CUMMINGS
Date 22 AUGUST 1984

2. Is the procedure documented and complete, and is it in written form
TP-04 B, now a controlled document.

2a. Is it a standard (ASTM) procedure? If yes, provide reference.

Non-standard

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.

Evolved since mid-1970's under supervision of senior management.

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?

1 revision, signed by P. Senseny, summer 1984
Tests were run under Revision 0.
Revision incorporated computer control of tests.
Test control prior to this was manual

2d. How are any deviations from the established procedures that occur during testing documented?

Documentation appears in the testing reports

2e. Comments.

Reviewer R. CUMMINGS
Date 22 AUG 84

3. What instrumentation is used for the test? electronic controls, dilatometers, Load cells, LVDTs, thermocouples, pressure transducers, Triaxial cells custom-built to Re/Spec specs. Loading frames custom built also. Axial load since early 1983 has been controlled by PDP 11/23 computer.

3a. How were the reliabilities* of the instruments specified? Reliabilities are assessed through repetitive measurements and by examining calibration data before & after tests.

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure? Calibration of load- and displacement-sensing equipment before and after each creep test. System calibration is carried out on assembled system

3c. Are the calibrations traceable to national or industrial standards?

All to NBS

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer R. CUMMINGS
Date 8/22/84

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

Data are digitized onto disc. Data reduction are by regression analysis/ curve fitting. Data collection intervals are automatic, based on either deformation or time limits.

4a. How can the raw numerical data be retrieved?

Numerical data are stored as bits; calibration constants are also formatted onto the tapes. Retrieval requires tape playback knowing the format of the tape.

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

All reports contain complete stress-strain, strain-time, etc., plots in appendices. Supporting geological sample descriptions, etc. are stored in hard-copy QA file at Ke/Spec

4c. Are the data keyed to geological, environmental, and other experimental conditions?

Specimens are examined geologically but the regressions run do not allow for geological conditions. Only pure data are presented.

4d. Comments.

Other efforts are targeted at explaining specimen behavior based on geological and experimental conditions.

Reviewer R. CUMMINGS
Date 22 AUG 84

5. What are the acceptance/rejection criteria for the test data?
Data clearly related to equipment failure or DAS failure are rejected. Other spurious data are rare but the rejection of these are really at the discretion of the analyst.

5a. Were these criteria established prior to test development?

N/A

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

- Data Handling
Any rejection of data are done by engineers and are reflected in plotted data; all data are contained in raw data files.
- Review Procedure
All plots are reviewed by senior management/ report authors
- Corrective Action
Most of the rejected data are limited to "glitches that are clearly out-of-line. These data are simply left off the plots.

Reviewer R. CUMMINGS
Date 22 AUG 84

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

Test results are compared w/ each other through regression analyses. Correlations w/ other tests may or may not be made, by others. There are also constant stress-rate tests (on salt, for E & ν) and constant strain-rate tests on non-salt rocks. Test duration ranges from 1 to 6 mo. LVDTs in latter tests (post-ONWI 450) are more accurate since

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

Optionally, details of the specimens tested and raw data may be desirable for correlation and extrapolation of results.

Permian Basin
Palo Duro

Reviewer Peshel / Mundell
Date 8/23/84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test. cored 9/24/82 #36 core run
Splitting tensile strength (Brazilian), No. 1 Detten Well, 2665.0 (ft), date of lab. test is on data sheet on file with SWEC
date of the core recovery is in Well completion report with ONWI

1a. What is the overall objective of the test?
add to the data base (~~and correlation with geophysical logs~~)

1b. What specific parameters are to be determined by the test?
Splitting tensile strength, bulk density

1c. What criteria were used for test site (or sample) selection?
1. Lithologic unit of interest
2. Sample reasonably homogeneous

1d. How is the rock at the test site characterized?
core logs, core photographs, post test petrographic description

1e. How many of these tests have been performed?
approx 60

1f. How many tests are planned?
approx. 40

1g. Comments.
Core is obtained and loged by SWEC, sealed in plastic bags, shipped to TBEG in Austin, samples are selected in Austin and shipped to SWEC in Boston for testing.

Summary report on testing in each well is planned to be issued in FY 85

Reviewer Rishel / Mundell
Date 9/23/69

2. Is the procedure documented and complete, and is it in written for
yes

2a. Is it a standard (ASTM) procedure? If yes, provide reference.
yes - COE RTH 113 with variation as described in writing in report and in procedures.

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.
SWEC technical procedure reviewed with accordance with QA program

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?
N/A

2d. How are any deviations from the established procedures that occur during testing documented?
in nonconformance and disposition reports also detailed notes and comments follow the test

2e. Comments.

Reviewer Pichel / Mandell
Date 8/23/84

3. What instrumentation is used for the test?
the 60,000 lbs testing machine and accessories
detailed specifications etc on file with SWEC

3a. How were the reliabilities* of the instruments specified?
N/A

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?
yes - calibration procedure on file with SWEC, it is with compliance with 10 CFR 50 Appendix B, regularly audited by USNRC and ONWI.

3c. Are the calibrations traceable to national or industrial standards?
yes (NBS)

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer Pickett/Mandell
Date 5/23/84

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

manual readout and recording on data sheet including calculations

4a. How can the raw numerical data be retrieved?

data is on SWEC datasheets on file with SWEC (at that time)

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

yes - clear tables and descriptions

4c. Are the data keyed to geological, environmental, and other experimental conditions?

sample locations allow tracing to geological conditions through the well completion reports

however, the moisture content is documented at the time of the test but no method has been devised yet to determine moisture content in situ

4d. Comments.

Reviewer Rachel Mundell
Date 9/27/84

5. What are the acceptance/rejection criteria for the test data?

all tests which were performed are included in data storage; the cores which were broken during slipping are not used; written procedures include strict calibration checks and procedures for identifying and correcting errors.

5a. Were these criteria established prior to test development?

yes

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

- Data Handling

  in accordance with SWEC procedures (data signed, reviewed and checked)

- Review Procedure

  all the final reports are reviewed internally, including independent QA review (technical review)

- Corrective Action

  written procedures for corrective actions

Reviewer Rashel Mundell
Date 8/23/84

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

These laboratory tests provide detailed information on the properties of small sample from a specific location. They do not provide in situ properties directly.

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

This laboratory test report is suplemented by the corresponding well completion report:
BM1/SRP 5008 Detten No. 1 (by SWEC)

Permian Basin
Palo Duro

Reviewer Mundell / Peshel
Date 8/23/84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Triaxial test at 2000 PSI confining pressure, No 1. Dotten (SWEC) 2673.1 (feet), Lower San Andres, Unit #4 (salt), tested Sept 14, 83

1a. What is the overall objective of the test?
triaxial test at 2000 PSI confining pressure, strain to failure, fracture strength (continued), poisons ratio, Young's modulus dynamic moduli. In general, to add to data base of elastic rock property data at potential Repository site.

1b. What specific parameters are to be determined by the test?
the above plus water content, density, velocity (ies)

1c. What criteria were used for test site (or sample) selection?
1. lithologic unit of interest
2. Sample reasonably homogeneous

1d. How is the rock at the test site characterized?
core logs, core photographs, post test petrographic descriptio

1e. How many of these tests have been performed?
approximately 100

1f. How many tests are planned?
approx. 50 more

1g. Comments.
Core is obtained and loged by Stone & Webster, Sealed in plastic bags, shipped to TBEG in Austin, samples are selected in Austin and shipped to various labs by TBEG in this case tested By Applied Researcl Ass. in Vermont. Summary report on testing in each wells is planned to be

Reviewer Mundell / Rebel
Date 8/23/84

2. Is the procedure documented and complete, and is it in written form?

yes

2a. Is it a standard (ASTM) procedure? If yes, provide reference.

