Form 3160-3
(November 1983)
(formerly 9-331C)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0136
Expires August 31, 1985

12

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. TYPE OF WORK: DRILL [X] DEEPEN [ ] PLUG BACK [ ]

b. TYPE OF WELL: OIL WELL [X] 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' FSL, 660' FWL Sec. 16-T41S-R24E
At proposed prod. zone: same

RECEIVED
JUN 27 1985
DIVISION OF OIL GAS & MINING

NW/SW

5. LEASE DESIGNATION AND SERIAL NO.: 14-20-603-355
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.: 16-13
10. FIELD AND POOL, OR WILDCAT: ✓ Greater Aneth
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 16-T41S-R24E
12. COUNTY OR PARISH: San Juan
13. STATE: Utah

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. (Also to nearest drlg. unit line, if any): 660' from Ratherford Unit lease line

16. NO. OF ACRES IN LEASE: 2180

17. NO. OF ACRES ASSIGNED TO THIS WELL: 40 acres

18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.: 1320'

19. PROPOSED DEPTH: 5600' Desert Creek

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 4693 ungraded ground

22. APPROX. DATE WORK WILL START*: 3rd quarter 1985

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# & 36#	5600'	1000 sx est (T.O.C. approx. 2000)

Approval is requested to drill Ratherford Unit #16-13, 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. Baza
WELL SPACING: A-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 21, 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

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.

COMPANY PHILLIPS OIL COMPANY

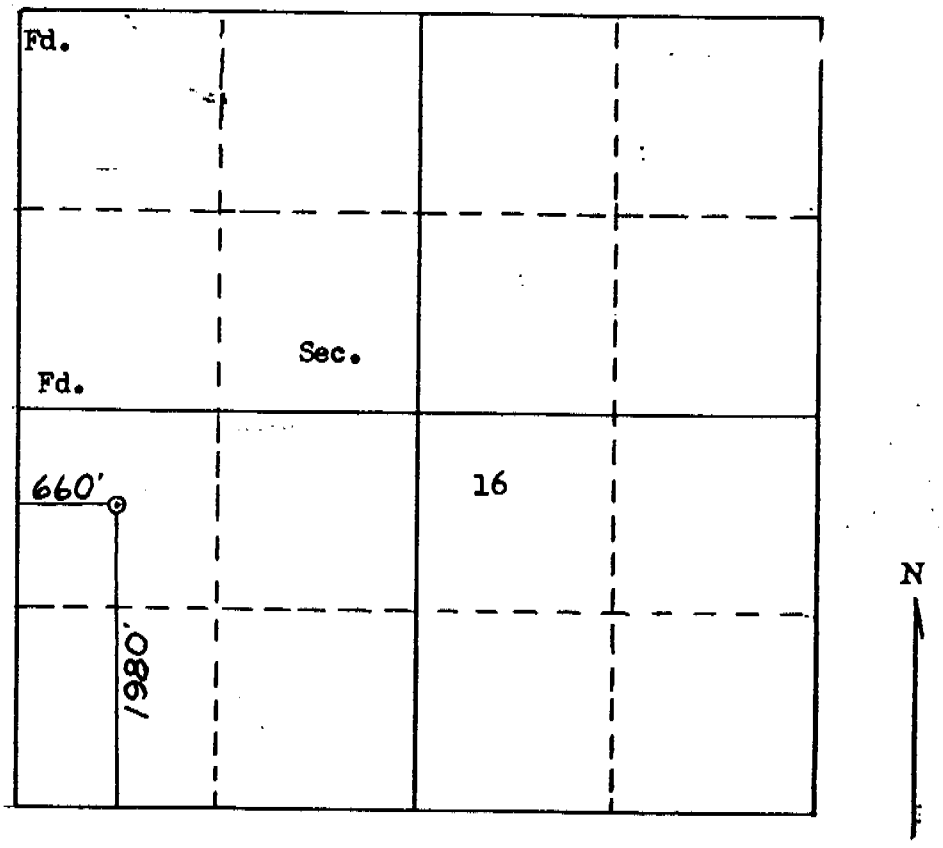
LEASE RATHERFORD UNIT WELL NO. 16-13

SEC. 16, T 41S, R 24E

County: San Juan State: Utah

LOCATION 1980FS & 660FW

ELEVATION 4693



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. MAHNKE II NEW MEXICO #8466 REGISTERED PROFESSIONAL LAND SURVEYOR

Wills McDonald

Registered Land Surveyor
N.M. P.L.S. No. 8466

SURVEYED Feb. 26 , 85

FARMINGTON, N. M.

RATHERFORD UNIT #16-13

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	2345'
DeChelly	2537'
Hermosa	4538'
Desert Creek Zone I	5517'

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. It is proposed to core the Desert Creek Zone I.

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 visable 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/fb (18)
Casper - RC

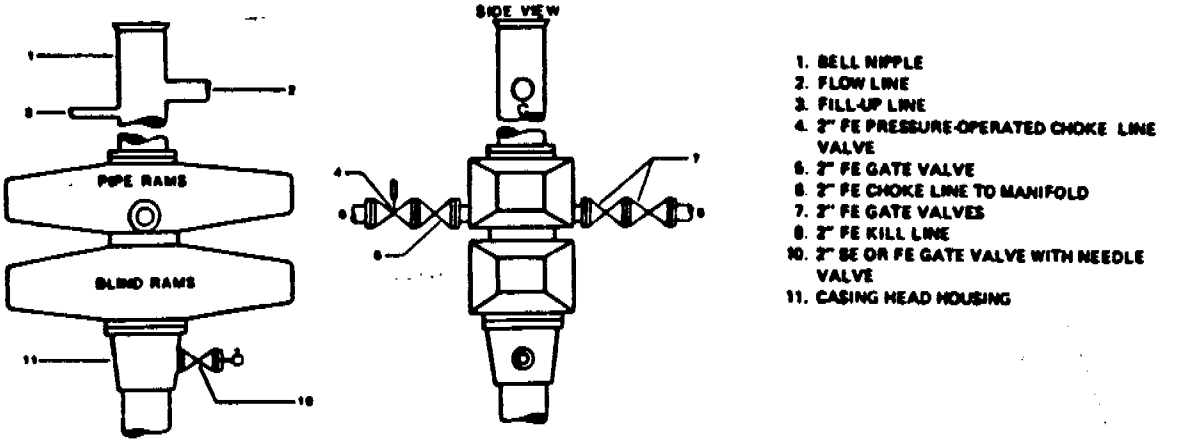


Figure 7-10. Standard Hydraulic Blowout Preventer Assembly (2 M or 3 M Working Pressure) Alternative 3 (without Drilling Spool)

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	Test all rams, annulars, valves, choke manifold, kelly cocks, and safety valves to the lesser of the following pressures. • 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.

7.6.3, cont'd

TEST	DESCRIPTION
Weekly and After Setting Casing	Test all rams, annulars, valves, choke and kill lines, choke manifold, kelly cocks, and safety valves, to the lesser of the following pressures. . 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	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.
Shallow Casing	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.
Accumulator	Test accumulator to the manufacturer's rated working pressure. Test the accumulator for time to pump up to specifications.

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 programs. 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.

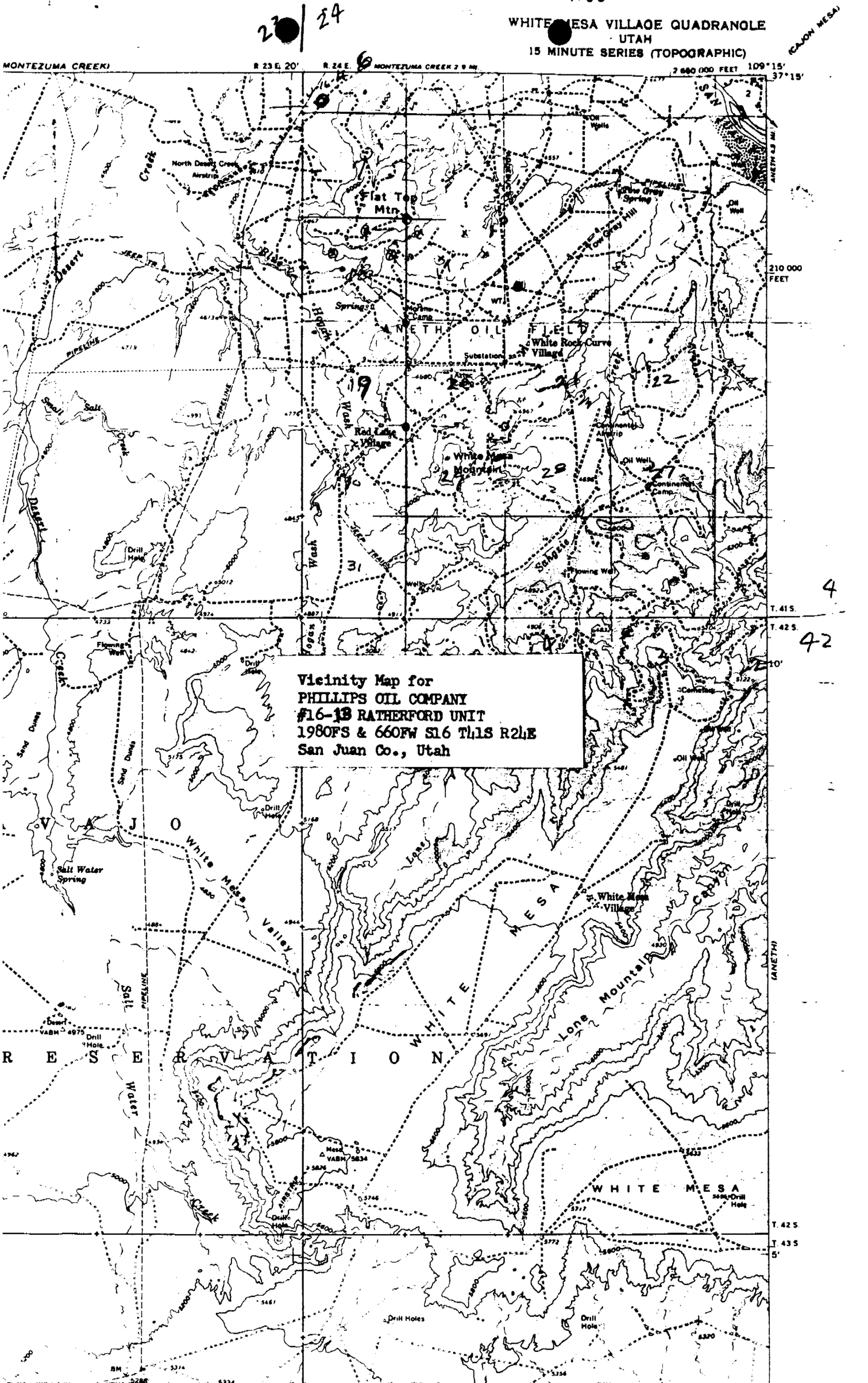
When testing the wellhead pack-off, use recorded test pressures and volumes to determine if pack-off is leaking. Pressure should be immediately released at the first indication of a leak.

7.6.6 Safety Precautions

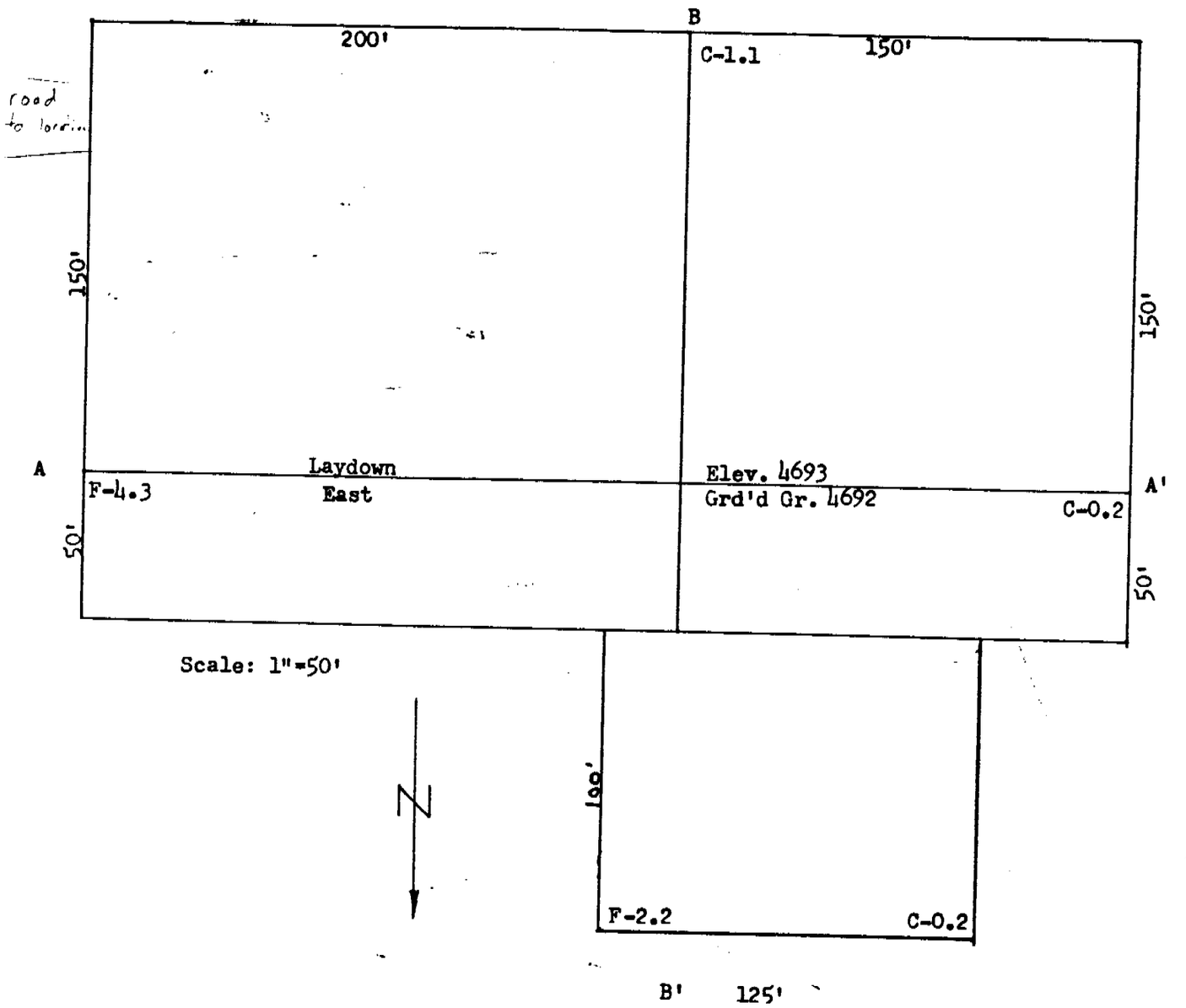
One pumping unit operator is to be stationed at the high pressure pumping unit, and is to remain at this station until all testing has been completed. The pump unit operator is to be in continuous communication with the person who is recording the test data. The Phillips Wellsite Supervisor and Contractor's 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.

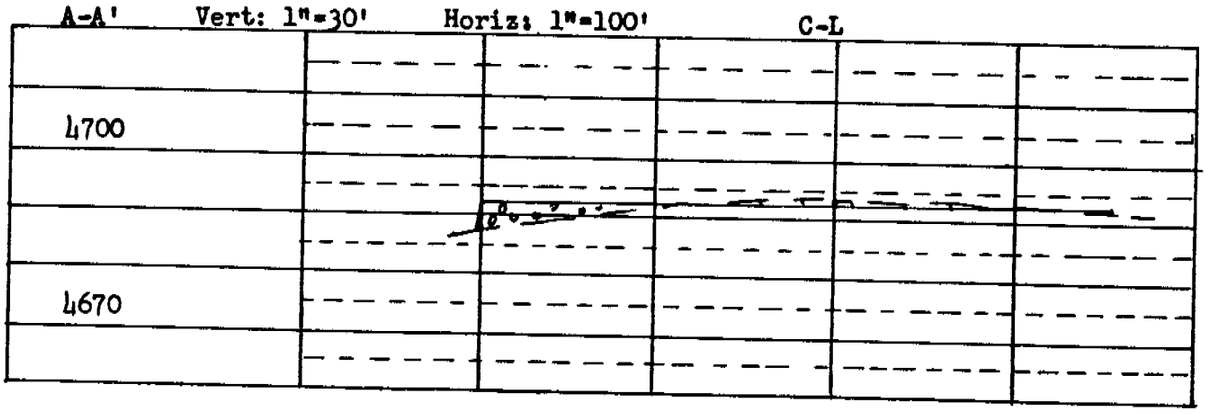
All lines, swings, and connections that are used in the testing of the blowout preventers are to be adequately secured in place.

