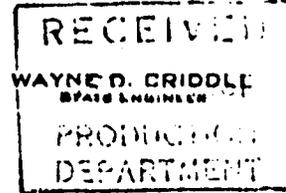




S. Smith

THE STATE OF UTAH
OFFICE OF STATE ENGINEER
SALT LAKE CITY



September 11, 1961

Phillips Petroleum Company
Bartlesville,
Oklahoma

Gentlemen:

RE: APPROVED APPLICATION NO. 32773

Enclosed find Approved Application No. 32773 . This is your authority to proceed with actual construction work which, under Sections 73-3-10 and 73-3-12, Utah Code Annotated, 1953, as amended, must be diligently prosecuted to completion. The water shall be put to beneficial use and proof of appropriation made to the State Engineer on or before ~~February 28, 1961~~ otherwise the application will lapse.

Failure on your part to comply with the requirements of the statutes may result in forfeiture of this application.

*Note error in date
etc 9/15/61*

Yours truly,

Wayne D. Criddle

ADDRESS ALL COMMUNICATIONS TO:

Wayne D. Criddle
STATE ENGINEER
STATE CAPITOL BUILDING
SALT LAKE CITY, UTAH

js

Encl: Copy of approved application

APPLICATION APPROVED

NOTICE TO APPLICANT

The approval of this Application is not a certificate of change. It is merely your authority to begin construction work, which must be diligently prosecuted to completion. To secure a certificate of change under this Application proof of change must be submitted within the time limit allowed by the State Engineer. The amount of water for which certificate will be issued will depend upon the amount of water actually put to a beneficial use, not to exceed, however, the amount of water covered by the original right. For further information write the State Engineer.

RULES AND REGULATIONS

Applicants will save time and expense by familiarizing themselves with the law before making Applications.

If the reservoir is to be located on the channel of the source from which the water is to be appropriated, it should be so stated under explanatory, and—

1. The location of the impounding dam should be described in Paragraph 16.
2. The point where the released storage will be rediverted from the natural stream should be described under explanatory in accordance with the note under Paragraph 16.

When the water is to be stored in other than the natural channel of the source from which it is to be appropriated, it should be so stated under explanatory, and—

1. The point of diversion from the supplying source should be described in Paragraph 16.
2. The intersection of the longitudinal axis of impounding dam and centerline of stream channel or drainage and a similar point where the released storage will be rediverted from a natural channel should be described under explanatory in accordance with the note under Paragraph 16.

In all cases Paragraphs 17 to 27, incl., should describe the proposed diverting and carrying works, exclusive of natural channels, even if already constructed in whole or in part.

If it is proposed to collect the water of a number of springs or other sources at a common point, said point should be described as the point of collection in Paragraph 16, and the point of diversion from each source should also be described under explanatory in accordance with the note in Paragraph 16. The quantity of water sought from each source should be indicated under explanatory, the total equaling the quantity specified in Paragraphs 12 or 13. Where the source of supply is in reality a spring area, the point of diversion is the point where the water is collected; in such case the exterior boundary of the spring area must be described under explanatory by metes and bounds and located with reference to the same point as used in describing the point of collection and as outlined by the note under Paragraph 16.

No enlargement of an original water right may be made by a change Application, either as to quantity of water covered, period of use or otherwise.

When there are two or more coapplicants the Application must be accompanied by a power of attorney.

The applicant's permanent address should be given in Paragraph 2, and the State Engineer notified promptly of any change in address; otherwise applicant may lose rights initiated by Application by failing to receive notices sent from the State Engineer's office.

No Application or other paper pertaining to an Application will be marked received unless accompanied with the required filing fee.

Applications accepted and numbered by the State Engineer, when returned to applicant for correction or additions, must be amended with red ink. Erasures must not be made, but any matter may be eliminated by running a red line through it. Corrected Applications must be resubmitted to the State Engineer's office, within sixty days from the date of State Engineer's letter returning Application for correction; otherwise the priority of the right to change will be brought down to date corrected Application is resubmitted.

Applicants will be informed by the State Engineer's office when cost of publishing notice of Application is due, and must advance cost within sixty days after date of notice, otherwise Application will lapse.

Fees Required by Law Payable to State Engineer

For examining and filing Applications for change of point of diversion, place and nature of use.....	\$2.50
For approving and recording Applications for change of point of diversion, place and nature of use.....	\$2.50
For filing written proof of change.....	\$1.00
For examining maps, profiles and drawings that are part of the proof of change.....	\$3.00
For issuing certificate of change.....	\$1.00

NOTE—In addition to the above fees applicants must pay the cost of publication of "Notice to Water Users" concerning the proposed change.

EXPLANATORY - contd. from printed form.

The additional alternative points of diversion from the source are in Section 3, T. 41S., R. 24E., San Juan County, Utah, situate at points as follows:

<u>Diversion Point</u>	<u>From West Line</u>	<u>From North Line</u>	<u>Subdivision</u>
1	100'	1780'	SW $\frac{1}{2}$ NW $\frac{1}{2}$
2	365'	1780'	"
3	630'	1770'	"
4	900'	1620'	"
5	1170'	1620'	"
6	1400'	1600'	SE $\frac{1}{2}$ NW $\frac{1}{2}$
7	1530'	1600'	"
8	1900'	1600'	"
9	2150'	1620'	"
10	2400'	1700'	"
11	2640'	1750'	"
12	2900'	1810'	SW $\frac{1}{2}$ NE $\frac{1}{2}$
13	3180'	1900'	"
14	3400'	1950'	"
15	3650'	2050'	"
16	3870'	2225'	"
17	4100'	2450'	SE $\frac{1}{2}$ NE $\frac{1}{2}$
18	4250'	2700'	NE $\frac{1}{2}$ SE $\frac{1}{2}$
19	4380'	2975'	"
20	4420'	3250'	"

*Review
10/13/61*

October 13, 1961

AIRMAIL

Mr. Clair M. Senior
Senior & Senior
Attorneys at Law
10 Exchange Place
Salt Lake City, Utah

Re: Alternate or Additional Source of Water
for the Rutherford Unit, San Juan County, Utah

Dear Clair:

Herewith in triplicate is completed and signed application to the Utah State Engineer for additional and alternate points of diversion for water for water-flood purposes in the Rutherford Unit. I would appreciate it if you would handle this matter with the Water Engineer and, as diplomatically as possible, urge upon him the importance of expediting the matter as much as possible.

Having gotten these papers back from the Production Department too late to get a check for the filing fee, I would ask that you advance the fee and, upon being billed, I will send you the check.

If you need any additional information, please advise.

Very truly yours,

RMW:jd
Enclosures

R. M. Williams

cc - Mr. Shofner Smith ✓

Application for Permanent Change of Point of Diversion, Place and Nature of Use of Water STATE OF UTAH

Do not fill out this blank until you have read carefully and thoroughly understand the "Rules and Regulations" on the back hereof and all the notes in the body of it.

For the purpose of obtaining permission to permanently change the point of diversion, place or nature of use of water right acquired by...

original Application No. 32773 (Give No. of Application, certificate of appropriation, title and date of Decree or other identification of right)

to that hereinafter described, application is hereby made to the State Engineer, based upon the following showing of facts, submitted in accordance with the requirements of the Laws of Utah.

1. The name of the applicant is Phillips Petroleum Company

2. The post-office address of the applicant is Bartlesville, Oklahoma

3. The flow of water which has been or was to have been used in second-feet is 8

4. The quantity of water which has been or was to have been used in acre-feet is XX

5. The water has been or was to have been used each year from January 1 to December 31 incl. (Month) (Day) (Month) (Day)

6. The water has been or was to have been stored each year from XX to XX incl. (Month) (Day) (Month) (Day)

7. The drainage area to which source of supply belongs is (Leave blank)

8. The direct source of supply is Underground water and subsurface flow of San Juan River in San Juan County.

9. The point of diversion as described in the original Application or the point at which the water has been diverted if situated at a point/s in Section 5, T. 41S., R. 24E as more particularly set out in the original Application No. 32773.

10. The water involved has been or was to have been used for the following purposes: Pressure maintenance and secondary recovery purposes

Total XX Acres.

NOTE-If for irrigation, give legal subdivision of land and total acreage which has been or was to have been irrigated. If for other purposes, give nature, place and extent of use or proposed use.

11. The point at which water has been or was to have been returned to the stream channel is situated as follows: XX

NOTE-The above space is to be filled in only when all or part of the water is returned to the natural stream or channel.

The Following Changes Are Proposed

12. The flow of water to be changed in cubic feet per second is No change

13. The quantity of water to be changed in acre-feet is XX

14. The water will be used each year from January 1 to December 31 incl. (Month) (Day) (Month) (Day)

15. The water will be stored each year from XX to XX incl. (Month) (Day) (Month) (Day)

16. The point at which it is now proposed to divert the water is situated (See note) See explanatory

NOTE-The "point of diversion," or "point of return," must be located by course and distance or by rectangular distances with reference to some regularly established United States land corner or United States mineral monument if within a distance of six miles of either, or if a greater distance, to some prominent and permanent natural object.

17. The proposed diverting and conveying works will consist of wells and conveyance pipe as explained in original Application No. 32773

18. The cross-section of the diverting channel will be XXXXXX O (Strike out ones not needed)

19. The nature of the diverting channel will be earth, wood, iron, concrete. (Strike out the ones not needed)

†Strike out written matter not needed.

3 copies... 10-13-61... Pol...

STATE ENGINEER Legal

APPLICATION TO APPROPRIATE WATER STATE OF UTAH

NOTE:—The information given in the following blanks should be free from explanatory matter, but when necessary, a complete supplementary statement should be made on the following page under the heading "Explanatory."

For the purpose of acquiring the right to use a portion of the unappropriated water of the State of Utah, for uses indicated by (X) in the proper box or boxes, application is hereby made to the State Engineer, based upon the following showing of facts, submitted in accordance with the requirements of the Laws of Utah.

1. Irrigation Domestic Stockwatering Municipal Power Mining Other Uses

2. The name of the applicant is PHILLIPS PETROLEUM COMPANY

3. The Post Office address of the applicant is Bartlesville, Oklahoma

4. The quantity of water to be appropriated is -- 8 -- second-feet or _____ acre-feet

5. The water is to be used for See Explanatory from January 1 to December 31
(Major Purpose) (Month) (Day) (Month) (Day)

other use period _____ from _____ to _____
(Minor Purpose) (Month) (Day) (Month) (Day)

and stored each year (if stored) from _____ to _____
(Month) (Day) (Month) (Day)

6. The drainage area to which the direct source of supply belongs is _____
(Leave Blank)

7. The direct source of supply is* Underground water and subsurface flow of San Juan River
(Name of stream or other source)

which is tributary to Colorado River tributary to _____

*Note.—Where water is to be diverted from a well, a tunnel, or drain, the source should be designated as "Underground Water" in the first space and the remaining spaces should be left blank. If the source is a stream, a spring, a spring area, or a drain, so indicate in the first space, giving its name, if named, and in the remaining spaces, designate the stream channels to which it is tributary, even though the water may sink, evaporate, or be diverted before reaching said channels. If water from a spring flows in a natural surface channel before being diverted, the direct source should be designated as a stream and not a spring.

8. The point of diversion from the source is in San Juan County, situated at a point*

~~See Explanatory~~ #1-S. 1000 ft. and W. 150 ft.; #2-S. 1000 ft. and W. 450 ft.; #3-S. 1000 ft. and W. 750 ft.; #4-S. 1000 ft. and W. 1050 ft.; #5-S. 1000 ft. and W. 1350 ft.; #6-S. 1000 ft. and W. 1650 ft.; #7-S. 1000 ft. and W. 1950 ft.; #8-S. 1000 ft. and W. 2250 ft.; #9-S. 1000 ft. and W. 2550 ft.; and #10-S. 1000 ft. and W. 2850 ft.; all from NE Cor. Sec. 5, T15S, R24E, SLB&M. (See letter of 2-16-33 attach

*Note.—The point of diversion must be located definitely by course and distance or by giving the distances north of south, and east or west with reference to a United States land survey corner or United States mineral monument, if within a distance of six miles of either, or if at a greater distance, to some prominent and permanent natural object. No application will be received for filing in which the point of diversion is not defined definitely.

9. The diverting and carrying works will consist of See Explanatory

10. If water is to be stored, give capacity of reservoir in acre-feet _____ height of dam _____
area inundated in acres _____ legal subdivision of area inundated _____

11. If application is for irrigation purposes, the legal subdivisions of the area irrigated are as follows:

Total _____ Acres

12. Is the land owned by the applicant? Yes _____ No _____

13. Is this water to be used supplementally with other water rights? Yes _____ No _____
If "yes," identify other water rights under explanatory.

14. If application is for power purposes, describe type of plant, size and rated capacity: _____

15. If application is for mining, the water will be used in Greater Aneth Area ~~oil field~~
~~oil field~~ where the following ores are mined oil and gas

16. If application is for stockwatering purposes, number and kind of stock watered: _____

17. If application is for domestic purposes, number of families to be served: _____

18. If application is for municipal purposes, name of municipality: _____

19. If application is for other uses, include general description of proposed uses: _____

20. Give place of use by legal subdivision of the United States Land Survey for all uses described in paragraphs 14 to 19, incl. See Explanatory

21. The use of water as set forth in this application will consume -- 8 -- second-feet of water and -- 0 -- second feet will be returned to the natural stream or source at a point described as follows: _____

POOR COPY

EXPLANATORY

The following additional facts are set forth in order to define more clearly the full purpose of the proposed application:

ITEM 2

The water will be pumped from the diversion area to the oil field where the water will be injected under pressure through deep wells into the petroleum-bearing formations for pressure maintenance and secondary recovery purposes.

ITEM 3

The point or points of diversion from the source will be in Section 5, T41S, R24E S1M, San Juan County, situated as follows: From that point at which the south bank of the river channel intersects the east line of Section 5, T41S, R24E, to that point at which the South bank of river channel intersects the North line of Section 5, T41S, R24E.

Diversion will be from one or more wells or infiltration galleries to be drilled in the alluvial fill and to be located as close to the South bank of the river channel as is practical within the east-west limits as above defined. Specific location and number of diversion points will be determined by a hydrographic survey and/or producing characteristics of wells to be drilled. The aggregate withdrawal, the rate of which is not to exceed that specified in this application, will be commingled in a conveyance works described in greater detail herein.

ITEM 9

The diverting and carrying works will consist of 12-1/4" diameter wells, cased with 35 to 50 feet of 8-5/8 inch outside diameter pipe to be drilled to depths of from 35 feet to 50 feet and about 1,000 feet of 10-3/4 inch conveyance pipe to places of use.

ITEM 20

Township 41 South, Range 23 East, S1M

S/2 Sec. 1; SE/4 Sec. 2; E/2 Sec. 11; All Sec. 12; All Sec. 13, E/2 Sec. 14, NE/4 Sec. 24.

Township 41 South, Range 24 East, S1M

All Sections 3, 4, 5, 6, 7, 8, 9, 10; W/2 Sec. 11, W/2 Sec. 14; All Sections 15, 16, 17, 18, 19, 20, 21; NW/4, W/2 SW/4 Sec. 22; W/2 NE/4, NW/4, W/2 SW/4 Sec. 28; All Sections 29, 30; N/2 Sec. 31; N/2 Sec. 32.

Said described lands, which are in San Juan County, Utah, constitute the Rutherford portion of the Greater Aneth Area oil field.

Continued on page 4

(Use page 4 if additional explanatory is needed.)

The quantity of water sought to be appropriated is limited to that which can be beneficially used for the purpose herein described.

PHILLIPS PETROLEUM COMPANY

By:

L. E. Fitzgerald

Signature of Applicant

VICE PRESIDENT OF PRODUCTION

*If applicant is a corporation or other organization, signature must be the name of such corporation or organization by its proper officer, or in the name of the partnership by one of the partners, and the names of the other partners shall be listed. If a corporation or partnership, the affidavit below need not be filled in. If there is more than one applicant, a power of attorney, authorizing one to act for all, should accompany the Application.

DECLARATION OF CITIZENSHIP

STATE OF UTAH, }
County of..... }

POOR COPY

On the day of 19....., personally appeared before me, a notary public for the State of Utah, the above applicant who, on oath, declared that he is a citizen of the United States, or has declared his intention to become such a citizen.

My commission expires:

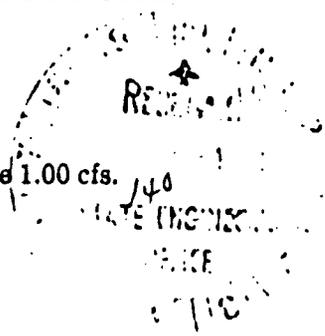
(SEAL)

Notary Public

FEEES FOR APPLICATIONS TO APPROPRIATE WATER IN UTAH

Flow rate — c.f.s.	Cost
0.0 to 0.1	\$ 10.00
over 0.1 to 0.5	20.00
over 0.5 to 1.0	30.00
over 1.0 to 15.0	30.00 plus \$5/cfs above 1.00 cfs.
over 15.0	100.00

Storage — acre-feet	Cost
0 to 20	15.00
over 20 to 500	30.00
over 500 to 7500	30.00 plus \$5/500 a. f. above first 500
over 7500	100.00



(This section is not to be filled in by applicant)

STATE ENGINEER'S ENDORSEMENTS

1. *10:00 a.m.*
Feb. 27, 1961 Application received *by mail* in State Engineer's office by *over counter*
2. Priority of Application brought down to, on account of
3. *Feb. 27, 1961* Application fee, \$ *5.50*, received by *over counter* Rec. No. *02265*
4. *Mar. 10, 1961* Application *PHOTOSTATED* book *711.32* page *357*, and indexed by *J. T. Moore*
5. Application platted by *W. S. B. 11-21-61 (D) and (Mac. G.)*
aac. (Ex. 1-6) u. b. l. (7) r. b. d. (1) a. b. c. (1) a. c. (1) b. a. d.
6. *April 7, 1961* Application examined by *W. E.*
7. Application returned, or corrected by office
8. Corrected Application resubmitted *over counter* to State Engineer's office.
by mail
9. *April 7, 1961* Application approved for advertisement by *W. E.*
10. *June 16, 1961* Notice to water users prepared by *R. K. H.*
11. *June 29, 1961* Publication began; was completed *July 13, 1961*
Notice published in *San Juan Record, Monticello, Utah*
12. *June 27, 1961* Proof slips checked by *J. S. D. G.*
13. Application protested by
14. *July 25, 1961* *Subscribed paid 22-1-016-222*
Hearing held by
15. Field examination by
16. *Sept 5, 1961* Application designated for *approval* *197-165*
rejection
17. *Sept. 11, 1961* Application copied or photostated by *T. E.* proofread by
18. *Sept. 11, 1961* Application *approved*
rejected
19. Conditions:
This Application is approved, subject to prior rights, as follows:
a. Actual construction work shall be diligently prosecuted to completion.
→ b. Proof of Appropriation shall be submitted to the State Engineer's office by *Feb. 28, 1963*
c.
20. Time for making Proof of Appropriation extended to
21. Proof of Appropriation submitted.
22. Certificate of Appropriation, No. *3-273* issued

Wayne D. Criddle
Wayne D. Criddle State Engineer.

POOR COPY
Application No. *3-273*

EXPLANATORY CONTINUED

The use of the applied for water for the planned pressure maintenance and secondary recovery operations will permit the recovery of substantial quantities of oil and gas which would otherwise not be recovered.

NOTICE TO APPLICANT

POOR COPY

All waters in this state, whether above or under the ground, are the property of the public, subject to all existing rights to the use thereof. No appropriation of the unappropriated public water may be made and no rights to the use thereof shall be recognized except Application for such appropriation first be made to the State Engineer.

The approval of this Application is not a Certificate of Appropriation. It is merely your authority to begin construction work, which must be prosecuted diligently to completion. To secure a Certificate of Appropriation under this Application, Proof of Appropriation must be submitted within the time limit allowed by the State Engineer. The amount of water for which Certificate will be issued will depend upon the amount of water actually put to a beneficial use, not to exceed, however, the amount of water specified in this Application. Proof of Appropriation must be made in accordance with the requirements of the law. For further information write the State Engineer.



Copied for
C. M. Boles
11-3-61 SS:mll

THE STATE OF UTAH
OFFICE OF STATE ENGINEER
SALT LAKE CITY
October 30, 1961

WAYNE D. CRIDDLE
STATE ENGINEER

Issue Date: October 30, 1961
Expiration Date: April 30, 1962

Phillips Petroleum Company
c/o Senior and Senior, Attorneys
#10 Exchange Place
Salt Lake City 11, Utah'

Gentlemen:

RE: APPROVED APPLICATION NO. 32773 AND
CHANGE APPLICATION NO. a-4025

This is to acknowledge receipt of your Permanent Change Application No. a-4025, which proposes to change the point of diversion of 0.0 sec.-ft. of water initiated by Application No. 32773. The water was to have been diverted from ten 12.75-inch O.D. wells located within S $\frac{1}{2}$ N $\frac{1}{2}$ NE $\frac{1}{4}$ and SE $\frac{1}{4}$ NE $\frac{1}{4}$ of Sec. 5, T41S, R24E, SLB&M. It is now proposed to divert the 0.0 sec.-ft. of water from a total of 11 wells 12.75 inches O.D. between 30 and 50 ft. deep ten of these being the same as heretofore described and thirty-one wells to be located within NW $\frac{1}{4}$ Sec. 3, S $\frac{1}{2}$ Sec. 4, NW $\frac{1}{4}$ Sec. 5, T41S, R24E, SLB&M. The water is to be used for pressure maintenance and secondary recovery purposes as heretofore.

You have requested permission to proceed immediately with the drilling of these additional 11 wells. This letter grants you that privilege with the understanding that all risks as regards water rights are being assumed by you.

If other than new standard casing is to be used in these wells such casing must be inspected and approved by a representative from this office. All wells must be so constructed and finished that they may be readily cased at all times, in order to prevent waste of underground water. Wells must be drilled and cased in such a manner that will prevent the infiltration of contaminated water into them.

The driller must be bonded and have a current permit from the State Engineer. Before commencing, he must give this office notice as to the date he will begin drilling. Also, within 30 days after the well has been completed or abandoned, he must file a well driller's report for each well. These reports are to contain accurate and complete information regarding the work done and become part of the files in this office pertaining to the above-numbered wells.

This is permission for a licensed driller to begin drilling your wells.

Please note that the expiration date of this letter is April 30, 1962.

Yours truly,

Wayne D. Criddle
Wayne D. Criddle
STATE ENGINEER

RECEIVED

ds

1961

SENIOR

POOR COPY

Copied for
C. M. Bole
4-18-62 EFL:ms

THE STATE OF UTAH
OFFICE OF THE STATE ENGINEER
SALT LAKE CITY

March 26, 1962



Phillips Petroleum Company
Bartlesville,
Oklahoma

Gentlemen:

RE: APPROVED APPLICATION NO. a-4025

Enclosed find Application No. a-4025 which has been approved by me. This approved Application is your authority to proceed with actual construction work which, under Sections 73-3-10 and 73-3-12, Utah Code Annotated 1953, as amended, must be diligently prosecuted to completion. The water shall be put to beneficial use and proof of appropriation filed with the State Engineer, as provided in the original application as amended by this approved change Application.

Failure on your part to comply with the requirements of the statutes may result in forfeiture of your Application.

Yours truly,

Wayne D. Criddle

Wayne D. Criddle

ADDRESS ALL COMMUNICATIONS TO:

STATE ENGINEER
403 STATE CAPITOL
SALT LAKE CITY, UTAH

js
Encl: Copy of approved application

CHANGE APPLICATION APPROVED

(Form for pending original Application)

December 2, 1965

Ratherford Unit, San Juan County, Utah -
Application No. 32773 - Request for Extension
of Time to Make Proof of Appropriation

Mr. R. M. Williams (2)
Legal Department

Phillips' Application No. 32773 to the State of Utah for appropriation of water to be used in the Ratherford Unit project was approved on September 5, 1961. One condition of the approval was that a proof of appropriation be submitted by February 28, 1963. Subsequently an extension was granted and the proof of appropriation is now due on February 28, 1966. It is not possible to determine at this time the quantity of water that will ultimately be required and this is to request your assistance in obtaining an additional extension of time before it is necessary to file the proof.

Attached is a copy of Mr. C. H. Boles' letter dated November 23, 1965, which transmits a copy of an unexecuted application for an extension of time for filing the proof from February 28, 1966, to February 28, 1971. Please examine the application as to form and, if it is acceptable, forward it to Mr. J. E. Christman, who will arrange for its execution. If it is your opinion that the legal firm of Senior and Senior should file the application, as was done previously, please so advise and the executed application will be returned to you.

Stofner Smith

JEC:ga
Attach.

cc: Messrs. C. W. Corbett
Attn. T. L. Osborne
C. H. Boles ✓

12/8/65
HSC
RECEIVED COPY
1/10



DIVISION OF CONSERVATION ARCHAEOLOGY

San Juan County
Museum Association

April 19, 1985

Mr. Jon Weichbrodt
Phillips Petroleum Company
P.O. Box 1150
Cortez, Colorado 81321

Re: BIA DCA-85-187

Dear Mr. Weichbrodt:

Our report on the archaeological survey of 17 well pads, access roads and pipeline right-of-ways in the Ratherford Unit, San Juan County, Utah is enclosed. Six sites and 34 isolated loci were found.

We have recommended clearance for all 17 locations (with stipulations for wells 7-44, 12-12 and 18-22 (see report for details)). Wells 7-24 and 7-33 require further treatment of archaeological sites and will be submitted in a separate report so they will not delay construction of the others.

The Bureau of Indian Affairs will review this report and make the final decision on archaeological clearance for your project. The Bureau of Indian Affairs in Window Rock should notify the Real Property Management office of the Shiprock Bureau of Indian Affairs of its decision.

An invoice will follow. We have enjoyed working with you and hope we can be of service again. If you have any questions, please call us. We will be happy to help you.

Sincerely,

Roger A. Moore
Supervisory Archaeologist

cc: Mark Henderson, BIA, Window Rock (6)
State Historic Preservation Office, Salt Lake City

Project No. 19-85-C
BIA DCA-85-187

NAO-BIA Use Authorization
No. 84-DCA-013-1 (Navajo)
Navajo Nation Permit No. 84-22

State of Utah No. U-84-3

An Archaeological Survey of
17 Well Pads and Their Access Routes
and Pipelines near White Rock Curve Village,
San Juan County, Utah

for

Phillips Petroleum Company

Ratherford Unit:

1-14	12-21	17-31
7-11	12-32	17-42
7-13	12-43	18-22
7-22	16-13	18-31
7-44	17-11	18-42
12-12	17-22	

by

Roger A. Moore and Timothy M. Kearns
Supervisory Archaeologists

Submitted by

Margaret A. Powers
Principal Investigator

DIVISION OF CONSERVATION ARCHAEOLOGY

Contributions to Anthropology Series, No. 963
San Juan County Archaeological Research Center and Library

April 19, 1985

ABSTRACT

On April 4-10 and 12, 1985, the Division of Conservation Archaeology of the San Juan County Museum Association completed an archaeological survey of 17 well pads and their access routes and pipeline tie-ins for Phillips Petroleum Company. The survey area is located in the Rutherford Unit, north of White Rock Curve Village, San Juan County, Utah and is under the jurisdiction of the Bureau of Indian Affairs (BIA) and the Navajo Nation. A total of 131.02 acres was surveyed.

Six archaeological sites and 34 isolated loci were found and recorded. The documentation of the isolates in the field has exhausted their research potential. Archaeological clearance is recommended with the following stipulations that 1) the revised locations for wells 7-44 and 12-12 be used; 2) the pipeline be laid within the existing bladed road within site DCA-85-13; and 3) the access road to well 18-22 follow the new flagged route which avoids site DCA-85-10.

INTRODUCTION

On April 4-6, and 19, 1985, the Division of Conservation Archaeology (DCA) of the San Juan County Museum Association conducted an archaeological survey for Phillips Petroleum Company of Cortez, Colorado. Jon Weichbrodt requested the survey on March 27, 1985 and administered the project for Phillips Petroleum Company. Margaret A. Powers administered the project for DCA.

In recognition of the limited, nonrenewable nature of archaeological remains, the federal government has enacted legislation that is designed to conserve and protect these resources. The principal legislation includes the Antiquities Act of 1906 (PL 52-209), the Historic Preservation Act of 1966 (PL 89-665), the National Environmental Policy Act of 1969 (PL 91-852), the 1971 Executive Order No. 11593, the Archaeological and Historical Conservation Act of 1974 (PL 93-291), and the Archaeological Resources Protection Act of 1979 (PL 96-95). In addition, the states of Arizona, New Mexico, Utah, and Colorado have enacted laws to ensure compliance with federal legislation and to protect archaeological resources within their jurisdiction. Work undertaken in the course of this project is intended to comply with these statutes and is governed by the stipulations of NAO-BIA Use Authorization No. 84-DCA-013-1, Navajo Nation Permit No. 84-22, and State of Utah Permit No. U-84-3.

Roger A. Moore and Timothy M. Kearns, DCA archaeologists, surveyed the project area for cultural remains. Anthony Klesert (Coordinator of the Navajo Nation Cultural Resource Management Program) and Mark Henderson (Bureau of Indian Affairs Navajo Area Archaeologist) were notified of the survey schedule before fieldwork began. Jon Weichbrodt of Phillips Petroleum Company accompanied the archaeologists during part of the fieldwork.

METHODS

The area was surveyed by walking parallel transects 15m apart across the well pads, and a single zigzag transect along the access routes and pipeline right-of-ways. A buffer zone 50 to 100 ft wide (depending on amount of cut and fill for a pad) was included in well surveys, and 20 ft was added to each side of the access routes and pipeline right-of-ways. The archaeologists recorded all cultural remains. Those whose information potential exceeded what could be extracted during the survey phase were assigned site status. Other cultural remains were documented as isolated loci (IL). Pertinent environmental data were also recorded.

In addition to field inspection, the archaeologists conducted a search of the records at the Division of Conservation Archaeology, San Juan College, and the Utah Division of State History to determine if any sites had been recorded in the project area. Site and project records required by the BIA and the Utah Division of State History were completed.

GENERAL DISCUSSION

The areas surveyed are within the Phillips Petroleum Company Rutherford Unit on and around Flat Top Mountain, north of White Rock Curve Village, San Juan County, Utah. Table 1 contains the legal descriptions; Table 2 defines the areas surveyed. The legal descriptions of the project areas are referenced to the Salt Lake City Meridian; the project areas are on the USGS 7.5' Aneth 3 NE, Utah (Blue line) (1962) quadrangle map. The map showing all the well locations and right-of-ways is Figure 1. The legal descriptions and artifact descriptions for the isolated loci are in Table 3.

In the discussion of well pads, access, and pipeline right-of-ways the term "access route" will refer to the route to be constructed between the well pad and an existing bladed or paved road. The term "route" is used because it is just that, a proposed route, not an existing road. Unless otherwise stated, the pipeline will follow the same right-of-way from the pad as the access route. The term "road" refers to an existing feature.

Topography

Flat Top Mountain is a large mesa rising above the San Juan Valley south of the San Juan River. It is surrounded by a gently sloping upland valley. This part of the valley resembles a broad bench of a mesa; most of it is covered by stable and semistable dune fields and cut by several deep washes. The principal washes traversing the project area are Blue Hogan Wash and Desert Creek.

The top of Flat Top Mountain is capped by the Brushy Basin Member of the Morrison Formation. A gray to light gray-green chert and a silty chert occurs on this surface. The base of Flat Top Mountain is composed of the Westwater Canyon Member of the Morrison Formation. The surface bedrock of the upland valley surrounding the mountain consists of the Recapture Member of the Morrison Formation. This member is made of "reddish-gray, white, and brown fine- to medium-grained sandstone characterized by dark- and light-colored grains; interbedded reddish-gray siltstone and mudstone" (Haynes, et al. 1972).

Vegetation

The vegetation on Flat Top Mountain is a shadscale community which varies in density from 10-35 percent ground cover. Vegetation includes shadscale (Atriplex confertifolia), snakeweed (Gutierrezia sarothrae), Indian ricegrass (Oryzopsis hymenoides), prickly pear cactus (Opuntia sp.), and fishhook cactus (Mamillaria sp.).

The dune field below Flat Top Mountain is covered principally by a desert scrub community. This community is dominated by one or more of the following: two-scale Mormon tea (Ephedra viridis), narrowleaf yucca (Yucca angustissima), snakeweed, rabbitbrush (Chrysothamnus nauseosus), or Indian ricegrass. Other plants common to this community include galleta grass (Hilaria jamesii), prickly pear cactus, barrel cactus (Ferocactus sp.), and wolfberry (Lycium sp.). The ground cover varies from 5 to 25 percent.

Table 1 (Cont.)
 Legal Description for Well Pads

Well Pad No.	AFE #	LEGAL DESCRIPTION						UTM COORDINATES					
		T	R	Sec.	1/4	1/4	1/4	Center of Well Pad Zone	Northing	Eastings	End of Access route (pipeline) Zone	Northing	Eastings
12-43	POC-R249	41S	23E	12	N 1/2	N 1/2	SE	12	4122225	647800	12	(4122450	647150)
16-13	POC-R248	41S	24E	16		NW	SW	12	4120475	651450	12	4120400	651500
					W 1/2	SW	SW					(4119850	651250)
17-11	POC-R247	41S	24E	17	SE	NW	NW	12	4121100	649850	12	4121000	649925
					E 1/2	NE	NW					(4120650	650450)
					E 1/2	SE	NW						
17-22	POC-R246	41S	24E	17		SE	NW	12	4120875	650200	12	(4120650	650450)
17-31	POC-R245	41S	24E	17	NW	NW	NE	12	4121275	650625	12	4121400	650450
					E 1/2	NE	NW					(4120650	658450)
					E 1/2	SE	NW						
17-42	POC-R244	41S	24E	17	E 1/2	SE	NE	12	4120875	651025	12	4120850	651100
					E 1/2	NE	SE					(4119850	651250)
				16	W 1/2	W 1/2	SW						
18-22	POC-R243	41S	24E	18	SE	SE	NW	12	4120750	648680	12	4120575	648750
												(4120575	648750)
18-31	POC-R242	41S	24E	18	W 1/2	NW	NE	12	4121200	649000	12	4121225	648750
					E 1/2	NE	NW					(4120575	648750)
					E 1/2	SE	NW						
						S 1/2	NE						
18-42	POC-R241	41S	24E	18	S 1/2	SE	NE	12	4120750	649375	12	(4120575	648750)

*N 1/2 SW 1/4 SE 1/4
 S 1/2 NE 1/4 SW 1/4

Table 2 (Cont.)
Area Surveyed

Well Pad No.	AFE #	Footages for Well	Well Pad ¹	Access Route ¹	Pipeline ¹	Acres
17-22	POC-R246	1882' F/NL 1910' F/WL	300' x 350' (400' x 450')	450' x 20' (450' x 60')	500' x 20' (500' x 60')	5.44
17-31	POC-R245	500' F/NL 1980' F/EL	300' x 350' (400' x 450')	600' x 20' (600' x 60')	900' x 20' (900' x 60')	6.20
17-42	POC-R244	1980' F/NL 660' F/EL	300' x 350' (400' x 450')	90' x 20' (90' x 60')	2700' x 20' (2700' x 60')	7.98
18-22	POC-R243	2200' F/NL 2210' F/WL	300' x 350' (400' x 450')	600' x 20' (600' x 60')	-----	4.96
18-31	POC-R242	795' F/NL 2090' F/EL	300' x 350' (400' x 450')	600' x 20' (600' x 60')	4300' x 20' (4300' x 60')	10.88
18-42	POC-R241	2120' F/NL 745' F/EL	300' x 350' (400' x 450')	50' x 20' (50' x 60')	2000' x 20' (2000' x 60')	7.00

¹Top numbers are size of project areas
Numbers in parenthesis are actual area surveyed with buffer zone

* These footages represent the original staked location. They will be revised as per the recommendations.

Table 3 (Cont.)
Isolated Loci Descriptions

IL No.	Well No.	LEGAL DESCRIPTION				UTM		Description
		T	R	Sec.	Zone	Northing	Easting	
15	12-12	41S	23E	12	12	4122655	646485	One light tan-gray grainy quartzite core; 30 medium to large tertiary flakes of same material; all in an area 0.4 x 0.2m. Both IL 9 and 10 appear to represent eroding out piles of single event flaking/core reduction.
16	12-12	41S	23E	12	12	4122680	646510	One proximal fragment of a large heavily varnished tertiary flake of tan siltstone.
17	12-12	41S	23E	12	12	4122680	646580	One very large secondary core reduction flake of light green chert.
18	12-21	41S	23E	12	12	4123000	646980	One light tan chert biface thinning flake, distal fragment.
19	12-21	41S	23E	12	12	4122925	646980	One utilized large secondary core reduction flake of light green cherty siltstone. The utilization is represented by very minute nibbling along the distal edge of the flake.
20	17-11	41S	24E	17	12	4121050	649900	One one-hand cobble mano of quartzite.
21	17-22	41S	24E	17	12	4120850	650275	One large secondary flake of white cherty siltstone with one utilized lateral edge; 6.2cm long, 5.5cm wide, 1.0cm thick.

Table 3 (Cont.)
Isolated Loci Descriptions

IL No.	Well No.	LEGAL DESCRIPTION				UTM		Description
		T	R	Sec.	Zone	Northing	Easting	
22	17-22	41S	24E	17	12	4120825	650325	One possibly utilized core of fine green chert; core was made from large natural spall 9.5 x 7.3 x 3.7cm; flakes removed from both faces (multidirectional core), one end was unifacially retouched and has minute step fracture edge damage; possibly reused as chopper or hoe.
23	17-22	41S	24E	17	12	4120860	650450	One light gray chert tertiary flake, 5cm long.
24	17-31	41S	24E	17	12	4121280	650580	One green chert primary core reduction flake.
25	17-31	41S	24E	17	12	4121325	650625	One scraper made by retouch on a primary core reduction flake of green chert; 4.8cm long, 11.5cm wide, 2.4cm thick.
26	17-31	41S	24E	17	12	4121335	650600	Flake of green chert, 3.7cm long, 3.4cm, wide, 1.4cm thick; and on one uni-directional core of gray quartzite, 15 x 6 x 6cm.
27	18-31	41S	24E	18	12	4121200	649020	One green chert primary core reduction flake; two green chert tertiary core reduction flakes.
28	18-31	41S	24E	18	12	4121180	649060	One large tertiary core reduction flake, used as a core, 7.8 x 6.5 x 4.5cm.

access route and pipeline go east about 30 ft to an old two-track road, then follow the road south about 200 ft to a bladed dirt road. The pipeline then parallels the north side of the road west 500 ft to an intersection and then turns south and parallels the intersection road 1600 ft to the tank battery. Both sides of the road along this 1600 ft stretch were surveyed.

Cultural Resources: No sites or isolated loci were found.

Recommendations: Archaeological clearance is recommended.

Well 17-11

The proposed well pad is in the dissected area of the dune field just below the talus slopes of Flat Top Mountain. The scrubland community provides about 15 percent cover dominated by Mormon tea. The talus is composed of dark brown sandstone with a number of angular chunks of green chert.

From the south side of the pad, the access route goes southeast about 300 ft to a bladed dirt road. The pipeline continues east along the north side of the road to well 17-21, then follows the east side of the road southeast 50 ft to a "T" intersection. Another 1300 ft southeast is a second "T" intersection, from which the line goes about 200 ft southeast on the road. It then follows the pipeline to 17-32 south-southwest to the satellite in Section 17.

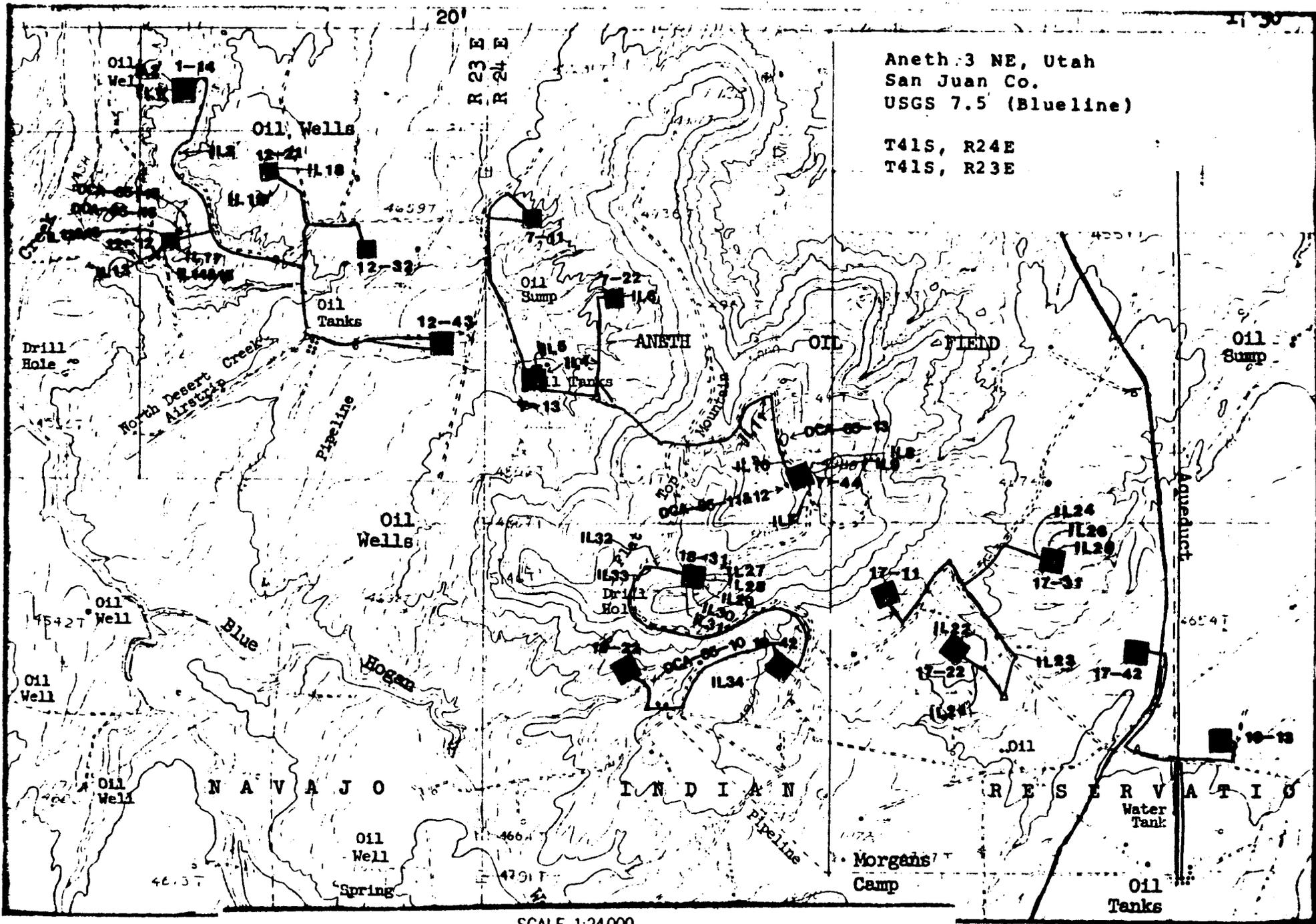
Cultural Resources: One prehistoric isolated locus (IL 20), a one-hand mano was found about 150 ft from the north end of the access route.

Recommendations: Archaeological clearance is recommended.

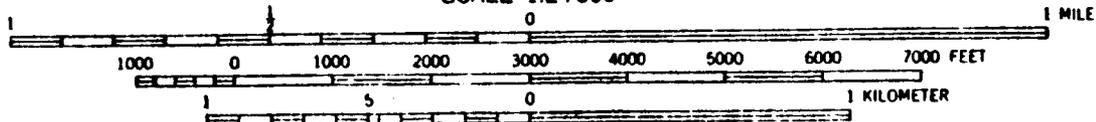
Well 17-22

The proposed well pad is located in the rolling dune field south of Flat Top Mountain. The area is predominantly low sandy hills with occasional outcrops of sandstone and scattered sandstone and siltstone detritus. The scrubland vegetation community is characterized by Mormon tea, narrowleaf yucca, snakeweed, prickly pear, and grasses. The access road and pipeline leave the pad along the southern edge and run roughly 450 ft to an existing bladed road. The flow line continues south of the road in a 145° trajectory crossing rolling sand hills, eroded badlands and a small wash before terminating at the Section 17 satellite station. The distance from the bladed road to the satellite station is approximately 500 ft. An alternate flow line route was also examined. It follows a bladed road which heads toward the satellite station and stops at a small electrical complex (powers poles and transformer) north of the satellite station. This road extends south from the bladed road south of the well pad and is roughly 125 ft east of where the flagged access road intercepts the bladed road. The west side of this road was surveyed and a straight-line trajectory from its end to the satellite station was also examined.

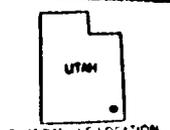
FIGURE 1



SCALE 1:24000



CONTOUR INTERVAL 20 FEET



UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1A. TYPE OF WORK
 DRILL DEEPEN PLUG BACK

B. TYPE OF WELL
 OIL WELL GAS WELL OTHER
 SINGLE ZONE MULTIPLE ZONE

2. NAME OF OPERATOR
 Phillips Oil Company

3. ADDRESS OF OPERATOR
 P.O. Box 2920, Casper, WY 82602

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.)
 At surface: 1980' FNL, 1980' FWL Sec. 17-T41S-R24E
 At proposed prod. zone: same

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*
 Approximately 5 miles south of Montezuma Creek, Utah

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT.
 1980' from Ratherford Unit Lease Line

18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.
 1270'

21. ELEVATIONS (Show whether DF, ET, GR, etc.)
 4734' ungraded ground

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17-1/2"	13-3/8"	48#	100'	150 sx (Circ to surface)
12-1/4"	9-5/8"	36#	1600'	600 sx (Circ to surface)
8-3/4"	7"	23# & 26#	5600'	1000 sx est (T.O.C. approx 2000)

Approval is requested to drill Ratherford Unit #17-22, a Desert Creek Development oil well, to increase the ultimate recovery from the Ratherford Unit.

BOP equipment will be operated daily and tested weekly.

APPROVED BY THE STATE
OF UTAH DIVISION OF
OIL, GAS, AND MINING

DATE: 7/9/85
 BY: John R. Dava
 WELL SPACING: 1-3 Unit Well

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24. SIGNED: A. E. Stuart TITLE: Area Manager DATE: June 20, 1985

(This space for Federal or State office use)

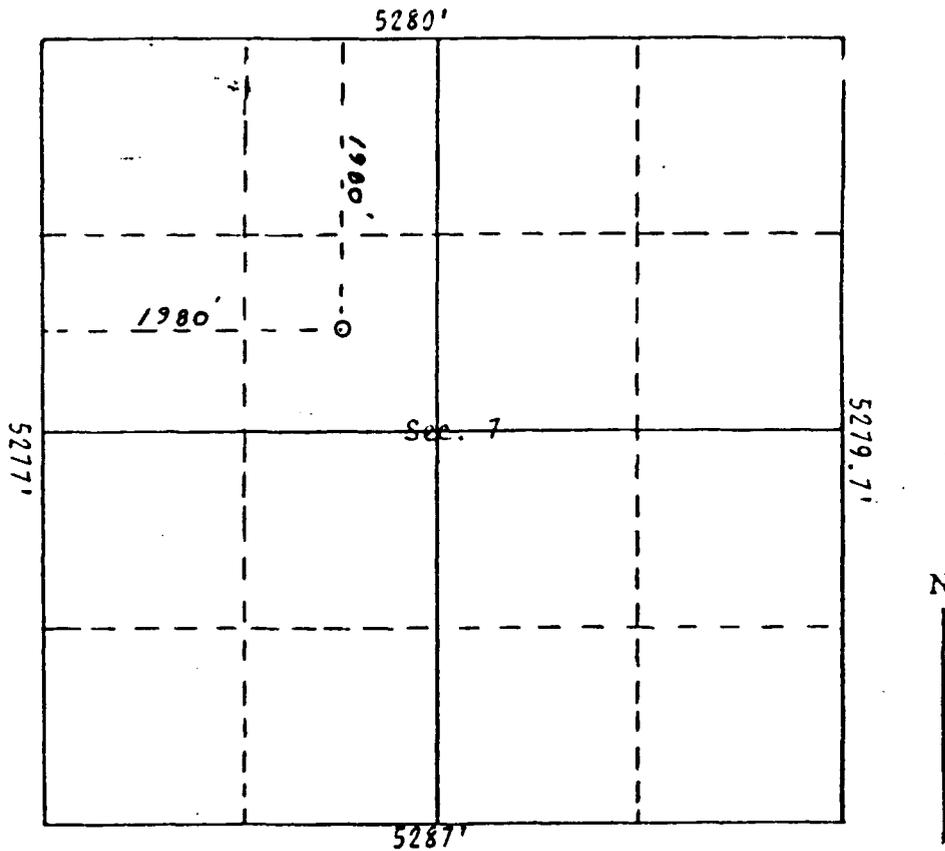
PERMIT NO. _____ APPROVAL DATE _____

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions On Reverse Side

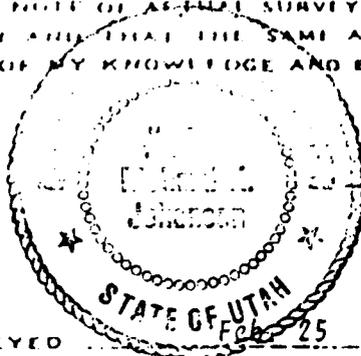
COMPANY Phillips Petroleum Co.
Ratherford Unit
 LEASE _____ WELL NO. 7-22
 SEC. 7, T. 41 S., R. 24 E.
 County: San Juan State: Utah
 LOCATION 1980 FNL & 1980 FWL
 ELEVATION 4734



SCALE—4 INCHES EQUALS 1 MILE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM
 FIELD NOTES OF ACTUAL SURVEYS MADE BY ME UNDER MY SUPER-
 VISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE
 BEST OF MY KNOWLEDGE AND BELIEF.

SEAL



R. Johnson
 Registered Land Surveyor

SURVEYED

Feb 25

1985

RATHERFORD UNIT #17-22

Supplement to Form 9-331C "Application for Permit to Drill, Deepen, or Plug Back."

DRILLING PROGRAM

1. Surface formation is the Dune Sand, which consists of loose windblown sand, age-recent.

Estimated tops of geologic markers:

Shinarump	2361'
DeChelly	2644'
Hermosa	4558'
Desert Creek Zone I	5475'

2. Brackish water-bearing sands are expected in the Navajo, Wingate, and DeChelly formations. Oil is expected to be encountered in the Ismay and Desert Creek formations. The top of cement will be approximately at 2000'.

3. Blow-out preventers will be 10" Series 900 equipment to be tested initially to 3000 psi. They will be inspected and operated daily and pressure tested weekly to 1500 psi. Weekly pressure tests will be supervised by representatives of Phillips Oil Company and the drilling contractor. Tests will be recorded on the daily drilling report which will remain on the rig floor during drilling operations. BOP tests will be conducted in accordance with Phillips standards, copy attached.

4. a. Proposed Casing Program:

1. Conductor casing:

100'	13-3/8"	48#/ft	H-40	ST&C	new
------	---------	--------	------	------	-----

2. Surface casing:

1600'	9-5/8"	36#/ft	K-55	ST&C	new
-------	--------	--------	------	------	-----

Surface casing will be tested to 1500# before drilling out.

3. Production casing:

5700'	7"	23# & 26#/ft	K-55	ST&C	new
-------	----	--------------	------	------	-----

Production casing will be tested to 3000#.

b. Proposed Cementing Program:

1. Conductor Casing:

Conductor casing will be cemented with 150 sks Class B cement. Cement will be brought to surface.

2. Surface Casing:

Surface casing will be cemented with 300 sks "light" cement followed with 300 sks Class B cement. Cement will be brought to surface.

3. Production casing:

Production casing will be cemented with "light" cement followed with Class B cement. For cement volume, caliper will be used with 15% excess. The top of the cement should be around 2000'. If other zones with hydrocarbon potential are encountered, they will be covered with cement.

c. Auxiliary Equipment:

Auxiliary equipment will include upper and lower kelly cocks, a drill string safety valve, and a pit level indicator.

5. Drilling Fluid:

Drilling fluid will be a fresh water based mud system. Spud mud is gel and water with a weight of 8.4-8.8 ppg. From the surface to approximately 1600', gel and water will be used. Mud weight may be up to 9 ppg to control water flow from the Wingate formation. A slurry of 8.6-9.5 ppg, 32-38 viscosity, and less than 15cc/30 min. water loss will be used from 1600'-5200'. Mud weight may be increased to 10.4 ppg if a water flow is encountered. From 5200' to total depth mud properties will be 10.5-12.5 ppg, 40-45 viscosity, and below 10 cc water loss.

Adequate quantities of mud materials will be stored at the location to equal the volume of the rigs complete circulating system. A flow sensor will be used.

6. Testing, logging, and coring:

The logging program will consist of DLL, MSFL, GR, SP, and Caliper from T. D. to the surface casing. A FDC/CNL and a Micro-proximity log will be run from T. D. to 4300'. A temperature or cement bond log will be run to determine cement top. No coring or drill stem tests are planned.

7. Downhole Conditions:

Drilling in the area indicates no abnormal pressures, temperatures, or hydrogen sulfide gas.

8. Phillips anticipates starting operations in the third quarter of 1985. Drilling operations are estimated to take fifteen days per well.

CULTURAL RESOURCE REPORT

Division of Conservation Archaeology has prepared a cultural resource inventory of the subject wellsite. A copy of the report has been sent to the BLM Farmington office. Pertinent information regarding the subject well is attached.

SURFACE USE PROGRAM

1. Existing Roads

- a. Access to existing lease roads is approximately 5 miles south of Montezuma Creek, Utah.
- b. The existing roads will be maintained in the same or better condition.
- c. Refer to the attached access road map for road information.

2. Access Roads

Planned upgrading of existing access roads is shown on the attached map.

3. Location of Existing Wells.

Locations of existing wells are shown on the attached maps.

4. Production from the proposed well will be piped to Ratherford Unit Tank Battery #1, located in the SW SW Sec. 16-T41S-R24E San Juan County, Utah. The flowline will be visible from the existing lease roads. A plat of the proposed leadline is attached.

5. Water Supply

- a. The source of water to drill the subject well is from the River Booster, NE/4 Sec. 5., or from the Water Injection Plant, SE/4 Sec. 17 in T41S-R24E, San Juan County, Utah.
- b. The drilling water will be trucked from the water source to the subject well.
- c. A water supply well will not be drilled on the lease.

6. Construction Materials

- a. Only native soils will be used for construction of wellsite and the access road.
- b. Pit run rock will be used on the wellsite and access road when needed.
- c. The above materials are owned by the Navajo Tribe.

7. Waste Disposal

- a. Cuttings: Cuttings will be contained in a fenced reserve pit until dry enough to cover. Upon abandonment, the reserve pit area will be backfilled, shaped to natural topography, and seeded.
- b. Drilling Fluid: Drilling fluid will be contained in a fenced reserve pit until dry enough to cover. Upon abandonment, the reserve pit area will be backfilled, shaped to natural topography, and seeded.
- c. Garbage/Trash: All garbage and trash will be put in the burn pit. The burn pit will be fenced on four sides. After the burn pit is no longer in use, the trash and garbage will be covered with a minimum of 4 feet of fill.
- d. Salt: No salts are anticipated on this well. If salt is present, it will be disposed of in the reserve pit.
- e. Chemicals: Chemicals will be disposed of in the reserve pit.
- f. Sewage: Dry chemical toilets will be used.

8. Ancillary Facilities

No ancillary facilities are required.

9. Well Site Layout.

- a. Refer to attached Rig Layout plat
- b. There are no plans to line the reserve pit unless porous soil materials are encountered during construction.

10. Surface Reclamation Plans

- a. Construction Program: The top 8 inches of surface material will be removed and stockpiled. A cross section of the drill site showing cuts and fills is attached.
- b. Well Abandonment: All disturbed areas will be shaped to the natural topography and seeded in accordance with BLM requirements.

- c. Producing Well: Those areas not needed for production purposes will be recontoured to the surrounding topography. Seeding will be in accordance with BLM requirements.
 - d. Pipelines and flowlines: Flowlines will be above ground and follow or be visible from existing roads.
 - e. Rehabilitation will begin as soon as possible, considering weather and other factors, and proceed per recommendation of the BLM. The reserve pit will be reclaimed once it dries.
11. Surface Ownership: The wellsite location, access road and leadline are on the Navajo Indian Reservation. No dwellings are in the proposed drilling area.

12. Other information:

The reserve pit will be lined if needed to contain drilling fluids. The reserve pit will be fenced on three sides during drilling and on the fourth side after the rig is moved out.

13. Operator's Representative and Certification.

a. Field Representative:

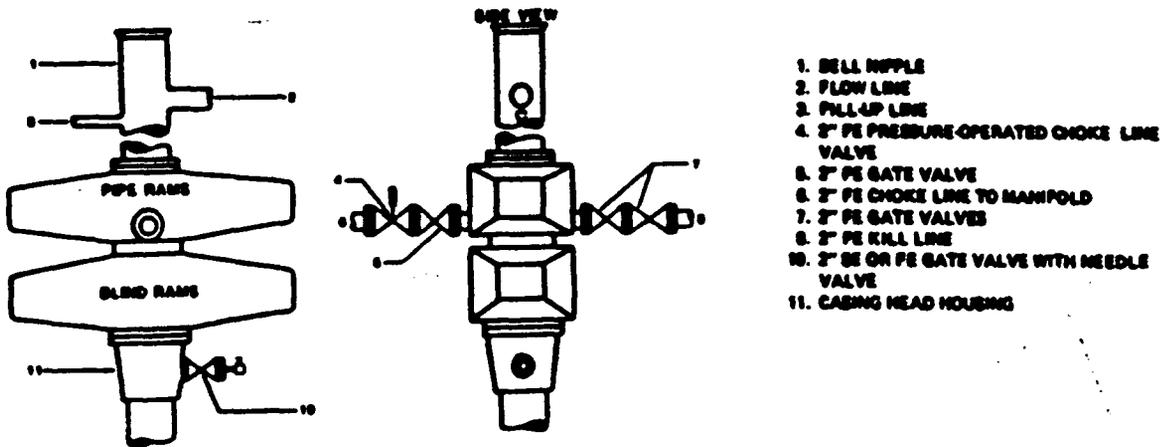
A. E. Stuart
P. O. Box 2920
Casper, Wyoming 82602
307-237-3791

I hereby certify that I or persons under my direct supervision have inspected the proposed drill site and access route; and I am familiar with the conditions which currently exist; that the statements made in this plan are to the best of my knowledge true and correct; and that the work associated with operations proposed herein will be performed by Phillips Oil Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of the 18 U.S.C. 1001 for the filing of a false statement.

Date June 21, 1985


A. E. Stuart
Area Manager

RCT/lt (18)
Casper - RC



**Figure 7-10. Standard Hydraulic Blowout Preventer Assembly
(2 M or 3 M Working Pressure) Alternative 3 (without Drilling Spool)**

**Well Control 4
January/83**

PHILLIPS PETROLEUM COMPANY



**Page 251
Section II**

7.6 Testing Surface Blowout Preventer Equipment

7.6.1 Pressure Test Frequency

All rams, annulars, valves, choke and kill lines, choke manifold, kelly cocks, and safety valves shall be pressure tested at the following frequencies:

- (1) Initial installation of blowout preventers.
- (2) After setting casing, before drilling cement.
- (3) Every 7 days or on first trip out of hole after 7 days since previous pressure test.
- (4) After any component of the blowout preventer assembly is disturbed, replaced or repaired (this includes lines, valves, or choke manifold). In this case, the component changed may be the only component tested.
- (5) Prior to conducting first drill stem test in a series of one or more DST's.
- (6) Any time the Phillips Wellsite Supervisor deems necessary, such as prior to drilling into suspected high pressure zones.

7.6.2 Function Test Frequency

All rams, annulars, valves, and other items specified below, shall be function tested at the following frequencies.

- (1) On initial installation from driller control and remote panel.
- (2) Each trip out of hole alternating between driller's and remote control panel but not more than once every twenty-four (24) hours. Close pipe rams or annular preventer ONLY on drill pipe.

7.6.3 Test Pressures

Use the following table to identify which test is appropriate and at what pressure.

TEST	DESCRIPTION
Low Pressure	Test to 200-300 psi prior to each high pressure test.
Initial Installation	<p>Test all rams, annulars, valves, choke manifold, Kelly cocks, and safety valves to the lesser of the following pressures.</p> <ul style="list-style-type: none"> . Rated working pressure of the component in the blowout preventer assembly with the exception of annular preventer which is to be tested to 70% of the rated working pressure. . The API rated casing burst pressure of the last casing to be utilized in the well with the BOP assembly being tested. . Rated working pressure of the casing head. . If "Cup Tester" is used do not exceed 80% of the API rated burst pressure of the casing.
Repair	Repaired or replaced components are to be tested to the same pressures used in the Initial Test.

FIELD PRACTICES AND STANDARDS

7.6.3, cont'd

TEST	DESCRIPTION
Weekly and After Setting Casing	<p>Test all rams, annulars, valves, choke and kill lines, choke manifold, kelly cocks, and safety valves, to the lesser of the following pressures.</p> <ul style="list-style-type: none"> . 50% of the rated working pressure of the component to be tested. . 80% of the API rating of the casing burst pressure then in the well. . Test blind rams during internal casing pressure test. (Refer to drilling program for test pressures).
DST Operations	<p>Test all pipe rams, annular preventers, valves, choke and kill lines, choke manifold, kelly cocks, and safety valves to the maximum anticipated surface pressure expected while conducting drill stem tests. Do not test annular to more than 70% of its working pressure.</p>
Shallow Casing	<p>Where cased hole is less than 2000 feet measured depth, the test pressure may be 1.5 psi per foot of casing depth, not to exceed 80% of the API rated burst pressure. In the case of shallow conductor casing or drive pipe (500 feet or less) that is equipped with one BOP, then the test pressures do not need to exceed 1.0 psi per foot of casing depth.</p>
Accumulator	<p>Test accumulator to the manufacturer's rated working pressure. Test the accumulator for time to pump up to specifications.</p>

7.6.4 Blowout Preventer Test Practices

- (1) All pressure tests shall be witnessed by Phillips' Representative and the Contractor's Senior Supervisor on Location. All tests shall be recorded on the Phillips' Daily Drilling Report, the IADC Report and the BOP Test Form; see Figure 7-13. A reproducible copy of the BOP Test Form (Figure 7-13) can be found in Section III.

7.6.4, cont'd

- (2) Hold all low pressure tests for three minutes and high pressure tests for five minutes or until Phillips Representative and the Contractor's Senior Supervisor are satisfied no leaks exist.
- (3) A detail procedure for the testing of blowout preventer and choke manifold equipment will be included in the drilling program. The procedure is to be distributed for each drilling unit under contract by the operating office. Each operating office must include the following practices:
 - a. Prior to testing, all lines and valves will be thoroughly flushed to ensure the system is clear. Test all opening and closing control lines to 1500 psi and inspect for leaks.
 - b. If necessary, run a stand of drill collars below the test plug to prevent unseating the test tool during testing.
 - c. All precautions must be taken to avoid pressuring the casing below the test tool.
 - d. The running string is to be full of water (or antifreeze solution) for immediate indication of test tool leakage.
 - e. All pipe rams, blind/shear rams, blind rams, annular preventers, valves, fail-safe valves, choke and kill lines are to be tested at the frequencies and pressures outlined in this section.
 - f. Drill pipe safety valve, lower and upper kelly cocks are to be tested from below at pressures and frequencies outlined in this section.
 - g. All test fluids are to be bled back to the pump unit in safe manner.

7.6.5 Testing Wellhead Pack-offs

The wellhead pack-off is to be pressure tested upon installation for five minutes. Test pressure is to be 80% API rated casing collapse or the rated working pressure of the casing head whichever is the lesser. Casing annulus valve(s) must be in open position to prevent casing collapse during pack-off testing.

When testing the wellhead pack-off, use recorded test pressures and volumes to determine if pack-off is leaking. Pressure should be immediately released at the first indication of a leak.



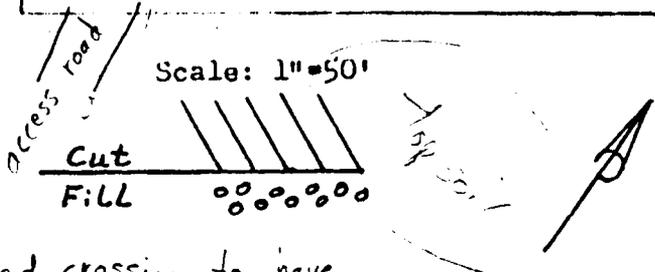
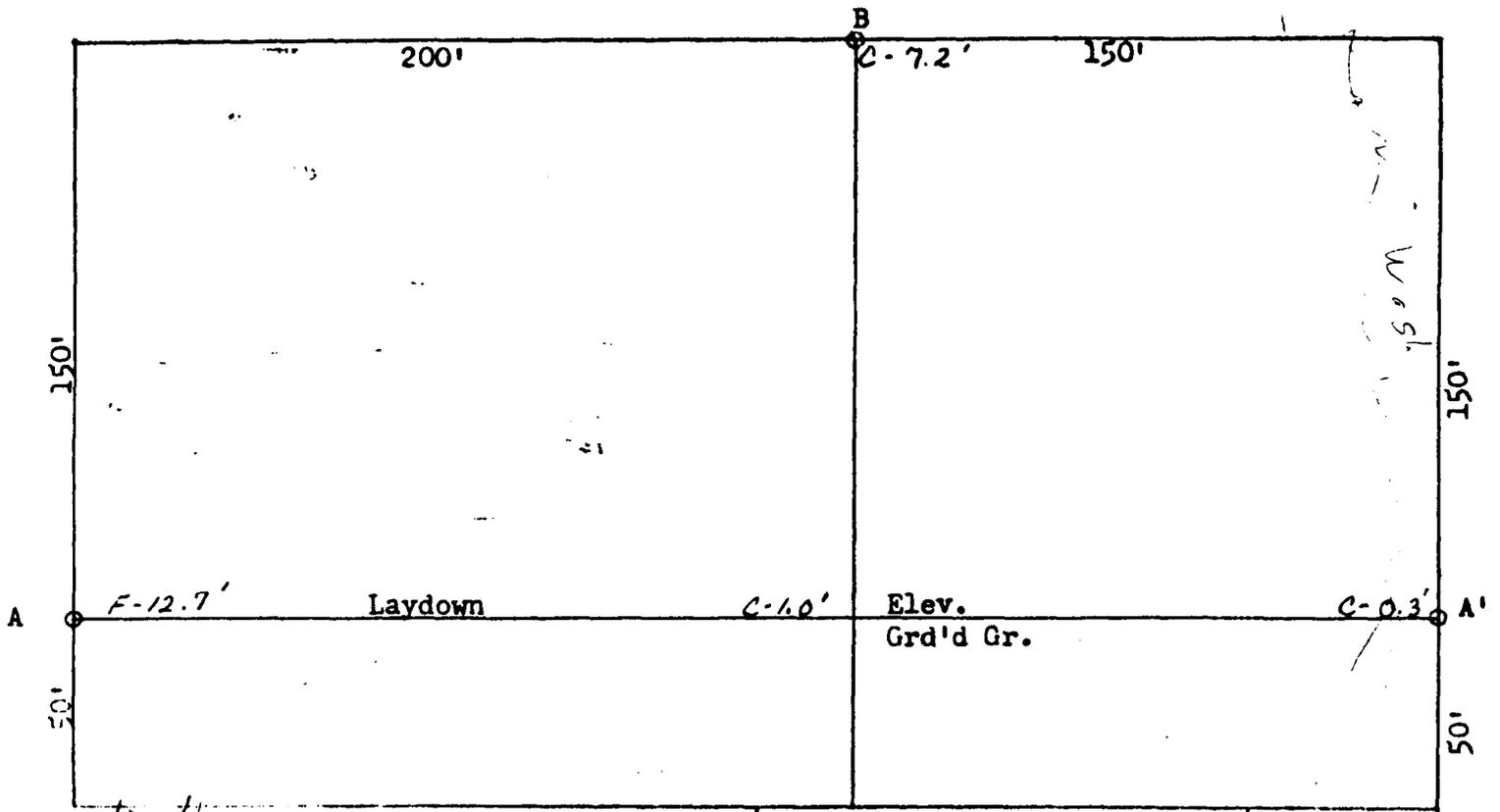
7.6.6 Safety Precautions

One pumping unit operator is to be stationed at the high pressure pumping unit, and is to remain at this station until all testing has been completed. The pump unit operator is to be in continuous communication with the person who is recording the test data. The Phillips Wellsite Supervisor and Contractor's Senior Supervisor on location will be the only personnel who will go into the test area to inspect for leaks when the equipment involved is under pressure. The rig crews are to stay clear of the area until such time that both the Phillips Wellsite Supervisor and the Contractor's Senior Supervisor have contacted the pumping unit operator and all three have agreed that all pressure has been released, and there is no possibility of pressure being trapped. The rig crews may then go into the area to repair leaks or work as directed.

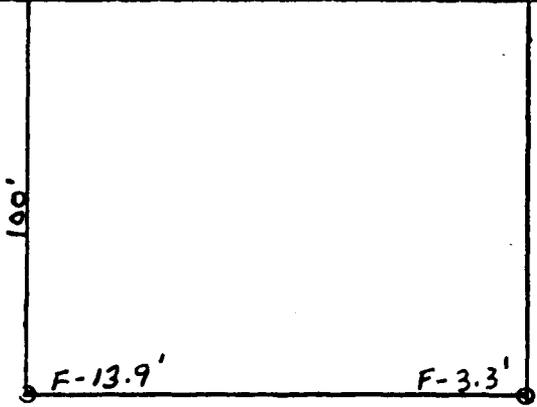
All lines, swings, and connections that are used in the testing of the blowout preventers are to be adequately secured in place.

Pressure is to be released only through the pressure release lines that are vented back into the pump unit tanks. The lines are to be clamped down to direct the flow into unit tanks.