Engineering Service Scope of Work (ESSOW) No. 13697-G1101
It follows standard ASTM procedure with some differences as specified in writing

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.

Stone & Webster document: basis for contractors procedure which is reviewed, approved and which controls the work

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?

There have been revisions approved through the same process

2d. How are any deviations from the established procedures that occur during testing documented?

in. nonconformance and disposition reports
also detailed notes and comments follow the test

2e. Comments.

Reviewer Mundell / Pichel
Date 8/23/84

3. What instrumentation is used for the test?
Listed in detail in the laboratory testing report Volume 6, 2/7/84 by ARA

3a. How were the reliabilities* of the instruments specified?
redundancy of the instrumentation is built in system

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?

Written calibration procedure approved by Stone & Webster in compliance with 10 CFR 50 Appendix B
audited by Stone & Webster

3c. Are the calibrations traceable to national or industrial standards?

yes (NBS)

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer Mundell / Rachuk
Date 8/23/94

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

numerical using Apple computer as described in the ARA report

4a. How can the raw numerical data be retrieved?

plots are in the ARA reports
numerical data on floppy discs at ARA

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

yes - the graphs are in clear and informative form

4c. Are the data keyed to geological, environmental, and other experimental conditions?

in the future the data will be keyed to Geotechnical log by SWEC

however, the moisture content is documented at the time of test but no method has been devised to determine moisture content in situ

4d. Comments.

Reviewer Mondell / Reshel
Date 5/23/94

5. What are the acceptance/rejection criteria for the test data?

all tests which were performed are included in data storage; the cores which broke during shippment were not used; written procedures included

5a. Were these criteria established prior to test development?

yes

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

Written procedures include strict calibration checks and procedures for identifying and correcting errors

- Data Handling

  in accordance with contractors procedures (data signed, reviewed and checked)

- Review Procedure

  the contractors draft report is reviewed by SWEC the final report by AEA is reviewed and accepted by SWEC

- Corrective Action

  Written procedures for corrective actions

Reviewer Mundell/Pelak
Date 8/23/94

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

The laboratory tests provide detailed information on the properties of a small sample from a specific location. They do not provide in situ properties directly.

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

This laboratory test report ~~should be~~ is supplemented by the corresponding well completion report BMI/SRP 5008 Detten No.1 (by SWEC).

The reports for each well are provided by SWEC to DOE/NV.

Permian Basin
Palo Duro

Reviewer John Peshel / L. Mundell
Date 8/23/84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Unconfined compression and dynamic modulus December 20, 1983
Zeck 2989.5 (ft) to the top of the specimen), ~~Sept. 30, 1983~~
Core was otrecovered MAY 22, 1982

1a. What is the overall objective of the test?
Unconfined compresiv strength, static modulus,
dynamic modulus
in general, to gather information* on potential repository site
* data base – elastic properties

1b. What specific parameters are to be determined by the test?
~~future~~ Bulk density and water content as addition to above

1c. What criteria were used for test site (or sample) selection?
1. Lithologic unit of interest
2. Sample reasonably homogeneous

1d. How is the rock at the test site characterized?
core logs, core photographs, post test petrographic description

1e. How many of these tests have been performed?
approximately ~~100~~ 70

1f. How many tests are planned?
approximately 30 more

1g. Comments.
Summary report on testing in each well is planned
to be issued in FY 85
Core is obtained and loged by Stone & Webster, Sealed in
plastic bags, shipped to TBEG in Austin, samples
are selected in Austin and shipped to various labs by TBEG
in this case tested by Applied Research Ass. in Vermont

Reviewer Pedal/Mundell
Date 8/23/84

2. Is the procedure documented and complete, and is it in written form?
yes

2a. Is it a standard (ASTM) procedure? If yes, provide reference.
Engineering Service Scope of Work (ESSOW) No. 13697-G110D
It follows standard ASTM procedure with some differences as specified in writing.

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.
Stone & Webster document: basis for contractors procedure which is reviewed, approved and controls the work

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?
There have been revisions approved through the same process
~~Also detailed notes &~~

2d. How are any deviations from the established procedures that occur during testing documented?
in Nonconformance and disposition reports
also detailed notes and comments follow the test

2e. Comments.

Reviewer Peshel / Mundell
Date 8/27/80

3. What instrumentation is used for the test?
Listed in detail in the Laboratory testing report Volume 7, 4/4/198
by Applied Research Acoustics

3a. How were the reliabilities* of the instruments specified?
redundancy of the instrumentation is build in the system

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?
Written calibration procedure approved by Stone&Webster
in compliance with 10 CFR 50 Appendix B
audited by Stone Webster

3c. Are the calibrations traceable to national or industrial standards?
yes (NBS)

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer Peshel / Mundell
Date 8/23/84

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

numericsd using Apple computer as described in the ARA report

4a. How can the raw numerical data be retrieved?

plots are in the ARA reports
numerical data on floppy disks at ARA

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

yes - the graphs are in clear and informative form

4c. Are the data keyed to geological, environmental, and other experimental conditions?

yes - the data are keyed to Geotechnical log by SWEC at the time of test
however the moisture content is documented (but ~~not~~ no method has been devised yet to determine moisture content in situ

4d. Comments.

Reviewer Perkel/Mundell
Date 2/23/94

5. What are the acceptance/rejection criteria for the test data?
all tests which were performed are included in data storage
the cores which broke during shipping are not used
written procedures include strict calibration checks and
procedures for identifying and correcting errors

5a. Were these criteria established prior to test development?

Yes

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

- Data Handling
in accordance with contractors procedures (data signed, reviewed and checked)

- Review Procedure
the contractors draft report is reviewed by SWEC
the final report by ARA is reviewed and accepted by SWEC

- Corrective Action

written procedures for corrective actions

Reviewer Peshel / Mundell
Date 8/23/85

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

These laboratory tests provide detailed information on the properties of a small sample from a specific location. They do not provide ~~information for design.~~ in situ properties directly.

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

Well completion reports are essential to evaluate & extrapolate the laboratory test data.

The well completion reports for each well are provided by SWEC to ONWI.

For this test the well completion report used is BMI/SRP-5009

Permian Basin
Palo Duro

Reviewer Peshel / Mundell
Date 8/23/84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Specific gravity & total porosity lab. test, G. Ftiemel #1, S-79, GFR 2635.3-2635.4, lower San Andres, unit #4 dolomite limestone, date of test ... approx Nov. 83

1a. What is the overall objective of the test?
data traceable back to the REI data sheets add to the data base and correlation with geophical logs

1b. What specific parameters are to be determined by the test?
Water Content, Specific gravity, effective and total porosity

1c. What criteria were used for test site (or sample) selection?
1. lithologic unit of interest specific to porosity
2. samples reasonably homogeneous and representative of a larger interval

1d. How is the rock at the test site characterized?
core logs, core photographs, pre test petrographic description

1e. How many of these tests have been performed?
approximately 80

1f. How many tests are planned?
approx. 70

1g. Comments.
Testing done by Resource Engineering Inc. as subcontract to Stone & Webster Eng. Corp.
Core is obtained and loged by Stone & Web. E.C, sealed in plastic bags, shipped to TREG in Austin, samples are selected in Austin by SWEC and shipped to SWEC in Boston where test specimen are selected and shipped to REI

Reviewer Peshel / Mundell
Date 5/23/84

2. Is the procedure documented and complete, and is it in written for
yes

2a. Is it a standard (ASTM) procedure? If yes, provide reference.
Standard written procedure is based on COE, U.S. Army Rock Testing Handbook, RTH 107-80 and RTH 106-80 with some differences specified in writing.

