Department of Energy
Salt Repository Project Office
110 North 25 Mile Avenue
Hereford, Texas 79045

September 16, 1987

Mr. John J. Linehan, Section Leader
Projects Section
Division of Waste Management, MS 623-SS
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Linehan:

SUBJECT: NRC REQUEST FOR DATA REVIEW (SRPO CORE), OCTOBER 20-22, 1987, AT TBEG (AUSTIN, TEXAS)

References: 1) Letter, Linehan to Neff, dated June 26, 1987, requesting a July 21 - July 23 data review at the Texas Bureau of Economic Geology, dated June 26, 1987.
2) Letter, Neff to Linehan, dated July 6, 1987, indicating that SRPO will be unable to hold data review on requested dates.

This letter confirms recent telephone discussions between Dan Gillen of NRC and Susan Heston of DOE (SRPO), regarding the scheduling of an NRC visit to the Bureau of Economic Geology on October 20, 21, and 22, 1987, to view sections of core previously recovered as part of our Palo Duro Basin studies.

SRPO currently intends to schedule this data review for October 20-22, in Austin, Texas; however, in view of the recent decision to publish the draft SRP Site Characterization Plan in January 1988, we note that both the scope and the dates of the data review may change if it begins to impact SRPO's ability to meet the schedule for SCP publication. A description of what we now believe we can provide for this core review is given below and on Enclosures 1 and 2.

Based on your letter of June 26, 1987 (referenced above), we understand that the purpose of this data review is to provide new NRC staff and contractors an opportunity to view the core and gather information; it is not a technical meeting to resolve specific concerns, nor is it a presentation or review of planned site characterization studies involving core. Accordingly, no formal presentations will be made by SRPO and its contractors, other than an introductory presentation of the Palo Duro Basin stratigraphic section and program core lithology, and an orientation session on the project Quality Assurance procedures for examination of core.

An inventory of the core and other requested materials that can be made available during this review is given on Enclosure 1. The data review also will include a tour of the core storage facility, as requested.

Project contractors will be available during the review to respond informally to questions regarding the core and its analysis. Interpretations presented will be limited to those explicitly applicable to the core. The technical contractors that we currently plan to have available, and their areas of expertise, are included in Enclosure 2. Since some of these individuals may be unavailable at the time of the review due to SCP responsibilities, this list should be considered preliminary.

Please contact Mohammed Mozumder if you have any questions concerning the technical content of this core review. Questions concerning logistics should be directed to Susan Heston. Either may be reached at (806) 374-2320.

Sincerely,

J.O. Neff
Project Manager
Salt Repository Project Office

SRPO:SLH:max:1265SG

Enclosures:
1. Materials for Core Review
2. SRPO/Contractor Attendees

cc: G. Appel, SRPO, w/encl.
R. Lahoti, SRPO, w/o encl.
T. Taylor, SRPO, w/o encl.
M. Mozumder, SRPO, w/encl.
J. Ellenberger, SRPO, w/encl.
K. Wu, SRPO, w/encl.
L. McClain, SRPO, w/encl.
J. Knight, RW-24, w/encl.
O. Thompson, RW-242, w/encl.
D. Gillen, NRC, w/encl.
R. Helgerson, ONWI, w/encl.
J. Sulima, ONWI, w/encl.
M. Milling, TBEG, w/encl.
M. Abashian, ONWI, w/encl.
D. Smith, TX, w/encl.
P. Niedzilski-Eichner, WDIC, w/encl.