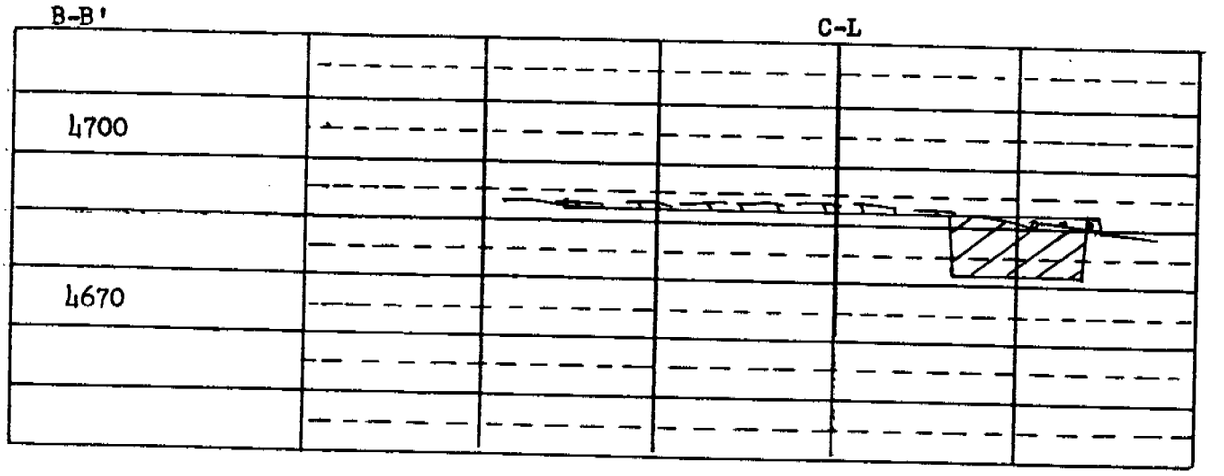
Pressure is to be released only through the pressure release lines that are vented back into the pump unit tanks. The lines are to be clamped down to direct the flow into unit tanks.

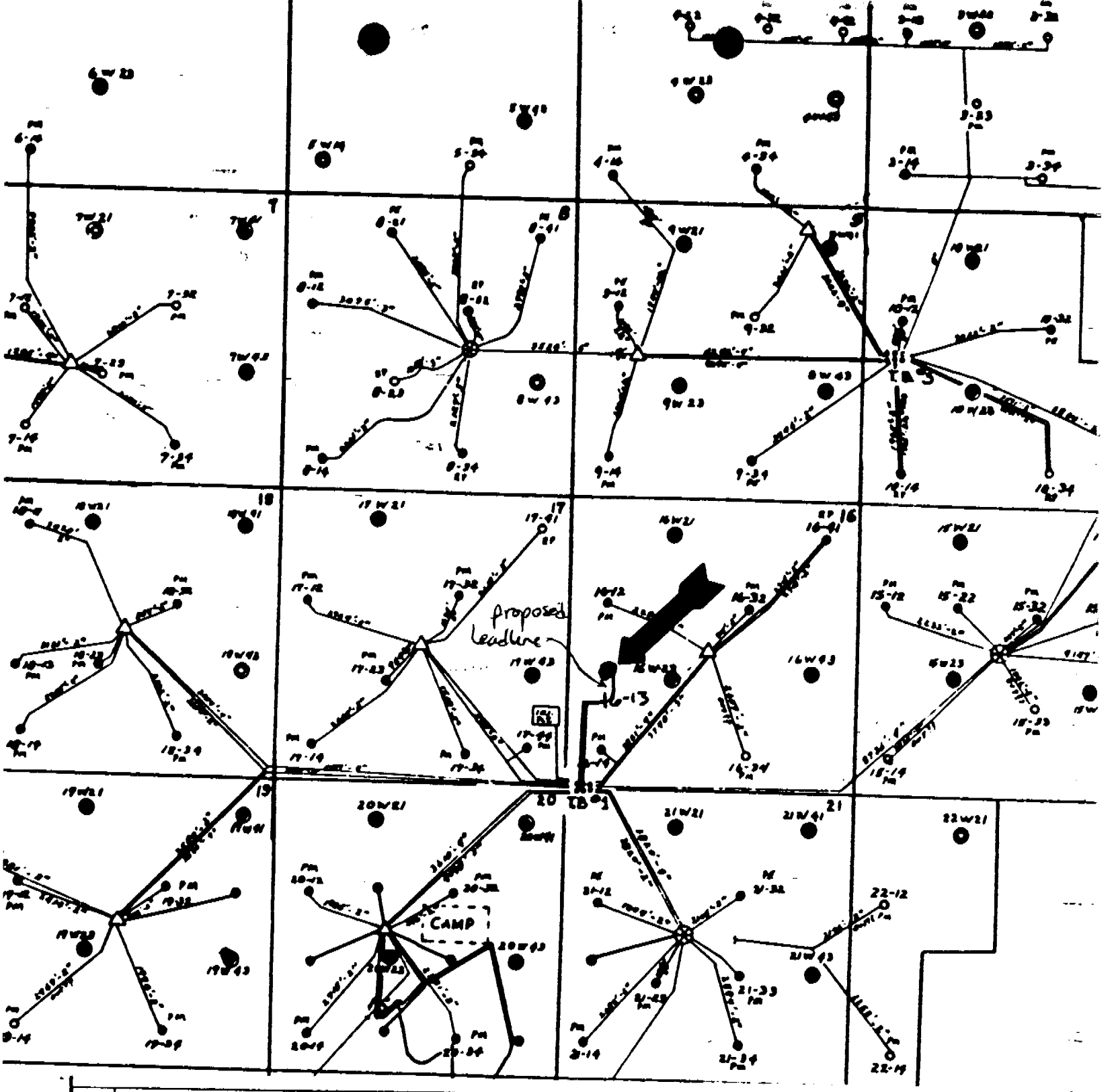

WHITE MESA VILLAGE QUADRANGLE
UTAH
15 MINUTE SERIES (TOPOGRAPHIC)
MONTEZUMA CREEK
R 23 E. 20'
R. 24 E.
MONTEZUMA CREEK 2 9 MI.
2 680 000 FEET
109°15'
37°15'
210 000 FEET
Flat Top Mtn.
North Desert Creek Airstrip
Desert
Hogan Wash
Spring
Hogan Camp
ANETH OIL FIELD
White Rock Curve Village
Substation
Red Lake Village
White Mesa Mountain
Continental Airstrip
Continental Camp
Oil Well
Flowing Well
Drill Hole
Salt Creek
Pipeline
Jeep Trails
Sand Dunes
Salt Water Spring
White Mesa Valley
Lone Mountain
White Mesa Village
Canyon
(ANETH)
(CAJON MESA)
WHITE MESA
RESERVATION
Mesa VABM 5834
Airstrip
Drill Holes
T. 41 S.
T. 42 S.
T. 43 S.
Vicinity Map for
PHILLIPS OIL COMPANY
#16-13 RATHERFORD UNIT
1980FS & 660FW S16 T41S R24E
San Juan Co., Utah

Profile for
PHILLIPS OIL COMPANY #16-13 RATHERFORD UNIT
1980FS & 660FW S16 T41S R24E
SAN JUAN COUNTY, UTAH





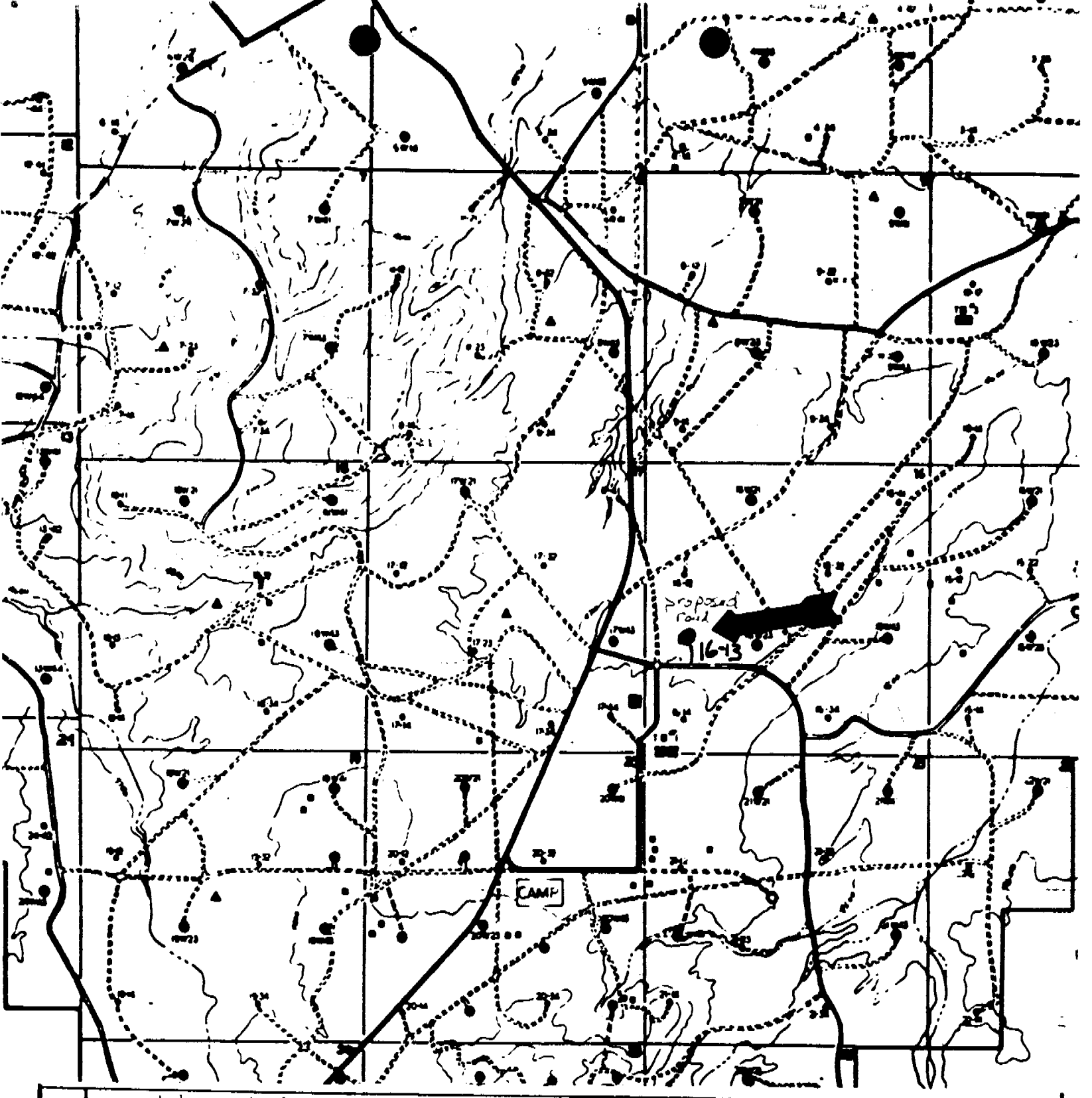




NO	REVISION	BY	DATE	CHKD	APP'D
	Revised 6-18-85 RCT				

FOR BIDS	PHILLIPS PETROLEUM COMPANY	JA NO	FILE CODE
FOR APPR	BARTLESVILLE, OKLAHOMA	AFE NO	SCALE 2.2" = 1mi
FOR CONST	RATHERFORD UNIT WELL 16-13 PROPOSED LEADLINE PLAT NW SW SEC. 16 T41S-R24E SAN JUAN CO., UTAH	DWG NO	
DRAWN 6-17-85 BJM		SH NO.	
CHECKED			
APP'D			