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.
Stone & Webster document : basis for contractors procedure which is reviewed, approved and controls the work

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?
There have been revisions approved through the same process

2d. How are any deviations from the established procedures that occur during testing documented?
in nonconformance and disposition reports also detailed notes and comments follow the test

2e. Comments.
Non-standard technique using air pycnometer has recently been approved for future tests, based on comparisons of the two techniques on the same samples.

Reviewer Peskel / Mundell
Date 8/23/94

3. What instrumentation is used for the test?

Basically a balance and a temperature controlled oven. The instrumentation is described in test procedure.

3a. How were the reliabilities* of the instruments specified?

N/A

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?

yes (NBS) Written calibration procedure approved by Stone & Webster in compliance with 10 CFR 50 Appendix B audited by Stone & Webster

3c. Are the calibrations traceable to national or industrial standards?

yes (NBS)

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer Peshkin/Mundell
Date 6/23/94

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

manual completion of data sheets including calculations

4a. How can the raw numerical data be retrieved?

data sheets in RFI files
Results in SWEC REPORTS.

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

yes - tables clear and logical, calculation methods described

4c. Are the data keyed to geological, environmental, and other experimental conditions?

yes. the data are keyed to Geotechnical log by SWEC however the moisture content is documented at the time of test but no method has been devised yet to determine moisture content in situ

4d. Comments.

Reviewer Pashel / Mundell
Date 8/23/84

5. What are the acceptance/rejection criteria for the test data?

all tests which were performed are included in data storage
the cores which broke during slipping are not used
written procedures include strict calibration checks, identification and correcting errors
the use or rejection of the data is left to the user, everything reported

5a. Were these criteria established prior to test development?

yes

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

- Data Handling
  in accordance with contractors procedures (data signed, reviewed and checked)

- Review Procedure
  the contractors draft report is reviewed by SWEC
  the final report by REI is reviewed and accepted by SWEC

- Corrective Action
  written procedures for corrective actions

The tests of effective and total porosity by REI on 11 samples from drillhole G. FRIEMEL #1 show a descrepancy in the magnitute of the values of effective porosity are in 5 cases higher than the total porosities. The problem was thoroughly checked by SWEC and no laboratory test error found.

Reviewer Poehl / Mundell
Date 8/21/84

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

These laboratory tests provide detailed information on the properties of a small sample from a specific location. They do not provide in situ properties directly.

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

The well completion report for this well needs to be provided to complement the laboratory data.

Summary report on testing in each well is planned to be issued in FY85.

Permian Basin
Palo Duro

Reviewer
Date

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.

1a. What is the overall objective of the test?

1b. What specific parameters are to be determined by the test?

1c. What criteria were used for test site (or sample) selection?

1d. How is the rock at the test site characterized?

1e. How many of these tests have been performed?

1f. How many tests are planned?

1g. Comments.

Reviewer _____
Date _____

2. Is the procedure documented and complete, and is it in written for

2a. Is it a standard (ASTM) procedure? If yes, provide reference.

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?

2d. How are any deviations from the established procedures that occur during testing documented?

2e. Comments.

Reviewer _____

Date _____

3. What instrumentation is used for the test?

3a. How were the reliabilities* of the instruments specified?

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?

3c. Are the calibrations traceable to national or industrial standards?

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer _____
Date _____

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

4a. How can the raw numerical data be retrieved?

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

4c. Are the data keyed to geological, environmental, and other experimental conditions?

4d. Comments.

Reviewer _____
Date _____

5. What are the acceptance/rejection criteria for the test data?

5a. Were these criteria established prior to test development?

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

- Data Handling

- Review Procedure

- Corrective Action

Reviewer _____
Date _____

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

Permian Basin
Palo Duro

Reviewer
Date 5

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Slake Durability Index 1. Cored 4/18/84 Core Run #11

1a. What is the overall objective of the test?

1b. What specific parameters are to be determined by the test?

1c. What criteria were used for test site (or sample) selection?

1d. How is the rock at the test site characterized?

1e. How many of these tests have been performed?

1f. How many tests are planned?

1g. Comments.

Reviewer _____
Date _____

2. Is the procedure documented and complete, and is it in written for

2a. Is it a standard (ASTM) procedure? If yes, provide reference.

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?

2d. How are any deviations from the established procedures that occur during testing documented?

2e. Comments.

Reviewer _____
Date _____

3. What instrumentation is used for the test?

3a. How were the reliabilities* of the instruments specified?

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?

3c. Are the calibrations traceable to national or industrial standards?

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer
Date

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

4a. How can the raw numerical data be retrieved?

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

4c. Are the data keyed to geological, environmental, and other experimental conditions?

4d. Comments.

Reviewer
Date

5. What are the acceptance/rejection criteria for the test data?

5a. Were these criteria established prior to test development?

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

- Data Handling

- Review Procedure

- Corrective Action

Reviewer _____
Date _____

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

Reviewer Mundell / Peshel
Date 8/23/84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Schmidt rebound hardness index, Detten #1 well, YATES Formation 1272.3 (feet, depth), date of test 9/23/83 date of the core recovery is in Well completion report with ONE

1a. What is the overall objective of the test?
add to the data base

1b. What specific parameters are to be determined by the test?
Schmidt rebound hardness index

1c. What criteria were used for test site (or sample) selection?
1. Lithologic unit of interest
2. Sample reasonably homogeneous

1d. How is the rock at the test site characterized?
core logs, core photographs, post test petrographic description

1e. How many of these tests have been performed?
approx. 100

1f. How many tests are planned?
. 50

1g. Comments.
Core is obtained and logged by SWEC, sealed in plastic bags, shipped to TBEG in Austin, samples are selected in Austin, and shipped to SWEC in Boston for testing. Summary report on testing in each well is planned to be issued in FY 85

Reviewer Mundell / Pasulle
Date 8/23/84

2. Is the procedure documented and complete, and is it in written form?

yes

2a. Is it a standard (ASTM) procedure? If yes, provide reference.

yes - ISRM 1978, Part 3, "Suggested Method for Determination of the Schmidt Rebound Hardness"

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.

Stone & Webster document: basis for contractors procedure which is reviewed, approved and controls the work

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?

There have been revisions approved through the same process

2d. How are any deviations from the established procedures that occur during testing documented?

in nonconformance and disposition reports also detailed notes and comments follow the test

2e. Comments.

Reviewer Mandello/Paschall
Date 6/23/84

3. What instrumentation is used for the test?

listed in laboratory testing report supplied by RFI to SWEC

3a. How were the reliabilities* of the instruments specified?

N/A

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?

yes written calibration procedure approved by Stone & Webster in compliance with 10 CFR 50 Appendix B, audited by Stone & Webster

3c. Are the calibrations traceable to national or industrial standards?

yes (NBS)

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer Mundell/Bickel
Date 4/23/84

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

manual completion of data sheets including calculations

4a. How can the raw numerical data be retrieved?

data sheets in RET files
Results in SWEC reports

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

yes - tables clear and logical, calculation methods described

4c. Are the data keyed to geological, environmental, and other experimental conditions?

yes the data are keyed to Geotechnical log by SWEC

However the moisture content is documented at the time of test but no method has been developed yet to determine moisture content in site

4d. Comments.

Reviewer Mundell / Reshel
Date 8/23/84

5. What are the acceptance/rejection criteria for the test data?
all test which were performed are included in data storage
the cores which broke during shipping are not used
written procedures include strict calibration checks and procedures for identifying and correcting errors

5a. Were these criteria established prior to test development?

Yes

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

- Data Handling
in accordance with contractors procedures (data signed, reviewed, and checked)
- Review Procedure
the contractors draft report is reviewed by SWEC, the final report by ARA is reviewed and accepted by SWEC
- Corrective Action

written procedure for corrective actions

Reviewer Mundell/Rahel
Date 8/15/94

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

The laboratory tests provide detailed information on the properties of a small sample from a specific location. They do not provide in situ properties directly.

