Department of Energy
Chicago Operations Office
Salt Repository Project Office
505 King Avenue
Columbus, Ohio 43201-2693

November 5, 1984

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

Dear Mr. Linehan:

SUBJECT: DOE-NRC TECHNICAL MEETING SUMMARY

Enclosed is a summary of the DOE-NRC meeting held in San Francisco, California on October 16-18, 1984 at the office of Woodward-Clyde Consultants. The meeting was a review of geophysical data for the Paradox Basin.

The summary is being sent to all salt states pursuant to the DOE-NRC Interagency Agreement.

Sincerely,

Theodore J. Taylor
Chief
Socioeconomic, Environmental,
and Institutional Relations
Salt Repository Project Office

SRPO:TJT:max:4635B

Enclosure:
As Stated

cc: J. Gervers, NGA
H. Brown, LATIR
L. Casey, SRPO
T. Verma, NRC
L. McClain, SRPO
B. Darrough, SRPO
J. Williams, SRPO
B. Gale, DOE-HQ

IN# 081-85

757

OCTOBER 16, 1984
GEOPHYSICS REVIEW MEETING

NAME	AFFILIATION
MICHAEL FERRIGAN	DOE 614-425-5916
John Tapp	N.R.C. 301 - 427-4645
BEN RICE	NRC 301 - 427-4646
Fuad Ibrahim	NRC 301 - 427-4646
Jim Hileman	BATTELLE (614) 424-7554 (NRC)
Vincent Murphy	Weston Geophy 617 366 9191
John Imse	Weston Geophysical 617-366-9191
Richard Lee	NRC 301 427-4526
Tom Tolcotte	WCC 415 945-3000
Terry Grant	WCC 415 864-5010
Fred R. Conwell	WCC "
Albert M. La Sala, Jr.	USGS / Colg. OH. 614-424-5916
Ernst G. Zurflueh	NRC 301-427-4343
Bernard Archer	ONWI 614/424-4863
H. Lawrence McKague	LLNL 819-422-6494
Ivan Wong	WCC 415 864-5010

NRC DATA REVIEW OF GEOPHYSICAL DATA FOR THE PARADOX BASIN
16 to 18 October, 1984
Woodward-Clyde Consultant office
San Francisco, CA

On the 16th, 17th, and 18th of October, 1984 representatives of the NRC geotechnical staff (WMGT) met in the San Francisco office of Woodward-Clyde Consultants to review the data utilized in the preparation of the draft report titled "SEISMIC REFLECTION, GRAVITY AND AEROMAGNETIC STUDIES OF THE GEOLOGIC STRUCTURE IN THE GIBSON DOME AREA, SOUTHWESTERN PARADOX BASIN. As the data used to prepare this report is proprietary, it was the purpose of this meeting to evaluate the quality of the data, how it was collected, processed and analyzed and then to gather insight into how the interpretations presented in the above report were made. As this meeting was to be a data review and not a workshop, questions regarding geologic interpretations were not part of the agenda.

In attendance at this meeting were, in addition to the NRC and Woodward-clyde Consultants, representatives of the Department of Energy (DOE), Battelle Memorial Institute Office of Nuclear Waste Isolation (ONWI), the US Geologic Survey, as well as Weston Geophysical and Lawrence Livermore Laboratory. A complete attendance list is included as Attachment 1.

On the morning of the 16th, T. Grant, I. Wong and T. Turcotte of WCC presented a brief overview of the procedures utilized in processing, collecting and analyzing the data. For the remainder of the day the NRC and its consultants conducted a general review of all data available. During the 17th the NRC performed a detailed review of selected pieces of data. The results of the NRC review are presented in the three attached data sheets. On the morning of the 18th a discussion was conducted between the NRC staff and consultants regarding all information reviewed.

In the afternoon the data review was concluded and results of the review were discussed between the NRC and all attendees.

General observations by the NRC on the data were as follows:

1) Some seismic data is of variable quality.
2) Seismic data were obtained and processed utilizing standard/ routine petroleum industry methodology.
3) Future seismic surveys should be of high resolution type designed to provide additional information on the salt and near surface strata.
4) The gravity and magnetic data appear to be of good quality.
5) The Davis and Lavender Canyon sites are located at the Southwestern edge of the gravity survey. No data are included to the Southwest of the sites.
6) If the Paradox Basin is selected for characterization the relationship between gravity and magnetic data and geologic features such as the Northeast trending basement features and circular features as seen on landsat and orthophotos may be the subject of a workshop between the NRC and DOE.