256-87-RC

ENCLOSURE 1

AVAILABLE CORE, LOGS, AND OTHER MATERIALS

CORE

Borehole Name	Core Interval Depth (ft.)	Comment
J. Friemel	394-600 1000-1216 1239-1464 1846-2830 5519-5909 6421-6537 7768-7780 8047-8283	Core recovery was excellent below 1846 ft. Above that, recovery in the softer sediments was moderate to very good.
G. Friemel	1210-1312 2400-2700	Core recovery was excellent below 2400 ft. Above that, core recovery in the softer sediments was moderate. A 10 foot measuring discrepancy was noted in the upper section.
Grabbe #1	30-90	
Mansfield	1540-1820	Core recovery was excellent.
Sawyer	2850-3100	Core recovery was excellent.
Zeeck	2700-3100 5308-5500 7300-7387	Core problems around 2871 ft. due to flooding of pits by a rain storm. A short core loss occurred and the recovered ore was washed or eroded. 5300-5308 ft. was drilled; core recovery from 5308-5500 was moderate to excellent. 7300-7387 ft. some core extrusion problems occurred and some handling damage was noted.

ENCLOSURE 1

AVAILABLE GEOPHYSICAL & OTHER LOGS

Borehole Name	Log Types	Available Depths (ft.)
J. Friemel	dual induction - SFL	60-4635; 4695-8282
	dual laterolog	1202-2810
	proximity log micro	60-8282
	comp. neutron litho density	60-4646; 4695-8282
	comp. neutron	1202-2820; 4698-6532
	temperature	0-8282
	b.h. comp. sonic	60-4635; 4695-8282
	sonic var. density waveform	60-4635; 4695-8282
	long spaced sonic	60-4647; 4695-8282
	long spaced sonic digit. waveform	60-4647; 4695-8282
	fracture ID	60-4650; 4695-8282
	4 arm cont. dipmeter	60-4650; 4695-8282
	contin. directional	60-4650; 4693-8283
	field directional	60-4650; 4693-8283
	4 arm caliper	1202-2824; 4698-7774
	CYBERLOOK	60-4600; 4695-8282
	CORIBAND	75-4630; 4700-8260
	natural gamma	60-4646; 4695-8283
	syner. geogram	
	well seismic report	0-8232
	cement evaluation	4400-5950
	VOLAN	600-900; 1250-1950; 2700-3200; 5500-6100
G. Friemel	dual laterolog	1057-2697
	comp. neutron lith. density	1057-2685
	temperature	1057-2695
	b.h. comp. sonic	1057-2697
	sonic waveform var. density	1057-2697

G. Friemel (cont.)	long sp b.h. comp. sonic	1057-2697
	long sp sonic waveform	1057-2697
	fracture ID	1057-2711
	4 arm cont. dipmeter	1057-2711
	computed directional	1057-2711
	CYBERLOOK	1057-2697
	CORIBAND	1060-2686
	repeat fm. tester (10 tests)	1233-2684
	natural gamma	1057-2704
	well seismic report	338-2666
	syn. geogram	
Grabbe #1	no logs available from 30-89 ft.	
Mansfield	dual laterolog	1000-3539
	comp. neutron fm. density	1000-3537
	temperature	1216-3540
	b.h. comp. sonic	1000-3540
	sonic var. waveform density	1000-3523
	fracture ID	1216-3539
	4 arm cont. dipmeter	1216-3539
	cont. directional	1216-3539
	CYBERLOOK	1216-3430
	CORIBAND	1200-3522
	dual sp thermal neutron	38-4895
	var. density cement	486-5130
Sawyer	dual laterolog	330-3432
	comp. neutron fm. density	1500-3933
	temperature	0-3918
	b.h. comp. sonic	330-3917
	sonic waveform var. density	330-3916
	fracture ID	330-3920
	4 arm cont. dipmeter	330-3920
	cont. directional	330-3920
Zeeck	dual laterolog	1017-7644
	comp. neutron litho density	1017-7642
	comp. neutron	1019-5757
	temperature	1017-7642
	b.h. comp. sonic	1017-7642
	sonic waveform var. density	1017-7642

Zeeck (cont.)	fracture ID	1017-7644
	4 arm cont. dipmeter	1017-7644
	cont. directional	1017-7644
	field comp. directional	1017-7642
	4 arm caliper	1017-5350
	CYBERLOOK	1017-7610
	CORIBAND	1020-7620
	repeat fm. tester (14 tests)	2936-7645
	syn. geogram	
	well seismic report	0-7428
	well seismic monitor	1017-7302
	cement bond (several)	0-7399
	natural gamma	1017-7630

Black #1

Logs run in this hole were included in BMI-SRP-5037, an additional copy of which was transmitted to NRC on 7-17-87. However, these logs also can be made available for the core data review if necessary.