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

The Well completion report for this well needs to be provided to complement the laboratory data.

Summary report on testing in each well is planned to be issued in FY 85.

Reviewer S. Smykowski / K. Wahi
Date 8/23

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
GD1-14 GD1-39 June 1981
GD1-15 GD1-40
GD1-16 GD1-41 by WCC

1a. What is the overall objective of the test?
Triaxial Extension Unload Test.
To determine strength parameters + stress-strain relationship on salt cycle 6
depth ≈ 3270' to ≈ 3340'

1b. What specific parameters are to be determined by the test?
radial + axial strain
Elastic moduli

1c. What criteria were used for test site (or sample) selection?
Taken from salt cycle 6 in vicinity of repository horizon.

1d. How is the rock at the test site characterized?
salt with some samples having a small % anhydrite.

1e. How many of these tests have been performed?
9

1f. How many tests are planned?
none - testing completed

1g. Comments.
Reported Moduli values are reported for only 1 Tx extension unload test + 1 Tx compression unloading test. It appears the moduli were never determined or reported for any of the other tests done,
Poissons ratio, Bulk Moduli, Shear Moduli do not appear to be calculated.

Reviewer Smykowski / Wahi
Date 8/23/84

2. Is the procedure documented and complete, and is it in written form?
yes, in WCC files + in RPT's at ONWI on microfile

2a. Is it a standard (ASTM) procedure? If yes, provide reference.

no.

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.
Internal (WCC) development

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?

N/A

2d. How are any deviations from the established procedures that occur during testing documented?

No apparent deviations were noted. Load values varied among tests.

2e. Comments.

Reviewer Smyłowski / Wahi
Date 8/23/84

3. What instrumentation is used for the test?
pressure cell, LVDT, circumferential strain gauge

3a. How were the reliabilities* of the instruments specified?
not available

3b. Is there a calibration system and were calibrations systematically carried out accord-g to approved procedure?
yes, dead wt. testers were used prior to each test after initial calibration.
the load cell was calibrated by an outside NBS approved lab

3c. Are the calibrations traceable to national or industrial standards?
yes

3d. Comments.

Axial and radial gauges gave erratic readings during test on sample GD1-16.
Quote from records on sample GD1-15: "Axial strain no good;

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Some Terminology on raw + calculated data print out was unclear.
For example "total axial strain" and 'axial strain'

Reviewer Swykowski/Wahi
Date 8/23/84

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

Automated data aquisition system (HP-85 microcomputer)
Printout of data tapes.

4a. How can the raw numerical data be retrieved?

WCC files + ONWI microfilm records

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

Yes, in ONWI-400 and on microfilm at ONWI, Columbus
Relatively complete records

4c. Are the data keyed to geological, environmental, and other experimental conditions?

No. Conventional test loads were used.

4d. Comments.

Reviewer Smykowski/Wake
Date 8/23/84

5. What are the acceptance/rejection criteria for the test data?

Supervisory personnel's judgement based upon visual inspection of stress-strain curves + numerical values of calculated data.

5a. Were these criteria established prior to test development?

Yes

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

- Data Handling

  Judgement of supervisory personnel

- Review Procedure

  In general, 2 people other than lab technician reviewed the data.

- Corrective Action

  Depending on the anomaly, a test was either abandoned or started on a new sample. [redacted]

Reviewer Smykowski / Wahi
Date

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

None

Reviewer K. Wahi / S. Smykowski
Date 8/23

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Triaxial compression loading/unloading GD1-58, 59, 61, 62, 63, 64

1a. What is the overall objective of the test?
Determine elastic moduli and strength parameters for Salt cycle 6 samples from GD1 Borehole in Paradox Basin

1b. What specific parameters are to be determined by the test?
Young's Modulus, Stress-rate curves, strength

1c. What criteria were used for test site (or sample) selection?
Salt from the vicinity of the expected repository horizon.

1d. How is the rock at the test site characterized?
Don't know

1e. How many of these tests have been performed?
Six

1f. How many tests are planned?
None

1g. Comments.
Strength values not reported explicitly

Reviewer
Date

2. Is the procedure documented and complete, and is it in written form?
Yes. Available in WCC Files; In RTPs at ONWI on microfilm

2a. Is it a standard (ASTM) procedure? If yes, provide reference.
No

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.
Internally developed Procedures

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?

N/A

2d. How are any deviations from the established procedures that occur during testing documented?

~~with memoranda~~
No apparent deviations were noted. Some alterations in the planned load values were made based on test results of ~~on~~ tests to date.

2e. Comments.
The procedures may be similar or the same as ASTM but are not identified as such.

Reviewer
Date

3. What instrumentation is used for the test?
Pressure cell, LVDT, strain gauges (~~axial~~, circumferential)

3a. How were the reliabilities* of the instruments specified?
Don't know

3b. Is there a calibration system and were calibrations systematically carried out accord··g to approved procedure?
Yes. The load cell was calibrated by an outside approved lab. Dead-wt. testers were used prior to each test after initial calibration

3c. Are the calibrations traceable to national or industrial standards?
Most of the transducers are calibrated by lab. standards. The lab. standards are traceable to national standards.

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer
Date

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)
Automated data aquisition system (HP-85)
Printouts of data tapes available.

4a. How can the raw numerical data be retrieved?
WCC Files or ONWI microfilm records

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)
Yes. Extensive records were kept on test data. WCC files as well as ONWI-400 report the data relatively completely.

4c. Are the data keyed to geological, environmental, and other experimental conditions?
No. Convential test loads were used.

4d. Comments.
Corrections related to strain data were made after an error was discovered in the program that calculates the strains. Terminology on raw ~~data~~ and calculated data printout unclear. For example "modulus" is used as a reading without definition.

Reviewer
Date

5. What are the acceptance/rejection criteria for the test data?

Supervisory personnel's judgement based on visual inspection of stress-strain curves and numerical values of calculated data.

5a. Were these criteria established prior to test development?

Yes.

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

Not sure

° Data Handling

Judgement of supervisor

° Review Procedure

Two people (in addition to the technician) reviewed the data.

° Corrective Action

Certain data were ignored if instrument malfunction was suspected.

Reviewer _____
Date _____

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

Young's modulus reported was derived from only ~~two~~ one test out of ~~a dozen~~ six or so conducted

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

None

S.S. $\dot{\varepsilon} = A e^{-Q/RT} \sigma^n$

Transient $\dot{\varepsilon} = A e^{-R\theta/Q} t^a \sigma^{n'}$ 1

Reviewer WAHI
Date 9/22

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Creep Test GD 1-73 Start Date Sept. 11, 81
(Triaxial) Laboratory

1a. What is the overall objective of the test?
Measure creep behavior of salt from Gibson Dome core (GD-1)

1b. What specific parameters are to be determined by the test?
Radial and axial strains as a fn. of time at different load increments

1c. What criteria were used for test site (or sample) selection?
Samples from expected repository horizon area in Salt Cycle 6 of the GD-1 hole.

1d. How is the rock at the test site characterized?
N/A (It is a lab test)

1e. How many of these tests have been performed?
Six

1f. How many tests are planned?
N/A

1g. Comments. Refer to ONWI-400 for data on other tests.

Triaxial Extension Unload

Reviewer
Date

2. Is the procedure documented and complete, and is it in written form?

Yes. A Woodward-Clyde Procedure is documented, complete and in written form. Available on microfilm File # 2931.2.3

2a. Is it a standard (ASTM) procedure? If yes, provide reference.

No

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.

Developed, reviewed and approved internally

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?

No revisions. Specific work instructions were given by the geotechnical engineer.