7) Future geophysical surveys including proprietary data should be available for submission to the NRC.

The NRC representatives at this data review wish to thank DOE, ONWI, and WCC for the excellent cooperation in conducting this review.

John S. Trapp
U. S. Nuclear Regulatory Commission
Division of Waste Management

P. Michael Ferrigan
U. S. Department of Energy
Salt Repository Project Office

October 18, 1984

Attachments as stated.

OCTOBER 16, 1984
GEOPHYSICS REVIEW MEETING

NAME	AFFILIATION
MICHAEL FERRIGAN	DOE/SRPO 614 - 424-5916
John Tapp	N.R.C 301 - 427-4645
BEN RICE	NRC 301 - 427-4646
Buck Ibrahim	NRC 301 - 427-4646
Jim [illegible]AN	BATTELLE (614) 454-7554 (NRC)
VINCENT MURPHY	WESTON GEOPHY 617 366 9191
JOHN IMSE	WESTON GEOPHYSICAL 617-366-9191 "
RICHARD LEE	NRC 301 427-4526
TOM TORCOTTE	WCC 415 945-3000
TERRY GRANT	WCC 415 864-5010
Fred R. Conwell	WCC "
Albert M. La Sala, Jr.	USGS / Colg. OH. 614-424-5916
Ernst G. Zurflueh	NRC 301-427-4343
BERNARD HRCHER	CNWI 614/424-4663
H. LENEKE McKAGUE	LLNL 819-422-6494
Ivan Wong	WCC 415 864-5010

J. TRAPP,
Reviewer V. MURPHY, A.K. IBRAHIM, R. LEE
Date 10/18/84

GEOLOGY-GEOPHYSICAL DATA REVIEW CHECKLIST

1. Name/type, identification number, and date of survey?
SEISMIC REFLECTION SURVEY IN GIBSON DOME AREA, PARADOX BASIN; DEC. 1983, CATHERINE KITCHO, WCC "ROUGH DRAFT".

1a. What was the overall objective of the survey?
(i.e., What features were to be identified?)
TO IDENTIFY GEOLOGIC STRUCTURE & STRATIGRAPHY OF GIBSON DOME AREA.

1b. What criteria were used for line or station locations selection?
GROUP SHOOT PROJECT & DATA BANKS.

1c. What geologic constraints were used in determining coverage?
TOPOGRAPHIC & ROUTING CONSTRAINTS.

1d. What was the density of coverage in survey?
(i.e., seismic coverage, gravity station locations, aeromag. flt line spacing,...)
GOOD COVERAGE IN THE EAST (2-10 MILE SPACING). SPARSE COVERAGE IN THE WEST (REFER TO ATTACHED Fig. 2-1 SHEET 1 OF 3.).

1e. What features (i.e., structures, anomalies, stratigraphic parameters) were determined by the survey?
SEISMIC REFLECTION HORIZONS IDENTIFIED & CORRELATED TO PRE-C, DEVONIAN, MISSISSIPPIAN, & HORIZONS UP TO TOP OF SALT.

1f. Comments on:

Reviewer J. TRAPP, R. MURPHY, A.K. IBRAHIM, R. LEE
Date 10/18/84

2. How is the procedure documented?
MAP PRESENTATION OF LINE LOCATIONS & PROCESSED SEISMIC REFLECTION SURVEY RECORDINGS. ALSO SHOWN IN TITLE "ROUGH DRAFT" REPORT.

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

N/A

2b. If non-"standard", how was the procedure developed, reviewed, documented, and approved? For example, COE, USBM, USBR, USGS, NBS, or other (internal) processes.
PROCESSING PROCEDURE IN SCG-B FORMAT AS SHOWN ON ATTACHED HEADER SHEET EXAMPLE.

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?
ORAL CONFIRMATION BY WCC OF REPROCESSING OF SOME SEISMIC REFLECTION SURVEYS.

2d. Show are any deviations from the established procedures that occur during survey documented?
ESTABLISHED PROCEDURES APPEAR TO HAVE BEEN FOLLOWED DURING ACQUISITION & PROCESSING OF DATA.