FORM 1779-S 8-81



NO.	REVISION	BY	DATE	CHKD	APP'D
	revised 6-18-85 RCT				

FOR BIDS
FOR APPR
FOR CONST

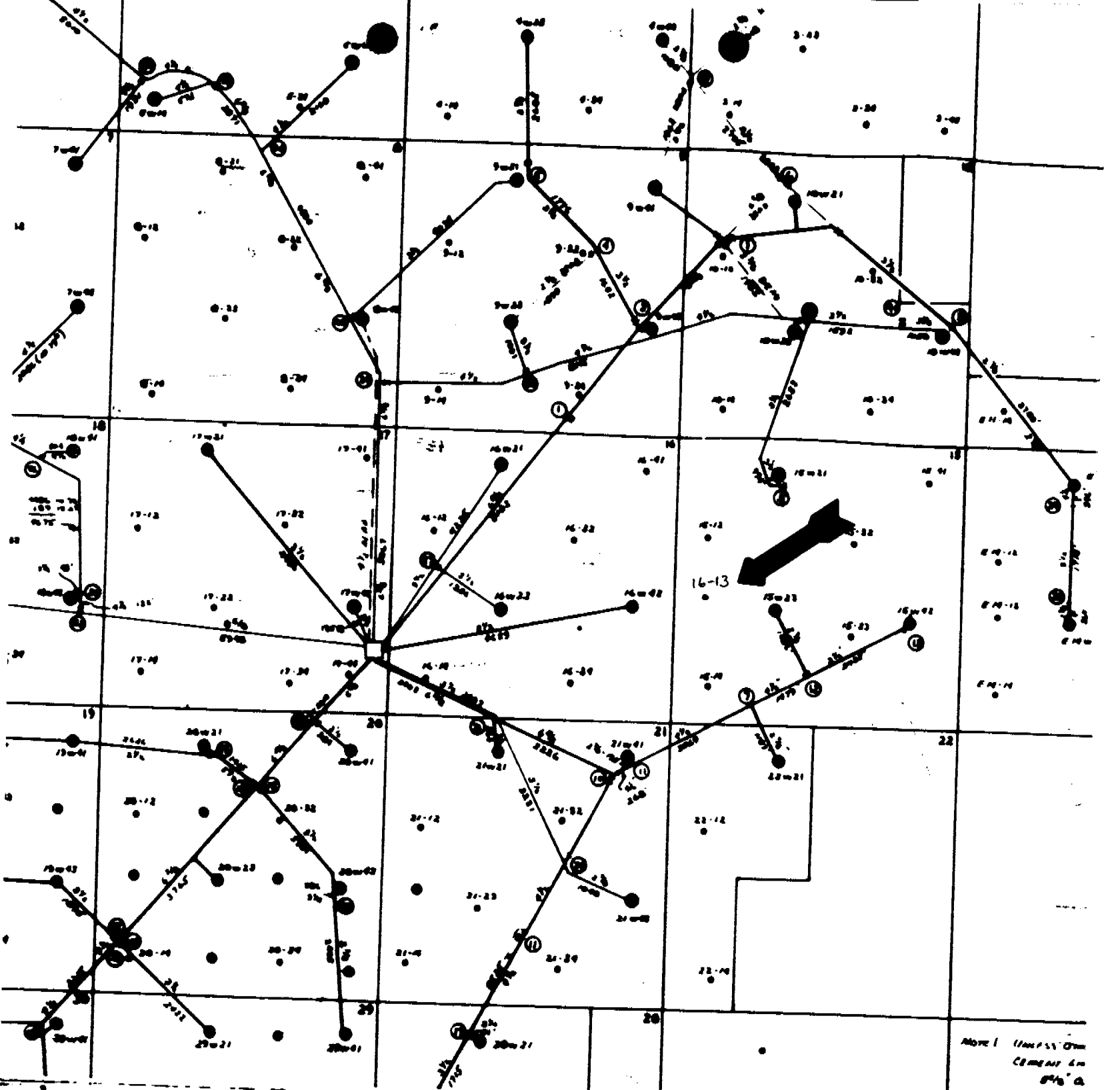
DRAWN 1-17-85 PJM
CHECKED
APP'D

PHILLIPS PETROLEUM COMPANY
BARTLESVILLE, OKLAHOMA

RATHERFORD UNIT WELL 16-13
PROPOSED ROAD PLAT
NW SW SEC 16 T41S-R24E
SAN JUAN CO., UTAH

JA NO.
FILE CODE
AFE NO.
SCALE 2.2" = 1mi
DWG NO
SH NO

FORM 1779-S 8-81



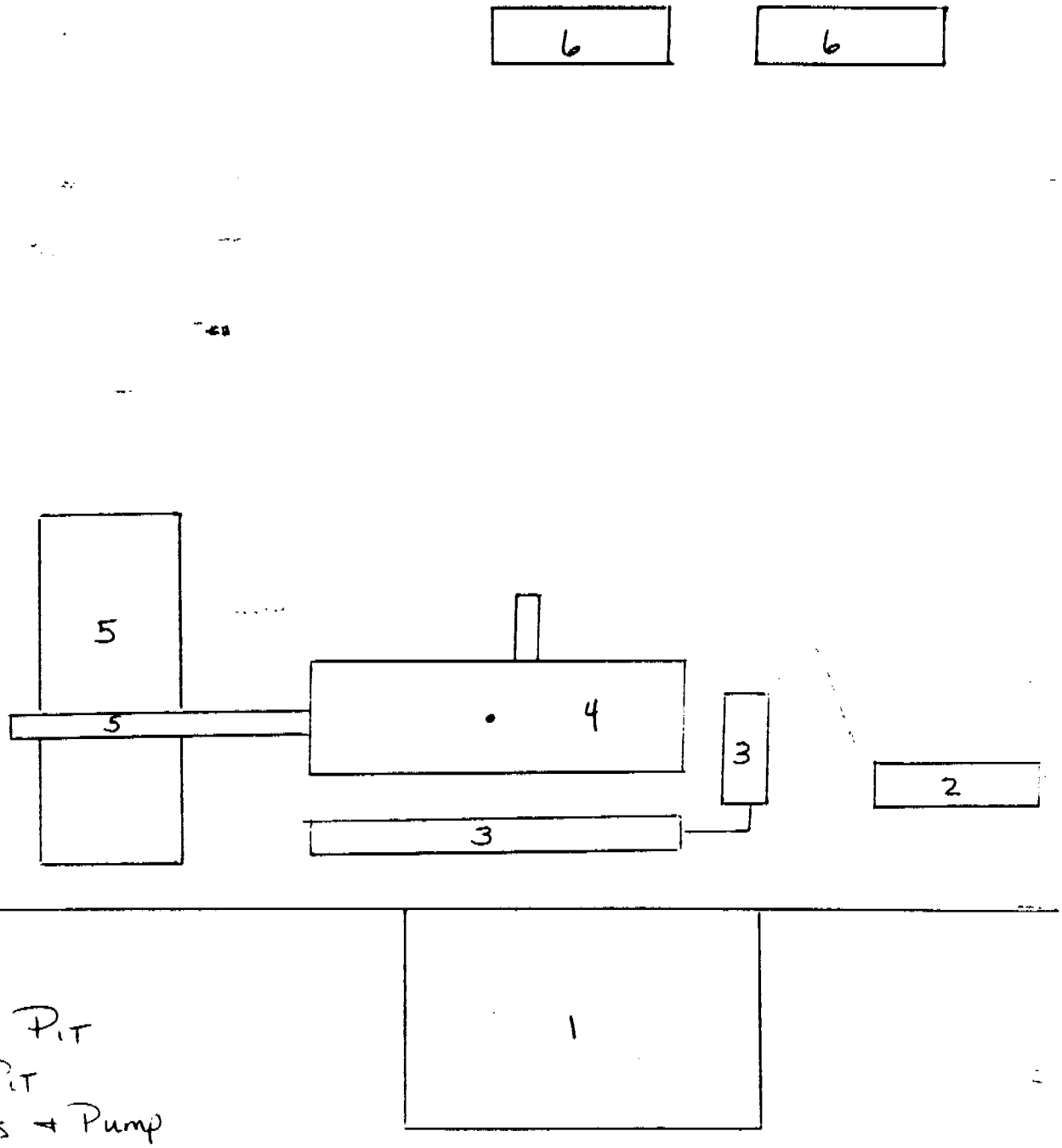
NO.	REVISION	BY	DATE	CHKD	APP'D

FOR BIDS	PHILLIPS PETROLEUM COMPANY BARTLESVILLE, OKLAHOMA	JA NO.	FILE CODE
FOR APPR			
FOR CONST	RATHERFORD UNIT WELL 16-13 WATER INJECTION LINES NW SW SEC 16 T41S-R24E SAN JUAN CO., UTAH	AFE NO.	SCALE 2.2"=1m
DRAWN 3-30-84 BJM		DWG NO.	
CHECKED			
APP'D		SH NO.	

FORM 1779-S 8-81

Rutherford Unit # 16-13

NWSW Sec 16 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'

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 Ratherford 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 Ratherford 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 (Blueline) (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 T	R	Sec.	1/4	1/4	1/4	UTM COORDINATES Center of Well Pad Zone	Northing	Easting	End of Access route (pipeline) Zone	Northing	Easting
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
						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
Area Surveyed

Well Pad No.	AFE #	Footages for Well	Well Pad[1]	Access Route[1]	Pipeline[1]	Acres
1-14	POC-R259	660′ F/SL 660′ F/WL	300′ x 350′ (400′ x 450′)	1600′ x 20′ (1600′ x 60′)	900′ x 20′ (900′ x 60′)	7.58
7-11	POC-R258	660′ F/NL 710′ F/WL	300′ x 350′ (400′ x 450′)	600′ x 20′ 400′ x 20′ (1000′ x 60′)	3400′ x 20′ (3400′ x 60′)	10.19
7-13	POC-R257	2110′ F/SL 740′ F/WL	300′ x 350′ (400′ x 450′)	----	1000′ x 20′ (1000′ x 60′)	5.51
7-22	POC-R256	1980′ F/NL* 1990′ F/WL	300′ x 350′ (450′ x 450′)	1350′ x 20′ (1350′ x 60′)	100′ x 20′ (100′ x 60′)	6.66
7-44	POC-R253	625′ F/SL* 560′ F/EL	300′ x 350′ (500′ x 500′)	----	4000′ x 20′ (4000′ x 60′)	11.25
12-12	POC-R252	1850′ F/NL 660′ F/WL	300′ x 350′ (450′ x 550′)	50′ x 20′ (50′ x 60′)	2000′ x 20′ (2000′ x 60′)	8.51
12-21	POC-R251	660′ F/NL 1980′ F/WL	300′ x 350′ (400′ x 450′)	400′ x 20′ (400′ x 60′)	2300′ x 20′ (2300′ x 60′)	7.85
12-32	POC-R250	1820′ F/NL 1820′ F/EL	300′ x 350′ (450′ x 450′)	300′ x 20′ (300′ x 60′)	700′ x 20′ (700′ x 60′)	6.03
12-43	POC-R249	2100′ F/SL 660′ F/EL	300′ x 350′ (400′ x 450′)	----	3000′ x 20′ (3000′ x 60′)	8.27
16-13	POC-R248	1980′ F/SL 660′ F/WL	300′ x 350′ (400′ x 450′)	230′ x 20′ (230′ x 60′)	2400′ x 20′ (2400′ x 60′)	7.76
17-11	POC-R247	1075′ F/NL 800′ F/WL	300′ x 350′ (400′ x 450′)	400′ x 20′ (400′ x 60′)	3100′ x 20′ (3100′ x 60′)	8.95

then parallels the pipeline south across the steep canyon to the satellite in Section 12.

Cultural Resources: Two isolated loci were noted within the proposed well pad area (Table 3). IL 18 is a fragment of or small tertiary flake fragment of light tan chert which is probably from biface reduction. IL 19 is a utilized large secondary flake of light green cherty siltstone.

Recommendations: Archaeological clearance is recommended.

Well 13-32

The proposed well pad is in a dissected area of the dune field. Several gullies cut through the pad from north to south and empty into a major dry drainage just south of the pad. The scrubland community provides about 15 percent cover dominated by Mormon tea and narrowleaf yucca.

From the northwest corner of the pad, the access route goes north 400 ft to a bladed dirt road. The pipeline right-of-way follows the south side of this road west 500 ft to a "T" intersection, crosses to the west side, and heads south with the 12-21 pipeline to a satellite.

Cultural Resources: No sites or isolated loci were found.

Recommendations: Archaeological clearance is recommended.

Well 12-43

The proposed well pad is in a relatively level area of the gently rolling stabilized dune field. The scrubland community provides about 20 percent cover dominated by snakeweed and Indian ricegrass. A bladed dirt road cuts through the north edge of the pad from east to west. A second road cuts through the south half of the pad from east to west. Access will be by one of these two roads.

Two pipeline right-of-ways were surveyed. The first right-of-way follows the south side of the road that cuts through the north end of the pad, and follows this road west to a satellite. The second right-of-way follows a surface pipeline, which crosses the south half of pad, west 1100 ft to a "Y" road intersection. From here the right-of-way follows the same route as the first right-of-way to the satellite.

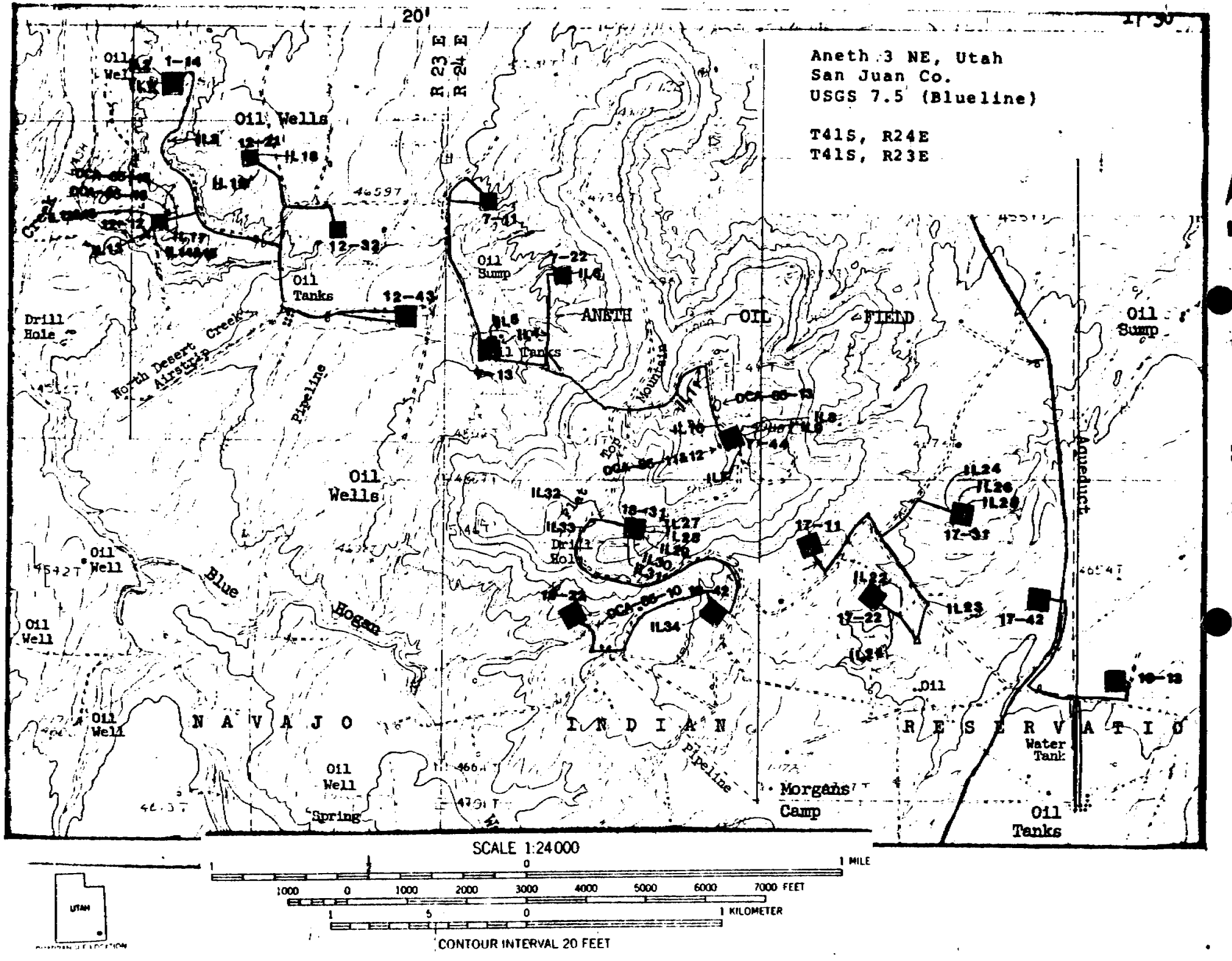
Cultural Resources: No sites or isolated loci were found.

Recommendations: Archaeological clearance is recommended.

Well 16-13

The proposed well pad is on the gently rolling dune field east of the Red Lake Village Highway. The scrubland community provides about 10 percent cover dominated by snakeweed and Mormon tea. From the east side of the pad, the

FIGURE 1


Aneth 3 NE, Utah
San Juan Co.
USGS 7.5 (Blueline)
T41S, R24E
T41S, R23E
R 23 E
R 24 E
ANETH OIL FIELD
Oil Wells
Oil Tanks
Oil Sump
Drill Hole
North Desert Airstrip
Pipeline
Aqueduct
Blue Hogan
Oil Well
Oil Wells
Morgans Camp
Water Tank
Oil Tanks
Spring
N A V A J O I N D I A N R E S E R V A T I O
SCALE 1:24000
1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER
CONTOUR INTERVAL 20 FEET
UTAH

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

Roger A. Moore
Supervisory Archaeologist

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

Form 97 6M 8-69 Application No. 3 6775

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 (Major Purpose) from January 1 (Month) (Day) to December 31 (Month) (Day)

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

   and stored each year (if stored) from ..... (Month) (Day) to ..... (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, T41S, R24E. SLB&M. (See letter of 3-16-71 attach

*Note.—The point of diversion must be located definitely by course and distance or by giving the distances north or 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 ~~in the~~ ~~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:.....

EXPLANATORY

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

ITEM 7

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 8

The point or points of diversion from the source will be in Section 5, T41S, R24E SLM, 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 14,000 feet of [illegible] inch conveyance pipe to places of use.

ITEM 10

Township 41 South, Range 23 East, SLM

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, SLM

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 lie in San Juan County, Utah, constitute the Ratherford 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..... } ss

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

FEES 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				
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

10:00 a. m.

1. Feb. 27, 1961 Application received by mail / over counter in State Engineer's office by [illegible]
2. ..... Priority of Application brought down to, on account of .....
3. Feb. 27, 1961 Application fee, $ [illegible], received by [illegible] Rec. No. 02265
4. Mar. 10, 1961 Application PHOTOSTATED book 711-32, page 357, and indexed by [illegible]
5. [illegible] Application platted by [illegible]
6. April 7, 1961 Application examined by MC
7. ..... Application returned, ... or corrected by office .....
8. ..... Corrected Application resubmitted over counter / by mail to State Engineer's office.
9. April 7, 1961 Application approved for advertisement by [illegible]
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 [illegible]
13. ..... Application protested by .....

July 25, 1961 - Protest filed [illegible]

14. ..... Hearing held by .....
15. ..... Field examination by .....
16. Sept. 5, 1961 Application designated for approval / ~~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. .....

Wayne D. Criddle
Wayne D. Criddle State Engineer.

20. ..... Time for making Proof of Appropriation extended to .....
21. ..... Proof of Appropriation submitted.
22. ..... Certificate of Appropriation, No. ....., issued

Application No. 3-2273

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

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 Certficate 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.

Senior
file/ss

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 Ratherford 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 Ratherford 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,

R. M. Williams

RMW:jd
Enclosures

cc - Mr. Shofner Smith

Form 107—6-57—2M

CHANGE APPLICATION NO.....

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~~ (Strike out written matter not needed)

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 (Month) (Day) *to* December 31 (Month) (Day) *incl.*
6. †*The water has been or was to have been stored each year from* XX (Month) (Day) *to* XX (Month) (Day) *incl.*
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~~s~~ of diversion as described in the original Application ~~or the point at which the water has been diverted~~ if* are *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 (Month) 1 (Day) *to* December (Month) 31 (Day) *incl.*
15. *The water will be stored each year from* XX (Month) (Day) *to* XX (Month) (Day) *incl.*
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.* XXXXXXXXX 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.

THE STATE OF UTAH
OFFICE OF STATE ENGINEER
SALT LAKE CITY

September 11, 1961

RECEIVED
WAYNE D. CRIDDLE
STATE ENGINEER
PRODUCTION
DEPARTMENT

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 Eff 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: Copyof approved application

APPLICATION APPROVED

POOR COPY

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	$5.00
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.