Hudson Taylor #1	b.h. comp. sonic	1243-8969
	simul. dual laterolog	1243-4445; 4460-8993
	computer processed	4460-8950
	lithologic/gas analysis	1200-9000
	simul. comp. neutron litho.	1243-4457
	comp. neutron lithodens.	1243-4457
	CYBERLOOK	4460-8950
	dual induction	4460-8993
	dual laterolog	1243-4445

ENCLOSURE 1

LSA - 4 THIN SECTIONS

The Salt Repository Project has had LSA-4 thin sections prepared by more than one contractor. A list of the thin sections available for the data review is being compiled and will be transmitted prior to the data review.

ENCLOSURE 2

SRP ATTENDEES LIST, CORE DATA REVIEW, OCTOBER 20-22, 1987,
BUREAU OF ECONOMIC GEOLOGY, AUSTIN, TEXAS

(preliminary)

S. Heston (SRPO)	Licensing
M. Mozumder (SRPO)	Geology
J. Ellenberger (SRPO)	TBEG Management
S. Hovorka (TBEG)	Stratigraphy and Geochemistry, Repository Horizon Evaporites
T. Gustavson (TBEG)	Stratigraphy and Geomorphology, Ogallala Formation
S. Fisher (TBEG)	Geochemistry; Clastic Diagenesis
TBD (TBEG)	Hydrology
B. Kaiser (TBEG)	Geochemistry; Adsorption
TBD (TBEG)	Quality Assurance
TBD (ONWI)	Geology/Program Management
TBD (SWEC)	Geology
TBD	Rock Mechanics
TBD	LSA-4 Thin Section Petrography

JUN 22 1987

Jefferson Neff, Program Manager
U.S. Department of Energy
Salt Repository Project Office
110 North 25 Mile Avenue
Hereford, TX 79045

Dear Mr. Neff:

This letter confirms recent telephone conversations between Tom Cardone (NRC) and John Ellenburger (DOE), regarding a planned NRC visit to the Texas Bureau of Economic Geology (TBEG) on July 21, 22, and 23, 1987, to view sections of the drill core recovered to date as part of the Deaf Smith site study. The NRC staff would find it valuable if arrangements could be made for this core review to consist of the following:

1) DOE introductory presentation of the Palo Duro Basin stratigraphic section and lithology represented in the core, with emphasis on any new unpublished developments or interpretations of data;

2) Examination of core intervals, geophysical logs, and thick and thin sections of the San Andres Salt as detailed in Enclosure 1;

3) Discussion of the core descriptions and interpretations, and other related work that has been done by the investigators; and

4) Tour of the core storage facility.

The purpose of this core review is to provide new NRC staff and contractors, who were not involved in the previous core review (August 1985), an opportunity to view sections of the drill core. This visit is not a technical meeting to resolve specific concerns; rather, it is a data review to improve the staff's understanding of the geologic section associated with the Deaf Smith site. Such understanding will provide useful information for our future review of the Site Characterization Plan.

The NRC attendees will include two geologists, a geochemist, a rock mechanics engineer and three hydrologic contractors (see list of attendees, Enclosure 2). We ask that, to the extent practicable, technical staff with expertise in these disciplines, as well as personnel responsible for obtaining, analyzing and interpreting the drill core, be available to respond to questions that may arise during the review. It would be useful if the following individuals at TBEG could be made available for discussions: Susan Hvorka, Thomas Gustavson, Michael Fracasso, R.S. Fisher, C.W. Kreitler, and B. Kaiser.