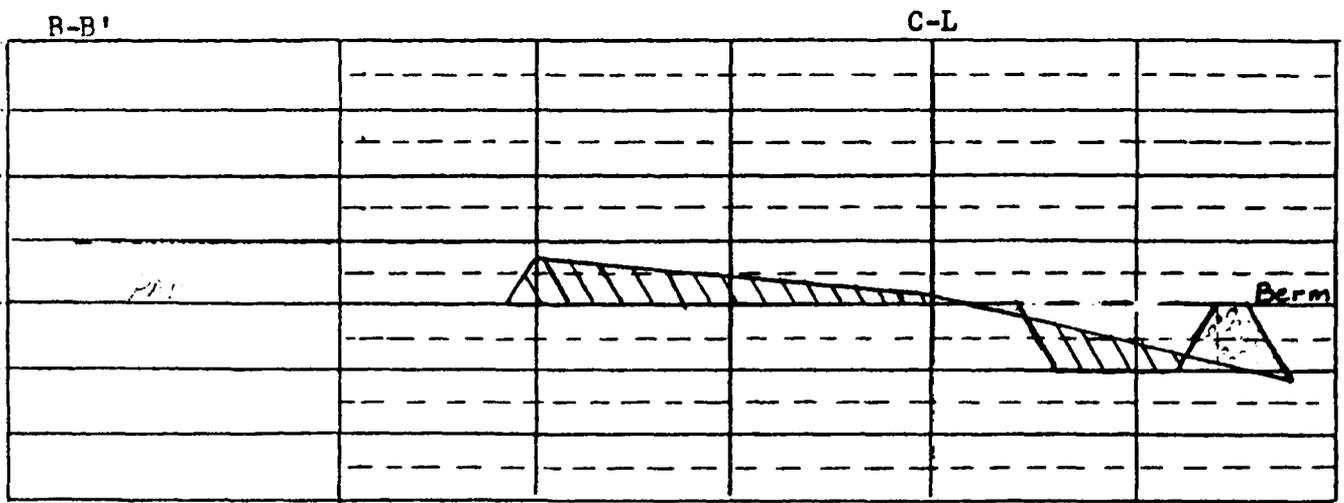
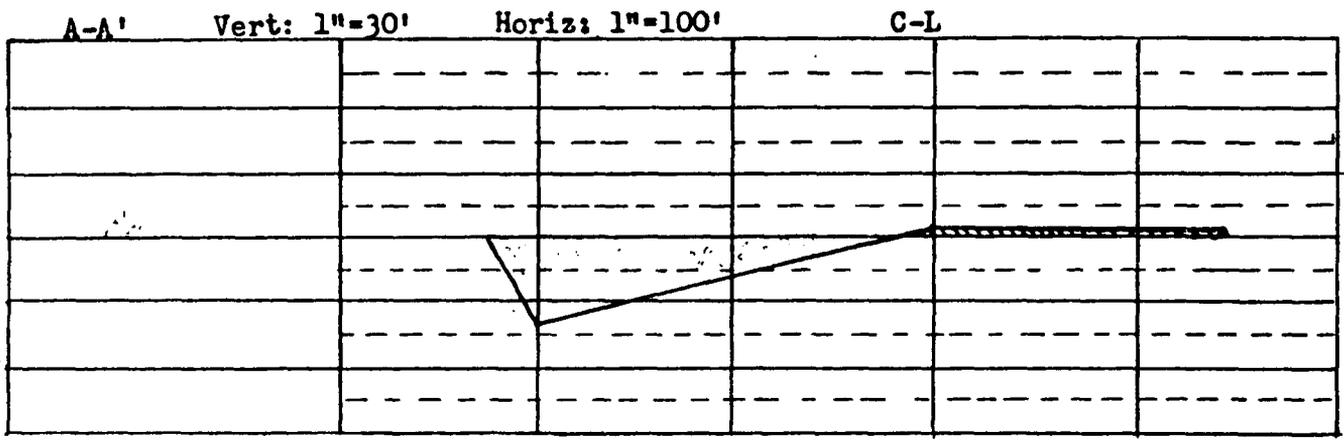
Profile for
 PHILLIPS OIL COMPANY # 7-22 RATHERFORD UNIT
 SAN JUAN COUNTY, UTAH

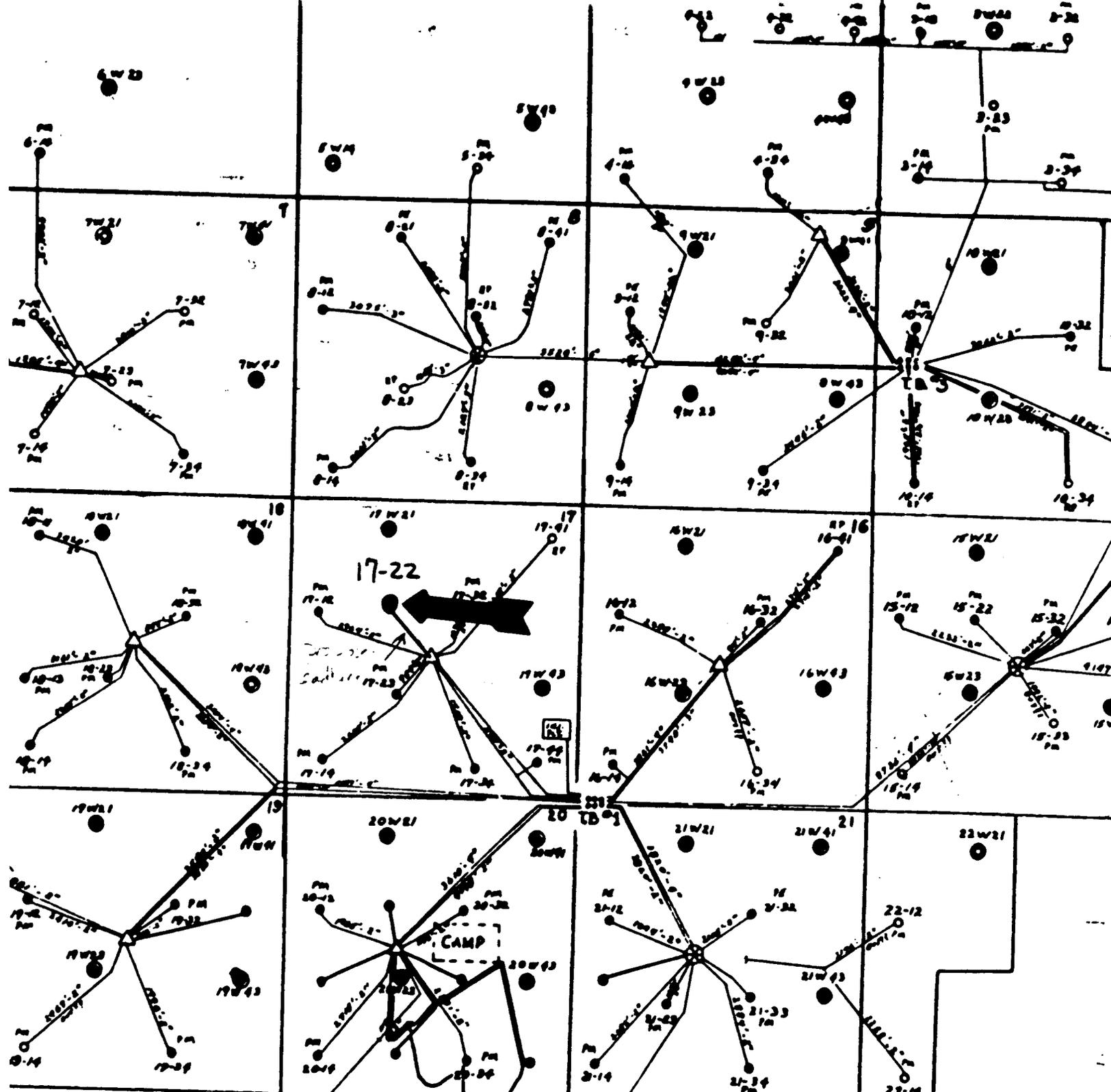


road crossing to have
 (1) 9" culvert and
 (1) low road crossing

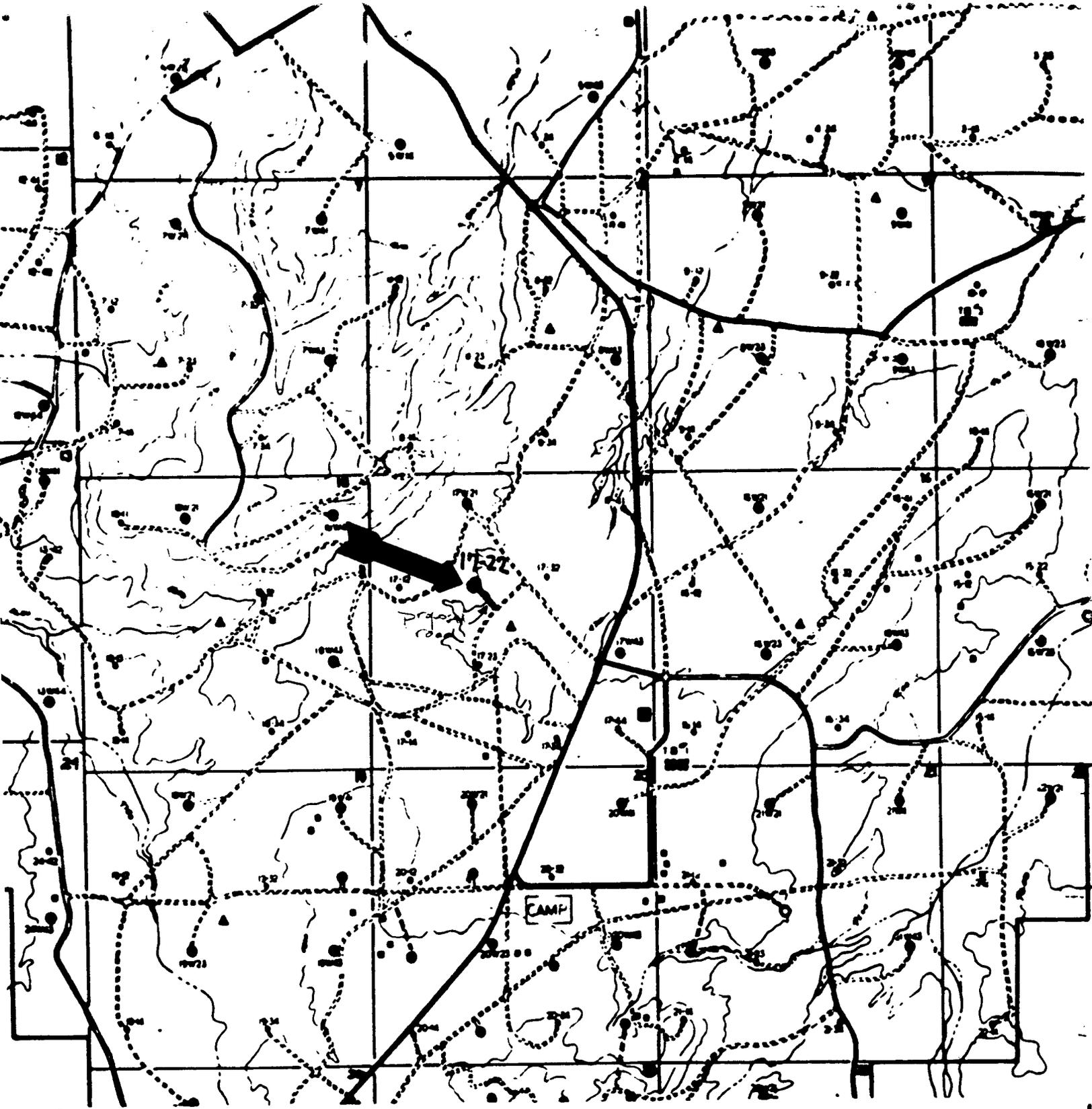


B' 125'

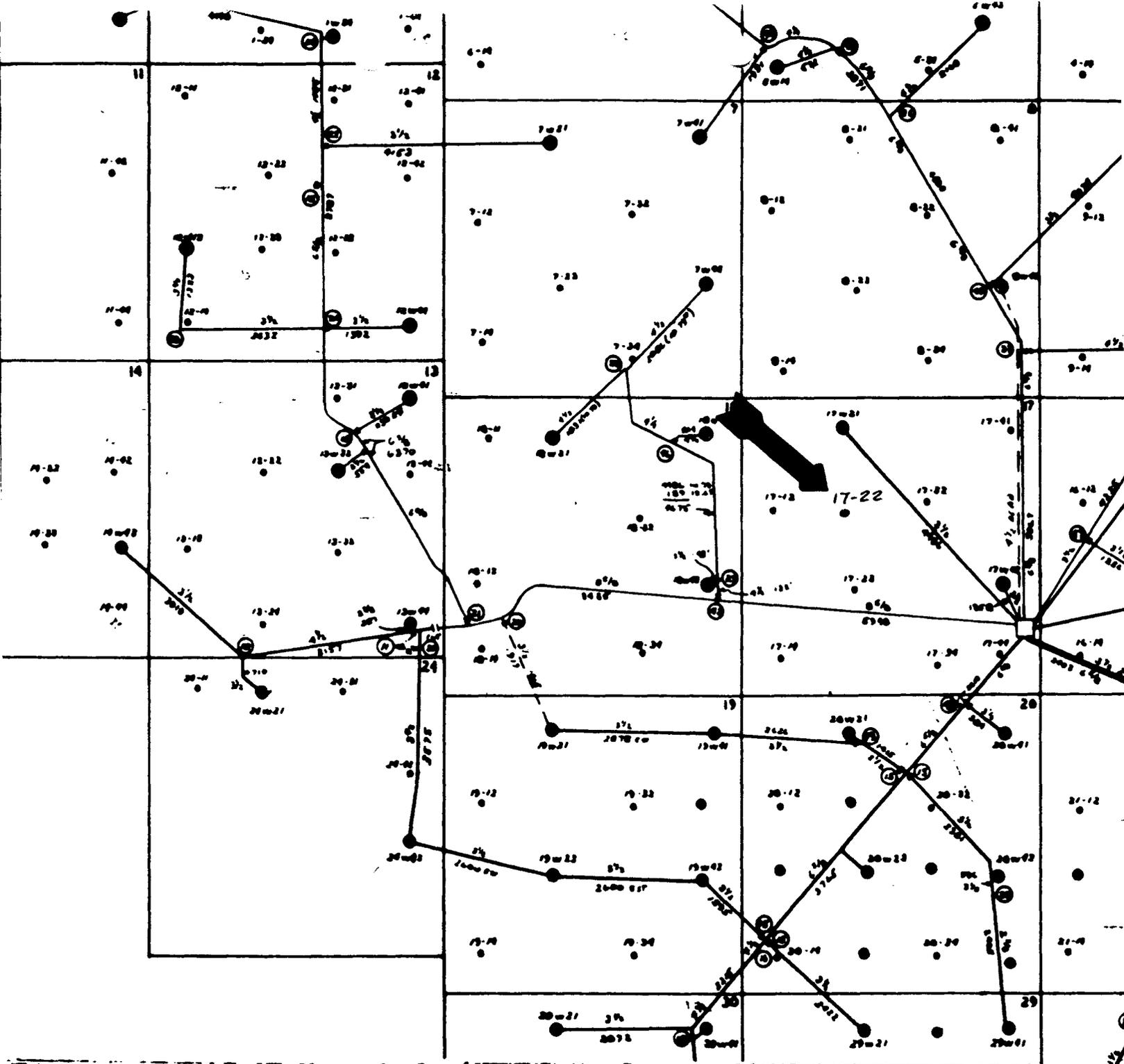




NO	REVISION	BY	DATE	CHKD	APP'D
FOR BIDS	 PHILLIPS PETROLEUM COMPANY BARTLESVILLE, OKLAHOMA 				
FOR APPR					
FOR CONST					
DRAWN 1-17-35 BJM	RATHERFORD UNIT WELL 17-22 PROPOSED LEADLINE PLAT SE NW SEC. 17 T41S-R24E SAN JUAN CO., UTAH				JA NO FILE CODE
CHECKED					AFE NO SCALE 2.2" = 1 mi
APP'D					DWG NO SH NO



NO.	REVISION	BY	DATE	CHKD	APP'D
FOR BIDS	 PHILLIPS PETROLEUM COMPANY 			JA NO.	FILE CODE
FOR APPR				AFE NO.	SCALE 2.2"=1 mi.
FOR CONST	RATHERFORD UNIT WELL 17-22 PROPOSED ROAD PLAT SE NW SEC 17 T41S-R24E SAN JUAN CO., UTAH			DWG NO.	SH NO.
DRAWN 1-17-85 EJM					
CHECKED					
APP'D					



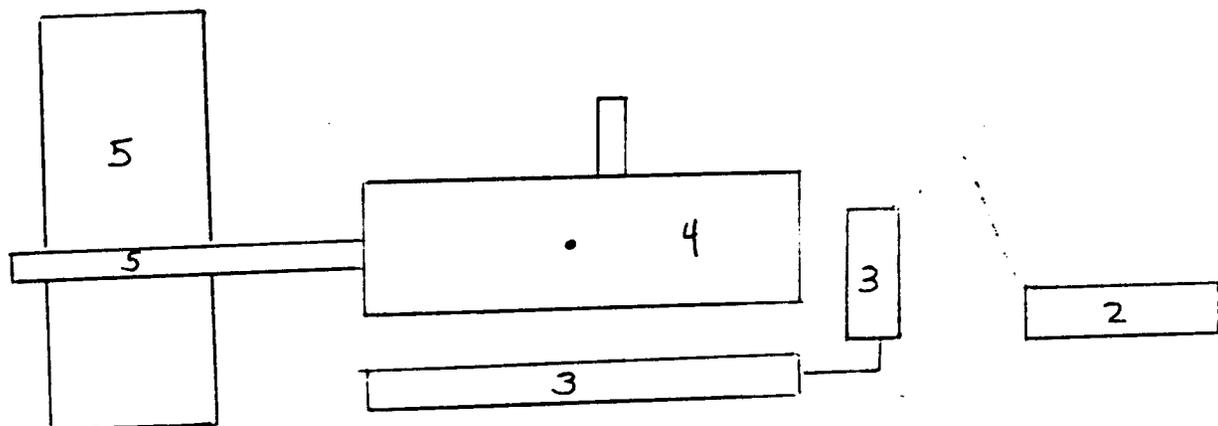
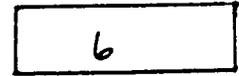
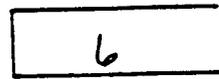
NO.	REVISION	BY	DATE	CHKD	APP'D
FOR BIDS	 PHILLIPS PETROLEUM COMPANY BARTLESVILLE, OKLAHOMA 	JA NO.	FILE NO.		
FOR APPR		AFE NO.	SCALE		
FOR CONST		2.2" = 1'			
DRAWN 3-30-84 BJM	RATHERFORD UNIT WELL 17-22 WATER INJECTION LINES SE NW SEC 17 T41S-R24E SAN JUAN CO., UTAH			DWG NO.	
CHECKED				SH	
APP'D				'10	

FORM 1779-S 8-81

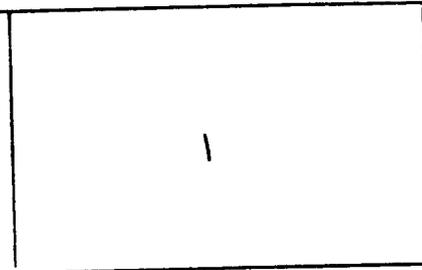


Pattonford Unit # 17-22

SE NW Sec 17 T41S-R24E



- 1 RESERVE PIT
- 2 TRASH PIT
- 3 CIR. PITS + Pump
- 4 RIG
- 5 CAT WALK + PIPE RACKS
- 6 TRAILERS



DRILLING RIG LAYOUT

Outline of location approximately 300' x 350'

OPERATOR Phillips Oil Company DATE 6-27-85

WELL NAME Rutherford Unit 17-22

SEC SE NW 17 T 41S R 24E COUNTY San Juan

43-037-31170
API NUMBER

Indian
TYPE OF LEASE

CHECK OFF:

PLAT

BOND

NEAREST WELL

LEASE

FIELD

POTASH OR OIL SHALE

PROCESSING COMMENTS:

Unit well - a BLM (New Mexico)
Wita &

APPROVAL LETTER:

SPACING:

A-3

Rutherford
UNIT

c-3-a

CAUSE NO. & DATE

c-3-b

c-3-c

STIPULATIONS:



STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

Norman H. Bangerter, Governor
Dee C. Hansen, Executive Director
Dianne R. Nielson, Ph.D., Division Director

355 W. North Temple • 3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

July 9, 1985

Phillips Oil Company
P. O. Box 2920
Casper, Wyoming 82602

Gentlemen:

Re: Well No. Ratherford Unit 17-22 - SE NW Sec. 17, T. 41S, R. 24E
1980' FNL, 1980' FWL - San Juan County, Utah

Approval to drill the above-referenced oil well is hereby granted in accordance with Section 40-6-18, Utah Code Annotated, as amended 1983; and predicated on Rule A-3, General Rules and Regulations and Rules of Practice and Procedure.

In addition, the following actions are necessary to fully comply with this approval:

1. Spudding notification to the Division within 24 hours after drilling operations commence.
2. Submittal to the Division of completed Form OGC-8-X, Report of Water Encountered During Drilling.
3. Prompt notification to the Division should you determine that it is necessary to plug and abandon this well. Notify John R. Baza, Petroleum Engineer, (Office) (801) 538-5340, (Home) 298-7695, or R. J. Firth, Associate Director, (Home) 571-6068.
4. Compliance with the requirements and regulations of Rule C-27, Associated Gas Flaring, General Rules and Regulations, Oil and Gas Conservation.

Page 2
Phillips Oil Company
Well No. Ratherford Unit 17-22
July 9, 1985

5. This approval shall expire one (1) year after date of issuance unless substantial and continuous operation is underway or an application for an extension is made prior to the approval expiration date.

The API number assigned to this well is 43-037-31170.

Sincerely,



R. J. Firth
Associate Director, Oil & Gas

as
Enclosures
cc: Branch of Fluid Minerals
Bureau of Indian Affairs

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a direct reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

6. LEASE OBSERVATION AND SERIAL NO.
14-20-603-353

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
Navajo

7. UNIT ASSIGNMENT NAME
SW-I-4192

8. FARM OR LEASE NAME
Ratherford Unit

9. WELL NO.
17-22

10. FIELD AND POOL, OR WILDCAT
Greater Aneth

11. SEC., T., R., N., OR S.E. AND SURVEY OR AREA
Sec. 17-T41S-R24E

12. COUNTY OR PARISH
San Juan

13. STATE
Utah

1. OIL WELL GAS WELL OTHER (Proposed) APD **RECEIVED**

2. NAME OF OPERATOR
Phillips Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2920, Casper, WY 82602

4. LOCATION OF WELL (Report location clearly and in accordance with any State regulations. See also space 17 below.)
At surface
1882' FNL, 1910 FWL, SE NW Sec. 17-T41S-R24E

14. PERMIT NO.

15. ELEVATIONS (Show whether SF, ST, OR, etc.)
4704' GR

JUL 17 1985

DIVISION OF OIL GAS & MINING

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input type="checkbox"/>	PCLL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETE <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON* <input type="checkbox"/>	SHOOTING OR ACIDIZING <input type="checkbox"/>	ABANDONMENT* <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANE <input type="checkbox"/>	(Other) <input type="checkbox"/>	(Other) <input type="checkbox"/>

(Other) Amend APD

(NOTE: Report results of multiple completion or Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

Per your letter of 7-8-85 noting APD deficiencies:

- (1) Attached a new surface plat; changed lines 4, 15 and 21 on form 3160-3 to the following:
 - (4) See line 4 above.
 - (15) 1340'
 - (21) See line 15 above.

- (2) Cement volumes in cu. ft.:

13-3/8" Casing	150 sx	175 cu. ft.
9-5/8" Casing	600 sx	1000 cu. ft.
7" Casing	1000 sx	1500 cu. ft.

- 5- BLM-Farmington
- 2- Utah OGCC-SLC
- 1-File
- Cover Sheet only
- 1-L. Williamson
- 1-B. Conner, 318-B TRW
- 1-P. J. Admason
- 1-CMA 1-BJM

ACCEPTED BY THE STATE OF UTAH DIVISION OF OIL, GAS, AND MINING

DATE: 7/18/85

BY: John R. [Signature]

18. I hereby certify that the foregoing is true and correct

SIGNED: [Signature] TITLE: Area Manager DATE: 7/12/85

A. E. Stuart

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY: _____

*See Instructions on Reverse Side

COMPANY PHILLIPS OIL COMPANY

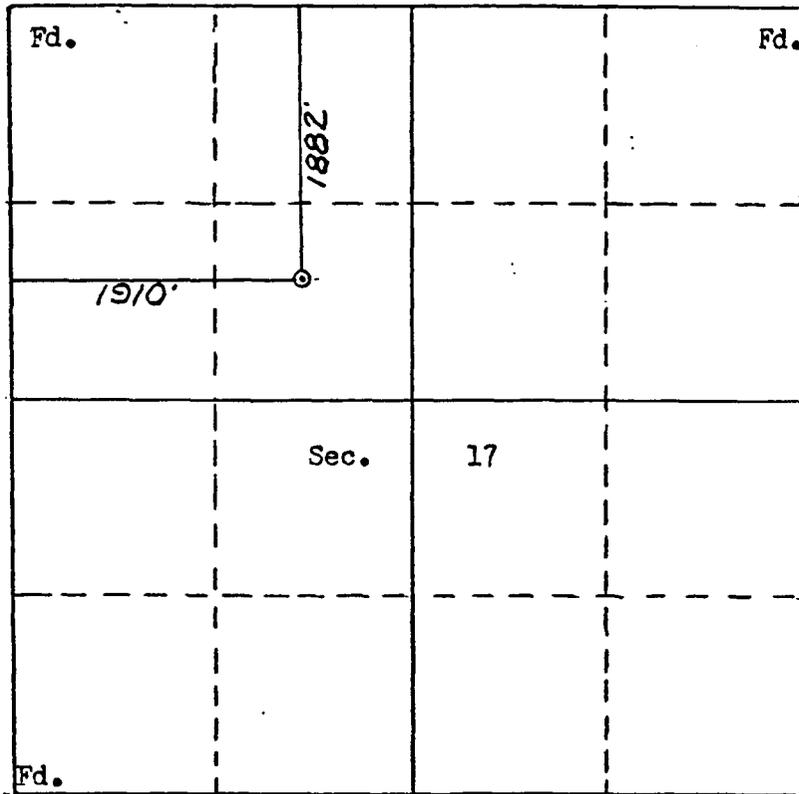
LEASE RATHERFORD UNIT WELL NO. 17-22

SEC. 17, T. 41S, R. 24E

County: San Juan State: Utah

LOCATION 1882FN & 1910FW

ELEVATION 4704



SCALE—4 INCHES EQUALS 1 MILE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTE OF ACTUAL SURVEYS MADE BY ME UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

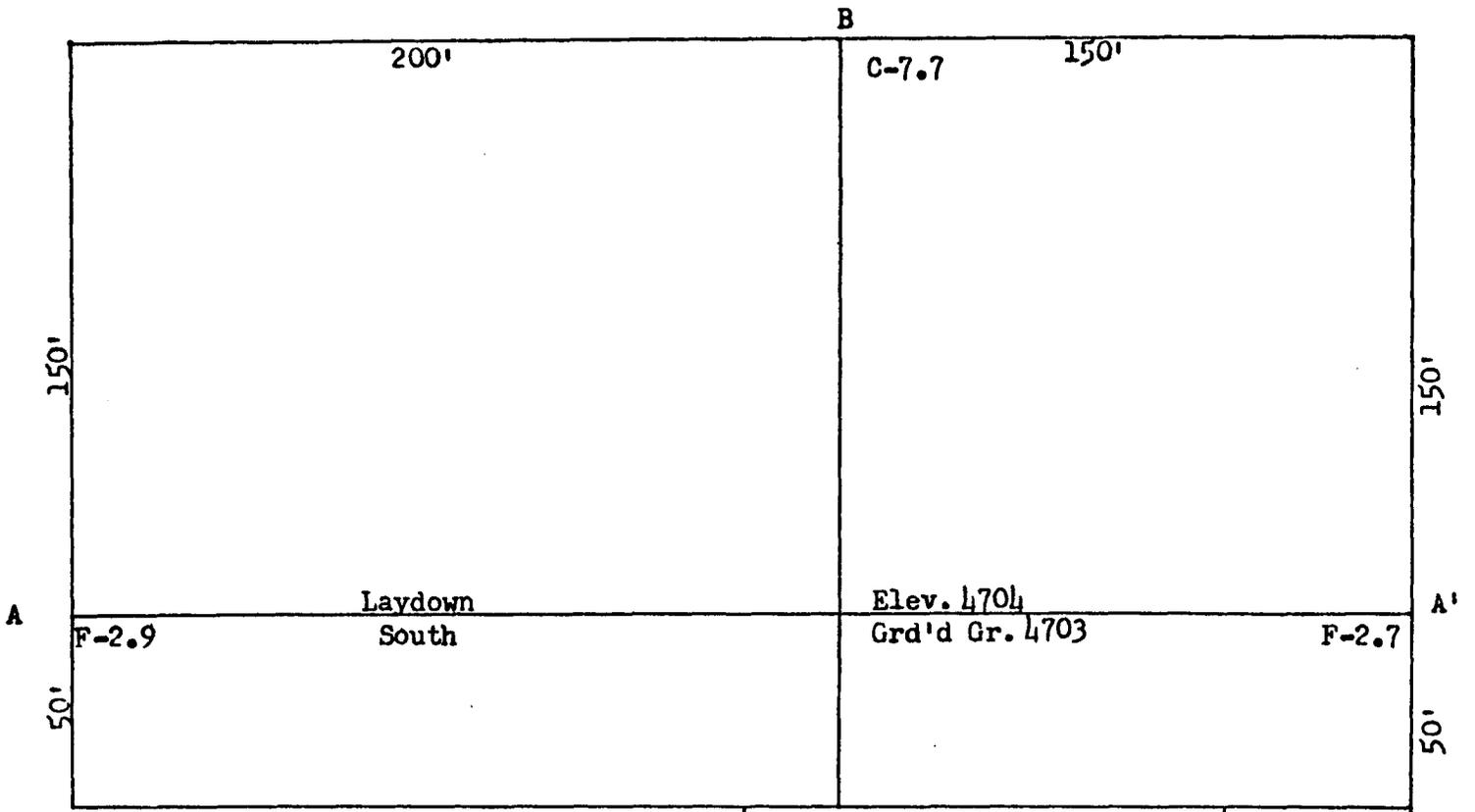
SEAL:



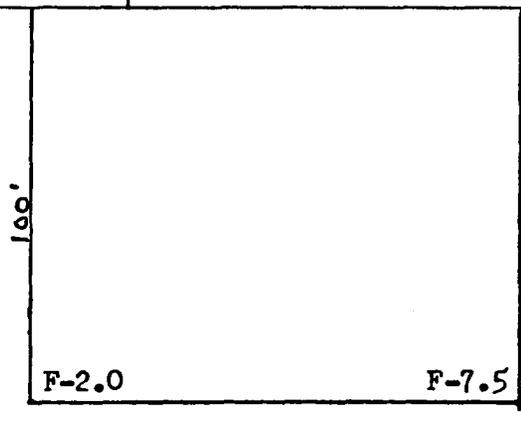
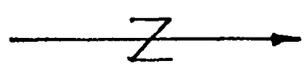
William E. Mahkell II
Registered Land Surveyor
N.M. P.L.S. No. 8466

SURVEYED Feb. 26 1985

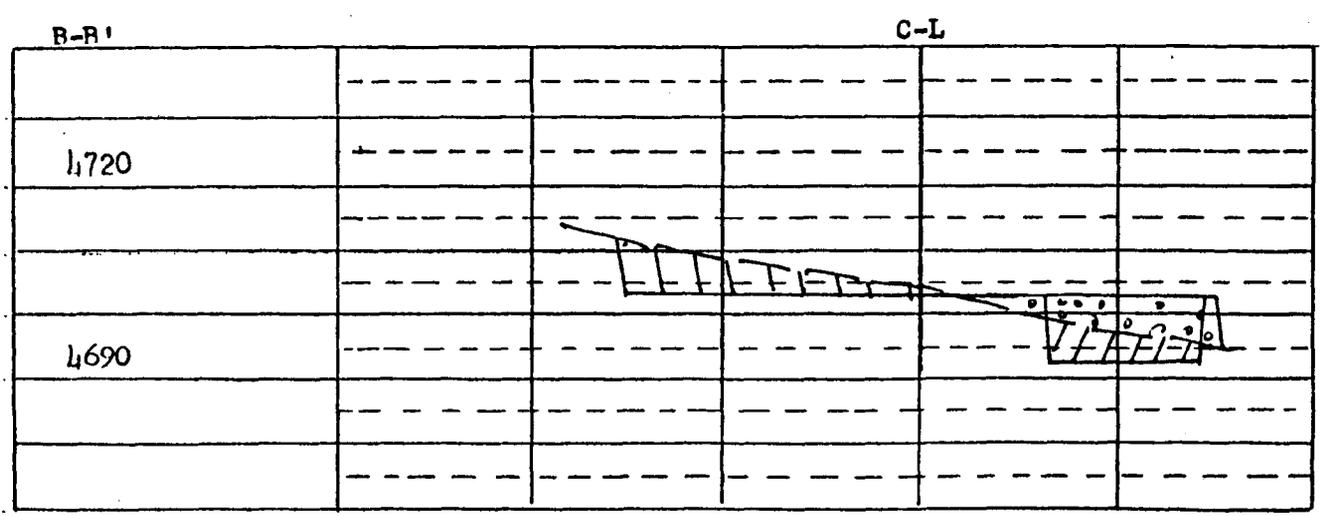
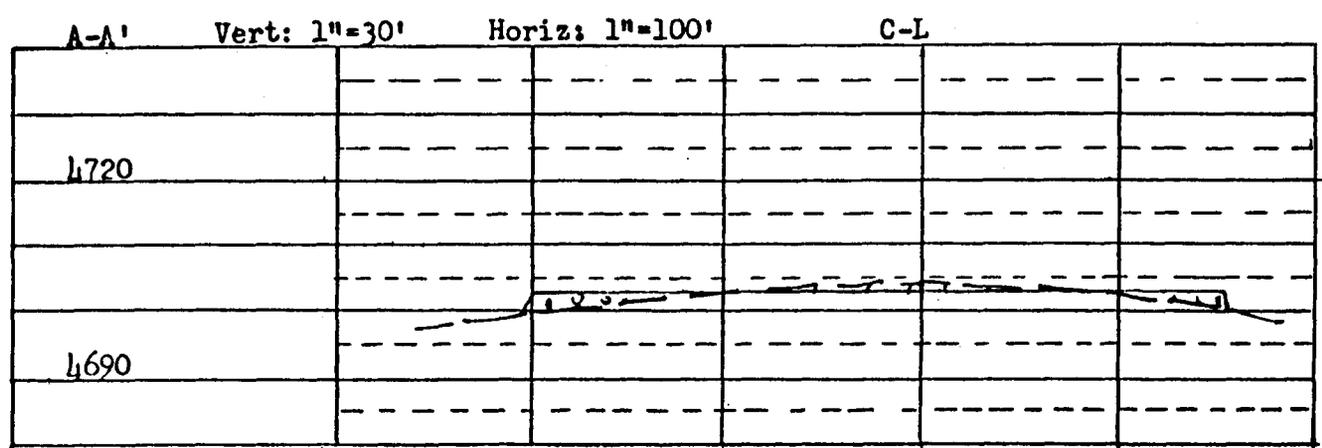
Profile for
 PHILLIP OIL COMPANY #17-22 RATHERFORD UT
 1882FN - 1910FW S17 T41S R24E
 SAN JUAN COUNTY, UTAH



Scale: 1"=50'



B' 125'



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well gas well other

2. NAME OF OPERATOR
Phillips Petroleum Company (Attn: RMR Drlg)

3. ADDRESS OF OPERATOR
8055 E. Tufts Ave. Pkwy., Denver, CO 80237

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 1980' FNL, 1980' FWL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

5. LEASE
14-20-603-353

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
Navajo

7. UNIT AGREEMENT NAME
SW-I-4192

8. FARM OR LEASE NAME
Ratherford Unit

9. WELL NO.
#17-22

10. FIELD OR WILDCAT NAME
Greater Aneth

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 17, T41S, R24E

12. COUNTY OR PARISH
San Juan

13. STATE
Utah

14. API NO.
43-037-31170

15. ELEVATIONS-(SHOW DF, KDB, AND WD)
4734' ung. G.L.

REQUEST FOR APPROVAL TO:

TEST WATER SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

PULL OR ALTER CASING

MULTIPLE COMPLETE

CHANGE ZONES

ABANDON*

(other)

SUBSEQUENT REPORT OF:

RECEIVED

JAN 17 1986

DIVISION OF OIL
GAS & MINING

NOTE: Report results of multiple completion or zone change on Form 9-330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Drilled 17-1/2" conductor hole to 119' RKB on 12-29-85. Ran 119' 13-3/8" 54.5# K-55 Buttress casing. Set at 119', cemented with 177 cu.ft. (150 sx) Class B cement to surface. Finished job and moved out rat hole driller 12-29-85.

Spudded well 1-6-86 with Four Corners Drilling Rig #9. Drilled 12-1/4" hole to 1549'. Ran 9-5/8" 40# K-55 Buttress casing, set at 1549'. Cemented with 731 cu.ft. (395 sx) Howco Light cement; tailed with 354 cu.ft. (300 sx) Class "B" cement. Circulated to surface, fell back; pumped 100 sx Class B as top job. Job complete 1-7-86.

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED Julie Butz TITLE Drilling Manager DATE January 8, 1986

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

- 6-BLM, Farmington, NM
- 2-Utah O&GCC, SLC
- 1-Well File (RC)
- 1-Casper Office
- 1-J. Weichbrodt
- 1-Chevron USA, Inc.
- 1-Texaco, Inc.
- 1-Shell Oil Co.
- 1-Mobil Oil Corp.

*See Instructions on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

RECEIVED
JAN 23 1986

1. oil well gas well other

2. NAME OF OPERATOR
Phillips Petroleum Company (Attn: RMR Drilling)

DIVISION OF OIL
GAS & MINING

3. ADDRESS OF OPERATOR
8055 E. Tufts Ave. Pkwy., Denver, CO 80237

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 1980' FNL, 1980' FWL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF	<input type="checkbox"/>	<input type="checkbox"/>
FRACTURE TREAT	<input type="checkbox"/>	<input type="checkbox"/>
SHOOT OR ACIDIZE	<input type="checkbox"/>	<input type="checkbox"/>
REPAIR WELL	<input type="checkbox"/>	<input type="checkbox"/>
PULL OR ALTER CASING	<input type="checkbox"/>	<input type="checkbox"/>
MULTIPLE COMPLETE	<input type="checkbox"/>	<input type="checkbox"/>
CHANGE ZONES	<input type="checkbox"/>	<input type="checkbox"/>
ABANDON*	<input type="checkbox"/>	<input type="checkbox"/>
(other)		

5. LEASE 14-20-603-353	
6. IF INDIAN, ALLOTTEE OR TRIBE NAME Navajo	
7. UNIT AGREEMENT NAME SW-I-4192	
8. FARM OR LEASE NAME Ratherford Unit	
9. WELL NO. #17-22	
10. FIELD OR WILDCAT NAME Greater Aneth	
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec. 17, T41S, R24E	
12. COUNTY OR PARISH San Juan	13. STATE Utah
14. API NO. 43-037-31170	
15. ELEVATIONS (SHOW DF, KDB, AND WD) 4734' ung. G.L.	

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Drilled 8-1/2" hole to 5581'. Ran 5601' 7" 23# and 26# K-55 LT&C & ST&C casing, set at 5584.58'. Cemented with 1122 cu.ft. (550 sx) Class B Howco Light; tailed with 370 cu.ft. (300 sx) Class B w/18% salt. Pressure tested casing to 2000 psi Job complete 1-19-86. Plug back total depth 5557'. TOC ± 2000'.

Subsurface Safety Valve: Manu. and Type _____ Set @ _____ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED [Signature] TITLE Drilling Manager DATE January 20, 1986

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

6-BLM, Farmington, NM
2-Utah O&GCC, SLC
1-Well File (RC)
1-Casper Office
1-J. Weichbrodt

1-Chevron USA, Inc.
1-Texaco, Inc.
1-Shell Oil Co.
*See Instructions on Reverse Side
1-Mobil Oil Corp.

**UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**

SUBMIT IN DUPLICATE*

See other instructions on reverse side

WELL COMPLETION OR RECOMPLETION REPORT AND LOG *

1a. TYPE OF WELL: (OIL WELL GAS WELL DRY Other _____

b. TYPE OF COMPLETION:
NEW WELL WORK OVER DEEP EN PIPE BACK DIFF. REPAIR Other _____

2. NAME OF OPERATOR
Phillips Petroleum Company

3. ADDRESS OF OPERATOR
P. O. Box 2920, Casper, Wyoming 82602

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*
At surface ~~1980'~~ 1982' FNL & 1980' FWL, SE NW
At top prod. interval reported below 1910'
At total depth _____

MAR 17 1986
DIVISION OF OIL, GAS & MINING

5. LEASE DESIGNATION AND SERIAL NO.
14-20-603-353

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
Navajo

7. UNIT AGREEMENT NAME
SW-I-4192

8. FARM OR LEASE NAME
Rutherford Unit

9. WELL NO.
17-22

10. FIELD AND POOL, OR WILDCAT
Greater Aneth

11. SEC. T., R., M., OR BLOCK AND SURVEY OR AREA
Sec. 17-T41S-R24E

12. COUNTY OR PARISH
San Juan

13. STATE
Utah

14. PERMIT NO. _____ DATE ISSUED _____

15. DATE SPUDDED 1/6/86 16. DATE T.D. REACHED 1/17/86 17. DATE COMPL. (Ready to prod.) 2/19/86 18. ELEVATIONS (DF, RKB, RT, GR, ETC.)* GR 4715', RKB 4727'

19. ELEV. CASINGHEAD ---
20. TOTAL DEPTH, MD & TVD 5585' 21. PLUG, BACK T.D., MD & TVD 5570' 22. IF MULTIPLE COMPL., HOW MANY* --- 23. INTERVALS DRILLED BY ROTARY TOOLS 10 - 5585' CABLE TOOLS ---

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*
5497' - 5554' Desert Creek Zone I 25. WAS DIRECTIONAL SURVEY MADE No

26. TYPE ELECTRIC AND OTHER LOGS RUN
CDL/DSN, Dual Guard Forxo, Contact Caliper CBL-CCL 27. WAS WELL CORED No

28. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	54.5#	119'	17-1/2"	177 cu.ft. Class B	
9-5/8"	40#	1548'	12-1/4"	731 cu.ft. Howco Lite & 354 cu.ft. Class B	
7"	23# & 26#	5585'	8-1/2"	1122 cu.ft. Howco Lite & 370 cu.ft. Class B	

29. LINER RECORD 30. TUBING RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
---	---	---	---	---	2-7/8"	5384'	---

31. PERFORATION RECORD (Interval, size and number)

5542-5554', 2 SPF, 4" HSC Gun, 24 shots
5522-5530', 2 SPF, 4" HSC Gun, 16 shots
5497-5512', 2 SPF, 4" HSC Gun, 30 shots

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
5497-5554'	Break down ea ft of perms w/50 gal 28% HCL (1750 gal). Acidized entire interval with remaining 3550 gal 28% HCL containing 1 gal/1000 A-250 corrosion inhibitor

33. PRODUCTION (CONTINUED ON BACK)

DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing or shut-in)					
2/19/86	Flowing	Producing					
DATE OF TEST	HOURS TESTED	CHOKER SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
2/25/86	24	32/64"	→	113	36	3	319
FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)	
165	---	→	113	36	3	40.0	

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)
Sold TEST WITNESSED BY ---

35. LIST OF ATTACHMENTS
None

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED D. C. Gill TITLE Area Manager DATE March 13, 1986

*(See Instructions and Spaces for Additional Data on Reverse Side)

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.
ACID TREATMENT CONTINUED -			
3 gal/1000 W-802 non-emulsifier,			2 gal/1000 F-801 fines suspender and 105 ball sealers for diverting.
6 gal/1000 U-42 iron agent. Used			
<p>Distribution:</p> <ul style="list-style-type: none"> 4 - BLM Farmington, NM 2 - Utah O&G CC, Salt Lake City, UT 1 - The Navajo Nation, Window Rock, AZ 1 - R. Ewing, B'Ville 1 - L. R. Williamson r) G. W. Bertk, Denver 1 - T. L. Carten r) P. Bertuzzi, Denver 1 - J. B. Lindemood, Denver 1 - D. J. Kennedy, Denver 17 - W. I. Owners 1 - J. Weichbrodt, Cortez 1 - File RC 			

38. GEOLOGIC MARKERS

NAME	MEAS. DEPTH	TOP	
		MEAS. DEPTH	TRUE VERT. DEPTH
	<u>LOG TOPS</u>		
Shinarump	2294		
DeChelly	2610		
Hermosa	4520		
Ismay	5349		
Desert Creek Zone I	5492		

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLI
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

6

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL GAS WELL OTHER

2. NAME OF OPERATOR
Phillips Petroleum Company

3. ADDRESS OF OPERATOR
P. O. Box 1150, Cortez, CO 813

4. LOCATION OF WELL (Report location clearly and in accordance with any requirements. See also space 17 below.)
At surface
1980' FNL & 1980' FWL

14. PERMIT NO. API# 43-037-31170

15. ELEVATIONS (Show whether DP, RT, GR, etc.)
4727' GL

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MAY 27 1988
DIVISION OF
OIL, GAS & MINING

5. LEASE DESIGNATION AND SERIAL NO.
14-20-603-353

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
Navajo

7. UNIT AGREEMENT NAME
SW-I-4192

8. FARM OR LEASE NAME
Ratherford Unit

9. WELL NO.
#17-22

10. FIELD AND POOL, OR WILDCAT
Greater Aneth

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 17, T41S, R24E

12. COUNTY OR PARISH
San Juan

13. STATE
Utah

18. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETE <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON* <input type="checkbox"/>	SHOOTING OR ACIDIZING <input checked="" type="checkbox"/>	ABANDONMENT* <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	(Other) <input type="checkbox"/>	

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

February 4, 1988 through February 11, 1988

Move in and Rig up Well Service Unit 2/4/88. POOH with production equipment. RIH with packer on tubing workstring, set packer @5457'. Acidize with 3500 gal. 28% gelled HCl. Swab well. RIH with production equipment, set anchor @ 5463'. Release rig 2/11/88. Turned well to production 2/11/88.

Production Before: 5 BOPD, 4 BWPD
Production After: 10 BOPD, 7 BWPD

- 4-BLM
- 2-Utah O & G
- 1-M. Williams, Bartlesville
- 1-R. J. Rundt (r) Engineering
- 1-D. C. Gill (r) Denver Files
- 1-Cortez Office - RC

18. I hereby certify that the foregoing is true and correct

SIGNED J. Reno TITLE District Superintendent DATE 5/18/88

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

MONTHLY OIL AND GAS PRODUCTION REPORT

OPERATOR NAME AND ADDRESS:

ACCOUNT NUMBER: N0772

P J KONKEL
PHILLIPS PETROLEUM COMPANY
5525 HWY 64 NBU 3004
FARMINGTON NM 87401

RECEIVED

AUG 16 1993

REPORT PERIOD (MONTH/YEAR):

6 / 93

DIVISION OF
OIL, GAS & MINING

AMENDED REPORT (Highlight Changes)

Well Name API Number	Entity	Location	Producing Zone	Well Status	Days Oper	Production Volumes		
						OIL(BBL)	GAS(MCF)	WATER(BBL)
#21-23 4303713754	06280	41S 24E 21	DSCR	POW	29	1374	883	58
#3-44 4303715031	06280	41S 24E 3	DSCR	POW	30	111	94	2905
#3-14 4303715124	06280	41S 24E 3	DSCR	POW	30	67	23	302
#9-12 4303715126	06280	41S 24E 9	DSCR	POW	30	112	654	17363
#9-14 4303715127	06280	41S 24E 9	DSCR	POW	30	201	315	423
#28-12 4303715336	06280	41S 24E 28	PRDX	POW	29	112	47	2428
#29-12 4303715337	06280	41S 24E 29	PRDX	POW	29	56	0	672
#29-32 4303715339	06280	41S 24E 29	DSCR	POW	29	1402	287	2224
#29-34 4303715340	06280	41S 24E 29	DSCR	POW	29	757	48	0
#30-32 4303715342	06280	41S 24E 30	DSCR	POW	29	588	1049	3744
#3-12 4303715620	06280	41S 24E 3	DSCR	POW	30	268	11	363
#9-34 4303715711	06280	41S 24E 9	DSCR	POW	30	45	46	9800
#10-12 4303715712	06280	41S 24E 10	DSCR	POW	30	45	23	1088
TOTALS						5138	3480	41370

COMMENTS: Effective July 1, 1993, Phillips Petroleum Company has sold its interest in the Ratherford Unit to Mobil Exploration and Producing U.S., Incorporated, P. O. Box 633, Midland, Texas 79702. Mobil assumed operations on July 1, 1993.

I hereby certify that this report is true and complete to the best of my knowledge.

Date: 8/11/93

Name and Signature: PAT KONKEL

Pat Konkell

Telephone Number: 505 599-3452

MONTHLY OIL AND GAS DISPOSITION REPORT

OPERATOR NAME AND ADDRESS:

L B SHEFFIELD
BRIAN BERRY
~~M E P N A MOBIL~~
POB 219031 1807A RENTWR *F.O. DRAWER G*
DALLAS TX 75221-9031 *CORTEZ, Co. 81321*

UTAH ACCOUNT NUMBER: N7370

REPORT PERIOD (MONTH/YEAR): 7 / 93

AMENDED REPORT (Highlight Changes)

X931006 updated. jlc

ENTITY NUMBER	PRODUCT	GRAVITY BTU	BEGINNING INVENTORY	VOLUME PRODUCED	DISPOSITIONS				ENDING INVENTORY
					TRANSPORTED	USED ON SITE	FLARED/VENTED	OTHER	
05980	OIL			177609	177609	0			
	GAS			72101	66216	5885			
11174	OIL								
	GAS								
	OIL								
	GAS								
	OIL								
	GAS								
	OIL								
	GAS								
	OIL								
	GAS								
TOTALS				249710	243825	5885			

RECEIVED

SEP 13 1993

DIVISION OF OIL, GAS & MINING

COMMENTS: *PLEASE NOTE ADDRESS change. All in ~~ASU~~ PRODUCTION REPORTS will be compiled and sent from the Cortez, Co. office IN THE FUTURE.*

I hereby certify that this report is true and complete to the best of my knowledge.

Date: 9/5/93

Name and Signature: *Lwell B Sheffield*

Telephone Number: *303 565 2211*
244 658 2528

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

SUNDRY NOTICES AND REPORTS ON WELLS <small>(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)</small>		3. LEASE DESIGNATION & SERIAL NO.	
		6. IF INDIAN ALLOTTEE OR TRIBE NAME NAVAJO TRIBAL	
1. OIL WELL <input type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <input type="checkbox"/>		7. UNIT AGREEMENT NAME RATHERFORD UNIT	
2. NAME OF OPERATOR MOBIL OIL CORPORATION		8. FARM OR LEASE NAME	
3. ADDRESS OF OPERATOR P. O. BOX 633 MIDLAND, TX 79702		9. WELL NO.	
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.) At surface		10. FIELD AND POOL OR WILDCAT GREATER ANETH	
At proposed prod. zone		11. SEC., T., R., M. OR BLK. AND SURVEY OR AREA	
14. API NO.	15. ELEVATIONS (Show whether DF, RT, GR, etc.)	12. COUNTY SAN JUAN	13. STATE UTAH

REGISTRATION

SEP 15 1993

DIVISION OF
OIL, GAS & MINING

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input type="checkbox"/>	FULL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETE <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON <input type="checkbox"/>	SHOOTING OR ACIDIZING <input type="checkbox"/>	ABANDONMENT* <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	(Other) <u>CHANGE OF OPERATOR</u> <input type="checkbox"/>	
<small>(Other)</small>		<small>(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)</small>	
APPROX. DATE WORK WILL START _____		DATE OF COMPLETION _____	

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

* Must be accompanied by a cement verification report.

AS OF JULY1, 1993, MOBIL OIL CORPORATION IS THE OPERATOR OF THE RATHERFORD UNIT. ATTACHED ARE THE INDIVIDUAL WELLS.

18. I hereby certify that the foregoing is true and correct

SIGNED Shirley J. Todd TITLE ENV. & REG TECHNICIAN DATE 9-8-93

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

✓ 12W-44	43-037-16405	14-20-603-246A	SEC. 12, T41S, R23E	SE/SE 660 FSL; 660 FEL
✓ 12W-44A	43-037-31543	14-20-603-246A	SEC. 12, T41S, R23E	SE/SE 807 FEL; 772 FSL
✓ 13-11W	43-037-31152	14-20-603-247A	SEC. 13, T41S, R23E	NW/NW 500 FNL; 660 FWL
✓ 13-12	43-037-31127	14-20-603-247A	SEC. 13, T41S, R23E	SW/NW 1705 FNL; 640 FWL
✓ 13W-13	43-037-15851	14-20-603-247A	SEC. 13, T41S, R23E	NW/SW 1980 FSL; 4620 FEL
✓ 13-14	43-037-31589	14-20-603-247A	SEC. 13, T41S, R23E	660 FSL; 660 FWL
✓ 13-21	43-037-31128	14-20-603-247A	SEC. 13, T41S, R23E	NE/NW 660 FNL; 1920 FWL
✓ 13W-22	43-037-15852	14-20-603-247A	SEC. 13, T41S, R23E	SE/NW 1988 FNL; 3300 FEL
✓ 13-23	43-037-31129	14-20-603-247A	SEC. 13, T41S, R23E	NE/SW 1980 FSL; 1930 FWL
13W-44	43-037-15853	14-20-603-247	SEC. 13, T41S, R23E	600 FSL; 3300 FEL
✓ 13W-32	43-037-16406	14-20-603-247A	SEC. 13, T41S, R23E	1881 FNL; 1979 FEL
✓ 13W-33	43-037-15855	14-20-603-247A	SEC. 13, T41S, R23E	NW/SE 1970 FSL; 1979 FEL
✓ 13W-34	43-037-31130	14-20-603-247A	SEC. 13, T41S, R23E	SW/SE 660 FSL; 1980 FEL
✓ 13-41	43-037-15856	14-20-603-247A	SEC. 13, T41S, R23E	NE/NE 660 FNL; 660 FEL
✓ 13W-42	43-037-15857	14-20-603-247A	SEC. 13, T41S, R23E	SE/NE 2139; 585 FEL
✓ 13-43	43-037-31131	14-20-603-247A	SEC. 13, T41S, R23E	NE/SE 1700 FSL; 960 FEL
✓ 13W-44	43-037-16407	14-20-603-247A	SEC. 13, T41S, R23E	SE/SE 635 FSL; 659 FEL
14-02	NA	14-20-603-4037	SEC. 11, T41S, R23E	SW/SW 660 FSL; 660 FEL
✓ 14-32	43-037-15858	14-20-603-247A	SEC. 14, T41S, R23E	2130 FNL; 1830 FEL
✓ 14-41	43-037-31623	14-20-603-247A	SEC. 14, T41S, R23E	NE/NE 521 FEL; 810 FNL
✓ 14W-42	43-037-15860	14-20-603-247A	SEC. 14, T41S, R23E	SE/NE 1976 FNL; 653 FEL
✓ 14W-43	43-037-16410	14-20-603-247A	SEC. 14, T41S, R23E	3300 FSL; 4770 FEL
✓ 14-33	43-037-15859	14-20-603-247	SEC. 14, T41S, R23E	2130 FSL; 1830 FEL
✓ 15-12	43-037-15715	14-20-603-355	SEC. 15, T41S, R24E	1820 FNL; 500 FWL
✓ 15W-21	43-037-16411	14-20-603-355	SEC. 15, T41S, R24E	660 FNL; 1820 FWL
✓ 15-22	43-037-30449	14-20-603-355	SEC. 15, T41S, R24E	SE/NW, 1980 FNL; 2050 FWL
✓ 15-32	43-037-15717	14-20-603-355A	SEC. 15, T41S, R24E	1980 FNL; 1980 FEL
✓ 15-33	43-037-15718	14-20-603-355	SEC. 15, T41S, R24E	NW/SE 1650 FSL; 1980 FEL
✓ 15-41	43-037-15719	14-20-603-355	SEC. 15, T41S, R24E	660 FNL; 660' FEL
✓ 15-42	43-037-30448	14-20-603-355	SEC. 15, T41S, R24E	SE/NE 2020 FNL; 820 FEL
✓ 16W-12	43-037-15720	14-20-603-355	SEC. 16, T41S, R24E	SW/NW 1880 FNL; 660 FWL
✓ 16-13	43-037-31168	14-20-603-355	SEC. 16, T41S, R24E	1980 FSL; 660 FWL
✓ 16W-14	43-037-15721	14-20-603-355	SEC. 16, T41S, R24E	SW/SW 660 FSL; 660 FWL
✓ 16W-21	43-037-16414	14-20-603-355	SEC. 16, T41S, R24E	NE/NW 660 FNL; 1880 FWL
✓ 16W-23	43-037-15722	14-20-603-355	SEC. 16, T41S, R24E	NE/SW 1980 FSL; 1980 FWL
✓ 16-32	43-037-15723	14-20-603-355	SEC. 16, T41S, R24E	1980 FNL; 1980' FEL
✓ 16-34	43-037-15724	14-20-603-355	SEC. 16, T41S, R24E	660 FNL; 1980' FEL
✓ 16-41	43-037-15725	14-20-603-355	SEC. 16, T41S, R24E	660 FNL; 660 FEL
✓ 16W-43	43-037-16415	14-20-603-355	SEC. 16, T41S, R24E	NE/SE 2140 FSL; 820 FEL
✓ 17-11	43-037-31169	14-20-603-353	SEC. 17, T41S, R24E	NW/NW 1075' FNL; 800' FWL
✓ 17W-12	43-037-15726	14-20-603-353	SEC. 17, T41S, R24E	SW/NW 1980' FNL; 510' FWL
✓ 17-13	43-037-31133	14-20-603-353	SEC. 17, T41S, R24E	NW/SW 2100' FSL; 660' FWL
✓ 17W-14	43-037-15727	14-20-603-353	SEC. 17, T41S, R24E	SW/SW 660' FSL; 660' FWL
✓ 17W-21	43-037-16416	14-20-603-353	SEC. 17, T41S, R24E	510' FNL; 1830' FWL
✓ 17-22	43-037-31170	14-20-603-353	SEC. 17, T41S, R24E	1980' FNL; 1980' FWL
✓ 17W-23	43-037-15728	14-20-603-353	SEC. 17, T41S, R24E	NE/SW 1980' FWL; 1880' FSL
✓ 17-31	43-037-31178	14-20-603-353	SEC. 17, T41S, R24E	NW/NE 500' FNL; 1980' FEL
✓ 17-32W	43-037-15729	14-20-603-353	SEC. 17, T41S, R24E	SW/NE 1830' FNL; 2030' FEL
✓ 17-33	43-037-31134	14-20-603-353	SEC. 17, T41S, R24E	NW/SE 1980' FSL; 1845' FEL
✓ 17-34W	43-037-15730	14-20-603-353	SEC. 17, T41S, R24E	SW/SE 560' FSL; 1880' FEL
✓ 17W-41	43-037-15731	14-20-603-353	SEC. 17, T41S, R24E	610' FNL; 510' FEL
✓ 17-42	43-037-31177	14-20-603-353	SEC. 17, T41S, R24E	SE/NE 1980; FNL, 660' FEL
✓ 17-44	43-037-15732	14-20-603-353	SEC. 17, T41S, R24E	660 FSL; 660' FEL
✓ 17W-43	43-037-16417	14-20-603-353	SEC. 17, T41S, R24E	NE/SE 1980' FSL; 660' FEL
✓ 18-11	43-037-15733	14-20-603-353	SEC. 18, T41S, R24E	NW/NW 720' FNL; 730' FWL
✓ 18-12W	43-037-31153	14-20-603-353	SEC. 18, T41S, R24E	SW/NW 1980' FNL; 560' FWL
✓ 18W-21	43-037-16418	14-20-603-353	SEC. 18, T41S, R24E	NE/NW 660' FNL; 1882' FWL
✓ 18-22	43-037-31236	14-20-603-353	SEC. 18, T41S, R24E	SW/NW 2200' FNL; 2210' FWL
✓ 18W-23	43-037-30244	14-20-603-353	SEC. 18, T41S, R24E	NE/SW 2385' FSL; 2040' FWL
✓ 18W-14	43-037-15735	14-20-603-353	SEC. 18, T41S, R24E	SW/SW 810' FSL; 600' FWL
✓ 18-24	43-037-31079	14-20-603-353	SEC. 18, T41S, R24E	SE/SW 760' FSL; 1980' FWL
✓ 18-31	43-037-31181	14-20-603-353	SEC. 18, T41S, R24E	NW/NE 795' FNL; 2090; FEL
18W-32	43-037-15736	14-20-603-353	SEC. 18, T41S, R24E	SW/NE 2140' FNL; 1830' FEL
✓ 18-33	43-037-31135	14-20-603-353	SEC. 18, T41S, R24E	NW/SE 1870' FSL; 1980' FEL
✓ 18-34W	43-037-15737	14-20-603-353	SEC. 18, T41S, R24E	SW/SE 780' FSL; 1860 FEL
✓ 18W-41	43-037-15738	14-20-603-353	SEC. 18, T41S, R24E	NE/NE 660' FNL; 660' FEL
✓ 18-42	43-037-31182	14-20-603-353	SEC. 18, T41S, R24E	SE/NE 2120' FNL; 745' FEL
✓ 18W-43	43-037-16419	14-20-603-353	SEC. 18, T41S, R24E	NE/SE 1980' FSL; 660' FEL
✓ 18-44	43-037-31045	14-20-603-353	SEC. 18, T41S, R24E	SE/SE 660' FSL; 660' FEL
✓ 19-11	43-037-31080	14-20-603-353	SEC. 19, T41S, R24E	NW/NW 660' FNL; 660' FWL
✓ 19-12	43-037-15739	14-20-603-353	SEC. 19, T41S, R24E	600' FWL; 1980' FNL
✓ 19-14	43-037-15740	14-20-603-353	SEC. 19, T41S, R24E	600' FSL; 660' FEL

PA'd

PA'd

Sept 29, 1993

TO: Lisha Cordova - Utah Mining
Oil & Gas

FROM: Janice Easley
BLM Farmington, NM
505 599-6355

Here is copy of Rutherford Unit
Successor Operator.

4 pages including this one.

File Rutherford Unit (GC)

RECEIVED
BLM

SEP 27 11:44

070 FARMINGTON, NM

Navajo Area Office
P. O. Box 1060
Gallup, New Mexico 87305-1060

ARES/543

SEP 26 1993

Mr. G. D. Cox
Mobil Exploration and
Producing North America, Inc.
P. O. Box 633
Midland, Texas 79702

MINERALS DIVISION
SEP 27 1993
SEARCHED
SERIALIZED
INDEXED
FILED
ALL SUPV.
FILED

Dear Mr. Cox:

Enclosed for your information and use is the approved Designation of Operator between the Phillips Petroleum Company and Mobil Exploration and Producing North America, Inc. for the Rutherford Unit.

Please note that all other concerned parties will be furnished their copy of the approved document.

Sincerely,

ACTING Area Director

Enclosure

cc: Bureau of Land Management, Farmington District Office w/enc.
TNN, Director, Minerals Department w/enc.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

RECEIVED
BLM

DESIGNATION OF OPERATOR

Phillips Petroleum Company is, on the records of the Bureau of Indian Affairs, operator of the Rutherford Unit,

JUN 27 11:44

AREA OFFICE: Window Rock, Arizona
LEASE NO: Attached hereto as Exhibit "A"

070 FARMINGTON, NM

and, pursuant to the terms of the Rutherford Unit Agreement, is resigning as Unit Operator effective July 1, 1993, and hereby designates

NAME: Mobil Exploration and Producing North America Inc., duly elected pursuant to the terms of the Rutherford Unit Agreement,

ADDRESS: P. O. Box 633, Midland, Texas 79702
Attn: G. D. Cox

as Operator and local agent, with full authority to act on behalf of the Rutherford Unit lessees in complying with the terms of all leases and regulations applicable thereto and on whom the authorized officer may serve written or oral instructions in securing compliance with the Operating Regulations (43 CFR 3160 and 25 CFR 211 and 212) with respect to (described acreage to which this designation is applicable):

Attached hereto as Exhibit "A"

Bond coverage under 25 CFR 211, 212 or 225 for lease activities conducted by the above named designated operator is under Bond Number 05202782 (attach copy). Evidence of bonding is required prior to the commencement of operations.

It is understood that this designation of operator does not relieve any lessee of responsibility for compliance with the terms of the leases and the Operating Regulations. It is also understood that this designation of operator does not constitute an assignment of any interest in the leases.

In case of default on the part of the designated operator, the lessees will make full and prompt compliance with all regulations, lease terms, stipulations, or orders of the Secretary of the Interior or his representative.

Attached is the appropriate documentation relevant to this document.

The designated operator agrees to promptly notify the authorized officer of any change in the operatorship of said Rutherford Unit.

Phillips Petroleum Company

June 17, 1993

By: M. B. [Signature]
Attorney-in-Fact

Mobil Exploration and Producing
North America Inc.

June 11, 1993

By: B. D. Martiny
Attorney-in-Fact B.D. MARTINY

[Signature]
APPROVED BY

ACTING AREA DIRECTOR
TITLE

7/9/93
DATE

APPROVED PURSUANT, TO SECRETARIAL REDELEGATION ORDER 209 DM 8 AND 230 DM 3.

This form does not constitute an information collection as defined by 44 U.S.C. 3502 and therefore does not require OMB approval.

EXHIBIT "A"

ATTACHED TO AND MADE A PART OF DESIGNATION OF SUCCESSOR OPERATOR, RATHERFORD UNIT

EXHIBIT "C"

Revised as of September 29, 1992
SCHEDULE OF TRACT PERCENTAGE PARTICIPATION

<u>Tract Number</u>	<u>Description of Land</u>	<u>Serial Number and Effective Date of Lease</u>	<u>Tract Percentage Participation</u>
1	S/2 Sec. 1, E/2 SE/4 Sec. 2, E/4 Sec. 11, and all of Sec. 12, T-41-S, R-23-E, S.L.M. San Juan County, Utah	14-20-603-246-A Oct. 5, 1953	11.0652565
2	SE/4 and W/2 SW/4 Sec. 5, the irregular SW/4 Sec. 6, and all of Sec. 7 and 8, T-41-S, R-24-E, San Juan County, Utah	14-20-603-368 Oct. 26, 1953	14.4159942
3	SW/4 of Sec. 4, T-41-S, R-24-E, San Juan County, Utah	14-20-603-5446 Sept. 1, 1959	.5763826
4	SE/4 Sec. 4, and NE/4 Sec. 9, T-41-S, R-24-E, San Juan County, Utah	14-20-603-4035 March 3, 1958	1.2587779
5	SW/4 of Sec. 3, T-41-S, R-24-E, S.L.M., San Juan County, Utah	14-20-603-5445 Sept. 3, 1959	.4667669
6	NW/4 of Sec. 9, T-41-S, R-24-E, S.L.M., San Juan County, Utah	14-20-603-5045 Feb. 4, 1959	1.0187043
7	NW/4, W/2 NE/4, and SW/4 Sec. 10, SE/4 Sec. 9, T-41-S, R-24-E, San Juan County, Utah	14-20-603-4043 Feb. 18, 1958	3.5097575
8	SW/4 Sec. 9, T-41-S, R-24-E, S.L.M. San Juan County, Utah	14-20-603-5046 Feb. 4, 1959	1.1141679
9	SE/4 Sec. 10 and S/2 SW/4 Sec. 11 T-41-S, R-24-E, San Juan County, Utah	14-20-603-4037 Feb. 14, 1958	2.6186804
10	All of Sec. 13, E/2 Sec. 14, and E/2 SE/4 and N/2 Sec. 24, T-41-S, R-23-E, S.L.M., San Juan County, Utah	14-20-603-247-A Oct. 5, 1953	10.3108861
11	Sections 17, 18, 19 and 20, T-41-S, R-24-E, San Juan County Utah	14-20-603-353 Oct. 27, 1953	27.3389265
12	Sections 15, 16, 21, and NW/4, and W/2 SW/4 Sec. 22, T-41-S, R-24-E, San Juan County, Utah	14-20-603-355 Oct. 27, 1953	14.2819339
13	W/2 Section 14, T-41-S, R-24-E, San Juan County, Utah	14-20-603-370 Oct. 26, 1953	1.8500847
14	N/2 and SE/4, and E/2 SW/4 Sec. 29, NE/4 and E/2 SE/4 and E/2 W/2 irregular Sec. 30, and E/2 NE/4 Sec. 32, T-41-S, R-24-E, San Juan County, Utah	14-20-603-407 Dec. 10, 1953	6.9924969
15	NW/4 Sec. 28, T-41-S, R24-E San Juan County, Utah	14-20-603-409 Dec. 10, 1953	.9416393
16	SE/4 Sec. 3, T-41-S, R-24-E San Juan County, Utah	14-20-0603-6504 July 11, 1961	.5750254
17	NE/4 Sec. 3, T-41-S, R-24-E San Juan County, Utah	14-20-0603-6505 July 11, 1961	.5449292
18	NW/4 Sec. 3, T-41-S, R-24-E San Juan County, Utah	14-20-0603-6506 July 11, 1961	.5482788
19	NE/4 Sec. 4, T-41-S, R24-E San Juan County, Utah	14-20-0603-7171 June 11, 1962	.4720628
20	E/2 NW/4 Sec. 4, T-41-S, R-24-E San Juan County, Utah	14-20-0603-7172 June 11, 1962	.0992482
100% Indian Lands	TOTAL 12,909.74		100.0000000

Division of Oil, Gas and Mining
PHONE CONVERSATION DOCUMENTATION FORM

Route original/copy to:

Well File _____

(Location) Sec ___ Twp ___ Rng ___
(API No.) _____

Suspense
(Return Date) _____
(To - Initials) _____

Other
OPERATOR CHANGE

1. Date of Phone Call: 10-6-93 = Time: 9:30

2. DOGM Employee (name) L. CORDOVA (Initiated Call
Talked to:

Name GLEN COX (Initiated Call - Phone No. (915) 688-2114

of (Company/Organization) MOBIL

3. Topic of Conversation: OPERATOR CHANGE FROM PHILLIPS TO MOBIL "RATHERFORD UNIT".

(NEED TO CONFIRM HOW OPERATOR WANTS THE WELLS SET UP - MEPNA AS PER BIA APPROVAL

OR MOBIL OIL CORPORATION AS PER SUNDRY DATED 9-8-93?)

4. Highlights of Conversation: _____

MR. COX CONFIRMED THAT THE WELLS SHOULD BE SET UNDER ACCOUNT N7370/MEPNA AS

PER BIA APPROVAL, ALSO CONFIRMED THAT PRODUCTION & DISPOSITION REPORTS WILL NOW

BE HANDLED OUT OF THEIR CORTEZ OFFICE RATHER THAN DALLAS.

MEPNA-

PO DRAWER G

CORTEZ, CO 81321

(303)565-2212

*ADDRESS CHANGE AFFECTS ALL WELLS CURRENTLY OPERATED BY MEPNA, CURRENTLY

REPORTED OUT OF DALLAS (MCELMO CREEK).

Division of Oil, Gas and Mining
OPERATOR CHANGE WORKSHEET

Routing:	
1	VLC/17-93
2	DTG/58-93
3	VLC
4	RJFV
5	IBP
6	PL

Attach all documentation received by the division regarding this change.
 Initial each listed item when completed. Write N/A if item is not applicable.

- Change of Operator (well sold) Designation of Agent
 Designation of Operator Operator Name Change Only

The operator of the well(s) listed below has changed (EFFECTIVE DATE: 7-1-93)

TO (new operator)	<u>M E P N A</u>	FROM (former operator)	<u>PHILLIPS PETROLEUM COMPANY</u>
(address)	<u>PO DRAWER G</u>	(address)	<u>5525 HWY 64 NBU 3004</u>
	<u>CORTEZ, CO 81321</u>		<u>FARMINGTON, NM 87401</u>
	<u>GLEN COX (915)688-2114</u>		<u>PAT KONKEL</u>
	phone <u>(303) 565-2212</u>		phone <u>(505) 599-3452</u>
	account no. <u>N7370</u>		account no. <u>N0772(A)</u>

Well(s) (attach additional page if needed):

***RATHERFORD UNIT (NAVAJO)**

Name: **SEE ATTACHED**	API: <u>43037.31170</u>	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____

OPERATOR CHANGE DOCUMENTATION

- Sec 1. (Rule R615-8-10) Sundry or other legal documentation has been received from former operator (Attach to this form). (Reg. 8-20-93) (6/93 Prod. Rpt. 8-16-93)
- Sec 2. (Rule R615-8-10) Sundry or other legal documentation has been received from new operator (Attach to this form). (Reg. 8-31-93) (Rec'd 9-14-93)
- N/A 3. The Department of Commerce has been contacted if the new operator above is not currently operating any wells in Utah. Is company registered with the state? (yes/no) _____ If yes, show company file number: _____
- Sec 4. (For Indian and Federal Wells ONLY) The BLM has been contacted regarding this change (attach Telephone Documentation Form to this report). Make note of BLM status in comments section of this form. Management review of Federal and Indian well operator changes should take place prior to completion of steps 5 through 9 below.
- Sec 5. Changes have been entered in the Oil and Gas Information System (Wang/IBM) for each well listed above. (O&G wells 10-6-93) (Wiw's 10-26-93)
- Sec 6. Cardex file has been updated for each well listed above. (O&G wells 10-6-93) (Wiw's 10-26-93)
- Sec 7. Well file labels have been updated for each well listed above. (O&G wells 10-6-93) (Wiw's 10-26-93)
- Sec 8. Changes have been included on the monthly "Operator, Address, and Account Changes" memo for distribution to State Lands and the Tax Commission. (10-6-93)
- Sec 9. A folder has been set up for the Operator Change file, and a copy of this page has been placed there for reference during routing and processing of the original documents.