20. The length of the diverting channel, exclusive of laterals, will be 15,000 feet
(If an existing channel is used give only the length of that part used under this Application)

21. The top width of the diverting channel will be (if a ditch) XX feet

22. The bottom width of the diverting channel will be (if a ditch) XX feet

23. The depth of water in the diverting channel will be (if a ditch) XX feet

24. The width of diverting channel will be (if a flume) XX feet

25. The depth of water in the diverting channel will be (if a flume) XX feet

26. The diameter of the diverting channel will be (if a pipe) 42.75 inches

27. The grade of the diverting channel will be 21.4 feet per thousand

28. The point at which it is proposed to return the water is situated (See note under 16)
XX

29. The water is to be used for the same purposes as specified in the original Application No. 32773

Total XX acres.

NOTE—If for irrigation, give legal subdivisions of land to be irrigated. If for other purposes, give place and extent of proposed use. If for power give number, size and make of wheels, head under which they will operate, total H. P. to be developed and place where power will be used.

30. The character of the soil to be irrigated is XX; subsoil XX

NOTE—Number 30 is to be filled in only when proposed change is for irrigation.

31. If paragraph 12 designates that only part of the right described in paragraph 1 to 11 inclusive is to be changed, designate the status of the water so affected by this change as to its being abandoned or used as heretofore.

EXPLANATORY

NOTE—Paragraph 13 on page 1 must not be used except when storage is contemplated; in such case Paragraph 14 should indicate the time in each year during which the water will be released and used. The lands to be inundated by the reservoir must be described in the space below this note as nearly as may be and by government subdivisions if upon surveyed land, and the area of the reservoir when at full stage should be given in acres; the height of the impounding dam must also be specified.

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

The original Application No. 32773 specified _____ points of diversion situate in Section 5, T. 41S., R. 24E., San Juan County, Utah, and bears the following notation: "Diversion will be from one or more or all of the above diversion points. Water from the several diversion points will be commingled in conveyance works or in use. The applicant proposes to divert water from the San Juan River partly or wholly by means of infiltration wells, pits or horizontal galleries, dug in the alluvial fill within the stream valley. The exact number, depth, diameter, spacing and yield of such wells, pits or galleries will be determined during the project construction; however, the aggregate withdrawal rate will not exceed that specified." The purpose of this Change Application is to secure approval of additional alternative points of diversion as hereinafter specified without waiver of any rights under the original Application and without increase in the quantity of water applied for or the ultimate objective and purpose of the original Application.

See "Explanatory" continued on attached sheet.

PHILLIPS PETROLEUM COMPANY

Signature of Applicant.

BY _____
Vice-President of Production

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:

Diversion Point	From West Line	From North Line	Subdivision
1	100'	1780'	SW¼NW¼
2	365'	1780'	"
3	630'	1770'	"
4	900'	1620'	"
5	1170'	1620'	"
6	1400'	1600'	SE¼NW¼
7	1530'	1600'	"
8	1900'	1600'	"
9	2150'	1620'	"
10	2400'	1700'	"
11	2640'	1750'	"
12	2900'	1810'	SW¼NE¼
13	3180'	1900'	"
14	3400'	1950'	"
15	3650'	2050'	"
16	3870'	2225'	"
17	4100'	2450'	SE¼NE¼
18	4250'	2700'	NE¼SE¼
19	4380'	2975'	"
20	4420'	3250'	"

FORM 22 SM 5-57

Copied fo
C. M. Bol
4-18-62 EFL:m

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)

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

THE STATE OF UTAH

OFFICE OF STATE ENGINEER

WAYNE D. CRIDDLE
STATE ENGINEER

SALT LAKE CITY
October 30, 1961

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 (A.F.)
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 6.0 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 6.0 sec.-ft. of water from a total of twenty-one 12.75 inches O.D. wells 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, $\frac{1}{2}$ 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 21 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 sounded 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 proceedings.

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

ds

RECEIVED
1961
SENIOR

POOR COPY

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. M. 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. Chrisman, 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.

Slofner Smith

JEC:gm
Attach.

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

12/8/65

OPERATOR Phillips Oil Company DATE 6-27-85

WELL NAME Rutherford Unit 16-13

SEC NW SW NW 16 T 41S R 24E COUNTY San Juan

43-037-31168
API NUMBER

Indian
TYPE OF LEASE

CHECK OFF:

[✓] PLAT	[✓] BOND	[✓] NEAREST WELL
[✓] LEASE	[✓] FIELD	[✓] POTASH OR OIL SHALE

PROCESSING COMMENTS:
Unit Well - ok BLM (New Mexico)
Water ok

APPROVAL LETTER:

SPACING: [✓] A-3 Rutherford UNIT [ ] c-3-a _____ CAUSE NO. & DATE

[ ] c-3-b [ ] c-3-c

STIPULATIONS:

11/2/84
25020

Form 3160-5
(November 1983)
(Formerly 9-331)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

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

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.)

RECEIVED
JUL 12 1985
DIVISION OF OIL GAS & MINING

1. OIL WELL [X] GAS WELL [ ] OTHER	5. LEASE DESIGNATION AND SERIAL NO.: 14-20-603-355
	6. IF INDIAN, ALLOTTEE OR TRIBE NAME: Navajo
	7. UNIT AGREEMENT NAME: SW-I-4192
2. NAME OF OPERATOR: Phillips Oil Company	8. FARM OR LEASE NAME: Ratherford Unit
3. ADDRESS OF OPERATOR: P. O. Box 2920 Casper, WY 82602	9. WELL NO.: 16-13
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.) At surface: 1980' FSL, 660' FWL Sec. 16-T41S-R24E	10. FIELD AND POOL, OR WILDCAT: Greater Aneth
	11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 16-T41S-R24E
14. PERMIT NO.	15. ELEVATIONS (Show whether DF, RT, GR, etc.): 4693' GR
	12. COUNTY OR PARISH: San Juan
	13. STATE: Utah

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

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	[ ]	PULL OR ALTER CASING	[ ]	WATER SHUT-OFF	[ ]	REPAIRING WELL	[ ]
FRACTURE TREAT	[ ]	MULTIPLE COMPLETE	[ ]	FRACTURE TREATMENT	[ ]	ALTERING CASING	[ ]
SHOOT OR ACIDIZE	[ ]	ABANDON*	[ ]	SHOOTING OR ACIDIZING	[ ]	ABANDONMENT*	[ ]
REPAIR WELL	[ ]	CHANGE PLANS	[ ]	(Other)			
(Other) Amend APD			[X]	(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.)*

Your letter of July 3, 1985 notes the APD for this well is deficient as follows:

1) The cement volume is given in "sx" not cubic feet. Below are the appropriate cement volumes:

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.

2) Compliance office approval has not been received: We have contacted the compliance office requesting a copy of the approval letter be forwarded to you.

5- BLM
2- Utah O&G Salt Lake City
1- P. Adamson
1- J. R. Weichbrodt
1- C. M. Anderson
1- L. Williamson
1- File

Federal approval of this action is required before commencing operations

ACCEPTED BY THE STATE OF UTAH DIVISION OF OIL, GAS, AND MINING
DATE: 7/15/85
BY: John R. Baza

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

SIGNED A. E. Stuart TITLE Area Manager DATE July 8, 1985

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

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 16-13 - NW SW Sec. 16, T. 41S, R. 24E
1980' FSL, 660' 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.

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 43-037-31168.

Sincerely,

R. J. Firth
Associate Director, Oil & Ga

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

9-331
1973

Form Approved.
Budget Bureau No. 42-R1424

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
OCT 04 1985
DIVISION OF OIL
GAS & MINING

1. oil well [X] gas well [ ] other

2. NAME OF OPERATOR
Phillips Petroleum Company

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' FSL, 660' FWL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
14-20-603-355

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.
#16-13

10. FIELD OR WILDCAT NAME
Greater Aneth

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 16-T41S-R24E

12. COUNTY OR PARISH
San Juan

13. STATE
Utah

14. API NO.
43-037-31168

15. ELEVATIONS (SHOW DF, KDB, AND WD)
4693' ungraded ground

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

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF	[ ]		[ ]
FRACTURE TREAT	[ ]		[ ]
SHOOT OR ACIDIZE	[ ]		[ ]
REPAIR WELL	[ ]		[ ]
PULL OR ALTER CASING	[ ]		[ ]
MULTIPLE COMPLETE	[ ]		[ ]
CHANGE ZONES	[ ]		[ ]
ABANDON*	[ ]		[ ]
(other)			

(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 18" conductor hole to 119' G.L. on 9-14-85. Ran 118' 13-3/8" 54.5# K-55 Butt casing. Set at 118.08'., cemented with 177 cu.ft. (150 sx) Class "B" cement to surface. Finished job and moved out rat hole driller 9-14-85.

Spudded well 9-18-85 with Four Corners Drilling Rig #9. Drilled 12-1/4" hole to 1593'. Ran 9-5/8" 36# and 40# K-55 and S-80, LT&C and ST&C casing; set at 1592.5'. Cemented with 956 cu.ft. (395 sx) Howco Light cement; tailed with 354 cu.ft. (300 sx) Class "B" cement. Circulated to surface, fell back; pumped 150 sx Class "B" as top job. Complete 9-19-85.

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 October 1, 1985

(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-Casper
1-Well File (RC)
1-J. Weichbrodt
1-Chevron USA, Inc.
1-Texaco, Inc.
1-Mobil Oil Corp

*See Instructions on Reverse Side

1-Shell Oil Corp.

9-331
1973

Form Approved.
Budget Bureau No. 42-R1424

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
OCT 10 1985
DIVISION OF OIL, GAS & MINING

1. oil well ☒ gas well ☐ other

2. NAME OF OPERATOR
Phillips Petroleum Company

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' FSL, 660' FWL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
14-20-603-355

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.
#16-13

10. FIELD OR WILDCAT NAME
Greater Aneth

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 16-T41S-R24E

12. COUNTY OR PARISH
San Juan

13. STATE
Utah

14. API NO.
43-037-31168

15. ELEVATIONS (SHOW DF, KDB, AND WD)
4693' ungraded ground

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

REQUEST FOR APPROVAL TO:		SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF	☐	☐
FRACTURE TREAT	☐	☐
SHOOT OR ACIDIZE	☐	☐
REPAIR WELL	☐	☐
PULL OR ALTER CASING	☐	☐
MULTIPLE COMPLETE	☐	☐
CHANGE ZONES	☐	☐
ABANDON*	☐	☐
(other)		

(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 8-3/4" hole to 5616'. Ran 7" 23# and 26# K-55 ST&C casing; set at 5616'. Cemented with 1122 cu.ft. (550 sx) Howco Light cement; tailed with 360 cu.ft. (300 sx) Class B w/18% salt. Pressure tested casing to 1500 psi. Job complete 10-3-85. Plug back total depth 5588'.

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 October 7, 1985

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

6-BLM, Farmington, NM
2-Utah L&GCC, SLC
1-Casper
1-Well File
1-J. Weichbrodt
1-Chevron USA, Inc.
1-Mobil Oil Corp.
1-Texaco, Inc.

*See Instructions on Reverse Side

1-Shell Oil Corp.

Form 3160-4
(November 1983)
(formerly 9-330)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN DUPLICATE* (other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0137
Expires August 31, 1985

12

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

1a. TYPE OF WELL: OIL WELL [X] GAS WELL [ ] DRY [ ] Other

b. TYPE OF COMPLETION: NEW WELL [X] WORK OVER [ ] DEEP-EN [ ] PLUG BACK [ ] DIFF. RESVR. [ ] 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' FSL & 660' FWL, NW SW
At top prod. interval reported below
At total depth

RECEIVED
DEC 09 1985
DIVISION OF OIL GAS & MINING

API #43-037-31168

5. LEASE DESIGNATION AND SERIAL NO.
14-20-603-355

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.
16-13

10. FIELD AND POOL, OR WILDCAT
Greater Aneth

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA
Sec. 16-T41S-R24E

14. PERMIT NO.	DATE ISSUED	12. COUNTY OR PARISH	13. STATE
43-037-31168	7-9-85	San Juan	Utah

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (Ready to prod.)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
9/18/85	9/30/85	10/31/85	GR 4694', RKB 4706'	--

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
5616'	5608'	--	→	0 - 5616'	--

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*
5513' - 5594' Desert Creek Zone I

25. WAS DIRECTIONAL SURVEY MADE
No

26. TYPE ELECTRIC AND OTHER LOGS RUN
Dual Guard Forxo, Comp Density-DSN-GR-Caliper, Contact Caliper

27. WAS WELL CORED
Yes

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#	118'	17-1/2"	177 cu. ft. Class "B"	--
9-5/8"	36# & 40#	1592'	12-1/4"	1310 cu. ft. Class "B"	--
7"	23# & 26#	5616'	8-3/4"	1482 cu. ft. Class "B"	--

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
--	--	--	--	--

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2-7/8"	5416'	--

31. PERFORATION RECORD (Interval, size and number)
5594-5555', 2 SPF, 4" HSC Gun, 78 shots
5543-5513', 2 SPF, 4" HSC Gun, 60 shots

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

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
5513-5594' -	Breakdown in 1' increments w/50 gal acid/ft. (3450 gal). Acidized entire zone w/remaining 6500 gal acid containing 1 gal/1000 A-250 corrosion inhibitor, 3 gal/1000 W802

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)
10/31/85	Flowing	Producing

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
11/15/85	24	22/64"	→	230	251	46	1091

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
40	--	→	230	251	46	40.0

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)
Sold

TEST WITNESSED BY
--

35. LIST OF ATTACHMENTS
None

851212

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

SIGNED D. C. Gill (D. C. Gill) TITLE Area Manager DATE December 4, 1985

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

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.

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 -			
non-emulsifier, 2 gal/1000 F801 fines suspender and 6 gal/1000 U42 iron agent. Dropped 50, 1.2 sp. gr., ball sealers. Displaced w/42 bbls lease wtr.			
CORE #1	5528	5588	Cut and Recovered 60'.
CORE #2	5588	5616	Cut and Recovered 28'.

38. GEOLOGIC MARKERS

NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
LOG TOPS		
Shinarump	2290	
DeChelly	2612	
Hermosa	4540	
Ismay	5353	
Desert Creek Zone I	5510	

Distribution:
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. Berk, Denver
1 - T. L. Carten r) P. Bertuzzi, Denver
1 - J. B. Lindemood, Denver
1 - D. L. Kennedy, Denver
16 - W. I. Owners
1 - J. Weichbrodt, Cortez
1 - File RC

Mobil Oil Corporation

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

May 14, 1986

RECEIVED
MAY 16 1986

DIVISION OF
OIL, GAS & MINING

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

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

FORM 10

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

MONTHLY OIL AND GAS PRODUCTION REPORT

OPERATOR NAME AND ADDRESS:

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

RECEIVED
AUG 16 1993
DIVISION OF
OIL, GAS & MINING

UTAH ACCOUNT NUMBER: N0772

REPORT PERIOD (MONTH/YEAR): 6 / 93

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 Konkel Telephone Number: 505 599-3452

(6/93)

FORM 9

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

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.)

5. LEASE DESIGNATION & SERIAL NO.

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: NAVAJO TRIBAL

1. OIL WELL ☐ GAS WELL ☐ OTHER

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.

RECEIVED
SEP 13 1993
DIVISION OF
OIL, GAS & MINING

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.)
At surface

At proposed prod. zone

10. FIELD AND POOL, OR WILDCAT: GREATER ANETH

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA

14. API NO.	15. ELEVATIONS (Show whether DF, RT, GR, etc.)	12. COUNTY	13. STATE
		SAN JUAN	UTAH

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

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	☐	PULL OR ALTER CASING	☐	WATER SHUT-OFF	☐	REPAIRING WELL	☐
FRACTURE TREAT	☐	MULTIPLE COMPLETE	☐	FRACTURE TREATMENT	☐	ALTERING CASING	☐
SHOOT OR ACIDIZE	☐	ABANDON	☐	SHOOTING OR ACIDIZING	☐	ABANDONMENT*	☐
REPAIR WELL	☐	CHANGE PLANS	☐	(Other) CHANGE OF OPERATOR			☐
(Other)				(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			
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 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:

See Instructions On Reverse Side

(3/89)

PERATOR CHANGE WORKSHEET (CONTINUED) Initial each item when completed. Write N/A if item is not applicable.

ENTITY REVIEW

Lec 1. (Rule R615-8-7) Entity assignments have been reviewed for all wells listed above. Were entity changes made? (yes/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)

Lec/N/A 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) ___. Today's date _____ 19___. If yes, division response was made by letter dated _____ 19___.

LEASE INTEREST OWNER NOTIFICATION RESPONSIBILITY

N/A 1. (Rule R615-2-10) The former operator/lessee of any **fee lease** well listed above has been notified by letter dated _____ 19___, 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.