If there is a need for further clarification of technical aspects of this

proposed core review, please contact Tom Cardone at FTS 427-4526. Any discussion of the logistics of this review should be held with Dan Gillen of my staff (FTS 427-4793).

Original Signed By:

John J. Linehan, Acting Chief
Operations Branch
Division of High-Level Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosures:
As stated

cc: J. Knight, DOE/HQ
O. Thompson, DOE/HQ
S. Frishman, State of Texas

ENCLOSURE 1

Proposed Data Review Specifics

I. Examination

(a) Core sections and geophysical logs of the following intervals:

Boring Name	Core Interval Depth(ft.)	Formation
J. Friemel	394-600 1000-1216 1239-1464 1846-2830 5519-5909 6421-6537 7768-7780 8047-8283	Ogallala to Pennsylvanian
G. Friemel	1210-1312 2400-2700	Upper Seven Rivers Lower San Andres Unit 4
Grabbe #1	30-90	Ogallala Aquifer
Mansfield	1540-1820	Lower San Andres Unit 4
Sawyer	2850-3100	Wichita-Wolfcamp
Zeeck	2700-3100 5300-5500 7300-7387	Lower San Andres Units Wichita-Wolfcamp Pennsylvanian

(b) Black #1 and Taylor Wells

We understand that these were drilled by oil companies, and therefore the core is not available. However, we would like to see whatever information has been made available to TBEG and the DOE staff for interpretation, i.e., geophysical logs, field observations, and laboratory data. This information from the Black #1 and Taylor Wells would be valuable for comparison with that of the J. Friemel to detect possible structural discontinuities or deformation and/or possible facies changes in Lower San Andres Unit 4.

(c) Sections of the San Andres Salt

If possible, the staff would like to view thick sections of the San Andres salt. It would be preferable if the salt contained fluid inclusions displaying a variety of characteristics which are representative of the repository horizon. The salt should contain representative examples of primary (chevron) and secondary inclusions including fracture fill inclusions. Samples containing a wide range in water content (i.e., fluid inclusion content) are also of interest. In addition, thin sections of the San Andres salt should be made available to view secondary minerals present in the salt.

II. Discussion

Areas of discussion related to the core review may include:

- Vertical and lateral distribution of silt and clay interbeds in the Lower San Andres Unit 4 salt.
- Percentage of mudstone and other non salt strata in the Lower San Andres Unit 4 salt.
- Percent recovery of core collected and identification of core tested by Stone and Webster and/or TBEG.
- Indications of dissolution/diagenesis, syndeposition and postdeposition in the Lower San Andres Unit 4 in particular, or in other Permian evaporate sequences.
- Indications of faulting or fracturing in the core from any of the formations penetrated.
- Distribution of secondary permeability zones in the Lower San Andres Unit 4.
- Correlation of core with geophysical logs, with drilling records of core loss or drilling fluid loss, with field tests for permeability and/or brine zones, and with laboratory testing geophysical logs.

ENCLOSURE 2

NRC Attendees List

Dan Gillen (HLOB)	Project Management
Tom Cardone (HLTR)	Geology
Jim Warner (HLTR)	Geology
Jim Tesoriero (HLTR)	Geochemistry
Naiem Tanious (HLTR)	Rock Mechanics
Dan Stephens (Stephens & Assoc.)	Hydrology
Jeff Minier (Stephens & Assoc.)	Hydrology
Fred Phillips (Stephens & Assoc.)	Hydrology

SEP 0 4 1985

JT/85/08/28

MEMORANDUM FOR: Malcolm R. Knapp, Chief
Geotechnical Branch
Division of Waste Management

FROM: John Trapp, Richard Lee, and Fred Ross
Geotechnical Branch
Division of Waste Management

DISTRIBUTION:

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MFTiegel	

SUBJECT: TRIP REPORT - PERMIAN BASIN CORE EXAMINATION MEETING

On August 5 - 9, 1985 members of the NRC staff and their contractors met with DOE at the Texas Bureau of Economic Geology Offices in Austin, Texas to examine the core obtained from DOE drilled wells in the Palo Duro Basin.