2e. Comments on:

3

Review: J. TRAPP, V. MURPHY, A.K. IBRAHIM, R. LEE

DATE: 10/18/84

3. What instrumentation is used for the survey? STANDARD SEISMIC REFLECTION DIGITAL RECORDING SYSTEMS USED; ~~BUT SINCE~~ DATA OBTAINED FROM DIFFERENT SOURCES; A SMALL AMOUNT OF DATA USED ANALOG RECORDING SYSTEMS; ENERGY SOURCE GENERALLY VIBROSEIS SYSTEMS; DYNAMITE IN A FEW CASES.

3a. How were the reliabilities* of the instruments specified?
WCC RELIED UPON CONTRACTOR WHOSE QC LABEL IS ON SEISMIC HEADER SHEET (SEE ATTACHED).

3b. Is there a calibration system and were calibrations systematically carried out according to approved procedure?
NONE ARE APPARENT. NO INFORMATION IS AVAILABLE.

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

yes

3d. Comments on:

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

Reviewer J. TRAPP, V. MURPHY, A.K. IBRAHIM, R. Lee

Date 10/18/84

4. What are the data processing and presentation techniques used?

NORMAL DATA PROCESSING USED. SEE ATTACHED HEADER SHEET EXAMPLE FROM LINE 37 DAVIS CANYON AREA.

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

ORIGINAL DIGITAL RECORDING TAPES MUST BE REQUESTED.

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

YES, STANDARD SIZE & QUALITY IN PRESENTATION.

4c. Are the data keyed to geological, environmental, geographic or other traceable references?

YES, REFER TO TITLE "ROUGH DRAFT" REPORT.

4d. Comments on:

Reviewer J. TRAPP, V. MURAHY, A.K. IBRAHIM, R. Lee
Date 10/18/84

5. What are the acceptance/rejection criteria for the survey data?
CAPABILITY TO IDENTIFY GEOLOGICAL FEATURES OF INTEREST FOR REPOSITORY SITING CONSIDERATIONS.

5a. Were these criteria established prior to survey performance?

yes.

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

- Data Handling
  ORIGINALLY RECORDED DATA WERE REVIEWED & WHEN IT APPEARED FEASABLE, REPROCESSING TOOK PLACE.

- Review Procedure
  A CONSULTANT WAS UTILIZED (J.S. RICHARDS, INC.) WHO ALSO PARTICIPATED IN CHOOSING SEISMIC LINES.

- Corrective Action
  SOME ~~INTERPRETATIONS &~~ TERMINOLOGY ~~ARE~~ IS EXPECTED TO BE REVISED.

Reviewer J. TRAPP, V. MURPHY, A.K. IBRAHIM, R. Lee

Date 10/18/84

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

A) DIFFERENT SURVEYS HAVE DISCLOSED DIFFERENT QUALITY OF DATA RECORDINGS & INTERPRETABLE FEATURES.

B) CONCERNING IMPACTS ON INTERPRETATIONS, THE VELOCITY DATA USED AFFECTS THE RESOLUTION POTENTIAL FOR SMALL FEATURES.

C) CONCERNING TEST CLOSURE, MANY LINES HAVE LIMITED OR NO "TIES" TO OTHER LINES.

D) CONCERNING ACCURACY & LIMITATIONS OF MEASUREMENTS, THE DATA IN ITS PRESENT FORMAT CONSTRAINS INTERPRETATIONS.

E) CONCERNING ADDITIONAL DATA USES, SEISMIC SURVEY DATA CAN BE COMBINED WITH GRAVITY, MAGNETIC & WELL LOG DATA.

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

SINCE DATA IS NOTED AS PROPRIETARY & PRESENTLY ONLY AVAILABLE AT ONE LOCATION (WCC OFFICES, SAN FRANCISCO), IT WOULD BE HELPFUL IF DATA COULD BE AVAILABLE TO THE NRC ~~APPROPRIATE FEDERAL AGENCIES~~ FOR ~~INTERNAL~~ REVIEW WITH CONSTRAINTS AS NECESSARY.

IN ADDITION, FUTURE SURVEYS COULD BE SIMILARLY AVAILABLE.