ENTITY REVIEW

- 1. (Rule R615-8-7) Entity assignments have been reviewed for all wells listed above. Were entity changes made? (yes/no) no (If entity assignments were changed, attach copies of Form 6, Entity Action Form).
- 2. State Lands and the Tax Commission have been notified through normal procedures of entity changes.

BOND VERIFICATION (Fee wells only)

- 1. (Rule R615-3-1) The new operator of any fee lease well listed above has furnished a proper bond.
- 2. A copy of this form has been placed in the new and former operators' bond files.
- 3. The former operator has requested a release of liability from their bond (yes/no) no. Today's date 11-17 1993. If yes, division response was made by letter dated 11-17 1993.

LEASE INTEREST OWNER NOTIFICATION RESPONSIBILITY

- 1. (Rule R615-2-10) The former operator/lessee of any fee lease well listed above has been notified by letter dated 11-17 1993, of their responsibility to notify any person with an interest in such lease of the change of operator. Documentation of such notification has been requested.
- 2. Copies of documents have been sent to State Lands for changes involving State leases.

FILMING

- 1. All attachments to this form have been microfilmed. Date: 11-17 1993.

FILING

- 1. Copies of all attachments to this form have been filed in each well file.
- 2. The original of this form and the original attachments have been filed in the Operator Change file.

COMMENTS

931006 BIA/Btm Approved 7-9-93.

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING
 355 West North Temple, 3 Triad, Suite 350, Salt Lake City, UT 84180-1203

MONTHLY OIL AND GAS PRODUCTION REPORT

OPERATOR NAME AND ADDRESS:

C/O MOBIL OIL CORP
 M E P N A
 PO DRAWER G
 CORTEZ CO 81321

UTAH ACCOUNT NUMBER: N7370

REPORT PERIOD (MONTH/YEAR): 6 / 95

AMENDED REPORT (Highlight Changes)

Well Name API Number	Entity	Location	Producing Zone	Well Status	Days Oper	Production Volumes		
						OIL(BBL)	GAS(MCF)	WATER(BBL)
RATHERFORD UNIT #17-22 4303731170	06280	41S 24E 17	DSCR					
RATHERFORD UNIT #17-42 4303731177	06280	41S 24E 17	DSCR					
RATHERFORD UNIT #17-31 4303731178	06280	41S 24E 17	DSCR					
RATHERFORD UNIT #18-31 4303731181	06280	41S 24E 18	DSCR					
RATHERFORD UNIT #18-42 4303731182	06280	41S 24E 18	DSCR					
RATHERFORD UNIT #7-44 4303731189	06280	41S 24E 7	DSCR					
RATHERFORD UNIT #12-12 4303731190	06280	41S 23E 12	DSCR					
RATHERFORD UNIT #12-21 4303731201	06280	41S 23E 12	DSCR					
RATHERFORD UNIT 12-43 4303731202	06280	41S 23E 12	DSCR					
RATHERFORD UNIT #12-32 4303731203	06280	41S 23E 12	DSCR					
RATHERFORD UNIT 18-22 4303731236	06280	41S 24E 18	DSCR					
RATHERFORD 11-41 4303731544	06280	41S 23E 11	DSCR					
RATHERFORD 13-14 4303731589	06280	41S 23E 13	DSCR					
TOTALS								

REMARKS: _____

I hereby certify that this report is true and complete to the best of my knowledge.

Date: _____

Name and Signature: _____

Telephone Number: _____

Division of Oil, Gas and Mining
PHONE CONVERSATION DOCUMENTATION FORM

Route original/copy to:

Well File _____
(Location) Sec ___ Twp ___ Rng ___
(API No.) _____

Suspense
(Return Date) _____
(To - Initials) _____

Other
OPER NM CHG _____

1. Date of Phone Call: 8-3-95 Time: _____

2. DOGM Employee (name) L. CORDOVA (Initiated Call)
Talked to:

Name R. J. FIRTH (Initiated Call) - Phone No. (_____)
of (Company/Organization) _____

3. Topic of Conversation: M E P N A / N7370

4. Highlights of Conversation: _____

OPERATOR NAME IS BEING CHANGED FROM M E P N A (MOBIL EXPLORATION AND PRODUCING NORTH AMERICA INC) TO MOBIL EXPLOR & PROD. THE NAME CHANGE IS BEING DONE AT THIS TIME TO ALLEVIATE CONFUSION, BOTH IN HOUSE AND AMONGST THE GENERAL PUBLIC.

*SUPERIOR OIL COMPANY MERGED INTO M E P N A 4-24-86 (SEE ATTACHED).

Mobil Oil Corporation

P.O. BOX 5444
DENVER, COLORADO 80217-5444

May 14, 1986

Utah Board of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Attn: R. J. Firth
Associate Director

RECEIVED
MAY 16 1986

DIVISION OF
OIL, GAS & MINING

SUPERIOR OIL COMPANY MERGER

Dear Mr. Firth:

On September 20, 1984, The Superior Oil Company (Superior) became a wholly owned subsidiary of Mobil Corporation. Since January 1, 1985, Mobil Oil Corporation (MOC), another wholly owned subsidiary of Mobil Corporation, has acted as agent for Superior and has operated the Superior-owned properties.

On April 24, 1986, Superior was merged with Mobil Exploration and Producing North America Inc. (MEPNA), which is also a wholly owned subsidiary of Mobil Corporation. MEPNA is the surviving company of the merger.

This letter is to advise you that all properties held in the name of Superior will now be held in the name of MEPNA; and that these properties will continue to be operated by MOC as agent for MEPNA.

Attached is a listing of all wells and a separate listing of injection-disposal wells, Designation of Agent and an organization chart illustrating the relationships of the various companies. If you have any questions or require additional documentation of this merger, please feel free to contact me at the above address or (303) 298-2577.

Very truly yours,



R. D. Baker
Environmental Regulatory Manager

CNE/rd
CNE8661

Division of Oil, Gas and Mining
OPERATOR CHANGE WORKSHEET

Routing:	
1-LEC	7-PL
2-LWP	8-SJV
3-DE	9-FILE
4-VLC	
5-RJF	
6-LWP	

Attach all documentation received by the division regarding this change.
 Initial each listed item when completed. Write N/A if item is not applicable.

- Change of Operator (well sold) Designation of Agent
 Designation of Operator Operator Name Change Only

The operator of the well(s) listed below has changed (EFFECTIVE DATE: 8-2-95)

TO (new operator) <u>MOBIL EXPLOR & PROD</u>	FROM (former operator) <u>M E P N A</u>
(address) <u>C/O MOBIL OIL CORP</u>	(address) <u>C/O MOBIL OIL CORP</u>
<u>PO DRAWER G</u>	<u>PO DRAWER G</u>
<u>CORTEZ CO 81321</u>	<u>CORTEZ CO 81321</u>
phone <u>(303) 564-5212</u>	phone <u>(303) 564-5212</u>
account no. <u>N7370</u>	account no. <u>N7370</u>

Well(s) (attach additional page if needed):

Name: ** SEE ATTACHED **	API: <u>037-31170</u>	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____
Name: _____	API: _____	Entity: _____	Sec _____	Twp _____	Rng _____	Lease Type: _____

OPERATOR CHANGE DOCUMENTATION

- N/A 1. (Rule R615-8-10) Sundry or other legal documentation has been received from former operator (Attach to this form).
- N/A 2. (Rule R615-8-10) Sundry or other legal documentation has been received from new operator (Attach to this form).
- N/A 3. The Department of Commerce has been contacted if the new operator above is not currently operating any wells in Utah. Is company registered with the state? (yes/no) ____ If yes, show company file number: _____.
- N/A 4. (For Indian and Federal Wells ONLY) The BLM has been contacted regarding this change (attach Telephone Documentation Form to this report). Make note of BLM status in comments section of this form. Management review of **Federal and Indian** well operator changes should take place prior to completion of steps 5 through 9 below.
- Yes 5. Changes have been entered in the Oil and Gas Information System (Wang/IBM) for each well listed above. (8-3-95)
- LWP 6. Cardex file has been updated for each well listed above. 8-21-95
- LWP 7. Well file labels have been updated for each well listed above. 9-28-95
- Yes 8. Changes have been included on the monthly "Operator, Address, and Account Changes" memo for distribution to State Lands and the Tax Commission. (8-3-95)
- Yes 9. A folder has been set up for the Operator Change file, and a copy of this page has been placed there for reference during routing and processing of the original documents.

ENTITY REVIEW

- YLC* 1. (Rule R615-8-7) Entity assignments have been reviewed for all wells listed above. Were entity changes made? (yes/no) no (If entity assignments were changed, attach copies of Form 6, Entity Action Form).
- N/A* 2. State Lands and the Tax Commission have been notified through normal procedures of entity changes.

BOND VERIFICATION (Fee wells only) ** No Fee Lease Wells at this time!*

- N/A* *YLC* 1. (Rule R615-3-1) The new operator of any fee lease well listed above has furnished a proper bond.
2. A copy of this form has been placed in the new and former operators' bond files.
3. The former operator has requested a release of liability from their bond (yes/no) no. Today's date _____ 1995. If yes, division response was made by letter dated _____ 1995.

LEASE INTEREST OWNER NOTIFICATION RESPONSIBILITY

- N/A* *UTS* *8/5/95* 1. (Rule R615-2-10) The former operator/lessee of any **fee lease** well listed above has been notified by letter dated _____ 1995, of their responsibility to notify any person with an interest in such lease of the change of operator. Documentation of such notification has been requested.
- N/A* 2. Copies of documents have been sent to State Lands for changes involving **State leases**.

FILMING

1. All attachments to this form have been microfilmed. Date: October 6 1995.

FILING

1. Copies of all attachments to this form have been filed in each well file.
2. The original of this form and the original attachments have been filed in the Operator Change file.

COMMENTS

950803 UIC F5/Not necessary!

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT -" for such proposals

5. Lease Designation and Serial No.
14-20-603-353

6. If Indian, Allottee or Tribe Name
NAVAJO TRIBAL

SUBMIT IN TRIPLICATE

7. If Unit or CA, Agreement Designation
RATHERFORD UNIT

1. Type of Well
 Oil Well Gas Well Other

8. Well Name and No.
RATHERFORD 17-22

2. Name of Operator
MOBIL PRODUCING TX & NM INC.*
***MOBIL EXPLORATION & PRODUCING US INC. AS AGENT FOR MPTM**

9. API Well No.
43-037-31170

3. Address and Telephone No.
P.O. Box 633, Midland TX 79702 (915) 688-2585

10. Field and Pool, or exploratory Area
GREATER ANETH

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

11. County or Parish, State
SAN JUAN UT

SEC. 17, T41S, R24E
~~1980'~~ FNL & ~~1980'~~ FWL
1882 1910 per Shirley Houchins

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other SIDETRACK
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

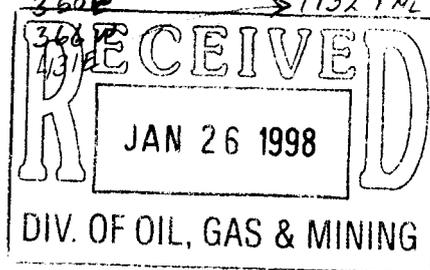
(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

BHL:

LATERAL #1, 1093' NORTH & 1302' WEST F/SURFACE SPOT (ZONE 1c). **333N 396W**
 LATERAL #2, 1638' SOUTH & 1147' EAST F/SURFACE SPOT (ZONE 1b). **440S 360E**
 LATERAL #3, 1202' NORTH & 1202' WEST F/SURFACE SPOT (ZONE 1a). **366N 1132 FNL 784 FWL**
 LATERAL #4, 1414' SOUTH & 1414' EAST F/SURFACE SPOT (ZONE 1a). **413S**

SEE ATTACHED:



14. I hereby certify that the foregoing is true and correct

Signed *Joe Masley for* Title SHIRLEY HOUCHINS/ENV & REG TECH Date 01-21-98

(This space for Federal or State office use)
 Approved by *John R. Baya* Title Associate Director Utah DOGM Date 2/3/98
 Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Rutherford Unit Well #17-22 Horizontal Drilling Procedure

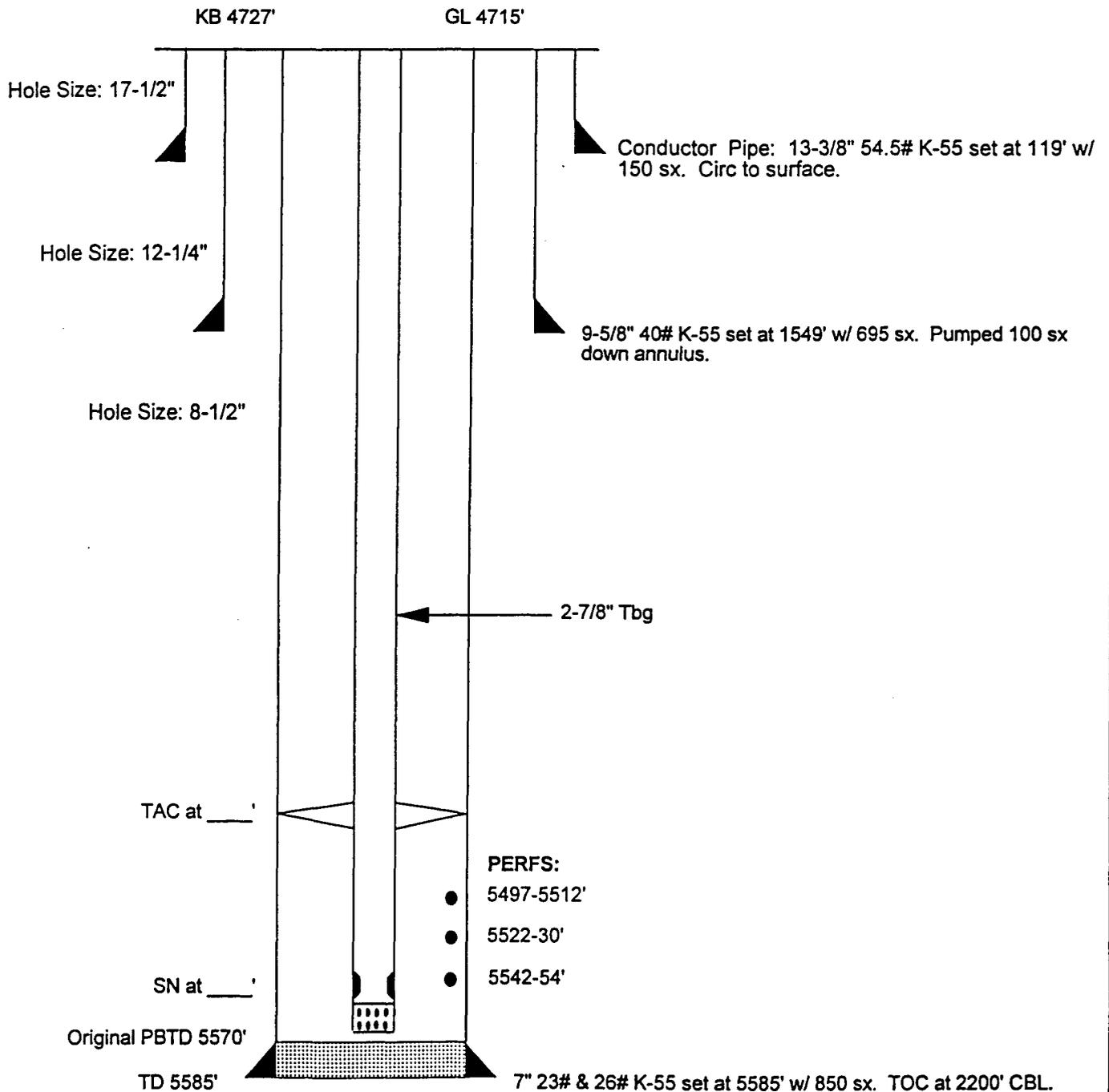
The objective of this procedure is to prepare this wellbore for sidetracking, sidetrack the subject well and drill multilateral short radius horizontal laterals (1700-2000 feet).

1. Prepare location and dig working pit.
2. MIRU WSU, reverse unit, and H2S equipment. Bullhead kill weight fluid down tubing.
3. ND wellhead and NU BOP's. Pressure test BOP's to working pressure.
4. Continue to POH with related equipment (tubing and rods for producers or tubing and packer for injectors).
5. RU wireline to run any logs desired and run gage ring for casing size and weight.
6. Set retrievable bridge plug on wireline and pressure test casing to 1000 psi.
7. RDMO WSU.
8. MIRU 24 hr. WSU. NU BOP's and pressure test with chart.
9. PU tubing, drilling collars, and drill pipe in derrick and run in hole. Then POH and stand back.
10. Run packer on wireline and set using GR/CCL log to correlate with. RD wireline.
11. PU drillpipe with UBHO sub in string and latch into packer to survey the hole and obtain orientation of keyway. POH w/gyro and drill string.
12. Orient whipstock on surface to desired bearing and RIH on drill pipe. Latch into packer. Shear stater mill bolt and make starter cut.
13. POH w/ starter mill and pick up window mill and watermelon mill and continue to mill window. Drill 1-2 ft of formation
14. POH w/ mills and PU curve building assembly and drill string with UBHO sub in string and RIH.
15. RU gyro to assist in time drilling and starting out of the casing window. POH w/ gyro when inclination dictates it must be pulled.
16. Finish drilling the curve using the MWD.
17. POH once curve is finished and PU lateral motor to drill the lateral using MWD.
18. Once lateral TD is reached, POH w/ directional equipment.
19. PU retrieving hook and RIH on drill pipe. Retrieve whipstock and PU new whipstock oriented for desired bearing to start in hole.
20. Repeat steps 12 through 19 for each subsequent lateral.

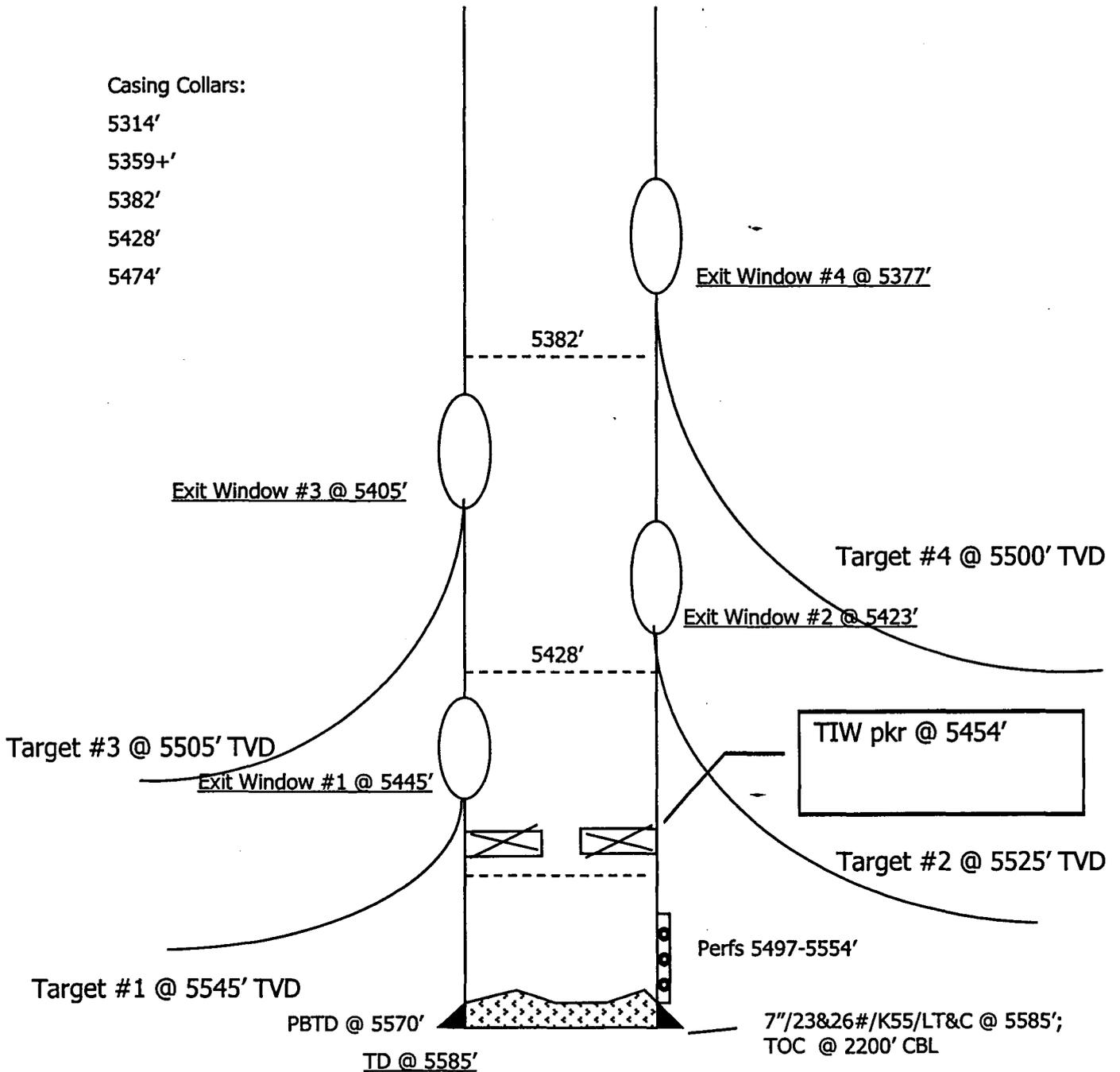
RATHERFORD UNIT # 17-22
GREATER ANETH FIELD
 1882' FNL & 1910' FWL
 SEC 17-T41S-R24E
 SAN JUAN COUNTY, UTAH
 API 43-037-31170
 PRISM 0043050

PRODUCER

Capacities:	bbbl/ft	gal/ft	cuft/ft
2-7/8" 6.5#	.00579	.2431	.0325
7" 23#	.0393	1.6535	.2210
7" 26#	.0382	1.6070	.2148
2-7/8"x7"23#	.0313	1.3162	.1760
2-7/8"x7"26#	.0302	1.2698	.1697



Ratherford Unit #17-22



Window	Btm-Top of Window	Ext length	Curve Radius	Bearing	Horiz Displ
1	5445-37	-----	100	310	1700
2	5423-15	22	102	145	2000
3	5405-5397	38	100	315	1700
4	5397-69	66	123	135	2000

The double spline is 2.42 ft long and the bottom of the whipstock, the latch, the debris and the shear sub are 8.68 ft long. These lengths must be added to the extension lengths to determine the entire whipstock assembly length.

WORKSHEET
APPLICATION FOR PERMIT TO DRILL

APD RECEIVED: 01/26/98

API NO. ASSIGNED: 43-037-31170

WELL NAME: RATHERFORD 17-22
 OPERATOR: MOBIL EXPL & PROD (N7370)

PROPOSED LOCATION:
 SENW 17 - T41S - R24E
 SURFACE: ~~1980~~¹⁸⁸²-FNL-~~1980~~¹⁹⁷⁰-FWL
 BOTTOM: ~~1132~~-FNL-~~0784~~-FWL *Multi-lateral*
 SAN JUAN COUNTY
 GREATER ANETH FIELD (365)

INSPECT LOCATION BY: / /		
TECH REVIEW	Initials	Date
Engineering		
Geology		
Surface		

LEASE TYPE: IND
 LEASE NUMBER: 14-20-603-353

PROPOSED PRODUCING FORMATION: DSCR

RECEIVED AND/OR REVIEWED:

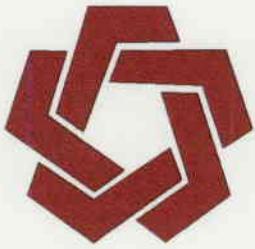
Plat
 Bond: Federal State Fee
 (Number ALREADY IN PLACE)
 Potash (Y/N)
 Oil shale (Y/N)
 Water permit
 (Number CITY OF PRICE)
 RDCC Review (Y/N)
 (Date: _____)

LOCATION AND SITING:

R649-2-3. Unit: RATHERFORD UNIT
 R649-3-2. General.
 R649-3-3. Exception.
 Drilling Unit.
 Board Cause no: _____
 Date: _____

COMMENTS: _____

STIPULATIONS: 1. Directional drilling



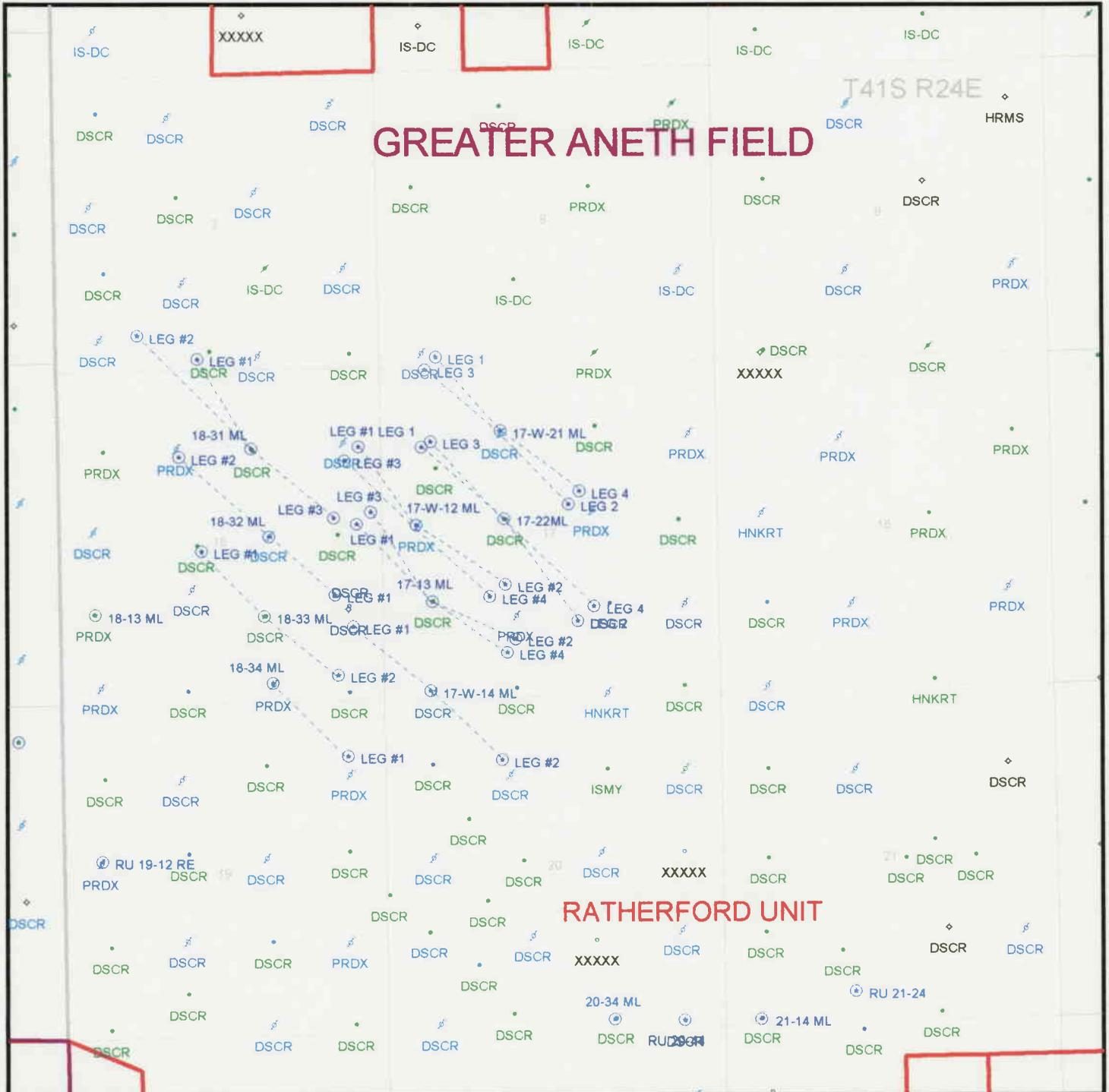
DIVISION OF OIL, GAS & MINING

OPERATOR: MOBIL EXPL & PROD (N7370)

FIELD: GREATER ANETH (365)

SEC. TWP. RNG.: SEC. 17, T41S, R24E

COUNTY: SAN JUAN UAC: R649-2-3 RETHERFORD UNIT



DATE PREPARED:
28-JAN-1998



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
Lowell P. Braxton
Division Director

1594 West North Temple, Suite 1210
PO Box 145801
Salt Lake City, Utah 84114-5801
801-538-5340
801-359-3940 (Fax)
801-538-7223 (TDD)

February 3, 1998

Mobil Exploration & Producing
Po Box 633
Midland, TX 79702

Re: Ratherford 17-22, 1882' FNL, 1910' FWL, SE NW,
SEC. 17, T. 9 S., R. 17 E., Duchesne County, Utah

Gentlemen:

Pursuant to the provisions and requirements of Utah Code Ann. 40-6-1 et seq., Utah Administrative Code R649-3-1 et seq., and the attached Conditions of Approval, approval to drill the referenced well is granted.

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date. The API identification number assigned to this well is 43-013-31170.

Sincerely,

A handwritten signature in black ink that reads "John R. Baza". The signature is written in a cursive style with a large initial "J".

John R. Baza
Associate Director

1s

Enclosures

cc: Duchesne County Assessor
Bureau of Land Management, Vernal District Office



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
Lowell P. Braxton
Division Director

1594 West North Temple, Suite 1210
PO Box 145801
Salt Lake City, Utah 84114-5801
801-538-5340
801-359-3940 (Fax)
801-538-7223 (TDD)

February 17, 1998

CORRECTED LETTER

Mobil Exploration & Producing U.S., Inc.
P.O. Box 633
Midland, Texas 79702

Re: Ratherford 17-22 Well (Re-entry), 1882' FNL, 1910' FWL,
SE NW, Sec. 17, T. 41 S., R. 24 E., San Juan County, Utah

Gentlemen:

Pursuant to the provisions and requirements of Utah Code Ann. 40-6-1 et seq., Utah Administrative Code R649-3-1 et seq., and the attached Conditions of Approval, approval to re-enter and drill the referenced well is granted.

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date. The API identification number assigned to this well is 43-037-31170.

Sincerely,

A handwritten signature in cursive script that reads "John R. Baza".

John R. Baza
Associate Director

lwp

Enclosures

cc: San Juan County Assessor
Bureau of Land Management, Moab District Office

DIVISION OF OIL, GAS AND MINING

SPUDDING INFORMATION

Name of Company: MOBIL EXPLORATION & PRODUCTION

Well Name: RATHERFORD UNIT 17-22

Api No. 43-037-31170

Section 17 Township 41S Range 24E County SAN JUAN

Drilling Contractor BIG "A"

Rig # 25

SPUDDED:

Date 5/4/98

Time _____

How ROTARY

Drilling will commence _____

Reported by SIMON

Telephone # _____

Date: 5/4/98 Signed: JLT

J



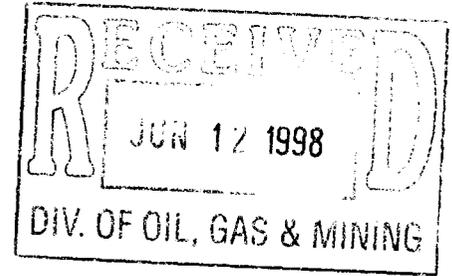
ROCKY MOUNTAIN GEO-ENGINEERING

Electronic Rig Monitoring Systems • Well Logging • Consulting Geology • Coal Bed Methane Services

PASON ROCKY MOUNTAIN GEO-ENGINEERING CORP.

2450 INDUSTRIAL BLVD. • GRAND JUNCTION, CO 81505

(970) 243-3044 • (FAX) 241-1085



Tuesday, June 09, 1998

Division of Oil & Gas Mining
State of Utah
1594 West North Temple
3 Triad Center, Ste. 1210
Salt Lake City, UT 84116

Re: **Ratherford Unit #17-22 Legs 1, 2, 3, 4 DRL**
Sec. 17, T41S, R24E 43 037 31170
San Juan County, Utah

Dear Sirs:

Enclosed is the **final computer colored log and geology report** for the above referenced well.
W LOG FILE

We appreciate the opportunity to be of service to you and look forward to working with you again in the near future.

If you have any questions regarding the enclosed data, please contact us.

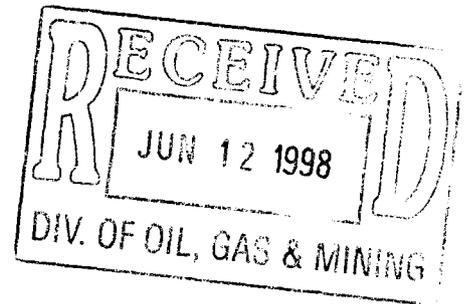
Sincerely,

Bill Nagel
Senior Geologist

BN/dn

Enc. 1 Final Computer Colored Log and Geology Report For Each Leg

cc Letter Only; Dana Larson; Mobil E & P U.S., Inc.; Midland, TX



MOBIL

**RATHERFORD UNIT #17-22
NW HORIZONTAL LATERAL LEG #1
1-C POROSITY BENCH
DESERT CREEK MEMBER
PARADOX FORMATION
SECTION 17, T41S, R24E
SAN JUAN, UTAH**

**GEOLOGY REPORT
by
DAVE MEADE / MARVIN ROANHORSE
ROCKY MOUNTAIN GEO-ENGINEERING CORP.
GRAND JUNCTION, COLORADO
(970) 243-3044**

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WELL SUMMARY

OPERATOR: MOBIL EXPLORATION & PRODUCTION U.S. INC.

NAME: RATHERFORD UNIT #17-22 NW HORIZONTAL LATERAL
LEG #1 IN DESERT CREEK 1-C POROSITY BENCH

LOCATION: SECTION 17, T41S, R24E

COUNTY/STATE: SAN JUAN, UTAH

ELEVATION: KB:4716' GL:4739'

SPUD DATE: 5/05/98

COMPLETION DATE: 5/14/98

DRILLING ENGINEER: BENNY BRIGGS / SIMON BARRERA

WELLSITE GEOLOGY: DAVE MEADE / MARVIN ROANHORSE

**MUDLOGGING
ENGINEERS:** DAVE MEADE / MARVIN ROANHORSE

CONTRACTOR: BIG "A" RIG 25
TOOLPUSHER: J. DEES

HOLE SIZE: 4 3/4"

CASING RECORD: SIDETRACK IN WINDOW AT 5333' MEASURED DEPTH

DRILLING MUD: M-I
ENGINEER: MIKE PITTSINGER /RON WESTENBERG
MUD TYPE: FRESH WATER & BRINE WATER W/ POLYMER SWEEPS

**DIRECTIONAL
DRILLING CO:** SPERRY-SUN

ELECTICAL LOGGING: NA

TOTAL DEPTH: 7216' MEASURED DEPTH; TRUE VERTICAL DEPTH- 5528.5'

STATUS: TOH & LAY DOWN TOOLS – PREPARE WELL FOR LEG #2

DRILLING CHRONOLOGY
RATHERFORD UNIT #17-22
1-C NW HORIZONTAL LATERAL LEG #1

DATE	DEPTH	DAILY	ACTIVITY
5/04/98	6915/0'	0'	L.D. DRL PIPE & COLLARS-NIPPLE DOWN BOP-RING DOWN-MOVE RIG TO R.U. 17-22 LOCATION & RIG UP
5/05/98	0'	0'	RIG UP-NIPPLE UP BOP-ATTEMPT TO PRES TEST-NIPPLE DOWN HYDRIL-W.O. HYDRIL-NIPPLE UP HYDRIL-PRES TEST BOP & HYDRIL-STRAP & CALIPERS DRL COLLARS-TIH-STRAP DRL PIPE & TIH-LATCH INTO & RETRIVE BRIDGE PLUG-CK FOR FLOW-TOH-L.D. BRIDGE PLUG-RIG UP WIRE LINE & RIH-SET PACKER @ 5454-P.U. ANCHOR LATCH ASSEM.-TIH
5/06/98	5454'	0'	TIH W/ANCHOR LATCH ASSEM.-P.U. 8 JTS AOH-WAS THRU STRING & LATCH ANCHOR-RIG UP & RUN GYRO DATA-PULL GYRO & SHEAR OFF-LOSING CIR-PUMP 60 BBL SWEEP-MIX LCM-PUMP30 BBLs OF 10#/BBL MAGNA FIBER-CIR & GET RETURNS-TOH-CHANGE OUT LATCH & ORIENT-TIH-CIR-LATCH INTO ANCHOR-RIH W/GYRO-PULL GYRO & SHEAR OFF-TOH-P.U. WHIPSTOCK #1 & STARER MILL-TIH-SET WHIPSTOCK & SHEAR OFF @ 5436'
5/07/98	5436'	2'	P.U. SWIVEL-MILL 5436' TO 5438'-TOH-L.D. STARTER MILL & P.U. WINDOW & WATERMELLON MILLS-TIH-MILL 5438' TO 5445'-PUMP 10 BBL SWEEP & CIR OUT-L.D. 14 JTS PIPE-TOH-L.D. MILLS-P.U. CURVE ASSEM & TEST-TIH-P.U. 4 JTS AOH
5/08/98	5438'	203'	FILL PIPE & WASH THRU STRING-R.U. GYRO DATA & RIH W/GYRO-TIME DRLG 5445' TO 5448'-DRLG & WIRE LINE SURVEYS TO 5472'-PULL GYRO-RIG DOWN GYRO DATA-DIR DRLG & SURVEYS
5/09/98	5641'	188'	PUMP 10 BBL SWEEP & CIR OUT SPLS-TOH-L.D. 65 JTS AOH-L.D. CURVE ASSEM. & P.U. LATERAL ASSEM.-P.U. 50 JTS PH 6-TIH-RIG REPAIRS (HYDROMATIC CHAIN)-TIH-CIR-DIR DRLG & SURVEYS
5/10/98	5762'	121'	DIR DRLG & SURVEYS
5/11/98	6047'	413'	DIR DRLG & SURVEYS
5/12/95	6460'	334'	DIR DRLG & SURVEYS
5/13/95	6794'	136'	DIR DRLG & SURVEYS TO 6930'-PUMP 10 BBL SWEEP & CIR OUT SPLS-L.D. 1 JT PIPE-TOH CUT DRLG LINE-TOH-CHANGE OUT MWD & BIT-P.U. 12 JTS PIPE-TIH-L.D. 12 JTS PIPE-TIH-CIR

DRILLING CHRONOLOGY
RATHERFORD UNIT #17-22
1-C NW HORIZONTAL LATERAL LEG #1(CON'T)

DATE	DEPTH	DAILY	ACTIVITY
5/14/98	6930'	286'	DIR DRLG & SURVEYS TO 6940'-SHUT IN WELL & CIR BTMS UP THRU CHOKE-DIR DRLG & SURVEYS TO TD @ 7216'-PUMP 10 BBL SWEEP & CIR OUT SPLS-PUMP 20 BBL BRINE-TOH-TO WINDOW-DISPLACE W/BRINE-TOH-L.D. LATERAL ASSEM.-P.U. RETRIEVING HOOK-TIH-LATCH INTO WHIPSTOCK-TOH

DAILY ACTIVITY

Operator: MOBIL

Well Name: RATHERFORD UNIT #17-22 NW 1-C HORIZONTAL LATERAL LEG #1

DATE	DEPTH	DAILY	DATE	DEPTH	DAILY
5/04/98	6915/0'	0'			
5/05/98	0'	0'			
5/06/98	5454'	0'			
5/07/98	5436'	2'			
5/08/98	5438'	203'			
5/09/98	5641'	188'			
5/10/98	5762'	121'			
5/11/98	6047'	413'			
5/12/95	6460'	334'			
5/13/95	6794'	136'			
5/14/98	6930'	286'			

BIT RECORD

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #17-22 NW 1-C HORIZONTAL LATERAL LEG #1

RUN	SIZE	MAKE	TYPE	IN/OUT	FTG	HRS	FT/HR
#1 (RR)	4 3/4"	STC	MF-3P	5445'/ 5641'	196'	20.5	9.56
#2	4 3/4"	STC	MF-3P	5641'/ 6930'	1289'	97.5	13.2
#3 (RR)	4 3/4"	STC	MF-3P	6930'/ 7216'	286'	14.0	20.4

MUD REPORT

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #17-22 NW 1-C HORIZONTAL LATERAL LEG #1

DATE	DEPTH	WT	VIS	PLS	YLD	GEL	PH	WL	CK	CHL	CA	SD	OIL	WTR
5/04/98	NO CHECK	-	-	-	-	-	-	-	-	-	-	-	-	-
5/05/98														
5/06/98														
5/07/98	5436'	8.34	26	1	0	0/0	10.0	NC	NC	1200	120	-	0%	100%
5/08/98	5498'	8.34	26	1	0	0/0	10.0	NC	NC	6000	880	-	0%	100%
5/09/98	5641'	8.34	26	1	0	0/0	12.0	NC	NC	6000	920	-	0%	100%
5/10/98	5885'	8.4	26	1	0	0/0	12.0	NC	NC	10000	1120	-	0%	100%
5/11/98	6250'	8.4	26	1	0	0/0	12.5	NC	NC	11000	1120	-	0%	100%
5/12/95	6611'	8.4	26	1	0	0/0	11.5	NC	NC	13000	1280	1	1%	98%
5/13/95	6857'	8.4	26	1	0	0/0	10.0	NC	NC	16000	1400	1	1%	98%
5/14/98	7116'	8.6	28	1	0	0/0	12.0	NC	NC	19000	1480	2	1%	97%

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/17-22, 1A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
5400.00	0.44	214.61	5399.40	18.40 N	10.60 E	3.71	0.00
5436.00	0.21	234.30	5435.40	18.25 N	10.47 E	3.71	0.70
5445.00	4.20	310.00	5444.39	18.45 N	10.20 E	4.04	46.15
5455.00	8.50	314.80	5454.33	19.21 N	9.40 E	5.15	43.29
5465.00	13.60	319.60	5464.14	20.62 N	8.11 E	7.04	51.78
5475.00	19.00	324.40	5473.73	22.85 N	6.40 E	9.78	55.61
5485.00	24.00	329.20	5483.04	25.92 N	4.41 E	13.28	52.97
5495.00	29.60	334.00	5491.96	29.89 N	2.28 E	17.46	60.00
5505.00	35.20	335.80	5500.40	34.74 N	0.02 E	22.32	56.82
5515.00	41.20	337.10	5508.25	40.41 N	2.45 W	27.85	60.53
5525.00	47.10	338.40	5515.43	46.85 N	5.08 W	34.01	59.69
5535.00	52.40	338.30	5521.89	53.95 N	7.90 W	40.72	53.01
5545.00	57.80	337.10	5527.60	61.53 N	11.01 W	47.98	54.89
5555.00	63.20	334.60	5532.53	69.47 N	14.57 W	55.81	58.21
5565.00	68.10	331.80	5536.65	77.59 N	18.68 W	64.19	55.24
5575.00	73.30	329.60	5539.95	85.82 N	23.30 W	73.01	55.99
5585.00	78.60	327.20	5542.38	94.07 N	28.38 W	82.21	57.88
5595.00	81.40	323.40	5544.12	102.17 N	33.99 W	91.71	46.73
5605.00	80.80	318.00	5545.67	109.81 N	40.25 W	101.41	53.69
5615.00	81.50	312.00	5547.21	116.79 N	47.23 W	111.25	59.70
5641.00	92.20	307.60	5548.63	133.38 N	67.14 W	137.17	44.48
5676.00	91.60	304.00	5547.47	153.84 N	95.51 W	172.05	10.42
5708.00	88.00	307.20	5547.59	172.46 N	121.52 W	203.95	15.05
5740.00	87.50	308.30	5548.84	192.04 N	146.80 W	235.90	3.77
5771.00	87.40	309.10	5550.22	211.40 N	170.97 W	266.86	2.60
5803.00	87.50	309.60	5551.64	231.67 N	195.69 W	298.82	1.59
5835.00	89.60	308.70	5552.45	251.86 N	220.50 W	330.81	7.14
5867.00	90.40	308.90	5552.45	271.92 N	245.44 W	362.80	2.58
5899.00	90.80	309.10	5552.12	292.05 N	270.31 W	394.79	1.40
5930.00	91.40	308.90	5551.52	311.56 N	294.39 W	425.78	2.04
5962.00	91.90	308.70	5550.60	331.60 N	319.32 W	457.76	1.68
5993.00	92.40	308.90	5549.44	351.01 N	343.46 W	488.73	1.74
6025.00	93.20	309.60	5547.88	371.23 N	368.21 W	520.69	3.32
6057.00	91.10	309.60	5546.68	391.62 N	392.85 W	552.67	6.56
6089.00	88.90	309.80	5546.68	412.05 N	417.47 W	584.67	6.90
6120.00	88.20	309.40	5547.46	431.81 N	441.35 W	615.65	2.60
6152.00	88.80	309.30	5548.30	452.09 N	466.09 W	647.64	1.90
6184.00	89.40	310.20	5548.80	472.55 N	490.69 W	679.64	3.38

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/17-22, 1A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
6216.00	90.80	311.20	5548.75	493.42 N	514.95 W	711.63	5.38
6248.00	90.00	309.40	5548.52	514.11 N	539.35 W	743.63	6.16
6280.00	90.50	309.10	5548.38	534.36 N	564.13 W	775.63	1.82
6311.00	90.40	308.90	5548.14	553.87 N	588.22 W	806.62	0.72
6343.00	90.80	308.90	5547.80	573.96 N	613.12 W	838.61	1.25
6375.00	91.00	309.10	5547.30	594.10 N	637.99 W	870.60	0.88
6407.00	91.60	309.40	5546.58	614.34 N	662.76 W	902.59	2.10
6439.00	91.10	308.90	5545.82	634.54 N	687.57 W	934.58	2.21
6470.00	91.50	308.40	5545.12	653.89 N	711.77 W	965.56	2.07
6502.00	91.70	308.20	5544.22	673.72 N	736.88 W	997.54	0.88
6533.00	92.70	309.40	5543.03	693.13 N	761.02 W	1028.51	5.04
6565.00	93.00	310.70	5541.44	713.69 N	785.48 W	1060.47	4.16
6597.00	91.60	310.30	5540.16	734.46 N	809.80 W	1092.44	4.55
6629.00	90.60	308.90	5539.54	754.85 N	834.45 W	1124.43	5.38
6660.00	91.50	308.70	5538.98	774.27 N	858.60 W	1155.42	2.97
6692.00	91.20	308.60	5538.22	794.25 N	883.59 W	1187.40	0.99
6723.00	91.80	308.90	5537.41	813.65 N	907.75 W	1218.38	2.16
6755.00	92.50	308.90	5536.21	833.73 N	932.64 W	1250.35	2.19
6787.00	95.00	309.30	5534.12	853.86 N	957.42 W	1282.28	7.91
6818.00	95.50	309.60	5531.28	873.48 N	981.26 W	1313.15	1.88
6850.00	92.00	309.30	5529.19	893.77 N	1005.91 W	1345.07	10.98
6896.00	92.60	308.70	5527.34	922.69 N	1041.63 W	1391.03	1.84
6928.00	91.00	307.90	5526.34	942.51 N	1066.73 W	1423.00	5.59
6959.00	90.40	310.90	5525.96	962.19 N	1090.68 W	1453.99	9.87
6990.00	90.30	314.40	5525.77	983.19 N	1113.47 W	1484.95	11.29
7022.00	87.70	317.00	5526.33	1006.08 N	1135.82 W	1516.78	11.49
7054.00	89.30	320.70	5527.17	1030.16 N	1156.86 W	1548.38	12.59
7086.00	88.50	323.70	5527.78	1055.44 N	1176.47 W	1579.65	9.70
7117.00	88.00	326.70	5528.73	1080.88 N	1194.15 W	1609.55	9.81
7149.00	89.30	328.30	5529.48	1107.86 N	1211.34 W	1640.06	6.44
7181.00	91.30	329.00	5529.31	1135.19 N	1227.99 W	1670.38	6.62
7216.00	91.30	329.00	5528.52	1165.18 N	1246.01 W	1703.46	0.00

THE DOGLEG SEVERITY IS IN DEGREES PER 100.00 FEET.
N/E COORDINATE VALUES GIVEN RELATIVE TO WELL HEAD.
TVD COORDINATE VALUES GIVEN RELATIVE TO WELL HEAD.
THE VERTICAL SECTION ORIGIN IS WELL HEAD.
THE VERTICAL SECTION WAS COMPUTED ALONG 310.00 (TRUE).
CALCULATION METHOD: MINIMUM CURVATURE.

7216 STRAIGHT LINE EXTRAPOLATION

SAMPLE DESCRIPTIONS

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #17-22 NW 1-C HORIZONTAL LATERAL LEG #1

DEPTH	LITHOLOGY
5440.00 5450.00	"LS crm-tan-ltbrn,crpxl-micxl,rthy-chk,cln-dns ip,arg,v sl dol,scat CHT frag,tt,NFSOC,w/abnt LCM & METAL frag"
5450.00 5460.00	"LS wh-crm-ltgy-brn,micxl-crpxl,rthy-chk,v arg-shy ip,occ cln,sl dol,v sl slty,tt,NFSOC,grdg to v lmy-dol brn sl mica arg v sl slty SH,rr mbrn micxl v rthy sl lmy dns DOL,scat brn-bf CHT frag"
5460.00 5470.00	"LS AA,bcmg v slty-grdg to v lmy SLTST,rr brn micxl arg shy DOL w/NFSOC,scat bf CHT frag,tr mbrn-gy brn SH lams" □
5470.00 5480.00	"LS crm-tan,occ ltgy-ltbrn,crpxl-micxl,slty-chk ip,occ cln-dns,sl anhy,rr clr-trnsl CHT frag,v sl dol,tt,NFSOC,occ grdg to ltgy-wh v lmy SLTST incl,tr ltbrn-brn,micxl,cln-rthy,lmy DOLw/v rr ANHY xl tt-v rr intxl POR,vfnt dull FLOR,NSOC"
5480.00 5490.00	"LS AA,scat DOL AA tt NFSOC,grdg to SH blk-dkgy sbblky-fis carb calc-dol sooty" □
5490.00 5500.00	"SH dkgy-blk,sbblky-plty,occ fis,calc-dol,carb-sooty,mica,sl slty,rr ANHY xl,bcmg arg brn sl lmy dns DOL & dns crm-tan-brn crpxl-micxl dns LS PKST occ chk v sl anhy slty ip dns tt NFSOC"
5500.00 5510.00	"SH CVGS AA,LS crm-tan-ltbrn,crpxl-micxl,bcmg vfxl-gran,pred PKST bcmg GRNST,v anhy ip,v sl fos-sl ool,tt-fr intxl-ool POR,fr dull-bri yel FLOR,rr spty STN,tr slow-mod fast CUT"
5510.00 5530.00	"LS crm,occ tan,v rr brn,micxl-vfxl,bcmg crpxl,gran-micsuc ip,pred sl ool GRNST-bcmg dns PKST,scat CHT frag-ANHY xl-incl,tr DOL cmt,rr CHT frag-tr SH cvgs-ptgs,fr-tt intxl-tr ool POR,fr dull-bri yel FLOR,tr spty brn STN,tr-fr slow-mod fast stmg CUT"
5530.00 5540.00	"LS AA,decr SH cvgs,rr CHT frag,pred PKST w/stks ooc-oom GRNST,decr POR-FLOR-STN-CUT"
5540.00 5560.00	"LS crm-tan-ltbrn,rr wh,crpxl-micxl,occ vfxl-gran,pred dns sl anhy PKST,v thn stks sl ooc-oom GRNST sl dol,w/v thn stks dns-rthy micxl lmy DOL,rr scat trnsl-clr CHT frag,occ ANHY xl-incl,rr intxl-ool POR,tr bri FLOR,n vis STN,rr p slow stmg-dif CUT,SH CVG"
5560.00 5570.00	"LS AA,pred dns-thn chky plty sl anhy PKST,v rr GRNST AA,w/decr thn stks DOL AA,dk brn-trnsl-tan CHT,tr xl ANHY-POR fl,tt-rr intxl POR,NFSOC"

DEPTH	LITHOLOGY
5570.00 5580.00	"LS ltbrn-ltgybrn-ltgy, occ crm-wh, micxl, crpxl, sl micsuc ip, rthy-occ slty GRNST, dol-occ grdg to calc DOL, tr dns-chky plty PCKST, sl anhy/tr POR fl-rr xln ANHY, rr CHT AA, tr intxl POR, tr scat mod bri-dull yel FLOR, tr brn STN, slow stmg mlky CUT"
5580.00 5600.00	"LS AA, micxl-gran, crpxl, sl micsuc ip, rthy-slty dns GRNST, dol/tr DOL cmt-occ grdg to calc DOL, scat thn sl mot chky plty-tr dns PCKST, sl anhy/tr POR fl-rr xln ANHY, rr CHT AA, tr-fr intxl POR, no-rr scat dull yel FLOR, v rr brn STN, p dif/v fnt res ring CUT"
5600.00 5610.00	"LS lt-mgybrn, occ tan-crm, crpxl-micxl, occ sl miosuc-gran, pred thn chky-sl anhy plty-tr dns PCKST intbd/sl dol LS GRNST, occ grdg to calc DOL, tr xln ANHY-POR fl, tt, NFSOC, tr intbd-scat ltbrn-brn crpxl-micxl DOL, NFSOC, rr blk SH prtgs, "
5610.00 5630.00	"LS AA, pred thn chky-sl anhy mot plty-tr dns PCKST intbd/sl dol LS GRNST, occ grdg to calc DOL, tr xln ANHY-POR fl, tt, NFSOC, incr scat-occ intbd DOL AA, NFSOC, incr blk SH prtgs, "
5630.00 5641.00	"LS wh-crm-tan, rr brn, crpxl-sl micxl, pred dns-thn chky plty sl anhy PCKST/thn intbddkbrn-blk dol-calc carb SH prtgs, rr micxl rthy-slty calc DOL frag, tr xln ANHY, tt-tr intxl POR, NFSOC"
5641.00 5660.00	"LS crm-tan, occ ltbrn, crpxl-micxl, cln-dns, occ rthy-chk, sl dol, sl anhy-rr ANHY xl, rr mic fos, tt, NFSOC, w/v thn DOL brn-gybrn crpxl-micxl cln-rthy sl arg lmy tt-v rr intxl POR, v rr spty bri-dull yel FLOR, n-v rr STN, v p slow dif CUT, rr-tr blk carb SH cvgs"
5660.00 5680.00	"LS pred dns sl dol PKST AA, w/incr intbd brn-gybrn-dkbrn, crpxl-micxl, occ vfxl-gran DOL, sl lmy, rr ANHY xl-FRAC fl, rr mic fos, tt-tr intxl-v rr frac POR, n-v fnt dull yel FLOR, rr-tr dkbrn-blk STN, v p slow dif CUT, v rr scat gy calc-dol SH lams"
5680.00 5690.00	"DOL lt-mbrn, occ lt-mgybrn, rr dk brn strk, micxl-micsuc-gran, occ crpxl, rthy-sl slty, chky-anhy DOL GRNST/tr POR fl, sl arg, tr lmy strk-grdg to dol LS ip, fr-tr intxl POR, NFSOC"
5690.00 5710.00	"DOL AA, chky-anhy DOL GRNST/tr POR fl, sl arg ip, rr lmy strk, fr-tr intxl POR, fr-g even mod bri-dull yel FLOR, tr ltbrn-rr dkbrn STN, g slow stmg mlky CUT, w/tr scat LS PCKST crm-wh, crpxl, chky-sl anhy, pred thn plty-mrly ip, occ dns, tt-rr intxl POR, NFSOC"
5710.00 5720.00	"DOL lt-mbrn, occ ltgybrn, rr dkbrn, micsuc-micxl-gran, chky-sl anhy GRNST, arg ip, fr-tr intxl POR/tr POR fl, tr scat FLOR AA, STN-CUT AA, incr scat thn wh-ltgy mot-mrly & rr dns LS PCKST prtgs, occ grdg to calc DOL, NFSOC"
5720.00 5730.00	"LS wh-ltgybrn, occ tan-crm, crpxl, chky-sl anhy thn plty-v rr dns LS PCKST, rr ltgy mot strks, sl mrly ip, NFSOC"

DEPTH	LITHOLOGY
5730.00 5750.00	"LS tan-crm-wh,crpxl,rr micxl,pred dns-thn chky plty PCKST,anhy/rr xln ANHY incl,v rr mic fos,tt-rr intxl POR,NFSOC,decr scat DOL frag AA,tr intxl POR,rr dull yel FLOR,tr ltbrn STN,tr slow stmg mlky CUT"
5750.00 5770.00	"LS tan-crm-wh,crpxl-sl micxl,dns cln PCKST,sl chky-anhy/rr xln ANHY incl,tr mic fos,rr crm-trnsl CHT,v rr blk SH lam-prtg,tt-v rr intxl POR,tr v dull orng mnrl FLOR,NSOC,tr scat DOL brn,crpxl,dns,sl calc,NFSOC"
5770.00 5780.00	"LS AA,dns cln PCKST/rr chky-sl anhy prtg,rr xln ANHY incl,rr mic fos & blk SH lam-prtg,rr tan-crm CHT frag,tt-v rr intxl POR,tr scat v dull orng mnrl FLOR,NSOC.rr DOL frag,brn,crpxl-occ micxl,sl calc,tt,NFSOC"
5780.00 5790.00	"LS AA,dns cln PCKST AA,tt-rr intxl POR,FLOR AA,NSOC"
5790.00 5800.00	"LS tan-crm,rr wh,crpxl-sl micxl,dns cln PCKST,sl chky-anhy/tr xln ANHY incl,tr mic fos,rr crm-trnsl CHT,v rr blk SH lam-prtg,tt-v rr intxl POR,tr v dull orng mnrl FLOR,NSOC"
5800.00 5810.00	"LS wh-crm,occ tan-ltbrn,crpxl-micxl,rthy-chk,occ plty,dns,sl anhy,occ dol,scat ANHY xl,v rr CHT frag,scat styl,v rr mic fos,tt,NFSOC,tr brn-ltbrn crpxl-micxl dns lmy anhy DOL tt NFSOC"
5810.00 5820.00	"LS pred brn-ltbrn,crpxl,rr micxl,v sl dol,anhy ip,rr mic fos,tr frac-ANHY fl frac,styl,tt NFSOC,w/v rr thn brn crpxl lmy anhy DOL incl,tt,NFSOC"
5820.00 5830.00	"LS AA,incr wh-plty-chk,occ arg,v sl chty,dol ip-occ grdg to v lmy tt DOL,NFSOC"
5830.00 5840.00	"LS tan-ltbrn,occ wh-crm,crpxl,rr micxl-rthy,v sl arg,occ chk,rr CHT frag,scat ANHY fl frac,dol-grdg to v lmy DOL ip,dns,tt,NFSOC"
5840.00 5850.00	"LS AA,v rr scat dns brn crpxl DOL frag,rr frac POR-pred ANHY fl,scat styl,v rr blk dd o STN in frac,tt-v rr vis frac POR,NFSOC"
5850.00 5870.00	"LS tan-brn,occ wh-crm,rr ltgy,crpxl,occ micxl,dns-cln,sl fos,chk-rthy-v sl arg ip,dol-v rr thn dns brn-gybrn micxl v lmy DOL frag,scat styl,v rr frac POR-pred ANHY fl,n vis FSOC"
5870.00 5880.00	"LS AA,w/v rr v thn SH ptgs to frac fl,POR AA,NFSOC"
5880.00 5900.00	"LS tan-ltbrn,rr crm-wh,crpxl,micxl ip,pred dns,v rr arg stks,tr mic fos,v sl anhy-occ ANHY xl-frac fl,rr styl-scat ltgy mica calc-sl dol occ carb v thn SH lams,occ dol-grdg to v lmy DOL ip,tt-v rr frac-intxl POR,NFSOC"
5900.00 5910.00	"LS AA,pred dns-tt,w/v rr ANHY fl frac POR,v rr styl,occ mic fos,tt-v rr frac POR,NFSOC"

DEPTH	LITHOLOGY
5910.00 5920.00	"LS tan-ltbrn,rr crm-wh,crpxl,micxl ip,pred dns PKST,v rr arg-dol stks,tr mic fos,v sl anhy-occ ANHY xl-frac fl,rr styl-v thn mica calc-sl dol occ carb SH lams,grdg to v lmy DOL ip,tt-v rr frac-pp intxl POR,NFOC,v rr spty blk dd o STN"
5920.00 5930.00	"LS AA,pred v dns PKST w/v rr ANHY & CALC fl frac,v rr mic fos,tt-v rr frac-intxl POR,NFSOC"
5930.00 5940.00	"LS AA,v sl incr wh plty-sl chk,v rr bf-trnsl CHT frag,n-v rr frac-v spty intxl stks POR,n vis FLOR-CUT,v rr stks dkbrn-blk dd o STN-carb stks"
5940.00 5960.00	"LS tan-ltbrn,occ wh-crm,crpxl-rr micxl,cln dns chky-sl anhy PCKST/sl incr thn plty prtgs/depth,v sl arg ip,tr xln ANHY incl-frac fl,rr blk SH lam-styl & mic fos,tt-v rr intxl-frac POR,no FLOR,v rr blk strk-pp STN,no CUT"
5960.00 5970.00	"LS AA,dns-thn chky plty PCKST,sl incr anhy/tr xln ANHY-frac fl,sl arg,v rr mic fos,tt-v rr intxl POR,no FLOR,v rr blk pp STN,no CUT"
5970.00 5980.00	"LS AA/incr wh,dns cln-thn chky plty PCKST,anhy/tr xln ANHY incl-frac fl,v rr mic fos,tt-v rr intxl-frac POR,no FLOR-STN-CUT"
5980.00 6000.00	"LS tan-ltbrn,occ crm,tr wh,crpxl-rr micxl,cln dns chky-sl anhy PCKST/decr thn plty prtgs,v sl arg ip,tr xln ANHY incl-frac fl,rr mic fos,v rr blk SH lam-styl,tt-v rr intxl-frac POR,no FLOR,v rr blk strk-pp STN,no CUT"
6000.00 6010.00	"LS AA,crpxl-tr scat micxl,cln dns-scat thn chky plty PCKST,anhy/tr xln ANHY,sl arg,tr trnsl-clr/rr mic fos incl CHT,tt,NFSOC"
6010.00 6020.00	"LS AA,dns cln-decr thn plty PCKST,anhy/tr xln ANHY-POR fl,occ sl dol-grdg to lmy DOL,tt-rr intxl POR,NFSOC,w/tr DOL brn,crpxl,thn-dns,cln,NFSOC"
6010.00 6020.00	"LS tan,occ ltbrn,crm,tr wh,crpxl-rr micxl,cln dns chky-sl anhy PCKST/thn plty prtgs,sl arg ip,tr xln ANHY incl-frac fl,rr mic fos,v rr blk SH lam-styl,tt-v rr intxl-frac POR,no FLOR,v rr blk strk-pp STN,no CUT"
6030.00 6040.00	"DOL lt-mbrn,occ brn,ltgybrn,micxl-gran,sl micsuc,occ crpxl,pred GRNST,chky-anhy/tr POR fl,tr xln ANHY,tr intxl POR,fr dull-mod bri FLOR,tr ltbrn STN,fr slow stmg mlky CUT,intbd/LS PCKST AA,tt-rr intxl POR,NFSOC"
6040.00 6060.00	"DOL AA,GRNST,chky-sl anhy/tr xln ANHY-POR fl,occ grdg to dol LS,incr POR-FLOR-STN-CUT AA,w/scat-intbd LS crm-tan,occ wh,crpxl-micxl,chky dns-tr thn plty PCKST,sl mic fos,tt-tr intxl POR,tr dull yel FLOR,NSOC"

DEPTH	LITHOLOGY
6060.00 6070.00	"DOL brn,micxl-micsuc-gran,DOL GRNST,sl chky-anhy/tr xln ANHY-rr POR fl,tr scat-occ intbd tan-crm crpxl LS,tr-fr intxl POR,g even mod bri-dull yel FLOR,fr-g ltbrn-brn/rr blk STN,g fast stmg mlky CUT"
6070.00 6080.00	"DOL AA,micsuc-gran,occ micxl-sl suc,GRNST/tr scat-intbd sl dol crm-tan crpxl LS,sl chky-anhy/tr xln ANHY-POR fl,fr intxl POR,g even mod bri-dull yel FLOR,STN-CUT AA"
6080.00 6090.00	"DOL brn,occ ltbrn,micsuc-gran,tr crpxl,suc,GRNST,sl chky,v sl anhy/rr xln ANHY incl,tr POR fl,fr intxl POR,FLOR AA,g-fr brn/tr blk STN,CUT AA"
6090.00 6100.00	"DOL AA,POR-FLOR-STN-CUT AA,w/decr scat-tr intbd LS AA"
6100.00 6110.00	"DOL brn,micsuc-gran,tr micxl,GRNST,v sl chky-anhy/rr xln ANHY incl,occ sl lmy-tr LS mtx,fr intxl POR/tr chky-anhy fl,g even mod bri-dull yel FLOR,g ltbrn/rr brn STN,g fast stmg mlky CUT"
6110.00 6120.00	"DOL AA,pred GRNST/tr crpxl PCKST strk,tr ltgy-gybrn sil-sl slty prtgs,rr trnsl-mlky sl fos CHT,v rr LS AA,POR-FLOR-STN-CUT AA"
6120.00 6140.00	"DOL brn,micxl-vfvl,gran-micsuc ip,pred GRNST,scat ANHY xl,rthy-v sl slty,tr trnsl-bf CHT frag,scat dns tt sl fos LS frag,v rr arg stks,fr-mg intxl POR,g bri-dull yel FLOR,fr brn STN-v rr spty blk dd o STN,fr slow-tr mod fast stmg CUT"
6140.00 6150.00	"DOL AA,scat ltbrn-crm dns crpxl sl fos LS frag-scat trnsl-wh-bf CHT frag,POR-FLOR-STN-CUT AA"
6150.00 6160.00	6150.00 0 "DOL pred GRNST AA,w/scat CHT frag AA,incr tan-crm-wh crpxl occ plty dns LS frag,POR-FLOR-STN-CUT AA"
6160.00 6170.00	"DOL brn,micxl-vfvl,gran-micsuc ip,pred GRNST,scat ANHY xl,rthy-v sl slty,tr trnsl-bf CHT frag,scat dns tt sl fos LS frag,v rr arg stks,fr-mg intxl POR,mg dull-v rr bri yel FLOR,fr brn STN-v rr spty blk dd o STN,fr slow-tr mod fast stmg CUT"
6170.00 6180.00	"DOL pred brn GRNST AA,decr LS frag,CHT AA,POR-FLOR-STN-CUT AA"
6180.00 6190.00	"DOL AA,v sl incr LS frag,tr trnsl-wh-bf occ mot CHT frag,mfr-mg intxl POR,mg dull-rr bri yel FLOR,mg brn STN-v rr spty blk dd o STN,fr-mg slow-tr mod fast stmg CUT"
6190.00 6200.00	"DOL brn,micxl-vfvl,gran-micsuc ip,pred GRNST,scat ANHY xl-incl,rthy-v sl slty,scat trnsl-bf CHT frag,rr dns tt occ plty LS frag,v rr sl arg stks,fr-mg intxl POR,mg dull-v rr bri yel FLOR,fr brn STN-v rr spty blk dd o STN,fr slow-tr mod fast stmg CUT"

DEPTH	LITHOLOGY
6200.00	6220.00 "DOL pred GRNST sl incr LS cmt,w/scat CHT frag & incr amnts dns sl fos dol LS frag,fr-mg intxl POR,mg dull yel FLOR,tr-fr ltbrn-brn STN-v rr spty blk dd o STN,mfr dif-tr slow-mod fast stmg CUT"
6220.00	6240.00 "DOL brn,micxl-vfxl,gran-micsuc ip,pred lmy-v lmy GRNST,scat ANHY xl-incl,v sl slty,scat trns-bf CHT frag,rr dns tt occ plty LS frag,v rr sl arg stks,mg-tr intxl POR,mg dull yel FLOR,mfr brn STN-v rr spty blk dd o STN,fr slow dif-tr slow stmg CUT"
6240.00	6250.00 "DOL pred lmy-v lmy GRNST,tr dns-occ plty LS incl,scat CHT frag AA,POR AA,tr-mg dull-bri yel FLOR,fr ltbrn-brn STN-v rr spty blk dd o STN,fr dif-tr slow-mod fast stmg CUT"
6250.00	6280.00 "DOL brn,micxl-vfxl,gran-micsuc ip,rr crpxl,pred lmy-v lmy GRNST,scat ANHY xl-cmt,v sl slty,scat trns-bf CHT frag,occ grd to dns dol LS incl,rr sl arg stks,fr-tr intxl POR,mfr dull yel FLOR,fr brn STN-v rr spty blk dd o STN,fr slow dif-stmg CUT"
6280.00	6290.00 "DOL pred lmy-v lmy GRNST AA,sl decr plty-chk LS frag,scat trns-wh-bf CHT frag,fr intxl POR,mfr-fr dull-rr bri yel FLOR,mfr ltbrn-brn STN-v rr spty blk dd o STN,mfr-g dif-slow stmg-tr mod fast stmg CUT"
6290.00	6300.00 "DOL AA,tr-mfr intxl POR,mfr dull-rr bri yel FLOR,STN & CUT AA,incr tan-ltbrn-crm-wh,crpxl-micxl,rthy-chk,occ plty dns tt LS frag,tr CHT frag AA"
6300.00	6310.00 "LS tan-brn,occ wh-crm,crpxl,micxl ip,cln-dns,dol,occ chk-plty,v rr mic fos,anhy,tt,NFSOC,w/thn brn crpxl-vfxl lmy DOL PKST & GRNST,w/POR-FLOR-STN-CUT AA"
6310.00	6320.00 "LS AA,w/incr CHT frag,incr DOL GRNST decr DOL PKST,incr POR-FLOR-STN-CUT"
6320.00	6330.00 "DOL pred lmy-v lmy GRNST AA,sl decr plty-chk LS frag,scat trns-wh-bf CHT frag,fr intxl POR,mfr-fr dull-rr bri yel FLOR,mfr ltbrn-brn STN-v rr spty blk dd o STN,mfr-g dif-slow stmg-tr mod fast stmg CUT"
6330.00	6350.00 "LS tan-brn,occ wh-crm,crpxl,micxl ip,cln-dns,dol,occ chk-plty,v rr mic fos,anhy,tt,NFSOC,w/thn brn crpxl-vfxl lmy DOL PKST & GRNST,w/POR-FLOR-STN-CUT AA"
6350.00	6360.00 "DOL AA,tr-mfr intxl POR,fr scat spty dull-mod bri yel FLOR,fr ltbrn/tr brn-v rr pp blk dd o STN,fr dif CUT,sl decr LS tan-ltbrn-crm,tr wh,crpxl-micxl,rthy-chky,dns-occ plty LS PCKST frag,rr CHT frag AA"
6360.00	6380.00 "LS tan-brn-ltbrn,occ wh-crm,crpxl-micxl ip,cln-dns,dol/tr DOL rich cmt,occ grd to calc-lmy DOL,tr thn chky-plty prtgs,rr mic fos,anhy/rr xln ANHY,tt-rr xln POR,NFSOC,w/lmy DOL PKST & GRNST,w/POR-FLOR-STN-CUT AA"