2d. How are any deviations from the established procedures that occur during testing documented?

N/A

2e. Comments.

Reviewer
Date

3. What instrumentation is used for the test?

Four strain gages (two axial, two circumperential)
Electrical resistance (foil type) "Micro-Measurements, In
Load Cell (axial), Pressure Transducer
Platen-to-Platen (LVDT) ~~Displacement~~ Transducer

3a. How were the reliabilities* of the instruments specified?

Don't know

3b. Is there a calibration system and were calibrations systematically carried out accord··g to approved procedure?

Yes. Dead wt. testers were used prior to each test after initial calibration.
The load cell was calibrated by an outside approved lab.

3c. Are the calibrations traceable to national or industrial standards?

Most transducers are calibrated by laboratory standards
The lab. standards are traceable to national standards

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer
Date

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

Automated data aquisition system (HP-85 microcomputer)
Printouts of data tapes. No backups.
~~Data~~ Creep data were fit to ~~the~~ an empirical creep law using non-linear least squrke fit.

4a. How can the raw numerical data be retrieved?

~~Weee~~ WCC Files or ONWI microfilm records.

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

Yes. In particular, ONWI-400 reports the data very clearly.

4c. Are the data keyed to geological, environmental, and other experimental conditions?

To some extent. The temp of 50°C is only slightly higher (~15°C higher) than the ambient at repository depth. However, "extension unload" type of test was used that simulates stress conditions of an excavation better than a compression load triaxial

4d. Comments.

Certain tests used much higher than in-situ stress as the confining stress

Reviewer _____
Date _____

5. What are the acceptance/rejection criteria for the test data?

Instrument or equipment failure ~~are~~ are bases for rejecting data points. Anomalous ~~plot~~ points on a plot are symptomatic of instrument malfunction or equipment failure. No written guideline.

5a. Were these criteria established prior to test development?

Yes.

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

- Data Handling

  Judgement of supervisory personnel

- Review Procedure

  In general, two people other than lab technician reviewed the data.

- Corrective Action

  Depending on the anomaly, a test ~~was~~ either abandoned or started on a new sample. Data from erratic instruments was not utilized in the empirical fit.

Reviewer
Date

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

Data interpretation and fitting appear to have questionable assumptions in that total strain value is reinitialized (numerically) in determining steady state strain rates for different stages of loading in a given test.

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

ONWI-400 & microfilm at ONWI

Reviewer WAH1
Date 8/23

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Elevated temperature extension unload tests on Salt Cycle 6.
GD1-36 (@ 50°C); GD1-37 (@ 100°C); GD1-38 (@ 150°C)
Aug. 21, 81 Aug. 24, 81

1a. What is the overall objective of the test?
Determine strength and elastic behavior as a fn. of temperature.

1b. What specific parameters are to be determined by the test?
Stress-strain data at different temperatures.
Confined compressive strength

1c. What criteria were used for test site (or sample) selection?
Salt cycle 6 ~~consider~~ at a depth of ~3300 ft considered representative of expected repository horizon salt.

1d. How is the rock at the test site characterized?
Physical appearance?

1e. How many of these tests have been performed?
Three

1f. How many tests are planned?
None

1g. Comments.
Strain gauges did not function properly for the most part. Erratic axial and radial strains were experienced frequently.
Two sets of data are reported for specimen GD1-37 (File 37 and File 37A)

Reviewer K. WAHI
Date 8/23

2. Is the procedure documented and complete, and is it in written form?
Yes. On WCC files and RTP (on microfilm) at ONWI.

2a. Is it a standard (ASTM) procedure? If yes, provide reference.
No. Internal WCC procedures were written.

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.
Developed, reviewed, and approved internally.

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?
No revision to the procedure. Certain confining stress levels had to be lowered due to sealing problems.

2d. How are any deviations from the established procedures that occur during testing documented?

N/A

2e. Comments.

Reviewer _____
Date _____

3. What instrumentation is used for the test?

LVDT, pressure cell, circumferential strain gauge (Disp. Transducer)

3a. How were the reliabilities* of the instruments specified?

Unknown

3b. Is there a calibration system and were calibrations systematically carried out accord··g to approved procedure?

Yes. Dead-wt. testers were used prior to each test after initial calibration. The load cell was calibrated by an outside, approved lab.

3c. Are the calibrations traceable to national or industrial standards?

Most transducers are calibrated by laboratory standards. The lab. standards are traceable to national standards.

3d. Comments.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer
Date

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

Automated data acquisition system (HP-85) Printouts of data tapes and hand written notes. Simple formulae for converting displacements and loads to strains and stresses were programmed into the microcomputer.

4a. How can the raw numerical data be retrieved?

WCC Files and ONWI microfilms (RTPs)

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

Yes. Extensive notes, documentation, and plots are included in the WCC files to trace the tests completely.

4c. Are the data keyed to geological, environmental, and other experimental conditions?

Yes. Near-field temperatures will most likely range between 100°C and 150°C. Tests were performed at 50°C, 100°C, and 150°C at sufficiently large confining stresses.

4d. Comments.

Reviewer
Date

5. What are the acceptance/rejection criteria for the test data?

Supervisory personnel's judgement based on visual inspection of stress-strain data Tests were to be stopped at failure or 20% strain. (total)

5a. Were these criteria established prior to test development?

Yes

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

Unsure.

- Data Handling

  Judgement of supervisor

- Review Procedure

In General, Two people reviewed the data

- Corrective Action

  If instrument malfunction, or hardware problem was suspected, the data were ignored or test stopped

Reviewer _____
Date _____

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

No moduli ~~dat~~ calculated at elevated temperatures. One test (GD1-38) did not appear to have the correction applied to all other tests; namely the error in the strain calculation algorithm that was identified. See Fig. B-15, p. 149, ONWI-400.

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

Reviewer ABrown
Date 8/23/84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
YOUNG'S MODULUS OF SALT SAMPLES FROM DRILL LOGS.

1a. What is the overall objective of the test?
MEASUREMENT OF DEFORMATION CHARACTERISTIC.

1b. What specific parameters are to be determined by the test?
E

1c. What criteria were used for test site (or sample) selection?
ENTIRE HOLE

1d. How is the rock at the test site characterized?
SALT, ANHYDRITE, ETC

1e. How many of these tests have been performed?
CONTINUOUS (~ 6000)

1f. How many tests are planned?
NO MORE

1g. Comments.
INTERPRETED FROM SONIC DATA

Reviewer ABrown
Date 8/23/82

2. Is the procedure documented and complete, and is it in written form?

NO; [illegible]

2a. Is it a standard (ASTM) procedure? If yes, provide reference.

YES - REFERENCE NOT GIVEN (OUTGOLD)

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.

NO REVIEW

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?

N/A

2d. How are any deviations from the established procedures that occur during testing documented?

NOT APPARENT

2e. Comments.

Reviewer A Brown
Date 93/2/9 DC

3. What instrumentation is used for the test?

DOWNHOLE SONIC LOGGING TOOL

3a. How were the reliabilities* of the instruments specified?

NOT SPECIFIED

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?

YES, BUT NO RECORD

3c. Are the calibrations traceable to national or industrial standards?

PRESUMABLY, BUT NO RECORD

3d. Comments.

3-D LOGS (3 OF THEM) -
500-2710 (WELEX)
2690-5525 (BP ROWEL)
5525-6380 (✓)

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer A Brown
Date 5/23/84

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

ANALYTICAL ANALYSIS OF SOME LOG DATA

4a. How can the raw numerical data be retrieved?

FROM TAPES OR HARD COPY OF LOGS

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

YES

4c. Are the data keyed to geological, environmental, and other experimental conditions?

NOT IN CURRENT FORM

4d. Comments.

LOOSE LOGS.