DTS 11-10-93

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: 11-17 1993.

FILING

Lec 1. Copies of all attachments to this form have been filed in each well file.

Lec 2. The original of this form and the original attachments have been filed in the Operator Change file.

COMMENTS

931006 BIA/Bfm Approved 7-9-93.

FORM 11

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

MONTHLY OIL AND GAS DISPOSITION REPORT

OPERATOR NAME AND ADDRESS:

LB Sheffield
~~BRIAN BERRY~~
~~M E P N A~~ MOBIL
~~POB 219031 1807A RENTWR~~ P.O. DRAWER G
DALLAS TX 75221-9031 CORTEZ, Co. 81321

UTAH ACCOUNT NUMBER: N7370

REPORT PERIOD (MONTH/YEAR): 7 / 93

AMENDED REPORT ☐ **(Highlight Changes)**

*931006 updated. fe

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								
	OIL								
	GAS								
TOTALS				249710	243825	5885			

RECEIVED
SEP 13 1993
DIVISION OF
OIL, GAS & MINING

COMMENTS: PLEASE NOTE ADDRESS CHANGE. MOBIL ~~MEPNA~~ 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: 9/6/93

Name and Signature: Lowell B Sheffield

Telephone Number: 303 565 2212 ~~214 658 2528~~

(6/93)

FORM=NR0003.FRM 07/2

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.

Re: Rutherford Unit (GC)

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

ARES/543

JUL 26 1993

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

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 Ratherford 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

DESIGNATION OF OPERATOR

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

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

and, pursuant to the terms of the Ratherford 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 Ratherford 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 Ratherford 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 Ratherford Unit.

Phillips Petroleum Company

June 17, 1993 By: M. B. Fadel, J.
Attorney-in-Fact

Mobil Exploration and Producing
North America Inc.

June 11, 1993 By: B. D. Martiny
Attorney-in-Fact B.D. MARTINY

ACTING AREA DIRECTOR 7/9/93
APPROVED BY TITLE 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

Tract Number	Description of Land	Serial Number and Effective Date of Lease	Tract Percentage Participation
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
OPERATOR CHANGE WORKSHEET

Routing:
1-LEC/7-SJ
2-DTS/8-FILE
3-VLC
4-RJF
5-LEC
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.

XX 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) MEPNA
(address) PO DRAWER G
CORTEZ, CO 81321
GLEN COX (915)688-2114
phone (303) 565-2212
account no. N7370

FROM (former operator) PHILLIPS PETROLEUM COMPANY
(address) 5525 HWY 64 NBU 3004
FARMINGTON, NM 87401
PAT KONKEL
phone (505) 599-3452
account no. N0772(A)

Well(s) (attach additional page if needed): *RATHERFORD UNIT (NAVAJO)

Name: **SEE ATTACHED**	API: 43037.31168	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

Lec 1. (Rule R615-8-10) Sundry or other legal documentation has been received from former operator (Attach to this form). (Req. 8-20-93) (6/93 Prod. Rpt. 8-16-93)

Lec 2. (Rule R615-8-10) Sundry or other legal documentation has been received from new operator (Attach to this form). (Req. 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: ____.

Lec 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.

Lec 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)

Lec 6. Cardex file has been updated for each well listed above. (O&G wells 10-6-93) (WIW's 10-26-93)

Lec 7. Well file labels have been updated for each well listed above. (O&G wells 10-6-93) (WIW's 10-26-93)

Lec 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)

Lec 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.

– OVER –

PERATOR CHANGE WORKSHEET (CONTINUED) Initial each item when completed. Write N/A if item is not applicable.

ENTITY REVIEW

Lec 1. (Rule R615-8-7) Entity assignments have been reviewed for all wells listed above. Were entity changes made? (yes/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)

Lec/N/A 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) ___. Today's date _____ 19___. If yes, division response was made by letter dated _____ 19___.

LEASE INTEREST OWNER NOTIFICATION RESPONSIBILITY

N/A 1. (Rule R615-2-10) The former operator/lessee of any **fee lease** well listed above has been notified by letter dated _____ 19___, 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.

DTS 11-10-93

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: 11-17 1993.

FILING

Lec 1. Copies of all attachments to this form have been filed in each well file.

Lec 2. The original of this form and the original attachments have been filed in the Operator Change file.

COMMENTS

931006 BIA/Bfm Approved 7-9-93.

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
~~14-03~~	~~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

Form 3160-5
(June 1990)

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

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.
14-20-603-355

6. If Indian, Allottee or Tribe Name
NAVAJO TRIBAL

7. If Unit or CA, Agreement Designation
RATHERFORD UNIT

1. Type of Well
[X] Oil Well [ ] Gas Well [ ] Other

8. Well Name and No.
RATHERFORD UNIT 16-13

2. Name of Operator
MOBIL EXPLORATION & PRODUCING US, AS AGENT FOR MEPNA

9. API Well No.
43-037-31168

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)
1980' FSL, 660 FWL Sec 16 T41S R24E

11. County or Parish, State
SAN JUAN, UT

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

TYPE OF SUBMISSION	TYPE OF ACTION	
[ ] Notice of Intent	[ ] Abandonment	[ ] Change of Plans
[X] Subsequent Report	[ ] Recompletion	[ ] New Construction
[ ] Final Abandonment Notice	[ ] Plugging Back	[ ] Non-Routine Fracturing
	[ ] Casing Repair	[ ] Water Shut-Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[ ] Other **REMEDIAL**	[ ] 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.)*

03-25-94 MIRU. PULL PARTED 4th AND 5th ROD, FISH ROD. POOH W/ PUMP; PU 2-1/2 X 1-3/4 X 20.5 RHBC. SEAT & RESPACE. PRESS TEST TO 500 PSI/HELD/OK. RDMO.

14. I hereby certify that the foregoing is true and correct
Signed D. Price for Shirley Todd Title **ENV. & REG. TECHNICIAN** Date **04/04/94**

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
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.

*** See Instruction on Reverse Side**

FORM 10

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 #13-43 4303731131	06280	41S 23E 13	DSCR					
RATHERFORD UNIT #24-41 4303731132	06280	41S 23E 24	DSCR					
RATHERFORD UNIT 17-13 4303731133	06280	41S 24E 17	DSCR					
RATHERFORD UNIT #17-33 4303731134	06280	41S 24E 17	DSCR					
RATHERFORD UNIT #18-33 4303731135	06280	41S 24E 18	DSCR					
RATHERFORD UNIT #1-14 4303731162	06280	41S 23E 1	DSCR					
RATHERFORD UNIT #7-11 4303731163	06280	41S 24E 7	DSCR					
RATHERFORD UNIT #7-13 4303731164	06280	41S 24E 7	DSCR					
RATHERFORD UNIT #7-22 4303731165	06280	41S 24E 7	DSCR					
RATHERFORD UNIT #7-24 4303731166	06280	41S 24E 7	DSCR					
RATHERFORD UNIT 7-33 4303731167	06280	41S 24E 7	IS-DC					
RATHERFORD UNIT #16-13 4303731168	06280	41S 24E 16	DSCR					
RATHERFORD UNIT #17-11 4303731169	06280	41S 24E 17	DSCR					
				TOTALS				

COMMENTS: _____

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) _____

XXX 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 XX) - 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).

Division of Oil, Gas and Mining
OPERATOR CHANGE WORKSHEET

Routing:
1-LEC 7-PL
2-LWP 8-SJ
3-~~DES~~ 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 XXX Operator Name Change Only

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

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

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

Name: **** SEE ATTACHED ****	API: 43-037-31168	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

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.

Lec 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. 8-31-95

Lwp 7. Well file labels have been updated for each well listed above. 9-28-95

Lec 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)

Lec 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.

– OVER –

OPERATOR CHANGE WORKSHEET (CONTINUED) Initial each item when completed. Write N/A if item is not applicable.

ENTITY REVIEW

Lec 1. (Rule R615-8-7) Entity assignments have been reviewed for all wells listed above. Were entity changes made? (yes/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/Lec 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) ___. Today's date _____ 19___. If yes, division response was made by letter dated _____ 19___.

LEASE INTEREST OWNER NOTIFICATION RESPONSIBILITY

N/A 1. (Rule R615-2-10) The former operator/lessee of any **fee lease** well listed above has been notified by letter dated _____ 19___, 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.
UTS
8/S/FS

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 19 95.

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 WIC F5/Not necessary!

WE71/34-35

Form 3160-5
(June 1990)

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

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: 14-20-603-355
6. If Indian, Allottee or Tribe Name: NAVAJO TRIBAL
7. If Unit or CA, Agreement Designation: RATHERFORD UNIT
8. Well Name and No.: RATHERFORD 16-13
9. API Well No.: 43-037-31168
10. Field and Pool, or exploratory Area: GREATER ANETH
11. County or Parish, State: SAN JUAN UT

1. Type of Well: [X] 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. 16, T41S, R24E
1980' FSL & 660' FWL

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

TYPE OF SUBMISSION	TYPE OF ACTION	
[X] Notice of Intent	[ ] Abandonment	[ ] Change of Plans
[ ] Subsequent Report	[ ] Recompletion	[ ] New Construction
[ ] Final Abandonment Notice	[ ] Plugging Back	[ ] Non-Routine Fracturing
	[ ] Casing Repair	[ ] Water Shut-Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[X] Other SIDETRACK	[ ] 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; 2121' SOUTH & 2121' EAST FROM SURFACE SPOT (ZONE 1a).
LATERAL #2; 2475' NORTH & 2475' WEST FROM SURFACE SPOT (ZONE 1a).

SEE ATTACHED PROCEDURE.

Federal Approval of this Action is Necessary

RECEIVED
JUN 04 1998
DIV. OF OIL, GAS & MINING

14. I hereby certify that the foregoing is true and correct
Signed for Mosley Title SHIRLEY HOUCHINS/ENV & REG TECH Date 6-01-98

(This space for Federal or State office use)
Approved by Title BRADLEY G. HILL RECLAMATION SPECIALIST III Date 6/23/98
Conditions of approval, if any:

Oil, Gas and Mining
Date:
By:

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.

* See Instruction on Reverse Side

Ratherford Unit Well #16-13
Horizontal Drilling Procedure

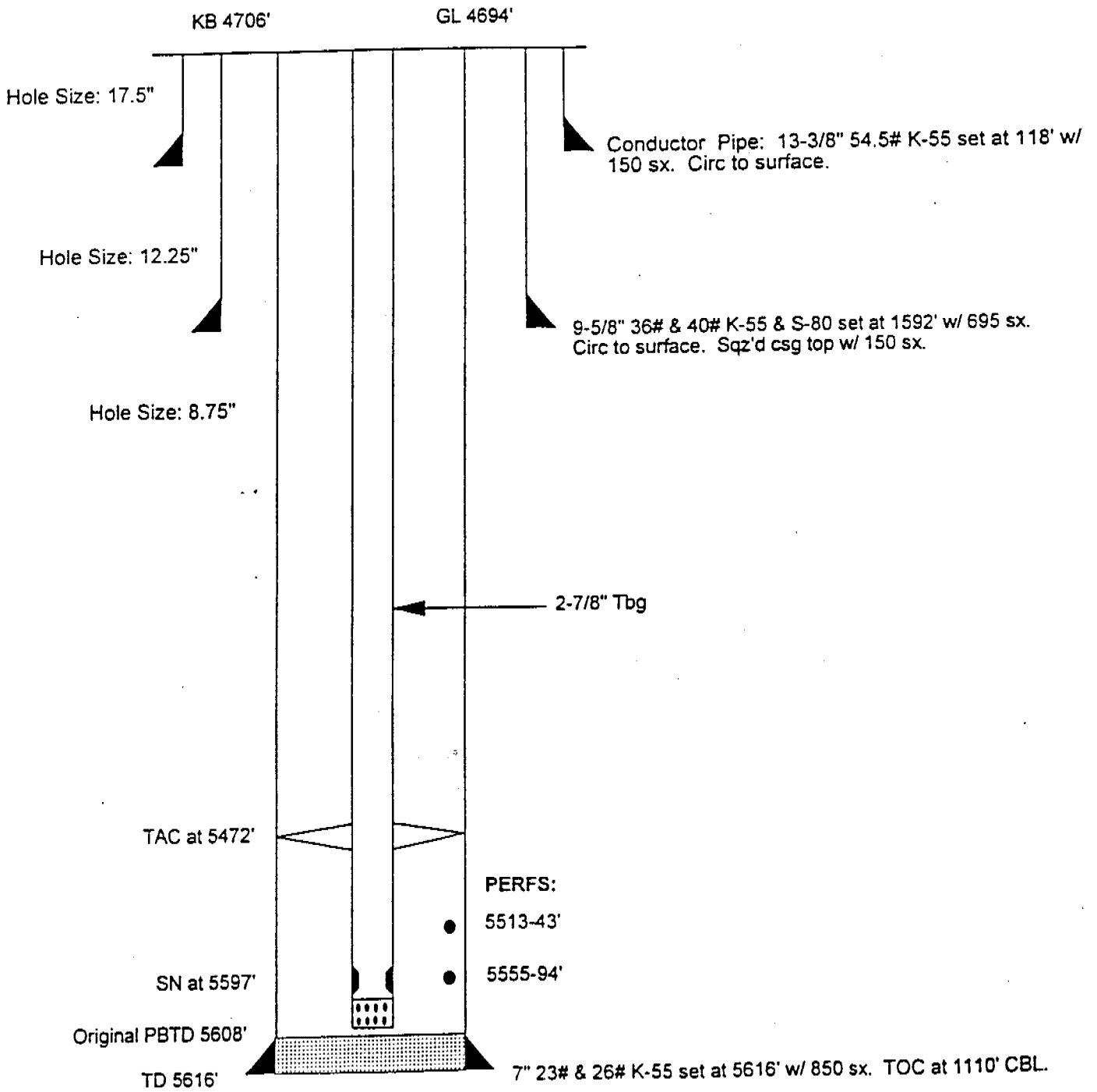
The objective of this procedure is to prepare this wellbore for sidetracking, sidetrack the subject well and drill multilateral short radius horizontal laterals (3000-3300 feet).