AS SEEN IN TITLED "ROUGH DRAFT" REPORT, FIG. 2-1 SHEET 1 OF 3, THESE ARE THE KEY LINES REVIEWED:

33A, 33B, 34, 35, 36, 37, 38, 39, 40A, 42 + 43.

IN ADDITION, OTHER SEISMIC LINES WERE PERUSED:

FOR EXAMPLE, 1, 5 & 13.

WOODWARD LYDE
PARADOX BASIN
SAN JUAN CO., UTAH

SEFEL GEOPHYSICAL
SEISMIC DATA PROCESSING
DENVER COLORADO

DATE PROCESSED OCTOBER 81
CONTRACT NUMBER 6659

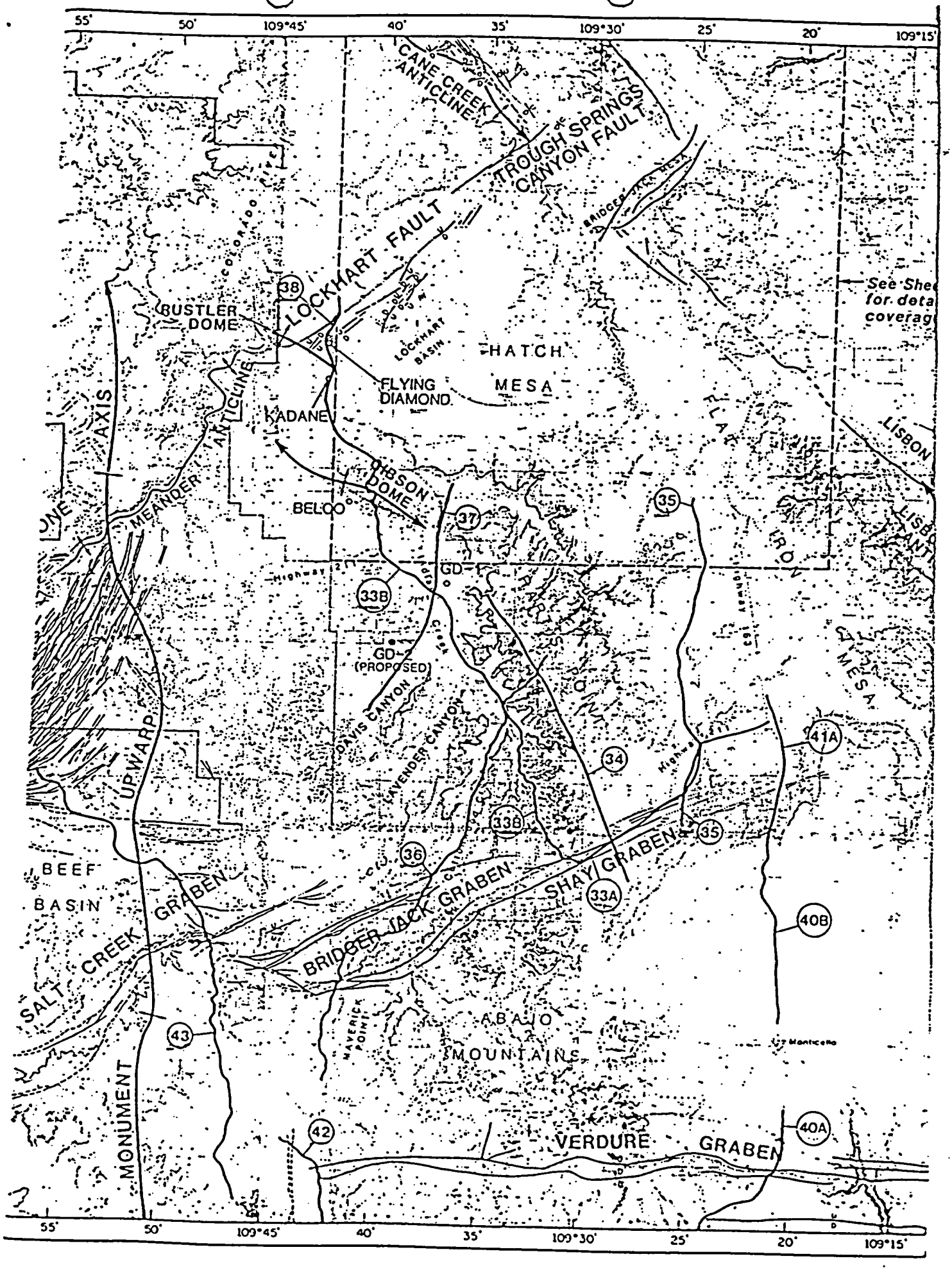
FIELD RECORDING

ACQUISITION BY	SEISMIC ENGINEERING CO.
PARTY	3
DATE	AUGUST 1968
RECORDING	
TYPE	ANALOG
RECORD LENGTH	6 SEC.
ENERGY SOURCE	
TYPE	DYNAMITE
DEPTH	20 FT.
FIELD GEOMETRY	
NUMBER OF CHANNELS	24
S.P. INTERVAL	1320 FT.
GROUP INTERVAL	440 FT.
COVERAGE	400 PERCENT
SPREAD	5060-220-*-220-5060

DIGITAL PROCESSING

1	REFORMAT TO SEFEL SEG-Y RESAMPLE TO 4 MS.	
2	DISPLAY RAW RECORDS	
3	RECORD EDIT	
4	CDP GATHER	
5	DECONVOLUTION	SPIKING
	OPERATOR LENGTH	76 MSEC.
	PREWHITENING	1 PERCENT
	DESIGN WINDOW	300 - 1900 MSEC.
	APPLICATION TIME	0 - 3000 MSEC.
6	ELEVATION STATICS	
	DATUM ELEVATION	6000 FT.
	REPLACEMENT VELOCITY	10000 FT./SEC.
7	VELOCITY ANALYSIS	
	TYPE	CVS
	VELOCITY RANGE	9000 - 18000 FT./SEC.
8	NORMAL MOVEOUT CORRECTION	
9	AUTOMATIC RESIDUAL STATICS	
	RANGE	+/- 25 MSEC.
	WINDOW	900-1600 MSEC
10	FINAL VELOCITY ANALYSIS	
11	FINAL NORMAL MOVEOUT CORRECTION	
12	FIRST BREAK SUPPRESSION	
13	CDP STACK	
14	FINAL FILTER	
	FREQUENCY BAND	15-45 HZ.
	TIME	0-1800 MSEC.
	FREQUENCY BAND	10-35 HZ.
	TIME	1500-1800 MSEC.
15	TRACE EQUALIZATION	
16	FILM DISPLAY	
	SCALE	12 TPI 5 IPS