Reviewer Abrow
Date 5/23-84

5. What are the acceptance/rejection criteria for the test data?

ALL ACCEPTED

5a. Were these criteria established prior to test development?

N/A

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

N/A

- Data Handling

  N/A

- Review Procedure

  N/A

- Corrective Action

  N/A

Reviewer A Brown
Date 3/23/84

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

TWO CHECKS:

		YOUNG'S MODULUS (PSI x10⁶)	
DEPTH	ONWI 400 REF	WWC	LOG
3294	p 160	4.1	5.5
3277	p 153	4.3	5.4

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

NONE

NOTE: YOUNG'S MODULUS DOES NOT APPEAR TO BE STRESS OR TEMPERATURE DEPENDENT (UNLESS THEY CANCEL) BASED ON CONSTANT VALUE IN LOGS.

Reviewer A Brown
Date 8/22/84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
HOLTZCLAW #1, HYDROFRAC TESTS

1a. What is the overall objective of the test?
IN SITU STRESS DETERMINATION

1b. What specific parameters are to be determined by the test?
HORIZONTAL STRESS (TOTAL)

1c. What criteria were used for test site (or sample) selection?
GEOLOGY, GEOPHYSICS

1d. How is the rock at the test site characterized?
VISUAL, ETC

1e. How many of these tests have been performed?
5 IN THIS HOLE

1f. How many tests are planned?
NO MORE AT PRESENT.

1g. Comments.

TERRA TEK FOR SWEC. REFERENCE:
IN-SITU STRESS DETERMINATION BY HYDRAULIC FRACTURING, HOLTZCLAW #1 WELL, BY D.D. BUSH AND N. BARTON, TERRA TEK, SALT LAKE CITY, REPORT TREE 84-04, JUNE, 1984.

Reviewer A Brown
Date

2. Is the procedure documented and complete, and is it in written form?

NOT AS FAR AS CAN BE ASCERTAINED

2a. Is it a standard (ASTM) procedure? If yes, provide reference.

NO

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.

FROM LITERATURE (BIEDERMAN ET AL, 1976) AND ONWI CONTRACTOR EXPERIENCE (NELSON ET AL, 1982 - ONWI 400)

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?

SOME MODIFICATIONS AS THEY WENT ALONG

2d. How are any deviations from the established procedures that occur during testing documented?

IN REPORT

2e. Comments.

PROCEDURE HAS BECOME RELATIVELY STANDARD OVER LAST DECADE.

Reviewer _____
Date _____

3. What instrumentation is used for the test?

UPHOLE PRIMARY TEST EQUIPMENT (HP, TERRADYNAMIC)
DOWNHOLE SECONDARY CHECK EQUIPMENT (LYNES)
LYNES DOWNHOLE PACKER ASSEMBLY

3a. How were the reliabilities* of the instruments specified?

THEY WEREN'T

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?

YES (DATA PROVIDED IN REPORT)

3c. Are the calibrations traceable to national or industrial standards?

YES

3d. Comments.

REDUNDANT SYSTEMS THROUGHOUT.
LITTLE EVIDENCE IN REPORT THAT THIS REDUNDANCY WAS CONSISTENTLY USED IN EVALUATION

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer
Date

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

EMPIRICAL DATA ANALYSIS BASED ON DEBATABLE THEORETICAL BASIS, ESPECIALLY IN SALT
ANALYTICAL ANALYSIS

4a. How can the raw numerical data be retrieved?

FROM REPORT, OR DATA TAPES AT TERRA TEK

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

YES

4c. Are the data keyed to geological, environmental, and other experimental conditions?

YES

4d. Comments.

THOROUGH, IF SOMEWHAT ACADEMIC, EVALUATION.
INTERPRETATION OF TESTS APPEARS MORE
TECHNICAL THAN NRC REQUIREMENTS

Reviewer
Date

5. What are the acceptance/rejection criteria for the test data?

ALL BUT ONE WERE ACCEPTED, DESPITE APPARENT FRACTURE PROPAGATION BELOW LOWER PACKER IN SILTSTONE & ANHYDRITE TESTS; FAILED TEST WAS ANALYSED FOR ALL AVAILABLE DATA

5a. Were these criteria established prior to test development?

APPARENTLY NOT.

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

° Data Handling

ACCEPTED

° Review Procedure

EVALUATED

° Corrective Action

REPORTED

Reviewer _____
Date _____

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

DATA IN GENERAL APPEAR OF APPROPRIATE ACCURACY FOR HLW PROGRAM. DETAILED UNNECESSARY EVALUATION APPEARS SOMEWHAT SPURIOUS, IN OPINION OF REVIEWER THE FINDINGS PROVID MUCH OF THE DATA NEEDED ON STRESS IN THIS AREA FOR THE HLW PROGRAM

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

NONE.

Reviewer ABROWN
Date 8/22/84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
GDST's - GEOTECHNICAL DRILL STEM TESTS
GIBSON DOME HOLE GD-1

1a. What is the overall objective of the test?
CREEP TESTS
HYDROFRACTURE TESTS

1b. What specific parameters are to be determined by the test?
VOLUMETRIC CREEP RATE
IN SITU STRESS

1c. What criteria were used for test site (or sample) selection?
IN PROPOSED REPOSITORY LOCATION AND
ASSOCIATED STRATA

1d. How is the rock at the test site characterized?
BY CORE INSPECTION & GEOPHYSICAL LOGS

1e. How many of these tests have been performed?
5 CREEP (INC 2 FAILED)
6 HYDROFRAC (INC 1 FAILED)

1f. How many tests are planned?
NO MORE

1g. Comments.
TESTS CONDUCTED AFTER DRILLING & REAMING
DESCRIPTION IN FIELD NOTES (DATA LOG 2922.1. READ) APPEARS TO ACCORD WITH GNWI 400 DESCRIPTION (ALTHOUGH DETAILS OF CONTINUAL PROBLEMS WITH LINES EQUIPMENT WERE OMITTED)

Reviewer ABROWN
Date 8/22/84

2. Is the procedure documented and complete, and is it in written form?

NOT IN FILES - EACH TEST PLAN DOCUMENTED IN FIELD NOTES. PLAN IS IN FILES - REEL 160, FRAMES 135-1

2a. Is it a standard (ASTM) procedure? If yes, provide reference.

NO PBP PROCEDURE #28

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.

BY TRIAL & ERROR (EXCELLENTLY DOCUMENTED IN FIELD LOG)

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?

YES - IN FIELD

2d. How are any deviations from the established procedures that occur during testing documented?

IN FIELD NOTES & ONWI 400

2e. Comments.

TO SOME EXTENT A PIONEERING TEST APPROACH, APPLICABLE ONLY TO AN ESSENTIALLY IMPERMEABLE, CREEP PRONE MATERIAL

Reviewer A Brown
Date 8/22/84

3. What instrumentation is used for the test?

LYNES PACKER SYSTEM, DOWNHOLE PRESSURE TRANSDUCERS, UPHOLE DATA RECORDING

3a. How were the reliabilities* of the instruments specified?

NOT SPECIFIED. A HIGH LEVEL OF REDUNDANCY WAS BUILT INTO INSTRUMENTATION

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?

YES

3c. Are the calibrations traceable to national or industrial standards?

YES

3d. Comments.

SYSTEM CALIBRATED IN CASED SECTION
PRESSURE GAGES CALIBRATED BY NORTHWEST REGIONAL CALIBRATION CENTER, BELLEVUE, WA.
NO RECORD OF POST-TEST CALIBRATION.
RELATIVE CHECKS BETWEEN TRANSDUCERS AND OF INCREMENTAL ACCURACY ARE EXCELLENT.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer ABrown
Date 9/22/82

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

COLLECTION - AS PER ONWI 400

ANALYSIS - ANALYTICAL

INTERPRETING - ANALYTICAL

PRESENTATION - COMPUTER TAPE, PLOTS, ONWI 400

4a. How can the raw numerical data be retrieved?