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 at 5200' 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 starter 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 # 16-13
GREATER ANETH FIELD
1980' FSL & 660' FWL
SEC 16-T41S-R24E
SAN JUAN COUNTY, UTAH
API 43-037-31168
PRISM 0043037

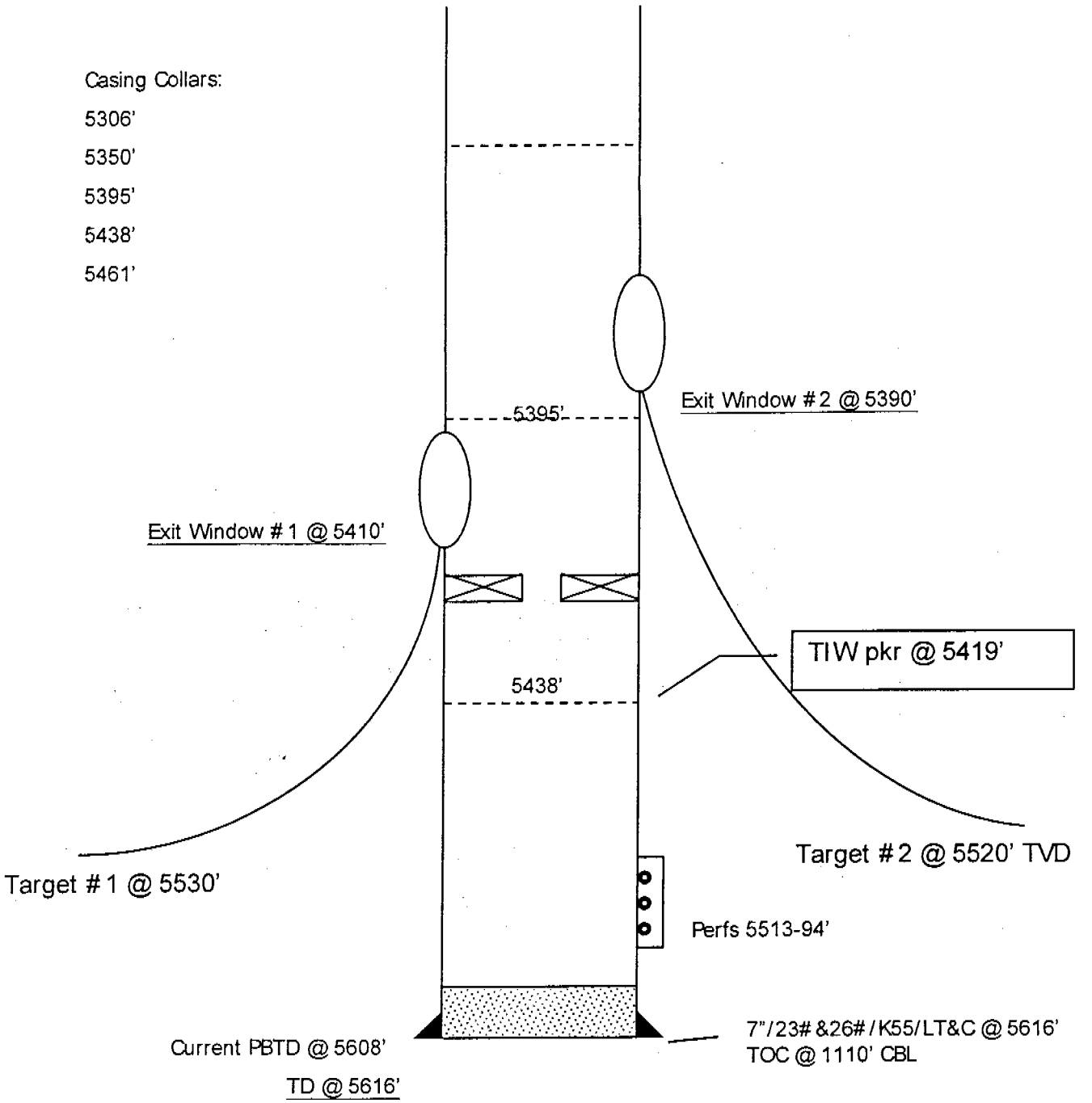
PRODUCER

Capacities:	bbl/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



L. A. TUCKER 5-31-96 R.U. # 16-13

Ratherford Unit #16-13



Window	Btm-Top of Window	Ext length	Curve Radius	Bearing	Horiz Displ
1	5410-5402	------	120	135	3000
2	5390-82	20	130	315	3500

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: 06/04/98

API NO. ASSIGNED: 43-037-31168

WELL NAME: RATHERFORD 16-13 MULTI-LEG
OPERATOR: MOBIL PRODUCING INC (N7370)
CONTACT: _____

PROPOSED LOCATION:
NWSW 16 - T41S - R24E
SURFACE: 1980-FSL-0660-FWL } Multi-lateral
BOTTOM: 0660-FNL-1980-FEL }
SAN JUAN COUNTY
GREATER ANETH FIELD (365)

LEASE TYPE: IND
LEASE NUMBER: 14-20-603-355
SURFACE OWNER: _____

PROPOSED FORMATION: DSCR

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

RECEIVED AND/OR REVIEWED:

✓ Plat
✓ Bond: Federal [✓] State [] Fee []
(No. ALREADY BONDED)
N Potash (Y/N)
N Oil Shale (Y/N) *190-5(B)
✓ Water Permit
(No. NAVAJO ALLOTMENT)
NA RDCC Review (Y/N)
(Date: _____)

NA St/Fee Surf Agreement (Y/N)

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) FEDERAL APPROVAL
(2) Directional Drilling

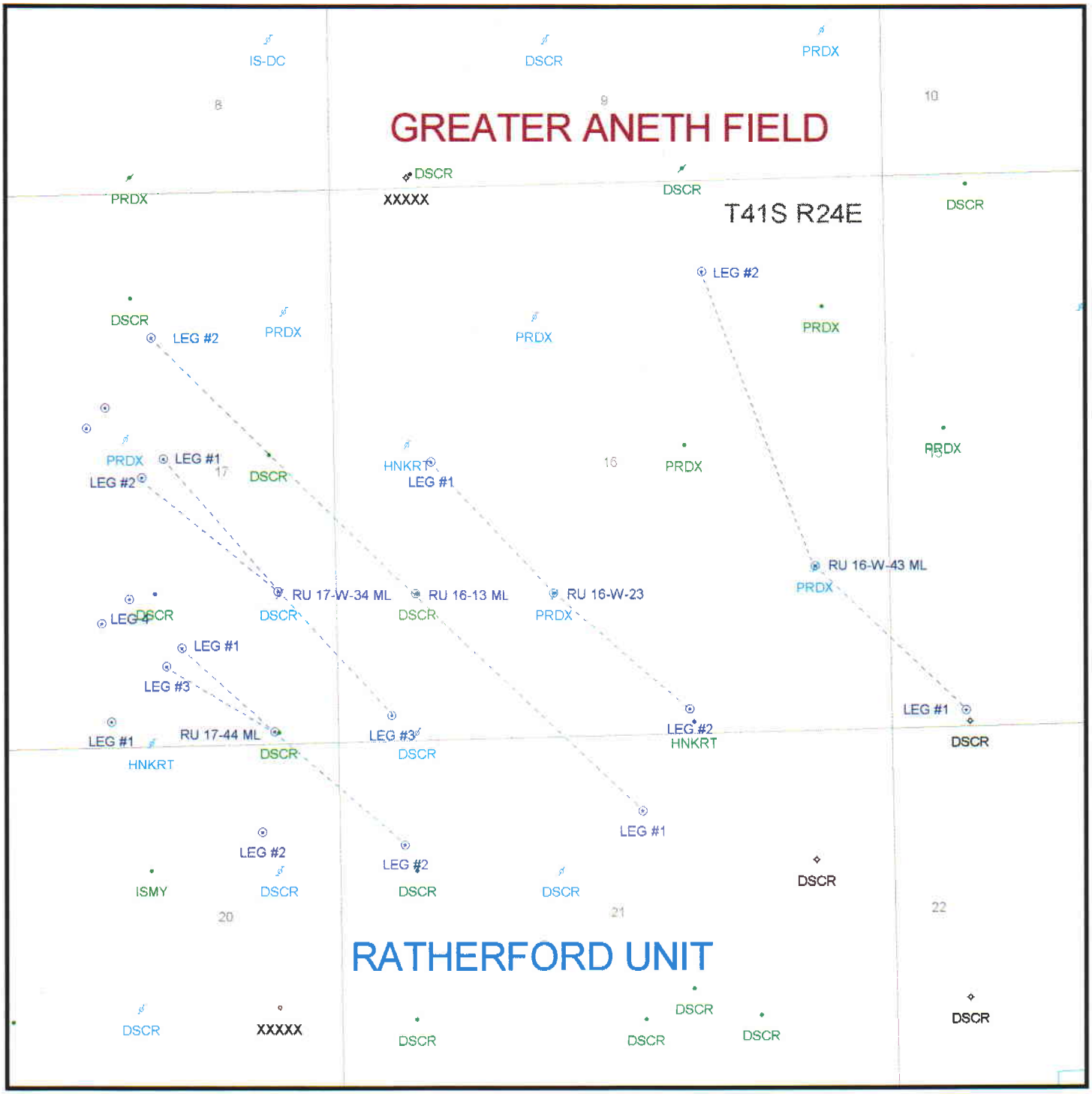
DIVISION OF OIL, GAS & MINING

OPERATOR: MOBIL PRODUCTION INC (N7370)

FIELD: GREATER ANETH (365)

SEC., 16 TWP 41S, RNG 24E

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



DATE PREPARED:
11-JUNE-1998

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

State of Utah

DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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)

June 23, 1998

Mobil Exploration & Producing
P.O. Box 633
Midland, TX 79702

Re: Ratherford 16-13, 1980' FSL, 660' FWL, NW SW, Sec. 16, 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 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 43-037-31168.

Sincerely,

John R. Baza
Associate Director

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

Operator: Mobil Exploration & Producing

Well Name & Number: Ratherford 16-13

API Number: 43-037-31168

Lease: 14-20-603-355

Location: NW SW **Sec.** 16 **T.** 41 S. **R.** 24 E.

Conditions of Approval

1. General
   Compliance with the requirements of Utah Admin. R. 649-1 et seq., the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for Permit to Drill.

2. Notification Requirements
   Notify the Division within 24 hours prior to spudding the well or commencing drilling operations. Contact Jim Thompson at (801)538-5336.

   Notify the Division prior to commencing operations to plug and abandon the well. Contact Dan Jarvis at (801) 538-5338 or Robert Krueger at (801) 538-5274.

3. Reporting Requirements
   All required reports, forms and submittals shall be promptly filed with the Division, including but not limited to the Entity Action Form (Form 6), Report of Water Encountered During Drilling (Form 7), Weekly Progress Reports for drilling and completion operations, and Sundry Notices and Reports on Wells requesting approval of change of plans or other operational actions.

4. State approval of this well does not supercede the required federal approval which must be obtained prior to drilling.

5. In accordance with Utah Admin. R.649-3-11, Directional Drilling, submittal of a complete angular deviation and directional drilling survey report is required.

DIVISION OF OIL, GAS AND MINING

SPUDDING INFORMATION

Name of Company: MOBIL E & P

Well Name: RATHERFORD UNIT 16-13

Api No. 43-037-31168 Lease Type: INDIAN

Section 16 Township 41S Range 24E County SAN JUAN

Drilling Contractor BIG "A"

Rig # 25

SPUDDED:

Date 7/27/98

Time 7:30 AM

How ROTARY

Drilling will commence

Reported by SIMON GERAUERRA

Telephone # 1-435-651-3473

Date: 7/27/98 Signed: MKH

√

Pason

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

Wednesday, September 02, 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 #16-13 , Legs 1 & 2 43-037-31165
Sec. 16, T41S, R24E
San Juan County, Utah

Dear Sirs:

Enclosed is the final computer colored log and geology report for the above referenced well.

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 #16-13
SE HORIZONTAL LATERAL LEG #1
UPPER 1-A POROSITY BENCH
DESERT CREEK MEMBER
PARADOX FORMATION
SECTION 16, T41S, R24E
SAN JUAN, UTAH

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

TABLE OF CONTENTS

WELL SUMMARY

OPERATOR:	MOBIL EXPLORATION & PRODUCTION U.S. INC.
NAME:	RATHERFORD UNIT #16-13 SE HORIZONTAL LATERAL LEG #1 IN 1-A UPPER POROSITY BENCH, DESERT CREEK
LOCATION:	SECTION 16, T41S, R24E
COUNTY/STATE:	SAN JUAN, UTAH
ELEVATION:	KB:4755' GL:4694'
SPUD DATE:	7/25/98
COMPLETION DATE:	8/01/98
DRILLING ENGINEER:	BENNY BRIGGS / SIMON BARRERA
WELLSITE GEOLOGY:	DAVE MEADE / LUKE TITUS / MARVIN ROANHORSE
MUDLOGGING ENGINEERS:	DAVE MEADE / LUKE TITUS / MARVIN ROANHORSE
CONTRACTOR: **TOOLPUSHER:**	BIG "A" RIG 25 J. DEES
HOLE SIZE:	4 ¾"
CASING RECORD:	SIDETRACK IN WINDOW AT 5410' MEASURED DEPTH
DRILLING MUD: **ENGINEER:** **MUD TYPE:**	M-I DANE BEASON/RON WESTENBERG FRESH WATER & BRINE WATER W/ POLYMER SWEEPS
DIRECTIONAL DRILLING CO:	SPERRY-SUN
ELECTICAL LOGGING:	NA
TOTAL DEPTH:	8569' MEASURED DEPTH; TRUE VERTICAL DEPTH-5562.3'
STATUS:	MILLING WINDOW FOR LEG #2

DRILLING CHRONOLOGY
RATHERFORD UNIT #16-13
1-A SE HORIZONTAL LATERAL LEG #1

DATE	DEPTH	DAILY	ACTIVITY
7/24/98	7238'/ 5401'	0'	RIG DOWN & MOVE TO R.U. 16-13;RIG UP;NIPPLE UP;SLIP & CUT 73' DRLG LINE;TEST B.O.P.E;P.U. DRLG COLLARS
7/25/98	5401'	3'	P.U. D.P. OFF RACK & TIH-LATCH ONTO PACKER & UNSET;TOOH L.D BRIDGE PLUG;R.U. SCHLUMBER RUN IN W/WIRELINE PACKER SET @ 5419'-TIH W/ANCHOR LATCH & UBHA-CIRC CLN PIPE-LATCH INTO ANCHOR-RUNIN GYRO & ORIENT, POOH W/GYRO-SHEAR PACKER LATCH;TOOH W/ANCHOR LATCH ASSEM;M.U. WHIPSTOCK-TIH;TOOH- P.U. SWIVEL & BRK CIRC.P.U. STARTER MILL & MILL F/5401' T/5403';TOOH W/STARTER MILL
7/26/98	5403'	63'	L.D. STARTER MILL & M.U. WINDOW MILLS;TIH W/WINDOW MILL & WATER MELON MILL-P.U. SWIVEL & FILL PIPE-MILL F/5401' T/5409';PMP-SWEEP & CIRC. OUT;L.D. 13 JTS D.P-TOOH;L.D.MILLS-P.U. CRVE ASSEM ORIENT & TEST-P.U. 10 JTS PH 6-TIH;BRK CIRC-CLN PIPE-RUN IN GYRO;TIME DRILL F/5410' T/5412'-DIR DRLG & WIRELINE SURVEYS F/5412' T/5445;POOH W/GYRO DATA-DIR DRLG & SURVEYS TO 5466'
7/27/98	5466'	264'	DIR DRLG & SRVYS T/5606'-TD CRVE;PMP SWEEP & CIRC SMPLS-TOOH;L.D. 14 JTS-L.D CRVE ASSEM-P.U. DIR ASSEM & TEST/ORIENT-P.U. 98 JTS PH 6 & 18 ¼ D.C. OFF RACK-TIH;DIR DRLG & SURVEYS
7/28/98	5730'	716'	DIR DRLG & SURVEYS
7/29/98	6446'	317'	DIR DRLG & SURVEYS
7/30/98	6763'	1248'	DIR DRLG & SURVEYS
8/01/98	8011'	558'	DIR DRLG & SURVEYS TO 8569'-PUMP SWEEP & CIR SPLS-PUMP 40 BBLS BRINE-TOH TO WINDOW-PUMP 160 BBLS BRINE TO KILL WELL (WELL FLOWING ± 15-20 BBLS/HR)-TOH-L.D. LATERAL ASSEM.-PICK UP HOOK-TIH-P.U. 23 JTS AOH-LATCH INTO WHIPSTOCK
8/02/98	8569'	TD	LATCH INTO WHIPSTOCK & WORK FREE-FOR MORE DETAILS SEE GEO. RPT OF R.U. 16-13 LEG #2

DAILY ACTIVITY

Operator: MOBIL
Well Name: RATHERFORD UNIT #16-13 SE 1-A HORIZONTAL LATERAL LEG #1

DATE	DEPTH	DAILY	DATE	DEPTH	DAILY
7/24/98	7238'/ 5401'	0'			
7/25/98	5401'	3'			
7/26/98	5403'	63'			
7/27/98	5466'	264'			
7/28/98	5730'	716'			
7/29/98	6446'	317'			
7/30/98	6763'	1248'			
8/01/98	8011'	558'			
8/02/98	8569'	TD			

BIT RECORD

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #16-13 SE 1-A HORIZONTAL LATERAL LEG #1

RUN	SIZE	MAKE	TYPE	IN/OUT	FTG	HRS	FT/HR
#1 (RR)	4 3/4"	STC	MF-37P	5410'/ 5606'	196'	17	12
#2	4 3/4"	STC	MF-37P	5606'/ 8569'	2963'	112	26.5

MUD REPORT

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #16-13 SE 1-A HORIZONTAL LATERAL LEG #1

DATE	DEPTH	WT	VIS	PLS	YLD	GEL	PH	WL	CK	CHL	CA	SD	OIL	WTR
7/26/98	5410'	8.4	26	1	1	0/0	8.0	NC	NC	1200	100	-	0%	100%
7/27/98	5585'	8.5	26	1	1	0/0	10.0	NC	NC	2800	200	TR	0%	99%
7/28/98	6250'	8.5	26	1	1	0/0	13.0	NC	NC	9000	200	1	0%	99%
7/29/98	6605'	8.5	26	1	1	0/0	12.5	NC	NC	7000	120	-	1%	98%
7/30/98	7238'	8.9	26	1	1	0/0	11.0	NC	NC	50000	4800	1	TR	99%
8/01/98	8327'	8.6	27	1	1	0/0	11.0	NC	NC	25000	360	1	TR	98%