While the primary purpose of this meeting was to obtain familiarization with the stratigraphy and lithofacies of the Permian evaporite sequences, additional discussions were conducted on other stratigraphic units as well as in the structural framework of the Palo Duro Basin, dissolution phenomena groundwater flow, geochemistry, geomechanical properties and the status of ongoing investigations.

Enclosed with this report is a copy of the signed meeting minutes, the agenda and list of participants. Handouts for this meeting were quite extensive so they have not been included, however copies are available for review from the DCC and in R. Johnson and J. Trapp's office.

John Trapp, WMGT

Richard Lee, WMGT

Fred Ross, WMGT

Enclosure:
As stated

8509300208 11pp

OFC	:WMGT	kd	:WMGT	RL	:WMGT	FRoss	:	:	:	:
NAME	:JTrapp	JT	:RLee		:FRoss		:	:	:	:
DATE	:85/08/28		:85/08/30		:85/08/29		:	:	:	:

NRC/DOE PERMIAN BASIN CORE
EXAMINATION SUMMARY

Date/Location

August 5-9, 1985
Texas Bureau of Economic Geology Offices
Austin, Texas

Attendees/Organizational Affiliation

A list of attendees and their organizational affiliations is attached as Enclosure 1.

Background/Facts

The primary purpose of this data review was to obtain a familiarization with the Palo Duro Basin stratigraphy and lithofacies through core examination and presentations of interpretations of core, logs, and cross sections. Also discussed were structural framework core observations and interpretations relating to dissolution, groundwater flow and engineering properties. An overview was given of ongoing work being conducted by Stone & Webster and the Texas Bureau of Economic Geology which aided in discussions of future data reviews and technical meetings. The agenda (Enclosure 2) gives a more detailed listing of the topics discussed and the activities during the course of this data review. Enclosure 3 consists of all of the handouts and copies of viewgraphs presented; each package is identified by the person making the presentation and date shown on the agenda. A representative of the Governor's Office of the State of Texas (see Enclosure 1) was present during the first day and did not make any observations for this summary.

Observations

The NRC general observations are given below. More detailed observations on geology, hydrogeology, rock mechanics, and quality assurance are included in the review sheets completed by NRC during the course of the data review and will be transmitted to SRP in a follow-up package. No specific geochemistry observations were made.

1. Interactions such as this core examination serve as one kind of excellent mechanism to transfer current information (data interpretations, methods, etc.) on SRP programs to NRC in a timely fashion. Such information transfer and exchange of ideas is greatly enhanced by including all the key investigators involved with the work as was done for this data review. The ability of NRC to comment in a timely manner to SRP on the various plans being developed is dependent on keeping current with the work in certain key technical areas. NRC noted that keeping up with current work using published reports in some cases is difficult and large time lags have and do exist for release of subcontractor reports (with their QA review completed) due to the additional technical review process.

2. Detailed lithologic logging of the DOE core by TBEG appears to be of extremely high quality.

3. Correlation of major units between DOE wells appears to be well established and documented by TBEG.

4. Correlation of minor units between DOE wells by TBEG appears reasonable. Continued efforts to strengthen the correlations by using geophysical logs from intermediate petroleum exploration wells is encouraged.

5. The core appears to be well treated within the TBEG facilities. Storage appears to be well organized and preservation techniques appear to be adequate.

6. The characteristics of the San Andres salts are such that considerable variation in their properties on the size scale of a repository is expected. Vertical and lateral lithologic variations probably will be present.

7. The preliminary investigation of the Dockum Group appears to be well thought out and focused. Information developed by this study should be integrated with hydrologic and structural geologic studies by others.

8. The structural framework of the basin is well known with respect to major structures. Minor structures are not as well known.

9. Significant work still remains to be done to understand dissolution phenomena. Problems still remain on understanding the relationship of interior to peripheral dissolution, timing of dissolution episodes, relationship to structural features, dissolution rates, and effects on waste isolation.