FROM COMPUTER TAPES (TAKEN ON HP 9825, TRANSLATED TO HP 85) OR FROM MICROFILM HARD COPY

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

YES, IN GENERAL

4c. Are the data keyed to geological, environmental, and other experimental conditions?

YES

4d. Comments.

EXCELLENT DATA & FILE CLARITY

Reviewer A Brown
Date 8/22/86

5. What are the acceptance/rejection criteria for the test data?

BASICALLY FAILED PACKERS AND TRANSDUCERS, WERE THE CAUSE OF "FAILED" TESTS

5a. Were these criteria established prior to test development?

YES

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

- Data Handling

  FIELD SUPERVISOR EVALUATES REJECTION/ ACCEPTANCE BASED ON REAL-TIME EVALUATION

- Review Procedure

  REVIEW IS PERFORMED BY FIELD PROJECT MANAGER (GEOTECH) - IN THIS CASE R.A. NELSON OF WCC.

- Corrective Action

  RETEST.

Reviewer A Brown
Date 3/22/84

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

CAREFULLY PERFORMED. WELL DOCUMENTED TESTS. ANALYSIS

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

NONE - ~~DATA~~ PRESENTATION IS EXCELLENT (GRAPHICAL) IN ONW° 400. THE ONLY TESTS NOT REQUESTED ARE "FAILED TESTS", WHICH WE LOOKED AT IN MICROFICHE.

Reviewer M. DeMarco
Date 8/23/84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Uniaxial compression tests, GD-1 - 2,3,4,5,7, began 4/28, thru 6/12/82, from cycle 6 Gibson Dome Horizon.

1a. What is the overall objective of the test?
Determine unconfined strength of sample.

1b. What specific parameters are to be determined by the test?
unconfined compressive strength (no modulus)

1c. What criteria were used for test site (or sample) selection?
samples had to come from cycle 6, but were not grouped together. They are reported in ONWI 400 as low anhydrite samples but samples 2,3,4 are listed in WCC data files as high 90 anhydrite (which is shown in the porosity data for the same samples)

1d. How is the rock at the test site characterized?
Nearly pure halite with minor amounts of anhydrite, potassium and high solubility salts.

1e. How many of these tests have been performed?
5

1f. How many tests are planned?
N/A

1g. Comments.

Again, core handling and storage is questionable. Two samples were destroyed at the lab due to anomalies in the core, which should have been reported. Moisture contents should have been recorded (especially since permeability tests were run on these samples also).

Reviewer M. DeMarco
Date 8/23/84

2. Is the procedure documented and complete, and is it in written form?
WCC uses ASTM documentation as their written procedure with one minor modification - the loading rate is such that failure occurs beyond 15 minutes.

2a. Is it a standard (ASTM) procedure? If yes, provide reference.
Yes - D2938-79 ASTM (with the above modification)

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.

N/A

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?
In addition to the failure time modification above, "failure" is described as occurring when a) the sample breaks, b) strain reaches 20%, or c) stress difference exceeds 10,000 psi.

2d. How are any deviations from the established procedures that occur during testing documented?
By simple memo from tester to WCC supervisory personnel. This system is found on microfilm of WCC data files. The microfilm is now in NRC possession.

2e. Comments.
The sample depth locations reported in WCC files do not agree with those reported in ONWI 400.

Reviewer M. DeMarco
Date 8/23/84

3. What instrumentation is used for the test?
Two circumferential strain gages and 3 pairs of axial strain gages attached to the specimen at the quarter points, load cell (axial), and platen-to-platen LVDT's.

3a. How were the reliabilities* of the instruments specified?
Load cells and strain gages are used and relied upon according to manufacturer specifications.

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?
Load frame calibration is periodic and conducted by outside firms. The strain gages are not checked out, but used in accordance to specs. Calibration data is not presented in the files of WCC in the section concerning the uniaxial tests.

3c. Are the calibrations traceable to national or industrial standards?
where applicable.

3d. Comments.
Only 2 strain gages are used to measure any one axial strain data point. Common lab practice requires 3 at 120° separations. Also, WCC data files mention the possible inadequacy of the chosen gages, but no further mention was made of it.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer M. DeMarco
Date 8/23/84

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

HP-85 data acquisition with plotter is used to collect, format, and analyze all data. In-house programs are used and debugging of these programs has also been an in-house responsibility.

4a. How can the raw numerical data be retrieved?

WCC data file or ONWI/NRC microfilm

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

Data file information is complicated and not prioritized, however results are presented well in ONWI 400.

4c. Are the data keyed to geological, environmental, and other experimental conditions?

The tests were run at 22°C and none were considered for elevated temperatures. Water contents were surely dissimilar to site conditions due to the handling and storage method.

4d. Comments.

Reviewer M. DeMarco
Date 8/23/84

5. What are the acceptance/rejection criteria for the test data?
Apparently none were reported for this test. During the tests 3 of 5 samples had strain gage malfunctions and had to be restarted. One of the three had to be started three times. These do not conform to standard lab practice, but due to cove shortages the data was preserved and reported. Ideally, many more tests would be run with these tests discarded.

5a. Were these criteria established prior to test development?

N/A

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

- Data Handling
  Acceptance / rejection is apparently operator controlled.

- Review Procedure
  Same

- Corrective Action
  Supervisory personnel reviewed the findings concurrently with testing and provided any corrective measures needed. The largest error in Q/A was not testing the procedure prior to salt cove testing. For example, the strain gage problem would have been solved prior to testing.

Reviewer M. DeMarco
Date 8/23/84

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).
The objective of this test was not thoroughly realized. Only five tests were completed, three of which are questionable due to strange loading conditions. Of the five samples two were characterized as containing high % anhydrite (as discussed briefly in WCC notes, not in ONWI 400). The limited number and characteristics of the tests do not allow for cycle & characterization. Higher loading rate data would have been desireable.

Q/A is also somewhat unclear. WCC data files have memos referring to the difficulty of acquiring and building equipment to meet contract deadlines. In fact, it was internally suggested that outside firms be solicited to do the work to insure the quality of the results. This was not done and perhaps should have been. The bugs were not worked out of the test procedure prior to salt testing and it is suspected that this was due to their quote "tight schedule".

The lack of samples to test is not a reflection of WCC commitment. Samples were needed for many tests and only one hole's worth is available.

7. Requested Test Data - (Identify all data and documentation that is needed for further review).
NONE

Reviewer M. DeMarco
Date 8/23/84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Ultrasonic Pulse Velocity, GD1-4,5,7,14,15,16,32,3,2 tests were conducted on or about 6/1/81

1a. What is the overall objective of the test?
Provide elastic modulus data on GD1 cycle 6 salt.

1b. What specific parameters are to be determined by the test?
P and S wave velocities.

1c. What criteria were used for test site (or sample) selection?
No apparent criteria was used other than the salt was from cycle 6.

1d. How is the rock at the test site characterized?
Mostly halite with small amounts of anhydrite, potassium, and soluble salts.

1e. How many of these tests have been performed?
9, however several of the tests were performed in a variety of directions.

1f. How many tests are planned?
None

1g. Comments.
These tests can be believed for the velocities due to similarity with other salt and soft rock data. Also, badly fractured samples were run first to see if velocities could be obtained at all, and the data came out quite well.

Reviewer M. DeMarco
Date 8/23/84

2. Is the procedure documented and complete, and is it in written form?
Portions of the procedure and theory are documented with hand written comments (that are difficult to read) that do not appear to be complete.

2a. Is it a standard (ASTM) procedure? If yes, provide reference.
The test procedure used by the subcontractor, Testing Engineer Inc., is not provided.