DEPTH	LITHOLOGY
6380.00 6400.00	"LS tan,occ crm,tr ltbrn,crpxl-occ micxl,dns-rr thn chky plty PCKST,anhy/tr xln ANHY,dol-occ grdg to lmy DOL ip,v rr mic fos-wh CHT frag,tt-rr intxl POR,fr dull yel FLOR,rr ltbrn STN,fr dif CUT"
6390.00 6400.00	"DOL ltbrn,occ grdg to tan,rr brn,micxl-crpxl,tr gran-sl micsuc,pred GRNST grdg to PCKST,lmy-sl chky,grdg to lmy DOL,tr xln ANHY,fr intxl POR,fr scat dull-mod bri yel FLOR,tr ltbrn/rr brn-v rr pp blk STN,g slow/tr mod fast stmg CUT"
6400.00 6420.00	"DOL brn,occ ltbrn,micsuc-micxl,gran,tr crpxl,GRNST/occ lmy PCKST strks,sl chky-anhy/tr xln ANHY incl-POR fl,tr trnsl-wh CHT,fr-g intxl POR,g-fr mod bri yel FLOR,g brn-lt brn/rr pp blk STN,g mod fast-fast stmg CUT"
6420.00 6440.00	"DOL AA,GRNST occ grdg to PCKST,sl chky-anhy/tr xln ANHY-POR fl,rr CHT,rr calc mtx/pp LS frag incl,POR-FLOR-STN-CUT AA,w/scat-intbd dns-thn plty LS PCKST tan-crm-off wh,crpxl-sl micxl,rr mic fos,tt-rr intxl POR,tr dull yel FLOR,rr ltbrn STN,fr dif CUT"
6440.00 6450.00	"DOL AA,pred GRNST/rr PCKST strk,sl chky-anhy/tr xln ANHY-POR fl,tr lmy mtx-occ grdg to lmy DOL ip,POR-FLOR-STN-CUT AA"
6450.00 6460.00	"LS tan-crm,ltgybrn,occ wh,sl mot,crpxl,micxl ip,dol/tr DOL rich cmt,occ grdg to calc-lmy DOL,incr thn chky-plty prtgs,v rr mic fos,anhy/tr xln ANHY,tt-rr xln POR,NFSOC"
6460.00 6470.00	"DOL ltbrn,occ brn,micsuc-micxl,gran,GRNST/rr dns lmy PCKST,occ grdg to dol LS ip,sl chky-anhy/tr xln ANHY incl-POR fl,rr CHT AA,fr-g intxl POR,fr scat dull/tr mod bri yel FLOR,fr ltbrn-tr brn STN,g mod fast stmg CUT"
6470.00 6480.00	"DOL AA,GRNST,POR-FLOR-STN-CUT AA"
6480.00 6490.00	"LS tan-crm,ltgybrn,occ wh,crpxl,micxl ip,occ dol/tr DOL strk-cmt,occ grdg to calc-lmy DOL,scat thn chky-plty prtgs,v rr mic fos,anhy/tr xln ANHY,tt-rr xln POR,NFSOC"
6490.00 6500.00	"DOL AA,micsuc-micxl,gran,GRNST occ grdg to dol LS ip,sl chky-anhy/tr xln ANHY incl-POR fl,fr-g intxl POR,fr scat dull-mod bri yel FLOR,fr ltbrn-rr brn STN,g-fr slow stmg CUT"
6500.00 6520.00	"LS ltbrn-gybrn,occ crm-rr wh,crpxl-micxl,rthy-chk,plty,v sl slty,chtly ip,occ anhy,dns,tt,v dol ip-occ grdg to intbd ltbrn-brn,crpxl-vfxl,occ gran-rr micsuc,v lmy DOL GRNST w/tr-mfr intxl POR,mfr dull-tr bri yel FLOR,mfr brn STN,tr dif-slow stmg CUT"
6520.00 6540.00	"LS AA,scat trnsl-bf CHT frag bcmg pred ltbrn-brn micxl-vfxl gran-occ micsuc DOL PKST w/scat ANHY xl tr-mg intxl POR mfr-mg bri-fr dull yel FLOR tr-mg ltbrn-brn STN-v rr spty blk dd o STN fr-mg slow-fast stmg CUT"

DEPTH	LITHOLOGY
6540.00	6560.00 "DOL lt-mbrn,micxl-vfxl,gran-micsuc,occ LS-v sl ANHY cmt,pred GRNST,w/tr scat dns plty-chk ip LS PKST incl-lams,scat wh-trnsl-bf CHT frag,fr-g intxl POR,mfr-fr dull-bri yel FLOR,tr-mg brn-dkbrn STN-rr spty blk dd o STN,mfr-mg slow-mod fast stmg CUT"
6560.00	6570.00 "DOL AA,g intxl POR,mg FLOR-STN-CUT AA,decr plty-chk dns LS PKST incl"
6570.00	6580.00 "DOL pred brn,lt-dkbrn ip,micxl-vfxl,gran-suc,pred GRNST,occ LS-ANHY cmt,rthy-v sl slty ip,v rr plty-chk-dns LS PKST incl-frag,scat ANHY xl-CHT frag,fr-g intxl POR,g bri-fr dull yel FLOR,g lt-dkbrn-rr blk STN,fr-g mod fast-fast stmg CUT"
6580.00	6590.00 "DOL brn-dkbrn AA,w/tr scat LS-CHT frag AA,g intxl POR,g bri yel FLOR,fr-g lt-dkbrn STN-spty blk dd o STN,fr-g mod fast-fast stmg CUT"
6590.00	6610.00 "DOL brn-mbrn,micxl-vfxl,gran-micsuc,pred sl lmy GRNST,v sl rthy-sl slty,occ anhy-v rr ANHY xl,rr wh-crm-ltbrn crpxl occ chk-plty sl dol LS frag,scat bf-trnsl CHT frag,g intxl POR,fr-g dull-bri yel FLOR,g brn STN-rr spty blk dd o STN,mg mod fast stmg CUT"
6610.00	6630.00 "DOL pred GRNST AA,POR-FLOR-STN-CUT AA,v rr scat LS PKST-CHT frag AA"
6630.00	6650.00 "DOL brn-mbrn,occ dkbrn,micxl-vfxl,gran-micsuc,pred sl lmy occ rthy-v sl slty GRNST,w/rr dns-sl chk-plty LS PKST & trnsl-bf CHT frag,occ ANHY xl-incl,mg intxl POR,mg dull-bri yel FLOR,g brn-dkbrn STN-rr spty blk dd o STN,mg mod fast-fast stmg CUT"
6650.00	6670.00 "DOL pred GRNST AA w/POR-FLOR-STN-CUT AA,incr & bcmg v dol crm-ltbrn occ mot-wh dns rthy-chk crpxl-micxl tt LS PKST n vis POR-FLOR-STN-CUT"
6670.00	6680.00 "LS AA,w/v thn intbd lmy-v lmy DOL GRNST w/decr POR-FLOR-STN-CUT"
6680.00	6690.00 "LS tan-brn,occ crm-wh,mot ltbrn-crm ip,crpxl-micxl,rthy-v sl slty,dns,occ plty-chk,rr mic fos,tt NFSOC,w/decr amnts scat DOL GRNST-lmy-v lmy fr intxl POR mfr dull-bri yel FLOR tr-fr brn STN mfr slow-rr mod fast stmg CUT"
6690.00	6710.00 "LS pred dns chk-plty PKST AA,v thn intbd brn-mbrn micxl-vfxl gran-micsuc ip DOL GRNST rthy-v sl slty occ lmy w/decr amnt POR-FLOR-STN-CUT AA"
6710.00	6720.00 6707.35 0 "DOL brn,occ ltbrn,micsuc-micxl-gran,GRNST,sl chky-anhy/tr POR fl-rr xln ANHY incl,tr calc-LS cmt/rr LS incl,fr-g intxl POR,g-fr mod bri-bri yel FLOR,fr-g ltbrn-brn/rr blk STN,g mod fast stmg CUT,abnt thn dkbrn CHT"

DEPTH	LITHOLOGY
6720.00 6730.00	"LS tan-crm-off wh,occ ltgy-gybrn,mot ip,crpxl-micxl,dns-thn chky plty PCKST,rr mic fos,tt NFSOC,w/decr DOL GRNST AA,POR AA<decr FLOR,STN-CUT AA,sl decr CHT AA"
6730.00 6750.00	"LS AA,crpxl-tr micxl,pred dns-thn chky plty PCKST,anhy/tr xln ANHY-POR fl,scat trns/dk brn stn CHT,rr mic fos,tt-rr intxl POR,NFSOC,w/decr scat DOL GRNST AA,fr intxl POR,FLOR-STN-CUT AA"
6750.00 6770.00	"LS crm-wh-occ tan,crpxl,dns-thn chky plty PCKST,intbd/abnt trns-tan-brn stn CHT,sl anhy/tr xln ANHY-POR fl,tt-v rr intxl POR,NFSOC,w/tr scat DOL GRNST,ltbrn-brn,tr intxl POR,fr mod bri yel FLOR,fr ltbrn STn,CUT AA"
6770.00 6780.00	"CHT trns-tan/brn stn,m-dkbrn,tr wh,ltgy,hd,w/scat-occ intbd LS AA,pred dns-tr chky plty PCKST,tt,NFSOC & v rr DOL GRNST frag AA,rr intxl POR,rr dull-mod bri FLOR,fr ltbrn STN,tr slow stmg CUT"
6780.00 6790.00	"LS AA,crpxl,rr micxl,dns-thn chky plty PCKST,intbd/abnt CHT AA,sl anhy/tr xln ANHY-POR fl,tt-v rr intxl POR,NFSOC,w/tr scat DOL GRNST,ltbrn-brn,tr intxl POR,FLOR-STN-CUT AA"
6790.00 6800.00	"LS AA,crpxl,rr micxl,dns-thn chky plty PCKST,intbd/abnt CHT AA,sl anhy/tr xln ANHY-POR fl,rr mic fos,tt-v rr intxl POR,NFSOC,w/tr scat DOL GRNST AA,POR-FLOR-STN-CUT AA"
6800.00 6820.00	"LS crm-wh-occ tan,crpxl,dns-thn chky plty PCKST,w/scat-intbd CHT AA,sl anhy/tr xln ANHY-POR fl,tr mic fos,tt-v rr intxl POR,NFSOC,w/tr scat DOL GRNST,ltbrn-brn,tr intxl POR,fr mod bri yel FLOR,fr ltbrn STN,CUT AA"
6820.00 6830.00	"DOL lt-mbrn,micxl,occ vfxl-gran,micsuc ip,sl anhy-rr ANHY xl,tr gy-brn-trns CHT frag,lmy,tr-mg intxl POR,tr-mfr yel FLOR,fr brn STN,mg slow-stmg CUT,bcmg v lmy-grdg to sl dol crpxl-micxl rthy-chk dns chty LS PKST"
6830.00 6840.00	"LS wh-tan-crm,occ mot wh-brn,crpxl-micxl,rthy-chk,cln-dns, chty,dol PKST,w/thn intbd DOL AA,decr POR-FLOR-STN-CUT"
6840.00 6850.00	"LS AA,w/thn intbd DOL GRNST tr-mfr POR-FLOR-STN-CUT AA,scat trns-gybrn-brn CHT frag "
6850.00 6860.00	"LS pred wh-crm-tan,crpxl,dns,plty-chky ip,PKST,w/occ micxl-vfxl,scat ooc-oom GRNST stks,tt-v rr ool POR,n-tr bri yel FLOR,tr ltbrn STN,mfr stmg CUT,w/v thn stks DOL GRNST AA,tr CHT frag AA"
6860.00 6870.00	"DOL brn,micxl-vfxl,gran-micsuc pred GRNST,v rr mic fos,lmy,rr-mfr intxl POR,mfr bri yel FLOR,tr brn STN-v rr dd o STN,mfr slow-mod fast stmg CUT,w/wh-crm-ltbrn LS PKST & rr-tr ooc-oom LS GRNST,POR-FLOR-STN CUT AA,CHT AA"

DEPTH	LITHOLOGY
6870.00	6890.00 "LS wh-crm-ltbrn,occ ltgy-brn,crpxl-micxl,occ vfxl-gran,pred dns occ chk-pty PKST w/stks & bcmg ooc-oom GRNST,tt-mfr ool-intxl POR,tr bri yel FLOR,rr-tr brn STN,mfr slow-mod fast stmg CUT & decr amnts thn DOL GRNST AA"
6890.00	6900.00 "LS ltbrn-brn,occ crm-wh,crpxl-vfxl,gran-micsuc ip,pred ooc-oom GRNST,scat dns occ rthy-chky-pty PKST,sl ANHY-DOL rich cmt,w/v rr scat brn micxl-vfxl lmy DOL GRNST,tr-mg ool-tr intxl POR,fr-g dull-bri yel FLOR,fr-g brn STN-tr spty dd o STN,mg fast CUT "
6900.00	6910.00 "LS AA,pred ooc-oom GRNST,w/decr DOL-CHT AA,incr ool-intxl POR,fr-mg FLOR-STN-CUT AA"
6910.00	6930.00 "LS tan-brn,occ crm-wh,crpxl-vfxl,gran-micsuc ip,pred ooc-oom GRNST,rr dns occ rthy-chky-pty PKST,sl ANHY-tr DOL rich cmt,scat trnsl-mot brn CHT frag,fr-mg intxl-ool POR,fr-g dull-bri yel FLOR,mg brn-dkbrn STN-tr spty blk dd o STN,"
6930.00	6940.00 "LS AA,ooc-oom GRNST,sl anhy,tr DOL cmt,POR-FLOR-STN-CUT AA,tr dns-pty PCKST cvgs,NFSOC,w/scat DOL & SH cvgs,mg mod fast stmg CUT,w/scat rr brn vfxl DOL GRNST frag,tr POR-FLOR-STN-CUT"
6940.00	6960.00 "LS tan-ltbrn,occ brn,crm,tr wh,micxl-gran,sl micsuc,rr crpxl,ooc-oom GRNST,sl dol/tr DOL rich cmt,sl anhy-chky/tr POR fl-rr xln ANHY,g ool POR,g even bri yel FLOR,fr ltbrn/tr brn-blk pp dd o STN,g fast stmg-blooming mlky CUT"
6960.00	6970.00 "LS AA,gran-micsuc ip,ooc-oom GRNST,scat thn chky pty PCKST,sl ANHY-tr POR fl,tr DOL rich cmt,g ool POR,g even bri yel FLOR,g ltbrn/tr brn-rr blk pp dd o STN,g fast stmg-blooming mlky CUT "
6970.00	6980.00 "LS AA,ool-oom GRNST AA/incr scat thn chky pty PCKST frag,DOL cmt,sl anhy/tr POR fl-rr xln ANHY,POR-FLOR-STN-CUT AA"
6980.00	7000.00 "LS tan-ltbrn,occ brn,gran-micsuc,ooc-oom GRNST/tr DOL rich cmt,tr thn chky pty PCKST frag,sl anhy/tr POR fl-v rr xln ANHY,g ool POR,g even bri yel FLOR,g-fr ltbrn/tr brn-blk pp dd o STN,g fast stmg-blooming mlky CUT"
7000.00	7010.00 "LS brn-mbrn,occ wh-crm-tan,micxl-vfxl,occ crpxl,pred ooc-oom GRNST w/v rr scat dns occ pty-chk PKST,POR-FLOR-STN-CUT AA"
7010.00	7020.00 "LS pred ooc-oom GRNST AA,sl incr dns occ pty-chk PKST,scat trnsl-wh-bf occ mot CHT frag,POR-FLOR-STN-CUT AA"
7020.00	7050.00 "LS tan-brn,occ m-dkbrn,rr wh-crm,micxl-vfxl,occ gran-micsuc,pred ooc-oom GRNST/tr DOL rich cmt,rr-tr dns occ chky pty PKST frag,v rr ANHY xl-POR fl,g ool-fr intxl POR,g bri yel FLOR,g-fr ltbrn ST-tr blk-dkbrn dd o STN,g fast stmg mlky CUT"

DEPTH	LITHOLOGY
7050.00 7060.00	"LS AA pred ooc-oom GRNST w/incr amnts dns v sl ool tr plty-chk crpxl LS PKST,v anhy,occ DOL rich cmt,tt-mfr intxl-ool POR,mfr-fr intxl-ool POR,g brn STN-rr blk dd o STN,tr-fr g mod fast stmg CUT"
7060.00 7070.00	"LS lt-dkbrn,tan,micxl-vfxl,gran-micsuc-suc ip,ooc-oom GRNST,decr PKST AA,fr-g POR-FLOR-STN-CUT"
7070.00 7080.00	"LS pred ooc-oom GRNST,incr PKST AA,decr POR-FLOR-STN-CUT"
7080.00 7090.00	"LS tan-brn,occ m-dkbrn,rr wh-crm,micxl-vfxl,occ gran-micsuc,pred ooc-oom GRNST/tr DOL rich cmt,rr dns occ chky plty PKST frag,v rr ANHY xl-POR fl,scat CHT frag,g ool-fr intxl POR,g bri yel FLOR,g-fr ltbrn ST-tr blk-dkbrn dd o STN,g fast stmg mlky CUT"
7090.00 7100.00	"LS AA,pred ooc-oom GRNST AA,rr scat CHT frag-sl ool LS PKST incl,fr-g POR-FLOR-STN-CUT"
7100.00 7120.00	"LS ltbrn,occ m-dkbrn,rr wh-crm-tan,vfxl-gran,micsuc-suc ip,pred ooc-oom GRNST,rr scat crpxl sl ool occ plty-chk PKST,sl DOL cmt,v sl anhy-rr ANHY xl-POR fl,rr scat trnsl-bf CHT frag,fr ool-g intxl POR,g bri yel FLOR,g lt-dkbrn-spty blk STN,g faststmg CUT"
7120.00 7130.00	"LS AA,incr dns plty-chk crpxl sl ool occ anhy PKST incl,mfr-fr intxl-mfr ool POR,fr lt-dkbrn STN-rr spty blk dd o STN,fr-g mod fast-fast stmg CUT"
7130.00 7140.00	"LS pred ooc-oom GRNST AA,w/thn intbd dns PKST AA,pred fr-g POR-FLOR-STN-CUT"
7140.00 7150.00	"LS AA,incr dns plty-chk micxl-crpxl PKST FRAG,tr-mg ool-intxl POR,fr bri yel FLOR,mfr-fr lt-dkbrn STN,rr slow-mg mod fast stmg CUT"
7150.00 7180.00	"LS ltbrn,occ mbrn,v rr wh-crm-tan,vfxl-gran,micsuc-suc ip,pred ooc-oom GRNST,scat crpxl sl ool occ plty-chk PKST,sl DOL cmt,v sl anhy-rr ANHY xl-POR fl,rr scat trnsl-bf CHT frag,mfr ool-g intxl POR,g bri yel FLOR,fr lt-dkbrn-spty blk STN,g fast stmg CUT"
7180.00 7190.00	"LS AA,sl incr dns PKST frag,v sl decr ool-intxl POR,mg FLOR-CUT,mfr-fr lt-mbrn STN,rr spty blk dd o STN"
7190.00 7200.00	"LS pred ooc-oom GRNST,w/scat dns occ plty-chk v sl ool crpxl-micxl wh-crm-ltbrn PKST incl-frag,v sl decr POR,fr-mg FLOR-STN-CUT AA"
7200.00 7216.00	"LS tan-brn-mbrn,rr crm-wh,crpxl-vfxl,gran-suc ip,pred ooc-oom GRNST w/scat intbd dns v sl ool occ plty-chk PKST incl-lams,tr DOL rich cmt,v rr trnsl-bf CHT frag,sl anhy-rr ANHY xl,tr-g intxl-ool POR,g bri yel FLOR,mfr-mg brn-dkbrn-blk STN,n-g fast CUT"

FORMATION TOPS

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #17-22 NW 1-C HORIZONTAL LATERAL LEG #1

FORMATION NAME	SAMPLE	SAMPLE	DATUM
	MEASURED DEPTH	TRUE VERTICAL DEPTH	KB:4716'
LOWER ISMAY	5452'	5451'	-735'
GOTHIC SHALE	5482'	5480'	-764'
DESERT CREEK	5494'	5491'	-775'
DC 1-A ZONE	5500'	5496'	-780'
DC 1-A/1-B TRANSITION ZONE	5520'	5512'	-796'
DC 1-B ZONE	5532'	5520'	-804'
DC 1-B/1-C TRANSITION ZONE	5541'	5525'	-809'
TOP DC 1-C ZONE	5613'	5546'	-830'
BASE DC 1-C ZONE	5647'	5548'	-832'

GEOLOGICAL SUMMARY

AND

ZONES OF INTEREST

The Mobil Exploration and Production U.S., Inc., Ratherford Unit #17-22 Northwest Horizontal Lateral Leg #1 was a re-entry of the Mobil Ratherford Unit #17-22 located in Section 17, T41S, R24E, and was sidetracked in a northwesterly direction from a 5445' measured depth, 5444.39' true vertical depth, on May 7, 1998. The lateral reached a measured depth of 7216', true vertical depth of 5528.5' at total depth, with a horizontal displacement of 1703.5' and true vertical plane 329 degrees on May 14, 1998 in the upper Desert Creek 1-B porosity zone. During the well preparation, prior to commencing drilling operations, difficulty was experienced in pressure testing the hydrill, loosing circulation and setting the oriented whipstock. Two runs with the whipstock and gyro were required to seat and orient the whipstock.

The curve section of the hole was drilled with no problems from a measured depth of 5445' to 5641'. The curve was landed at a true vertical depth of 5448.5', in the dense tight limestone packstones at the base of the 1-C porosity zone of the Desert Creek on May 8, 1998. The curve section of the hole was begun in the basal 6 feet of the Upper Ismay member of the Paradox Formation before encountering the typical sections of the Lower Ismay, Gothic Shale and Desert Creek members of the Paradox Formation. The lateral section was begun on May 9, 1998, with a trip on May 13th, at a measured depth of 6930' to change out MWD probes and bits.

Objectives of the Ratherford Unit #17-22 leg #1 horizontal lateral were to penetrate and drill the 1-C porosity horizon of the Desert Creek member of the Paradox Formation to a horizontal displacement of 1700'. Additional objectives were to identify and define the lithology and evaluate the porosity and to determine the horizon parameters of the 1-C porosity bench of the Desert Creek away from the original well bore. These objectives were accomplished in the 1-C zone with some difficulty due to the thickness of the zone. Throughout the length of the lateral considerable sections of marginal porosity near the base of the zone was penetrated, with lesser sections of good dolomite grainstone porosity with good sample shows encountered. After completing the curve section of the lateral, the lateral section required intermittent sliding to maintain vertical and horizontal plane direction. The well path used the proposed target line until the 1-C zone was encountered, and then only as a reference point throughout the lateral section. Both the top and bottom of the 1-C and 1-B zones was encountered in the lateral, which was terminated in the 1-B porosity bench. Although the 1-B porosity horizon was not a target in this lateral, it was encountered while trying to reacquire the 1-C porosity bench. The lateral section of the hole was planed for a horizontal displacement of 1700', but this distance was extended after encountering good oolitic to oomoldic limestones in the 1-B porosity bench. The extra distance of approximately 300' to 500' was not drilled due to the laterals proximity to the well bore in the Ratherford Unit #17-11 well.

The top of the Upper Ismay was not encountered during the drilling of the curve, but was at a measured depth of approximately 5348', based on electric logs. The basal 7 feet from 5445' to 5452' measured depth was characterized by interbedded dense limestone packstones, very argillaceous limestone marlstone and very thin carbonaceous shales. The limestones was tan to cream to brown, cryptocrystalline to microcrystalline, dense, slightly dolomitic with scattered chert fragmentse. The argillaceous limestone was brown to gray brown in color, with an earthy to grainy texture which graded in to the thin calcareous to slightly dolomitic, carbonaceous shales of the Hovenweep Shale.

This interval had no visible intercrystalline porosity, no stain and displayed no fluorescence or cuts. The Hovenweep marker between the Upper and Lower Ismay members was represented by a thin interval of black to dark gray brown shale which was slightly calcareous to dolomitic and occasionally micaceous to slightly silty. The Hovenweep Shale was very poorly represented in the samples.

The top of the Lower Ismay was picked at 5452' measured depth, 5451' true vertical depth, at the base of the thin Hovenweep shale marker. This pick was based on sample identification and an increase in penetration rate. The lithology of the Lower Ismay from 5452' to the top of the Gothic Shale at 5482' measured depth was predominately limestone packstone, light gray to white to cream to brown in color, cryptocrystalline to microcrystalline with an earthy to grainy texture grading to a dense tight matrix. Throughout the Lower Ismay were scattered light to dark brown chert fragments, very thin black carbonaceous shale partings and rare silty streaks. Also noted were very thin interbeds of brown, very argillaceous, microcrystalline, limy dolomites. The interval from a measured depth of 5475' to 5482' measured depth, showed an increase in light brown to brown, microcrystalline to cryptocrystalline, earthy to argillaceous dolomites. The dolomites and limestones near the base became increasingly marly and graded into the carbonaceous shales of the Gothic Shale. Minor intercrystalline was noted, with a very rare scattered bright yellow fluorescence, but no stain or cut, was noted in the dolomites above the Gothic Shale.

The Gothic Shale was penetrated at a measured depth of 5482', 5480' true vertical depth, and was the typical lithology; predominantly black to dark gray shale, carbonaceous, silty, soft to slightly firm, subblocky, occasionally subplaty to slightly fissal, calcareous to slightly dolomitic, micaceous, and very slightly silty. The top of the Gothic lays gradationally below the thin interbedded argillaceous limestones and dolomites at the base of the Lower Ismay. The top of the Gothic was picked predominantly by an increase in penetration rate and an abrupt increase in the percentage of shale in the samples. The Gothic Shale overlays the transition zone at the top of the Desert Creek, with a rather sharp facies change.

The top of the Desert Creek member of the Paradox was marked by a thin transition zone facies between the overlying Gothic Shale and the underlying 1-A porosity zone. This thin interval in this lateral was the typical transition zone lithology, being thin interbeds of light gray, dolomitic limestone packstone, cryptocrystalline to microcrystalline and argillaceous with traces of a silty texture and an argillaceous to clean, brown to gray brown, microcrystalline, slightly limey dolomite. This zone displayed rare scattered chert fragments and very thin carbonaceous shale partings. There were no visible porosity and no visible staining, fluorescence or cuts in this thin interval.

The top of the Desert Creek 1-A porosity zone was encountered at a measured depth of 5500', true vertical depth of 5496', essentially flat with the top on the vertical well log. The top was noted by a significant increase in the penetration rate and a change into the typical oolitic to oomoldic limestone grainstones displaying oolitic to intercrystalline porosity development. The limestone was cream to tan to brown in color, cryptocrystalline to very finely crystalline, oolitic and had slightly dolomitic to anhydritic cement, scattered anhydrite crystals with fair bright yellow fluorescence, spotty fair brown stain, and fair slow to moderately fast streaming cut. Thin interbeds of limestone packstones were present though the 1-A porosity zone and were cream to tan in color, cryptocrystalline to microcrystalline with a dense tight to slightly chalky texture. These packstones displayed no visible sample shows. The 1-A porosity zone was about 12 feet thick in this lateral and appeared to become somewhat less porous with depth. This corresponds well to the 14 foot thick porosity seen on the gamma neutron log.

A tight limestone packstone was penetrated from the base of the 1-A porosity zone at 5520' measured depth, with a true vertical depth of 5512' to the top of the 1-B horizon at 5532' measured depth, 5520' true vertical depth. This 1-A to 1-B transition zone was characterized by a tight limestone packstone, cream to tan in color, cryptocrystalline to microcrystalline with a dense to slightly chalky micritic matrix and was slightly anhydritic. No fossils, but scattered chert fragment and

very thin brown, microcrystalline, earthy dolomites were observed in this section. Only a very poor spotty intercrystalline porosity with rare spotty dark brown to black stain, poor dull yellow fluorescence and slow streaming to residual ring cuts were noted in this packstone interval.

The 1-B porosity horizon was penetrated from a measured depth of 5532', 5520' true vertical depth, down to a measured depth of 5541', 5525' true vertical depth. The top of the porosity was within approximately 1 foot of the top shown on the well log for the vertical well. The porosity development on the vertical well log appears to be about 8 to 9 feet thick, but in the curve section the best porosity appeared to be only about 5 feet thick. The lithology of the 1-B porosity zone was an oolitic to oomoldic limestone grainstone, tan to light brown, very fine crystalline to microcrystalline with a granular texture, slight anhydritic with moderately fair oolitic to intercrystalline porosity. The sample shows were only poor to moderately fair with trace of spotty light brown to brown stain, trace of dull to yellow fluorescence and a rare to trace of fair slow streaming cut.

The interval between the base of the 1-B porosity to the top of the 1-C porosity zone was a limestone packstone grading to a dolomitic limestone just above the 1-C horizon. The 1-B to 1-C transition zone was from measured depths of 5541' to 5613', with true vertical depths from 5525' to 5547'. The lithology of this interval was predominately a limestone packstone, cream to tan to light brown and occasionally white in color, cryptocrystalline to microcrystalline with an occasionally chalky texture and was slightly fossiliferous and occasionally anhydritic with scattered chert fragments. Scattered in the transition zone were thin earthy brown to light brown, limey dolomites which had a very limey cement, traces of anhydrite crystals and had poor visible intercrystalline porosity. Porosity development through this interval was generally very streaky poor intercrystalline with no visible staining, very poor scattered dull yellow fluorescence and only a very slight streaming to residual cut in the limestones and thin dolomites.

The 1-C objective horizon was penetrated at a measured depth of 5613', true vertical depth of 5547', 6' low to the top shown on the gamma-neutron log for the vertical well. The lithology of the 1-C when first penetrated was primarily a dolomite grainstone, light brown to brown in color, microcrystalline to very finely crystalline with a microsugrosic to granular texture. As the depth increased, the dolomite became increasingly limey and appeared to grade to a very dolomitic limestone. Scattered through out the interval were anhydrite crystals thin dolomitic limestone packstones. The curve portion of the hole was landed at a measured depth of 5641', true vertical depth of 5548.5', 3.5 feet below the target depth and in the dense limestone packstone at the base of the 1-C porosity zone with an inclination of 92.2 degrees.

After landing the curve section of the lateral, it appeared that the thin 1.5 foot thick porosity streak seen when landing the curve, correlated to a very thin streak of porosity on the electric logs just above the best porosity of the 1-C zone. As the lateral section was begun, the inclination of the well bore was slowly turned downward to an angle of 87.5 degrees to a true vertical depth of 5552.5', in an attempt to find the thicker porosity seen on the electric logs. Upon reaching the true vertical depth of 5552.5', 5830' measured depth; it became apparent that the porosity of the 1-C zone had thinned significantly in the northwesterly direction away from the vertical well bore. At this time the well path was oriented upward to try to reacquire the very thin porosity of the 1-C zone.

From the beginning of the lateral section the measured depth of 5641' to a measured depth of 6032' the lithology remained quite consistent with only minor variations in the amount of dolomites encountered. The lithology was primarily the tight, platy, white to cream, some tan, cryptocrystalline to microcrystalline limestone packstone at the base of the 1-C zone, at the top of the 1-C to 1-D transition zone. These limestones had varying amounts of chert fragments, scattered microfossils, occasionally anhydritic to scattered anhydrite crystals, and a trace of stylolites. A minor amount of dolomite grainstone, medium brown to brown, microcrystalline to very finely crystalline with a sugrosic to grainy texture, which graded into a dense dolomitic limestone, was seen from a measured depth of 5670', 5547.5' to a measured depth of 5705', also at a true vertical depth of 5547.5' as the

well path was turned downward. This dolomite grainstone decreased rapidly after reaching the measured depth of 5705', and became very minor interbeds to scattered inclusions.

Upon reaching the measured depth of 6032', 5547.5' true vertical depth, the thin porosity zone noted when landing the curve section and just after beginning the lateral section, was again encountered. The lithology became predominately a light to medium brown, microcrystalline to very finely crystalline dolomite, with a granular to microsucrosic texture. Scattered dense limestone packstone fragments; microfossils and very rare clear to white chert fragments were also noted within the dolomite porosity horizon. The porosity within the dolomite was fair to good intercrystalline, with sample shows being predominately moderately good. The well path was oriented at approximately 89 degrees with in this dolomite grainstone horizon. This lithology continued to a measured depth of 6250', 5548.5 true vertical depth, when the base of the 1-C porosity zone was encountered. As the well bore was oriented to an inclination of 91.5 degrees in at attempt to move away from the base of the 1-C zone, the base of the zone appeared to climb at the same rate. The lithology was predominately brown, microcrystalline dolomite grainstone with moderately fair to good porosity and sample shows, and had streaks of dense white to cream, cryptocrystalline, limestone packstones with increased amounts of chert fragments, when the base was bumped and scraped, until reaching a measured depth of 6522', true vertical depth of 5543.5'. At this time the well bore was moved away from the base of the 1-C zone by increasing the angle to 93 degrees. The lithology showed a significant decrease in the platy to chalky, dense limestone, as the brown dolomite grainstones with good intercrystalline porosity and sample shows became the dominate lithology.

As the lateral was continued upward in the dolomite grainstone porosity, the inclination of the well bore was lowered to 91.5 degrees. The top of the 1-C zone was encountered at a measured depth of 6668', 5538.5' true vertical depth, and a horizontal displacement of 1160'. Due to the steep dip of the base of the 1-C it was unsure at the time the top was encountered whether it was the top or just the base of the 1-C continuing to climb at a steep angle. From the measured depth of 6668', the well path was continue upward, until reaching a measured depth of 6987', 5527' true vertical depth and a horizontal displacement of 1391'. Throughout this 1-C to 1-B transition zone the lithology became predominately a dense, tight, very slightly dolomitic limestone packstone with increasing amounts of translucent to brown chert fragments and thin interbedded dolomite grainstones. The limestones had no visible sample shows, with the thin dolomites having only minor amounts of porosity and sample shows.

At a measured depth of 6850', 5529' true vertical depth; a slight change in lithology was noted. The lithology was still predominately the dense, cherty limestone packstone, but the thin streaks of dolomite grainstone decreased and graded to a very dolomite rich, slightly oolitic to oomoldic limestone grainstone as the well bore approached the base of the 1-B porosity zone. Upon reaching the measured depth of 6897', 5527' true vertical depth, the base of the 1-B porosity zone was encountered.

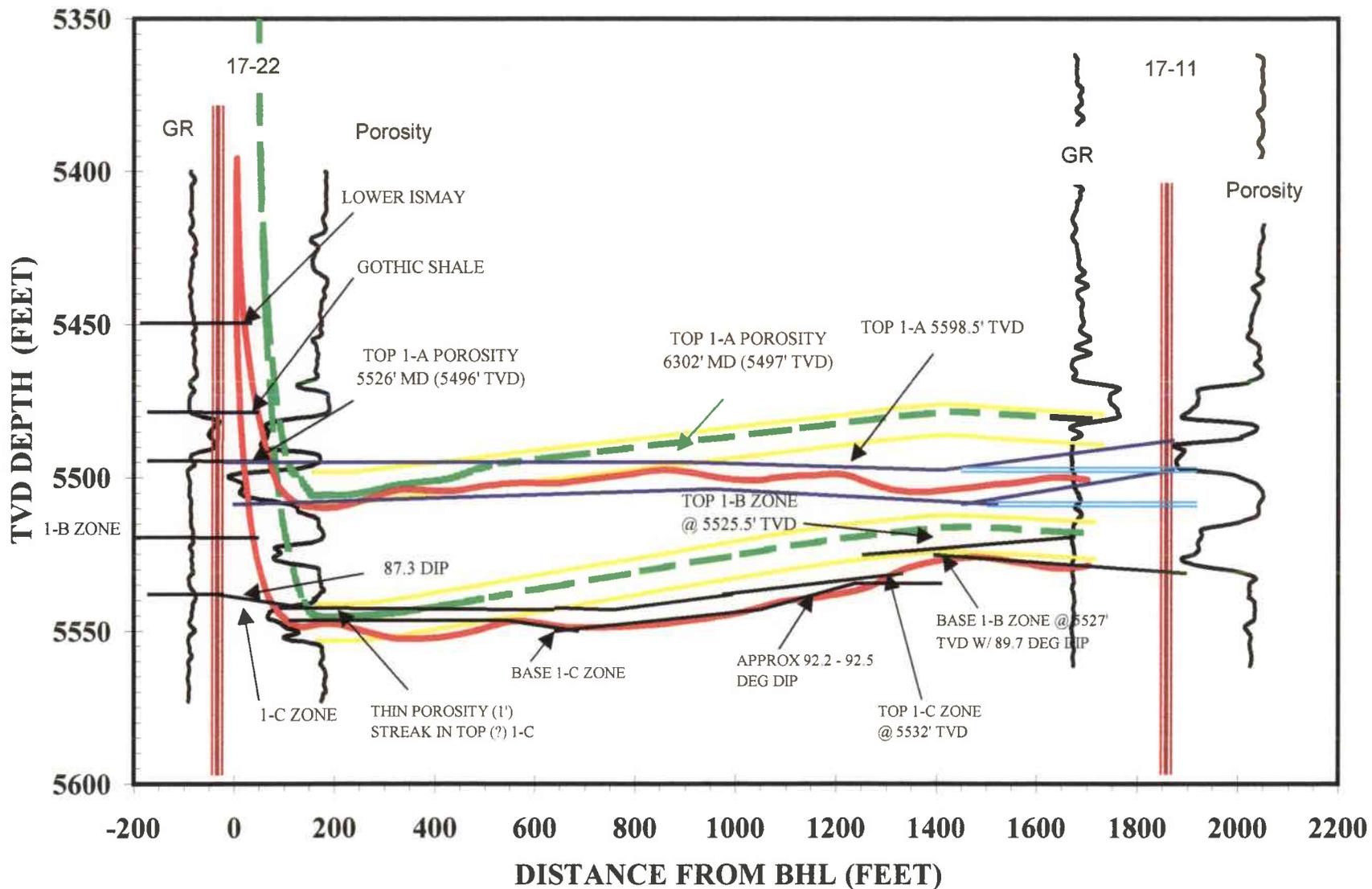
Beginning at 6850' with a horizontal displacement of 1345', a gradual increase in penetration rate was noted along with the increase in oolitic to oomoldic limestone. As the lateral was continued the limestone packstone and granular dolomites decreased as the penetration rate increased, until reaching the measured depth of 6897', with a horizontal displacement of 1392', when the lithology became predominately the good oolitic to oomoldic limestone. These limestones had good intercrystalline and oolitic porosities, and very good sample shows. This lithology was continuous, with minor increases in dense limestone packstones to the laterals termination. The minor increases in the very dense, slightly cherty, cryptocrystalline limestone packstones were when the base of the 1-B zone was bumped and scraped from a measured depth of 7104', 5528' true vertical depth, with a horizontal displacement of 1596', to a measured depth of 7167', 5529.5' true vertical depth with a horizontal displacement of 1656'. At this time the angle of the well bore had increased and moved away from the base in to the very good oolitic to oomoldic limestones.

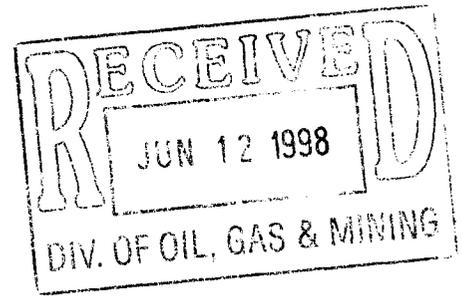
After penetrating the 1-B porosity zone the lateral was turned toward the north to bypass as far as possible the Ratherford 17-11 well bore. The lateral was planed to be 1700' in horizontal displacement, but after acquiring the good porosity of the 1-B; it was hoped to extend the lateral to possibly 2200' to 2300' of horizontal displacement. But due to the well path being turned late in the lateral section, it was determined that the lateral was not going to be far enough away from the 17-11 well when it passed the 17-11 vertical well bore. Thus the lateral was terminated at a measured depth of 7215', 5528.5' true vertical depth, with a horizontal displacement of 1703.5', on May 14, 1998.

From where the 1-C zone was first penetrated in the curve, the background gas readings remained low, in the 100 to 150 unit range. When the lateral section penetrated base of the 1-C porosity zone from the measured depth of 5670' to the measured depth of 5704', the background gas increased to 400 units. Not until reacquiring the 1-C zone at a measured depth of 6032', did the background gases increase significantly. The background gas went almost instantaneously from the 150 to 200 unit range to the 5000 to 6000 unit range even after going through the gas buster with a significant amount of C₁ through C₄ gasses noted on the gas chromatograph and a 6' to 8' flare. The flare remained constant throughout the rest of the lateral. A flare in excess of 30' was noted after the trip to replace the MWD tool.

It appears the dolomite grainstones of the 1-C porosity horizon thinned abruptly to 1' thick toward the northeast and thickened to only 3.5'. The majority of the lateral was spent attempting to find a thicker 1-C zone and then to try to stay in the thin 1-C zone. The overall best porosity in this northwest lateral was in the oolitic to oomoldic limestone grainstones of the 1-B zone. Although poorly represented in the lateral, in terms of horizontal distance penetrated, the dolomites of the 1-C did show fair intercrystalline porosity and sample shows. With the minor amounts of 1-C porosity combined with the good porosity of the 1-B zone near the end of the lateral, this lateral should, although possibly only marginally, contribute to the overall production of the 17-22 well. After discussion with the Mobil geology department, the lateral was terminated within the 1-B porosity zone, due to the proximity of the well bore of the R.U. 17-11 well.

MOBIL, Ratherford Unit #17-22, Northwest Lateral Legs 1 & 3





MOBIL

**RATHERFORD UNIT #17-22
SE HORIZONTAL LATERAL LEG #2
1-B POROSITY BENCH
DESERT CREEK MEMBER
PARADOX FORMATION
SECTION 17, T41S, R24E
SAN JUAN, UTAH**

**GEOLOGY REPORT
by
DAVE MEADE / MARVIN ROANHORSE / LUKE TITUS
ROCKY MOUNTAIN GEO-ENGINEERING CORP.
GRAND JUNCTION, COLORADO
(970) 243-3044**

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WELL SUMMARY

OPERATOR: MOBIL EXPLORATION & PRODUCTION U.S. INC.

NAME: RATHERFORD UNIT #17-21 SE HORIZONTAL LATERAL
LEG #2 IN DESERT CREEK 1-B POROSITY BENCH

LOCATION: SECTION 17, T41S, R24E

COUNTY/STATE: SAN JUAN, UTAH

ELEVATION: KB:4716' GL:4739'

SPUD DATE: 5/05/98

COMPLETION DATE: 5/19/98

DRILLING ENGINEER: BENNY BRIGGS

WELLSITE GEOLOGY: DAVE MEADE / MARVIN ROANHORSE/ LUKE TITUS

**MUDLOGGING
ENGINEERS:** DAVE MEADE / MARVIN ROANHORSE/ LUKE TITUS

CONTRACTOR: BIG "A" RIG 25
TOOLPUSHER: J. DEES

HOLE SIZE: 4 ¾"

CASING RECORD: SIDETRACK IN WINDOW AT 5424' MEASURED DEPTH

DRILLING MUD: M-I
ENGINEER: MIKE PITTSINGER /RON WESTENBERG
MUD TYPE: FRESH WATER & BRINE WATER W/ POLYMER SWEEPS

**DIRECTIONAL
DRILLING CO:** SPERRY-SUN

ELECTICAL LOGGING: NA

TOTAL DEPTH: 7181' MEASURED DEPTH; TRUE VERTICAL DEPTH- 5527'

STATUS: TOH & LAY DOWN TOOLS – PREPARE WELL FOR LEG #3

DRILLING CHRONOLOGY
RATHERFORD UNIT #17-22
1-B SE HORIZONTAL LATERAL LEG #2

DATE	DEPTH	DAILY	ACTIVITY
5/15/98	7216'	9'	TOH-NO WHIPSTOCK-TIH W/ SUPER HOOK-RETRIEVE WHIPSTOCK-TOH-L.D. WHIPSTOCK #1-P.U. WHIPSTOCK #2 & ORIENT-TIH W/WHIPSTOCK-SET @ 5414' & SHEAR OFF-CIR BTMS UP-THRU CHOKE-MILL 5415' TO 5417'-CIR & TOH-L.D. STARTER MILL & HOOK ASSEM.-P.U. WHINDOW & WATER MELLON MILLS-TIH-MILL 5415' TO 5424'-CIR BTMS UP-TOH
5/16/98	5424'	158'	TOH-L.D. MILLS-P.U. CURVE ASSEM.-ORIENT & TEST-TIH-CIR-R.U. GYRO DATA-RUN GYRO-TIME DRLG 5424' TO 5427'-DIR DRLG & WIRE LINE SURVEYS TO 5455'-PULL GYRO & R.D. GYRO DATA-DIR DLG & SURVEYS
5/17/98	5582'	514'	DIR DRLG & SURVEYS TO 5589'-PUM- SWEEP & CIR OUT SPLS-PUMP 15 BBLS BRINE-L.D. 63 JTS PIPE-TOH-L.D. CURVE ASSEM.-P.U. LATERAL ASSEM.-ORIENT & TEST-TIH-P.U. 6 JTS AOH-CIR GAS-DIR DRLG & SURVEYS
5/18/98	6096'	387'	DIR DRLG & SURVEYS
5/19/98	6483'	698'	DIR DRLG & SURVEYS TO 7181' (TD)-PUMP SWEEP & CIR OUT SPLS-PUMP 20 BBLS BRINE-L.D. 1 JT-TOH TO WINDOW-DISPLACE HOLE W/BIRNE-TOH
5/20/98	7181'	TD	

DAILY ACTIVITY

Operator: MOBIL

Well Name: RATHERFORD UNIT #17-22 SE 1-B HORIZONTAL LATERAL LEG #2

DATE	DEPTH	DAILY	DATE	DEPTH	DAILY
5/15/98	7216'	9'			
5/16/98	5424'	158'			
5/17/98	5582'	514'			
5/18/98	6096'	387'			
5/19/98	6483'	698'			
5/20/98	7181'	TD			

BIT RECORD

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #17-22 SE 1-B HORIZONTAL LATERAL LEG #2

RUN	SIZE	MAKE	TYPE	IN/OUT	FTG	HRS	FT/HR
#1 (RR)	4 3/4"	STC	MF-3P	5424'/ 5589'	165'	16	10.3
#2	4 3/4"	STC	MF-37P	5589'/ 7181'	1592'	58.5	27.2

MUD REPORT

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #17-22 SE 1-B HORIZONTAL LATERAL LEG #2

DATE	DEPTH	WT	VIS	PLS	YLD	GEL	pH	WL	CK	CHL	CA	SD	OIL	WTR
5/15/98	NO CHECK													
5/16/98	5424'	8.9	28	1	0	0/0	12.0	NC	NC	52000	880	2	1%	97%
5/17/98	5600'	8.9	28	1	0	0/0	12.0	NC	NC	51000	920	2	1%	97%
5/18/98	6191'	8.9	28	1	0	0/0	11.5	NC	NC	56000	1800	2	1%	97%
5/19/98	6774'	8.9	27	2	1	0/0	11.0	NC	NC	60000	1920	1	1%	98%

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/17-22, 2A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
5400.00	0.44	214.61	5399.45	18.41 N	10.63 E	-8.98	0.00
5415.00	0.34	219.74	5414.45	18.33 N	10.57 E	-8.95	0.71
5424.00	4.30	145.00	5423.44	18.03 N	10.75 E	-8.61	46.92
5434.00	8.50	157.50	5433.38	17.04 N	11.24 E	-7.51	44.01
5444.00	14.10	161.20	5443.18	15.20 N	11.92 E	-5.62	56.44
5454.00	19.80	163.00	5452.74	12.43 N	12.81 E	-2.83	57.23
5464.00	25.50	163.40	5461.97	8.74 N	13.92 E	0.82	57.02
5474.00	31.30	164.10	5470.76	4.18 N	15.25 E	5.32	58.09
5484.00	36.70	164.70	5479.05	1.21 S	16.75 E	10.59	54.10
5494.00	41.40	163.30	5486.81	7.26 S	18.49 E	16.55	47.82
5504.00	46.10	159.90	5494.03	13.81 S	20.68 E	23.18	52.54
5514.00	50.90	156.90	5500.66	20.77 S	23.44 E	30.46	52.99
5524.00	56.70	155.70	5506.56	28.16 S	26.69 E	38.37	58.80
5534.00	62.30	155.30	5511.63	35.99 S	30.26 E	46.84	56.11
5544.00	67.40	156.00	5515.88	44.24 S	33.99 E	55.73	51.39
5554.00	72.60	154.40	5519.30	52.76 S	37.93 E	64.98	54.13
5564.00	77.70	152.60	5521.86	61.41 S	42.24 E	74.53	53.88
5589.00	89.80	152.70	5524.58	83.44 S	53.64 E	99.12	48.40
5624.00	92.70	150.00	5523.82	114.14 S	70.41 E	133.89	11.32
5656.00	90.30	149.10	5522.98	141.72 S	86.62 E	165.77	8.01
5688.00	93.20	150.70	5522.00	169.39 S	102.66 E	197.64	10.35
5719.00	89.60	149.50	5521.25	196.25 S	118.11 E	228.50	12.24
5751.00	91.00	147.40	5521.08	223.51 S	134.85 E	260.44	7.89
5783.00	90.40	147.40	5520.69	250.47 S	152.09 E	292.41	1.87
5815.00	91.80	146.30	5520.07	277.26 S	169.58 E	324.38	5.56
5847.00	88.50	145.10	5519.99	303.69 S	187.61 E	356.38	10.97
5878.00	91.40	146.00	5520.02	329.25 S	205.15 E	387.37	9.79
5909.00	90.30	145.10	5519.56	354.81 S	222.68 E	418.37	4.58
5941.00	90.10	144.70	5519.44	380.99 S	241.08 E	450.37	1.40
5973.00	91.80	145.40	5518.91	407.21 S	259.41 E	482.36	5.75
6005.00	87.50	145.10	5519.11	433.50 S	277.65 E	514.35	13.47
6037.00	84.90	143.90	5521.23	459.49 S	296.18 E	546.28	8.95
6069.00	86.70	144.40	5523.57	485.36 S	314.87 E	578.19	5.84
6100.00	88.10	146.00	5524.98	510.78 S	332.55 E	609.15	6.85
6132.00	90.50	144.60	5525.37	537.09 S	350.76 E	641.15	8.68
6164.00	92.30	145.60	5524.59	563.32 S	369.06 E	673.13	6.43
6196.00	92.50	146.00	5523.25	589.77 S	387.03 E	705.10	1.40
6228.00	94.30	146.00	5521.35	616.25 S	404.90 E	737.04	5.63

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/17-22, 2A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
6259.00	90.00	145.10	5520.19	641.79 S	422.42 E	768.01	14.17
6291.00	89.60	146.10	5520.30	668.19 S	440.49 E	800.01	3.37
6323.00	87.10	146.80	5521.22	694.85 S	458.17 E	831.98	8.11
6355.00	87.50	146.50	5522.73	721.55 S	475.74 E	863.93	1.56
6386.00	85.70	145.80	5524.57	747.25 S	492.98 E	894.87	6.23
6418.00	89.30	144.90	5525.96	773.54 S	511.15 E	926.83	11.60
6449.00	89.70	142.60	5526.23	798.54 S	529.48 E	957.82	7.53
6480.00	90.20	144.00	5526.26	823.39 S	548.01 E	988.81	4.80
6512.25	88.30	143.20	5526.68	849.35 S	567.14 E	1021.04	6.39
6544.00	89.60	142.50	5527.26	874.65 S	586.31 E	1052.77	4.65
6576.00	89.90	140.70	5527.40	899.72 S	606.19 E	1084.71	5.70
6607.00	89.80	140.70	5527.49	923.71 S	625.82 E	1115.62	0.32
6639.90	88.90	140.70	5527.86	949.17 S	646.66 E	1148.42	2.74
6671.00	89.60	140.30	5528.27	973.17 S	666.44 E	1179.43	2.59
6703.00	90.10	140.50	5528.35	997.82 S	686.84 E	1211.32	1.68
6734.00	91.10	140.90	5528.02	1021.81 S	706.47 E	1242.23	3.47
6766.00	89.10	140.70	5527.97	1046.61 S	726.70 E	1274.15	6.28
6796.00	89.40	141.40	5528.36	1069.94 S	745.55 E	1304.07	2.54
6828.00	89.90	141.60	5528.56	1094.98 S	765.47 E	1336.01	1.68
6860.00	88.90	141.40	5528.89	1120.02 S	785.39 E	1367.95	3.19
6892.00	90.70	141.90	5529.00	1145.11 S	805.25 E	1399.89	5.84
6924.00	90.90	143.20	5528.56	1170.52 S	824.70 E	1431.86	4.11
6954.00	90.20	143.70	5528.27	1194.61 S	842.57 E	1461.85	2.87
6986.00	88.90	143.20	5528.52	1220.32 S	861.62 E	1493.83	4.35
7018.00	90.40	143.70	5528.72	1246.03 S	880.68 E	1525.82	4.94
7050.00	87.90	143.20	5529.19	1271.73 S	899.73 E	1557.80	7.97
7081.00	88.30	144.40	5530.22	1296.73 S	918.03 E	1588.78	4.08
7113.00	91.80	144.70	5530.19	1322.79 S	936.59 E	1620.77	10.98
7145.00	93.00	144.60	5528.85	1348.87 S	955.08 E	1652.74	3.76
* 7181.00	93.00	144.60	5526.97	1378.17 S	975.91 E	1688.69	0.00 *

THE DOGLEG SEVERITY IS IN DEGREES PER 100.00 FEET.
N/E COORDINATE VALUES GIVEN RELATIVE TO WELL HEAD.
TVD COORDINATE VALUES GIVEN RELATIVE TO WELL HEAD.
THE VERTICAL SECTION ORIGIN IS WELL HEAD.
THE VERTICAL SECTION WAS COMPUTED ALONG 145.00 (TRUE).
CALCULATION METHOD: MINIMUM CURVATURE.

* PROJECTED TO BIT

SAMPLE DESCRIPTIONS

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #17-22 SE 1-B HORIZONTAL LATERAL LEG #2

DEPTH	LITHOLOGY
5424.00 5430.00	"LS brn-mbrn,occ dkgybrn-blk,crpxl-micxl,cln-dns,v rthy-shy ip,scat Crin fos,sl dol,NFSOC,grdg to dkgy-blk lmy-sl dol mrly dkgy-blk sl carb-mica fos ip SH,v rr micxl arg-sl slty dkbrn v shy DOL lams & rr CMT cvgs"
5430.00 5440.00	"LS ltbrn-gybrn,crm-tan,occ wh,crpxl-micxl,dns,arg,mrly ip,v sl plty-chk,chtly,occ dol,slty ip,dns,tt,NFSOC,w/thn DOL incl brn-dkbrn micxl sl gran arg rthy,tt-tr intxl POR,n-v rr spty dull yel FLOR,tr brn STN,p slow dif CUT,decr SH ptgs"
5440.00 5450.00	"LS AA,incr plty-chk,rthy-sl slty,dol ip,tt,NFSOC,w/thn intbd lmy brn DOL incl-POR-FLOR-STN-CUT AA,v rr v thn dkgy-blk sl carb SH ptgs,v rr trnsl-bf CHT frag"
5450.00 5460.00	"LS crm-tan-ltgy-gybrn-brn,AA,v arg,occ chk,chtly-tr smky gy-brn CHT frag,v rr scat thn arg DOL lams-tr dkgy-blk carb SH ptgs-incl,NFSOC" □
5460.00 5480.00	"LS tan-ltbrn-brn,occ wh-crm,crpxl-micxl,rthy-chk,occ cln-dns,dol ip,occ arg,anhy,rr mic fos,v sl slty,dns,NFSOC,w/thn trnsl-xl ANHY incl-lams,v rr dkgy-blk SH ptgs,bcmg pred DOL brn-ltbrn,micxl,micsuc ip,rthy-sl slty,lmy,anhy,tt-fr intxl POR,"
5480.00 5490.00	"LS AA,w/scat v thn DOL AA bcmg dns tt v lmy decr POR-FLOR-STN-CUT,grdg to & bcmg pred dkgy-blk carb SH"
5482.00 5485.00	"mg dull-rr bri FLOR,rr ltbrn STN,fr slow dif-v rr mod fast stmg CUT" □
5490.00 5500.00	"SH dkgy-blk,sbblky-sbplty,occ fis,mica,calc-sl dol,v sl slty,carb-sooty,w/thn lams crm-tan crpxl dns LS & mbrn-brn micxl rthy sl lmy v arg DOL NFSOC"
5500.00 5508.00	"SH AA,pred cvgs-v thn ptgs,pred LS crm-tan-brn,crpxl-micxl,dns,occ chky,rthy,scat ANHY incl,dol ip,w/v thn brn micxl-crpxl lmy DOL,scat CHT frag,n vis POR,NFSOC"
5520.00 5530.00	"LS tan-crm-wh,tr brn,crpxl-micxl,cln,dns PCKST/rr GRNST,chky-anhy/tr xln ANHY-POR fl,tr agal mat,tt-tr intxl/rr ool POR,scat bri yel FLOR,rr dkbrn-blk dd o STN,g fast stmg mlky CUT" □
5530.00 5540.00	"LS AA,chky-sl anhy/tr xln ANHY-POR fl,tt-tr intxl POR, rr scat ool POR,g scat bri-mod bri yel FLOR,tr brn/rr dk brn-blk dd o STN,CUT AA"

DEPTH	LITHOLOGY
5540.00 5550.00	"LS tan-crm-wh, tr brn, crpxl-micxl, pred PCKST/rr GRNST frag, cln, dns, chky-anhy/tr xln ANHY-POR fl, tr CHT, POR-FLOR-STN-CUT AA"
5550.00 5560.00	"LS tan, crm-wh, occ ltbrn, micxl-crppl, pred PCKST/rr GRNST frag, chky-anhy/tr xln ANHY-POR fl, sl agal-tr mic fos, cln, dns, tt-tr intxl POR, scat bri yel FLOR, tr brn STN, CUT AA" □
5560.00 5570.00	"LS AA, pred dns-chky PCKST, rr scat ool GRNST, anhy/tr xln ANHY, tt-fr intxl-rr ool POR, scat mod bri yel FLOR, fr ltbrn/tr brn-blk STN, g slow stmg mlky CUT"
5570.00 5589.00	"LS ltbrn, tan, occ crm-off wh, tr brn, gran-micxl, occ crpxl, ool-oom GRNST/thn intbd dns-chky PCKST, tr xln ANHY, sl dol/tr DOL rich cmt, g ool/tr intxln POR, g even mod bri/scat bri yel FLOR, g ltbrn-brn/tr blk STN, g mod fast stmg mlky CUT"
5589.00 5600.00	"LS AA, w/thn intbd dns ool PKST, occ well cmt POR w/DOL-ANHY cmt, mfr-fr ool-intxl POR, fr dull-bri yel FLOR, fr ltbrn-tr dkbrn-blk STN, fr slow-tr mod fast stmg CUT, rr CHT frag, tr blk carb SH CVGS"
5600.00 5610.00	"LS pred wh-crm-tan, crpxl-micxl, plty-chk, occ anhy-v sl dol PKST w/v thn intbd ooc-oom GRNST, decr POR-FLOR-STN-CUT, rr CHT frag, tr SH CVGS"
5610.00 5630.00	"LS tan-brn, crm-wh, crpxl-vfxl, occ plty-chk, tr gran, pred intbd ooc-oom GRNST & dns sl ool sl chty PKST, tr DOL cmt, scat ANHY xl-incl-cmt ip, rr bf-trnsl CHT frag, tt-fr intxl-ool POR, mfr dull-bri yel FLOR, n-fr brn STN, rr spty blk dd o STN, fr slow-fast CUT "
5630.00 5650.00	"LS bcmg pred g ooc-oom GRNST w/thn intbd sl ool dns chky-plty PKST, tr abnt DOL-CALC cmt, scat ANHY xl-incl, rr bf-trnsl CHT frag, tt-mg ool-intxl POR, tr-fr dull-bri yel FLOR, tr-g brn STN, incr blk dd o STN, fr slow-mfr mod fast stmg CUT"
5650.00 5660.00	"LS AA, pred g ooc-oom GRNST w/rr thn PKST AA, fr-mg ool-intxl POR, mg dull-mfr bri yel FLOR, mg brn-mbrn-rr blk STN, fr-mg mod fast-fast stmg CUT, v rr CHT frag" □
5660.00 5670.00	"LS bcmg pred wh-crm-tan crpxl sl ool PKST, w/incr DOL-rr ANHY cmt, decr POR-FLOR-STN-CUT, sl incr CHT frag" □
5670.00 5680.00	"LS wh-crm, tan-brn, crpxl-vfxl, occ gran-micsuc, plty-chk ip, intbd ooc-oom GRNST & dns sl ool PKST, v rr CHT frag, rr ANHY xl-incl, sl dol cmt, tt-fr intxl-ool POR, incr FLOR-STN-CUT"
5680.00 5700.00	"LS wh-crm, tan-brn, crpxl-vfxl, gran-micsuc, plty-chk ip, pred ooc-oom GRNST w/tr dns sl ool PKST incl, v rr CHT frag, rr ANHY xl-incl, sl dol cmt, rr-mg intxl-ool. POR, fr-mg bri-dull yel FLOR, fr brn-dkbrn STN-tr blk dd o STN, fr-mg mod fast-fast stmg CUT"

DEPTH	LITHOLOGY
5700.00 5720.00	"LS AA,w/scat tan-ltbrn,occ crm-wh sl ool occ pkty-chk PKST frag,fr-g intxl-ool POR,mg dull-bri yel FLOR,mfr-mg lt-dkbrn STN-tr blk dd o STN,fr-mg mod fast-fast stmg CUT" □
5720.00 5740.00	"LS tan-mbrn,occ wh-crm,micxl-vfxl,gran-micsuc,pred ooc-oom GRNST w/tr crpxl plty-chk dns sl ool PKST incl,v rr CHT frag,rr ANHY xl-incl,tr DOL cmt,fr-g intxl-ool POR,fr-mg bri-dull yel FLOR,fr-g brn-dkbrn STN-tr blk dd o STN,fr-mg mod fast-fast stmg CUT"
5740.00 5760.00	"LS AA,v sl incr dns crpxl plty-chk occ ool-v rr mic fos PKST,rr scat ANHY xl-incl,tr DOL rich CMT,fr-mg POR-FLOR-STN-CUT" □
5760.00 5780.00	"LS,ltbngy-tn-crm-libn,mott,mic-vf xln,pred oom-ooc GRNST,sme vscat sl ool mdns PCKST,ool,tr anhy xls,vsl dolo;pred m-f oom/occ to introol fab POR,fr-dkbrn-blk o STN,mf-fr fast strm/dif CUT,mbri yelgld FLOR"
5780.00 5800.00	"LS AA,sl incr mdns sl chlky-sl ool PCKST,pred GRNST,scat anhy xls,rr chlky cast flgs,sl dolo;pred oom/occ fab POR,mbri-bri yelgld FLOR,fr-fast strm CUT"
5800.00 5820.00	"LS,tn-crm-ltbn,mott,mic-vf xl,pred oom-ooc-sl suc GRNST w/sme mdns sl ool/sl dolo PCKST,tr chlky mat,rr anhy xl,rr cht frgs;pred oom/occ to introol w/ f intrxl fab POR,mbri-bri yelgld FLOR,mf-fast dif CUT,tr dd o STN res,mg-dkbrn-blk o STN"
5820.00 5840.00	"LS AA,sl incr in calc/chlky cast flgs,sl incr ool PCKST,rr calc frac flgs,ool,tr pel,rr anhy xls;pred f-interxln to oom/occ fab POR,fast-mg slo dif CUT,mbri-sptty bri yelgld FLOR,g-mg dkbrn o STN,blk dd cast o STN"
5840.00 5860.00	"LS,ltbn-ltgybn-tn-crm,mott,mic-vf xln,grn-sl suc mtx,pred oom/occ GRNST,scat mdns-dns sl ool crm PCKST,sl dolo mtx,rr chlky mat,rr calc frac flgs;pred oom/occ to f-intrxln w/sme introol fab POR,mbri-bri yelgld FLOR,fast f-dif CUT,mg-blk-dkbrn o STN"
5860.00 5880.00	"LS,tn-crm-ltbn,mott,mic-vf xl,pred oom-occ-sl suc GRNST w/sme mdns sl ool/sl dolo PCKST,tr chlky mat,rr anhy xl,rr cht frgs;pred oom/occ to introol w/ f intrxl fab POR,mbri-bri yelgld FLOR,mf-fast dif CUT,tr dd o STN res,mg-dkbrn-blk o STN"
5880.00 5900.00	"LS AA,sl incr f-intrxl fab POR,pred GRNST,sl dolo,scat anhy xls;pred oom-occ-interool fab POR,blk-dkbrn o STN,mf-fast strm/dif CUT,bri yelgld FLOR" □
5900.00 5920.00	"LS,ltbn-ltgybn-tn-occ crm,mott,mic-vf xln,sl suc-sl grn mtx,mdns mtx,sl dolo,pred oom/occ GRNST,crm-sl ool f-intrxl PCKST,rr anhy xls,sme calc/chlky cast flgs;pred oom-occ to interool to f-intrxln fab POR,mbri-bri yelgld FLOR,f-fast dif CUT,blk-dkbrno STN"

DEPTH	LITHOLOGY
5920.00 5940.00	"LS,ltbrn-tn-crm,mott,mic-vf xln,pred oom/occ GRNST w/sme crm-slo ool PCKST,rr calc frac flgs,sme cacl cast flgs;pred oom-occ to f-intrxln w/sme introol fab POR,blk o STN cast flgs,bri yelgld FLOR,mf-fast dif CUT,dkbrn o STN"
5940.00 5960.00	"LS,ltbngy-tn-crm-libn,mott,mic-vf xln,pred oom-occ GRNST,sme vscat sl ool mdns PCKST,ool,tr anhy xls,vsl dolo;pred m-f oom/occ to introol fab POR,fr-dkbrn-blk o STN,mf-fr fast strm/dif CUT,mbri yelgld FLOR"
5960.00 5980.00	"LS,ltbrn-tn-crm,mott,mic-vf xln,sl suc-grn mtx,sl dolo,pred oom-occ to sl introol GRNST,scat crm-sl ool-sl chky PCKST,tr anhy xls;pred f-interxln to oom/occ w/sme introol fab POR,mbri-bri yelgld FLOR,fr-fast dif CUT,blk cast fld o STN,mf-dkbrn o STN"
5980.00 6000.00	"LS,ltbrn-tn-ltgybn-occ crm,mott,mic-vf xln,pred GRNST,sme PKST,rr calc frac flgs,tr anny xls,chky,sl rthy, sl dolo;pred oom/occ to f-intrxln to interool fab POR,mbri-bri yelgld FLOR,mf-fr fast dif CUT,dkbrn-blk o STN"
6000.00 6020.00	"LS,ltbrn-tn-crm,mott,mic-vf xln,pred oom/occ GRNST w/sme crm-sl ool PCKST,rr calc frac flgs,sme calc cast flgs;pred oom-occ to f-intrxln w/sme introol fab POR,blk o STN cast flgs,mbri-bri yelgld FLOR,mf-fast dif CUT,dkbrn-blk o STN"
6020.00 6040.00	"LS,ltbn-tn-crm,mott,mic-vf xln,sl suc-grn,pred GRNST,scat PCKST,ool,scat calc cast flgs;pred oom/occ to f-interxln,interool fab POR,mbri-bri yelgld FLOR,fast fr-dif strm CUT,mf-blk-dkbrn o STN" □
6040.00 6060.00	"LS,ltbrn-tn-crm,mott,mic-vf xln,pred oom/occ GRNST w/sme crm-slo ool PCKST,rr calc frac flgs,sme cacl cast flgs;pred oom-occ to f-intrxln w/sme introol fab POR,blk o STN cast flgs,bri yelgld FLOR,mf-fast dif CUT,dkbrn o STN"
6060.00 6080.00	"LS,ltbrn-tn-crm,mott ip,crpt-mic-vf xln,sl suc-grn mtx,pred mdns mtx,decr oom/occ GRNST,mdns-sl ool-ool crm PCKST,rr anhy xls;pred oom/occ to mf-fr intrxln fab POR,dkbrn-blk o STN,mbri yelgld FLOR,fst-slo dif strm CUT"
6080.00 6100.00	"LS,crm-tn-offwht,sl mott ip,mic-occ vf xln,pred sl ool-sl plty mdns-dns-occ tt mtx PCKST,scat oom/occ sl suc GRNST,tr ANHY xls,sme offwht chky carb mat;pred intrxl to scat oom/occ fab POR,sptty blk cast fld o STN,dkbrn o STN,dul-mbri yelgld FLOR,m-strmCUT"
6100.00 6120.00	"LS,tn-crm-offwht,sl mott,mic-vf xln,mdns-dns mtx,scat sl suc-grn mtx,pred sl ool PCKST,chky,scat anhy,sl rthy ip,tr GRNST AA;pred intxln w/sme scat oom/occ fab POR,mbri-sptty bri yelgld FLOR,m-slo strm-dif CUT,m-dkbrn-blk o STN"

DEPTH	LITHOLOGY
6120.00 6130.00	"LS crm-tan, occ wh, rr lt-mbrn, crpxl-vfxl, rr gran-micsuc, pred dns sl anhy occ chk-pty v sl ool PKST, w/thn stks ooc-oom GRNST, rr DOL rich cmt, v rr CHT frag-ANHY xl, tt-tr intxl-rr ool POR, tr dull-bri yel FLOR, tr brn-mbrn-rr blk STN, tr fr slow-mod fast CUT"
6130.00 6150.00	"LS AA, incr pty-chk dns rthy sl anhy PKST, w/v thn stks ooc-oom GRNST, v rr bf-trnsl CHT frag, tt-rr intxl-v rr ool POR, tr bri-dull yel FLOR, rr-tr spty lt-dkbrn STN, tr slow-rr mod fast stmg mlky CUT" □
6150.00 6160.00	"LS tan-crm, rr brn-mbrn, crpxl-micxl, rr vfxl-gran, pred dns occ pty-chk v sl anhy PKST, w/v thn stks sl ooc-oom GRNST, rr DOL cmt, v rr scat trnsl CHT frag, tt-v rr stks intxl-ool POR, rr-tr spty bri-dull yel FLOR, rr spty brn-v rr blk STN, rr tr slow stmg CUT"
6160.00 6170.00	"LS AA, v sl incr GRNST, POR-FLOR-STN-CUT AA"
6170.00 6190.00	"LS tan-crm, rr brn-mbrn, crpxl-micxl, rr vfxl-gran, pred dns occ pty-chk v sl anhy PKST, w/v thn stks sl ooc-oom GRNST, rr DOL cmt, v rr scat trnsl CHT frag, tt-v rr stks intxl-ool POR, rr-tr spty bri-dull yel FLOR, rr spty brn-v rr blk STN, rr tr slow stmg CUT"
6190.00 6210.00	"LS AA, v sl incr sl ooc-oom GRNST, POR-FLOR-STN-CUT AA" □
6210.00 6220.00	"LS crm-tan-brn, occ mbrn, rr wh, crpxl-vfxl, gran-micsuc ip, bcmg pred ooc-oom GRNST, decr occ pty-chk dns v sl ooc tt PKST, rr-tr DOL cmt, rr scat CHT frag, v sl anhy, tt-mg intxl-ool POR, fr dull-bri yel FLOR, n-fr brn-rr bl STN, n-mg mod fast-fast stmg CUT"
6220.00 6230.00	"LS pred lt-mbrn, AA, pred ooc-oom GRNST, v rr PKST frag, fr-g intxl-ool POR, mg bri yel FLOR, fr-mg brn STN, tr blk dd o STN, mg fast stmg CUT"
6230.00 6240.00	"LS AA, bcmg wh-crm chk-pty dns sl ool PKST, decr POR, bcmg pred tt w/v rr FLOR-STN-CUT" □
6240.00 6250.00	"LS crm-tan-ltbrn, occ wh-brn, crpxl-vfxl, pred intbd dns sl ool anhy occ pty-chk PKST & ooc-oom GRNST, tr DOL cmt, sl anhy-rr ANHY xl-POR fl, n-v rr trnsl-bf CHT frag, tt-tr intxl-ool POR, tr-fr dull-bri yel FLOR, n-tr lt-dkbrn STN-rr blk dd o STN, n-mfr stmg CUT"
6250.00 6270.00	"LS AA, bcmg pred dns pty-chk tt PKST, w/decr ooc-oom GRNST, n-mfr dull-bri yel FLOR, v rr-mfr lt-dkbrn STN-v rr-tr blk dd o STN, n-mg slow-fast stmg CUT"
6270.00 6280.00	"LS AA, pred dns v sl ool anhy incr chk-pty PKST, w/v thn intbd ooc-oom GRNST, decr POR-FOR-STN-CUT" □
6280.00 6300.00	"LS tan-ltbrn, occ crm-wh, rr brn, crpxl-micxl, occ vfxl-rr gran, pred dns v rr mic fos-v sl anhy chk-pty PKST, w/v thn stks sl ooc-oom GRNST, rr DOL cmt-ANHY xl, tt-mfr ool-rr intxl POR, tr-mfr bri-dull yel FLOR, spty lt-dkbrn-rr blk dd o STN, rr slow-mod fast CUT"