	POLARITY	NORMAL

PROC. GEOPHYSICIST JPG DATE 11/20/81


55'
50'
109°45'
40'
35'
109°30'
25'
20'
109°15'
CANE CREEK ANTICLINE
TROUGH SPRINGS CANYON FAULT
LOCKHART FAULT
BUSTLER DOME
38
LOCKHART BASIN
HATCH
FLYING DIAMOND
MESA
KADANE
See Sheet for detail coverage
UNE AXIS
MEANDER ANTICLINE
GIBSON DOME
BELOO
37
35
LISBON
GD
33B
GD-2 (PROPOSED)
DAVIS CANYON
LAVENDER CANYON
UPWARP
34
41A
36
33B
BEEF BASIN
SALT CREEK GRABEN
BRIDGER JACK GRABEN
SHAY GRABEN
33A
40B
MAVERICK POINT
ABAJO MOUNTAINS
Monticello
43
42
MONUMENT
VERDURE GRABEN
40A

Reviewer B. RICE, J. IMSE, E. ZURFLUEH
Date OCT. 17, 1984

GEOLOGY-GEOPHYSICAL DATA REVIEW CHECKLIST

1. Name/type, identification number, and date of survey?
GRAVITY SURVEY; PROJECT 85-2003, GEOTERREX, LIMITED; 1982

1a. What was the overall objective of the survey?
(i.e., What features were to be identified?)
REGIONAL GEOLOGIC DATA FOR THE PARADOX BASIN

1b. What criteria were used for line or station locations selection?
ONE MILE GRID FOR STATION LOCATIONS

1c. What geologic constraints were used in determining coverage?
PARADOX BASIN BOUNDARY

1d. What was the density of coverage in survey?
(i.e., seismic coverage, gravity station locations, aeromag. flt line spacing,...)
ONE MILE GRID SPACING (NORTH-SOUTH AND EAST-WEST LINES)

1e. What features (i.e., structures, anomalies, stratigraphic parameters) were determined by the survey?
GRAVITY ANOMALIES - INTERPRETATIONS OF STRUCTURAL AND STRATIGRAPHIC FEATURES INCOMPLETE AT THIS TIME.