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.
N/A

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?
N/A

2d. How are any deviations from the established procedures that occur during testing documented?
N/A

2e. Comments.
The specifics of the test are not clear.

Reviewer M. DeMarco
Date 8/23/84

3. What instrumentation is used for the test?

James V-scope with 54 kHz transducers

3a. How were the reliabilities* of the instruments specified?

They were not specified. It is likely that WCC assumed TEI's methods to be technically sound.

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?

On one nearly blank data book cover sheet it is noted that a calibration was done. No description of the calibration procedure or occurrence is given.

3c. Are the calibrations traceable to national or industrial standards?

N/A

3d. Comments.

WCC did not document QA concerns regarding TEI's work.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer M. DeMarco
Date 8/23/84

4. What are the data collection, reduction, and presentation techniques involved in collecting analyzing and interpreting the data? (emperical, analytical, numerical)

Not discussed in WCC data files.

4a. How can the raw numerical data be retrieved?

It may be possible to get it from TEI files.

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

No data, other than a memo from TEI to WCC with the test results included, exists.

4c. Are the data keyed to geological, environmental, and other experimental conditions?

The wave velocities are probably influenced to some degree by the physical integrity of the cove, which is suspect due to poor handling and storage.

4d. Comments.

Reviewer M. DeMarco
Date 8/23/84

5. What are the acceptance/rejection criteria for the test data?
No way of knowing.

5a. Were these criteria established prior to test development?
N/A

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)
N/A

- Data Handling

- Review Procedure

- Corrective Action

Reviewer M. DeMarco
Date 8/23/84

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

The velocity data results were made available to WCC, however, they were not converted into engineering parameters (modulus) and have not been published anywhere. The intentions of these tests is unclear. Future review into the adequacy of these tests is necessary if this data is to be used.

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

None - unless the modulus is going to be calculated and presented at a later date.

Reviewer M. DeMarco
Date 8/22/84

Draft Rock Mechanics Data Review Checklist
(Revision, August 6, 1984)

1. Name/type, identification number, and date of test.
Extension unloading creep test, GD-1-73, began 9/11/81, sample came from 3309.8 - 3310.5 horizon.

1a. What is the overall objective of the test?
To determine strain dependency on stress path, specifically, but to also characterize unloading creep characteristics of in situ salt structures.

1b. What specific parameters are to be determined by the test?
Axial stress, axial strain, radial strain, temperature, and time are being monitored to determine relationships between stress difference and strain rate at various temperatures and confining pressures.

1c. What criteria were used for test site (or sample) selection?
Test set samples (generally in groups of 3) were selected from immediately adjacent core. All samples tested came from cycle 6, Paradox Basin. All samples were selected to be void of major anomalous inclusions.

1d. How is the rock at the test site characterized?
Nearly pure halite with minor amounts of anhydrite, potassium, and high solubility salts.

1e. How many of these tests have been performed?
6 (but several are multi-staged tests)

1f. How many tests are planned?
N/A

1g. Comments.
Core handling and storage is questionable. No attempt was made to maintain moisture contents.

Reviewer M. DeMarco
Date 8/22/84

2. Is the procedure documented and complete, and is it in written form?
Yes, contained in WCC file documentation (2931.2.3) and is on microfilm.

2a. Is it a standard (ASTM) procedure? If yes, provide reference.
No

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.
WCC developed in-house. QA conducted in-house.

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?
No revisions made to method during or prior to testing.

2d. How are any deviations from the established procedures that occur during testing documented?
No desired deviations from the established procedure were included during testing.

2e. Comments.
Deviations in the data, especially concerning load increments, isolated load changes, and final loads achieved are not due to procedural changes, but physical variables influencing the test.

Reviewer M. Delharco
Date 8/22/84

* 3. What instrumentation is used for the test?
Two Axial strain gages and two circumferential strain gages attached to specimen, axial load cell, confining pressure electric pressure transducer, platen-to-platen LVDT, standard triaxial cell.

3a. How were the reliabilities* of the instruments specified?
strain gages were checked according to manufacturer specs and used in accordance to these same specs. The strain gages may not have functioned according to specs over long periods of time.

3b. Is there a calibration system and were calibrations systematically carried out accord-ng to approved procedure?
Yes, thermal tests did not practice strain gage calibration, but the manufacturer provided information shows changes ~~no~~ due to ΔT maximizing at 0.5% of full readout, which is minuscule.

3c. Are the calibrations traceable to national or industrial standards?
Yes, aluminum calibration compared to "Structural Engineers Handbook All calibrations traceable to lab standards, which in turn are traceable to outside firms calibrating the equipment to accepted standards.

3d. Comments.
All calibration data is documented.

* Reliability is defined as the probability of an instrument to perform a stated function under a stated environment for a stated time.

Reviewer M. DeMarco
Date 8/22/84

4. What are the data collection, reduction, and presentation techniques involved in collecting, analyzing and interpreting the data? (emperical, analytical, numerical)

Computer techniques are used to acquire, reduce, and present data (HP-85). Programs were all prepared in-house.

4a. How can the raw numerical data be retrieved?

WCC data file or ONWI microfilm.

4b. Are the data presented in a complete and clear format? (Comment also on the utility of the presentation.)

Data is complete, but documentation with the data is minimal thereby limiting the utility of the data by outside reviewers. Refined data is presented clearly in ONWI 400.

4c. Are the data keyed to geological, environmental, and other experimental conditions?

50°C over ambient was deemed appropriate for most structure designs. Mechanical failures of seals at temperatures > 50°C precluded testing at anticipated site temperatures. Also, the cores are subject to dissimilar water contents due to handling and storage. Pressures for confining pressures were approximately depicting worst case stress concentrations around openings. Whether or not this is accurate depends on the environment of the opening, (especially around the canisters).

4d. Comments.

Reviewer M. Dellerco
Date 8/22/84

5. What are the acceptance/rejection criteria for the test data?
Primarily based on equipment failure and anomalous calibrations in mid-suite testing.

5a. Were these criteria established prior to test development?

N/A

5b. How are the criteria implemented? (Data handling, review procedure, corrective action.)

- Data Handling
  Acceptance/rejection is operator controlled, as well as by engineering staff review (QA driven reviews)

- Review Procedure
  same as above

- Corrective Action
  Supervisory review, comment, documentation results in corrected methods in the lab, and justified data. Example, maintaining stress deviations was difficult and noticeable in early tests. Corrective measures were taken immediately. A debugging program for the creep test operation system should have been implemented.

Reviewer M. Delhaco
Date 8/22/84

6. General comments (such as, relationship among different tests, impacts on interpretation, instrument redundancy, factors resulting in test closure, accuracy of measurements, limitations, additional uses of data, computer programs, and other miscellaneous comments).

The method used to derive the creep law parameters is unclear and may be in error. The unloading extension creep tests were actually multi-staged at various deviated stress levels approximately on week long duration steps. However, the steady state strain rate parameters were determined by curve fitting which included the transient terms as well. Two controlled variables come into play with how the data comes out: time of test duration and magnitude of stress differe No standardized duration is used in the calculations to normalize the derived data. The calculated steady-state strain rates, determined in conjunction with the transient steady-state strain rate, do not involve the entire strain history of the sample. Instead, each stage of testing represents a zeroed duration, regardless of the acquired strain.

7. Requested Test Data - (Identify all data and documentation that is needed for further review).

None

cont: It was also brought out during discussions with WCC that although some data points are in question and are in turn well documented, they are improperly included in the analysis and interpretation of the data. Such points should have been documented and discarded, and not inconporated in the data evaluation.

General: The contractor was not aware of the degree of review that would be conducted on the data would have been presente much more cleanly and concisely.