10. SWEC and TBEG are preparing several types of lithologic and geotechnical logs based on different classification schemes. A method of relating all classification schemes to each other should be developed.

11. Basin-wide correlations of individual stratigraphic units, based on the cyclicity interpreted from the core, provides a powerful means of interpreting the stratigraphic details between widespread drill holes. Further resolution of the extent and importance of sabkha-like versus marine influences would enhance the ability to predict the likely magnitude of local anomalies.

12. The DOE has not published information on the Quaternary Blackwater Draw formation, an eolian-lacustrine deposit. The extent and characteristics of this formation are important to the resolution of issues such as Quaternary dissolution and warping and ages of latest movement on faults. Information on this unit is also needed for foundation engineering.

13. The existing seismic network, as described in this meeting, does not appear to be properly deployed to accurately locate events within potentially seismogenic areas such as the Oldham Nose, Matador Arch, Amarillo Uplift and eastern New Mexico.

14. The nature and extent of fracturing that may have been induced by interior dissolution needs to be determined and its influence on hydrologic properties of strata above the base of dissolution assessed.

15. The geophysical logs appear to be sufficient to aid in stratigraphic correlations and geotechnical studies. The influence of halite cement on the values of geotechnical parameters so obtained is not yet fully understood.

16. At present, there is no document that synthesizes and integrates the stratigraphic, structural and hydrogeologic research by all DOE contractors.

17. With respect to quality assurance, SRP should improve their overview of TBEG work in the areas of surveillance, records management, TBEG QA organization, and supplier control. It is believed that these concerns would be surfaced and corrected in a timely manner if the SRP implemented a planned, disciplined program of surveillance and monitoring of work activities as well as the audit which is conducted annually.

18. NRC Rock Mechanics/Design staff and contractors observed core custody, core storage, and protection procedures pertinent to several borings within the Palo Duro Basin. In addition discussions with representatives of SWEC and RE/SPEC addressed such topics as core protection, rationale for selection of samples for testing, representativeness of samples, sample transportation, type of tests and documentation of core selection, handling procedures, test procedures and results. Observations relative to these activities will be part of the follow-up material to be provided by NRC.

19. NRC, SRP, ONWI, and TBEG discussed ideas for future interactions in the areas of geology, hydrogeology, geochemistry, and rock mechanics. NRC and SRP discussed the advantages and disadvantages to having large meetings covering many topics/issues versus meetings more focused on issues and the information pertinent to understanding the issue. NRC in general favors the more focused approach to interactions. The following summarizes NRC's current ideas on interactions for fiscal year 1986:.

Geology:

1. The only presently scheduled interaction between SRP and NRC is the surface based test plan. The NRC needs to discuss with the SRP contact the general philosophy which will be used in preparation of this plan prior to NRC and SRP setting a firm date for interaction.

2. Specific topical meetings are needed in the fields of structural geology, near surface stratigraphic units and dissolution.

3. The specific topical meetings while focused must be broad enough so that all disciplines which have input are represented.

Hydrogeology:

The following are topics to be included in one or more interactions.

1. Hydrogeologic conceptual model(s) - integration of current interpretations of all aspects of the existing data base including structure, stratigraphy, hydrochemistry, isotopes, and hydrogeologic properties.

2. Explanation and examination of hydrochemical and isotopic data.

3. Core data - how will core data be used to develop hydrogeologic properties?

4. Potentiometric head data

   a) error estimation
   b) fluid density variations with respect to head

5. Hydrogeologic properties of evaporite section including unit 4 dolomite.

Geochemistry:

The most immediate need is to read a draft of the geochemistry program plan when it becomes available. This will provide a better understanding of the geochemistry program which will allow NRC and SRP to more intelligently plan technical meetings as soon as possible.

Rock Mechanics:

Between now and January 1986, three interactions have already been agreed to by NRC and SRP. These are for exploratory shaft construction and sealing, repository design, and in situ testing. No additional interactions are needed during this time period.