DEPTH

LITHOLOGY

6300.00 6310.00 "LS AA,pred dns PKST AA,w/thn stks ooc-oom GRNST,rr-tr ool-intxl POR,tr spty bri-dull yel FLOR,rr-tr spty brn STN-v rr blk dd o STN,mfr slow-rr mod fast stmg CUT"

6310.00 6320.00 "LS pred tan-crm,ltbrn ip,rr wh,crpxl-micxl,dns,occ chk-plty,v sl anhy PKST w/v rr CHT frag,v rr scat thn stks sl ooc-oom GRNST w/rr-tr intxl-ool POR,tr spty FLOR-STN-CUT"

6320.00 6340.00 "LS tan-ltbrn,occ crm-wh,rr brn,crpxl-micxl,rr vfxl-gran,pred dns v rr mic fos-v sl anhy chk-plty PKST,w/v thn stks sl ooc-oom GRNST,v rr DOL cmt-ANHY xl,tt-tr ool-rr intxl POR,tr spty bri-dull yel FLOR,spty lt-dkbrn-rr blk dd o STN,rr slow-mod fast CUT"

6340.00 6350.00 "LS AA,pred dns tt v sl ool anhy-v rr dol occ plty-chk PKST,w/v rr scat ooc-oom GRNST,tt-v rr POR-FLOR-STN-CUT"

6350.00 6370.00 "LS,tn-crm-occ ltbn,mott,mic xln,mdns-dns mtx,sl dolo mtx,pred mdns-occ tt foss-ool PCKST,sme strks red-pr oom/occ GRNST,rr chlky carb mat,rr anhy xls;pred pr-m intrxln to ool POR,sptty dd blk cast fld oSTN,pred dkbrn mtx o STN,dul-sptty mbri yel FLOR "

6370.00 6400.00 "LS,ltbrn-tn-crm,mott,mic-vf xln,mdns mtx,sl dolo,pred foss-ool PCKST intrbd w/m-oom/occ ool GRNST,rr transl CHT frgs,scat xln ANHY,micro foss,ool rich;pred f-interxl to oom/occ fab POR,dd blk cast fls oSTN,m-mf dkbrn o STN,mf-f slo dif CUT,mbri-bri FLOR"

6390.00 6410.00 "LS AA,sl incr pr-m oom/occ sl suc GRNST,v-rr CHT frgs,decr foss frgs,rr calc frac flgs,ool;pred f-intrxln to red-pr-m oom/occ fab POR,mf-dkbrn oSTN,sptty blk cast fld o STN,mbri-bri yelgld FLOR,fst dif-slo strm bloom CUT"

6410.00 6430.00 "LS,ltbrn-tn-crm,mott,mic-pred vf xln,sl suc-occ grn mtx,mdns mtx,pred oom/occ ool GRNST to mdns sl ool vf xln PCKST,rr foss frgs,sl chlky,rr anhy xls;pred oom/occ to f-intrxln fab POR,mbri-bri yelgld FLOR,mf-fast dif strm CUT,mf-dkbrn-ltbrn-blk o STN"

6430.00 6460.00 "LS,tn-crm-ltbn,mott,mic-vf xl,pred oom-occ-sl suc GRNST to mdns sl ool/sl dolo PCKST,tr chlky mat,rr anhy xl,rr foss frgs;pred oom/occ to f intrxl fab POR,mbri-bri yelgld FLOR,mf-fast dif CUT,mf dd o STN res,mg-dkbrn-blk o STN"

6460.00 6480.00 "LS,ltbrn-tn-crm,sl mott,mic-vf xln,sl suc-occ grn mtx,sl dolo,pr-f oom/occ ool GRNST,sl ool-chlky oc vf xln PCKST,v-rr CHT frgs,chlky ip;pred mf-f intrxln to red-pr-f oom/occ fab POR,dd blk oSTN,dkbrn mtx o STN,mbri-bri yelgld FLOR,fst-slo dif strm CUT"

6480.00 6500.00 "LS,ltbrn-tn-crm,mott,mic-pred vf xln,sl suc-occ grn mtx,mdns mtx,pred oom/occ ool GRNST to mdns sl ool vf xln PCKST,rr foss frgs,rr anhy xls;pred oom/occ to f-intrxln fab POR,mbri-bri yelgld FLOR,mf-fast dif strm CUT,mf-dkbrn-ltbrn-blk o STN"

DEPTH	LITHOLOGY
6500.00 6520.00	"LS,ltbrn-tn-crm,mott,mic-pred vf xln,sl suc-grn mtx,occ-oom GRNST,tr sl ool mdns PCKST,rr ANHY xls,rr calc frac flgs,tr calc/chlky cast flgs;pred oom to occ w/sme intrxln fab POR,mg-g blk-dkbrn o STN,mbri yelgld FLOR,fast dif strm CUT"
6520.00 6540.00	"LS,tn-crm-ltbrn,mic-vf xln,sl suc-grn mtx ip,pred oom-occ ool GRNST,tr crm sl chlky-sl plty PCKST,rr cht frgs;pred oom-occ to f-intrxln fab POR,tr interool fab POR,mbri-bri yelgld FLOR,f-fast-slo dif CUT"
6540.00 6560.00	"LS,ltbrn-tn-crm-occ offwht,sl mott,mic-pred vf xln,grn mtx ip,mdns mtx ip,pred pr-red oom/occ GRNSTto sl ool chlky offwht mdns PCKST,rr calc frac flgs,rr anhy xls;pred oom/occ to intrxln fab POR,bri yelgld FLOR,fast dif CUT to m-slo strm CUT,blkdkbno STN"
6560.00 6580.00	"LS,ltbrn-tn-crm,mic-pred vf xln,mdns mtx ip,sl suc-grn mtx,pred oom-occ ool GRNST,tr sl ool-sl chlky PCKST,rr anhy xls;pred pr-occ g oom/occ fab POR to f-intrxl fab POR,pred dkbn-ltbn w/sme spty blk o STN,mbri-bri yelgld FLOR,fst-slo dif strm CUT"
6580.00 6600.00	"LS,ltbrn-tn-crm-occ offwht,mic-pred vf xln,sl suc-occ grn mtx,mdns mtx,pred oom/occ ool GRNST to mdns sl ool vf xln PCKST,rr foss frgs,rr anhy xls;pred pr-m oom/occ to f-intrxln fab POR,mbri-bri yelgld FLOR,mf-fast dif strm CUT,mf-dkbrn-ltbrn-blk o STN"
6600.00 6610.00	"LS AA,pred g ooc-oom GRNST,rr scat PKST frag,g ool-tr intxl POR,mg bri yel FLOR,fr-g ltbrn-tr blk dd o STN,g mod fast-fast stmg CUT"
6610.00 6640.00	"LS tan-crm,ltbrn,rr wh,crpxl-vfxl,gran-micsuc ip,pred ooc-oom GRNST,w/rr scat dns sl chty-anhy rr plty PKST frag-incl,sl DOL rich cmt,v rr ANHY xl-trnsl CHT frag,fr-g ool-tr intxl POR,mg bri yel FLOR,fr-mg ltbrn-brn STN,tr blk dd o STN,mg fast stmg CUT"
6640.00 6650.00	"LS AA,v sl incr PKST frag,pred ooc-oom GRNST,w/POR-FLOR-STN-CUT AA"
□	
6650.00 6670.00	"LS tan-ltbrn,occ crm-brn-rr wh,micxl-vfxl,gran-micsuc ip,pred ooc-oom GRNST,sl incr dns plty-chk v sl fos PKST frag,rr CHT frag-ANHY xl,sl DOL cmt,fr-g ool-tr intxl POR,mg bri yel FLOR,mfr-fr ltbrn-brn STN-rr spty blk dd o STN,fr-g mod fast-fast stmg CUT"
6670.00 6690.00	"LS AA,pred ooc-oom GRNST,w/v rr scat PKST frag,g ooc-fr intxl POR,mg bri yel FLOR,fr ltbrn-brn-rr spty blk STN,g mod fast-fast stmg CUT"
6690.00 6710.00	"LS tan-ltbrn,occ crm-brn-rr wh,micxl-vfxl,gran-micsuc ip,pred ooc-oom GRNST,scat dns plty-chk v sl fos PKST frag,rr CHT frag-ANHY xl,sl DOL cmt,fr-g ool-tr intxl POR,mg bri yel FLOR,mfr-fr ltbrn-brn STN-rr spty blk dd o STN,fr-g mod fast-fast stmg CUT"

DEPTH	LITHOLOGY
6710.00 6740.00	"LS pred ooc-oom GRNST w/incr plty-chk dns v sl ool-fos occ chty PKST,v sl decr POR,FLOR-STN-CUT AA"
6740.00 6760.00	"LS ltbrn,occ crm-tan-rr wh,micxl-vfxl,gran-micsuc ip,pred ooc-oom GRNST,rr dns plty-chk v sl fos PKST frag,rr trnsl CHT frag-ANHY xl,sl DOL cmt,fr-g ool-tr intxl POR,mg bri yel FLOR,mfr-fr ltbrn-brn STN-rr spty blk dd o STN,fr-g mod fast-fast stmg CUT"
6760.00 6780.00	"LS ltbrn-tan,occ crm-rr wh,brn ip,crpxl-vfxl,gran-micsuc,pred GRNST AA,v rr PKST frag-incl AA,n-v rr ANHY xl-CHT frag,g ool-fr intxl POR,g bri-tr dull yel FLOR,g ltbrn-brn STN,rr spty blk dd o STN,g mod fast-fast stmg CUT"
6780.00 6800.00	"LS ltbrn-brn-tan,occ crm-wh,micxl-vfxl,occ gran-micsuc,pred ooc-oom GRNST w/v rr scat dns v sl ool PKST,v rr scat ANHY xl-CHT frag,occ DOL cmt,g ool-intxl POR,g bri yel FLOR,fr-g brn STN,rr spty blk dd o STN,g mod fast-fast stmg CUT"
6800.00 6820.00	"LS AA,pred g ooc-oom GRNST,mg-g ool-intxl POR,mg bri-rr dull yel FLOR,g brn-rr blk STN,mg fast stmg CUT" □
6820.00 6850.00	"LS ltbrn-brn-tan,occ crm-wh,micxl-vfxl,gran-micsuc-rr suc,pred ooc-oom GRNST w/v rr scat dns v sl ool PKST,v rr scat ANHY xl-CHT frag,occ DOL cmt,g ool-intxl POR,g bri yel FLOR,fr-g brn-mbrn STN,rr spty blk dd o STN,g fast stmg mlky CUT"
6850.00 6870.00	"LS AA,pred ooc-oom GRNST,w/v rr scat dns v sl ool occ plty-chk sl anhy PKST frag,n-v rr trnsl-bf CHT frag,fr-g intxl-ool POR,g bri yel FLOR,mfr-fr ltbrn-brn STN,mg fast-mod fast stmg CUT"
6870.00 6900.00	"LS ltbrn-brn-tan,occ crm-wh,micxl-vfxl,gran-micsuc-rr suc,pred ooc-oom GRNST w/v rr scat dns v sl ool PKST,v rr scat ANHY xl-CHT frag,occ DOL cmt,g ool-intxl POR,g bri yel FLOR,fr-g brn-mbrn STN,rr spty blk dd o STN,g fast stmg mlky CUT"
6900.00 6920.00	"LS AA,v sl incr trnsl-bf CHT frag,mg-g POR-FLOR-STN-CUT AA"
6920.00 6940.00	"LS AA,sl incr wh plty-chk rthy sl anhy PKST frag,fr-g intxl-ool POR,g bri-rr dull yel FLOR,fr-mg ltbrn-brn STN,rr-tr blk dd o STN,g mod fast-fast stmg mlky CUT" □
6940.00 6960.00	"LS ltbrn-brn-tan,occ crm-wh,micxl-vfxl,gran-micsuc-rr suc,pred ooc-oom GRNST & v rr scat dns v sl ool PKST,v rr scat ANHY xl-CHT frag,occ DOL cmt,g ool-intxl POR,g bri yel FLOR,fr-g brn-mbrn STN,rr spty blk dd o STN,g fast stmg mlky CUT"
6960.00 6990.00	"LS AA,sl incr wh plty-chk rthy sl anhy PKST frag,n-v rr trnsl-bf CHT frag,g ool-fr-mg intxl POR,g bri-rr dull yel FLOR,fr-mg ltbrn-brn STN,rr-tr blk dd o STN,g mod fast-fast stmg mlky CUT"

DEPTH	LITHOLOGY
6990.00 7010.00	"LS AA,n-v rr wh plty-chk rthy sl anhy PKST frag,fr-g intxl-ool POR,g bri-v rr dull yel FLOR,fr-mg ltbrn-brn STN,rr-tr blk dd o STN,g mod fast-fast stmg mlky CUT"
7010.00 7030.00	"LS ltbrn-brn-tan,rr crm-wh,micxl-vfxl,gran-micsuc-rr suc,pred ooc-oom GRNST & v rr scat dns v sl ool PKST,v rr scat ANHY xl-CHT frag,sl DOL rich cmt,g ool-intxl POR,g bri yel FLOR,fr-g brn-mbrn STN,rr spty blk dd o STN,g fast stmg mlky CUT"
7030.00 7070.00	"LS ltbrn-brn-tan,rr crm-wh,micxl-vfxl,gran-suc,bcmg sl ooc-oom GRNST w/v rr scat dns tt crpxl PKST frag,v rr ANHY xl, rr trnsf-bf CHT frag,v sl DOL rich cmt,g intxl-fr ool POR,g bri yel FLOR,g brn-mbrn STN,rr-tr spty blk dd o STN,g fast stmg mlky CUT"
7070.00 7080.00	"LS AA,pred v g ooc-oom GRNST,w/sl incr crpxl-micxl v sl ool occ plty-chk PKST,rr scat trnsf-bf CHT frag,g intxl-ool POR,g bri yel FLOR,g lt-mbrn-occ dk brn STN,rr spty blk dd o STN,g fast stmg CUT"
7080.00 7100.00	"LS pred ooc-oom GRNST AA,incr dns v sl ool anhy occ plty-chk PKST,w/rr trnsf-bf CHT frag,tt-mg intxl-ool POR,fr-g bri yel FLOR,mg lt-dkbrn STN,rr-tr blk dd o STN,rr-v g mod fast-fast stmg mlky CUT"
7100.00 7120.00	"LS,ltbn-tn-crm,mott,mic-pred vf xln,mdns-sl suc-grn mtx,sl dolo,pred oom-occ ool GRNST,scat sl ool chlky PCKST,rr calc frac flgs,v-rr CHT frgs;pred oom/occ to f-interxl w/sme vrr introol fab POR,mg-g blk-dkbrn o STN,mf-f fast-dif slow CUT,g-bri yel FLOR"
7120.00 7140.00	"LS,ltbrn-tn-crm,mic-pred vf xln,mdns mtx ip,sl suc-grn mtx,pred oom-occ ool GRNST,tr sl ool-sl chlky PCKST,rr anhy xls;pred pr-occ g oom/occ fab POR to f-intrxl fab POR,pred dkbn-ltbn w/sme spty blk o STN,mbri-bri yelgld FLOR,fst-slo dif strm CUT"
7140.00 7160.00	"LS AA,pred g ooc-oom GRNST,rr scat PKST frag,g ool-tr intxl POR,mg bri yel FLOR,fr-g ltbrn-tr blk dd o STN,g mod fast-fast stmg CUT"
□	
7160.00 7181.00	"LS,ltbrn-tn-crm-offwht,sl mott-mott,mic-vf xln,sl suc mtx,mdns mtx,m-oom/occ GRNST to sl ool chlky dns PCKST,tr anhy xls,v-rr CHT frgs,rr foss frgs;pred mf-f intrxln to omm/occ fab POR,pred dkbrn o STN,spty dd o STN.mbri-bri yelgld FLOR,mf-slo strm difCUT"

FORMATION TOPS

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #17-22 SE 1-B HORIZONTAL LATERAL LEG #2

FORMATION NAME		SAMPLE	SAMPLE	DATUM
		MEASURED DEPTH	TRUE VERTICAL DEPTH	KB:4716'
LOWER ISMAY		5453'	5451'	-735'
GOTHIC SHALE		5487'	5481'	-765'
DESERT CREEK		5500'	5491'	-775'
DC 1-A ZONE		5509'	5497'	-781'
DC 1-A/1-B TRANSITION ZONE		5533'	5512'	-796'
DC 1-B ZONE		5551'	5521'	-805'
BEST POROSITY IN 1-B ZONE		5568'	5522'	-806'

GEOLOGICAL SUMMARY

AND

ZONES OF INTEREST

The Mobil Exploration and Production U.S., Inc., Ratherford Unit #17-22 Southeast Horizontal Lateral Leg #2 was a re-entry of the Mobil Ratherford Unit #17-22 located in Section 17, T41S, R24E, and was sidetracked in a southeasterly direction from a 5424' measured depth, 5424' true vertical depth, on May 15, 1998. The lateral reached a measured depth of 7181', true vertical depth of 5526.97' at total depth, with a horizontal displacement of 1688.7' and true vertical plane of 144.6 degrees on May 19, 1998 in the upper Desert Creek 1-B porosity zone. The curve and lateral sections of the lateral were drilled with no significant problems. The curve was landed at a true vertical depth of 5524.5', in an oolitic to oomoldic limestone grainstone, becoming a tight dense limestone packstone with depth, at or near the base of the thin 1-B porosity zone of the Desert Creek on May 17, 1998. The curve section of the hole was begun in the basal 29 feet of the Upper Ismay member of the Paradox Formation before encountering the typical sections of the Lower Ismay, Gothic Shale and Desert Creek members of the Paradox Formation.

The objective of the Ratherford Unit #17-22 leg #2 horizontal lateral were to penetrate and drill laterally in the 1-B porosity horizon of the Desert Creek member of the Paradox Formation to a horizontal displacement of 1700'. Additional objectives were to identify and define the lithology and evaluate the porosity and to determine the horizontal parameters of the 1-B porosity bench of the Desert Creek away from the original well bore. These objectives were accomplished in the 1-B zone with some difficulty due to the thickness of the zone at a horizontal distance of 730' away from the vertical well bore. Throughout the length of the lateral considerable sections of very good porosity within the zone was penetrated. Lesser sections, of very marginal to very tight limestone grainstone and packstone, were also encountered. After completing the curve section of the lateral, the lateral section required intermittent sliding to maintain vertical and horizontal plane direction. The well path used the proposed target line as a reference point throughout the lateral section in the 1-B zone. Both the top and bottom of the 1-B zone was encountered in the lateral, which was terminated in the top of 1-B porosity bench. The lateral section of the hole was planned for a horizontal displacement of 2000', but the lateral was terminated early when problems controlling the tool face and rotating were encountered after penetrating the top of the 1-B zone.

The top of the Upper Ismay was not encountered during the drilling of the curve, but was at a measured depth of approximately 5348', based on electric logs. The basal 29 feet from 5424' to 5453' measured depth was characterized by interbedded dense limestone packstones, very argillaceous limestone marlstone, with very thin argillaceous dolomites and carbonaceous shales. The limestones was tan to cream to brown, cryptocrystalline to microcrystalline, dense, slightly dolomitic with scattered chert fragments. The argillaceous limestone and dolomites were brown to gray brown in color, with an earthy to grainy texture, some scattered crinoid fossils, and graded into the thin calcareous to slightly dolomitic, carbonaceous shales of the Hovenweep Shale. The very thin shales were black to dark gray, platy to subblocky, slightly silty, occasionally micaceous, calcareous and slightly dolomitic. This interval showed very minor intercrystalline porosity in the thin limey granular dolomites, which had a very poor, spotty fluorescence, rare stain and a very poor cut. The Hovenweep marker between the Upper and Lower Ismay members was represented by a thin interval of black to dark gray brown shale which was slightly calcareous to dolomitic and occasionally micaceous to slightly silty. The Hovenweep Shale was very poorly represented in the samples.

The top of the Lower Ismay was picked at 5453' measured depth, 5451' true vertical depth, at the base of the thin Hovenweep shale marker. This pick was based on sample identification and a slight increase in penetration rate. The lithology of the Lower Ismay from 5453' to the top of the Gothic Shale at 5482' measured depth was predominately limestone packstone, light gray to white to cream to brown in color, cryptocrystalline to microcrystalline with an earthy to grainy texture grading to a dense tight matrix. Throughout the Lower Ismay were scattered light to dark brown chert fragments, very thin black carbonaceous shale partings and rare silty streaks. Also noted were very thin interbeds of brown, very argillaceous, microcrystalline, limy dolomites. The interval from a measured depth of 5477' to 5481' measured depth, showed an increase in light brown to brown, microcrystalline to cryptocrystalline, earthy to argillaceous dolomite grainstone. This thin dolomite grainstone showed a trace of moderately fair intercrystalline porosity, a fair spotty dull to bright yellow fluorescence, very rare brown stain and a moderate cut. The dolomites and limestones near the base became increasingly marly and graded into the carbonaceous shales of the Gothic Shale.

The Gothic Shale was penetrated at a measured depth of 5487', 5480' true vertical depth, and was the typical lithology; predominantly black to dark gray shale, carbonaceous, silty, soft to slightly firm, subblocky, occasionally subplaty to slightly fissile, calcareous to slightly dolomitic, micaceous, and very slightly silty. The top of the Gothic lays gradationally below the thin interbedded argillaceous limestones and dolomites at the base of the Lower Ismay. The top of the Gothic was picked predominantly by an increase in penetration rate and an abrupt increase in the percentage of shale in the samples. The Gothic Shale overlays the transition zone at the top of the Desert Creek, with a rather sharp facies change.

The top of the Desert Creek member of the Paradox was marked by a thin transition zone facies between the overlying Gothic Shale and the underlying 1-A porosity zone. The Desert Creek was picked at a measured depth of 5499', 5491' true vertical depth, and was marked by a decrease in penetration rate at the base of the Gothic Shale. This thin interval in this lateral was the typical transition zone lithology, being thin interbeds of light gray, dolomitic limestone packstone, cryptocrystalline to microcrystalline and argillaceous with traces of a silty texture and an argillaceous to clean, brown to gray brown, microcrystalline, slightly limey dolomite. This zone displayed rare scattered chert fragments and very thin carbonaceous shale partings. There were no visible porosity and no visible staining, fluorescence or cuts in this thin interval.

The top of the Desert Creek 1-A porosity zone was encountered at a measured depth of 5509', true vertical depth of 5496', essentially flat with the top on the vertical well log. The top was noted by a significant increase in the penetration rate and a change into the typical oolitic to oomoldic limestone grainstones displaying oolitic to intercrystalline porosity development. The limestone was cream to tan to brown in color, cryptocrystalline to very finely crystalline, slightly oolitic to oomoldic, with scattered traces of algal material and had slightly dolomitic to anhydritic cement, scattered anhydrite crystals with fair bright yellow fluorescence, spotty fair brown stain, and fair slow to moderately fast streaming cut. Thin interbeds of limestone packstones were present though the 1-A porosity zone and were cream to tan in color, cryptocrystalline to microcrystalline with a dense tight to slightly chalky texture. These packstones displayed no visible sample shows. The 1-A porosity zone was about 12 feet thick in this lateral and appeared to become somewhat less porous with depth. This corresponds well to the 14 foot thick porosity seen on the gamma neutron log.

A tight limestone packstone was penetrated from the base of the 1-A porosity zone at 5533' measured depth, with a true vertical depth of 5511' to the top of the 1-B horizon at 5551' measured depth, 5521' true vertical depth. This 1-A to 1-B transition zone was characterized by a tight limestone packstone, cream to tan in color, cryptocrystalline to microcrystalline with a dense to slightly chalky texture and was slightly anhydritic, with very rare scattered chert fragment and micro fossils with rare algal material. Only a very poor spotty intercrystalline porosity with rare spotty dark brown to black stain, poor dull yellow fluorescence and slow streaming to residual ring cuts were noted in this packstone interval.

The 1-B zone was penetrated at a measured depth of 5551', 5521' true vertical depth. The top of the 1-B zone was marked by an increase in the rate of penetration, and very thin, minor streaks of limestone grainstone. The top of the 1-B zone was predominately the dense tight limestone packstones. These limestone packstones were cryptocrystalline to microcrystalline, white to cream to tan, slightly anhydritic, with very rare microfossils and some minor algal material and had scattered chert fragments. Very thinly interbedded in the packstones were streaks of limestone grainstone, which had an anhydritic to slightly dolomitic cement with very poor sample show and poor porosity.

The best porosity of the 1-B horizon was penetrated at a measured depth of 5568', 5522' true vertical depth, down to a measured depth of 5609', 5524.5' true vertical depth. The top of the porosity was approximately flat to the top shown on the well log for the vertical well. The porosity development on the vertical well log appears to be about 8 to 9 feet thick, but in the curve section the best porosity appeared to be only about 2.5 feet thick in this southeasterly direction. The lithology of the 1-B porosity zone was an oolitic to oomoldic limestone grainstone, tan to light brown, very fine crystalline to microcrystalline with a granular texture, slight anhydritic with trace to moderately fair intercrystalline and oolitic porosity. The sample shows were only poor to moderately fair with trace of spotty light brown to brown stain, trace of dull to yellow fluorescence and a rare to trace of fair slow streaming cut. Also noted in the 1-B porosity zone were interbedded white to cream to tan, cryptocrystalline, some microcrystalline, dense, occasionally chalky to platy, limestone packstone. The penetration rate of the 1-B porosity zone seen in the curve did not indicate very consistent to a well to moderately cemented limestone porosity. The curve portion of the lateral was landed at a measured depth of 5589', true vertical depth of 5524.5', 2.5 feet below the top of the porosity and just one half a foot high to target depth, in the increasingly tight oolitic to oomoldic limestone grainstone and interbedded dense limestone packstone at the base of the 1-B porosity zone with an inclination of 89.8 degrees, on May 17, 1998.

From the beginning of the lateral section to a measured depth of 5683', 5522.5' true vertical depth and a horizontal displacement of 191', the lithology of the zone was primarily an interbedded tight dense, occasionally platy limestone packstone with increasing amounts of oolitic to oomoldic limestone grainstone. The limestone grainstone became the predominately lithology with horizontal displacement and vertical depth change. This interval has a moderate amount of intercrystalline to oolitic porosity and sample shows. Upon reaching the measured depth of 5683' the lithology became a very good oolitic to oomoldic limestone grainstone. The limestone was predominately light brown to tan to cream, slightly mottled, microcrystalline to very finely crystalline with a microsucrosic to granular texture, and had a slightly dolomitic cement with scattered anhydrite crystals to rare inclusions and a very rapidly decreasing amount of algal material. Also noted were very rare scattered clear to white chert fragments. The porosity was generally fair to good, being primarily intercrystalline and oolitic with sample shows being predominately good.

As the lateral continued in the 1-B porosity zone which had a slight upward dip of approximately 90.4 degrees, the top of the zone was bumped at a measured depth of 5980', 5518.7' true vertical depth, with a horizontal displacement of 490', as the well bore was rotated ahead. Of note was that a short slide was initiated at or just after the top was bumped. This slide unfortunately helped increase the downward angle of the well bore and the base of the 1-B zone at a measured depth of 6070', 5523.5' true vertical depth, with a horizontal displacement to 579'.

Upon penetrating the base of the 1-B zone, the decision was made at the well site to try to reacquire the porosity of the 1-B zone rather than continue the well path downward to the 1-C zone, which had been previously discussed. The base of the 1-B zone and the top of the 1-B to 1-C zone was defined by a significant increase in very dense, tight white to cream, cryptocrystalline limestone packstone, which had only minor streaks of oolitic to oomoldic limestone grainstone. The sample shows within the thin slightly oolitic to oomoldic limestone grainstones of this zone were very scattered and poor. This lithology continued as the well path was turned upward until reaching a measured depth of

6213', 5522.5' true vertical depth, and a horizontal displacement of 723', when the base of the 1-B porosity zone was penetrated. As the well bore was oriented at an upward angle in excess of 93 degrees, the less than 1 foot thick porosity zone of the 1-B was drilled through, and the top of the 1-B zone was penetrated at a measured depth of 6235', 5521' true vertical depth, and a horizontal displacement of 744'. The very thin porosity encountered was again the very good oolitic to oomoldic limestone with fair to good sample shows.

When the well bore penetrated the tight limestones at the top of the 1-B zone, the tight dense limestone packstones of the 1-A to 1-B transition zones were again encountered. As when penetrated in the curve section the packstones has very thin streaks of slightly oolitic to oomoldic limestones grainstones. These very streaky thin grainstones as noted in the curve section had only minor porosity or sample shows. After penetrating the transition zone, the well path was oriented downward to try to reacquire, a hopefully thicker 1-B zone porosity, or to continue to the 1-C zone if no or very thin porosity in the 1-B zone was encountered.

At a measured depth of 6367', true vertical depth of 5523', with a horizontal displacement of 876', the top of the 1-B zone was encountered, and the lithology returned to the very good oolitic to oomoldic limestone grainstone. This limestone had a moderate intercrystalline to oolitic porosity with a trace to fair sample show and some thinly interbedded dense limestone packstones. Upon penetrating the 1-B porosity, the drilling assembly was slid upward to turn the well bore from an angle of 86 degrees to approximately horizontal in the hope that if the porosity of the 1-B porosity had again thickened, the well bore would remain within the porosity zone. The porosity zone had indeed thickened to approximately 3.5'. As the lateral continued with in the 1-B porosity zone, the oolitic to intercrystalline porosity and the sample shows became moderately good to very good. Also noted was a gradual increase in the background gas, although the flare remained at approximately 6 to 8 feet in height.

The well bore remained within the slightly downward dipping 1-B porosity zone, and the lithology remained consistent with only very slight variations when the base and top were bumped until reaching a measured depth of approximately 7157', 5528' true vertical depth and a horizontal displacement of 1665' when the top of the 1-B zone was again penetrated. The oolitic to oomoldic limestone grainstones of the 1-B porosity zone were tan to brown, some white to cream, microcrystalline to very finely crystalline, granular to microsucrosic, with intervals showing a sucrosic texture, oolitic to oomoldic, some dolomitic to slightly anhydritic cement, rare chert fragment and scattered anhydrite crystals. The porosity was predominately good intercrystalline to oolitic, with fair to good light to dark brown staining, some minor black bitchimum* staining, a bright yellow gold fluorescence, and a moderately fast to fast streaming milky cut. As the lateral continued through this interval, the zone appeared to thin to possibly 1.5 foot thick, as minor vertical changes, showed changes in the angle of the drilling assembly. When the top and base were bumped, slight increases in tight, occasionally chalky to platy, very slightly oolitic limestone packstone were noted. From the measured depth of 7157', to the termination of the lateral, the lithology became increasingly tight with a decrease in sample show and an increase in packstone.

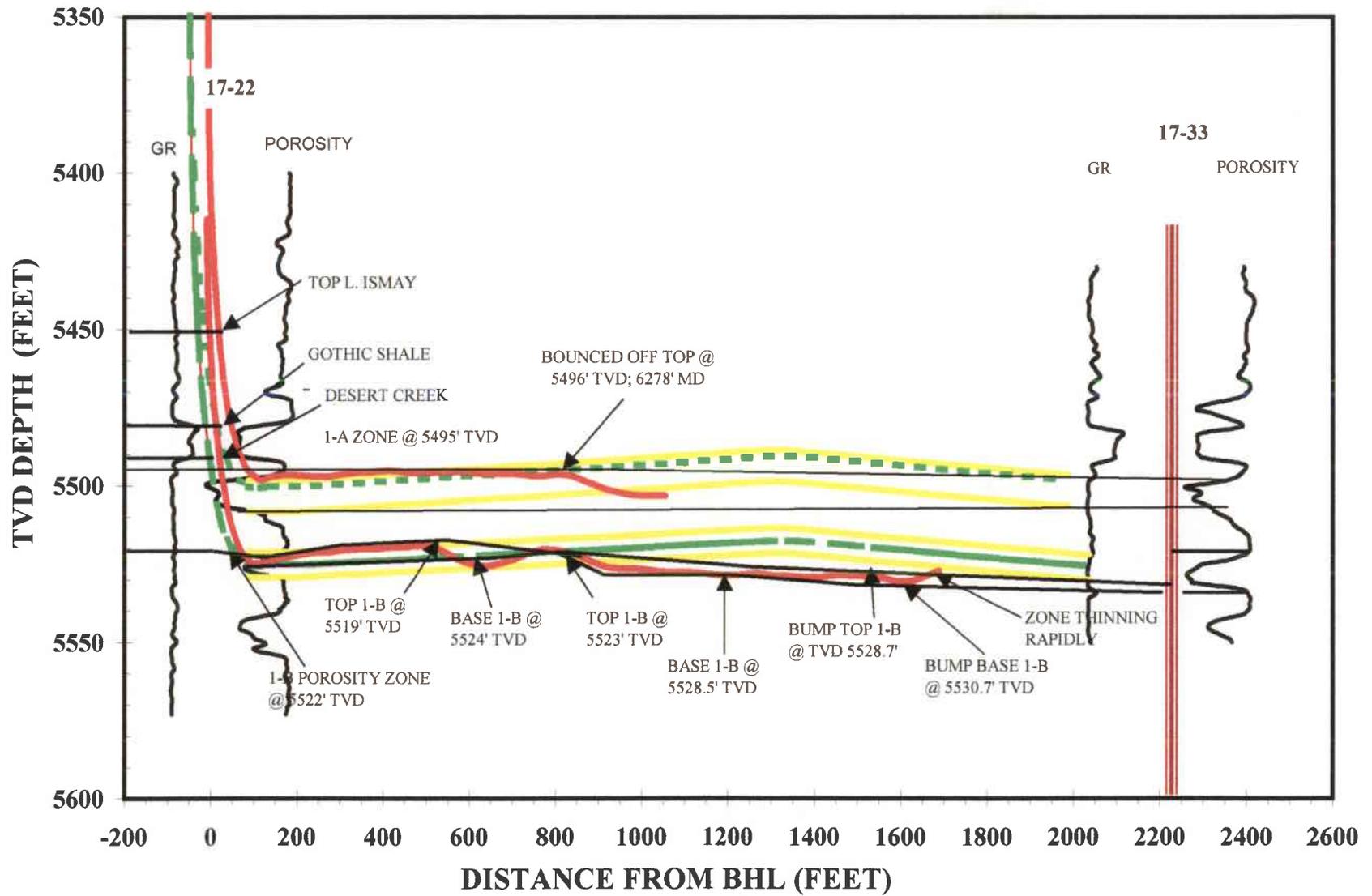
After having the well path pushed upward by the base of the zone and penetrating the top of the 1-B porosity zone, the drilling assembly encountered problems controlling the tool face orientation and a high degree of torque when attempting to rotate the drill string. At this time the lateral was terminated at a measured depth of 7181', 5527' true vertical depth, and a horizontal displacement of 1688.7', on May 19, 1998, in the dense, tight limestone packstones of the 1-A to 1-B transition zone.

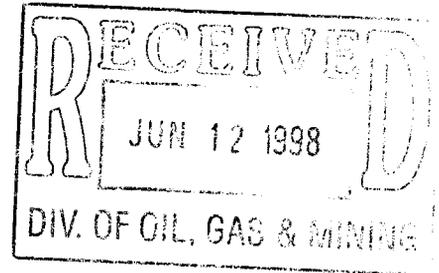
In conclusion, it is apparent that the 1-B porosity horizon thins laterally away from the well bore until reaching a horizontal displacement of 191' when the porosity zone again thickens and trends upward at a shallow angle. In tracking the 1-B porosity zone throughout the length of the lateral, the 1-B zone has repeating cycles, increasing in length and varying in dip, of fair porosity development followed by a gradual thinning and pinching out to the southeast. A possible explanation is a series of

barrier shoals over which the porosity thins and pinches out. The interval from 744' to 876' may possibly have a fault zone, although no indication of a fault was noted in the samples or drill rate. The 1-B porosity zone from 191' to 744' of displacement may not be connected to any offsetting wells, and could be interpreted as a virgin reservoir environment. Throughout the 1-B porosity penetrated, there were no noticeable zones that appeared to be flushed by offsetting injections. The lithology of the 1-B porosity in this lateral was very consistent, as were the sample shows and associated gases. This lateral could contribute substantial production in this re-entry.

*The black residual staining has been called by Dr. Dave Eby & others as "bitchimum" and is also known as "dead oil" ("dd o stn" on mud logs). This staining is associated with the movement of oil over long periods of time and is a good indicator of producible hydrocarbons when associated with productive porosities, but can also be found in porosities that have been filled by anhydrites and other material at later dates.

MOBIL, Ratherford #17-22, Southeast Lateral Legs 2 & 4





MOBIL

**RATHERFORD UNIT #17-22
NW HORIZONTAL LATERAL LEG #3
1-A POROSITY BENCH
DESERT CREEK MEMBER
PARADOX FORMATION
SECTION 17, T41S, R24E
SAN JUAN, UTAH**

**GEOLOGY REPORT
by
DAVE MEADE/LUKE TITUS/MARVIN ROANHORSE
ROCKY MOUNTAIN GEO-ENGINEERING CORP.
GRAND JUNCTION, COLORADO
(970) 243-3044**

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WELL SUMMARY

OPERATOR: MOBIL EXPLORATION & PRODUCTION U.S. INC.

NAME: RATHERFORD UNIT #17-22 NW HORIZONTAL LATERAL
LEG #3 IN THE DESERT CREEK 1-A POROSITY BENCH

LOCATION: SECTION 17, T41S, R24E

COUNTY/STATE: SAN JUAN, UTAH

ELEVATION: KB:4716' GL:4704'

SPUD DATE: 5/05/98

COMPLETION DATE: 5/24/98

DRILLING ENGINEER: BENNY BRIGGS / SIMON BARRERA

WELLSITE GEOLOGY: DAVE MEADE / LUKE TITUS / MARVIN ROANHORSE

**MUDLOGGING
ENGINEERS:** DAVE MEADE / MARVIN ROANHORSE / LUKE TITUS

CONTRACTOR: BIG "A" RIG 25
TOOLPUSHER: J. DEES

HOLE SIZE: 4 3/4"

CASING RECORD: SIDETRACK IN WINDOW AT 5405' MEASURED DEPTH

**DRILLING MUD:
ENGINEER:** M-I DRILLING FLUIDS
RON WESTENBERG
MUD TYPE: FRESH WATER & BRINE WATER W/ POLYMER SWEEPS

**DIRECTIONAL
DRILLING CO:** SPERRY-SUN

ELECTICAL LOGGING: NA

TOTAL DEPTH: 7156' MEASURED DEPTH; TRUE VERTICAL DEPTH-5500.55'

STATUS: TOH & LAY DOWN TOOLS - PREPARE WELL FOR LEG #4

DRILLING CHRONOLOGY
RATHERFORD UNIT #17-22
NW 1-A HORIZONTAL LATERAL LEG #3

DATE	DEPTH	DAILY	ACTIVITY
5/20/98	7181'	8'	TOH-L.D. LATERAL ASSEM.-P.U. RETRIEVING HOOK-TIH-LATCH INTO WHIPSTOCK-CIR. OUT & PUMP 15 BBLs BRINE-TOH-L.D. WHIPSTOCK #2-PICK UP WHIPSTOCK #3 & STARTER MILL-ORIENT-TIH-SET WHIPSTOCK-CIR BTMS UP-MILL W/STARTER MILL 5396' TO 5398'-CIR. OUT-DISPLACE HOLE W/ 15 BBLs BRINE-TOH-L.D. STARTER MILL-PICK UP WINDOW & WATERMELLON MILLS-TIH-CIR-MILL 5398' TO 5404'
5/21/98	5405'	95'	MILL 5404' TO 5405'--PUMP SWEEP & CIR OUT-PUMP 15 BBLs BRINE-L.D. 13 JTS AOH-TOH-L.D. MILLS-PICK UP & ORIENT CURVE ASSEMBLY-TEST MWD & MUD MOTOR-TIH-CIR BTMS UP THRU CHOKE-RIG UP GYRO DATA-RUN GYRO-TIME DRLG 5405' TO 5408'-DIR DRLG W/WIRE SURVEYS TO 5442'-PULL GYRO & RIG DOWN GYRO DATA-DIR DRLG & SURVEYS TO 5500'
5/22/98	5500'	253'	DIR DRLG & SURVEYS TO 5575'-PUMP 10 BBLs SWEEP & CIR SPLS-DISPLACE W/BRINE-L.D. 1 JT AOH-TOH TO WINDOW-DISPLACE W/ BRINE-TOH-L.D. CURVE ASSEMBLY-P.U. LATERAL ASSEMBLY-TEST & ORIENT MWD & MUD MOTOR-TIH. P.U. 5 JTS-FILL PIPE-DIR DRLG & SURVEYS TO 5753'
5/23/98	5753'	1108'	DIR DRLG & SURVEYS TO 6861'
5/24/98	6861'	295'	DIR DRLG & SURVEYS TO 7156' TD OF LATERAL LEG #3-PUMP 10 BBL SWEEP & CIRC OUT SMPLS-PUMP 20 BBL 10# BRINE & TOOH TO WINDOW- CIRC 20 MINS & PUMP 100 BBLs 10# BRINE-TOOH & L.D. LATERAL ASSEMBLY-M.U. SUPER HOOK & TIH-TIH W/PIPE OFF RACK-HOOK WHIPSTOCK & SHEAR OFF -TOOH W/ WHIPSTOCK & L.D.-M.U. NEW WHIPSTOCK(#4) & ORIENT-TIH W/WHIPSTOCK-SET WHIPSTOCK @ 5369'-CIRC BTMS UP THRU CHOKE

DAILY ACTIVITY

Operator: MOBIL

Well Name: RATHERFORD UNIT #17-22 NW 1-A HORIZONTAL LATERAL LEG #3

DATE	DEPTH	DAILY	DATE	DEPTH	DAILY
5/20/98	7181'	8'			
5/21/98	5405'	95'			
5/22/98	5500'	253'			
5/23/98	5753'	1108'			
5/24/98	6861'	295'			
TD	7156'				

BIT RECORD

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #17-22 NW 1-A HORIZONTAL LATERAL LEG #3

RUN	SIZE	MAKE	TYPE	IN/OUT	FTG	HRS	FT/HR
1 (RR)	4 3/4"	STC	MF-37P	5405'/ 5575'	170'	19	8.95
2	4 3/4"	STC	MF-37P	5575'/ 7156'	1,581'	78	20.3

MUD REPORT

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #17-22 NW 1-A HORIZONTAL LATERAL LEG #3

DATE	DEPTH	WT	VIS	PLS	YLD	GEL	PH	WL	CK	CHL	CA	SD	OIL	WTR
5/20/98	5396'	8.9	27	2	1	0/0	11.0	NC	NC	62K	1800	1%	1%	98%
5/21/98	5414'	8.9	27	2	1	0/0	12.0	NC	NC	64K	1800	1%	1%	98%
5/22/98	5575'	9.0	27	2	1	0/0	12.0	NC	NC	73K	1480	1%	1%	98%
5/23/98	6069'	9.1	27	2	1	0/0	13.0	NC	NC	84K	1400	1%	2%	97%
5/24/98	7156'	9.1	27	2	1	0/0	12	NC	NC	83K	1520	1%	2%	97%

SPERRY-SUN DRILLING SURVICE
SURVEY DATA

Customer .: MOBIL (UTAH)
Platform .: RHATHERFORD UNIT
Slot/Well .: BA25/17-22,3A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTH INCL FEET	EAST INCL FEET	VERTICAL SECTION	DOG LEG
5200	0.24	227.94	5199.45	19.33	11.38	5.62	0
5396	0.43	214.75	5395.45	18.45	10.66	5.51	0.1
5405	4.2	315	5404.44	18.66	10.4	5.84	47.75
5415	9.1	320.34	5414.37	19.53	9.64	6.99	49.34
5425	14.5	321.8	5424.15	21.12	8.36	9.02	54.08
5435	20.7	322.49	5433.68	23.51	6.51	12.02	62.03
5445	26.9	322.9	5442.83	26.72	4.07	16.02	62.02
5455	33.7	324.2	5451.46	30.78	1.07	21	68.31
5465	39.8	323.9	5459.46	35.62	2.44	26.91	61.03
5475	45.8	326.9	5466.8	41.21	6.28	33.58	63.35
5485	50	322.7	5473.5	47.26	10.57	40.89	52.28
5495	52.7	326.2	5479.75	53.62	15.1	48.59	38.41
5505	55.2	323.2	5485.63	60.21	19.77	56.56	34.83
5515	59.6	323.9	5491.02	66.99	24.78	64.89	44.39
5525	62.3	318.9	5495.88	73.81	30.23	73.57	51.37
5535	67.4	317.1	5500.13	80.54	36.29	82.61	53.54
5545	73.9	316.6	5503.44	87.42	42.74	92.03	65.17
5575	88.1	315.2	5508.12	108.63	63.31	121.58	47.56
5623	88.7	318.2	5509.46	143.55	96.21	169.54	6.37
5655	91.7	319.6	5509.35	167.66	117.25	201.46	10.35
5686	92.5	319.6	5508.21	191.25	137.33	232.34	2.58
5718	93.1	320.3	5506.65	215.72	157.89	264.18	2.88
5750	93.5	321	5504.81	240.42	178.15	295.97	2.52
5782	90.8	318.7	5503.61	264.86	198.76	327.83	11.08
5814	89.3	316.6	5503.58	288.51	220.32	359.79	8.06
5846	89.1	316.8	5504.02	311.79	242.26	391.78	0.88
5877	90.3	315.1	5504.19	334.07	263.81	422.77	6.71
5908	91.8	315.6	5503.62	356.12	285.6	453.76	5.1
5940	91.4	316.7	5502.73	379.19	307.76	485.74	3.66
5972	90.7	315.2	5502.14	402.19	330	517.73	5.17
6004	91.2	314.9	5501.61	424.83	352.6	549.73	1.82
6036	89.4	313.1	5501.44	447.06	375.62	581.72	7.95
6068	89.6	313	5501.72	468.9	399	613.7	0.7
6099	90.8	313.8	5501.61	490.2	421.53	644.69	4.65
6131	91.4	313.3	5501	512.24	444.72	676.67	2.44
6163	91.3	313.5	5500.24	534.22	467.96	708.65	0.7
6195	91.2	312.8	5499.55	556.1	491.3	740.63	2.21
6227	91	312.8	5498.93	577.84	514.78	772.6	0.62

SPERRY-SUN DRILLING SERVICE
SURVEY DATA

Customer ..: Mobil (Utah)
Platform ...: RATHERFORD UNIT
Slot/Well ...: BA25/17-22,3A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTH INCL FEET	EAST INCL FEET	VERTICAL SECTION	DOG LEG
6258	91.5	313.3	5498.25	599	537.42	803.57	2.28
6290	91.3	312.4	5497.47	620.75	560.88	835.54	2.88
6322	89.4	312.6	5497.28	642.37	584.47	867.51	5.97
6353	88.9	311.7	5497.74	663.17	607.45	898.46	3.32
6385	88.2	312.3	5498.55	684.58	631.22	930.41	2.88
6416	88.1	314.2	5499.55	705.8	653.79	961.38	6.13
6448	89.1	314.7	5500.33	728.21	676.62	993.37	3.49
6479	89.5	315.2	5500.71	750.11	698.56	1024.36	2.07
6511	91.1	316.1	5500.54	772.99	720.93	1056.36	5.74
6543	91.6	315.6	5499.79	795.94	743.21	1088.35	2.21
6575	90.4	316	5499.23	818.88	765.52	1120.34	3.95
6606	90.2	316	5499.07	841.18	787.05	1151.33	0.65
6638	91.5	317	5498.59	864.39	809.08	1183.32	5.13
6670	87.8	316.5	5498.79	887.69	831	1215.3	11.67
6702	86.3	315.8	5500.43	910.74	853.14	1247.25	5.17
6733	86.6	316.8	5502.35	933.1	874.51	1278.18	3.36
6764	88.7	317.7	5503.63	955.85	895.54	1309.13	7.37
6796	88.9	318.8	5504.3	979.72	916.84	1341.07	3.49
6828	90.6	318.8	5504.44	1003.79	937.92	1373	5.31
6860	91.1	319.8	5503.96	1028.05	958.78	1404.9	3.49
6892	90.8	320.9	5503.43	1052.68	979.2	1436.76	3.56
6923	91.1	320.5	5502.92	1076.67	998.83	1467.6	1.61
6954	91.1	318.9	5502.32	1100.31	1018.88	1498.49	5.16
6986	90.8	317.2	5501.79	1124.1	1040.26	1530.44	5.39
7017	90.8	316.7	5501.36	1146.75	1061.42	1561.42	1.61
7049	91.6	316.3	5500.69	1169.96	1083.44	1593.4	2.79
7081	91.6	316.1	5499.79	1193.05	1105.58	1625.38	0.62
7122	88.6	315.1	5499.72	1222.34	1134.27	1666.37	7.71
7156	88.6	315.1	5500.55	1246.41	1158.26	1700.36	0

THE DOGLEG SEVERITY IS IN DEGREES PER 100.00 FEET
N/E COORDINATE VALUES GIVEN RELATIVE TO WELL HEAD.
TVD COORDINATE VALUES RELATIVE TO WELL HEAD.
THE VERTICAL SECTION ORIGIN IS THE WELL HEAD.
THE VERTICAL SECTION WAS COMPUTED ALONG 315.00 (TRUE).
CALCULATION METHOD: MINIMUM CURVATURE

SAMPLE DESCRIPTIONS

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #17-22 NW 1-A HORIZONTAL LATERAL LEG #3

DEPTH	LITHOLOGY
5405.00	5420.00 "LS tan-brn,occ crm,crpxl-micxl,dns,occ rthy-chk,grdg to MRLST ip,v sl dol,v rr mic fos,tt,NFSOC,tr smky gy-brn CHT frag,scat dkbrn-gybrn crpxl rthy-sl lmy dns tt DOL-grdg to dol MRLST NFSOC & v rr thn gy-dkgy plty lmy-sl slty SH ptgs"
5420.00	5440.00 "LS,ltbn-bn-crm,mic-vf xln,slty-grn mtx,arg mtx,rthy,rr foss frgs,tr dkbrn CHT frgs,sl dolo to dolo ip;pred intrxln to rthy fab POR,v-pr dkbrn o STN,no CUT,dul spty yel FLOR"
5440.00	5450.00 "LS,ltbn-crm,mic-vf xln,mdns mtx,occ grn mtx,chlky,sl rthy/arg,scat CHT frgs,pred intrxln to rthy fab POR,spty blk o STN,p-slo CUT,spty dul FLOR"
5450.00	5460.00 "LS,ltbrn-tan-crm,mic-vfxl,mdns mtx,sl slty,sl suc tn DOL,rr anhy incl,rr CHT frgs,rthy,sl arg,sl chlky;pred intxl fab POR,p dkbrn o STN,spty dul-mbri yel gld FLOR,n CUT"
5460.00	5470.00 "LS,tan-crm-offwh-occ ltbrn,pred vfxl-mic xln,mdns,gran,sl dol to DOL rich cmt,sl chk,tr CHT frag-trnsi-ltbrn,tr offwh chk carb mat;pred intxl fab POR,ltbrn o STN,spty dull yel gld FLOR,n CUT"
5470.00	5480.00 "LS,offwh-tan-crm-occ ltbrn,vfxl,mdns mtx-sl suc,occ sl dol to DOL rich,scat arg LS,v sl slty;pred intxl fab POR,v-spty dull yel gld FLOR,n CUT,p ltbrn-dkbrn o STN"
5480.00	5500.00 "LS,tn-offwh-ltbrn-occ dkbrn,mic-vfxl,mdns mtx,sl slty-sl gran,sl dol ip,tr CHT frag,anhy,chy,scat arg LS,rr calc frac flg;pred intxl fab POR,p ltbrn-dkbrn o STN,v wk slo strmg CUT,spty dula yel gld FLOR"
5500.00	5510.00 "LS grdg to SH,dkbrn-dkgybrn-blk,calc,sl slty,sft-mfrm,sbblky-sbplty,rthy/arg,carb,occ fis,LS AA,rr CHT frgs"
5510.00	5520.00 "SH blk-dkgy,sbblky-sbplty,sft-mfrm,sl calc-dol,carb-sooty,sl slty,mica w/v thn arg micxl brn DOL incl & bcmg LS crm-brn-tan,crpxl-micxl,rthy-cln,dns,sl anhy,dol,arg,tt,NFSOC"
5520.00	5530.00 "LS tan-crn,ltbrn-brn,crpxl-micxl,cln-dns,sl slty,occ arg,sl anhy-dol,bcmg sl ooc-oom,tt-rr intxl-ool POR,spty bri yel FLOR,rr brn STN,mfr slow-mod fast CUT,w/v thn DOL incl-brn micxl arg-cln lmy,v rr CHT frag"
5530.00	5540.00 "LS tan-brn,crpxl-vfxl,occ gran-micsuc,pred ooc-oom GRNST,scat thn dns-v sl ool-fos PKST,sl chty,v rr DOL-ANHY cmt,tt-g ool-intxl POR,fr bri yel FLOR,fr brn-rr blk STN,fr-mg mod fast-rr slow strmg CUT"

DEPTH	LITHOLOGY
5540.00 5560.00	"LS tan-brn,occ mbrn,rr wh-crm,crpxl-vfxl,occ gran-micsuc,pred ooc-oom GRNST,rr thn dns-v sl ool-fos plty-chk PKST frag,sl chty,v rr DOL-ANHY cmt,fr-g ool-tr intrxl POR,fr bri yel FLOR,mg brn-mbrn STN-tr blk dd o STN,fr-mg mod fast-fast stmg CUT, rr SH CVG"
5560.00 5575.00	"LS AA,bcmg pred crm-tan,rr wh,crpxl-micxl,dns,occ chk,sl fos PKST,rr styl,occ ANHY incl,tt-fr ool-rr frac POR,mfr dull-bri yel FLOR,tr-mfr brn-tr blk STN,fr slow-mfr mod fast stmg CUT"
5575.00 5600.00	"LS,tn-crm,sl mott,pre mic xln-occ crpt xln,mdns-dns mtx,pred sl ool fossl plty PCKST,rr oom/occ GRNST,tr anhy xls,chlky;pred intrxln to micropore fab POR,wk slo sl dif CUT,dul-spty mbri yelgld FLOR,p-dkbn-ltbn o STN"
5600.00 5620.00	"LS AA,incr in dens-tt plty PCKST,chlky,sl anhy,sl foss,sl ool;pred intrxl fab POR,p-ltbrn o STN,wk slo strm CUT,dul-spty mbri yelgld FLOR"
5620.00 5640.00	"LS,crm-tn-occ ltbn,sl mott,crpt-mic xln,dns-occ tt mtx,pred sl ool sl chlky PCKST,scat anhy,offwht chlky carb mat,rr ltgy CHT frgs;pred mf-f interxl to micropore fab POR,spty mbri-bri yelgld FLOR,v-wk slo strm CUT,pred blk dd oSTN,p-dkbn-ltbn mtx o STN"
5640.00 5660.00	"LS AA,sl incr vf xln,rr calc frac flgs,tr chlky carb mat,sl ool,rr fos frgs;pred mf-f intrxl fab POR,poss sme frac POR,spty blk dd o STN res,dkbrn-ltbrn mtx o STN,FLOR AA,CUT AA"
5660.00 5680.00	"LS,crm-tn-occ ltbn,mic-scat vf xln,mdns-dns-rr tt mtx,sl dolo,chlky,pred mdns-sl ool chlky PCKST,rr foss frgs,rr calc frac flgs,tr anhy,tr chlky offwht carb mat;pred mf-f intrxl fab POR,spty dd o STN,dkbrn-ltbrn mtx o STN,spty mbri yelgld FLOR,wk-CUT"
5680.00 5690.00	"LS AA,sl incr dns-occ tt PCKST,occ vf xln,pred mic xln,FLOR AA-CUT AA-OSTN AA,rr cht frgs"
5690.00 5710.00	"LS,ltbn-tn-crm-offwht,sl mott,mic-vf xln,mdns mtx,occ grn mtx,pred sl ool-mdns sl chlky PCKST,rr ool GRNST,tr chlky carb mat,rr frac flgs;pred intrxln fab POR,wk slo strm CUT,spty blk oSTN res,ltbn-dkbn OSTN,dul yelgld FLOR"
5710.00 5730.00	"LS,ltbn-tn-crm,sl mott-mott,mic-vf xln,scat grn mtx,mdns mtx,sl ool mdns PCKST to ool red-pr-f oom/occ ool GRNST,tr foss frgs,sl anhy;pred red-pr-f oom/occ to mf-f intrxl fab POR,dul-mbri yelgld FLOR,p-m slo dif strm CUT,pred dkbrn mtx o STN,spty blk res"
5730.00 5750.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx ip-mdns mtx,pred ool foss red-mf oom/occ GRNST,tr mdns sl ool PCKST,tr calc/chlky/anhy fld casts,sl anhy,sl rthy;pred mf-f intrxln to oom/occ fab POR,m-slo dif strm CUT,mbri yelgld FLOR,pred dkbn OSTN,sptyblk res "

DEPTH	LITHOLOGY
5750.00 5770.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx-occ sl suc mtx,mdns mtx ip,pred ool oom/occ GRNST,tr sl ool chky cast fld PCKST,tr anhy xls;pred mf-f oom/occ fab POR,m-fst-f slo dif strm CUT,mlky ring,mbri-bri yelgld FLOR,pred mf-dkbrn OSTN"
5770.00 5790.00	"LS,ltbn-tn,mott,mic-vf xln,sl suc-grn mtx,mdns mtx ip,pred ool oom/occ GRNST,occ clac/chky-anhy fld casts,rr anhy xls;predmf-f oomoldic to oolcastic fab POR,mf-dkbrn-cast fld blk OSTN,mf-slo dif strm CUT,mbri-sptty bri yelgld FLOR"
5790.00 5815.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx-mdns mtx ip,pred ool oom/occ GRNST,rr sl ool PCKST,tr foss frgs,rr calc frac flgs,tr calc/anhy fld casts;pred mf-f oomoldic-oolcastic fab POR,mg-g dkbrn-blk cast fld o STN,mbri-bri yelgld FLOR,mf-fst-slo dif CUT"
5815.00 5840.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx ip-mdns mtx,pred ool foss oom/occ GRNST,rr mdns sl ool PCKST,tr calc/chky/anhy fld casts,sl anhy,sl rthy;pred mf-f intrxln to oom/occ fab POR,m-slo dif strm CUT,mbri yelgld FLOR,pred dkbn OSTN,sptyblk res "
5840.00 5860.00	"LS,ltbn-tn,mott,mic-vf xln,sl suc-grn mtx,mdns mtx ip,pred ool oom/occ GRNST,occ calc/chky-anhy fld casts,rr anhy xls;predmf-f oomoldic to oolcastic fab POR,mf-dkbrn-cast fld blk OSTN,mf-slo dif strm CUT,mbri-sptty bri yelgld FLOR"
5860.00 5880.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx-occ sl suc mtx,mdns mtx ip,pred ool oom/occ GRNST,tr sl ool chky cast fld PCKST,tr anhy xls;pred mf-f oom/occ fab POR,m-fst-f slo dif strm CUT,mlky ring,mbri-bri yelgld FLOR,pred mf-dkbrn OSTN"
5880.00 5900.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx ip-mdns mtx,pred ool foss oom/occ GRNST,rr mdns sl ool-sl plty PCKST,tr calc/anhy fld casts,rr anhy xls,sl rthy;pred mf-f intrxln to oom/occ fab POR,m-slo dif strm CUT,mbri yelgld FLOR,pred dkbn OSTN,sptyblk res "
5900.00 5920.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx-mdns mtx ip,pred ool oom/occ GRNST,rr sl ool PCKST,tr foss frgs,rr calc frac flgs,tr calc/anhy fld casts;pred mf-f oomoldic-oolcastic fab POR,mg-g dkbrn-blk cast fld o STN,mbri-bri yelgld FLOR,mf-fst-slo dif CUT"
5920.00 5940.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx-occ sl suc mtx,mdns mtx ip,pred ool oom/occ GRNST,tr sl ool chky cast fld PCKST,tr anhy xls;pred mf-f oom/occ fab POR,m-fst-f slo dif strm CUT,mlky ring,mbri-bri yelgld FLOR,pred mf-dkbrn OSTN"
5940.00 5960.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx-occ sl suc mtx,mdns mtx ip,pred ool oom/occ GRNST,tr sl ool chky cast fld PCKST,tr anhy xls;pred mf-f oom/occ fab POR,m-fst-f slo dif strm CUT,mlky ring,mbri-bri yelgld FLOR,pred mf-dkbrn OSTN"

DEPTH	LITHOLOGY
5960.00 5980.00	"LS,ltbn-tn,mott,mic-vf xln,sl suc-grn mtx,mdns mtx ip,pred ool oom/occ GRNST,occ calc/chlky-anhy fld casts,rr anhy xls;predmf-f oomoldic to oollicastic fab POR,mf-dkbrn-cast fld blk OSTN,mf-slo dif strm CUT,mbri-spty bri yelgld FLOR"
5980.00 6000.00	"LS,ltbn-tn,mott,mic-vf xln,sl suc-grn mtx,mdns mtx ip,pred ool oom/occ GRNST,occ calc/chlky-anhy fld casts,rr anhy xls;predmf-f oomoldic to oollicastic fab POR,mf-dkbrn-cast fld blk OSTN,mf-slo dif strm CUT,mbri-spty bri yelgld FLOR"
6000.00 6010.00	"LS AA,pred ool-oom GRNST/tr intbd-scat crm sl ool dns-chky PCKST,sl anhy/tr POR fl,g ool POR,g even mod bri-spty bri yel FLOR,g ltbrn/tr brn-blk dd o STN,g fast stmg mlky CUT"
6010.00 6030.00	"LS ltbrn-tan,occ crm/tr wh,gran-micxl,occ crpxl,pred ool-oom GRNST/scat-intbd dns sl ool-chky plty PCKST,anhy/tr xln ANHY-POR fl,sl dol/tr DOL rich cmt,rr tan CHT incl,POR-FLOR-STN-CUT AA"
6030.00 6070.00	"LS AA,ool-oom GRNST/sl incr scat-occ intbd dns sl ool-chky PCKST,anhy/tr xln ANHY-POR fl,sl dol/rr DOL cmt,tr mic fos,v rr CHT incl AA,g ool-tr intxl POR,g even mod bri-bri yel FLOR,g ltbrn/tr scat brn-blk dd o STN,g mod fast-fast stmg mlky CUT"
6070.00 6080.00	"LS AA,pred ool-oom GRNST/decr PCKST AA,anhy/tr xln ANHY-POR fl,v sl dol/rr DOL cmt,POR-FLOR AA,g-fr ltbrn/sl incr brn-blk dd o STN,CUT AA"
6080.00 6090.00	"LS AA,ool-oom GRNST/tr PCKST AA,v sl dol,POR-FLOR-STN-CUT AA"
6090.00 6100.00	"LS AA,ool-oom GRNST/tr intbd dns sl ool-rr chky plty PCKST,sl anhy/tr xln ANHY-POR fl,v sl-n dol,rr mic fos,POR-FLOR AA,STN AA/sl incr blk dd o STN,CUT AA"
6100.00 6120.00	"LS tan-ltbrn,occ crm-off wh,gran-micsuc,micxl,occ suc,crpxl,ool-oom GRNST/tr intbd-scat dns sl ool-v rr chky PCKST,anhy/tr xln ANHY-POR fl,tr mic fos,rr crm sil-CHT incl,v sl dol,g ool/tr intxl POR,FLOR-STN AA,g fast-sl blooming mlky CUT"
6120.00 6140.00	"LS AA,ool-oom GRNST/tr PCKST AA,anhy/tr xln ANHY-POR fl,v rr CHT incl AA,v sl-sl dol ip,g ool/tr intxl POR,g even bri-mod bri yel FLOR,g ltbrn/tr scat brn-blk dd o STN,g fast-sl blooming mlky CUT"
□	
6140.00 6160.00	"LS tan-ltbrn,occ crm-off wh,gran-micsuc,occ micxl,tr crpxl,ool-oom GRNST,tr scat-intbd PCKST AA,anhy/tr xln ANHY-POR fl,g ool/tr intxl POR,g even bri-mod bri yel FLOR,g ltbrn/tr brn-blk dd o STN,g fast stmg mlky CUT"

DEPTH	LITHOLOGY
6160.00-6190.00	"LS AA,gran-micsuc,occ suc-micxl,tr crpxl,ool-GRNST,trintbd-scat dns sl ool PCKST,chky-anhy/tr xln ANHY-POR fl,sl dol/rr DOL cmt strk,rr tan-crm CHT incl,rr mic fos,g ool/tr intxl POR,g even bri-mod bri yel FLOR,g ltbrn/scat brn-blk dd o STRN,CUT AA"
6190.00 6200.00	"LS AA,ool-oom GRNST/tr PCKST AA,chky-anhy/tr xln ANHY-POR fl,v sl dol,POR-FLOR-STN-CUT AA"
6200.00 6220.00	"LS tan-ltbrn,occ crm-off wh,gran-micsuc,occ micxl,tr crpxl,ool-oom GRNST,tr scat-intbd PCKST AA,chky-anhy/tr xln ANHY-sl incr POR fl,g ool/tr intxl POR,g even mod bri-scat bri yel FLOR,g ltbrn/tr brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"
6220.00 6240.00	"LS AA,gran-micsuc,occ micxl,tr crpxl,ool-oom GRNST/tr scat-intbd dns sl ool PCKST,chky-anhy AA,v rr tan CHT incl,POR AA,g even mod bri-bri yel FLOR,g ltbrn/tr brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"
6240.00 6260.00	"LS AA,ool-oom GRNST/tr scat-intbd dns sl ool PCKST,chky-anhy/tr xln ANHY-POR fl,n-v sl dol ip,v rr tan CHT incl,g ool/tr intxl POR,g even bri-mod bri yel FLOR,g ltbrn/tr brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"
6260.00 6280.00	"LS AA,ool-oom GRNST/tr scat-intbd PCKST AA,chky-anhy/tr xln ANHY-POR fl,n-v sl dol ip,v rr CHT AA,POR-FLOR-STN AA,g fast stmg-sl blooming mlky CUT"
6280.00 6300.00	"LS tan-ltbrn,occ crm-off wh,gran-micsuc,occ micxl,tr crpxl,ool-oom GRNST,tr scat-intbd PCKST AA,chky-anhy/tr xln ANHY-sl incr POR fl,g ool/tr intxl POR,g even mod bri-scat bri yel FLOR,g ltbrn/tr brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"
6300.00 6310.00	"LS AA,ool-oom GRNST/tr PCKST AA,v sl dol,POR-FLOR-STN-CUT AA"
6310.00 6340.00	"LS AA,gran-micsuc,occ micxl,tr crpxl,ool-oom GRNST/sl incr scat-intbd dns sl dol-ool PCKST,chky-anhy AA,tr tan-crm CHT incl,POR AA,g even mod bri-scat bri yel FLOR,g ltbrn/tr brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"
6340.00 6370.00	"LS tan-ltbrn,occ crm-off wh,tr brn,gran-micsuc,occ micxl-crpxl,pred ool-oom GRNST,scat-intbd PCKST AA,incr chky-anhy/tr xln ANHY-sl incr POR fl,tr CHT AA,POR-FLOR AA,g ltbrn/tr scat brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"
6370.00 6390.00	"LS AA,gran-micsuc,occ micxl-crpxl,pred ool-oom GRNST/scat-intbd dns sl ool-dol PCKST,chky-anhy/tr xln ANHY-sl incr POR fl,tr tan-crm CHT,g ool/tr intxl POR,g even mod bri-scat bri yel FLOR,g ltbrn/tr brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"

DEPTH	LITHOLOGY
6390.00 6410.00	"LS AA,pred ool-oom GRNST/scat-intbd PCKST AA,sl incr chky-anhy/tr xln ANHY-POR fl,g ool/tr intxl POR,tr CHT AA,g even mod bri-scat bri fast stmg mlky CUT"6430.00 6450.00 "LS AA,pred o yel FLOR,g ltbrn/tr brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"
6410.00 6430.00	"LS AA,gran-micsuc,occ micxl-crpxl,pred ool-oom GRNST/sl incr scat-intbd PCKST AA,incr chky-anhy/tr xln ANHY-sl incr POR fl,v rr CHT AA,g ool/tr intxl POR,g even mod bri-scat bri yel FLOR,STN AA,g mod fast/tr ol-oom GRNST/scat-intbd PCKST AA,chky-anhy/tr xln ANHY-POR fl,v rr CHT AA,POR-FLOR-STN AA,g mod fast-fast stmg mlky CUT"
6450.00 6470.00	"LS tan-ltbrn,occ crm-off wh,tr brn,gran-micsuc,occ micxl,tr crpxl,ool-oom GRNST/tr scat-rr intbd dns sl ool-dol PCKST,sl chky-anhy/tr xln ANHY-POR fl,v rr tan CHT,g ool/tr intxl POR,FLOR AA,g ltbrn/scat brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"
6470.00 6490.00	"LS AA,gran-micsuc,occ micxl,tr crpxl,pred ool-oom GRNST,tr scat-intbd PCKST AA,sl chky-anhy/tr xln ANHY-POR fl,v rr CHT AA,POR-FLOR AA,g-fr ltbrn/tr scat brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"
6490.00 6520.00	"LS AA,ool-oom GRNST/tr scat-intbd dns-sl ool PCKST,sl chky-anhy/tr xln ANHY-POR fl,v rr tan CHT incl,g ool/tr intxl POR,g mod bri-scat bri yel FLOR,fr-g ltbrn/tr scat brn-blk dd o STN,g mod fast-fast stmg mlky CUT"
6520.00 6540.00	"LS tan-crm,ltbrn,occ off wh,rr brn,gran-micsuc,tr crpxl,ool-oom GRNST/tr scat-intbd PCKST AA,sl chky-anhy/tr xln ANHY-POR fl,v rr CHT AA,g-fr ool/tr intxl POR,g even mod bri-scat bri yel FLOR,g ltbrn/tr brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"
6540.00 6560.00	"LS AA,gran-micsuc,occ micxl,tr crpxl,ool-oom GRNST/tr scat-rr intbd dns sl ool-dol PCKST,sl chky-anhy/tr xln ANHY-POR fl,v rr tan CHT,g ool/tr intxl POR,FLOR AA,g ltbrn/scat brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"
6560.00 6580.00	"LS tan-crm-off wh,occ ltbrn,tr brn,gran-micsuc,occ micxl,tr crpxl,ool-oom GRNST/scat-intbd dns sl ool-dol PCKST,sl chky-anhy/tr xln ANHY-POR fl,v rr tan CHT,POR-FLOR AA,g-fr ltbrn/tr scat brn-blk dd o STN,g fast-mod fast stmg mlky CUT"
6580.00 6600.00	"LS AA,gran-micsuc-micxl,occ crpxl,pred ool-oom GRNST/scat-intbd dns sl ool-dol PCKST,sl chky-anhy/tr xln ANHY-POR fl,v rr tan CHT,POR-FLOR-STN-CUT AA"
6600.00 6620.00	"LS,ltbn-tn-crm-offwht,sl mott-mott,mic-vf xln,mdns-scat dns mtx,pred intrbd ool oom/occ GRNST to sl ool dns chlky PCKST,tr anhy xls,rr foss frgs;pred oomoldic/oolcastic to f-intrxln fab POR,sptty pr-blk OSTN res,pred dkbrn-ltbrn OSTN,f-fst dif CUT,briFLO"