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/16-13 1A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
5400.00	0.29	206.27	5397.94	44.16 N	84.07 W	-90.67	0.00
5401.00	0.32	308.35	5398.94	44.16 N	84.07 W	-90.68	47.47
5410.00	4.90	135.00	5407.93	43.90 N	83.82 W	-90.32	57.98
5420.00	9.20	144.89	5417.85	42.95 N	83.06 W	-89.10	44.52
5430.00	14.60	148.49	5427.63	41.22 N	81.94 W	-87.09	54.48
5440.00	19.90	150.35	5437.18	38.66 N	80.44 W	-84.22	53.28
5450.00	24.60	151.49	5446.43	35.35 N	78.60 W	-80.58	47.20
5460.00	28.80	152.27	5455.37	31.39 N	76.49 W	-76.28	42.15
5470.00	32.30	152.85	5463.98	26.88 N	74.15 W	-71.44	35.12
5480.00	35.70	153.30	5472.26	21.89 N	71.62 W	-66.12	34.09
5490.00	40.00	151.70	5480.16	16.45 N	68.78 W	-60.27	44.10
5500.00	44.40	149.30	5487.57	10.61 N	65.47 W	-53.80	46.85
5510.00	48.60	143.50	5494.45	4.58 N	61.45 W	-46.69	59.42
5520.00	52.10	139.40	5500.83	1.43 S	56.65 W	-39.04	47.12
5530.00	55.80	136.20	5506.72	7.41 S	51.21 W	-30.97	45.14
5540.00	60.50	136.50	5511.99	13.56 S	45.35 W	-22.48	47.07
5550.00	65.70	137.10	5516.52	20.06 S	39.25 W	-13.57	52.27
5560.00	71.20	139.80	5520.19	27.02 S	33.09 W	-4.29	60.46
5570.00	75.80	142.70	5523.03	34.49 S	27.09 W	5.23	53.75
5580.00	80.00	139.60	5525.12	42.10 S	20.96 W	14.95	51.79
5606.00	89.20	131.50	5527.57	60.54 S	2.86 W	40.79	47.03
5633.00	88.00	128.20	5528.23	77.83 S	17.86 E	67.67	13.00
5664.00	89.50	130.80	5528.91	97.54 S	41.77 E	98.51	9.68
5696.00	89.10	131.90	5529.30	118.68 S	65.79 E	130.44	3.66
5728.00	89.30	132.60	5529.75	140.19 S	89.48 E	162.40	2.27
5759.00	89.70	132.80	5530.02	161.22 S	112.26 E	193.38	1.44
5791.00	89.90	132.90	5530.13	182.98 S	135.72 E	225.35	0.70
5823.00	88.50	132.90	5530.58	204.76 S	159.16 E	257.33	4.38
5854.00	87.30	132.90	5531.71	225.85 S	181.85 E	288.29	3.87
5886.00	87.60	132.80	5533.14	247.59 S	205.29 E	320.23	0.99
5917.00	87.80	133.70	5534.38	268.81 S	227.85 E	351.19	2.97
5949.00	89.80	134.50	5535.05	291.07 S	250.82 E	383.18	6.73
5981.00	89.90	135.10	5535.13	313.62 S	273.53 E	415.18	1.90
6013.00	89.40	134.50	5535.33	336.17 S	296.24 E	447.18	2.44
6045.00	89.40	134.00	5535.66	358.50 S	319.16 E	479.17	1.56
6076.00	90.00	133.50	5535.83	379.94 S	341.55 E	510.17	2.52
6108.00	91.80	133.30	5535.32	401.92 S	364.80 E	542.15	5.66
6140.00	88.90	133.50	5535.13	423.90 S	388.04 E	574.13	9.08

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/16-13 1A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
6172.00	88.10	134.70	5535.97	446.16 S	411.01 E	606.12	4.51
6204.00	88.30	135.60	5536.97	468.84 S	433.57 E	638.10	2.88
6235.00	88.90	136.30	5537.73	491.11 S	455.12 E	669.09	2.97
6267.00	90.50	137.00	5537.90	514.38 S	477.08 E	701.07	5.46
6299.00	89.80	136.80	5537.81	537.75 S	498.95 E	733.05	2.28
6331.00	90.40	135.80	5537.76	560.88 S	521.06 E	765.04	3.64
6362.00	91.10	135.90	5537.35	583.12 S	542.65 E	796.04	2.28
6394.00	91.50	135.60	5536.62	606.04 S	564.97 E	828.03	1.56
6425.00	87.90	135.60	5536.79	628.18 S	586.66 E	859.02	11.61
6457.00	87.20	135.40	5538.15	650.98 S	609.06 E	890.99	2.27
6489.00	87.80	135.90	5539.55	673.85 S	631.41 E	922.96	2.44
6521.00	88.90	137.20	5540.47	697.07 S	653.41 E	954.93	5.32
6553.00	90.20	137.30	5540.72	720.56 S	675.13 E	986.90	4.07
6584.00	88.00	137.00	5541.21	743.29 S	696.21 E	1017.88	7.16
6616.00	86.80	136.80	5542.66	766.63 S	718.05 E	1049.83	3.80
6648.00	88.30	137.50	5544.03	790.07 S	739.79 E	1081.77	5.17
6680.00	90.70	137.30	5544.31	813.62 S	761.45 E	1113.74	7.53
6712.00	91.40	137.70	5543.72	837.21 S	783.07 E	1145.70	2.52
6743.00	92.00	137.50	5542.80	860.09 S	803.96 E	1176.66	2.04
6775.00	92.00	137.90	5541.69	883.74 S	825.48 E	1208.60	1.25
6807.00	92.10	137.70	5540.54	907.43 S	846.96 E	1240.55	0.70
6839.00	92.70	137.70	5539.20	931.08 S	868.48 E	1272.48	1.87
6870.00	90.00	137.50	5538.47	953.96 S	889.38 E	1303.44	8.73
6902.00	91.10	137.70	5538.16	977.59 S	910.95 E	1335.40	3.49
6933.00	90.10	137.20	5537.84	1000.43 S	931.91 E	1366.37	3.61
6965.00	87.50	136.10	5538.51	1023.69 S	953.87 E	1398.35	8.82
6996.00	86.00	135.90	5540.27	1045.95 S	975.37 E	1429.29	4.88
7027.00	86.70	135.90	5542.24	1068.17 S	996.90 E	1460.23	2.26
7059.00	86.60	135.80	5544.11	1091.09 S	1019.15 E	1492.17	0.44
7091.00	88.70	134.90	5545.42	1113.84 S	1041.62 E	1524.14	7.14
7123.00	90.10	134.40	5545.76	1136.32 S	1064.39 E	1556.14	4.65
7154.00	90.30	134.50	5545.65	1158.03 S	1086.52 E	1587.13	0.72
7185.00	91.60	134.00	5545.14	1179.66 S	1108.72 E	1618.13	4.49
7217.00	92.10	133.50	5544.10	1201.78 S	1131.82 E	1650.10	2.21
7249.00	92.60	133.70	5542.79	1223.83 S	1154.97 E	1682.07	1.68
7281.00	92.20	132.80	5541.45	1245.73 S	1178.26 E	1714.02	3.08
7313.00	89.20	132.80	5541.06	1267.47 S	1201.74 E	1745.99	9.38
7344.00	88.70	132.60	5541.63	1288.49 S	1224.51 E	1776.96	1.74

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/16-13 1A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
7376.00	86.40	131.50	5543.00	1309.90 S	1248.25 E	1808.89	7.97
7406.00	86.80	131.90	5544.77	1329.82 S	1270.61 E	1838.79	1.88
7438.00	88.20	133.70	5546.17	1351.54 S	1294.07 E	1870.73	7.12
7469.00	88.20	133.70	5547.14	1372.95 S	1316.47 E	1901.71	0.00
7501.00	88.90	132.90	5547.95	1394.89 S	1339.75 E	1933.68	3.32
7533.00	88.50	132.10	5548.68	1416.50 S	1363.34 E	1965.64	2.79
7565.00	88.70	131.50	5549.46	1437.82 S	1387.18 E	1997.58	1.98
7597.00	88.70	131.00	5550.19	1458.92 S	1411.24 E	2029.51	1.56
7628.00	89.50	132.60	5550.67	1479.58 S	1434.34 E	2060.45	5.77
7660.00	89.80	132.20	5550.87	1501.15 S	1457.97 E	2092.42	1.56
7691.00	90.30	131.20	5550.84	1521.78 S	1481.12 E	2123.37	3.61
7723.00	89.50	130.80	5550.90	1542.77 S	1505.27 E	2155.29	2.80
7754.00	89.70	130.70	5551.12	1563.00 S	1528.75 E	2186.20	0.72
7785.00	90.10	132.40	5551.17	1583.57 S	1551.95 E	2217.14	5.63
7817.00	89.60	133.30	5551.25	1605.33 S	1575.41 E	2249.12	3.22
7849.00	90.20	133.30	5551.31	1627.27 S	1598.70 E	2281.11	1.87
7881.00	90.10	133.10	5551.23	1649.18 S	1622.03 E	2313.09	0.70
7912.00	89.10	133.30	5551.44	1670.40 S	1644.62 E	2344.08	3.29
7944.00	88.30	134.70	5552.17	1692.62 S	1667.64 E	2376.06	5.04
7976.00	86.80	134.90	5553.54	1715.15 S	1690.32 E	2408.03	4.73
8008.00	86.80	134.50	5555.32	1737.62 S	1713.03 E	2439.98	1.25
8040.00	87.20	134.20	5557.00	1759.96 S	1735.88 E	2471.93	1.56
8072.00	88.10	135.20	5558.31	1782.45 S	1758.61 E	2503.91	4.20
8103.00	89.20	135.20	5559.04	1804.44 S	1780.45 E	2534.90	3.55
8135.00	89.70	135.20	5559.35	1827.15 S	1802.99 E	2566.90	1.56
8167.00	90.20	135.10	5559.37	1849.83 S	1825.56 E	2598.90	1.59
8198.00	89.10	134.70	5559.56	1871.71 S	1847.52 E	2629.89	3.78
8230.00	88.80	134.50	5560.15	1894.18 S	1870.30 E	2661.89	1.13
8262.00	89.90	135.10	5560.51	1916.72 S	1893.00 E	2693.88	3.92
8294.00	89.70	135.10	5560.62	1939.39 S	1915.59 E	2725.88	0.63
8326.00	90.30	134.40	5560.62	1961.92 S	1938.32 E	2757.88	2.88
8358.00	90.30	134.50	5560.46	1984.33 S	1961.16 E	2789.88	0.31
8389.00	90.50	134.40	5560.24	2006.04 S	1983.29 E	2820.88	0.72
8421.00	90.30	134.00	5560.02	2028.35 S	2006.23 E	2852.88	1.40
8453.00	89.10	134.50	5560.18	2050.67 S	2029.15 E	2884.87	4.06
8485.00	88.20	134.40	5560.94	2073.08 S	2051.99 E	2916.86	2.83
8517.00	88.80	134.90	5561.78	2095.56 S	2074.75 E	2948.85	2.44
8535.00	89.60	135.20	5562.03	2108.29 S	2087.46 E	2966.85	4.75

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/16-13 1A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
* 8569.00	89.60	135.20	5562.27	2132.42 S	2111.42 E	3000.85	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 135.00 (TRUE).
CALCULATION METHOD: MINIMUM CURVATURE.

* 8569 EXTRAPOLATED TO BIT

SAMPLE DESCRIPTIONS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #16-13 SE 1-A HORIZONTAL LATERAL

DEPTH	LITHOLOGY

5410.00 5420.00 "LS tan-crm,brn,ltgybrn,crpxl-micxl,chky,rthy,tr slty strk,scat thn plty prtgs & brn CHT,tt-rr intxl POR,NFSOC"

5420.00 5430.00 "LS lt-mgybrn,m-dkbrn,occ tan-crm,crpxl-sl micxl,chky,rthy/occ slty strk,scat thn plty prtgs & brn CHT,v sl dol ip,tt-sl tr intxl POR,NFSOC"

5430.00 5440.00 "LS AA,crpxl-micxl,bcmg arg,chky-sl mrly,rthy-sl slty ip,scat thn plty prtgs & brn CHT,sl dol ip,tt-sl tr intxl POR,NFSOC"

5440.00 5450.00 "LS lt-mgybrn,m-dkbrn,occ tan-crm,tr wh,crpxl-micxl,chky-rthy,scat prtgs & CHT AA,v sl dol ip,tt-sl tr intxl POR,NFSOC w/tr blk carb SH frag"

5450.00 5470.00 "LS lt-mgybrn,crm-tan,tr dkbrn,wh,crpxl-micxl,chky-sl mrly,rthy-occ slty,bcmg incr dol ip-grdg to lmy DOL,tr GAST fos,tt-tr intxl POR,tr scat dull-occ spty mod bri yel FLOR,fr slow stmg mlky CUT,w/rr SH blk,carb-calc,grdg to shy arg LS"

5470.00 5480.00 "LS m-ltgybrn,dkgybrn-brnblk,ltbrn-tan,tr dkbrn,wh,crpxl-micxl,chky-sl anhy/rr xln ANHY,rthy-sl slty,occ shy-grdg to lmy arg SH ip,tt-tr intxl POR,rr FLOR AA,fr dif /v fnt res ring CUT"

5480.00 5490.00 "LS ltgy-gybrn,brn,occ tan-crm,tr wh,micxl-vfxl,crpxl,bcmg incr slty/tr sdy strk-occ grdg to vf gr SS/lmy mtx,occ shy AA,sl chky-anhy/rr xln ANHY,tt-tr intxl POR,NFSOC"

5490.00 5510.00 "LS crm-wh,ltgy,tan,crpxl-micxl,tr vfxl,chky-sl anhy,tr trnsl rhmb CALC,tt-fr intxl/tr frac POR,g even mod bri-dull/tr scat mod bri yel FLOR,no vis-tr ltbrn/rr blk pp dd o STN,g slow stmg mlky CUT"

5510.00 5520.00 "LS,ltgy-gy-ltbn-ofwht,crypt-mic xl,occ vf xl,mdns-dns mtx,tr tt mtx,chlky-cln,occ sl rthy/arg,tr ofwht chlky mat,tr anhy xls,pred tt-scat m intrxl fab POR,v spty dul-mbri yelgld FLOR,no vis-wk slo strmg CUT,spty ltbn o STN,dif CUT"

5520.00 5530.00 "SH-dkbn-blk,calc-v sl dol,sbblky-occ sbplty,v sl slty,carb-sl sooty,scat fiss,rthy/arg,v/thnly intrbd ARG LS-ltbn,LS-ltgy-gy"

5530.00 5543.00 "LS,ltgy-gybn-bn,mic-vf xl,mdns-dns mtx,scat tt mtx,rthy,sl slty,sl arg to mrly ip,tr SH prtgs AA;tt-mf intrxl fab POR,v-dul yelgld FLOR,no vis-wk strmg v/sl dif CUT"

5543.00 5562.00 "LS,ltbn-tn-bn,mott,mic-vf xln,mdns mtx,pred ool rich oom/occ GRNST,v rr ltgy-tn sl ool dns PKST,rr SH prtgs,v rr trnsl CHT frgs,tr foss frgs,v-sl dolo-chlky;pred mf-g oom/ooc fab POR,tr intrxln,mf-f fst to g slo strmg dif CUT,g-mbri-bri yelgld FLOR"

DEPTH	LITHOLOGY

5562.00 5575.00 "LS,ltbn-tn-crm,occ bn,sl mot-mot,mic-vf xln,sl incr in dns sl ool PKST,scat oom/ooc ool GRNST AA,sl inc in ltbn CHT frgs,chlky-anhy-calc fld casts,pred mf-f intrxl to f-oom to ooc fab POR,mf-g ltbn-bn o STN,tr dd blk o STN res,g mbri-bri yelgld FLOR"

5575.00 5592.00 "LS AA,pred mf intrxln fab POR,pred dns sl ool occ tt PKST thnly intrbd w/ool rich GRNSTS,v-sl decr in ltbn-bn o STN,g-mbri-spty bri yelgld FLOR"

5592.00 5605.00 "LS,ltbn-tn-crm-bn,mott,mic-pred vf xln,grn-mdns mtx,v-sl dolo,pred ool rich oom/occ sl foss GRNST,decr in dns sl ool occ tt PCKST,sl incr in calc fld casts-reduced;pred oom/ooc to intrxl fab POR,mf-f slo strmg dif/milky ring CUT,mf-g ltbn-mbn o STN"