20. NRC stressed the importance of having staff members, while assigned to the NRC on-site representative, read and understand program plans and detailed hierarchies (milestones charts) being developed by SRP/ONWI. This background should be very useful in mutually planning out an effective and timely series of interactions.

21. The NRC is of the opinion that this data review was extremely useful to their understanding of the present basis of stratigraphic studies in the Palo Duro Basin and has provided an excellent springboard from which other more focused topical workshops can be developed. The open discussion by all parties, especially in the core examination area, was extremely helpful. The NRC wishes to thank all personnel involved, and especially TBEG for hosting this review.

Agreements and Open Items

1. NRC and SRP agreed to further discuss ways (in addition to those currently in place) for enhancing the transfer of new interpretative information. A possibility suggested by the NRC is to open-file draft reports produced by contractors and subcontractors.

2. NRC will continue discussions with SRP on the topics, schedules and most effective approach to future interactions.

3. NRC will send SRP follow-up material within one month. This material will consist of the specific observations and any concerns developed during the meeting.

Robert L Johnson 8/9/85
Robert L. Johnson, NRC/WMRP

Jo-Ann Sherwin 8/9/85
Jo-Ann Sherwin, DOE/SRP

John Trapp 8/9/85
John Trapp, NRC/WMGT

Enclosure 1

Participants

NRC Core Workshop
August 5-8, 1985
Austin, Texas

Sam Panno	DOE HQ/Weston	
Jo-Ann Sherwin	DOE-SRPC	
Steve Frishman	Office of the Governor, Texas	
Don McReynolds	High Plains Water District	806/762-0181
Dick Berry	NRC/Lawrence Livermore	
David W. Carpenter	NRC/Lawrence Livermore	415/422-3976
Robert Cummings	NRC/Engineers International	602/884-8818
Jaak Daemen	NRC/University of Arizona	602/621-2501
Claudia Hackbarth	NRC	301/427-4639
Dale Hedges	NRC	
John Imse	NRC/Weston Geophysical Corp.	617/366-9191
Gary K. Jacobs	NRC/ORNL	615/576-0567
Robert Johnson	NRC/WMPP	301/327-4785
Walt Kelly	NRC/NMSS	301/427-4571
Richard Lee	NRC	
Larry McKague	NRC/Lawrence Livermore	415/422-6494
Jerome Pearring	NRC/WMEG	301/427-4648
Fred Ross	NRC/Williams & Associates	
Jack Sharp	NRC/Williams & Assoc./Univ. Texas	
John S. Trapp	NRC/WMGT	301/428-4545
Tilak (Teek) Verma	NRC/Columbus	
Roy E. Williams	NRC/Williams & Associates	208/883-0153
Gerry Winter	NRC/Williams & Associates	
Ernst G. Zurflueh	NRC	617/427-4343
Walter E. Newcomb	ONWI	614/424-7685
Owen E. Swanson	ONWI	
Francis D. Hansen	RE/SPEC	605/394-6400
Paul Senseny	RE/SPEC	605/394-6400
Tom Lamb	SWEC	
John Peck	SWEC	
Philip J. Murphy	SWEC	617/589-2173
Ev Washer	SWEC	

Ed Bingler	TBEG	
Roy T. Budnik	TBEG	
Dow Davidson	TBEG	
Alan Dutton	TBEG	
Steve Fisher	TBEG	
Mike Fracasso	TBEG	
Thomas C. Gustavson	TBEG	
Susan Hovorka	TBEG	
David A. Johns	TBEG	
Charles Kreitler	TBEG	
H. S. Nance	TBEG	
Steve Ruppel	TBEG	
Jerry Wermund	TBEG	
Margaret Hart	Texas Dept. of Water Resources	512/463-7797