1f. Comments on:
THE DAVIS AND LAVENDER CANYON SITES ARE LOCATED ON THE SOUTHWESTERN EDGE OF THE SURVEY. NO DATA TO THE SOUTHWEST IS INCLUDED IN THE SURVEY.

Reviewer B. RICE; J. IMSE; E. ZURFLU
Date OCT. 17, 1984

2. How is the procedure documented?
LOGISTICS REPORT BY THE COLLECTING CONTRACTOR.

2a. Is it a standard (ASTM) procedure? If yes, provide reference.
NO, THESE ARE STANDARD INDUSTRY 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.
(SEE 2a.)

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?
NO REVISIONS

2d. Show are any deviations from the established procedures that occur during survey documented?
NO DEVIATIONS

2e. Comments on:
NONE

B. RICE; J. IMSE; E. ZURFLUEH
OCT. 17, 1984

3. What instrumentation is used for the survey?

LACOSTE-ROMBERG MODEL G GRAVIMETER & A FERRANTI INERTIAL SURVEY SYSTEM

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

CALCULATED ERROR OF ±0.3 mgal

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

YES, STATION REOCCUPATION AND LOOPING BETWEEN ESTABLISHED GRAVITY BASE STATIONS AT MOAB, UH AND MONTICELLO, UH

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

YES, SEE 3b.

3d. Comments on:

NONE

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

Reviewer B. RICE; J. IMSE; E. ZURFLUH
Date OCT. 17, 1984

4. What are the data processing and presentation techniques used?
STANDARD BOUGUER REDUCTION USING THREE DENSITIES (2.2 g/cm^3, 2.4 g/cm^3, AND 2.67 g/cm^3). 2nd VERTICAL DERIVATIVE AND LIMITED PROFILE MODELLING DONE BY 3-D GRAVITY, INC. - 1983. PRESENTED IN 1:48,000 SCALE MAPS.

4a. How can the raw numerical data be retrieved?
COMPUTER TAPE AND PAPER TABLES WITH WOODWARD-CLYDE CONSULTANTS AND 3-D GRAVITY, INC.

4b. Are the data presented in a complete and clear format?
(Comment also on the utility of the presentation.)
NO, ONLY THE BOUGUER MAP AT 2.67 g/cm^3 AND DERIVATIVE MAP AT 2.4 g/cm^3 WERE AVAILABLE.

4c. Are the data keyed to geological, environmental, geographic or other traceable references?
DATA ARE GEOGRAPHICALLY TRACEABLE TO TOWNSHIP LINES.

4d. Comments on:
NONE

Reviewer J. IMSE; B. RICE; E. ZURFLUH
Date OCT. 17, 1984

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

STATION REOCCUPATION RESULTS ARE USED FOR ACCEPTANCE/REJECTION CRITERIA FOR GRAVITY VALUES. INERTIAL SURVEY COMPARED TO EXISTING TOPOGRAPHIC MAPS FOR ACCEPTANCE/REJECTION.

5a. Were these criteria established prior to survey performance?

YES

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

IMPLEMENTED BY PROCEDURES SHOWN IN 5. — PROFESSIONAL JUDGEMENT CALLS WERE USED FOR CORRECTIVE ACTIONS.

- o Data Handling
- o Review Procedure
- o Corrective Action

Reviewer B. RICE; J. IMSE; E. ZURFLUEH
Date OCT. 17, 1984

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

THERE IS NO PLANNED DATE FOR THE NEXT DRAFT OF THE KITCHO REPORT (DEC. 1983), CONTAINING A COMPLETE AND INTEGRATED INTERPRETATION, UTILIZING APPROPRIATE BOUGUER DENSITIES AS IDENTIFIED IN THAT REPORT.