DEPTH	LITHOLOGY
6620.00 6640.00	"LS AA,sl incr PCKST,mf-fr ltbn-dkbn mtx OSTN,sptty cast fld dd o STN res,g-even mbri-bri yelgld FLOR,mf-fast-dif/milky ring/strmg CUT,v-rr CHT frgs"
6640.00 6660.00	"LS,offwht-tn-crm,sl mott-mott,mic-vf xln,sl grn-mdns mtx,sl dolo ip,pred intrbd GRNST to PCKST,chlky,sl anhy,rr foss frgs,sme chlky/calc fld casts;pred mf-f intrxln to mf-occ red oom/occ fab POR,FLOR-CUT-OSTN AA"
6660.00 6680.00	"LS,ltbn-tn-crm-offwht,sl mott-mott,mic-vf xln,mdns-scat dns mtx,pred intrbd ool oom/occ GRNST to sl ool dns chlky PCKST,tr anhy xls,rr foss frgs;pred oom/occ to f-intrxln fab POR,sptty pr-blk OSTN res,pred dkbrn-ltbrn OSTN,f-fst dif CUT,mbri-bri FLOR"
6680.00 6700.00	"LS,ltbrn-tn-crm-occ offwht,sl mott-mott,mic-vf xln,sl grn-mdns ip,pred intrbd ool oom/occ GRNST to sl ool sl-plty chlky PCKST,rr abhy xls,rr cht frgs;pred mf-f intrxln to red-mf oom/occ fab POR,dkbn-ltbn OSTN,sptty blk OSTN res,mbri-bri yelgld FLOR"
6700.00 6720.00	"LS,crm-tn-occ ltbn,sl mott,mic-vf xln,occ crpt xln,mdns mtx-occ grn mtx,pred mdns sl ool PCKST to ool oom/occ GRNST,tr anhy xls,sl rthy,sl chlky;pred mf-f intrxln to scat reduced-pr oom/occ fab POR,sptty blk OSTN res-dkbrn-ltbrn OSTN,m-slo dif CUT"
6720.00 6740.00	"LS,offwht-tn-crm,sl mott,mic-occ vf xln,mdns mtx,sl dolo,tr oom/occ GRNST,pred intrxl-sl ool chlky PCKST,rr cht frgs,rr foss frgs;pred mf-intrxl to scat red-mf oom/occ fab POR,mbri-bri even yelgld FLOR,fst dif CUT,dkbrn-ltbrn OSTN,sptty blk cast fld res"
6740.00 6760.00	"LS,offwht-tn-crm,occ ltbn,sl mott,pred mic xln-occ vf xln,mdns mtx,occ grn mtx,pred intrbd PCKST to GRNST,sl chlky,sl rthy,tr anhy xls,tr offwht chlky carb mat,calc/anhy fls casts;pred mf-f intrxln to ptchy oom/occ fab POR,mbri-bri yelgld FLOR,mf-CUT"
6760.00 6780.00	"LS,offwht-tn-crm,sl mott-mott,mic-vf xln,sl grn-mdns mtx,sl dolo ip,pred intrbd GRNST to PCKST,chlky,sl anhy,rr foss frgs,sme chlky/calc fld casts;pred mf-f intrxln to mf-occ red oom/occ fab POR,FLOR-CUT-OSTN AA"
6780.00 6800.00	"LS,offwht-tn-crm,sl mott-mott,mic-vf xln,sl grn-mdns mtx,sl dolo ip,pred intrbd GRNST to PCKST,chlky,sl anhy,rr foss frgs,sme chlky/calc fld casts;pred mf-f intrxln to mf-occ red oom/occ fab POR,FLOR-CUT-OSTN AA"
6800.00 6820.00	"LS,ltbn-tn-crm-offwht,sl mott-mott,mic-vf xln,mdns-dns mtx,pred intrbd sl ool chlky mic foss PCKST to ool foss red-pr-fr oom/occ GRNST,tr anhy xls,chlky/calc fld casts;pred f-interxln to red-pr-fr oom/occ fab POR,even mbri yelgld FLOR,fst-mf-slo strm CUT"
6820.00 6840.00	"LS,crm-tn-occ ltbn,sl mott,mic-vf xln,occ crpt xln,mdns mtx-occ grn mtx,pred mdns sl ool PCKST to ool oom/occ GRNST,tr anhy xls,sl rthy,sl chlky;pred mf-f intrxln to scat reduced-pr oom/occ fab POR,sptty blk OSTN res-dkbrn-ltbrn OSTN,m-slo dif CUT"

DEPTH

LITHOLOGY

6840.00 6860.00 "LS,ltbn-tn-crm-offwht,sl mott-mott,mic-vf xln,mdns-scat dns
 mtx,pred intrbd ool oom/occ GRNST to sl ool dns chlky PCKST,tr anhy xls,rr foss
 frgs;pred oom/occ to f-intrxln fab POR,sptty pr-blk OSTN res,pred dkbrn-ltbrn OSTN,f-
 fst dif CUT,mbri-bri FLOR"6860.00 6880.00 "LS,ltbn-tn-crm-offwht,sl mott-

mott,mic-vf xln,mdns-scat dns mtx,pred intrbd ool oom/occ GRNST to sl ool dns chlky
 PCKST,tr anhy xls,rr foss frgs;pred poom/occ to f-intrxln fab POR,sptty pr-blk OSTN
 res,pred dkbrn-ltbrn OSTN,mf-fst dif CUT,g-mbri-bri FLOR"

6880.00 6900.00 "LS,offwht-tn-crm,occ ltbn,sl mott,pred mic xln-occ vf xln,mdns
 mtx,occ grn mtx,pred intrbd PCKST to GRNST,sl chlky,tr anhy xls,tr offwht chlky carb
 mat,calc/anhy fls casts;pred mf-f intrxln to ptchy oom/occ fab POR,mbri-bri yelgld
 FLOR,mf-fst dis strm CUT"

6900.00 6920.00 "LS,crm-tn-ltbn-offwht,sl mott,mic-vf xln,mdns mtx-occ grn mtx,pred
 mdns sl ool PCKST to ool oom/occ GRNST,tr anhy xls,sl rthy,sl chlky;pred mf-f intrxln
 to scat reduced-pr oom/occ fab POR,sptty blk OSTN res-dkbrn-ltbrn OSTN,m-slo dif CUT"

6920.00 6940.00 "LS,ltbn-tn-crm-offwht,sl mott-mott,mic-vf xln,mdns-scat dns
 mtx,pred intrbd ool oom/occ GRNST to sl ool dns chlky PCKST,tr anhy xls,rr foss
 frgs;pred oom/occ to f-intrxln fab POR,sptty pr-blk OSTN res,pred dkbrn-ltbrn OSTN,f-
 fst dif CUT,mbri-bri FLOR"

6940.00 6960.00 "LS,ltbn-tn-crm-offwht,sl mott-mott,mic-vf xln,mdns-dns mtx,pred
 intrbd sl ool chlky mic foss PCKST to ool foss red-pr-fr oom/occ GRNST,tr anhy
 xls,chlky/calc fld casts;pred f-interxln to red-pr-fr oom/occ fab POR,even mbri yelgld
 FLOR,fst-mf-slo strm CUT"

6960.00 6980.00 "LS,ltbn-tn-crm-offwht,sl mott-mott,mic-vf xln,mdns-dns mtx,pred
 intrbd sl ool chlky PCKST to ool foss red-pr-fr oom/occ GRNST,tr anhy xls,chlky/calc
 fld casts;pred f-interxln to red-pr-fr oom/occ fab POR,even mbri yelgld FLOR,fst-mf-
 slo strm CUT"

6980.00 7000.00 "LS,ltbn-tn-crm-offwht,sl mott-mott,mic-vf xln,mdns-scat dns
 mtx,pred intrbd ool oom/occ GRNST to sl ool dns chlky PCKST,tr anhy xls,rr foss
 frgs;pred oom/occ to f-intrxln fab POR,sptty pr-blk OSTN res,pred dkbrn-ltbrn OSTN,f-
 fst dif CUT,mbri-bri FLOR"

7000.00 7020.00 "LS,ltbn-tn,mott,mic-pred vf xln,grn mtx-occ sl suc mtx,mdns mtx
 ip,pred ool oom/occ GRNST,tr sl ool chlky cast fld PCKST,tr anhy xls;pred mf-f oom/occ
 fab POR,m-fst-f slo dif strm CUT,mlky ring,mbri-bri yelgld FLOR,pred mf-dkbrn OSTN"

7020.00 7040.00 "LS,ltbn-tn,mott,mic-vf xln,sl suc-grn mtx,mdns mtx ip,pred ool
 oom/occ GRNST,occ calc/chlky-anhy fld casts,rr anhy xls;predmf-f oomoldic to
 oolicastic fab POR,mf-dkbrn-cast fld blk OSTN,mf-slo dif strm CUT,mbri-sptty bri
 yelgld FLOR"

DEPTH	LITHOLOGY
7040.00 7060.00	"LS,ltbn-tn,mott,mic-vf xln,sl suc-grn mtx,mdns mtx ip,pred ool oom/occ GRNST,tr PCKST AA,occ calc/chlky-anhy fld casts;predmf-f oomoldic to oollicastic fab POR,mf-dkbrn-cast fld blk OSTN,mf-slo dif strm CUT,mbri-sptty bri yelgld FLOR"
7060.00 7080.00	"LS,ltbn-tn,mott,mic-vf xln,sl suc-grn m tx,mdns mtx ip,pred ool oom/occ GRNST,occ calc/chlky-anhy fld casts,rr anhy xls;predmf-f oomoldic to oollicastic fab POR,mf-dkbrn-cast fld blk OSTN,mf-slo dif strm CUT,mbri-sptty bri yelgld FLOR"
7080.00 7100.00	"LS crm-tan-ltbrn,occ brn,off wh,micsuc-gran-micxl,sl crpxl,oom-ool GRNST,tr scat dns sl ool PCKST,sl chky-anhy/tr xln ANHY-POR fl,v sl dol ip,rr tan-crm CHT-sil incl,g-fr ool/tr intxl POR,g even bri yel FLOR,fr-g ltbrn/tr brn-rr blk dd o STN,g fast stmg-sl blooming mlky CUT"
7100.00 7120.00	"LS tan-crm-ltbrn,occ brn,off wh,micsuc-gran-micxl,sl crpxl,oom-ool GRNST/tr PCKST AA,sl chky-anhy/tr xln ANHY & sl inc POR fl,sl dol/rr DOL cmt ip,rr CHT-sil incl AA,g-fr ool/tr intxl POR,g even bri-mod bri yel FLOR,fr-g ltbrn/scat brn -tr blk dd o STN,g blooming-fast stmg mlky CUT"
7120.00 7140.00	"LS AA,micsuc-gran-micxl,sl crpxl,oom-ool GRNST,tr scat-thn intbd dns sl ool PCKST,sl chky-anhy/tr xln ANHY-POR fl,incr sl dol/tr DOL cmt ip,v rr CHT-sil incl AA,g ool/tr intxl POR,FLOR-STN AA,g fast stmg-sl blooming mlky CUT"
7140.00 7156.00	"LS tan-crm-ltbrn,occ brn,off wh,micsuc-gran-micxl,sl crpxl,oom-ool GRNST/tr PCKST AA,sl chky-anhy/tr xln ANHY-rr POR fl,sl dol/tr DOL cmt ip,v rr tan-crm CHT incl,g ool/tr intxl POR,g even bri-mod bri yel FLOR,fr-g ltbrn/scat brn-tr blk dd o STN,CUT AA"

FORMATION TOPS

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #17-22 NW 1-A HORIZONTAL LATERAL LEG #3

FORMATION NAME		SAMPLE MEASURED DEPTH	SAMPLE TRUE VERTICAL DEPTH	DATUM KB:4716'
UPPER ISMAY		±5348'	±5348'	-632'
LOWER ISMAY		5455'	5451'	-735'
GOTHIC SHALE		5496'	5480'	-764'
DESERT CREEK		5516'	5491'	-775
DC 1-A ZONE		5526'	5496'	-780

GEOLOGICAL SUMMARY

AND

ZONES OF INTEREST

The Mobil Exploration and Production U.S., Inc., Ratherford Unit #17-22 Northwest Horizontal Lateral Leg #3 was a re-entry of the Mobil Ratherford Unit #17-22 located in Section 17, T41S, R24E, and was sidetracked in a northwesterly direction from 5405' measured depth, 5405' true vertical depth, on May 21, 1998. The lateral reached a measured depth of 7156', true vertical depth of 5501' at total depth, with a horizontal displacement of 1700' and true vertical plane 315 degrees on May 24, 1998 in the Desert Creek 1-A porosity zone. As previously noted, during the initial preparation of the well bore, difficulty was experienced pressure testing the BOP & Hydrill, consequentially the BOP & Hydrill had to be replaced. The curve portion of the lateral was completed at a true vertical depth of 5507.4', in the 1-A porosity zone of the Desert Creek on May 22, 1998. The curve section of the hole was begun in the lower 46' of the Upper Ismay member of the Upper Paradox Formation before encountering the typical sections of Lower Ismay, Gothic Shale and Desert Creek members of the Upper Paradox Formation.

Objectives of the Ratherford Unit #17-22 leg #3 horizontal lateral were to penetrate and drill the 1-A porosity horizon, to identify and define the lithology, and evaluate the porosity and effective permeability of the 1-A bench of the Desert Creek. These objectives were accomplished in the 1-A zone, which showed a consistent lithology. After completing the curve portion of the lateral, the lateral section required only minor amounts of sliding to remain within the porosity zone as well as control horizontal plane direction. The well path used the proposed target line as a reference point throughout the 1-A zone. Only the top of the porosity zone was encountered within the 1-A zone. The lateral section of the hole was completed at a horizontal displacement of 1700' in the good oolitic to oomoldic grainstones of the 1-A zone. .

The top of the Upper Ismay was not encountered while drilling the curve portion of Lateral Leg #3, but was estimated at 5348', measured and true vertical depths. The basal 50' of the formation, from 5405' to 5453' measured depths, was seen in the upper portion of the curve section. Approximately one third of the Upper Ismay was characterized by a dense argillaceous to silty, cherty to slightly anhydritic limestone. The limestone was tan to cream to white and occasionally brown to some gray brown, microcrystalline to cryptocrystalline with an occasional chalky to slightly silty texture, predominately dense and tight crystalline matrix and had very rare microfossils. Rare to traces of translucent to tan to brown and occasional dark brown to smokey gray brown cherts were present plus scattered crystalline calcite and anhydrite. Scattered throughout this interval were very rare streaks of intercrystalline porosity, with rare sample shows. The argillaceous limestones were generally darker in color with a slightly silty texture, grading to a calcareous siltstone and limey shale in part, and some tan to light brown, some brown, microcrystalline to very fine crystalline, very slightly limy, earthy dolomites were noted. This dolomite was slightly silty, with rare tan chert fragments, and graded to a very shaley dolomite marlstone. The basal limestone from 5445' to the top of the Lower Ismay were predominately packstone, cream to white to tan and occasionally gray brown to brown, cryptocrystalline to microcrystalline with a chalky to silty texture, with carbonaceous streaks and became increasingly dolomitic and shaley with depth. The zone was also slightly anhydritic with a trace of crystalline anhydrite, a scattered tan to brown chert, very rare thin argillaceous brown microcrystalline dolomite and scattered dark gray to black shale laminae. This zone displayed none to very rare

intercrystalline to fracture porosity with very rare, scattered bright to dull yellow fluorescence, very rare brown stain and a poor slow streaming cut. The Hovenweep marker between the Upper and Lower Ismay members was well represented in the samples in this lateral, consisting of a very slight increase in the brown to gray brown to gray, dolomitic to calcareous, slightly silty, occasionally micaceous, very slightly fossiliferous, occasionally carbonaceous shales.

The top of the Lower Ismay was picked at a measured depth of 5455', 5451' true vertical depth, and was based primarily on sample identification and an increase in penetration rate. The lithology of the Lower Ismay from 5455' to 5475' measured depth, 5451' to 5466' true vertical depth, was predominately a white to cream to brown, cryptocrystalline to microcrystalline limestone, predominately earthy to silty and argillaceous, slightly dolomitic to dolomitic rich cement, with thin chalky to anhydritic streaks. This interval had minor amounts of translucent to brown chert, and had scattered black carbonaceous inclusions. The limestones displayed no visible porosity or sample shows. At a measured depth of 5475' to 5487' measured depth, 5475' true vertical depth, and the lithology changed to a brown to medium brown, microcrystalline, argillaceous, very limey dolomite grainstone, with interbedded dense, slightly dolomitic limestone packstone. This dolomite had a trace of intercrystalline porosity with a trace of sample show. The interbedded dense limestone packstones were cream to gray to tan, with no visible porosity or sample show. The lower portion of the Lower Ismay from 5532' to the top of the Gothic at 5549' measured depth became increasingly argillaceous and darker in color, as the limestones and very thin dolomites graded into the shale of the Gothic Shale. This portion of the section was predominately tan to cream to light gray, dense to argillaceous limestones and very thin brown to medium brown, very argillaceous to marly dolomites. These limestones and dolomites were mainly microcrystalline to cryptocrystalline, earthy to slightly silty, as well as being slightly anhydritic with scattered tan to brown chert. Thin interbeds of carbonaceous shales were noted. Minor traces of microfossils were also present.

The Gothic Shale was penetrated at a measured depth of 5496', 5480' true vertical depth, and was the typical lithology, predominantly dark brown to black to dark gray shale, carbonaceous, silty, calcareous to slightly dolomitic and slightly micaceous. The top of the Gothic was picked primarily by a significant decrease in the penetration rate as well as an increase in the amount of shale in the samples. The top underlies the Lower Ismay with a gradational contact and overlays the Desert Creek with a rather sharp contact

The top of the Desert Creek member of the Upper Paradox formation was marked by a thin transition zone facies between the overlying Gothic Shale and the underlying 1-A porosity zone. This thin interval was picked at a measured depth of 5516', 5496' true vertical depth, and was based on an increase in limestones in the samples, as well as changes in the rate of penetration. In this northwesterly direction, the transition zone had a true thickness of approximately 4'. The lithology of the transition zone in this lateral, displayed the typical transition zone facies of interbedded light gray to white to brown, cryptocrystalline to microcrystalline limestone, argillaceous to clean, rare crinoid fossils and dense, with thin streaks of medium brown to brown dolomite, microcrystalline with a argillaceous to limey matrix, thin dark gray to black, carbonaceous shale partings and very thin anhydrite streaks to scattered crystals. This zone displayed no visible porosity with no visible staining, spotty very poor dull mineral fluorescence and no visible cut.

The top of the Desert Creek 1-A porosity zone was encountered at a measured depth of 5526', true vertical depth of 5496', approximately flat to the top of the 1-A zone on the R.U. 17-22 vertical well log. The top was noted by a significant increase in the penetration rate and a change to the typical oolitic limestone grainstone displaying oomoldic and intercrystalline porosity development. The limestones in the northwesterly 1-A porosity zone, while drilling the curve section, were tan to brown, some cream, very fine crystalline to microcrystalline, with a minor amount of granular to microsucrosic texture, oolitic to oomoldic and a slightly anhydritic to dolomitic cement. These limestone grainstones have a fair to good oolitic and a trace of

intercrystalline porosity development, fair brown stain to traces of black bitchimum stain*, a good bright to occasionally dull yellow fluorescence and fair to good streaming to some slow diffused cuts. Thin interbeds of slightly oolitic limestone packstones were present though out the 1-A porosity zone and were cream to tan in color, microcrystalline with a dense tight to slightly chalky texture. The limestone packstones had no visible sample shows and were occasionally anhydritic. The 1-A porosity zone was projected to be about 12 foot thick in this northwesterly lateral, based on the 1-A zone thickness seen in Lateral Leg #1. The vertical well log showed the 1-A zone to be approximately 13' thick and was not expected to thin significantly as the lateral moved away from the vertical well bore. The 1-A zone, in this northwest lateral, was encountered at a horizontal displacement of 75', and was interpreted to be slightly thinner than the 13 foot thick porosity zone seen on the gamma neutron log from the vertical well.

The curve portion of the lateral was completed at a measured depth of 5575', 5507.4' true vertical depth, and a horizontal displacement of 121', with an inclination of 89.9 degrees, on May 22, 1998. At this time a trip was made to change out bottom hole assemblies prior to drilling the lateral section. The lateral section was begun also on May 22, 1998, near the base of the 1-A porosity zone

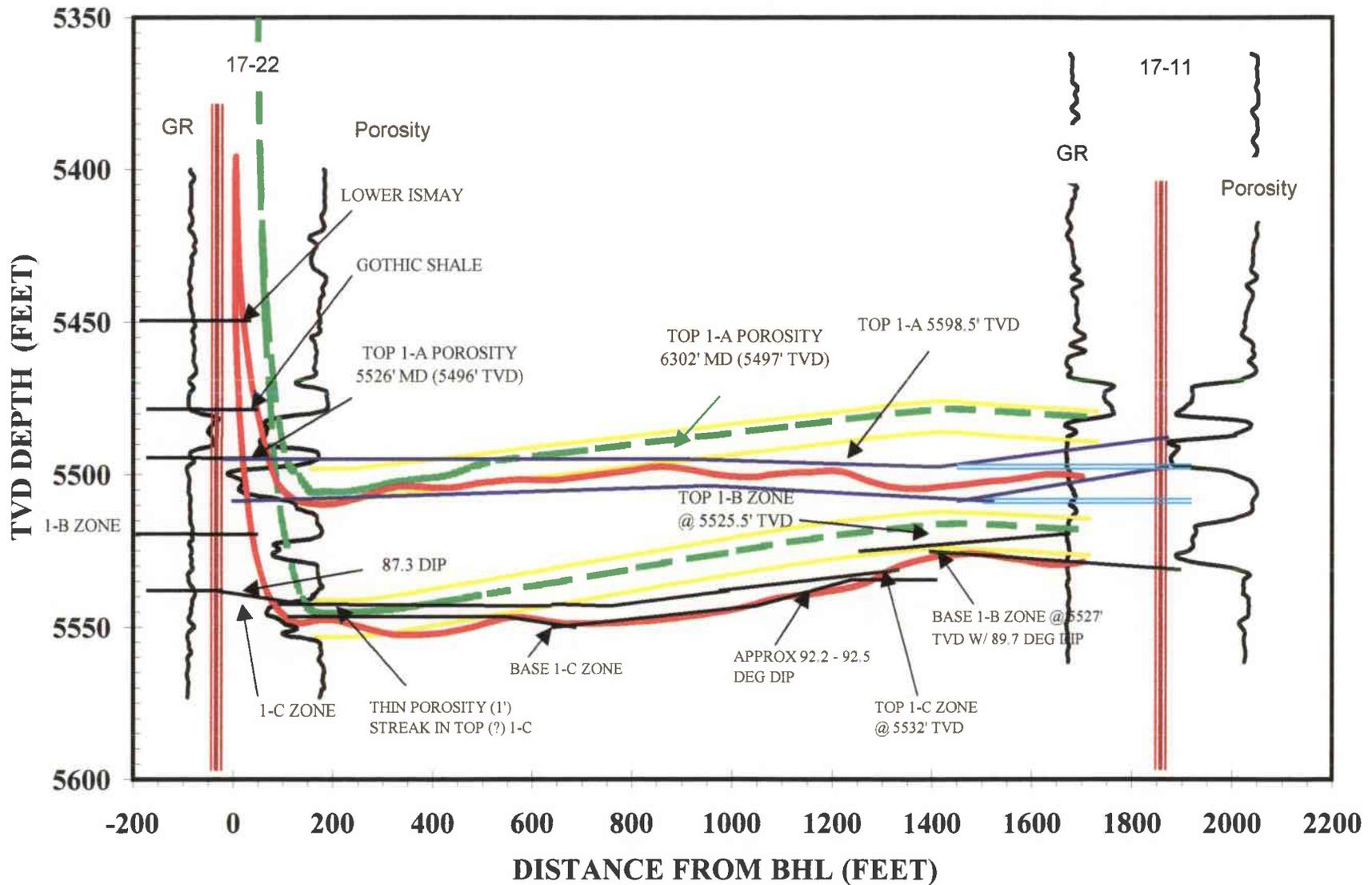
The lateral for the 1-A porosity began at a measured depth of 5575', true vertical depth 5508'. Landing approximately four feet below the target line placed the bit at the top of the 1-A/1-B transition zone. The limestones drilled from 5575' measured depth, true vertical depth 5508' to 5712' measured depth, true vertical depth 5506', were predominately a packstone, tan to cream, slightly mottled, microcrystalline to occasionally very fine crystalline with a moderately dense matrix and scattered dense to tight matrix. These limestones contained fossil fragments, trace oolites, anhydrite crystals, rare calcite fracture fill and some off-white chalky carbonaceous matter. This interval displayed predominately a moderately fair to fair intercrystalline fabric porosity with some thin streaks of reduced oomoldic to oolitic porosity. Staining was poor, fluorescence was a spotty moderately bright yellow-gold and the cut was weak and slightly diffused.

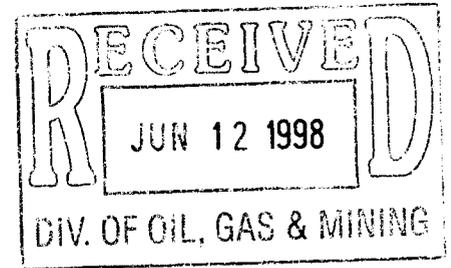
As the lateral continued up at shallow angle the facies changed to an oomoldic to oolitic grainstone with some thinly interbedded packstones and remained predominately a grainstone from 5712' measured depth, true vertical depth 5506', to the total depth of 7156', true vertical depth 5500'. These grainstones were cream to tan to light brown, mottled, microcrystalline to very fine crystalline, grainy to occasionally slightly sucrosic to microsucrosic with a moderately dense matrix in part. Samples contained crystalline anhydrite, calcite-anhydrite filled casts, rare light brown chert fragments, rare to trace fossil fragments, trace off-white chalky carbonaceous matter and were occasionally slightly dolomitic in part. Moderately fair to fair oomoldic to oolitic fabric porosity with some scattered interoolitic and good intercrystalline porosity was noted throughout the zone. The grainstones showed a moderately good to good dark brown to brown to light brown oil stain with black dead oil resin filling casts and the thinly interbedded packstones contained a weak light brown matrix staining. A moderately good to good fast streaming to good slow diffused cut and a moderately bright to bright yellow-gold even fluorescence was seen throughout the zone as well. The well path "bumped" the top at 6302' measured depth, true vertical depth 5497', and 6638' measured depth, true vertical depth 5498', and there was an increase in off-white to tan, microcrystalline, slightly platy, chalky, slightly oolitic packstone. An increase between 6800' measured depth, true vertical depth 5504', to 6970' measured depth, true vertical depth 5502', in packstones was noted on the log as well and was interpreted to be thinly interbedded with the grainstones.

From the beginning of the northwest lateral to termination on May 24, 1998, at a measured depth of 7156', true vertical depth 5501', and a horizontal displacement of 1700', the lithology remained fairly consistent. With the exception of minor increases in packstone towards the top of the 1-A porosity and some thin interbedding towards the 17-11 wellbore, the lithology remained an oomoldic to oolitic grainstone with good oil shows. After tracking the 1-A porosity it is apparent that its development will enhance the overall performance when the zone is influenced by the water flood plan and should contribute to production in the Rutherford Unit.

*The black residual staining has been called by Dr. Dave Eby & others as "bitchimum" and is also known as "dead oil" ("dd o stn" on mud logs). This staining is associated with the movement of oil over long periods of time and is a good indicator of producible hydrocarbons when associated with productive porosities, but can also be found in porosities that have been filled by anhydrites and other material at later dates.

MOBIL, Ratherford Unit #17-22, Northwest Lateral Legs 1 & 3





MOBIL

**RATHERFORD UNIT #17-22
SE HORIZONTAL LATERAL LEG #4
1-A POROSITY BENCH
DESERT CREEK MEMBER
PARADOX FORMATION
SECTION 17, T41S, R24E
SAN JUAN, UTAH**

**GEOLOGY REPORT
by
LUKE TITUS/ MARVIN ROANHORSE
ROCKY MOUNTAIN GEO-ENGINEERING CORP.
GRAND JUNCTION, COLORADO
(970) 243-3044**

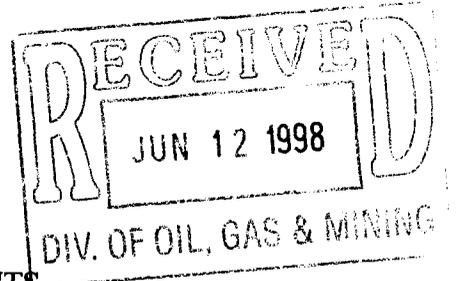


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WELL SUMMARY

OPERATOR: MOBIL EXPLORATION & PRODUCTION U.S. INC.

NAME: RATHERFORD UNIT #17-22 SE HORIZONTAL LATERAL
LEG #4 IN THE DESERT CREEK 1-A POROSITY BENCH

LOCATION: SECTION 17, T41S, R24E

COUNTY/STATE: SAN JUAN, UTAH

ELEVATION: KB:4716' GL:4704'

SPUD DATE: 5/05/98

COMPLETION DATE: 5/28/98

DRILLING ENGINEER: BENNY BRIGGS / SIMON BARRERA

WELLSITE GEOLOGY: LUKE TITUS / MARVIN ROANHORSE

**MUDLOGGING
ENGINEERS:** MARVIN ROANHORSE / LUKE TITUS

CONTRACTOR: BIG "A" RIG 25
TOOLPUSHER: J. DEES

HOLE SIZE: 4 3/4"

CASING RECORD: SIDETRACK IN WINDOW AT 5378' MEASURED DEPTH

DRILLING MUD: M-I DRILLING FLUIDS
ENGINEER: RON WESTENBERG
MUD TYPE: FRESH WATER & BRINE WATER W/ POLYMER SWEEPS

**DIRECTIONAL
DRILLING CO:** SPERRY-SUN

ELECTICAL LOGGING: NA

TOTAL DEPTH: 7058' MEASURED DEPTH; TRUE VERTICAL DEPTH-5498'

STATUS: TOH & LAY DOWN TOOLS – PREPARE TO MOVE RIG

DRILLING CHRONOLOGY
RATHERFORD UNIT #17-22
SE 1-A HORIZONTAL LATERAL LEG #4

DATE	DEPTH	DAILY	ACTIVITY
5/24/98	6861'	295'(TD)	TD LEG #3-7156;PUMP 10 BBL,SWEEP & CIRC OUT SMPLES-PUMP 20 BBLs BRINE & TOOH TO WINDOW-CIRC 20 MIN. & PUMP100 BBL BRINE.TOOH & L.D. LAT ASSMY-M.U. SUPER HOOK & TIH.TIH W/PIPE OFF RACK HHOK WHIPSTOCK & SHEAR OFF-TOOH W/WHIPSTOCK & L.D.-M.U. NEW WHIPSTOCK (#4) & ORIENT.TIH W/WHIPSTOCK-SET WHIPSTOCK @ 5369'-CIRC BTMS UP THRU CHOKE
5/25/98	5369'	0'	CIRC BTMS UP THRU CHOKE-MILL W/STARTER MILL 5369'-5371'.PUMP 20 BBLs BRINE & HANG SWIVEL.TOOH L.D. STARTER MILL. M.U. WINDOW MILL & TIH-BREAK CIRC-MILL WINDOW 5369'-5378'.PUMP 10 BBLs-SWEEP & CIRC OUT.PUMP 150 BBLs BRINE.L.D. 12 JNTS.TOOH,L.D. MILLS.P.U. CURVE ASSY.,ORIENT & TEST.RIG SERVICE.TIH-CIRC BTMS UP.R.U. & RUN GYRO IN HOLE.SURVEY F/5378-T/5396
5/26/98	5396'	27'	DRLG CURVE & SRVY F/5395-T/5407.PULL GYRO & RIG DOWN W.L. TRUCK.DIR DRLG & SURVEYING F/5407-T/5464;L.D. 4 JNTS TOH TO WINDOW.PUMP 150 BBLs BRINE.TOOH,CHGE OFFSET PAD.RIG SRVCE.TIH.SWIVEL UP,BREAK CIRC,DRLG AHEAD SRVY T/5570'
5/27/98	5570'	658'	PUMP & CIRC. SWEEP & DISPLACE W/BRINE-L.D. 63 JNTS. & TOOH-CHANGE OUT DIR. ASSY & TEST-TIH.SWIVEL UP & BREAK CIRC.SHUT IN WELL,CIRC GAS THRU CHOKE.DIR & SRVY F/5570-T/6628.CHANGE OUT OIL COOLER ON RIG MTR
5/28/98	6228'	830'	DRILLING AHEAD AND SURVEYING F/6628'-T/7058' TD; DRILLING CUT SHORT BY MOBIL OFFICE

DAILY ACTIVITY

Operator: MOBIL

Well Name: RATHERFORD UNIT #17-22 SE 1-A HORIZONTAL LATERAL LEG #4

DATE	DEPTH	DAILY	DATE	DEPTH	DAILY
5/25/98	5369'	0'			
5/26/98	5396'	27'			
5/27/98	5570'	658'			
5/28/98	6228'	830' (TD)			

BIT RECORD

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #17-22 SE 1-A HORIZONTAL LATERAL LEG #4

RUN	SIZE	MAKE	TYPE	IN/OUT	FTG	HRS	FT/HR
1 (RR)	4 3/4"	STC	MF-37P	5378'/ 5570'	191'	20	15'
2	4 3/4"	STC	MF-37P	5570'/ 7058'	1488'	31	60'

MUD REPORT

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #17-22 SE 1-A HORIZONTAL LATERAL LEG #4

DATE	DEPTH	WT	VIS	PLS	YLD	GEL	PH	WL	CK	CHL	CA	SD	OIL	WTR
5/25/98	5375'	9.2	27	2	1	0/0	11.0	NC	NC	93K	1600	3%	4%	93%
5/26/98	5464'	9.2	27	2	1	0/0	12.0	NC	NC	120K	1000	2%	6%	92%
5/27/98	5655'	9.4	27	2	1	0/0	12.0	NC	NC	135K	800	2%	4%	94%
5/28/98	6558'	9.2	26	1	1	0/0	11.0	NC	NC	950K	150	0%	2%	97%

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer : Mobil (Utah)
Platform ..: RATHERFORD UNIT
Slot/Well ..: BA25/17-22,4A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
5200	0.24	227.94	5199.45	19.33 N	11.38 E	-5.62	0
5369	0.4	215.81	5368.45	18.62 N	10.77 E	-5.55	0.1
5378	3.7	135	5377.44	18.38 N	10.96 E	-5.25	40.64
5388	7.1	143.4	5387.4	17.66 N	11.56 E	-4.32	34.82
5398	10.9	146.2	5397.27	16.38 N	12.45 E	-2.78	38.24
5408	14.8	147.6	5407.02	14.51 N	13.66 E	-0.6	39.12
5418	18.5	148.4	5416.6	12.08 N	15.18 E	2.19	37.07
5428	22.3	149	5425.97	9.1 N	16.99 E	5.57	38.06
5438	26.1	149.4	5435.09	5.58 N	19.09 E	9.55	38.04
5448	29.6	149.7	5443.93	1.56 N	21.45 E	14.07	35.03
5458	33.7	150	5452.44	2.98 S	24.09 E	19.14	41.03
5468	39.1	150	5460.49	8.12 S	27.05 E	24.87	54
5478	45.8	151.1	5467.86	13.99 S	30.37 E	31.37	67.41
5488	52.9	149.6	5474.37	20.58 S	34.12 E	38.68	71.9
5498	59.7	145.8	5479.92	27.6 S	38.57 E	46.79	74.97
5508	65.1	141.2	5484.55	34.71 S	43.85 E	55.55	67.64
5518	70.4	137.7	5488.34	41.74 S	49.86 E	64.77	62.11
5528	72.7	142.9	5491.5	49.04 S	55.92 E	74.21	54.42
5538	74.9	148.8	5494.29	56.98 S	61.3 E	83.64	60.77
5570	92.1	146.1	5497.9	83.67 S	78.35 E	114.57	54.39
5593	92.1	146.7	5497.06	102.81 S	91.07 E	137.1	2.61
5624	90.8	144.9	5496.28	128.44 S	108.49 E	167.54	7.16
5656	89.1	142.5	5496.3	154.23 S	127.43 E	199.17	9.19
5688	89.5	139.5	5496.7	179.09 S	147.57 E	230.99	9.46
5720	90.3	139.5	5496.75	203.43 S	168.35 E	262.89	2.5
5751	91.5	139.1	5496.26	226.93 S	188.56 E	293.8	4.08
5782	90.6	136.7	5495.7	249.92 S	209.34 E	324.75	8.27
5814	90.1	135.2	5495.5	272.92 S	231.59 E	356.74	4.94
5846	91.1	135.1	5495.17	295.61 S	254.16 E	388.74	3.14
5878	89.3	134.4	5495.05	318.13 S	276.88 E	420.74	6.04
5910	88.9	134	5495.56	340.44 S	299.82 E	452.73	1.77
5941	90.5	132.3	5495.72	361.64 S	322.43 E	483.71	7.53
5973	90	135.1	5495.58	383.74 S	345.57 E	515.7	8.89
6005	90.5	134.9	5495.44	406.37 S	368.19 E	547.7	1.68

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well... : BA25/17-22,4A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
6037	89.8	132.4	5495.35	428.46 S	391.35 E	579.69	8.11
6069	88.9	132.6	5495.72	450.07 S	414.94 E	611.65	2.88
6101	90.2	132.6	5495.97	471.73 S	438.49 E	643.63	4.06
6132	90	132.6	5495.92	492.72 S	461.31 E	674.6	0.65
6291	87.6	131.2	5496.52	599.8 S	578.82 E	833.41	12.55
6323	86.7	131.7	5498.11	620.96 S	602.77 E	865.31	3.22
6354	87.2	132.1	5499.76	641.63 S	625.81 E	896.22	2.06
6385	87.4	132.6	5501.22	662.49 S	648.7 E	927.15	1.74
6417	88.9	132.8	5502.25	684.18 S	672.2 E	959.11	4.73
6449	89.4	132.3	5502.73	705.82 S	695.77 E	991.07	2.21
6481	89.6	132.4	5503.01	727.37 S	719.42 E	1023.04	0.7
6512	90.7	132.8	5502.93	748.36 S	742.24 E	1054.01	3.78
6544	89.5	132.6	5502.87	770.06 S	765.76 E	1085.98	3.8
6576	88	132.1	5503.57	791.61 S	789.4 E	1117.94	4.94
6608	88.4	132.6	5504.58	813.16 S	813.04 E	1149.89	2
6639	90.4	133.1	5504.9	834.24 S	835.76 E	1180.87	6.65
6671	91.7	132.6	5504.31	855.99 S	859.22 E	1212.84	4.35
6703	91.4	132.4	5503.45	877.61 S	882.8 E	1244.8	1.13
6734	90.4	133.3	5502.96	898.68 S	905.53 E	1275.77	4.34
6766	89.6	131.6	5502.96	920.28 S	929.14 E	1307.74	5.87
6797	90.5	131	5502.93	940.74 S	952.42 E	1338.67	3.49
6829	91.1	130.9	5502.49	961.71 S	976.59 E	1370.59	1.9
6861	91.2	130.2	5501.85	982.51 S	1000.9 E	1402.48	2.21

THE DOGLEG SEVERITY IS IN DEGREES PER 100.00 FEET.
N/E COORDINATE VALUES GIVEN RELATIVE TO WELL HEAD.
TVD COORDINATE VALUES GIVEN RELATIVE TO WELL HEAD.
THE VERTICAL SECTION ORIGIN IS WELL HEAD.
THE VERTICAL SECTION WAS COMPUTED ALONG 135.00 (TRUE).
CALCULATION METHOD: MINIMUM CURVATURE

SAMPLE DESCRIPTIONS

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #17-22 SE 1-A HORIZONTAL LATERAL LEG #4

DEPTH	LITHOLOGY
5405.00 5420.00	"LS tan-brn,occ crm,crpxl-micxl,dns,occ rthy-chk,grdg to MRLST ip,v sl dol,v rr mic fos,tt,NFSOC,tr smky gy-brn CHT frag,scat dkbrn-gybrn crpxl rthy-sl lmy dns tt DOL-grdg to dol MRLST NFSOC & v rr thn gy-dkgy plty lmy-sl slty SH ptgs"
5420.00 5440.00	"LS,ltbn-bn-crm,mic-vf xln,slty-grn mtx,arg mtx,rthy,rr foss frgs,tr dkbrn CHT frgs,sl dolo to dolo ip;pred intrxln to rthy fab POR,v-pr dkbrn o STN,no CUT,dul spty yel FLOR"
5440.00 5450.00	"LS,ltbn-crm,mic-vf xln,mdns mtx,occ grn mtx,chlky,sl rthy/arg,scat CHT frgs,pred intrxln to rthy fab POR,spty blk o STN,p-slo CUT,spty dul FLOR"
5450.00 5460.00	"LS,ltbrn-tan-crm,mic-vfxl,mdns mtx,sl slty,sl suc tn DOL,rr anhy incl,rr CHT frgs,rthy,sl arg,sl chlky;pred intxl fab POR,p dkbrn o STN,spty dul-mbri yel gld FLOR,n CUT"
5460.00 5470.00	"LS,tan-crm-offwh-occ ltbrn,pred vfxl-mic xln,mdns,gran,sl dol to DOL rich cmt,sl chk,tr CHT frag-trnsl-ltbrn,tr offwh chk carb mat;pred intxl fab POR,ltbrn o STN,spty dull yel gld FLOR,n CUT"
5470.00 5480.00	"LS,offwh-tan-crm-occ ltbrn,vfxl,mdns mtx-sl suc,occ sl dol to DOL rich,scat arg LS,v sl slty;pred intxl fab POR,v-spty dull yel gld FLOR,n CUT,p ltbrn-dkbrn o STN"
5480.00 5500.00	"LS,tn-offwh-ltbrn-occ dkbrn,mic-vfxl,mdns mtx,sl slty-sl gran,sl dol ip,tr CHT frag,anhy,ckky,scat arg LS,rr calc frac flg;pred intxl fab POR,p ltbrn-dkbrn o STN,v wk slo strmg CUT,spty dula yel gld FLOR"
5500.00 5510.00	"LS grdg to SH,dkbrn-dkgybrn-blk,calc,sl slty,sft-mfrm,sbblky-sbplty,rthy/arg,carb,occ fis,LS AA,rr CHT frgs"
5510.00 5520.00	"SH blk-dkgy,sbblky-sbplty,sft-mfrm,sl calc-dol,carb-sooty,sl slty,mica w/v thn arg micxl brn DOL incl & bcmg LS crm-brn-tan,crpxl-micxl,rthy-cln,dns,sl anhy,dol,arg,tt,NFSOC"
5520.00 5530.00	"LS tan-crn,ltbrn-brn,crpxl-micxl,cln-dns,sl slty,occ arg,sl anhy-dol,bcmg sl ooc-oom,tt-rr intxl-ool POR,spty bri yel FLOR,rr brn STN,mfr slow-mod fast CUT,w/v thn DOL incl-brn micxl arg-cln lmy,v rr CHT frag"
5530.00 5540.00	"LS tan-brn,crpxl-vfxl,occ gran-micsuc,pred ooc-oom GRNST,scat thn dns-v sl ool-fos PKST,sl chty,v rr DOL-ANHY cmt,tt-g ool-intxl POR,fr bri yel FLOR,fr brn-rr blk STN,fr-mg mod fast-rr slow stmg CUT"

DEPTH	LITHOLOGY
5540.00 5560.00	"LS tan-brn,occ mbrn,rr wh-crm,crpxl-vfxl,occ gran-micsuc,pred ooc-oom GRNST,rr thn dns-v sl ool-fos plty-chk PKST frag,sl chty,v rr DOL-ANHY cmt,fr-g ool-tr intrxl POR,fr bri yel FLOR,mg brn-mbrn STN-tr blk dd o STN,fr-mg mod fast-fast stmg CUT, rr SH CVG"
5560.00 5575.00	"LS AA,bcmg pred crm-tan,rr wh,crpxl-micxl,dns,occ chk,sl fos PKST,rr styl,occ ANHY incl,tt-fr ool-rr frac POR,mfr dull-bri yel FLOR,rr-mfr brn-tr blk STN,fr slow-mfr mod fast stmg CUT"
5575.00 5600.00	"LS,tn-crm,sl mott,pre mic xln-occ crpt xln,mdns-dns mtx,pred sl ool fosssl plty PCKST,rr oom/occ GRNST,rr anhy xls,chlky;pred intrxln to micropore fab POR,wk slo sl dif CUT,dul-spty mbri yelgld FLOR,p-dkbn-ltbn o STN"
5600.00 5620.00	"LS AA,incr in dens-tt plty PCKST,chlky,sl anhy,sl foss,sl ool;pred intrxl fab POR,p-ltbrn o STN,wk slo strm CUT,dul-spty mbri yelgld FLOR"
5620.00 5640.00	"LS,crm-tn-occ ltbn,sl mott,crpt-mic xln,dns-occ tt mtx,pred sl ool sl chlky PCKST,scat anhy,offwht chlky carb mat,rr ltgy CHT frgs;pred mf-f intrxl to micropore fab POR,spty mbri-bri yelgld FLOR,v-wk slo strm CUT,pred blk dd oSTN,p-dkbn-ltbn mtx o STN"
5640.00 5660.00	"LS AA,sl incr vf xln,rr calc frac flgs,rr chlky carb mat,sl ool,rr fos frgs;pred mf-f intrxl fab POR,poss sme frac POR,spty blk dd o STN res,dkbrn-ltbrn mtx o STN,FLOR AA,CUT AA"
5660.00 5680.00	"LS,crm-tn-occ ltbn,mic-scat vf xln,mdns-dns-rr tt mtx,sl dolo,chlky,pred mdns-sl ool chlky PCKST,rr foss frgs,rr calc frac flgs,rr anhy,rr chlky offwht carb mat;pred mf-f intrxl fab POR,spty dd o STN,dkbrn-ltbrn mtx o STN,spty mbri yelgld FLOR,wk-CUT"
5680.00 5690.00	"LS AA,sl incr dns-occ tt PCKST,occ vf xln,pred mic xln,FLOR AA-CUT AA-OSTN AA,rr cht frgs"
5690.00 5710.00	"LS,ltbn-tn-crm-offwht,sl mott,mic-vf xln,mdns mtx,occ grn mtx,pred sl ool-mdns sl chlky PCKST,rr ool GRNST,rr chlky carb mat,rr frac flgs;pred intrxln fab POR,wk slo strm CUT,spty blk oSTN res,ltbn-dkbn OSTN,dul yelgld FLOR"
5710.00 5730.00	"LS,ltbn-tn-crm,sl mott-mott,mic-vf xln,scat grn mtx,mdns mtx,sl ool mdns PCKST to ool red-pr-f oom/occ ool GRNST,rr foss frgs,sl anhy;pred red-pr-f oom/occ to mf-f intrxl fab POR,dul-mbri yelgld FLOR,p-m slo dif strm CUT,pred dkbrn mtx o STN,spty blk res"
5730.00 5750.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx ip-mdns mtx,pred ool foss red-mf oom/occ GRNST,rr mdns sl ool PCKST,rr calc/chlky/anhy fld casts,sl anhy,sl rthy;pred mf-f intrxln to oom/occ fab POR,m-slo dif strm CUT,mbri yelgld FLOR,pred dkbn OSTN,sptyblk res "

DEPTH	LITHOLOGY
5750.00 5770.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx-occ sl suc mtx,mdns mtx ip,pred ool oom/occ GRNST,tr sl ool chlky cast fld PCKST,tr anhy xls;pred mf-f oom/occ fab POR,m-fst-f slo dif strm CUT,mlky ring,mbri-bri yelgld FLOR,pred mf-dkbrn OSTN"
5770.00 5790.00	"LS,ltbn-tn,mott,mic-vf xln,sl suc-grn mtx,mdns mtx ip,pred ool oom/occ GRNST,occ clac/chlky-anhy fld casts,rr anhy xls;predmf-f oomoldic to oolastic fab POR,mf-dkbrn-cast fld blk OSTN,mf-slo dif strm CUT,mbri- sptty bri yelgld FLOR"
5790.00 5815.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx-mdns mtx ip,pred ool oom/occ GRNST,rr sl ool PCKST,tr foss frgs,rr calc frac flgs,tr calc/anhy fld casts;pred mf-f oomoldic-oolastic fab POR,mg-g dkbrn-blk cast fld o STN,mbri-bri yelgld FLOR,mf-fst-slo dif CUT"
5815.00 5840.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx ip-mdns mtx,pred ool foss oom/occ GRNST,rr mdns sl ool PCKST,tr calc/chlky/anhy fld casts,sl anhy,sl rthy;pred mf-f intrxln to oom/occ fab POR,m-slo dif strm CUT,mbri yelgld FLOR,pred dkbn OSTN,sptyblk res "
5840.00 5860.00	"LS,ltbn-tn,mott,mic-vf xln,sl suc-grn mtx,mdns mtx ip,pred ool oom/occ GRNST,occ calc/chlky-anhy fld casts,rr anhy xls;predmf-f oomoldic to oolastic fab POR,mf-dkbrn-cast fld blk OSTN,mf-slo dif strm CUT,mbri- sptty bri yelgld FLOR"
5860.00 5880.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx-occ sl suc mtx,mdns mtx ip,pred ool oom/occ GRNST,tr sl ool chlky cast fld PCKST,tr anhy xls;pred mf-f oom/occ fab POR,m-fst-f slo dif strm CUT,mlky ring,mbri-bri yelgld FLOR,pred mf-dkbrn OSTN"
5880.00 5900.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx ip-mdns mtx,pred ool foss oom/occ GRNST,rr mdns sl ool-sl pty PCKST,tr calc/anhy fld casts,rr anhy xls,sl rthy;pred mf-f intrxln to oom/occ fab POR,m-slo dif strm CUT,mbri yelgld FLOR,pred dkbn OSTN,sptyblk res "
5900.00 5920.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx-mdns mtx ip,pred ool oom/occ GRNST,rr sl ool PCKST,tr foss frgs,rr calc frac flgs,tr calc/anhy fld casts;pred mf-f oomoldic-oolastic fab POR,mg-g dkbrn-blk cast fld o STN,mbri-bri yelgld FLOR,mf-fst-slo dif CUT"
5920.00 5940.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx-occ sl suc mtx,mdns mtx ip,pred ool oom/occ GRNST,tr sl ool chlky cast fld PCKST,tr anhy xls;pred mf-f oom/occ fab POR,m-fst-f slo dif strm CUT,mlky ring,mbri-bri yelgld FLOR,pred mf-dkbrn OSTN"
5940.00 5960.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx-occ sl suc mtx,mdns mtx ip,pred ool oom/occ GRNST,tr sl ool chlky cast fld PCKST,tr anhy xls;pred mf-f oom/occ fab POR,m-fst-f slo dif strm CUT,mlky ring,mbri-bri yelgld FLOR,pred mf-dkbrn OSTN"

DEPTH	LITHOLOGY
5960.00 5980.00	"LS,ltbn-tn,mott,mic-vf xln,sl suc-grn mtx,mdns mtx ip,pred ool oom/occ GRNST,occ calc/chlky-anhy fld casts,rr anhy xls;predmf-f oomoldic to oollicastic fab POR,mf-dkbrn-cast fld blk OSTN,mf-slo dif strm CUT,mbri-sptty bri yelgld FLOR"
5980.00 6000.00	"LS,ltbn-tn,mott,mic-vf xln,sl suc-grn mtx,mdns mtx ip,pred ool oom/occ GRNST,occ calc/chlky-anhy fld casts,rr anhy xls;predmf-f oomoldic to oollicastic fab POR,mf-dkbrn-cast fld blk OSTN,mf-slo dif strm CUT,mbri-sptty bri yelgld FLOR"
6000.00 6010.00	"LS AA,pred ool-oom GRNST/tr intbd-scat crm sl ool dns-chky PCKST,sl anhy/tr POR fl,g ool POR,g even mod bri-spty bri yel FLOR,g ltbrn/tr brn-blk dd o STN,g fast stmg mlky CUT"
6010.00 6030.00	"LS ltbrn-tan,occ crm/tr wh,gran-micxl,occ crpxl,pred ool-oom GRNST/scat-intbd dns sl ool-chky plty PCKST,anhy/tr xln ANHY-POR fl,sl dol/tr DOL rich cmt,rr tan CHT incl,POR-FLOR-STN-CUT AA"
6030.00 6070.00	"LS AA,ool-oom GRNST/sl incr scat-occ intbd dns sl ool-chky PCKST,anhy/tr xln ANHY-POR fl,sl dol/rr DOL cmt,tr mic fos,v rr CHT incl AA,g ool-tr intxl POR,g even mod bri-bri yel FLOR,g ltbrn/tr scat brn-blk dd o STN,g mod fast-fast stmg mlky CUT"
6070.00 6080.00	"LS AA,pred ool-oom GRNST/decr PCKST AA,anhy/tr xln ANHY-POR fl,v sl dol/rr DOL cmt,POR-FLOR AA,g-fr ltbrn/sl incr brn-blk dd o STN,CUT AA"
6080.00 6090.00	"LS AA,ool-oom GRNST/tr PCKST AA,v sl dol,POR-FLOR-STN-CUT AA"
6090.00 6100.00	"LS AA,ool-oom GRNST/tr intbd dns sl ool-rr chky plty PCKST,sl anhy/tr xln ANHY-POR fl,v sl-n dol,rr mic fos,POR-FLOR AA,STN AA/sl incr blk dd o STN,CUT AA"
6100.00 6120.00	"LS tan-ltbrn,occ crm-off wh,gran-micsuc,micxl,occ suc,crpxl,ool-oom GRNST/tr intbd-scat dns sl ool-v rr chky PCKST,anhy/tr xln ANHY-POR fl,tr mic fos,rr crm sil-CHT incl,v sl dol,g ool/tr intxl POR,FLOR-STN AA,g fast-sl blooming mlky CUT"
6120.00 6140.00	"LS AA,ool-oom GRNST/tr PCKST AA,anhy/tr xln ANHY-POR fl,v rr CHT incl AA,v sl-sl dol ip,g ool/tr intxl POR,g even bri-mod bri yel FLOR,g ltbrn/tr scat brn-blk dd o STN,g fast-sl blooming mlky CUT"
6140.00 6160.00	"LS tan-ltbrn,occ crm-off wh,gran-micsuc,occ micxl,tr crpxl,ool-oom GRNST,tr scat-intbd PCKST AA,anhy/tr xln ANHY-POR fl,g ool/tr intxl POR,g even bri-mod bri yel FLOR,g ltbrn/tr brn-blk dd o STN,g fast stmg mlky CUT"

DEPTH	LITHOLOGY
6160.00 6190.00	"LS AA, gran-micsuc, occ suc-micxl, tr crpxl, ool-GRNST, trintbd-scat dns sl ool PCKST, chky-anhy/tr xln ANHY-POR fl, sl dol/rr DOL cmt strk, rr tan-crm CHT incl, rr mic fos, g ool/tr intxl POR, g even bri-mod bri yel FLOR, g ltbrn/scat brn-blk dd o STRN, CUT AA"
6190.00 6200.00	"LS AA, ool-oom GRNST/tr PCKST AA, chky-anhy/tr xln ANHY-POR fl, v sl dol, POR-FLOR-STN-CUT AA"
6200.00 6220.00	"LS tan-ltbrn, occ crm-off wh, gran-micsuc, occ micxl, tr crpxl, ool-oom GRNST, tr scat-intbd PCKST AA, chky-anhy/tr xln ANHY-sl incr POR fl, g ool/tr intxl POR, g even mod bri-scat bri yel FLOR, g ltbrn/tr brn-blk dd o STN, g fast stmg-sl blooming mlky CUT"
6220.00 6240.00	"LS AA, gran-micsuc, occ micxl, tr crpxl, ool-oom GRNST/tr scat-intbd dns sl ool PCKST, chky-anhy AA, v rr tan CHT incl, POR AA, g even mod bri-bri yel FLOR, g ltbrn/tr brn-blk dd o STN, g fast stmg-sl blooming mlky CUT"
6240.00 6260.00	"LS AA, ool-oom GRNST/tr scat-intbd dns sl ool PCKST, chky-anhy/tr xln ANHY-POR fl, n-v sl dol ip, v rr tan CHT incl, g ool/tr intxl POR, g even bri-mod bri yel FLOR, g ltbrn/tr brn-blk dd o STN, g fast stmg-sl blooming mlky CUT"
6260.00 6280.00	"LS AA, ool-oom GRNST/tr scat-intbd PCKST AA, chky-anhy/tr xln ANHY-POR fl, n-v sl dol ip, v rr CHT AA, POR-FLOR-STN AA, g fast stmg-sl blooming mlky CUT"
6280.00 6300.00	"LS tan-ltbrn, occ crm-off wh, gran-micsuc, occ micxl, tr crpxl, ool-oom GRNST, tr scat-intbd PCKST AA, chky-anhy/tr xln ANHY-sl incr POR fl, g ool/tr intxl POR, g even mod bri-scat bri yel FLOR, g ltbrn/tr brn-blk dd o STN, g fast stmg-sl blooming mlky CUT"
6300.00 6310.00	"LS AA, ool-oom GRNST/tr PCKST AA, v sl dol, POR-FLOR-STN-CUT AA"
6310.00 6340.00	"LS AA, gran-micsuc, occ micxl, tr crpxl, ool-oom GRNST/sl incr scat-intbd dns sl dol-ool PCKST, chky-anhy AA, tr tan-crm CHT incl, POR AA, g even mod bri-scat bri yel FLOR, g ltbrn/tr brn-blk dd o STN, g fast stmg-sl blooming mlky CUT"
6340.00 6370.00	"LS tan-ltbrn, occ crm-off wh, tr brn, gran-micsuc, occ micxl-crpxl, pred ool-oom GRNST, scat-intbd PCKST AA, incr chky-anhy/tr xln ANHY-sl incr POR fl, tr CHT AA, POR-FLOR AA, g ltbrn/tr scat brn-blk dd o STN, g fast stmg-sl blooming mlky CUT"
6370.00 6390.00	"LS AA, gran-micsuc, occ micxl-crpxl, pred ool-oom GRNST/scat-intbd dns sl ool-dol PCKST, chky-anhy/tr xln ANHY-sl incr POR fl, tr tan-crm CHT, g ool/tr intxl POR, g even mod bri-scat bri yel FLOR, g ltbrn/tr brn-blk dd o STN, g fast stmg-sl blooming mlky CUT"

DEPTH	LITHOLOGY
6390.00 6410.00	"LS AA,pred ool-oom GRNST/scat-intbd PCKST AA,sl incr chky-anhy/tr xln ANHY-POR fl,g ool/tr intxl POR,tr CHT AA,g even mod bri-scat bri fast stmg mlky CUT"6430.00 6450.00 "LS AA,pred o yel FLOR,g ltbrn/tr brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"
6410.00 6430.00	"LS AA,gran-micsuc,occ micxl-crpxl,pred ool-oom GRNST/sl incr scat-intbd PCKST AA,incr chky-anhy/tr xln ANHY-sl incr POR fl,v rr CHT AA,g ool/tr intxl POR,g even mod bri-scat bri yel FLOR,STN AA,g mod fast/tr ol-oom GRNST/scat-intbd PCKST AA,chky-anhy/tr xln ANHY-POR fl,v rr CHT AA,POR-FLOR-STN AA,g mod fast-fast stmg mlky CUT"
6450.00 6470.00	"LS tan-ltbrn,occ crm-off wh,tr brn,gran-micsuc,occ micxl,tr crpxl,ool-oom GRNST/tr scat-rr intbd dns sl ool-dol PCKST,sl chky-anhy/tr xln ANHY-POR fl,v rr tan CHT,g ool/tr intxl POR,FLOR AA,g ltbrn/scat brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"
6470.00 6490.00	"LS AA,gran-micsuc,occ micxl,tr crpxl,pred ool-oom GRNST,tr scat-intbd PCKST AA,sl chky-anhy/tr xln ANHY-POR fl,v rr CHT AA,POR-FLOR AA,g-fr ltbrn/tr scat brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"
6490.00 6520.00	"LS AA,ool-oom GRNST/tr scat-intbd dns-sl ool PCKST,sl chky-anhy/tr xln ANHY-POR fl,v rr tan CHT incl,g ool/tr intxl POR,g mod bri-scat bri yel FLOR,fr-g ltbrn/tr scat brn-blk dd o STN,g mod fast-fast stmg mlky CUT"
6520.00 6540.00	"LS tan-crm,ltbrn,occ off wh,rr brn,gran-micsuc,tr crpxl,ool-oom GRNST/tr scat-intbd PCKST AA,sl chky-anhy/tr xln ANHY-POR fl,v rr CHT AA,g-fr ool/tr intxl POR,g even mod bri-scat bri yel FLOR,g ltbrn/tr brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"
6540.00 6560.00	"LS AA,gran-micsuc,occ micxl,tr crpxl,ool-oom GRNST/tr scat-rr intbd dns sl ool-dol PCKST,sl chky-anhy/tr xln ANHY-POR fl,v rr tan CHT,g ool/tr intxl POR,FLOR AA,g ltbrn/scat brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"
6560.00 6580.00	"LS tan-crm-off wh,occ ltbrn,tr brn,gran-micsuc,occ micxl,tr crpxl,ool-oom GRNST/scat-intbd dns sl ool-dol PCKST,sl chky-anhy/tr xln ANHY-POR fl,v rr tan CHT,POR-FLOR AA,g-fr ltbrn/tr scat brn-blk dd o STN,g fast-mod fast stmg mlky CUT"
6580.00 6600.00	"LS AA,gran-micsuc-micxl,occ crpxl,pred ool-oom GRNST/scat-intbd dns sl ool-dol PCKST,sl chky-anhy/tr xln ANHY-POR fl,v rr tan CHT,POR-FLOR-STN-CUT AA"
6600.00 6620.00	"LS,ltbn-tn-crm-offwht,sl mott-mott,mic-vf xln,mdns-scat dns mtx,pred intrbd ool oom/occ GRNST to sl ool dns chlky PCKST,tr anhy xls,rr foss frgs;pred oomoldic/oolcastic to f-intrxln fab POR,sptty pr-blk OSTN res,pred dkbrn-ltbrn OSTN,f-fst dif CUT,briFLO"

DEPTH

LITHOLOGY

6620.00 6640.00 "LS AA,sl incr PCKST,mf-fr ltbn-dkbn mtx OSTN,sptty cast fld dd o STN res,g-even mbri-bri yelgld FLOR,mf-fast-dif/milky ring/strmg CUT,v-rr CHT frgs"

6640.00 6660.00 "LS,offwht-tn-crm,sl mott-mott,mic-vf xln,sl grn-mdns mtx,sl dolo ip,pred intrbd GRNST to PCKST,chlky,sl anhy,rr foss frgs,sme chlky/calc fld casts;pred mf-f intrxln to mf-occ red oom/occ fab POR,FLOR-CUT-OSTN AA"

6660.00 6680.00 "LS,ltbn-tn-crm-offwht,sl mott-mott,mic-vf xln,mdns-scat dns mtx,pred intrbd ool oom/occ GRNST to sl ool dns chlky PCKST,tr anhy xls,rr foss frgs;pred oom/occ to f-intrxln fab POR,sptty pr-blk OSTN res,pred dkbrn-ltbrn OSTN,f-fst dif CUT,mbri-bri FLOR"

6680.00 6700.00 "LS,ltbrn-tn-crm-occ offwht,sl mott-mott,mic-vf xln,sl grn-mdns ip,pred intrbd ool oom/occ GRNST to sl ool sl-plty chlky PCKST,rr abhy xls,rr cht frgs;pred mf-f intrxln to red-mf oom/occ fab POR,dkbn-ltbn OSTN,sptty blk OSTN res,mbri-bri yelgld FLOR"

6700.00 6720.00 "LS,crm-tn-occ ltbn,sl mott,mic-vf xln,occ crpt xln,mdns mtx-occ grn mtx,pred mdns sl ool PCKST to ool oom/occ GRNST,tr anhy xls,sl rthy,sl chlky;pred mf-f intrxln to scat reduced-pr oom/occ fab POR,sptty blk OSTN res-dkbrn-ltbrn OSTN,m-slo dif CUT"

6720.00 6740.00 "LS,offwht-tn-crm,sl mott,mic-occ vf xln,mdns mtx,sl dolo,tr oom/occ GRNST,pred intrxl-sl ool chlky PCKST,rr cht frgs,rr foss frgs;pred mf-intrxl to scat red-mf oom/occ fab POR,mbri-bri even yelgld FLOR,fst dif CUT,dkbrn-ltbrn OSTN,sptty blk cast fld res"

6740.00 6760.00 "LS,offwht-tn-crm,occ ltbn,sl mott,pred mic xln-occ vf xln,mdns mtx,occ grn mtx,pred intrbd PCKST to GRNST,sl chlky,sl rthy,tr anhy xls,tr offwht chlky carb mat,calc/anhy fls casts;pred mf-f intrxln to ptchy oom/occ fab POR,mbri-bri yelgld FLOR,mf-CUT"

6760.00 6780.00 "LS,offwht-tn-crm,sl mott-mott,mic-vf xln,sl grn-mdns mtx,sl dolo ip,pred intrbd GRNST to PCKST,chlky,sl anhy,rr foss frgs,sme chlky/calc fld casts;pred mf-f intrxln to mf-occ red oom/occ fab POR,FLOR-CUT-OSTN AA"

6780.00 6800.00 "LS,offwht-tn-crm,sl mott-mott,mic-vf xln,sl grn-mdns mtx,sl dolo ip,pred intrbd GRNST to PCKST,chlky,sl anhy,rr foss frgs,sme chlky/calc fld casts;pred mf-f intrxln to mf-occ red oom/occ fab POR,FLOR-CUT-OSTN AA"

6800.00 6820.00 "LS,ltbn-tn-crm-offwht,sl mott-mott,mic-vf xln,mdns-dns mtx,pred intrbd sl ool chlky mic foss PCKST to ool foss red-pr-fr oom/occ GRNST,tr anhy xls,chlky/calc fld casts;pred f-interxln to red-pr-fr oom/occ fab POR,even mbri yelgld FLOR,fst-mf-slo strm CUT"

DEPTH	LITHOLOGY
6820.00 6840.00	"LS,crm-tn-occ ltbn,sl mott,mic-vf xln,occ crpt xln,mdns mtx-occ grn mtx,pred mdns sl ool PCKST to ool oom/occ GRNST,tr anhy xls,sl rthy,sl chlky;pred mf-f intrxln to scat reduced-pr oom/occ fab POR,sptty blk OSTN res-dkbrn-ltbrn OSTN,m-slo dif CUT"
6840.00 6860.00	"LS,ltbn-tn-crm-offwht,sl mott-mott,mic-vf xln,mdns-scat dns mtx,pred intrbd ool oom/occ GRNST to sl ool dns chlky PCKST,tr anhy xls,rr foss frgs;pred oom/occ to f-intrxln fab POR,sptty pr-blk OSTN res,pred dkbrn-ltbrn OSTN,f-fst dif CUT,mbri-bri FLOR"
	6860.00 6880.00 "LS,ltbn-tn- crm-offwht,sl mott- mott,mic-vf xln,mdns-scat dns mtx,pred intrbd ool oom/occ GRNST to sl ool dns chlky PCKST,tr anhy xls,rr foss frgs;pred oom/occ to f-intrxln fab POR,sptty pr-blk OSTN res,pred dkbrn-ltbrn OSTN,mf-fst dif CUT,g-mbri-bri FLOR"
6880.00 6900.00	"LS,offwht-tn-crm,occ ltbn,sl mott,pred mic xln-occ vf xln,mdns mtx,occ grn mtx,pred intrbd PCKST to GRNST,sl chlky,tr anhy xls,tr offwht chlky carb mat,calc/anhy fls casts;pred mf-f intrxln to ptchy oom/occ fab POR,mbri-bri yelgld FLOR,mf-fst dis strm CUT"
6900.00 6920.00	"LS,crm-tn-ltbn-offwht,sl mott,mic-vf xln,mdns mtx-occ grn mtx,pred mdns sl ool PCKST to ool oom/occ GRNST,tr anhy xls,sl rthy,sl chlky;pred mf-f intrxln to scat reduced-pr oom/occ fab POR,sptty blk OSTN res-dkbrn-ltbrn OSTN,m-slo dif CUT"
6920.00 6940.00	"LS,ltbn-tn-crm-offwht,sl mott-mott,mic-vf xln,mdns-scat dns mtx,pred intrbd ool oom/occ GRNST to sl ool dns chlky PCKST,tr anhy xls,rr foss frgs;pred oom/occ to f-intrxln fab POR,sptty pr-blk OSTN res,pred dkbrn-ltbrn OSTN,f-fst dif CUT,mbri-bri FLOR"
6940.00 6960.00	"LS,ltbn-tn-crm-offwht,sl mott-mott,mic-vf xln,mdns-dns mtx,pred intrbd sl ool chlky mic foss PCKST to ool foss red-pr-fr oom/occ GRNST,tr anhy xls,chlky/calc fld casts;pred f-interxln to red-pr-fr oom/occ fab POR,even mbri yelgld FLOR,fst-mf-slo strm CUT"
6960.00 6980.00	"LS,ltbn-tn-crm-offwht,sl mott-mott,mic-vf xln,mdns-dns mtx,pred intrbd sl ool chlky PCKST to ool foss red-pr-fr oom/occ GRNST,tr anhy xls,chlky/calc fld casts;pred f-interxln to red-pr-fr oom/occ fab POR,even mbri yelgld FLOR,fst-mf-slo strm CUT"
6980.00 7000.00	"LS,ltbn-tn-crm-offwht,sl mott-mott,mic-vf xln,mdns-scat dns mtx,pred intrbd ool oom/occ GRNST to sl ool dns chlky PCKST,tr anhy xls,rr foss frgs;pred oom/occ to f-intrxln fab POR,sptty pr-blk OSTN res,pred dkbrn-ltbrn OSTN,f-fst dif CUT,mbri-bri FLOR"
7000.00 7020.00	"LS,ltbn-tn,mott,mic-pred vf xln,grn mtx-occ sl suc mtx,mdns mtx ip,pred ool oom/occ GRNST,tr sl ool chlky cast fld PCKST,tr anhy xls;pred mf-f oom/occ fab POR,m-fst-f slo dif strm CUT,mlky ring,mbri-bri yelgld FLOR,pred mf-dkbrn OSTN"

DEPTH	LITHOLOGY
7020.00 7040.00	"LS,ltbn-tn,mott,mic-vf xln,sl suc-grn mtx,mdns mtx ip,pred ool oom/occ GRNST,occ calc/chlky-anhy fld casts,rr anhy xls;predmf-f oomoldic to oolastic fab POR,mf-dkbrn-cast fld blk OSTN,mf-slo dif strm CUT,mbri-sptty bri yelgld FLOR"
7040.00 7060.00	"LS,ltbn-tn,mott,mic-vf xln,sl suc-grn mtx,mdns mtx ip,pred ool oom/occ GRNST,tr PCKST AA,occ calc/chlky-anhy fld casts;predmf-f oomoldic to oolastic fab POR,mf-dkbrn-cast fld blk OSTN,mf-slo dif strm CUT,mbri-sptty bri yelgld FLOR"
7060.00 7080.00	"LS,ltbn-tn,mott,mic-vf xln,sl suc-grn m
	tx,mdns mtx ip,pred ool oom/occ GRNST,occ calc/chlky-anhy fld casts,rr anhy xls;predmf-f oomoldic to oolastic fab POR,mf-dkbrn-cast fld blk OSTN,mf-slo dif strm CUT,mbri-sptty bri yelgld FLOR"
7080.00 7100.00	"LS crm-tan-ltbrn,occ brn,off wh,micsuc-gran-micxl,sl crpxl,oom-ool GRNST,tr scat dns sl ool PCKST,sl chky-anhy/tr xln ANHY-POR fl,v sl dol ip,rr tan-crm CHT-sil incl,g-fr ool/tr intxl POR,g even bri yel FLOR,fr-g ltbrn/tr brn-rr blk dd o STN,g fast stmg-sl blooming mlky CUT"
7100.00 7120.00	"LS tan-crm-ltbrn,occ brn,off wh,micsuc-gran-micxl,sl crpxl,oom-ool GRNST/tr PCKST AA,sl chky-anhy/tr xln ANHY & sl inc POR fl,sl dol/rr DOL cmt ip,rr CHT-sil incl AA,g-fr ool/tr intxl POR,g even bri-mod bri yel FLOR,fr-g ltbrn/scat brn -tr blk dd o STN,g blooming-fast stmg mlky CUT"
7120.00 7140.00	"LS AA,micsuc-gran-micxl,sl crpxl,oom-ool GRNST,tr scat-thn intbd dns sl ool PCKST,sl chky-anhy/tr xln ANHY-POR fl,incr sl dol/tr DOL cmt ip,v rr CHT-sil incl AA,g ool/tr intxl POR,FLOR-STN AA,g fast stmg-sl blooming mlky CUT"
7140.00 7156.00	"LS tan-crm-ltbrn,occ brn,off wh,micsuc-gran-micxl,sl crpxl,oom-ool GRNST/tr PCKST AA,sl chky-anhy/tr xln ANHY-rr POR fl,sl dol/tr DOL cmt ip,v rr tan-crm CHT incl,g ool/tr intxl POR,g even bri-mod bri yel FLOR,fr-g ltbrn/scat brn-tr blk dd o STN,CUT AA"

FORMATION TOPS

OPERATOR: MOBIL

WELL NAME: RATHERFORD UNIT #17-22 SE 1-A HORIZONTAL LATERAL LEG #4

FORMATION NAME		SAMPLE MEASURED DEPTH	SAMPLE TRUE VERTICAL DEPTH	DATUM KB:4716'
UPPER ISMAY		±5348'	±5348'	-632'
LOWER ISMAY		5455'	5450'	-734'
GOTHIC SHALE		5495'	5478'	-762'
DESERT CREEK		5531'	5492'	-776'
DC 1-A ZONE		5541'	5495'	-779'

GEOLOGICAL SUMMARY

AND

ZONES OF INTEREST

The Mobil Exploration and Production U.S., Inc., Ratherford Unit #17-22 Southeast Horizontal Lateral Leg #4 was a re-entry of the Mobil Ratherford Unit #17-22 located in Section 17, T41S, R24E, and was sidetracked in a southeasterly direction from 5378' measured depth, 5378' true vertical depth, on May 25, 1998. The lateral reached a measured depth of 7058', true vertical depth of 5498' at total depth, with a horizontal displacement of 1599' and true vertical plane 134 degrees on May 28, 1998 in the Desert Creek 1-A porosity zone. As previously noted, during the initial preparation of the well bore, difficulty was experienced pressure testing the BOP & Hydrill, consequentially the BOP & Hydrill had to be replaced. The curve portion of the lateral was completed at a true vertical depth of 5498', in the 1-A porosity zone of the Desert Creek on May 26, 1998. The curve section of the hole was begun in the lower 46' of the Upper Ismay member of the Upper Paradox Formation before encountering the typical sections of Lower Ismay, Gothic Shale and Desert Creek members of the Upper Paradox Formation.