Enclosure 2

AGENDA
PERMIAN BASIN CORE EXAMINATION

August 5

1:00 p.m.	Introductions	J. Sherwin (SRPO) E. Bingler (TBEG)
1:30 p.m.	Opening remarks and expectations of meeting.	J. Sherwin (SRPO) J. Trapp (NRC) R. Johnson (NRC)
2:00 p.m.	Overview of the Palo Duro Basin, current understandings of structural and sedimentological history.	~~TBD (SWEC)~~ J. Peck (SWEC) P. Murphy (SWEC)
3:00 p.m.	Origin of the Permian evaporites, with emphasis on LSA 4.	Steve Ruppel TBA ~~TBD (SWEC)~~
4:00 p.m.	Core storage/handling/cur Palo Duro Basin stratigraphic section, locations of DOE test holes, regional correlations of major units, major hydrostratigraphic divisions.	Tom Davidson (TB S. Hovorka (TBEG)

August 6

8:15 a.m.	Reconvene	
8:30 a.m.	Geologic logging of DOE drill holes, detailed logs of repository horizon (Lower San Andres Unit 4), geologic cross-sections, correlation of formations and units, description of rocks present in the core, (incl. mineralogic, petrologic, geochemical characteristics), with emphasis on evaporite section and host salt beds.	S. Hovorka (TBEG)
9:30 a.m.	Description of features noted in core from "dissolution wells," regional implications	C. Kreitler (TBEG)
10:00 a.m.	Presentation on available material related to DOE drill hole logs: lithologic logs; geophysical logs; applicable reports and data; correlations of geophysical logs with core; applications of geophysical logging to stratigraphic analysis.	~~G. Adams (ONWI)~~ T. Lamb (SWEC)
11:00 a.m.	Development of geotechnical logs based on mechanical properties, geophysical logging and visual core logging-correlated with test results performed on drill core; index of laboratory testing for mechanical properties of rock mass; in-situ stress measurements.	T. Lamb (SWEC) ~~TBD~~ (RE/SPEC) P. Senseny
12:00 - 1:00 p.m.	LUNCH	

PERMIAN BASIN CORE EXAMINATION
PLANNED AGENDA
(Continued)

August 6 (Continued)

1:15 p.m.	Reconvene at Balcones Research Center and proceed to core repository. Core examination: Grabbe #1 J. Friemel #1 Zeeck #1 - LSA Unit 4 One dissolution well - TBD * There is not enough table space for all listed core sections to be laid out simultaneously; over two days all core will be available. Concurrent Quality Assurance discussions	

August 7

8:15 a.m.	Reconvene at Balcones Research Center Proceed to core repository.	
8:30 a.m.	Core examination continues. Tour of TBEG research and core storage/handling facilities	
12:00 - 1:00 p.m.	LUNCH	
1:15 p.m.	Review of status of Palo Duro Studies; published references; on-going work; data availability.	TBEG (Gustavson, Kreitler) SWEC (Washer, Murphy, Lamb) ONWI SRPO (Sherwin)

August 8

8:15 a.m.	Propose topics/agenda for Permian Basin data review.	
10:15 a.m.	Prepare summary of meeting.	J. Sherwin (SRPO) J. Trapp (NRC)

LIST OF SRP EXPECTED PARTICIPANTS

DOE

J. Sherwin

ONWI

W. Newcomb
C. Kuntz
H. Hume
A. Funk
S. Adams

SWEC

E. Washer
J. Peck
P. Murphy
T. Lamb

TBEG

E. Bingler
S. Hovorka
D. Davidson
C. Kreitler
S. Ruppel
S. Nance
D. Johns
S. Fisher
R. Budnik
T. Gustavson
A. Dutton
M. Farkasso

NRC

W. Kelly
G. Jacobs
F. Ross
R. Williams
G. Winters
J. Parring
J. Damon
R. Cummings
S. Bilhorn
D. Hedges
E. Zurflueh
C. Hackbarth
J. Trapp
R. Lee
R. Berry
L. McKeague
D. Carpenter
J. Imse
R. Johnson
T. Verma