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

COPY OF THE LOGISTICS REPORT AND AVAILABLE MAPS (e.g. BOUGUER AND VERTICAL DERIVATIVE MAPS)

Reviewer B. RICE; J. IMSE; E. ZURFLUEH
Date OCT. 17, 1984

GEOLOGY-GEOPHYSICAL DATA REVIEW CHECKLIST

1. Name/type, identification number, and date of survey?
AEROMAGNETIC SURVEY; JOB 81-206, GEOTERREX LIMITED; 1969-70.

1a. What was the overall objective of the survey?
(i.e., What features were to be identified?)
UNCOMPAHGRE PLATEAU, PARADOX FOLD AND FAULT BELT, MONUMENT UPWARP, BLANDING BASIN, AND AREAS OF IGNEOUS INTRUSIVES.

1b. What criteria were used for line or station locations selection?
NORTHEAST FLIGHT LINES FLOWN TO IDENTIFY NORTHWEST TRENDING FEATURES IN THE BASEMENT STRUCTURES AND INTRUSIVES.

1c. What geologic constraints were used in determining coverage?
(SEE 1a AND 1b)

1d. What was the density of coverage in survey?
(i.e., seismic coverage, gravity station locations, aeromag. flt line spacing,...)
1 MILE FLIGHT LINE SPACING - 3 MILE TIE LINE SPACING
FLIGHT ELEVATIONS 7,500'; 10,500'; 12,000'; AND 13,200' BAROMETRIC OVER VARIOUS BLOCKS.

1e. What features (i.e., structures, anomalies, stratigraphic parameters) were determined by the survey?
MAGNETIC ANOMALIES - INTERPRETATIONS OF STRUCTURAL FEATURES INCOMPLETE AT THIS TIME.

1f. Comments on:

DATA COVERAGE AND QUALITY APPEAR TO BE GOOD

Reviewer B.RICE; J.IMSE; E.ZURFLUH
Date OCT. 17, 1984

2. How is the procedure documented?
SURVEY REPORT BY ACQUISITION CONTRACTOR

2a. Is it a standard (ASTM) procedure? If yes, provide reference.
NO, THESE ARE STANDARD INDUSTRY 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.
(SEE 2a.)

2c. Have there been revisions and how and when were the revisions reviewed, documented, approved, and implemented?
NO REVISIONS

2d. Show are any deviations from the established procedures that occur during survey documented?
NO DEVIATIONS

2e. Comments on:
NONE

B. RICE; J. IMSE; E. ZURFLUEH
OCT. 17, 1984

3. What instrumentation is used for the survey?

CESIUM VAPOR MAGNETOMETER AND FIXED WING AIRCRAFT (MAGNETOMETER IN TOWED BIRD)

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

INSTRUMENT RELIABILITIES NOT SPECIFIED IN REPORT AND LOCATION RELIABILITIES ARE NOT STATED

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

CALIBRATION NOT STATED IN SURVEY REPORT

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

(SEE 3b.)

3d. Comments on:

REPORT IS MORE OF AN INTERPRETED REPORT RATHER THAN A SURVEY LOGISTICS REPORT.

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

Reviewer B. RICE; J. IMSE; E. ZURFLUEH
Date OCT 17, 1984

4. What are the data processing and presentation techniques used?

TOTAL FIELD INTENSITY MAPS

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

MAGNETIC TAPES AND PAPER FLIGHT LINE PROFILES

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

ONLY DATA AVAILABLE ARE IN A TOTAL FIELD INTENSITY MAP

4c. Are the data keyed to geological, environmental, geographic or other traceable references?

DATA ARE TRACEABLE TO GEOGRAPHIC REFERENCES (TOWNSHIP LINES)

4d. Comments on:

NONE

Reviewer B. RICE; J. IMSE; E. ZURFLUH
Date OCT. 17, 1984

5. What are the acceptance/rejection criteria for the survey data?
NONE SPECIFIED

5a. Were these criteria established prior to survey performance?
(SEE 5.)

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

- o Data Handling

- o Review Procedure

- o Corrective Action

Reviewer B. RICE; I. IMSE; E. ZUCHUEH
Date OCT. 17, 1984

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

THERE IS NO PLANNED DATE FOR THE NEXT DRAFT OF THE KITCHO REPORT (DEC. 1983) CONTAINING A COMPLETE AND INTEGRATED INTERPRETATION OF THE AEROMAGNETIC DATA.

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

COPY OF THE LOGISTICS AND SURVEY REPORTS AND AVAILABLE MAPS.