Objectives of the Ratherford Unit #17-22 leg #4 horizontal lateral were to penetrate and drill the 1-A porosity horizon, to identify and define the lithology, and evaluate the porosity and effective permeability of the 1-A bench of the Desert Creek. These objectives were accomplished in the 1-A zone, which showed a consistent lithology. After completing the curve portion of the lateral, the lateral section required only minor amounts of sliding to remain within the porosity zone as well as control horizontal plane direction. The well path used the proposed target line as a reference point throughout the 1-A zone. Only the top of the porosity zone was encountered within the 1-A zone. The lateral section of the hole was completed at a horizontal displacement of 1700' in the good oolitic to oomoldic grainstones of the 1-A zone. .

The top of the Upper Ismay was not encountered while drilling the curve portion of Lateral Leg #4, but was estimated at 5348', measured and true vertical depths. The basal 78' of the formation, from 5378' to 5456' measured depths, was seen in the upper portion of the curve section. The Upper Ismay was characterized by a dense too tight argillaceous occasionally silty, cherty limestone. This limestone was tan, cream, light brown, light gray brown, brown, microcrystalline to cryptocrystalline, with a predominately dense to tight matrix, occasionally silty to chalky, with some off-white chalky carbonaceous matter. Rare fossil fragments, light brown to dark brown chert fragments, rare calcite fracture fill and some crystalline anhydrite were noted. Porosity throughout this interval was predominately compact crystalline with some streaks of intercrystalline, with very poor to no shows. Argillaceous dolomites to dolomitic limestones tended to be dark brown with a microsucrosic to silty texture and graded to a marly limestone that was occasionally dolomitic in part. The basal limestone from 5438' measured depth to the top of the Lower Ismay were predominately packstones, microcrystalline to cryptocrystalline, dolomitic in part and became shaley to silty with depth. This interval displayed a compact to patchy intercrystalline fabric porosity with little or no shows. The Hovenweep marker between the Upper and Lower Isamy was not very well represented in this curve. It is suggested that the packstones noted above that became shaley to silty towards the top of the Lower Isamy was the Hovenweep.

The top of the Lower Ismay was picked at a measured depth of 5456', true vertical depth 5450', and was based primarily on sample identification, an increase in penetration rate and had a true thickness of 28'. The lithology for the Lower Ismay from 5456' to 5495' measured depths, true vertical depths 5450' to 5478', was a light gray, gray brown to cream cryptocrystalline to microcrystalline slightly dolomitic limestone that was occasionally argillaceous, chalky and anhydritic. These limestones were interbedded with light gray to light gray brown calcareous siltstones that occasionally graded to very fine grain calcareous sandstone with pinpoint limestone intraclasts. Trace translucent, light brown chert fragments and rare fossil fragments were noted as well. Predominately compact crystalline to poor intercrystalline fabric porosity with a poor light brown to brown stain was noted through this interval. This zone displayed a dull spotty moderately bright yellow-gold fluorescence and a weak cut.

The Gothic Shale was penetrated at a measured depth of 5495', true vertical depth 5478', and had a true thickness of 14'. The lithology was predominantly dark brown to black to dark gray shale, moderately dense to soft, carbonaceous, silty, argillaceous, and calcareous to slightly dolomitic, slightly fissile with some micro-pyrite inclusions. Also noted were some thinly interbedded argillaceous limestones and argillaceous dolomitic stringers. The top of the Gothic was picked primarily by a significant decrease in the penetration rate as well as an increase in the amount of shale in the samples.

The top of the Desert Creek member of the Upper Paradox formation was marked by a thin transition zone facies between the overlying Gothic Shale and the underlying 1-A porosity zone. This thin interval was picked at a measured depth of 5531', true vertical depth 5492', and was based on an increase in limestones in the samples, as well as changes in the rate of penetration. In this southeasterly direction, the transition zone had a true thickness of approximately 3'. The lithology of the transition zone was predominately a moderately dense limestone, light brown, tan to cream, microcrystalline to very fine crystalline slightly oolitic to intraclastic packstone. Trace fossil fragments, off-white chalky carbonaceous matter and crystalline anhydrite was observed as well. Carbonaceous shales and dark brown to brown argillaceous dolomitic limestones were thinly interbedded at the top of the transition zone and the base of the Gothic Shale. This zone displayed thin streaks of intercrystalline fabric porosity with a poor light brown to dark brown oil stain, a spotty moderately bright yellow-gold fluorescence and a weak cut.

The top of the Desert Creek 1-A porosity zone was encountered at a measured depth of 5541', true vertical depth of 5495'. A significant increase in the penetration rate and a change in lithology to oolitic rich limestone noted the top. This limestone grainstone displayed a moderately fair to fair oomoldic to oolitic fabric porosity with a moderately fair dark brown to brown oil stain and a black dead oil stain filling oolite casts or fossil fragments casts. A good bright to occasionally moderately bright fluorescence and a fair streaming diffused cut were seen in this interval. The grainstones were light brown, tan to cream, microcrystalline to very fine crystalline, had a slightly sucrosic to grainy to moderately dense matrix. Trace anhydrite, fossil fragments off-white chalky carbonaceous matter and was occasionally slightly dolomitic in part. Thinly interbedded slightly oolitic, slightly platy, slightly chalky cream to light brown dense packstones with a poor light brown oil stain were present in this part of the 1-A porosity, too. The 1-A porosity zone was projected to be about 12 foot thick in this southeasterly lateral, based on the 1-A zone thickness seen in Lateral Leg #1. The vertical well log showed the 1-A zone to be approximately 13' thick and was not expected to thin significantly as the lateral moved away from the vertical well bore. The 1-A zone, in this southeasterly lateral, was encountered at a horizontal displacement of approximately 115'.

The curve portion of the lateral was completed at a measured depth of 5572', true vertical depth 5497', and a horizontal displacement of 115', with an inclination of 92.1 degrees, on May 27, 1998. At this time a trip was made to change out bottom hole assemblies prior to drilling the lateral section. The lateral section was begun also on May 27, 1998, at the top of the 1-A porosity zone.

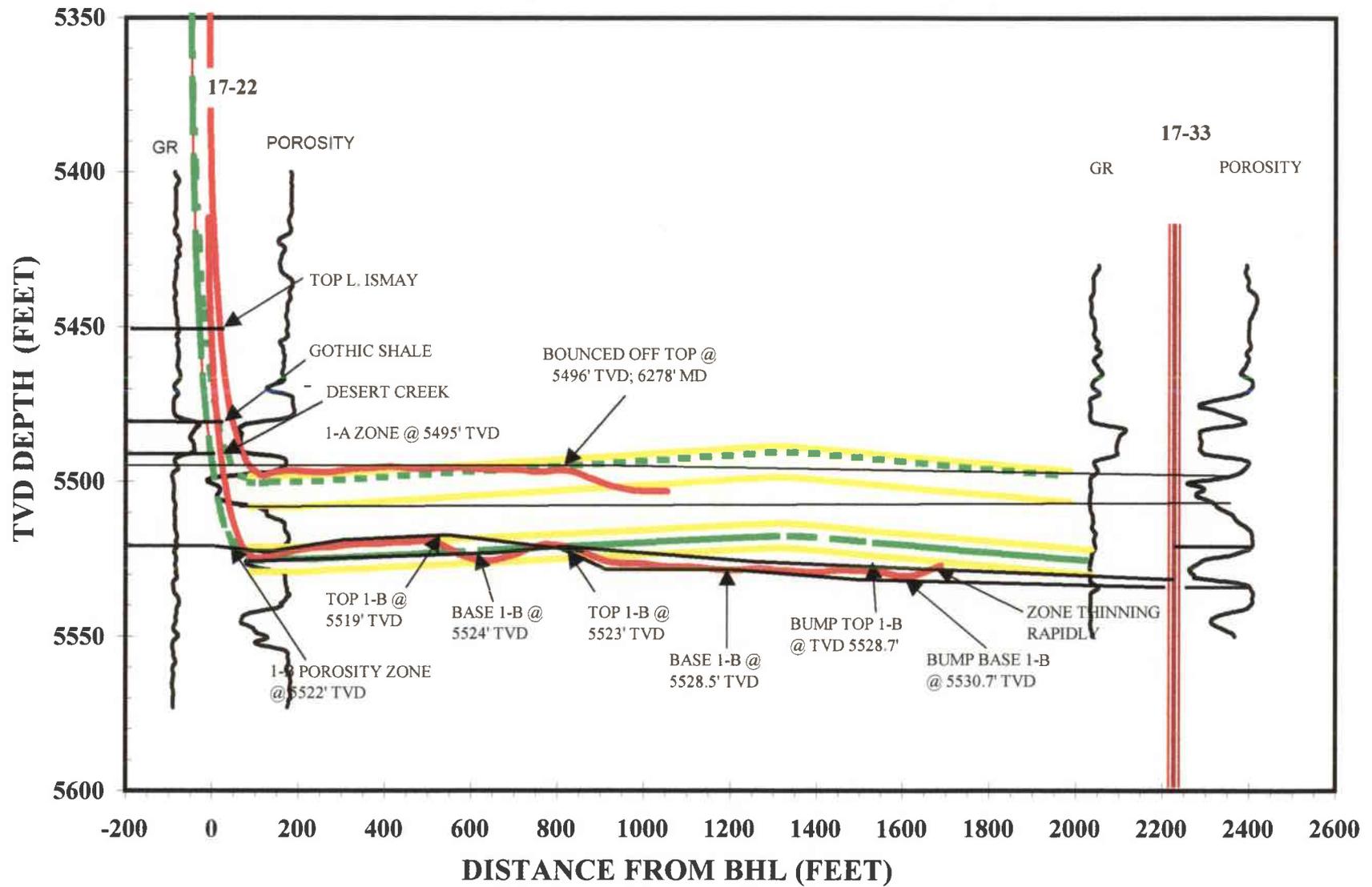
The lateral for the 1-A porosity began at a measured depth of 5572', true vertical depth 5497'. Landing at the top of the 1-A porosity zone at 92 degrees the bit was oriented down to horizontal and the lateral continued for the next 800' near the top of the 1-A porosity zone. At 6278' measured depth, true vertical depth 5496', the top of the 1-A porosity was encountered and the bit dropped from horizontal to approximately 87 degrees 800' out. The bit was brought back to horizontal at 6450' measured depth, true vertical depth 5502', at a horizontal displacement of 991'. The lateral continued from 6450' to 6700' measured depth, true vertical depths of 5502' to 5504'. At approximately 6700' measured depth, true vertical depth 5503', the bit began to slowly build angle for the remainder of the laterally from 6700' to 7014' measured depth, true vertical depths 5503' to 5498'.

The Desert Creek 1-A porosity zone began at a measured depth of 5572', true vertical depth 5497', placing the bit at the top of the 1-A porosity. From 5572' to 6278' measured depth, true vertical depths 5497' to 5496', an oolitic rich oomoldic to oolitic grainstones with some thinly interbedded slightly oolitic dense packstones were drilled. The grainstones were tan to light brown to cream, microcrystalline to very fine crystalline, grainy to occasionally microsugrosic to slightly sugrosic with a moderately dense matrix in part. These samples continued show trace amounts of anhydrite, fossil fragments, occasionally dark brown algal matter, off-white chalky carbonaceous matter, calcite-anhydrite filled casts, rare light brown to translucent chert fragments and were occasionally dolomitic in part. Moderately fair to fair oomoldic to oolitic fabric porosity with some scattered interoolitic and good intercrystalline porosity was noted throughout the zone and a moderately good to good dark brown to brown oil stain with dead black oil resin filling casts was seen. A moderately good to good fast streaming to good slow diffused cut and a moderately bright to bright yellow-gold even fluorescence was seen throughout this interval. The thinly interbedded packstones were cream to tan, cryptocrystalline to microcrystalline, dense, slightly oolitic to oolitic rich and had poor shows. At 6278' measured depth, true vertical depth 5496', the bit bounced off the top of the 1-A porosity zone and dropped to 5502' true vertical depth until it was brought back to horizontal. The lateral continued at true vertical depths 5502' to 5504' and the grainstones noted above with thinly interbedded packstones were drilled. At approximately 6700' measured depth, true vertical depth 5503', at a horizontal displacement of 1275'; there was an increase in slightly oolitic to oolitic rich dense packstones, an increase in tan to translucent chert fragments and a decrease in staining. The bit was slowly turned up and the laterally cut across the zone until the top of the 1-A porosity was encountered again at 7014' measured depth, true vertical depth 5500'. At this point the zone had thinned to approximately four feet, the rate of penetration slowed and after cutting across the payzone and not seeing any development the bit was not oriented back down and the lateral was cut short by approximately 400'.

From the beginning of the southeast lateral to termination on May 28, 1998, at a measured depth of 7058', true vertical depth 5498', and a horizontal displacement of 1599', the lithology remained fairly consistent. With the exception of increases in packstone and chert fragments for the last 358' and a decrease in staining, the lithology remained an oomoldic to oolitic grainstone with good oil shows throughout the lateral. After tracking the 1-A porosity it is apparent that its development will enhance the overall performance when the zone is influenced by the water flood plan and should contribute to production in the Ratherford Unit.

*The black residual staining has been called by Dr. Dave Eby & others as "bitchimum" and is also known as "dead oil" ("dd o stn" on mud logs). This staining is associated with the movement of oil over long periods of time and is a good indicator of producible hydrocarbons when associated with productive porosities, but can also be found in porosities that have been filled by anhydrites and other material at later dates.

MOBIL, Ratherford #17-22, Southeast Lateral Legs 2 & 4



**UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT**

SUBMIT IN DUPLICATE

(See other instructions on reverse side)

FORM APPROVED
OMB NO. 1004-0137
Expires: February 28, 1995

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

1a. TYPE OF WELL: OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> DRY <input type="checkbox"/> Other _____		5. LEASE DESIGNATION AND SERIAL NO. 14-20-603-353	
b. TYPE OF COMPLETION: NEW WELL <input type="checkbox"/> WORK OVER <input type="checkbox"/> DEEP-EN <input type="checkbox"/> PLUG BACK <input type="checkbox"/> DIFF. RESVR. <input type="checkbox"/> Other <input checked="" type="checkbox"/> SIDETRACK		6. IF INDIAN, ALLOTTEE OR TRIBE NAME NAVAJO TRIBAL	
2. NAME OF OPERATOR MOBIL PRODUCING TX & NM INC.* *MOBIL EXPLORATION & PRODUCING US INC. AS AGENT FOR MPTM		7. UNIT AGREEMENT NAME RATHERFORD UNIT	
3. ADDRESS AND TELEPHONE NO. P.O. Box 633, Midland TX 79702 (915) 688-2585		8. FARM OR LEASE NAME, WELL NO. RATHERFORD 17-22	
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)* At surface 1882' FNL & 1910' FWL At top prod. interval reported below *#37 At total depth *#37		9. API WELL NO. 43-037-31170	
14. PERMIT NO. _____ DATE ISSUED 1985		10. FIELD AND POOL, OR WILDCAT GREATER ANETH	
15. DATE SPUDDED 4-16-98		11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA SEC. 17, T41S, R24E	
16. DATE T.D. REACHED 5-31-98		12. COUNTY OR PARISH SAN JUAN	
17. DATE COMPL. (Ready to prod.) 6-22-98		13. STATE UT	
18. ELEVATIONS (DF, RKB, RT, GR, ETC.)* 4734' GR		19. ELEV. CASINGHEAD	
20. TOTAL DEPTH, MD & TVD **#37		23. INTERVALS DRILLED BY X	
21. PLUG, BACK T.D., MD & TVD **#37		ROTARY TOOLS	
22. IF MULTIPLE COMPL., HOW MANY*		CABLE TOOLS	
24. PRODUCING INTERVAL(S), OF THIS COMPLETION - TOP, BOTTOM, NAME (MD AND TVD)* **#37 <i>DSCR</i>			25. WAS DIRECTIONAL SURVEY MADE YES
26. TYPE ELECTRIC AND OTHER LOGS RUN NO			27. WAS WELL CORED NO

CASING RECORD (Report all strings set in well)

CASING SIZE/GRADE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	TOP OF CEMENT, CEMENTING RECORD	AMOUNT PULLED
13 3/8"	54.5#	119'	17 1/2"	150 SXS SURFACE	
9 5/8"	40#	1549'	12 1/4"	795 SXS SURFACE	
7"	23 & 26#	5601'	8 1/2"	850 SXS 2000' CALC	
ORIGINAL	CASING	UNDISTURBED			

LINER RECORD

TUBING RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
					2 7/8"	5273'	5223'

<p>31. PERFORATION RECORD (Interval size and number)</p> <div style="border: 2px solid black; padding: 10px; width: fit-content; margin: auto;"> <p align="center">RECEIVED</p> <p align="center">AUG 24 1998</p> </div>	32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.	
	DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
	5378-7056'	LAT 4A1, ACIDIZE W/15097 GALS
	5405-7156'	15% HCL ACID
***#37	LAT 3A1, ACIDIZE W/15965 GALS	
	15% HCL ACID	

33.* DIV. OF OIL, GAS & MINING PRODUCTION							
DATE FIRST PRODUCTION 6-28-98		PRODUCTION METHOD (Flowing, gas lift, pumping - size and type of pump) AXELSON 2.5" X 2" X 24' PUMP				WELL STATUS (Producing or shut-in) PRODUCING	
DATE OF TEST 6-30-98	HOURS TESTED 24	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL - BBL. 94	GAS - MCP. 149	WATER - BBL. 309	GAS - OIL RATIO 1585
FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL - BBL.	GAS - MCP.	WATER - BBL.	OIL GRAVITY - API (CORR.)	

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)	TEST WITNESSED BY
--	-------------------

35. LIST OF ATTACHMENTS
DIRECTIONAL SURVEY

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED *Shirley Houchins* TITLE **SHIRLEY HOUCHINS/ENV & REG TECH** DATE **8-17-98**

*(See Instructions and Spaces for Additional Data on Reverse Side)

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):

38. GEOLOGIC MARKERS

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	TOP	
					MEAS. DEPTH	TRUE VERT. DEPTH
**#4			LAT 1A1, 1165' FNL & 1246' FWL, F/SURF SPOT			
			LAT 2A1, 1378' FSL & 976' FEL, F/SURF SPOT			
			LAT 3A1, 1246' FNL & 1158' FWL, F/SURF SPOT			
			LAT 4A1, 1115' FSL & 1147' FEL, F/SURF SPOT			
**#20 & 21			LAT 1A1, (5445-7216' TMD)(5444-5528' TVD)			
			LAT 2A1, (5424-7181' TMD)(5423-5526' TVD)			
			LAT 3A1, (5405-7156' TMD)(5404-5500' TVD)			
			LAT 4A1, (5378-7058' TMD)(5377-5499' TVD)			
***#32	5424'	7172' TMD	LAT 2A1, ACIDIZE W/16399 GALS 15% HCL			
	6030	7216'	LAT 1A1, ACIDIZE W/12121 GALS 15% HCL			
	5710	5670'	LAT 1A1, ACIDIZE W/434 GALS 15% HCL			

ACTUAL BOTTOM-HOLE LOCATIONS:
 LATERAL 1 -- 0717 FNL 0664 FWL; SEC 17, T41S, R24E
 LATERAL 2 -- 2020 FSL 2394 FEL; SEC 17, T41S, R24E
 LATERAL 3 -- 0636 FNL 0752 FWL; SEC 17, T41S, R24E
 LATERAL 4 -- 2283 FSL 2223 FEL; SEC 17, T41S, R24E

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.

Use "APPLICATION FOR PERMIT - " for such proposals

5. Lease Designation and Serial No.

14-20-603-353

6. If Indian, Allottee or Tribe Name

NAVAJO TRIBAL

7. If Unit or CA, Agreement Designation

RATHERFORD UNIT

8. Well Name and No.

RATHERFORD 17-22

9. API Well No.

43-037-31170

10. Field and Pool, or exploratory Area

GREATER ANETH

11. County or Parish, State

SAN JUAN UT

SUBMIT IN TRIPLICATE

1. Type of Well

Oil Well Gas Well Other

2. Name of Operator

MOBIL PRODUCING TX & NM INC.*
*MOBIL EXPLORATION & PRODUCING US INC. AS AGENT FOR MPTM

3. Address and Telephone No.

P.O. Box 633, Midland TX 79702 (915) 688-2585

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

SEC. 17, T41S, R24E
1882' FNL & 1910' FWL

12. CHECK APPROPRIATE BOX(S) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Abandonment
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Recompletion
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Plugging Back
	<input type="checkbox"/> Casing Repair
	<input type="checkbox"/> Altering Casing
	<input checked="" type="checkbox"/> Other <u>SIDETRACK</u>
	<input type="checkbox"/> Change of Plans
	<input type="checkbox"/> New Construction
	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

BHL:

LATERAL #1, 1165' NORTH & 1246' WEST F/SURFACE SPOT (ZONE 1c).
LATERAL #2, 1378' SOUTH & 976' EAST F/SURFACE SPOT (ZONE 1b).
LATERAL #3, 1246' NORTH & 1158' WEST F/SURFACE SPOT (ZONE 1a).
LATERAL #4, 1115' SOUTH & 1147' EAST F/SURFACE SPOT (ZONE 1a).

SEE ATTACHED (04-16-98 -- 6-22-98)

14. I hereby certify that the foregoing is true and correct

Signed

Shirley Houchins

Title

SHIRLEY HOUCHINS/ENV & REG TECH

Date

8-17-98

(This space for Federal or State office use)

Approved by

Title

Date

Conditions of approval, if any:

DRILLED FOOTAGE CALCULATION FOR DIRECTIONAL AND HORIZONTAL WELLS

Unit, Well Name: Ratherford Unit, Well 17-22
API Well #: 43-037-31170
Well Completion: Horizontal, Producer, 2 Laterals

First leg description:	Lateral #1
KOP MD:	5436.00
EOL MD:	7216.00
Footage drilled:	1780.00
Max. TVD Recorded	5552.50

Second leg description:	Lateral #2
KOP MD:	5415.00
EOL MD:	7181.00
Footage drilled:	1766.00
Max. TVD Recorded	5530.19

Total Footage Drilled (MD):	3546.00
Deepest point (TVD):	5552.50

ATTACHMENT - FORM 3160-5
RATHERFORD UNIT #17-22
14-20-603-353
NAVAJO TRIBAL
SAN JUAN, UTAH

- 04-16-98 CALLED NAVAJO EPA @ 9:30 ON 4-14-98. TALKED TO CHARMAINE HOSTEEN. INFORMED OF INTENT TO DIG GROUND PIT AND LINE. PREP. WELL FOR DRLG. RIG. OK. CALLED BLM @ 8:15 ON 4-15-98, TALKED TO MARK KELLY ANSWER MACHINE. INFORMED OF INTENT TO PREP. WELL FOR DRLG. RIG. MIRU NAVAJO WEST RIG #36. RD PUMP HEAD. LD RODS AND PUMP. ND WH. RELEASE TBG. ANCHOR, NU BOPE. POH, LD MUD ANCHOR. SIFN.
- 04-17-98 SI CSG. PRESSURE @ 7:30 WAS 100 PSI. MIRU BLUE JET WIRELINE UNIT. RIH. SET RETV. BRIDGE PLUG TO 5200', SET, OK. POH RDMO BLUE JET. RIH WITH 2.875" TBG. TO 5153'. RU AND TEST CSG. TO 1000 PSI. 30 MIN. OK. SIFN.
- 04-18-98 SI CSG. PRESSURE @ 7:30 WAS 0 PSI. ND BOPE, ND TBG. HEAD. WELD ON 7" EXTENSION TO 7" CSG. AND DRESS OFF. NU TBG. HEAD. TEST TO 1000 PSI. 30 MIN. OK. RDMO NAVAJO WEST RIG #36. FINAL PREP. REPORT WELL SI.
- 05-05-98 MIRU NAVAJO WEST RIG #25. (NOTIFIED JIM THOMPSON W/STATE OF UTAH MAY 4 1998 @ 10 00 HRS.) NU BOP STACK. PRESSURE TEST TO 250 PSI LOW AND 2000 PSI HIGH PU RET. HD. DC'S AND AOHDP.
- 05-06-98 CONTINUE IN HOLE W/DP TO TOP OF RBP @ 5200'. RELEASE RBP AND POOH LAYING DOWN RBP. RU WL (SCHLUMBER) WL SET TIW PKR. @ 5454' (FLUID LEVEL 3950' FROM SURFACE,) PU ANCHOR LATCH, ORIENT SUB, DP AND AOH DP TIH TO 5200'. PU ADDITIONAL DP AND CONTINUE IN HOLE TOP OF TIW PKR. PUMP DOWN DP TO CLEAN AND LATCH INTO PKR. RU GYRODATA. RIH AND TOOK THREE READINGS OF ORIENTATION SUB AND SURVEY TO SURVEY. RD. TIH W/ REPLACEMENT ANCHOR LATCH ASSY.
- 05-07-98 CONTINUE IN HOLE W/BHA. LATCH INTO TIW PKR. RU GYRODATA TOOK READINGS. (GTF 332) RDWL. SHEAR ANCHOR LATCH. POOH. FINAL REPORT. (PREP)
- 05-07-98 PU RIH W/ANCHOR LATCH, WHIPSTOCK, STARTER MILL, LATCH INTO TIW PKR @ 5454'. SHEAR OFF STARTER MILL BOLT. RU POWER SWIVEL. LOAD HOLE. MILL W/STARTER MILL FROM 5436-5438'. POOH LAY DOWN STARTER MILL. TIH W/6 WATERMELON MILL RU POWER SWIVEL. BREAK CIRC. RE-MILL FROM 5436-5438 AND MILL FROM 5438-5444'
- 05-08-98 FINISH MILLING TO 5445' (1' FORMATION) TOOH W/MILLS AND LAY DOWN SAME. FINAL REPORT LAT. 1.
- 05-08-98 TIH PH6 TBG. AND AOHDP TO 5445'. RU GYRO DATA. ORIENT TOOLFACE. TIME DRILL FROM 5445-5472'. RD GYRO DATA. SLIDE/DRILL AND SURVEYS W/MWD FROM 5472'-5552'.
- 05-09-98 SLIDE/DRILL FROM 5552-5641'. (TD CURVE SECTION) POOH. TIH W/LAT. BUILDING ASSY. SLIDE/ROTATE DRILL AND SURVEY FROM 5641-5680'
- 05-10-98 SLIDE/ROTATE DRILL AND SURVEYS FROM 5680-5943' (FROM 5447-5552 TVD)
- 05-11-98 SLIDE/ROTATE DRILL AND SURVEYS FROM 5943-6330' (FOUND POROSITY @ 6030' MD, 5547' TVD).
- 05-12-98 SLIDE/ROTATE DRILLED LATERAL 1A1 FROM 6330-6700'
- 05-13-98 SLIDE/ROTATE DRILLED LATERAL 1A1 FROM 6700-6930', MWD FAILURE PUMPED POLYMER SWEEP & CIRC HOLE CLEAN. POH AOHDP.

ATTACHMENT - FORM 3160-5
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- 05-14-98 CUT DRILLING LINE POH CHANGE OUT MWD & MUD MOTOR, RIH ON SAME BHA. CIRC BOTTOMS UP THRU CHOKE, 30' FLARE FOR 5 MINS. SLIDE/ROTATE DRILLED LATERAL 1A1 FROM 6930-7216' TD, 5528' TVD.
- 05-15-98 RIH W/ TIW ANCHOR LATCH ASSEMBLY, WEATHERFORD, WHIPSTOCK & AOHPD LATCHED INTO TIW BIG BORE PKR @ 5454' TOP OF WHIPSTOCK @ 5414. CIRC BU THRU CHOKE, 3' FLARE. CUT WINDOW W/ STARTING MILL FROM 5414-5416', CIRC CLEAN POH W/ 2.875" AOHPD.
- 05-15-98 PUMPED POLYMER SWEEP & CIRC HOLE CLEAN. POH W/ BIT TO WINDOW. RIH W/ SUPERHOOK, CAUGHT WHIPSTOCK, POH, RECOVERED WHIPSTOCK.
- 05-16-98 RIH W/ WINDOW & WATERMELLON MILLS. MILLED WINDOW FROM 5414-5423 & FORMATION TO 5424'. PUMPED POLYMER SWEEP & CIRC HOLE CLEAN. REPORT FOR LATERAL 2.
- 05-16-98 RIH W/ SPERRY SUN MUD MOTOR & AOHPD. RU GYRO DATA & RIH W/ GYRO, DRILLED CURVE 2A1 FROM 5424-5470'.
- 05-17-98 DRILLED CURVE 2A1 FROM 5470-5589', LANDED CURVE @ 5524.58' TVD, POH & LD CURVE ASSEMBLY RIH, PH6 & AOHPD SLIDE & ROTATE DRILLED LATERAL 2A1 FROM 5589-5715.
- 05-18-98 SLIDE/ROTATE DRILLED LATERAL 2A1 FROM 5715-6290'
- 05-19-98 SLIDE/ROTATE DRILLED LATERAL 2A1 FROM 6290-7082'
- 05-20-98 SLIDE/ROTATE DRILLED LATERAL 2A1 FROM 7082-7181, TD LATERAL 2A1 @ 93 DEG ANGLE, 144 DEG DIR 5526 TVD, 1688' VS PUMPED SWEEP CIRC HOLE CLEAN. PULLED BIT TO WINDOW @ 5414'. RIH W/ SUPERHOOK, CAUGHT & SHEARED WHIPSTOCK, CIRC BOTTOMS UP, 20' FLARE FOR 15 MINS. POH W/ WHIPSTOCK. FINAL REPORT FOR LATERAL 2A1.
- 05-20-98 RIH W/ TIW KEYWAY ANCHOR LATCH ASSEMBLY, WEATHERFORD WHIPSTOCK & STARTER MILL, & AOHPD, LATCH INTO TIW BIG BORE PKR @ 5454' TOP OF WHIPSTOCK @ 5396' CUT WINDOW W/ STARTER MILL FROM 5396-5398', CIRC CLEAN POH W/ STARTER MILL.
- 05-21-98 RIH W/ WINDOW & WATERMELLON MILL. CUT WINDOW FROM 5496-5404' & FORMATION TO 5405'. POH W/ MILLS. FINAL REPORT FOR LATERAL 3
- 05-21-98 RIH PH6 TBG, & AOHPD TO 5400' CIRC OUT GAS THRU CHOKE, 20' FLARE 20 MINS RU GYRO DATA, RIH W/ GYRO, SLIDE DRILLED CURVE 3A1 W/ GYRO FROM 5405-5428'
- 05-22-98 SLIDE DRILLED CURVE 3A1 W/GYRO FROM 5428-5441' POH W/ GYRO. SLIDE DRILLED CURVE 3A1 FROM 5441-5575' TD CURVE, 5507' TVD, PUMPED POLYMER SWEEP CIRC HOLE CLEAN. PULLED BIT TO WINDOW. CUT DRILLING LINE. POH & LD CURVE ASSEMBLY ORIENT MUD MOTOR & MWD.
- 05-23-98 RIH W/ PH6 TBG, & AOHPD, SLIDE/ROTATE DRILLED LATERAL 3A1 FROM 5575-6400'
- 05-24-98 SLIDE/ROTATE DRILLED LATERAL 3A1 FROM 6400-7156' TD, 5500' TVD, PUMPED POLYMER SWEEP & CIRC HOLE CLEAN PULLED BIT TO WINDOW POH & LD MUD MOTOR & MWD.
- 05-25-98 RIH W/ SUPERHOOK, AOHPD, CAUGHT & REL WHIPSTOCK @ 5397' POH & LD WHIPSTOCK. FINAL REPORT FOR LATERAL 3A1.

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- 05-25-98 RIH W/ TIW ANCHOR LATCH ASSEMBLY, WEATHERFORD, WHIPSTOCK, STARTER MILL AOHDP, LATCH INTO TIW BIG BORE PKR KEYWAY @5454' TOP OF WHIPSTOCK @ 5369' CIRC BOTTOMS UP THRU CHOKE, 30' FLARE FOR 10 MINS. CUT WINDOW W/ STARTER MILL FROM 5369-5371', CIRC CLEAN POH W/ STARTER MILL, RIH WINDOW & WATERMELLON MILLS, CIRC BOTTOMS UP, FLARE FOR 10 MINS, NO H2S CUT WINDOW FROM 5369-5377' & FORMATION TO 5378' PUMPED POLYMER SWEEP & POH W/ MILLS. FINAL REPORT FOR LATERAL 4.
- 05-26-98 RU GYRO WL. RIH W/GYRO. TIME DRILL FROM 5378-5380'. DRLG. AND GYRO FROM 5380-5407' RDWL. DRILL FROM 5407-5464'. PULL OUT OF CURVE. DISPLACE HOLE W/ 10#BRINE. POOH W/ASSY. REPLACE PAD TIH W/SAME BHA.
- 05-27-98 PU POWER SWIVEL. BREAK CIRC. SLIDE/DRILL AND SURVEY CURVE SECTION FROM 5464 - 5770' (LAND CURVE @ TVD OF 5497.70) TOOH W/BHA AND LD CURVE BUILDING ASSY. PU NEW BIT AND LATERAL BUILDING ASSY. TIH. SLIDE/ROTATE DRILL AND SURVEYS FROM 5570-5835'. (SURVEY @ 5751' MD, 5496.26 TVD)
- 05-28-98 SLIDE/ROTATE DRILL AND SURVEYS FROM 5835-6985' (SURVEY @ 6925 MD, 5501.68 TVD)
- 05-29-98 SLIDE/ROTATE DRILL AND SURVEYS FROM 6980-7058'. PROJECTED SURVEY @ BIT @ 7058' MD. 5498.83 TVD. POOH LD DIR. TOOLS. PU RIH W/9, GUIBERSON V1 PKR. SET PKR. @ 5291' W/ TAILPIPE @ 5572'. PRESSURE TEST TO 500# OK. POOH LD DRILLSTRING.
- 05-30-98 FINISH LAYING DOWN DRILLSTRING. ND. BOP. NU WELLHD. RD ROTARY RIG.
- 05-31-98 FINISH RIGGING DOWN, NAVAJO WEST 25, FINAL REPORT.

COMPLETION:

- 06-04-98 MIRU NAVAJO WEST RIG #36, ND WELLHD CAP. NU BOPE. PU GUIBERSON ON/OFF TOOL, & PH-6 TBG. TO 5000'. SD TO MAN HUNT IN AREA.
- 06-05-98 SI PRESSURE @ 7:30 WAS 0 PSI. RU AND RIH WITH PH-6 TBG. TO 5291'. SPACE OUT WITH N-80 PUP. SHUT WELL IN DUE TO MAN HUNT IN AREA.
- 06-08-98 SI PRESSURE @ 7:30 WAS 0 PSI. RIH AND LATCH ONTO PKR W/ ON/OFF TOOL. RELEASE FROM PKR. RU AND CIRC. COLE CLEAN. RIH AND LATCH ONTO PKR, PH-6 TBG. @ 5291' PKR DEPTH, END OF PH-6 TAIL PIPE @ 5572' MIRU TEFTELLAR. RIH TO 5291'. RELEASE 'F' NIPPLE PLUG. POH, RDMO TEFTELLAR. RU FLOW LINES TO TEST TANK.
- 06-09-98 SITP = 535#, RU DOWELL CTU, TIH TO 7067', LATERAL 4A1. ACIDIZE W 15,097 GALS 15% HCL ACID. RD CTU.
- 06-10-98 SITP @ 0500=780#, UNSET PKR TOH, P/U S/H, TIH LATCH IN W/S & RELEASE, TOH, L/D EXT, ORIENTATE R/E GUIDE, LATCH IN PKR, DID NOT INDICATE PROPER RELEASE, SI & SDFN.

ATTACHMENT - FORM 3160-5
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- 06-11-98 TBG-200, CSG-320, TOH W TBG, W/S HUNG IN RET HEAD, BROKE APART, WASHED OUT TRASH W STEAMER, RELEASED.
- 06-12-98 SITP=180, RU DOWELL CTU TO 7165' LATERAL #3A1. ACIDIZE W 15965 GALS 15% HCL ACID. R/D COIL TBG UNIT. OPEN TO TANK. SI & SDFN.
- 06-13-98 SITP=720 UNSET PKR & TOH. TOH W TBG & W/S, L/D, ORIENTATE R/E GUIDE W W/S FOR LAT 2A1-145 DEGREE AZIMUTH. TIH W GUIBERSON UNI VI PKR, PH-6, SI & SD TILL MONDAY FOR ACID JOB.
- 06-14-98 SITP-200, SICP-280, FINISH TIH W TBG, SET PKR @ 5205', END OF T/P @ 5563', TEST PKR TO 500# - HELD. RU DOWELL CTU, TIH TO 7172' LATERAL 2A1, ACIDIZE W 16,399 GALS 15% HCL ACID, RD CTU SI & SDFN.
- 06-16-98 SITP @0600=760#, UNSET PKR - TOH P/U RET HEAD, TIH, LATCH ON W/S & RELEASE, TOH. TOH W W/S, LD EXTENSION ORIENTATE R/E GUIDE W W/S TOH W W/S LATCH IN, & J OFF, SI & SD HIGH WINDS.
- 06-17-98 SITP=100, SICP=140, FINISH TOH W TBG & RET HEAD TIH W, GUIB UNI VI PKR, SET PKR @5223'.
- 06-18-98 SITP=245, R/U DOWELL CTU TO 7216' LATERAL 4A1. ACIDIZE 7216-6030-12121 GALS, 5710-5670' 434 GALS', 15% HCL ACID W, R/D CT
- 06-19-98 WELL FLOWING ON 50#, P/U RET HEAD, TIH, LATCH ON R/E GUIDE & REL W/S DEBRIS SUB TOH W TBG & W/S TOOLS, BREAK DOWN TOOLS & LOAD OUT TIH W O/E TBG, L/D, LEFT 40 IN HOLE FOR KILL STRING, SI & SDFN
- 06-20-98 WHP=80, BLED OFF TO SLIGHT BLOW, PUMP 10BBLS B/W DOWN TBG, WELL DEAD. RUN PROD TBG 2.875" - TOTAL = 5272.94'. PREPARE EQUIPT TO RUN PUMP & RODS, SI & SDFN.
- 06-22-98 SI WELLHD PRESSURE @ 7:30 WAS 80 PSI. AXELSON 2.5" X 2" X 24'. TEST PUMP TO 500 PSI. OK. RD NAVAJO WEST RIG #36. FINAL COMPLETION REPORT. TURN WELL OVER TO PRODUCTION.

OPERATOR MOBIL PRODUCING TX & NM, INC.
 ADDRESS P. O. BOX 633
MIDLAND, TX 79702

OPERATOR ACCT. NO. N

ACTION CODE	CURRENT ENTITY NO.	NEW ENTITY NO.	API NUMBER	WELL NAME	WELL LOCATION					SPUD DATE	EFFECTIVE DATE
					QQ	SC	TP	RG	COUNTY		
			43-037-31170	RATHERFORD 17-22		17	41S	24E	SAN JUAN	4-16-98	6/98
WELL 1 COMMENTS:											
WELL 2 COMMENTS:											
WELL 3 COMMENTS:											
WELL 4 COMMENTS:											
WELL 5 COMMENTS:											

- ACTION CODES (See instructions on back of form)
- A - Establish new entity for new well (single well only)
 - B - Add new well to existing entity (group or unit well)
 - C - Re-assign well from one existing entity to another existing entity
 - D - Re-assign well from one existing entity to a new entity
 - E - Other (explain in comments section)

NOTE: Use COMMENT section to explain why each Action Code was selected.

Shirley Houchins
 Signature SHIRLEY HOUCHINS
 ENV & REG TECHNICIAN
 Title
 Date 8-11-98
 Phone No. (915) 688-2585

Mobil

**San Juan County
Utah
Ratherford Unit
RU 17-22 - MWD Survey Leg #1**

SURVEY REPORT

20 July, 1998

sperry-sun
DRILLING SERVICES
A DIVISION OF MICHAEL BAKER CORP., INC.

Survey Ref: svy2939

Sperry-Sun Drilling Services

Survey Report for RU 17-22



**Mobil
San Juan County**

**Utah
Ratherford Unit**

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
Gyro							
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
200.00	0.470	127.080	200.00	0.49 S	0.65 E	-0.82	0.235
400.00	0.470	124.290	399.99	1.45 S	1.99 E	-2.45	0.011
600.00	0.130	71.430	599.99	1.84 S	2.88 E	-3.39	0.202
800.00	0.570	3.020	799.98	0.78 S	3.15 E	-2.91	0.268
1000.00	1.420	359.680	999.95	2.70 N	3.19 E	-0.71	0.426
1200.00	1.610	346.960	1199.88	7.91 N	2.54 E	3.14	0.193
1400.00	1.730	344.400	1399.80	13.56 N	1.09 E	7.88	0.071
1600.00	1.690	347.840	1599.71	19.35 N	0.34 W	12.70	0.055
1800.00	1.140	348.560	1799.65	24.18 N	1.36 W	16.58	0.275
2000.00	0.750	349.750	1999.62	27.42 N	1.98 W	19.14	0.195
2200.00	0.470	5.550	2199.61	29.52 N	2.14 W	20.61	0.162
2400.00	0.770	104.640	2399.60	30.00 N	0.76 W	19.86	0.482
2600.00	1.120	120.940	2599.57	28.65 N	2.22 E	16.72	0.219
2800.00	1.400	94.590	2799.53	27.45 N	6.33 E	12.80	0.318
3000.00	0.750	91.900	2999.49	27.22 N	10.07 E	9.78	0.326
3200.00	0.390	97.190	3199.48	27.09 N	12.06 E	8.17	0.182
3400.00	0.340	82.610	3399.48	27.08 N	13.32 E	7.20	0.053
3600.00	0.320	146.640	3599.47	26.69 N	14.22 E	6.26	0.175
3800.00	0.350	183.790	3799.47	25.61 N	14.48 E	5.37	0.108
4000.00	0.220	195.080	3999.47	24.63 N	14.34 E	4.85	0.070
4200.00	0.260	172.760	4199.47	23.81 N	14.30 E	4.35	0.050
4400.00	0.430	204.550	4399.46	22.68 N	14.05 E	3.82	0.125
4600.00	0.300	215.080	4599.46	21.57 N	13.43 E	3.57	0.073
4800.00	0.280	232.770	4799.46	20.84 N	12.74 E	3.64	0.046
5000.00	0.330	215.280	4999.45	20.08 N	12.02 E	3.70	0.053
5200.00	0.240	227.940	5199.45	19.33 N	11.38 E	3.71	0.055
5400.00	0.440	214.610	5399.45	18.41 N	10.63 E	3.69	0.107
MWD Survey Leg #1							
5436.00	0.210	234.300	5435.45	18.26 N	10.50 E	3.70	0.701
5445.00	4.200	310.000	5444.44	18.46 N	10.23 E	4.03	46.146
5455.00	8.500	314.800	5454.37	19.22 N	9.43 E	5.13	43.289
5465.00	13.600	319.600	5464.19	20.64 N	8.14 E	7.03	51.780
5475.00	19.000	324.400	5473.78	22.86 N	6.43 E	9.77	55.611
5485.00	24.000	329.200	5483.08	25.93 N	4.44 E	13.27	52.965
5495.00	29.600	334.000	5492.01	29.90 N	2.31 E	17.45	59.995
5505.00	35.200	335.800	5500.45	34.75 N	0.05 E	22.30	56.819
5515.00	41.200	337.100	5508.30	40.42 N	2.42 W	27.83	60.533
5525.00	47.100	338.400	5515.47	46.87 N	5.05 W	33.99	59.688

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 17-22



Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5535.00	52.400	338.300	5521.93	53.96 N	7.87 W	40.71	53.005
5545.00	57.800	337.100	5527.65	61.54 N	10.98 W	47.97	54.888
5555.00	63.200	334.600	5532.58	69.48 N	14.54 W	55.80	58.213
5565.00	68.100	331.800	5536.70	77.60 N	18.65 W	64.17	55.236
5575.00	73.300	329.600	5540.00	85.83 N	23.27 W	73.00	55.989
5585.00	78.600	327.200	5542.43	94.09 N	28.36 W	82.20	57.884
5595.00	81.400	323.400	5544.17	102.18 N	33.96 W	91.70	46.735
5605.00	80.800	318.000	5545.71	109.82 N	40.22 W	101.40	53.685
5615.00	81.500	312.000	5547.25	116.81 N	47.20 W	111.24	59.696
5641.00	92.200	307.600	5548.68	133.39 N	67.11 W	137.16	44.478
5676.00	91.600	304.000	5547.52	153.85 N	95.48 W	172.04	10.422
5708.00	88.000	307.200	5547.63	172.47 N	121.49 W	203.93	15.051
5740.00	87.500	308.300	5548.89	192.05 N	146.77 W	235.88	3.774
5771.00	87.400	309.100	5550.27	211.41 N	170.94 W	266.84	2.598
5803.00	87.500	309.600	5551.69	231.68 N	195.66 W	298.81	1.592
5835.00	89.600	308.700	5552.50	251.88 N	220.47 W	330.79	7.139
5867.00	90.400	308.900	5552.50	271.93 N	245.41 W	362.79	2.577
5899.00	90.800	309.100	5552.17	292.06 N	270.28 W	394.78	1.398
5930.00	91.400	308.900	5551.57	311.57 N	294.36 W	425.77	2.040
5962.00	91.900	308.700	5550.65	331.61 N	319.29 W	457.75	1.683
5993.00	92.400	308.900	5549.49	351.02 N	343.43 W	488.72	1.737
6025.00	93.200	309.600	5547.92	371.25 N	368.19 W	520.68	3.320
6057.00	91.100	309.600	5546.72	391.63 N	392.82 W	552.65	6.562
6089.00	88.900	309.800	5546.72	412.07 N	417.44 W	584.65	6.903
6120.00	88.200	309.400	5547.51	431.82 N	441.32 W	615.64	2.601
6152.00	88.800	309.300	5548.35	452.10 N	466.06 W	647.63	1.901
6184.00	89.400	310.200	5548.85	472.56 N	490.66 W	679.62	3.380
6216.00	90.800	311.200	5548.79	493.43 N	514.92 W	711.62	5.376
6248.00	90.000	309.400	5548.57	514.12 N	539.32 W	743.62	6.155
6280.00	90.500	309.100	5548.43	534.37 N	564.10 W	775.61	1.822
6311.00	90.400	308.900	5548.19	553.88 N	588.19 W	806.61	0.721
6343.00	90.800	308.900	5547.85	573.97 N	613.09 W	838.60	1.250
6375.00	91.000	309.100	5547.35	594.11 N	637.96 W	870.59	0.884
6407.00	91.600	309.400	5546.62	614.35 N	662.73 W	902.58	2.096
6439.00	91.100	308.900	5545.87	634.55 N	687.54 W	934.57	2.209
6470.00	91.500	308.400	5545.16	653.90 N	711.74 W	965.55	2.065
6502.00	91.700	308.200	5544.27	673.73 N	736.85 W	997.52	6.884
6533.00	92.700	309.400	5543.08	693.14 N	760.99 W	1028.49	5.037
6565.00	93.000	310.700	5541.49	713.70 N	785.45 W	1060.45	4.164
6597.00	91.600	310.300	5540.21	734.47 N	809.77 W	1092.42	4.550
6629.00	90.600	308.900	5539.59	754.86 N	834.42 W	1124.42	5.376
6660.00	91.500	308.700	5539.02	774.28 N	858.57 W	1155.40	2.974
6692.00	91.200	308.600	5538.27	794.26 N	883.56 W	1187.39	0.988
6723.00	91.800	308.900	5537.46	813.66 N	907.72 W	1218.37	2.164
6755.00	92.500	308.900	5536.26	833.74 N	932.61 W	1250.34	2.187

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 17-22



**Mobil
San Juan County**

**Utah
Rutherford Unit**

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
6787.00	95.000	309.300	5534.16	853.88 N	957.39 W	1282.26	7.911
6818.00	95.500	309.600	5531.33	873.49 N	981.23 W	1313.13	1.879
6850.00	92.000	309.300	5529.24	893.78 N	1005.88 W	1345.06	10.977
6896.00	92.600	308.700	5527.39	922.70 N	1041.60 W	1391.01	1.844
6928.00	91.000	307.900	5526.38	942.53 N	1066.70 W	1422.98	5.590
6959.00	90.400	310.900	5526.01	962.20 N	1090.65 W	1453.97	9.868
6990.00	90.300	314.400	5525.82	983.20 N	1113.45 W	1484.94	11.295
7022.00	87.700	317.000	5526.37	1006.09 N	1135.79 W	1516.77	11.489
7054.00	89.300	320.700	5527.21	1030.17 N	1156.83 W	1548.37	12.593
7086.00	88.500	323.700	5527.83	1055.45 N	1176.44 W	1579.64	9.701
7117.00	88.000	326.700	5528.77	1080.89 N	1194.12 W	1609.53	9.806
7149.00	89.300	328.300	5529.53	1107.87 N	1211.31 W	1640.04	6.441
7181.00	91.300	329.000	5529.36	1135.20 N	1227.96 W	1670.36	6.622
7216.00	91.300	329.000	5528.57	1165.19 N	1245.98 W	1703.45	0.000

All data is in feet unless otherwise stated. Directions and coordinates are relative to True North.
Vertical depths are relative to Well. Northings and Eastings are relative to Well.

The Dogleg Severity is in Degrees per 100ft.
Vertical Section is from Well and calculated along an Azimuth of 310.000° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 7216.00ft.,
The Bottom Hole Displacement is 1705.91ft., in the Direction of 313.081° (True).

Mobil

**San Juan County
Utah
Ratherford Unit
RU 17-22 - MWD Survey Leg #2**

SURVEY REPORT

20 July, 1998

sperry-sun
DRILLING SERVICES
A DIVISION OF BRIDGE INDUSTRIES, INC.

Survey Ref: svy2941

Sperry-Sun Drilling Services

Survey Report for RU 17-22



**Mobil
San Juan County**

**Utah
Ratherford Unit**

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
Gyro							
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
200.00	0.470	127.080	200.00	0.49 S	0.65 E	0.78	0.235
400.00	0.470	124.290	399.99	1.45 S	1.99 E	2.33	0.011
600.00	0.130	71.430	599.99	1.84 S	2.88 E	3.16	0.202
800.00	0.570	3.020	799.98	0.78 S	3.15 E	2.44	0.268
1000.00	1.420	359.680	999.95	2.70 N	3.19 E	-0.38	0.426
1200.00	1.610	346.960	1199.88	7.91 N	2.54 E	-5.03	0.193
1400.00	1.730	344.400	1399.80	13.56 N	1.09 E	-10.48	0.071
1600.00	1.690	347.840	1599.71	19.35 N	0.34 W	-16.04	0.055
1800.00	1.140	348.560	1799.65	24.18 N	1.36 W	-20.59	0.275
2000.00	0.750	349.750	1999.62	27.42 N	1.98 W	-23.60	0.195
2200.00	0.470	5.550	2199.61	29.52 N	2.14 W	-25.41	0.162
2400.00	0.770	104.640	2399.60	30.00 N	0.76 W	-25.01	0.482
2600.00	1.120	120.940	2599.57	28.65 N	2.22 E	-22.20	0.219
2800.00	1.400	94.590	2799.53	27.45 N	6.33 E	-18.86	0.318
3000.00	0.750	91.900	2999.49	27.22 N	10.07 E	-16.52	0.326
3200.00	0.390	97.190	3199.48	27.09 N	12.06 E	-15.27	0.182
3400.00	0.340	82.610	3399.48	27.08 N	13.32 E	-14.54	0.053
3600.00	0.320	146.640	3599.47	26.69 N	14.22 E	-13.71	0.175
3800.00	0.350	183.790	3799.47	25.61 N	14.48 E	-12.67	0.108
4000.00	0.220	195.080	3999.47	24.63 N	14.34 E	-11.95	0.070
4200.00	0.260	172.760	4199.47	23.81 N	14.30 E	-11.30	0.050
4400.00	0.430	204.550	4399.46	22.68 N	14.05 E	-10.52	0.125
4600.00	0.300	215.080	4599.46	21.57 N	13.43 E	-9.96	0.073
4800.00	0.280	232.770	4799.46	20.84 N	12.74 E	-9.76	0.046
5000.00	0.330	215.280	4999.45	20.08 N	12.02 E	-9.55	0.053
5200.00	0.240	227.940	5199.45	19.33 N	11.38 E	-9.30	0.055
5400.00	0.440	214.610	5399.45	18.41 N	10.63 E	-8.99	0.107
MWD Survey Leg #2							
5415.00	0.340	219.740	5414.45	18.33 N	10.57 E	-8.95	0.705
5424.00	4.300	145.000	5423.44	18.03 N	10.75 E	-8.61	46.925
5434.00	8.500	157.500	5433.37	17.04 N	11.24 E	-7.51	44.007
5444.00	14.100	161.200	5443.18	15.21 N	11.92 E	-5.62	56.439
5454.00	19.800	163.000	5452.74	12.43 N	12.81 E	-2.84	57.234
5464.00	25.500	163.400	5461.96	8.75 N	13.92 E	0.82	57.020
5474.00	31.300	164.100	5470.76	4.18 N	15.25 E	5.32	58.095
5484.00	36.700	164.700	5479.04	1.20 S	16.75 E	10.59	54.104
5494.00	41.400	163.300	5486.81	7.26 S	18.49 E	16.55	47.818
5504.00	46.100	159.900	5494.03	13.81 S	20.68 E	23.17	52.539

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 17-22



Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5514.00	50.900	156.900	5500.65	20.77 S	23.44 E	30.46	52.989
5524.00	56.700	155.700	5506.56	28.15 S	26.69 E	38.37	58.801
5534.00	62.300	155.300	5511.63	35.99 S	30.26 E	46.84	56.106
5544.00	67.400	156.000	5515.88	44.23 S	33.99 E	55.73	51.392
5554.00	72.600	154.400	5519.30	52.76 S	37.93 E	64.97	54.128
5564.00	77.700	152.600	5521.86	61.41 S	42.24 E	74.53	53.884
5589.00	89.800	152.700	5524.58	83.44 S	53.64 E	99.12	48.402
5624.00	92.700	150.000	5523.81	114.14 S	70.41 E	133.89	11.319
5656.00	90.300	149.100	5522.98	141.72 S	86.62 E	165.77	8.010
5688.00	93.200	150.700	5522.00	169.38 S	102.66 E	197.63	10.349
5719.00	89.600	149.500	5521.24	196.24 S	118.11 E	228.50	12.241
5751.00	91.000	147.400	5521.08	223.51 S	134.85 E	260.44	7.887
5783.00	90.400	147.400	5520.68	250.47 S	152.09 E	292.41	1.875
5815.00	91.800	146.300	5520.07	277.25 S	169.58 E	324.38	5.563
5847.00	88.500	145.100	5519.99	303.68 S	187.61 E	356.37	10.973
5878.00	91.400	146.000	5520.01	329.24 S	205.15 E	387.37	9.795
5909.00	90.300	145.100	5519.55	354.80 S	222.68 E	418.36	4.585
5941.00	90.100	144.700	5519.44	380.98 S	241.08 E	450.36	1.398
5973.00	91.800	145.400	5518.91	407.21 S	259.41 E	482.36	5.745
6005.00	87.500	145.100	5519.11	433.49 S	277.64 E	514.35	13.470
6037.00	84.900	143.900	5521.23	459.49 S	296.18 E	546.27	8.945
6069.00	86.700	144.400	5523.57	485.35 S	314.87 E	578.18	5.837
6100.00	88.100	146.000	5524.98	510.78 S	332.55 E	609.15	6.854
6132.00	90.500	144.600	5525.37	537.09 S	350.76 E	641.14	8.682
6164.00	92.300	145.600	5524.59	563.32 S	369.06 E	673.13	6.434
6196.00	92.500	146.000	5523.25	589.76 S	387.03 E	705.10	1.397
6228.00	94.300	146.000	5521.35	616.25 S	404.90 E	737.04	5.625
6259.00	90.000	145.100	5520.19	641.79 S	422.42 E	768.01	14.171
6291.00	89.600	146.100	5520.30	668.19 S	440.49 E	800.00	3.366
6323.00	87.100	146.800	5521.22	694.84 S	458.17 E	831.98	8.113
6355.00	87.500	146.500	5522.73	721.54 S	475.74 E	863.93	1.562
6386.00	85.700	145.800	5524.56	747.24 S	492.98 E	894.87	6.229
6418.00	89.300	144.900	5525.96	773.54 S	511.15 E	926.83	11.595
6449.00	89.700	142.600	5526.23	798.54 S	529.48 E	957.82	7.530
6480.00	90.200	144.000	5526.26	823.39 S	548.01 E	988.81	4.795
6512.25	88.300	143.200	5526.68	849.34 S	567.14 E	1021.04	6.392
6544.00	89.600	142.500	5527.26	874.65 S	586.31 E	1052.76	4.650
6576.00	89.900	140.700	5527.40	899.72 S	606.19 E	1084.70	5.703
6607.00	89.800	140.700	5527.48	923.71 S	625.82 E	1115.62	0.323
6639.90	88.900	140.700	5527.86	949.17 S	646.66 E	1148.42	2.736
6671.00	89.600	140.300	5528.26	973.16 S	666.44 E	1179.42	2.592
6703.00	90.100	140.500	5528.35	997.82 S	686.84 E	1211.32	1.683
6734.00	91.100	140.900	5528.02	1021.81 S	706.47 E	1242.23	3.474
6766.00	89.100	140.700	5527.97	1046.60 S	726.70 E	1274.14	6.281
6796.00	89.400	141.400	5528.36	1069.93 S	745.55 E	1304.07	2.538

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 17-22



Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (* /100ft)
6828.00	89.900	141.600	5528.55	1094.98 S	765.47 E	1336.01	1.683
6860.00	88.900	141.400	5528.89	1120.02 S	785.39 E	1367.95	3.187
6892.00	90.700	141.900	5529.00	1145.11 S	805.25 E	1399.89	5.838
6924.00	90.900	143.200	5528.55	1170.51 S	824.70 E	1431.86	4.110
6954.00	90.200	143.700	5528.27	1194.61 S	842.57 E	1461.85	2.867
6986.00	88.900	143.200	5528.52	1220.32 S	861.62 E	1493.83	4.353
7018.00	90.400	143.700	5528.71	1246.02 S	880.68 E	1525.82	4.941
7050.00	87.900	143.200	5529.19	1271.72 S	899.73 E	1557.80	7.967
7081.00	88.300	144.400	5530.22	1296.73 S	918.03 E	1588.78	4.078
7113.00	91.800	144.700	5530.19	1322.79 S	936.59 E	1620.77	10.978
7145.00	93.000	144.600	5528.85	1348.87 S	955.08 E	1652.74	3.763
7181.00	93.000	144.600	5526.96	1378.17 S	975.91 E	1688.69	0.000

All data is in feet unless otherwise stated. Directions and coordinates are relative to True North.
Vertical depths are relative to Well. Northings and Eastings are relative to Well.

The Dogleg Severity is in Degrees per 100ft.

Vertical Section is from Well and calculated along an Azimuth of 145.000° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 7181.00ft.,
The Bottom Hole Displacement is 1688.71ft., in the Direction of 144.697° (True).

Mobil

**San Juan County
Utah
Ratherford Unit
RU 17-22 - MWD Survey Leg #3**

SURVEY REPORT

20 July, 1998

sperry-sun
DRILLING SERVICES
A DIVISION OF SERVICE INDUSTRIES, INC.

Survey Ref: svy2943

Sperry-Sun Drilling Services

Survey Report for RU 17-22



Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
Gyro							
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
200.00	0.470	127.080	200.00	0.49 S	0.65 E	-0.81	0.235
400.00	0.470	124.290	399.99	1.45 S	1.99 E	-2.43	0.011
600.00	0.130	71.430	599.99	1.84 S	2.88 E	-3.34	0.202
800.00	0.570	3.020	799.98	0.78 S	3.15 E	-2.77	0.268
1000.00	1.420	359.680	999.95	2.70 N	3.19 E	-0.35	0.426
1200.00	1.610	346.960	1199.88	7.91 N	2.54 E	3.80	0.193
1400.00	1.730	344.400	1399.80	13.56 N	1.09 E	8.81	0.071
1600.00	1.690	347.840	1599.71	19.35 N	0.34 W	13.92	0.055
1800.00	1.140	348.560	1799.65	24.18 N	1.36 W	18.06	0.275
2000.00	0.750	349.750	1999.62	27.42 N	1.98 W	20.79	0.195
2200.00	0.470	5.550	2199.61	29.52 N	2.14 W	22.39	0.162
2400.00	0.770	104.640	2399.60	30.00 N	0.76 W	21.75	0.482
2600.00	1.120	120.940	2599.57	28.65 N	2.22 E	18.69	0.219
2800.00	1.400	94.590	2799.53	27.45 N	6.33 E	14.94	0.318
3000.00	0.750	91.900	2999.49	27.22 N	10.07 E	12.12	0.326
3200.00	0.390	97.190	3199.48	27.09 N	12.06 E	10.63	0.182
3400.00	0.340	82.610	3399.48	27.08 N	13.32 E	9.73	0.053
3600.00	0.320	146.640	3599.47	26.69 N	14.22 E	8.82	0.175
3800.00	0.350	183.790	3799.47	25.61 N	14.48 E	7.87	0.108
4000.00	0.220	195.080	3999.47	24.63 N	14.34 E	7.27	0.070
4200.00	0.260	172.760	4199.47	23.81 N	14.30 E	6.72	0.050
4400.00	0.430	204.550	4399.46	22.68 N	14.05 E	6.10	0.125
4600.00	0.300	215.080	4599.46	21.57 N	13.43 E	5.75	0.073
4800.00	0.280	232.770	4799.46	20.84 N	12.74 E	5.73	0.046
5000.00	0.330	215.280	4999.45	20.08 N	12.02 E	5.70	0.053
5200.00	0.240	227.940	5199.45	19.33 N	11.38 E	5.62	0.055
MWD Survey Leg #3							
5396.00	0.430	214.750	5395.45	18.45 N	10.65 E	5.51	0.104
5405.00	4.200	315.000	5404.44	18.65 N	10.40 E	5.83	47.748
5415.00	9.100	320.340	5414.37	19.52 N	9.64 E	6.99	49.336
5425.00	14.500	321.800	5424.15	21.11 N	8.36 E	9.02	54.078
5435.00	20.700	322.490	5433.68	23.50 N	6.51 E	12.02	62.034
5445.00	26.900	322.900	5442.83	26.71 N	4.06 E	16.02	62.022
5455.00	33.700	324.200	5451.46	30.77 N	1.07 E	21.00	68.312
5465.00	39.800	323.900	5459.46	35.61 N	2.44 W	26.91	61.026
5475.00	45.800	326.900	5466.80	41.21 N	6.29 W	33.58	63.354
5485.00	50.000	322.700	5473.50	47.26 N	10.57 W	40.89	52.282

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 17-22



Mobil
San Juan County

Utah
Rutherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5495.00	52.700	326.200	5479.75	53.61 N	15.10 W	48.59	38.414
5505.00	55.200	323.200	5485.63	60.21 N	19.78 W	56.56	34.828
5515.00	59.600	323.900	5491.02	66.98 N	24.78 W	64.89	44.393
5525.00	62.300	318.900	5495.88	73.81 N	30.24 W	73.57	51.367
5535.00	67.400	317.100	5500.13	80.53 N	36.29 W	82.61	53.537
5545.00	73.900	316.600	5503.44	87.41 N	42.74 W	92.03	65.171
5575.00	88.100	315.200	5508.12	108.63 N	63.31 W	121.58	47.556
5623.00	88.700	318.200	5509.46	143.55 N	96.22 W	169.54	6.371
5655.00	91.700	319.600	5509.35	167.66 N	117.25 W	201.46	10.345
5686.00	92.500	319.600	5508.21	191.25 N	137.33 W	232.34	2.581
5718.00	93.100	320.300	5506.65	215.71 N	157.89 W	264.18	2.879
5750.00	93.500	321.000	5504.81	240.42 N	178.15 W	295.97	2.516
5782.00	90.800	318.700	5503.61	264.86 N	198.77 W	327.83	11.080
5814.00	89.300	316.600	5503.58	288.50 N	220.32 W	359.79	8.065
5846.00	89.100	316.800	5504.03	311.79 N	242.27 W	391.78	0.884
5877.00	90.300	315.100	5504.19	334.07 N	263.82 W	422.77	6.712
5908.00	91.800	315.600	5503.62	356.12 N	285.60 W	453.76	5.100
5940.00	91.400	316.700	5502.73	379.19 N	307.76 W	485.74	3.656
5972.00	90.700	315.200	5502.14	402.18 N	330.00 W	517.73	5.172
6004.00	91.200	314.900	5501.61	424.82 N	352.61 W	549.73	1.822
6036.00	89.400	313.100	5501.44	447.05 N	375.62 W	581.72	7.955
6068.00	89.600	313.000	5501.72	468.89 N	399.01 W	613.70	0.699
6099.00	90.800	313.800	5501.61	490.19 N	421.53 W	644.69	4.652
6131.00	91.400	313.300	5501.00	512.24 N	444.72 W	676.67	2.441
6163.00	91.300	313.500	5500.25	534.22 N	467.96 W	708.65	0.699
6195.00	91.200	312.800	5499.55	556.10 N	491.30 W	740.62	2.209
6227.00	91.000	312.800	5498.93	577.84 N	514.78 W	772.59	0.625
6258.00	91.500	313.300	5498.26	598.99 N	537.43 W	803.57	2.281
6290.00	91.300	312.400	5497.48	620.75 N	560.88 W	835.54	2.880
6322.00	89.400	312.600	5497.28	642.37 N	584.47 W	867.50	5.970
6353.00	88.900	311.700	5497.74	663.17 N	607.45 W	898.46	3.321
6385.00	88.200	312.300	5498.55	684.57 N	631.22 W	930.41	2.881
6416.00	88.100	314.200	5499.55	705.80 N	653.79 W	961.38	6.134
6448.00	89.100	314.700	5500.33	728.20 N	676.63 W	993.36	3.494
6479.00	89.500	315.200	5500.71	750.10 N	698.57 W	1024.36	2.065
6511.00	91.100	316.100	5500.54	772.98 N	720.93 W	1056.36	5.737
6543.00	91.600	315.600	5499.79	795.94 N	743.22 W	1088.35	2.209
6575.00	90.400	316.000	5499.23	818.87 N	765.52 W	1120.34	3.953
6606.00	90.200	316.000	5499.07	841.17 N	787.06 W	1151.33	0.645
6638.00	91.500	317.000	5498.59	864.38 N	809.08 W	1183.32	5.125
6670.00	87.800	316.500	5498.79	887.68 N	831.00 W	1215.29	11.668
6702.00	86.300	315.800	5500.44	910.73 N	853.14 W	1247.24	5.172
6733.00	86.600	316.800	5502.36	933.10 N	874.52 W	1278.18	3.362
6764.00	88.700	317.700	5503.63	955.84 N	895.54 W	1309.12	7.369
6796.00	88.900	318.800	5504.30	979.71 N	916.84 W	1341.07	3.493

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 17-22



Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
6828.00	90.600	318.800	5504.44	1003.79 N	937.92 W	1372.99	5.312
6860.00	91.100	319.800	5503.96	1028.04 N	958.78 W	1404.90	3.494
6892.00	90.800	320.900	5503.43	1052.68 N	979.20 W	1436.76	3.563
6923.00	91.100	320.500	5502.92	1076.66 N	998.83 W	1467.60	1.613
6954.00	91.100	318.900	5502.32	1100.30 N	1018.88 W	1498.49	5.160
6986.00	90.800	317.200	5501.79	1124.10 N	1040.27 W	1530.44	5.394
7017.00	90.800	316.700	5501.36	1146.75 N	1061.43 W	1561.42	1.613
7049.00	91.600	316.300	5500.69	1169.96 N	1083.45 W	1593.40	2.795
7081.00	91.600	316.100	5499.79	1193.04 N	1105.59 W	1625.38	0.625
7122.00	88.600	315.100	5499.72	1222.33 N	1134.27 W	1666.37	7.713
7156.00	88.600	315.100	5500.55	1246.41 N	1158.26 W	1700.36	0.000

All data is in feet unless otherwise stated. Directions and coordinates are relative to True North.
Vertical depths are relative to Well. Northings and Eastings are relative to Well.

The Dogleg Severity is in Degrees per 100ft.
Vertical Section is from Well and calculated along an Azimuth of 315.000° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 7156.00ft.,
The Bottom Hole Displacement is 1701.50ft., in the Direction of 317.099° (True).

Mobil

**San Juan County
Utah
Ratherford Unit
RU 17-22 - MWD Survey Leg #4**

SURVEY REPORT

20 July, 1998

sperry-sun
DRILLING SERVICES
A DIVISION OF HESSCOR CORPORATION, INC.

Survey Ref: svy2945

Sperry-Sun Drilling Services

Survey Report for RU 17-22



Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (*/100ft)
Gyro							
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
200.00	0.470	127.080	200.00	0.49 S	0.65 E	0.81	0.235
400.00	0.470	124.290	399.99	1.45 S	1.99 E	2.43	0.011
600.00	0.130	71.430	599.99	1.84 S	2.88 E	3.34	0.202
800.00	0.570	3.020	799.98	0.78 S	3.15 E	2.77	0.268
1000.00	1.420	359.680	999.95	2.70 N	3.19 E	0.35	0.426
1200.00	1.610	346.960	1199.88	7.91 N	2.54 E	-3.80	0.193
1400.00	1.730	344.400	1399.80	13.56 N	1.09 E	-8.81	0.071
1600.00	1.690	347.840	1599.71	19.35 N	0.34 W	-13.92	0.055
1800.00	1.140	348.560	1799.65	24.18 N	1.36 W	-18.06	0.275
2000.00	0.750	349.750	1999.62	27.42 N	1.98 W	-20.79	0.195
2200.00	0.470	5.550	2199.61	29.52 N	2.14 W	-22.39	0.162
2400.00	0.770	104.640	2399.60	30.00 N	0.76 W	-21.75	0.482
2600.00	1.120	120.940	2599.57	28.65 N	2.22 E	-18.69	0.219
2800.00	1.400	94.590	2799.53	27.45 N	6.33 E	-14.94	0.318
3000.00	0.750	91.900	2999.49	27.22 N	10.07 E	-12.12	0.326
3200.00	0.390	97.190	3199.48	27.09 N	12.06 E	-10.63	0.182
3400.00	0.340	82.610	3399.48	27.08 N	13.32 E	-9.73	0.053
3600.00	0.320	146.640	3599.47	26.69 N	14.22 E	-8.82	0.175
3800.00	0.350	183.790	3799.47	25.61 N	14.48 E	-7.87	0.108
4000.00	0.220	195.080	3999.47	24.63 N	14.34 E	-7.27	0.070
4200.00	0.260	172.760	4199.47	23.81 N	14.30 E	-6.72	0.050
4400.00	0.430	204.550	4399.46	22.68 N	14.05 E	-6.10	0.125
4600.00	0.300	215.080	4599.46	21.57 N	13.43 E	-5.75	0.073
4800.00	0.280	232.770	4799.46	20.84 N	12.74 E	-5.73	0.046
5000.00	0.330	215.280	4999.45	20.08 N	12.02 E	-5.70	0.053
5200.00	0.240	227.940	5199.45	19.33 N	11.38 E	-5.62	0.055
MWD Survey Leg #4							
5369.00	0.400	215.810	5368.45	18.61 N	10.77 E	-5.54	0.102
5378.00	3.700	135.000	5377.44	18.38 N	10.96 E	-5.25	40.638
5388.00	7.100	143.400	5387.40	17.66 N	11.55 E	-4.31	34.817
5398.00	10.900	146.200	5397.27	16.37 N	12.45 E	-2.77	38.240
5408.00	14.800	147.600	5407.02	14.51 N	13.66 E	-0.60	39.121
5418.00	18.500	148.400	5416.60	12.08 N	15.18 E	2.19	37.070
5428.00	22.300	149.000	5425.97	9.10 N	16.98 E	5.58	38.057
5438.00	26.100	149.400	5435.09	5.58 N	19.08 E	9.55	38.035
5448.00	29.600	149.700	5443.93	1.55 N	21.45 E	14.07	35.028
5458.00	33.700	150.000	5452.44	2.99 S	24.08 E	19.14	41.030

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 17-22



Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5468.00	39.100	150.000	5460.49	8.12 S	27.05 E	24.87	54.000
5478.00	45.800	151.100	5467.86	14.00 S	30.36 E	31.37	67.408
5488.00	52.900	149.600	5474.37	20.59 S	34.12 E	38.68	71.903
5498.00	59.700	145.800	5479.92	27.61 S	38.57 E	46.79	74.971
5508.00	65.100	141.200	5484.55	34.72 S	43.84 E	55.55	67.642
5518.00	70.400	137.700	5488.34	41.74 S	49.86 E	64.77	62.106
5528.00	72.700	142.900	5491.50	49.04 S	55.91 E	74.21	54.420
5538.00	74.900	148.800	5494.30	56.99 S	61.30 E	83.64	60.773
5570.00	92.100	146.100	5497.90	83.68 S	78.35 E	114.57	54.395
5593.00	92.100	146.700	5497.06	102.82 S	91.07 E	137.10	2.607
5624.00	90.800	144.900	5496.28	128.45 S	108.49 E	167.54	7.161
5656.00	89.100	142.500	5496.31	154.24 S	127.43 E	199.17	9.191
5688.00	89.500	139.500	5496.70	179.10 S	147.57 E	230.99	9.457
5720.00	90.300	139.500	5496.75	203.43 S	168.35 E	262.89	2.500
5751.00	91.500	139.100	5496.27	226.93 S	188.56 E	293.80	4.080
5782.00	90.600	136.700	5495.70	249.93 S	209.34 E	324.75	8.267
5814.00	90.100	135.200	5495.50	272.93 S	231.59 E	356.74	4.941
5846.00	91.100	135.100	5495.17	295.61 S	254.15 E	388.74	3.141
5878.00	89.300	134.400	5495.05	318.14 S	276.88 E	420.74	6.035
5910.00	88.900	134.000	5495.56	340.44 S	299.82 E	452.73	1.768
5941.00	90.500	132.300	5495.72	361.64 S	322.43 E	483.71	7.531
5973.00	90.000	135.100	5495.58	383.75 S	345.56 E	515.70	8.888
6005.00	90.500	134.900	5495.44	406.38 S	368.19 E	547.70	1.683
6037.00	89.800	132.400	5495.36	428.46 S	391.34 E	579.69	8.113
6069.00	88.900	132.600	5495.72	450.08 S	414.93 E	611.66	2.881
6101.00	90.200	132.600	5495.97	471.74 S	438.49 E	643.63	4.062
6132.00	90.000	132.600	5495.92	492.72 S	461.31 E	674.60	0.645
6164.00	89.400	132.800	5496.08	514.42 S	484.82 E	706.57	1.976
6196.00	89.100	131.900	5496.50	535.98 S	508.47 E	738.54	2.964
6228.00	90.300	132.700	5496.67	557.51 S	532.14 E	770.50	4.507
6260.00	91.300	132.400	5496.22	579.15 S	555.71 E	802.47	3.263
6291.00	87.600	131.200	5496.52	599.81 S	578.81 E	833.41	12.547
6323.00	86.700	131.700	5498.11	620.96 S	602.77 E	865.31	3.216
6354.00	87.200	132.100	5499.76	641.64 S	625.81 E	896.22	2.064
6385.00	87.400	132.600	5501.22	662.50 S	648.69 E	927.15	1.735
6417.00	88.900	132.800	5502.26	684.19 S	672.20 E	959.11	4.729
6449.00	89.400	132.300	5502.73	705.82 S	695.77 E	991.08	2.210
6481.00	89.600	132.400	5503.01	727.38 S	719.42 E	1023.04	0.699
6512.00	90.700	132.800	5502.93	748.36 S	742.24 E	1054.01	3.776
6544.00	89.500	132.600	5502.87	770.06 S	765.75 E	1085.99	3.802
6576.00	88.000	132.100	5503.57	791.61 S	789.40 E	1117.94	4.941
6608.00	88.400	132.600	5504.58	813.16 S	813.03 E	1149.89	2.000
6639.00	90.400	133.100	5504.90	834.24 S	835.76 E	1180.87	6.650
6671.00	91.700	132.600	5504.31	856.00 S	859.21 E	1212.84	4.353
6703.00	91.400	132.400	5503.45	877.61 S	882.80 E	1244.80	1.127

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 17-22



Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
6734.00	90.400	133.300	5502.96	898.69 S	905.52 E	1275.77	4.340
6766.00	89.600	131.600	5502.96	920.29 S	929.13 E	1307.74	5.871
6797.00	90.500	131.000	5502.93	940.75 S	952.42 E	1338.67	3.489
6829.00	91.100	130.900	5502.49	961.72 S	976.59 E	1370.59	1.901
6861.00	91.200	130.200	5501.85	982.52 S	1000.90 E	1402.49	2.209
6893.00	89.900	129.400	5501.54	1003.00 S	1025.48 E	1434.35	4.770
6925.00	89.600	131.000	5501.68	1023.65 S	1049.92 E	1466.24	5.087
6955.00	91.300	132.400	5501.44	1043.61 S	1072.32 E	1496.19	7.341
6987.00	91.100	133.500	5500.77	1065.41 S	1095.74 E	1528.16	3.493
7019.00	91.700	134.000	5499.99	1087.53 S	1118.84 E	1560.14	2.440
7058.00	91.700	134.000	5498.83	1114.61 S	1146.89 E	1599.12	0.000

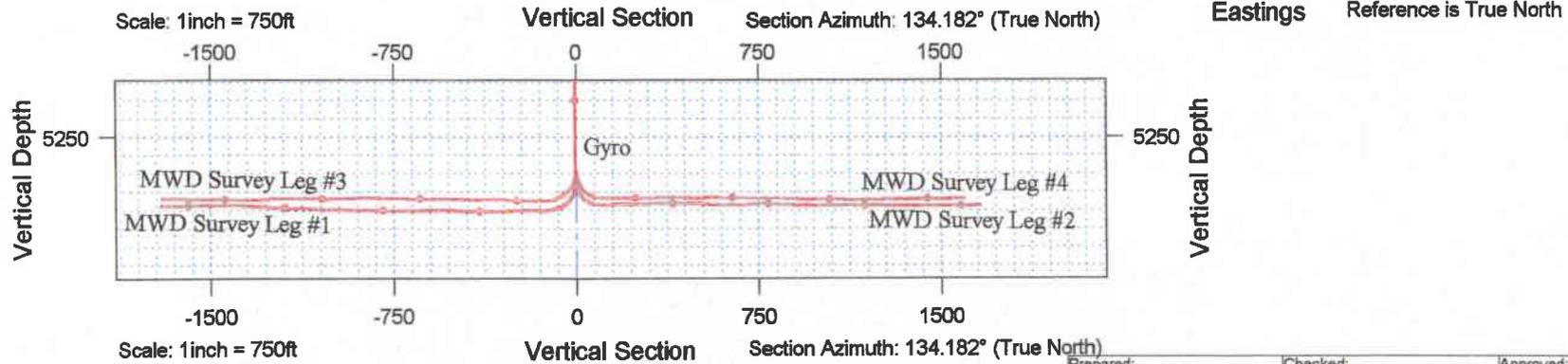
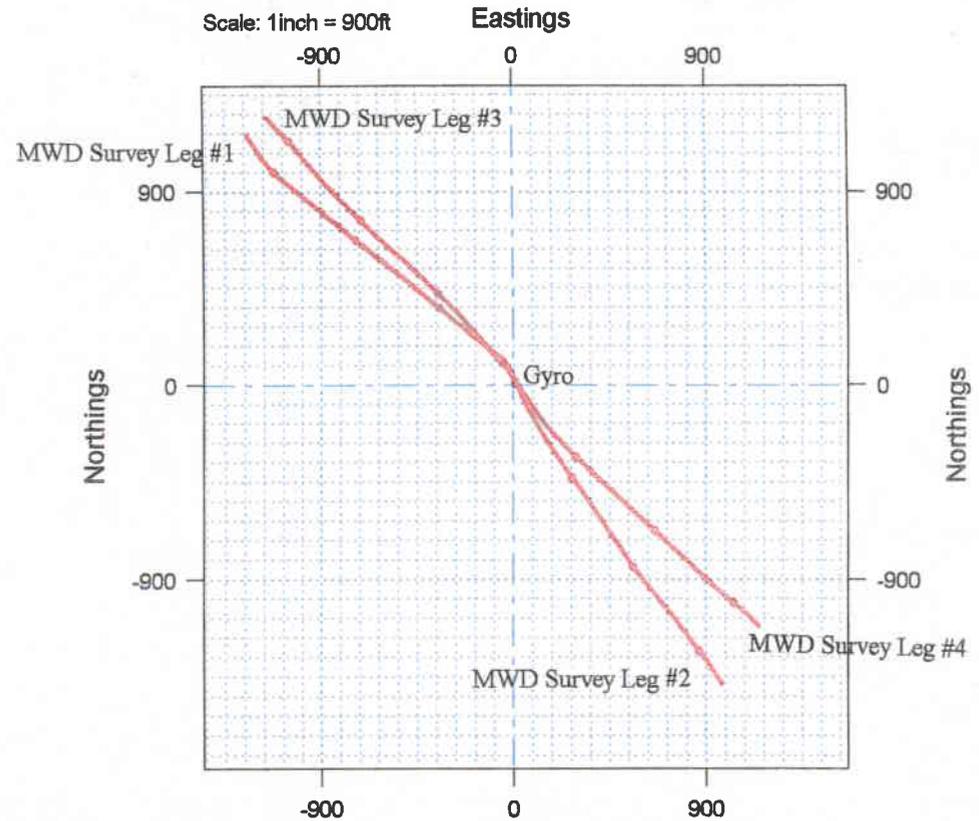
All data is in feet unless otherwise stated. Directions and coordinates are relative to True North.
Vertical depths are relative to Well. Northings and Eastings are relative to Well.

The Dogleg Severity is in Degrees per 100ft.

Vertical Section is from Well and calculated along an Azimuth of 135.000° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 7058.00ft,
The Bottom Hole Displacement is 1599.28ft., in the Direction of 134.182° (True).

San Juan County
 Utah
 Ratherford Unit
 RU 17-22 Legs #1,#2,#3, & #4



Prepared:

Checked:

Approved:

ExxonMobil Production Compa. —

U.S. West

P.O. Box 4358

Houston, Texas 77210-4358

June 27, 2001

ExxonMobil
Production

Mr. Jim Thompson
State of Utah, Division of Oil, Gas and Mining
1549 West North Temple
Suite 1210
Salt Lake City, UT 84114-5801

Change of Name – Mobil Oil Corporation to
ExxonMobil Oil Corporation

Dear Mr. Thompson

Effective June 1, 2001, Mobil Oil Corporation (MOC) changed its name to ExxonMobil Oil Corporation (EMOC). This was a name change only; EMOC is the same corporation as Mobil Oil Corporation, but with a new name. No facility or other asset was transferred from one corporation to another by virtue of the name change. Specifically, EMOC will remain the owner and operator of its existing exploration and production oil and gas properties and facilities, as well as relevant permits.

There is no change to the name of Exxon Mobil Corporation, the ultimate shareholder of EMOC.

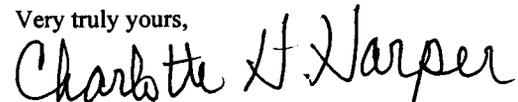
Please note the change of name of MOC to ExxonMobil Oil Corporation in your records pertaining to any MOC permits.

The Federal Identification Number for MOC (13-5401570) will remain the same for EMOC.

A copy of the Certification, Bond Rider and a list of wells are attached.

If you have any questions please feel free to call Joel Talavera at 713-431-1010

Very truly yours,



Charlotte H. Harper
Permitting Supervisor

ExxonMobil Production Company
a division of Exxon Mobil Corporation,
acting for ExxonMobil Oil Corporation

RECEIVED

JUN 29 2001

DIVISION OF
OIL, GAS AND MINING



United States Department of the Interior

BUREAU OF INDIAN AFFAIRS

Navajo Area Office
~~XXXXXXXXXXXX~~
NAVAJO REGION

P.O. Box 1060
Gallup, New Mexico 87305-1060

AUG 30 2001

IN REPLY REFER TO:

RRES/543

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Charlotte H. Harper, Permitting Supervisor
Exxon Mobil Production Company
U. S. West
P. O. Box 4358
Houston, TX 77210-4358

Dear Ms. Harper:

This is to acknowledge receipt of your company's name change from Mobil Oil Corporation to ExxonMobil Oil Corporation effective June 1, 2001. The receipt of documents includes the Name Change Certification, current listing of Officers and Directors, Listing of Leases, Financial Statement, filing fees of \$75.00 and a copy of the Rider for Bond Number 8027 31 97. There are no other changes.

Please note that we will provide copies of these documents to other concerned parties. If you need further assistance, you may contact Ms. Bertha Spencer, Realty Specialist, at (928) 871-5938.

Sincerely,

GENNI DENETSONE

Regional Realty Officer

cc: BLM, Farmington Field Office w/enclosures ✓
Navajo Nation Minerals Office, Attn: Mr. Akhtar Zaman, Director/w enclosures

MINERAL RESOURCES	
ADM	<i>DSM</i>
NATV ADMIN COORD	_____
SOLID MIN TEAM	_____
PETRO MENT TEAM	<i>2</i>
O & G INSPECT TEAM	_____
ALL TEAM LEADERS	_____
LAND RESOURCES	_____
ENVIRONMENT	_____
FILES	_____

ExxonMobil Production Company
U.S. West
P.O. Box 4358
Houston, Texas 77210-4358

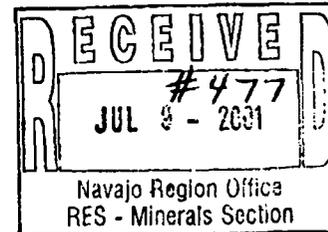
PS 7/12/001
SH
543
File

ExxonMobil
Production

June 27, 2001

Certified Mail
Return Receipt Requested

Ms. Genni Denetsone
United States Department of the Interior
Bureau of Indian Affairs, Navajo Region
Real Estate Services
P. O. Box 1060
Gallup, New Mexico 87305-1060
Mail Code 543



Change of Name -
Mobil Oil Corporation to
ExxonMobil Oil Corporation

Dear Ms. Denetsone:

Effective June 1, 2001, Mobil Oil Corporation (MOC) changed its name to ExxonMobil Oil Corporation (EMOC). This was a name change only; EMOC is the same corporation as Mobil Oil Corporation, but with a new name. No facility or other asset was transferred from one corporation to another by virtue of the name change. Specifically, EMOC will remain the owner and operator of its existing exploration and production oil and gas properties and facilities, as well as relevant permits.

There is no change to the name of Exxon Mobil Corporation, the ultimate shareholder of EMOC.

Please note the change of name of MOC to ExxonMobil Oil Corporation in your records pertaining to any MOC permits.

The Federal Identification Number for MOC (13-5401570) will remain the same for EMOC.

Attached is the Name Change Certification, Current listing of Officers and Directors, Filing Fee of \$75/-, Listing of Leases, Financial Statement and a copy of the Rider for Bond number 8027 31 97. The original Bond Rider has been sent to Ms. Barbar Davis at your Washington Office.

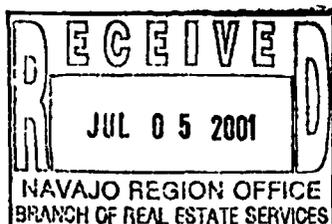
If you have any questions , please contact Alex Correa at (713) 431-1012.

Very truly yours,

Charlotte H. Harper

Charlotte H. Harper
Permitting Supervisor

Attachments



ExxonMobil Production Company
a division of Exxon Mobil Corporation,
acting for ExxonMobil Oil Corporation

NOTE: Check forwarded to Ella Isaac

Bureau of Indian Affairs
Navajo Region Office
Attn: RRES - Mineral and Mining Section
P.O. Box 1060
Gallup, New Mexico 87305-1060

Gentlemen:

The current listing of officers and director of ExxonMobil Oil Corporation (Name of Corporation), of New York (State) is as follows:

OFFICERS

President	<u>F.A. Risch</u>	Address <u>5959 Las Colinas Blvd. Irving, TX 75039</u>
Vice President	<u>K.T. Koonce</u>	Address <u>800 Bell Street Houston, TX 77002</u>
Secretary	<u>F.L. Reid</u>	Address <u>5959 Las Colinas Blvd. Irving, TX 75039</u>
Treasure	<u>B.A. Maher</u>	Address <u>5959 Las Colinas Blvd. Irving, TX 75039</u>

DIRECTORS

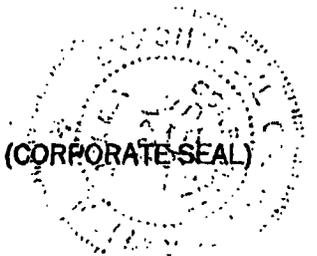
Name	<u>D.D. Humphreys</u>	Address	<u>5959 Las Colinas Blvd. Irving, TX 75039</u>
Name	<u>P.A. Hanson</u>	Address	<u>5959 Las Colinas Blvd. Irving, TX 75039</u>
Name	<u>T.P. Townsend</u>	Address	<u>5959 Las Colinas Blvd. Irving, TX 75039</u>
Name	<u>B.A. Maher</u>	Address	<u>5959 Las Colinas Blvd. Irving, TX 75039</u>
Name	<u>F.A. Risch</u>	Address	<u>5959 Las Colinas Blvd. Irving, TX 75039</u>

Sincerely,



Alex Correa

This is to certify that the above information pertaining to ExxonMobil Oil Corporation (Corporation) is true and correct as evidenced by the records and accounts covering business for the State of Utah and in the custody of Corporation Service Company (Agent), Phone: 1 (800) 927-9800 whose business address is One Utah Center, 201 South Main Street, Salt Lake City, Utah 84111-2218





 Signature
AGENT AND ATTORNEY IN FACT

 Title

CERTIFICATION

I, the undersigned Assistant Secretary of ExxonMobil Oil Corporation. (formerly Mobil Oil Corporation), a corporation organized and existing under the laws of the State of New York, United States of America, DO HEREBY CERTIFY, That, the following is a true and exact copy of the resolutions adopted by the Board of Directors on May 22, 2001:

CHANGE OF COMPANY NAME

WHEREAS, the undersigned Directors of the Corporation deem it to be in the best interest of the Corporation to amend the Certificate of Incorporation of the Corporation to change the name and principal office of the Corporation:

NOW THEREFORE BE IT RESOLVED, That Article 1st relating to the corporate name is hereby amended to read as follows:

"1st The corporate name of said Company shall be,
ExxonMobil Oil Corporation",

FURTHER RESOLVED, That the amendment of the Corporation's Certificate of Incorporation referred to in the preceding resolutions be submitted to the sole shareholder of the Corporation entitled to vote thereon for its approval and, if such shareholder gives its written consent, pursuant to Section 803 of the Business Corporation Law of the State of New York, approving such amendment, the proper officers of the Corporation be, and they hereby are, authorized to execute in the name of the Corporation the Certificate of Amendment of Certificate of Incorporation, in the form attached hereto;

FURTHER RESOLVED, That the proper officers of the Corporation be and they hereby are authorized and directed to deliver, file and record in its behalf, the Certificate of Amendment of Certificate of Incorporation, and to take such action as may be deemed necessary or advisable to confirm and make effective in all respects the change of this Company's name to EXXONMOBIL OIL CORPORATION.

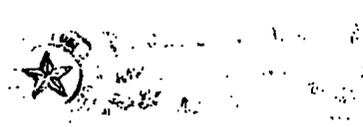
WITNESS, my hand and the seal of the Corporation at Irving, Texas, this 8th day of June, 2001.

S. A. Sullivan
Assistant Secretary

COUNTY OF DALLAS)
STATE OF TEXAS)
UNITED STATES OF AMERICA)

Sworn to and subscribed before me at Irving, Texas, U. S. A. on this the 8th day of June, 2001.

Janice M. Phillips
Notary Public



LISTING OF LEASES OF MOBIL OIL CORPORATION

Lease Number

- 1) 14-20-0603-6504
- 2) 14-20-0603-6505
- 3) 14-20-0603-6506
- 4) 14-20-0603-6508
- 5) 14-20-0603-6509
- 6) 14-20-0603-6510
- 7) 14-20-0603-7171
- 8) 14-20-0603-7172A
- 9) 14-20-600-3530
- 10) 14-20-603-359
- 11) 14-20-603-368
- 12) 14-20-603-370
- 13) 14-20-603-370A
- 14) 14-20-603-372
- 15) 14-20-603-372A
- 16) 14-20-603-4495
- 17) 14-20-603-5447
- 18) 14-20-603-5448
- 19) 14-20-603-5449
- 20) 14-20-603-5450
- 21) 14-20-603-5451

6/1/01

CHUBB GROUP OF INSURANCE COMPANIES

1000 West Loop South, Suite 1900, Houston, Texas 77027-3301
Telephone: (713) 297-4600 • Facsimile: (713) 297-4750

NW Bond

FEDERAL INSURANCE COMPANY RIDER
to be attached to and form a part of

BOND NO 8027 31 97

wherein

Mobil Oil Corporation and Mobil Exploration and Producing U.S., Inc. is
named as Principal and

FEDERAL INSURANCE COMPANY AS SURETY,

in favor of **United States of America, Department of the Interior**
Bureau of Indian Affairs

in the amount of **\$150,000.00**

bond date: **11/01/65**

IT IS HEREBY UNDERSTOOD AND AGREED THAT effective June 1, 2001
the name of the Principal is changed

FROM: Mobil Oil Corporation and Mobil Exploration and Producing U.S., Inc.

TO : ExxonMobil Oil Corporation

All other terms and conditions of this Bond are unchanged.

Signed, sealed and dated this 12th of June, 2001.

ExxonMobil Oil Corporation

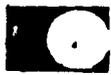
By:



FEDERAL INSURANCE COMPANY

By:

Mary Pierson
Mary Pierson, Attorney-in-fact



**Chubb
Surety**

**POWER
OF
ATTORNEY**

**Federal Insurance Company
Vigilant Insurance Company
Pacific Indemnity Company**

**Attn.: Surety Department
15 Mountain View Road
Warren, NJ 07059**

Know All by These Presents, That **FEDERAL INSURANCE COMPANY**, an Indiana corporation, **VIGILANT INSURANCE COMPANY**, a New York corporation, and **PACIFIC INDEMNITY COMPANY**, a Wisconsin corporation, do each hereby constitute and appoint **R. F. Bobo, Mary Pierson, Philana Berros, and Jody E. Specht of Houston, Texas-----**

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, said **FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY** have each executed and attested these presents and affixed their corporate seals on this **10th** day of **May, 2001**.

Kenneth C. Wendel, Assistant Secretary

Frank E. Robertson, Vice President

STATE OF NEW JERSEY } ss.
County of Somerset

On this **10th** day of **May, 2001**, before me, a Notary Public of New Jersey, personally came **Kenneth C. Wendel**, to me known to be Assistant Secretary of **FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY**, the companies which executed the foregoing Power of Attorney, and the said **Kenneth C. Wendel** being by me duly sworn, did depose and say that he is Assistant Secretary of **FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY** and knows the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of the By-Laws of said Companies; and that he signed said Power of Attorney as Assistant Secretary of said Companies by like authority; and that he is acquainted with **Frank E. Robertson**, and knows him to be Vice President of said Companies; and that the signature of **Frank E. Robertson**, subscribed to said Power of Attorney is in the genuine handwriting of **Frank E. Robertson**, and was thereto subscribed by authority of said **Kenneth C. Wendel** in the presence of the Notary Public.



Notary Public State of New Jersey
No. 2231647
Commission Expires Oct 29, 2004

Notary Public

Extract from the By-Laws of **FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY**:

"All powers of attorney for and on behalf of the Company may and shall be executed in the name and on behalf of the Company, either by the Chairman or the President or a Vice President or an Assistant Vice President, jointly with the Secretary or an Assistant Secretary, under their respective designations. The signature of such officers may be engraved, printed or lithographed. The signature of each of the following officers: Chairman, President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary and the seal of the Company may be affixed by facsimile to any power of attorney or to any certificate relating thereto appointing Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such power of attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached."

I, **Kenneth C. Wendel**, Assistant Secretary of **FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY** (the "Companies") do hereby certify that

- (i) the foregoing extract of the By-Laws of the Companies is true and correct,
- (ii) the Companies are duly licensed and authorized to transact surety business in all 50 of the United States of America and the District of Columbia and are authorized by the U. S. Treasury Department; further, Federal and Vigilant are licensed in Puerto Rico and the U. S. Virgin Islands, and Federal is licensed in American Samoa, Guam, and each of the Provinces of Canada except Prince Edward Island; and
- (iii) the foregoing Power of Attorney is true, correct and in full force and effect.

Given under my hand and seals of said Companies at Warren, NJ this **12th** day of **June, 2001**



Kenneth C. Wendel, Assistant Secretary

IN THE EVENT YOU WISH TO NOTIFY US OF A CLAIM, VERIFY THE AUTHENTICITY OF THIS BOND OR NOTIFY US OF ANY OTHER MATTER, PLEASE CONTACT US AT ADDRESS LISTED ABOVE, OR BY Telephone (908) 903-3485 Fax (908) 903-3656 e-mail: surety@chubb.com

CSC

5184334741

06/01 '01 08:46 NO.410 03/05

CSC

06/01 '01 09:06 NO.135 02/04

F010601000187

CERTIFICATE OF AMENDMENT
OF
CERTIFICATE OF INCORPORATION
OF
MOBIL OIL CORPORATION

CSC 45

(Under Section 805 of the Business Corporation Law)

Pursuant to the provisions of Section 805 of the Business Corporation Law, the undersigned President and Secretary, respectively, of Mobil Oil Corporation hereby certify:

FIRST: That the name of the corporation is MOBIL OIL CORPORATION and that said corporation was incorporated under the name of Standard Oil Company of New York.

SECOND: That the Certificate of Incorporation of the corporation was filed by the Department of State, Albany, New York, on the 10th day of August, 1882.

THIRD: That the amendments to the Certificate of Incorporation effected by this Certificate are as follows:

(a) Article 1st of the Certificate of Incorporation, relating to the corporate name, is hereby amended to read as follows:

"1st: The corporate name of said Company shall be, ExxonMobil Oil Corporation",

(b) Article 7th of the Certificate of Incorporation, relating to the office of the corporation is hereby amended to read as follows:

The office of the corporation within the State of New York is to be located in the County of Albany. The Company shall have offices at such other places as the Board of Directors may from time to time determine.

CSC
CSC

5184334741

06/01 '01 08:47 NO.410 04/05
06/01 '01 09:06 NO. 133 03/04

FOURTH: That the amendments to the Certificate of Incorporation were authorized by the Board of Directors followed by the holder of all outstanding shares entitled to vote on amendments to the Certificate of Incorporation by written consent of the sole shareholder dated May 22, 2001.

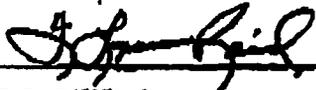
IN WITNESS WHEREOF, this Certificate has been signed this 22nd Day of May, 2001.



F. A. Risch, President 

STATE OF TEXAS)
COUNTY OF DALLAS)

F. L. REID, being duly sworn, deposes and says that he is the Secretary of MOBIL OIL CORPORATION, the corporation mentioned and described in the foregoing instrument; that he has read and signed the same and that the statements contained therein are true.



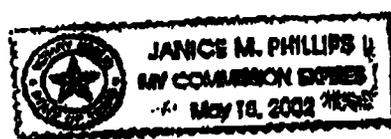
F. L. REID, Secretary

SUBSCRIBED AND SWORN TO before me, the undersigned authority, on this the 22nd day of May, 2001.

[SEAL]



NOTARY PUBLIC, STATE OF TEXAS



CSC
CSC

5184334741

06/01 '01 09:01 NO. 411 02/02
06/01 '01 09:06 NO. 133 04/04
F010601000187

CSC 45

CERTIFICATE OF AMENDMENT

OF

MOBIL OIL CORPORATION

Under Section 805 of the Business Corporation Law

SAC

100 cc
**STATE OF NEW YORK
DEPARTMENT OF STATE**

Filed by: EXXONMOBIL CORPORATION
(Name)

FILED JUN 01 2001

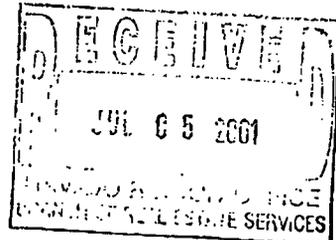
6949 Las Colinas Blvd.
(Mailing address)

TAX \$ _____
BY: *SAC*

Irving, TX 75039-2298
(City, State and Zip code)

ny Albany

Cust Ref # 1655781MPJ



010601000195

State of New York)
Department of State) ss:

I hereby certify that the annexed copy has been compared with the original document in the custody of the Secretary of State and that the same is a true copy of said original.

Witness my hand and seal of the Department of State on **JUN 01 2001**



A handwritten signature in black ink, appearing to read "J. Heub", is written over a horizontal line.

Special Deputy Secretary of State

OPERATOR CHANGE WORKSHEET

ROUTING

1. GLH
2. CDW /
3. FILE

Change of Operator (Well Sold)

Designation of Agent

X Operator Name Change

Merger

The operator of the well(s) listed below has changed, effective:		06-01-2001
FROM: (Old Operator):		TO: (New Operator):
MOBIL EXPLORATION & PRODUCTION		EXXONMOBIL OIL CORPORATION
Address: P O BOX DRAWER "G"		Address: U S WEST P O BOX 4358
CORTEZ, CO 81321		HOUSTON, TX 77210-4358
Phone: 1-(970)-564-5212		Phone: 1-(713)-431-1010
Account No. N7370		Account No. N1855

CA No. Unit: RATHERFORD

WELL(S)						
NAME	SEC TWN RNG	API NO	ENTITY NO	LEASE TYPE	WELL TYPE	WELL STATUS
RATHERFORD UNIT 17-33	17-41S-24E	43-037-31134	6280	INDIAN	OW	P
RATHERFORD UNIT 17-11	17-41S-24E	43-037-31169	6280	INDIAN	OW	S
RATHERFORD UNIT 17-22	17-41S-24E	43-037-31170	6280	INDIAN	OW	P
RATHERFORD UNIT 17-42	17-41S-24E	43-037-31177	6280	INDIAN	OW	P
RATHERFORD UNIT 17-31	17-41S-24E	43-037-31178	6280	INDIAN	OW	P
18-11	18-41S-24E	43-037-15733	6280	INDIAN	OW	P
RATHERFORD 18-13	18-41S-24E	43-037-15734	6280	INDIAN	OW	P
RATHERFORD UNIT 18-44	18-41S-24E	43-037-31045	6280	INDIAN	OW	P
RATHERFORD UNIT 18-24	18-41S-24E	43-037-31079	6280	INDIAN	OW	P
RATHERFORD UNIT 18-33	18-41S-24E	43-037-31135	6280	INDIAN	OW	P
RATHERFORD UNIT 18-31	18-41S-24E	43-037-31181	6280	INDIAN	OW	P
RATHERFORD UNIT 18-42	18-41S-24E	43-037-31182	6280	INDIAN	OW	P
RATHERFORD UNIT 18-22	18-41S-24E	43-037-31236	6280	INDIAN	OW	P
19-42	19-41S-24E	43-037-30916	6280	INDIAN	OW	P
RATHERFORD UNIT 19-22	19-41S-24E	43-037-31046	6280	INDIAN	OW	P
RATHERFORD UNIT 19-31	19-41S-24E	43-037-31047	6280	INDIAN	OW	P
RATHERFORD UNIT 19-33	19-41S-24E	43-037-31048	6280	INDIAN	OW	P
RATHERFORD UNIT 19-11	19-41S-24E	43-037-31080	6280	INDIAN	OW	P
RATHERFORD UNIT 19-44	19-41S-24E	43-037-31081	6280	INDIAN	OW	P
RATHERFORD 19-97	19-41S-24E	43-037-31596	6280	INDIAN	OW	P

OPERATOR CHANGES DOCUMENTATION

Enter date after each listed item is completed

- (R649-8-10) Sundry or legal documentation was received from the **FORMER** operator on: 06/29/2001
- (R649-8-10) Sundry or legal documentation was received from the **NEW** operator on: 06/29/2001
- The new company has been checked through the **Department of Commerce, Division of Corporations Database** on: 04/09/2002
- Is the new operator registered in the State of Utah: YES Business Number: 579865-0143
- If **NO**, the operator was contacted on: N/A

6. **Federal and Indian Lease Wells:** The BLM and or the BIA has approved the merger, name change, or operator change for all wells listed on Federal or Indian leases on: BIA-06/01/01

7. **Federal and Indian Units:**

The BLM or BIA has approved the successor of unit operator for wells listed on: 06/01/2001

8. **Federal and Indian Communitization Agreements ("CA"):**

The BLM or BIA has approved the operator for all wells listed within a CA on: N/A

9. **Underground Injection Control ("UIC")**

The Division has approved UIC Form 5, **Transfer of Authority to Inject**, for the enhanced/secondary recovery unit/project for the water disposal well(s) listed on: N/A

DATA ENTRY:

1. Changes entered in the **Oil and Gas Database** on: 04/15/2002

2. Changes have been entered on the **Monthly Operator Change Spread Sheet** on: 04/15/2002

3. Bond information entered in RBDMS on: N/A

4. Fee wells attached to bond in RBDMS on: N/A

STATE WELL(S) BOND VERIFICATION:

1. State well(s) covered by Bond Number: N/A

FEDERAL WELL(S) BOND VERIFICATION:

1. Federal well(s) covered by Bond Number: N/A

INDIAN WELL(S) BOND VERIFICATION:

1. Indian well(s) covered by Bond Number: 80273197

FEE WELL(S) BOND VERIFICATION:

1. (R649-3-1) The **NEW** operator of any fee well(s) listed covered by Bond Number N/A

2. The **FORMER** operator has requested a release of liability from their bond on: N/A
The Division sent response by letter on: N/A

LEASE INTEREST OWNER NOTIFICATION:

3. (R649-2-10) The **FORMER** operator of the fee wells has been contacted and informed by a letter from the Division of their responsibility to notify all interest owners of this change on: N/A

COMMENTS:

Division of Oil, Gas and Mining
OPERATOR CHANGE WORKSHEET

ROUTING	
1. DJJ	
2. CDW	

X Change of Operator (Well Sold)

Operator Name Change/Merger

The operator of the well(s) listed below has changed, effective: 6/1/2006	
FROM: (Old Operator): N1855-ExxonMobil Oil Corporation PO Box 4358 Houston, TX 77210-4358 Phone: 1 (281) 654-1936	TO: (New Operator): N2700-Resolute Natural Resources Company 1675 Broadway, Suite 1950 Denver, CO 80202 Phone: 1 (303) 534-4600
CA No.	Unit: RATHERFORD

OPERATOR CHANGES DOCUMENTATION

Enter date after each listed item is completed

- (R649-8-10) Sundry or legal documentation was received from the **FORMER** operator on: 4/21/2006
- (R649-8-10) Sundry or legal documentation was received from the **NEW** operator on: 4/24/2006
- The new company was checked on the **Department of Commerce, Division of Corporations Database** on: 6/7/2006
- Is the new operator registered in the State of Utah: YES Business Number: 5733505-0143
- If **NO**, the operator was contacted on:
- (R649-9-2) Waste Management Plan has been received on: requested
- Inspections of LA PA state/fee well sites complete on: n/a
- Reports current for Production/Disposition & Sundries on: ok
- Federal and Indian Lease Wells:** The BLM and or the BIA has approved the merger, name change, or operator change for all wells listed on Federal or Indian leases on: BLM n/a BIA not yet
- Federal and Indian Units:**
The BLM or BIA has approved the successor of unit operator for wells listed on: not yet
- Federal and Indian Communization Agreements ("CA"):**
The BLM or BIA has approved the operator for all wells listed within a CA on: n/a
- Underground Injection Control ("UIC")** The Division has approved UIC Form 5, **Transfer of Authority to Inject**, for the enhanced/secondary recovery unit/project for the water disposal well(s) listed on: 6/12/2006

DATA ENTRY:

- Changes entered in the **Oil and Gas Database** on: 6/22/2006
- Changes have been entered on the **Monthly Operator Change Spread Sheet** on: 6/22/2006
- Bond information entered in RBDMS on: n/a
- Fee/State wells attached to bond in RBDMS on: n/a
- Injection Projects to new operator in RBDMS on: 6/22/2006
- Receipt of Acceptance of Drilling Procedures for APD/New on: n/a

BOND VERIFICATION:

- Federal well(s) covered by Bond Number: n/a
- Indian well(s) covered by Bond Number: PA002769
- (R649-3-1) The **NEW** operator of any fee well(s) listed covered by Bond Number n/a
- The **FORMER** operator has requested a release of liability from their bond on: n/a
The Division sent response by letter on: n/a

LEASE INTEREST OWNER NOTIFICATION:

- (R649-2-10) The **FORMER** operator of the fee wells has been contacted and informed by a letter from the Division of their responsibility to notify all interest owners of this change on: n/a

COMMENTS:

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

FORM 9

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

1. TYPE OF WELL OIL WELL <input type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <u>Unit Agreement</u>		5. LEASE DESIGNATION AND SERIAL NUMBER: <u>See attached list</u>
2. NAME OF OPERATOR: <u>Resolute Natural Resources Company</u> <u>N2700</u>		6. IF INDIAN, ALLOTTEE OR TRIBE NAME: <u>Navajo Tribe</u>
3. ADDRESS OF OPERATOR: <u>1675 Broadway, Suite 1950</u> CITY <u>Denver</u> STATE <u>CO</u> ZIP <u>80202</u>		7. UNIT or CA AGREEMENT NAME: <u>Ratherford Unit</u>
4. LOCATION OF WELL FOOTAGES AT SURFACE: <u>See attached list</u>		8. WELL NAME and NUMBER: <u>See attached list</u>
QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: _____		9. API NUMBER: <u>Attached</u>
COUNTY: <u>San Juan</u>		10. FIELD AND POOL, OR WILDCAT: <u>Greater Aneth</u>
STATE: <u>UTAH</u>		

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

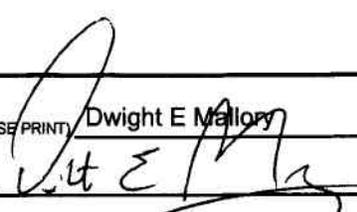
TYPE OF SUBMISSION	TYPE OF ACTION		
<input type="checkbox"/> NOTICE OF INTENT (Submit in Duplicate) Approximate date work will start: _____	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> REPERFORATE CURRENT FORMATION
<input checked="" type="checkbox"/> SUBSEQUENT REPORT (Submit Original Form Only) Date of work completion: _____	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> SIDETRACK TO REPAIR WELL
	<input type="checkbox"/> CASING REPAIR	<input type="checkbox"/> NEW CONSTRUCTION	<input type="checkbox"/> TEMPORARILY ABANDON
	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input checked="" type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> TUBING REPAIR
	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> VENT OR FLARE
	<input type="checkbox"/> CHANGE WELL NAME	<input type="checkbox"/> PLUG BACK	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> PRODUCTION (START/RESUME)	<input type="checkbox"/> WATER SHUT-OFF
	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input type="checkbox"/> OTHER: _____
	<input type="checkbox"/> CONVERT WELL TYPE	<input type="checkbox"/> RECOMPLETE - DIFFERENT FORMATION	

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

Effective June 1, 2006 Exxon Mobil Oil Corporation resigns as operator of the Ratherford Unit. Also effective June 1, 2006 Resolute Natural Resources Company is designated as successor operator of the Ratherford Unit.

A list of affected producing and water source wells is attached. A separate of affected injection wells is being submitted with UIC Form 5, Transfer of Authority to Inject.

As of the effective date, bond coverage for the affected wells will transfer to BIA Bond # PA002769.

NAME (PLEASE PRINT) <u>Dwight E Mallory</u>	TITLE <u>Regulatory Coordinator</u>
SIGNATURE 	DATE <u>4/20/2006</u>

(This space for State use only)

APPROVED 6127106
Earlene Russell
Division of Oil, Gas and Mining
Earlene Russell, Engineering Technician

RECEIVED
APR 24 2006
DIV. OF OIL, GAS & MINING

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

FORM 9

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

1. TYPE OF WELL OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER _____		5. LEASE DESIGNATION AND SERIAL NUMBER:
2. NAME OF OPERATOR: ExxonMobil Oil Corporation <i>N1855</i>		6. IF INDIAN, ALLOTTEE OR TRIBE NAME: Ship Rock
3. ADDRESS OF OPERATOR: P.O. Box 4358 CITY Houston STATE TX ZIP 77210-4358		7. UNIT or CA AGREEMENT NAME: UTU68931A
4. LOCATION OF WELL FOOTAGES AT SURFACE: QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:		8. WELL NAME and NUMBER: Ratherford 9. API NUMBER: attached
		10. FIELD AND POOL, OR WILDCAT: Aneth
		COUNTY: San Juan
		STATE: UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> NOTICE OF INTENT (Submit in Duplicate) Approximate date work will start: <u>6/1/2006</u>	<input type="checkbox"/> ACIDIZE	<input type="checkbox"/> DEEPEN	<input type="checkbox"/> REPERFORATE CURRENT FORMATION
<input type="checkbox"/> SUBSEQUENT REPORT (Submit Original Form Only) Date of work completion:	<input type="checkbox"/> ALTER CASING	<input type="checkbox"/> FRACTURE TREAT	<input type="checkbox"/> SIDETRACK TO REPAIR WELL
	<input type="checkbox"/> CASING REPAIR	<input type="checkbox"/> NEW CONSTRUCTION	<input type="checkbox"/> TEMPORARILY ABANDON
	<input type="checkbox"/> CHANGE TO PREVIOUS PLANS	<input checked="" type="checkbox"/> OPERATOR CHANGE	<input type="checkbox"/> TUBING REPAIR
	<input type="checkbox"/> CHANGE TUBING	<input type="checkbox"/> PLUG AND ABANDON	<input type="checkbox"/> VENT OR FLARE
	<input type="checkbox"/> CHANGE WELL NAME	<input type="checkbox"/> PLUG BACK	<input type="checkbox"/> WATER DISPOSAL
	<input type="checkbox"/> CHANGE WELL STATUS	<input type="checkbox"/> PRODUCTION (START/RESUME)	<input type="checkbox"/> WATER SHUT-OFF
	<input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS	<input type="checkbox"/> RECLAMATION OF WELL SITE	<input type="checkbox"/> OTHER: _____
	<input type="checkbox"/> CONVERT WELL TYPE	<input type="checkbox"/> RECOMPLETE - DIFFERENT FORMATION	

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

ExxonMobil Oil Corporation is transferring operatorship of Greater Aneth field, Ratherford lease to Resolute Natural Resources Company. All change of operator notices should be made effective as of 7:00 AM MST on June 1, 2006.

Attached please find a listing of producers and water source wells included in the transfer.

NAME (PLEASE PRINT) <u>Laurie Kilbride</u>	TITLE <u>Permitting Supervisor</u>
SIGNATURE <i>Laurie B. Kilbride</i>	DATE <u>4/19/2006</u>

(This space for State use only) **APPROVED** 6/13/06
Earlene Russell
Division of Oil, Gas and Mining
Earlene Russell, Engineering Technician

RECEIVED
APR 21 2006
DIV. OF OIL, GAS & MINING

Ratherford Unit - Producer Well List

minus P&A's

Lease	Number	API #	Status	Lease #	Location					
					Sec	T	R	QTR/QTR	NSFoot	EWFoot
Ratherford	01-14	430373116200S1	Producing	1420603246A	1	41S	23E	SWSW	0660FSL	0660FWL
Ratherford	01-34	430371638501S1	SI	1420603246A	1	41S	23E	SWSE	1133FSL	1980FEL
Ratherford	11-41	430373154400S1	Producing	1420603246A	11	41S	23E	NENE	0860FNL	0350FEL
Ratherford	11-43	430373162201S1	Producing	1420603246A	11	41S	23E	NESE	1980FSL	0660FEL
Ratherford	12-12	430373119000S1	Producing	1420603246A	12	41S	23E	SWNW	1850FNL	0660FWL
Ratherford	12-14	430371584400S1	SI	1420603246A	12	41S	23E	SWSW	0660FSL	4622FEL
Ratherford	12-21	430373120100S1	Producing	1420603246A	12	41S	23E	NENW	0660FNL	1980FWL
Ratherford	12-23	430371584601S1	Producing	1420603246A	12	41S	23E	NESW	1958FSL	3300FEL
Ratherford	12-32	430373120300S1	Producing	1420603246A	12	41S	23E	SWNE	1820FNL	1820FEL
Ratherford	12-34	430373112600S1	Producing	1420603246A	12	41S	23E	SWSE	0675FSL	1905FEL
Ratherford	12-43	430373120200S1	SI	1420603246A	12	41S	23E	NESE	2100FSL	0660FEL
Ratherford	13-12	430373112701S1	Producing	1420603247A	13	41S	23E	SWNW	1705FNL	0640FWL
Ratherford	13-14	430373158900S1	Producing	1420603247A	13	41S	23E	SWSW	0660FSL	0660FWL
Ratherford	13-21	430373112801S1	SI	1420603247A	13	41S	23E	NENW	0660FNL	1920FWL
Ratherford	13-23	430373112900S1	Producing	1420603247A	13	41S	23E	NESW	1980FSL	1930FWL
Ratherford	13-34	430373113001S1	Producing	1420603247A	13	41S	23E	SWSE	0660FSL	1980FEL
Ratherford	13-41	430371585601S1	Producing	1420603247A	13	41S	23E	NENE	660FNL	660FEL
Ratherford	13-43	430373113100S1	Producing	1420603247A	13	41S	23E	NESE	1700FSL	0960FEL
Ratherford	14-32	430371585801S1	Producing	1420603247A	14	41S	23E	SWNE	2130FNL	1830FEL
Ratherford	14-41	430373162300S1	Producing	1420603247A	14	41S	23E	NENE	0521FNL	0810FEL
Ratherford	24-32	430373159300S1	Producing	1420603247A	24	41S	23E	SWNE	2121FNL	1846FEL
Ratherford	24-41	430373113200S1	Producing	1420603247A	24	41S	23E	NENE	0660FNL	0710FEL
Ratherford	17-11	430373116900S1	Producing	1420603353	17	41S	24E	NWNW	1075FNL	0800FWL
Ratherford	17-13	430373113301S1	Producing	1420603353	17	41S	24E	NWSW	2100FSL	0660FWL
Ratherford	17-22	430373117001S1	Producing	1420603353	17	41S	24E	SENE	1882FNL	1910FWL
Ratherford	17-24	430373104400S1	Producing	1420603353	17	41S	24E	SESW	0720FSL	1980FWL
Ratherford	17-31	430373117800S1	Producing	1420603353	17	41S	24E	NWNE	0500FNL	1980FEL
Ratherford	17-33	430373113400S1	Producing	1420603353	17	41S	24E	NWSE	1980FSL	1845FEL
Ratherford	17-42	430373117700S1	Producing	1420603353	17	41S	24E	SENE	1980FNL	0660FEL
Ratherford	17-44	430371573201S1	Producing	1420603353	17	41S	24E	SESE	0660FSL	0660FEL
Ratherford	18-11	430371573300S1	SI	1420603353	18	41S	24E	NWNW	0720FNL	0730FWL
Ratherford	18-13	430371573401S1	Producing	1420603353	18	41S	24E	NWSW	1980FSL	0500FWL
Ratherford	18-22	430373123600S1	Producing	1420603353	18	41S	24E	SENE	2200FNL	2210FWL
Ratherford	18-24	430373107900S1	Producing	1420603353	18	41S	24E	SESW	0760FSL	1980FWL
Ratherford	18-31	430373118101S1	Producing	1420603353	18	41S	24E	NWNE	0795FNL	2090FEL
Ratherford	18-33	430373113501S1	Producing	1420603353	18	41S	24E	NWSE	1870FSL	1980FEL
Ratherford	18-42	430373118200S1	Producing	1420603353	18	41S	24E	SENE	2120FNL	0745FEL
Ratherford	18-44	430373104500S1	SI	1420603353	18	41S	24E	SESE	0660FSL	0660FEL
Ratherford	19-11	430373108000S1	Producing	1420603353	19	41S	24E	NWNW	0660FNL	0660FWL
Ratherford	19-13	430373171900S1	Producing	1420603353	19	41S	24E	NWSW	1980FSL	0660FWL
Ratherford	19-22	430373104601S1	Producing	1420603353	19	41S	24E	SENE	1840FNL	1980FWL
Ratherford	19-24	430373175401S1	Producing	1420603353	19	41S	24E	SESW	0600FSL	1980FWL
Ratherford	19-31	430373104701S1	Producing	1420603353	19	41S	24E	NWNE	510FNL	1980FEL
Ratherford	19-33	430373104800S1	Producing	1420603353	19	41S	24E	NWSE	1980FSL	1980FEL
Ratherford	19-42	430373091600S1	Producing	1420603353	19	41S	24E	SENE	1880FNL	0660FEL
Ratherford	19-44	430373108100S1	Producing	1420603353	19	41S	24E	SESE	0660FSL	0660FEL
Ratherford	19-97	430373159600S1	Producing	1420603353	19	41S	24E	SENE	2562FNL	0030FEL
Ratherford	20-11	430373104900S1	Producing	1420603353	20	41S	24E	NWNW	0500FNL	0660FWL
Ratherford	20-13	430373091700S1	Producing	1420603353	20	41S	24E	NWSW	2140FSL	0500FWL
Ratherford	20-22	430373093000S1	Producing	1420603353	20	41S	24E	SENE	2020FNL	2090FWL
Ratherford	20-24	430373091800S1	Producing	1420603353	20	41S	24E	SESW	0820FSL	1820FWL

Ratherford Unit - Producer Well List

minus P&A's

Lease	Number	API #	Status	Lease #	Location					
					Sec	T	R	QTR/QTR	NSFoot	EWFoot
Ratherford	20-31	430373105001S1	Producing	1420603353	20	41S	24E	NWNE	0660FNL	1880FEL
Ratherford	20-33	430373093100S1	Producing	1420603353	20	41S	24E	NWSE	1910FSL	2140FEL
Ratherford	20-42	430373105100S1	Producing	1420603353	20	41S	24E	SENE	1980FNL	0660FEL
Ratherford	20-44	430373091501S1	Producing	1420603353	20	41S	24E	SESE	0620FSL	0760FEL
Ratherford	20-66	430373159201S1	Producing	1420603353	20	41S	24E	SWNW	1369FNL	1221FWL
Ratherford	20-68	430373159100S1	Producing	1420603353	20	41S	24E	NWSW	1615FSL	1276FWL
Ratherford	15-12	430371571501S1	Producing	1420603355	15	41S	24E	SWNW	1820FNL	0500FWL
Ratherford	15-22	430373044900S1	SI	1420603355	15	41S	24E	SENE	1980FNL	2050FWL
Ratherford	15-32	430371571700S1	Producing	1420603355	15	41S	24E	SWNE	1980FNL	1980FEL
Ratherford	15-33	430371571800S1	Producing	1420603355	15	41S	24E	NWSE	1650FSL	1980FEL
Ratherford	15-41	430371571900S1	TA	1420603355	15	41S	24E	NENE	0660FNL	0660FEL
Ratherford	15-42	430373044800S1	Producing	1420603355	15	41S	24E	SENE	2020FNL	0820FEL
Ratherford	16-13	430373116801S1	Producing	1420603355	16	41S	24E	NWSW	1980FSL	660FWL
Ratherford	16-32	430371572300S1	Producing	1420603355	16	41S	24E	SWNE	1980FNL	1980FEL
Ratherford	16-41	430371572500S1	Producing	1420603355	16	41S	24E	NENE	0660FNL	0660FEL
Ratherford	16-77	430373176800S1	Producing	1420603355	16	41S	24E	NESW	2587FSL	2410FWL
Ratherford	21-23	430371375400S1	Producing	1420603355	21	41S	24E	NESW	1740FSL	1740FWL
Ratherford	21-24	430373172001S1	SI	1420603355	21	41S	24E	SESW	487FSL	2064FWL
Ratherford	21-32	430371575500S1	SI	1420603355	21	41S	24E	SWNE	1880FNL	1980FEL
Ratherford	21-77	430373175801S1	SI	1420603355	21	41S	24E	NWSE	2511FSL	2446FEL
Ratherford	07-11	430373116300S1	Producing	1420603368	7	41S	24E	NWNW	0660FNL	0710FWL
Ratherford	07-13	430373116400S1	Producing	1420603368	7	41S	24E	NWSW	2110FSL	0740FWL
Ratherford	07-22	430373116500S1	Producing	1420603368	7	41S	24E	SENE	1980FNL	1980FWL
Ratherford	07-24	430373116600S1	Producing	1420603368	7	41S	24E	SESW	0880FSL	2414FWL
Ratherford	07-44	430373118900S1	SI	1420603368	7	41S	24E	SESE	0737FSL	0555FEL
Ratherford	08-12	430371599100S1	Producing	1420603368	8	41S	24E	SWNW	1909FNL	0520FWL
Ratherford	08-21	430371599300S1	Producing	1420603368	8	41S	24E	NENW	0616FNL	1911FWL
Ratherford	08-23	430371599400S1	Producing	1420603368	8	41S	24E	NESW	1920FSL	2055FWL
Ratherford	08-32	430371599500S1	Producing	1420603368	8	41S	24E	SWNE	1980FNL	1980FEL
Ratherford	08-34	430371599600S1	Producing	1420603368	8	41S	24E	SWSE	0660FSL	1980FEL
Ratherford	04-34	430371616400S1	Producing	14206034035	4	41S	24E	SWSE	0660FSL	1980FEL
Ratherford	11-14	430371616700S1	Producing	14206034037	11	41S	24E	SWSW	0660FSL	0660FWL
Ratherford	09-34	430371571100S1	SI	14206034043	9	41S	24E	SWSE	0660FSL	1980FEL
Ratherford	10-12	430371571200S1	Producing	14206034043	10	41S	24E	SWNW	1980FNL	0660FWL
Ratherford	10-14	430371571300S1	Producing	14206034043	10	41S	24E	SWSW	0510FSL	0710FWL
Ratherford	10-32	430371571400S1	TA	14206034043	10	41S	24E	SWNE	2080FNL	1910FEL
Ratherford	10-44	430373045100S1	TA	14206034043	10	41S	24E	SESE	0820FSL	0510FEL
Ratherford	29-11	430373105300S1	Producing	1420603407	29	41S	24E	NWNW	0770FNL	0585FWL
Ratherford	29-22	430373108200S1	Producing	1420603407	29	41S	24E	SENE	2130FNL	1370FWL
Ratherford	29-31	430373091401S1	Producing	1420603407	29	41S	24E	NWNE	0700FNL	2140FEL
Ratherford	29-33	430373093200S1	SI	1420603407	29	41S	24E	NWSE	1860FSL	1820FEL
Ratherford	29-34	430371534000S1	SI	1420603407	29	41S	24E	SWSE	0817FSL	2096FEL
Ratherford	29-42	430373093700S1	SI	1420603407	29	41S	24E	SENE	1850FNL	0660FEL
Ratherford	30-32	430371534200S1	Producing	1420603407	30	41S	24E	SWNE	1975FNL	2010FEL
Ratherford	28-11	430373044600S1	Producing	1420603409	28	41S	24E	NWNW	0520FNL	0620FWL

Ratherford Unit - Producer Well List

minus P&A's

Lease	Number	API #	Status	Lease #	Location					
					Sec	T	R	QTR/QTR	NSFoot	EWFoot
Ratherford	09-12	430371512600S1	Producing	14206035045	9	41S	24E	SWNW	1865FNL	0780FWL
Ratherford	09-14	430371512700S1	Producing	14206035046	9	41S	24E	SWSW	0695FSL	0695FWL
Ratherford	04-14	430371616300S1	Producing	14206035446	4	41S	24E	SWSW	0500FSL	0660FWL
Ratherford	03-12	430371562000S1	Producing	14206036506	3	41S	24E	SWNW	2140FNL	0660FWL

Water Source Wells (Feb 2006)

RU	S1	4303700001	Active
RU	S2	4303700002	Active
RU	S3	4303700003	Active
RU	S4	4303700004	Active
RU	S5	4303700005	Active
RU	S6	4303700006	Active
RU	S7	4303700007	Active
RU	S8	4303700008	Active
RU	S9	4303700009	Active
RU	S10	4303700010	Active
RU	S11	4303700011	Active
RU	S12	4303700012	Active
RU	S13	4303700013	Active
RU	S14	4303700014	Active
RU	S16	4303700016	Active
RU	S17	4303700017	Active

STATE OF UTAH DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING	FORM 9 5. LEASE DESIGNATION AND SERIAL NUMBER: 14-20-603-353
SUNDRY NOTICES AND REPORTS ON WELLS Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.	6. IF INDIAN, ALLOTTEE OR TRIBE NAME: NAVAJO 7. UNIT or CA AGREEMENT NAME: RATHERFORD
1. TYPE OF WELL Oil Well	8. WELL NAME and NUMBER: RATHERFORD UNIT 17-22
2. NAME OF OPERATOR: RESOLUTE NATURAL RESOURCES	9. API NUMBER: 43037311700000
3. ADDRESS OF OPERATOR: 1675 Boradway Ste 1950 , Denver, CO, 80202	PHONE NUMBER: 303 534-4600 Ext
4. LOCATION OF WELL FOOTAGES AT SURFACE: 1882 FNL 1910 FWL QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: Qtr/Qtr: SENW Section: 17 Township: 41.0S Range: 24.0E Meridian: S	9. FIELD and POOL or WILDCAT: GREATER ANETH COUNTY: SAN JUAN STATE: UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
<input checked="" type="checkbox"/> NOTICE OF INTENT Approximate date work will start: 5/29/2014 <input type="checkbox"/> SUBSEQUENT REPORT Date of Work Completion: <input type="checkbox"/> SPUD REPORT Date of Spud: <input type="checkbox"/> DRILLING REPORT Report Date:	<input type="checkbox"/> ACIDIZE <input type="checkbox"/> CHANGE TO PREVIOUS PLANS <input type="checkbox"/> CHANGE WELL STATUS <input type="checkbox"/> DEEPEN <input type="checkbox"/> OPERATOR CHANGE <input type="checkbox"/> PRODUCTION START OR RESUME <input type="checkbox"/> REPERFORATE CURRENT FORMATION <input type="checkbox"/> TUBING REPAIR <input type="checkbox"/> WATER SHUTOFF <input type="checkbox"/> WILDCAT WELL DETERMINATION	<input type="checkbox"/> ALTER CASING <input type="checkbox"/> CHANGE TUBING <input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS <input type="checkbox"/> FRACTURE TREAT <input type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/> RECLAMATION OF WELL SITE <input type="checkbox"/> SIDETRACK TO REPAIR WELL <input type="checkbox"/> VENT OR FLARE <input type="checkbox"/> SI TA STATUS EXTENSION <input checked="" type="checkbox"/> OTHER	<input type="checkbox"/> CASING REPAIR <input type="checkbox"/> CHANGE WELL NAME <input type="checkbox"/> CONVERT WELL TYPE <input type="checkbox"/> NEW CONSTRUCTION <input type="checkbox"/> PLUG BACK <input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION <input type="checkbox"/> TEMPORARY ABANDON <input type="checkbox"/> WATER DISPOSAL <input type="checkbox"/> APD EXTENSION OTHER: <input style="width: 100px;" type="text" value="Rod replacement"/>

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

Resolute Natural Resources respectfully submits this sundry as notice of a Polish Rod Replacement on the above well. Attached are the schematic and procedures.

Accepted by the Utah Division of Oil, Gas and Mining
 June 05, 2014

Date: _____

By: *Derek Quist*

NAME (PLEASE PRINT) Erin Joseph	PHONE NUMBER 303 573-4886	TITLE Sr. Regulatory Analyst
SIGNATURE N/A	DATE 5/28/2014	

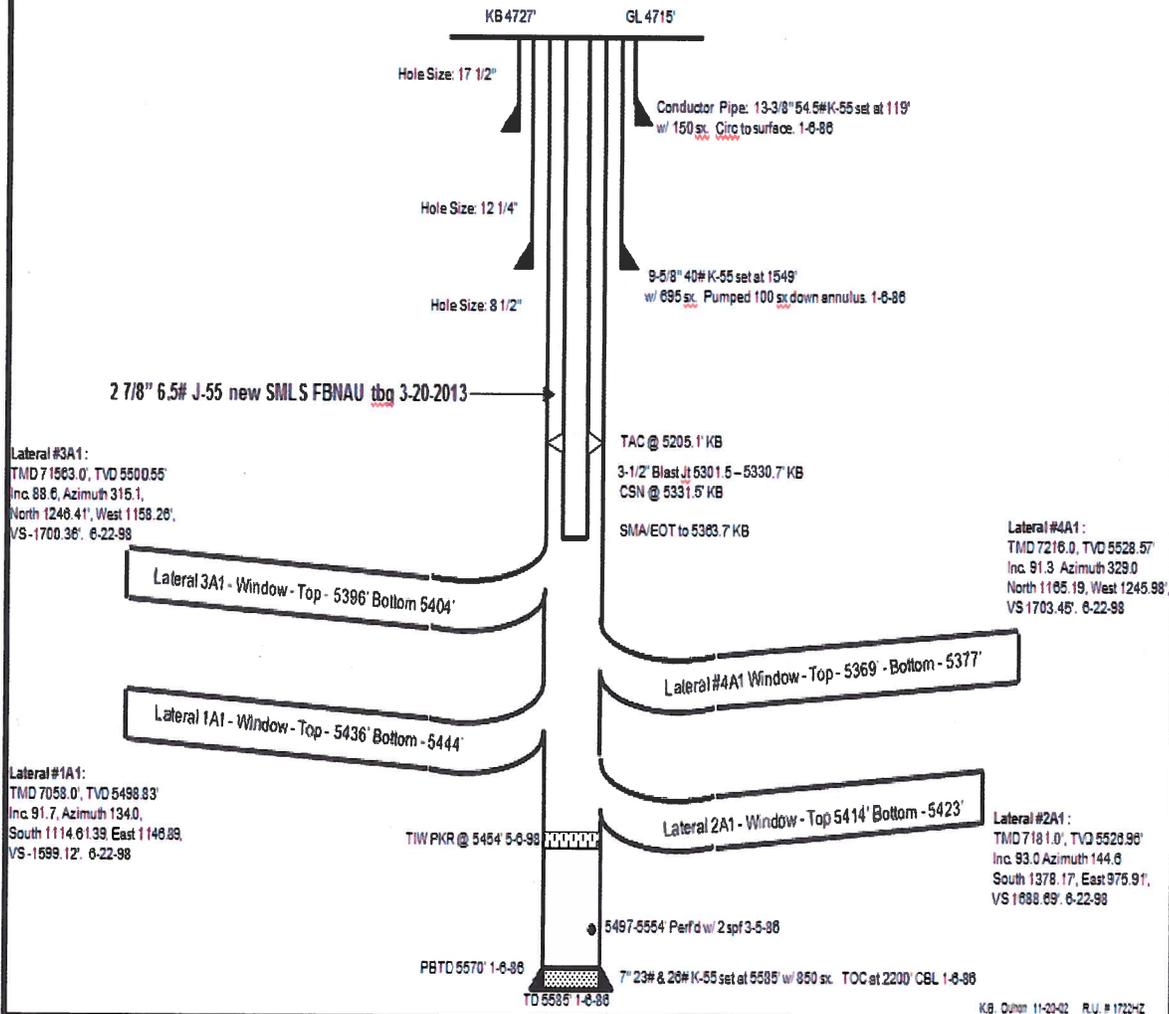
RU 17-22 Polish Rod Replacement

Procedure

1. MIRU WSU, LOTO. **CAUTION: 200 ppm H₂S in March 2013**
2. Pressure test tubing to 1000 psig.
3. Kill well as necessary.
4. Fish & pick up on rods, unseat pump. Replace 1-1/2" polish rod.
5. Re-seat the pump. Re-PT the tubing to 1000 psi.
6. Long stroke pump to test for good pumping action.
7. Leave enough polished rod for operators to correctly space pump as required.
8. Notify Area Production Supervisor Alfred Redhouse (435) 619-7227 that well is ready to return to production.
9. RDMOL. Hook up appropriate chemical treatment.

RATHERFORD UNIT # 17-22HZ
 GREATER ANETH FIELD
 Surface Loc: 1882' FNL & 1910' FWL
 SEC 17-T41S-R24E

PRODUCER
 SAN JUAN COUNTY, UTAH
 API 43-037-31170
 PRISM 0043050



STATE OF UTAH DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS, AND MINING		FORM 9
		5. LEASE DESIGNATION AND SERIAL NUMBER: 14-20-603-353
SUNDRY NOTICES AND REPORTS ON WELLS		6. IF INDIAN, ALLOTTEE OR TRIBE NAME: NAVAJO
Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.		7. UNIT or CA AGREEMENT NAME: RATHERFORD
		8. WELL NAME and NUMBER: RATHERFORD UNIT 17-22
1. TYPE OF WELL Oil Well	9. API NUMBER: 43037311700000	
2. NAME OF OPERATOR: RESOLUTE NATURAL RESOURCES	9. FIELD and POOL or WILDCAT: GREATER ANETH	
3. ADDRESS OF OPERATOR: 1675 Boradway Ste 1950 , Denver, CO, 80202	PHONE NUMBER: 303 534-4600 Ext	COUNTY: SAN JUAN
4. LOCATION OF WELL FOOTAGES AT SURFACE: 1882 FNL 1910 FWL QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: Qtr/Qtr: SENW Section: 17 Township: 41.0S Range: 24.0E Meridian: S	STATE: UTAH	
11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA		
TYPE OF SUBMISSION	TYPE OF ACTION	
<input type="checkbox"/> NOTICE OF INTENT Approximate date work will start: <input checked="" type="checkbox"/> SUBSEQUENT REPORT Date of Work Completion: 6/9/2014 <input type="checkbox"/> SPUD REPORT Date of Spud: <input type="checkbox"/> DRILLING REPORT Report Date:	<input type="checkbox"/> ACIDIZE <input type="checkbox"/> ALTER CASING <input type="checkbox"/> CASING REPAIR <input type="checkbox"/> CHANGE TO PREVIOUS PLANS <input type="checkbox"/> CHANGE TUBING <input type="checkbox"/> CHANGE WELL NAME <input type="checkbox"/> CHANGE WELL STATUS <input type="checkbox"/> COMMINGLE PRODUCING FORMATIONS <input type="checkbox"/> CONVERT WELL TYPE <input type="checkbox"/> DEEPEN <input type="checkbox"/> FRACTURE TREAT <input type="checkbox"/> NEW CONSTRUCTION <input type="checkbox"/> OPERATOR CHANGE <input type="checkbox"/> PLUG AND ABANDON <input type="checkbox"/> PLUG BACK <input type="checkbox"/> PRODUCTION START OR RESUME <input type="checkbox"/> RECLAMATION OF WELL SITE <input type="checkbox"/> RECOMPLETE DIFFERENT FORMATION <input type="checkbox"/> REPERFORATE CURRENT FORMATION <input type="checkbox"/> SIDETRACK TO REPAIR WELL <input type="checkbox"/> TEMPORARY ABANDON <input type="checkbox"/> TUBING REPAIR <input type="checkbox"/> VENT OR FLARE <input type="checkbox"/> WATER DISPOSAL <input type="checkbox"/> WATER SHUTOFF <input type="checkbox"/> SI TA STATUS EXTENSION <input type="checkbox"/> WILDCAT WELL DETERMINATION <input checked="" type="checkbox"/> OTHER	
OTHER: <input style="width: 100px;" type="text" value="Rod Replacement"/>		
12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.		
Resolute Natural Resources is submitting this sundry as notice that the Rod replacement was completed according to the previously reported procedures.		
Accepted by the Utah Division of Oil, Gas and Mining FOR RECORD ONLY June 23, 2014		
NAME (PLEASE PRINT) Erin Joseph	PHONE NUMBER 303 573-4886	TITLE Sr. Regulatory Analyst
SIGNATURE N/A	DATE 6/23/2014	