5606.00 5630.00 "LS ltgybrn-ltgy-crm,tan,dkbrn-brnblk ip,crpxl-micxl,vfxl-gran,pred dns chky PKST/occ sl gran tex-occ grdg to dns chky GRNST,tr scat-occ intbd sl ool GRNST,sl anhy/tr POR fl-rr xln ANHY,abnt arg LS-blk SH cvgs,tr dk brn CHT,pred dns/tr scat ool/pp vug POR,fr-tr scat bri-mod bri yel FLOR,fr-tr ltbrn/tr brn STN,g fast-mod fast stmg mlky CUT"

5630.00 5660.00 "LS ltbrn-brn/occ tan-tr crm incl,vfxl-gran-occ micxl,tr crpxl,ool-sl oom-agl GRNST/rr ltgy-off wh prtgs,tr intbd dns ool PKST,sl chky-anhy/rr xln ANHY,v sl dol/rr DOL cmt,rr tan CHT,g ool-sl oom/tr intxl POR,g-mg dull-mod bri/scat spty bri yel FLOR,g-mg ltbrn-brn STN,g mod fast-fast stmg mlky CUT"

5660.00 5680.00 "LS AA,ool-sl oom/tr agl GRNST/rr prtgs AA,tr intbd-occ scat dns sl ool PKST,sl chky-anhy/tr POR fl-rr xln ANHY,sl incr dol/tr DOL cmt-strk,tr tan CHT,POR AA,g even mod bri-spty bri yel FLOR,g ltbrn-brn/rr blk dd o STN,g fast-mod fast stmg mlky CUT "

5680.00 5700.00 "LS AA,ool-oom/tr agl GRNST,rr prtgs AA,tr PKST AA,sl chky-anhy/tr POR fl-rr xln ANHY,bcmg incr dol/tr DOL cmt-strk,rr tan CHT,g ool-oom/tr intxl-rr pp vug POR,g even bri-mod bri yel FLOR,g ltbrn-brn/rr blk dd o STN,g fast stmg mlky/sl blooming CUT "

5700.00 5730.00 "LS ltbrn-tan-brn/tr crm-off wh incl,vfxl-gran-sl micsuc ip,tr micxl-crpxl,ool-oom-sl agl GRNST,tr intbd-scat dns sl ool PKST,sl chky-anhy/rr POR fl-xln ANHY,sl dol/tr DOL cmt,v rr trnsl rhmb xl CALC,g ool-oom/tr intxl-occ pp vug POR,STN & CUT AA"

5730.00 5760.00 "LS AA,ool-sl oom/rr agl GRNST,tr intbd-scat PKST AA,sl chky-anhy/tr POR fl-rr xln ANHY,sl dol/tr DOL cmt-strk,rr tan CHT,POR AA,g even mod bri-spty bri yel FLOR,g ltbrn-fr brn/tr blk dd o STN,g fast stmg mlky-sl blooming CUT"

5760.00 5790.00 "LS tan-ltbrn,occ brn,tr crm-off wh incl,pred ool-oom/rr agl GRNST,tr intbd dns sl ool PKST,sl chky-anhy/tr POR fl-rr xln ANHY,sl dol AA,tr ltbrn-brn CHT incl,POR-FLOR AA,g ltbrn/scat brn & tr bllk dd o STN,CUT AA"

5790.00 5820.00 "LS AA,pred ool-oom/tr agl GRNST AA,tr intbd-occ scat PKST AA,sl chky-anhy/tr POR fl-rr xln ANHY,bcmg incr dol/tr DOL cmt-strk,tr tan CHT,POR-FLOR AA,g ltbrn-brn/tr blk dd o STN,g fast stmg-sl blooming mlky CUT "

DEPTH	LITHOLOGY

5820.00 5850.00 "LS AA,gran-vfxl-micsuc,tr micxl-crpxl,pred GRNST AA,tr intbd-occ scat dns sl ool PKST,sl chky-anhy/tr POR fl-rr xln ANHY,sl dol/tr DOL cmt,rr CHT AA,POR AA,g even mod bri-spty bri yel FLOR,g ltbrn-brn/rr blk dd o STN,g mod fast-fast stmg mlky CUT "

5850.00 5880.00 "LS,ltbn-tn-crm,mott,prd mic-vf xln,mdns-dns-grn mtx,v sl dolo,pred ool rich oom/occ mdns GRNST,rr dns ool rich PCKST,rr sh prtgs,tr pel/foss frgs,sl chlky;pred reduced to g-oom/occ-pinpt vug to mf-f intrxl fab POR,even yelgld FLOR,spty bri FLOR,mf-fo STN"

5880.00 5910.00 "LS AA,pred reduced oomoldic to oolicastic to pinpt vug w/sme mf-f interxln fab POR,mf-f slo strmg dif, sl milky CUT,even dul-mbri-spty bri yelgld FLOR,rr blk carb SH prtgs,v rr ltbn CHT frgs,mf-f ltbn-bn o STN,tr spty dd blk o STN"

5910.00 5940.00 "LS,ltbn-tn,occ crm-bn,mott,mic-vf xln,grn-mdns mtx,prd ool rich oom to occ ooc GRNST,tr dns ool rich PCKST,tr calc/chlky fld casts,v sl chlky,tr foss frgs,tr pel;pred oom/occ fab POR,tr interxln-pinpt vug POR,mf-f ltbn-bn,tr spty blk dd o STN,mf FLOR"

5940.00 5970.00 "LS AA, sl incr in dns ool rich PCKST,v sl dolo ip,pred ool rich GRNST w/ oom/ooc fab POR,rr blk carb prtgs, sl incr in chlky fld to calc fld casts,dul-mbri yelgld FLOR,spty bri yelgld FLOR,mf-f ltbn-bn o STN,tr blk dd o STN res"

5970.00 6000.00 "LS,ltbn-tn-crm,occ bn,mott,mic-pred vf xl,pred ool rich oom/ooc GRNST,tr dns sl ool to ool rich PKST,v sl dol,rr ltbn CHT grs;pred reduced oom/occ to scat vug-pinpt fab POR, scat mf-f ool-intrxln fab POR,mf-f ltbn-bn o STN,dul-mbri yelgld FLOR,mf-f CUT"

6000.00 6020.00 "LS AA,incr in dens sl ool to ool PCKST,tr chlky offwht mat,sl chlky/anhy;pred mf-scat oom/ooc to mf-f intrxln fab POR,tr-mf ltbn-bn o STN,tr blk o STN res,dul-mbri yelgld FLOR,spty bri FLOR,m-slo dif strmg CUT"

6020.00 6040.00 "LS AA,pred mf-f interxln to scat reduced oom/ooc fab POR, decr in vug-pinpt fab POR,tr-m ltbn o STN,v spty blk dd o STN res,tr-m slo strmg sl dif/milky ring CUT,dul-mbri FLOR,spty bri yelgld FLOR"

6040.00 6060.00 "LS,pred dns-sl ool PCKST, v-scat oom/ooc GRNST,decr in ool,chlky/anhy,tr anhy XLS,tr chlky mat;pred mf intrxln to rr compact tt xln fab POR,tr-m ltbn o STN,rr blk dd o STN res,dul-mbri yelgld FLOR"

6060.00 6080.00 "LS,tn-crm-offwht,occ ltbn,v sl mott,pred crypt-mic xln,occ vf xln,pred dns sl ool chlky PKST,v scat oom/ooc sl ool GRNST,sl anhy,rr cht frgs;pred interxln to compact xln FAB POR,FLOR AA,o STN AA,CUT AA"

6080.00 6100.00 "LS,tn-crm-offwht,pred mic xln,tr crypt-vf xln,mdns-dns-rr tt mtx,pred dns sl chlky v sl ool cln PCKST;pred mf-f intrxln to compact xln,tr-m ltbn o STN,dul-spty mbri yelgld FLOR,tr-m slo strmg/sl dif CUT"

6100.00 6120.00 "LS,incr in oom/occ ool GRNST w/sl ool dns chlky PCKST,v sl dolo,sl chlky/anhy,rr anhy xls,rr cht frgs;pred intrbd m-mf intrxln to redu-mf oom/occ fab POR,m-ltbn o STN,spty blk dd o STN res,m-slo strmg dif CUT"

DEPTH	LITHOLOGY

6120.00 6140.00 "LS,ltbn-tn-crm-ofwht,sl mot-mot,mic-vf xln,sl grn-mdns-dns mtx,pred intrbd oom/ooc GRNST w/sl ool dns PCKST;pred oom/occ to intrxln fab POR,ltbn-bn o STN,dul-mbri yelgld FLOR"

6140.00 6170.00 "LS,ltbn-tn,bn,mott,mic-vf xln,grn-mdns mtx,prd ool sl oom to ooc GRNST,tr dns ool sl chlky PCKST,tr calc-chlky fld casts,tr pel;pred oom/occ fab POR to mf-f interxln-POR,mf-f ltbn-bn,tr spty blk dd o STN,mf-g mbri yelgld FLOR,mg-g slo strmg dif CUT"

6170.00 6200.00 "LS AA,mf fst-g slo strmg dif milky ring CUT,mf-f dul-mbri to spty bri yelgld FLOR,pred ltbn-occ bn o STN,spty blk dd o STN res flg casts and w/calc frac flgs"

6190.00 6220.00 "LS,ltbn-tn-crm,occ tn,sl mot-mot,mdns-grn mtx ip, tr dns mtx,pred oom sl ool to GRNST w/ sl ool dns PCKST,tr chlky mat,v sl dolo;pred mf-f intrxln to oom occ ooc fab POR,mbri yelgld FLOR,m-mf fst to g slo strmg dif milky ring CUT,pred ltbn-bn o STN"

6220.00 6250.00 "LS,ltbn-tn-crm-bn,mott,mdns-grn mtx,rr dns mtx,pred oom ool GRNST to sl ool dns PCKST,tr chlky mat,sl chlky/calc fld casts,v sl dolo;pred mf-f intrxln to oom occ ooc fab POR,mbri yelgld FLOR,m-mf fst to g slo strmg dif milky ring CUT,pred ltbn-bn o STN"

6250.00 6280.00 "LS tan-crm,occ ltbrn,tr brn,vfxl-gran-micsuc,tr micxl-crpxl,ool-oom GRNST,tr intbd-scat dns ool PKST/occ gran tex,sl chky-anhy/tr POR fl-rr xln ANHY,sl dol/tr DOL cmt,tr crm-tan CHT incl,rr thn plty prtgs,g ool-oom/tr intxl-rr pp vug POR,g even bri-mod bri yel FLOR,mg-fr ltbrn/tr brn-rr blk pp dd o STN,g fast stmg mlky-sl blooming CUT"

6280.00 6301.00 "LS AA,ool-sl oom GRNST/rr agl strk,tr scat-intbd dns sl ool-thn chky plty PKST/tr gran tex,sl anhy/tr POR fl-rr xln ANHY,decr dol/rr DOL cmt,v rr CHT AA,g-fr ool-sl oom/tr intxl POR,FLOR AA,fr-mg ltbrn/rr brn-blk pp dd o STN,g fast-mod fast stmg mlky CUT"

6300.00 6320.00 "LS tan-crm,occ ltbrn,rr brn,wh,vfxl-gran-sl micsuc,micxl-crpxl,pred ool-sl oom GRNST/sl incr scat-intbd chky dns-tr plty PKST/sl tr gran tex,sl anhy/sl incr POR fl-rr xln ANHY,POR-STN AA,g fast-mod fast stmg mlky CUT"

6320.00 6350.00 "LS AA,pred ool-sl oom GRNST,sl incr dns sl ool PKST/tr gran tex,incr wh chky-sl anhy plty-thn prtg frag-incl,dol/tr DOL cmt,tr xln ANHY/sl incr POR fl,fr-mg intxl-tr ool-rr sl oom POR,g-mg even dull-mod bri/tr scat spty bri yel FLOR,fr-mg ltbrn/rr brn-blk pp dd o STN,mg slow dif/mod bri res ring-tr slow stmg mlky CUT"

6350.00 6380.00 "LS tan-crm,ltbrn,occ wh,tr brn,micxl-crpxl,occ vfxl-gran/tr micsuc,pred dns chky v sl ool-thn plty PKST/rr gran tex-occ grdg to dns chky GRNST ip,tr scat ool-sl oom-sl dol GRNST/tr DOL cmt,sl anhy/incr POR fl-tr xln ANHY,fr-mg intxl/tr ool-sl oom POR,g scat mod bri-bri yel FLOR,fr ltbrn/rr brn-v rr blk pp dd o STN,g dif/bri res ring-rr mod fast stmg mlky CUT"

6380.00 6400.00 "LS AA,pred dns chky sl ool-thn plty PKST/rr gran tex,tr scat ool-v sl oom GRNST-occ grdg to gran dns chky PKST,sl anhy-chky/tr POR fl-xln ANHY,v sl dol/tr DOL rich cmt,POR-FLOR-STN-CUT AA"

DEPTH	LITHOLOGY

6400.00 6420.00 "LS tan-crm-ltbrn,occ wh,tr brn,micxl-vfxl-crpxl,occ gran-sl micsuc,pred dns chky sl ool PKST/sl decr plty prtgs & incr gran tex-grdg to dns GRNST,tr scat ool-sl oom GRNST,sl anhy/tr xln ANHY-POR fl,sl dol/tr DOL rich cmt,fr-mg intxl/tr ool-sl oom POR,FLOR-STN AA,mg dif/dull-fnt res ring-rr slow stmg mlky CUT"

6420.00 6430.00 "LS AA,pred PKST AA/incr wh thn chky plty prtgs,tr GRNST AA,POR-FLOR-STN AA,p dif/fnt res ring CUT"

6430.00 6450.00 "LS tan-ltbrn,crm-wh,occ brn,crpxl,micxl-vfxl,sl gran,dns sl chky-v sl ool PKST/rr gran tex,scat thn chky plty prtgs,tr dns-rr sl ool GRNST,sl anhy/tr POR fl-rr xln ANHY,dol/tr DOL cmt,tt-tr intxl POR/rr ool POR,tr scat dull-mod bri yel FLOR,STN-CUT AA"

6450.00 6470.00 "LS AA,crpxl,micxl-vfxl,sl gran,dns chky-v sl ool PKST/incr gran tex & scat thn chky plty prtgs,tr dns-rr sl ool GRNST,sl anhy/tr POR fl-rr xln ANHY,dol/tr DOL cmt,tt-tr intxl POR/rr ool POR,FLOR AA,fr-g ltbrn-brn/rr blk pp dd o STN,fr dif/fnt res ring-rr slow stmg mlky CUT"

6470.00 6490.00 "LS AA,pred PKST AA,tr scat sl ool-v sl oom chky GRNST occ grdg to gran dns chky PKST,sl anhy/tr POR fl-rr xln ANHY,sl dol/rr DOL cmt,POR AA,no-v rr scat dull-mod bri yel FLOR,fr-mg ltbrn/tr brn-rr blk pp dd o STN,p dif/v fnt res ring CUT"

6490.00 6510.00 "LS,crm,tn-ltbn,crypt-mic xl,dns-tt mtx,pred dns sl ool PCKST,tr anhy xls,sl chlky,rr calc rac flgs;pred tt-intrxln fab POR,spty dul-mbri yelgld FLOR,wk slo strmg CUT,pr ltbn o STN"

6510.00 6530.00 "LS AA,pred interxln to compact xln fab POR,wk-tr slo strmg v sl dif CUT,sl tr-tr ltbn-occ bn o STN,rr dd blk o STN res,scat tr dul-mbri yelgld FLOR"

6530.00 6550.00 "LS,occ ltbn-tn-crm-ofwht,crypt-mic xln,dns-tt mtx,occ mdns fri mtx,pred dns sl ool occ chlky PCKST,sl anhy-rr ANHY xls;POR AA,FLOR AA,CUT AA"

6550.00 6570.00 "LS,ltbn-tn-crm-offwht,v sl mott,mic-crypt xln,mdns-tt mtx,v sl dolo,pred dns sl OOl PCKST,v scat oom GRNST,sl chlky,sl anhy-tr ANHY xls;pred compact xln to tt-intrxln to tr intrxln fab POR,sl tr-tr ltbn o STN,v spty dd blk OSTN,dul-mbri yelgl FLOR"

6570.00 6590.00 "LS,crm-tn-occ bn-ofwht,pred crypt to mic xln,mdns-dns-tt mtx,sl dolo,pred sl ool dns to occ chlky PCKST,sl ANHY;pred intrxln to compact xln fab POR,dul-spty mbri yelgld FLOR,v slo wk-tr strmg sl dif CUT"

6590.00 6610.00 "LS AA,pred compact xln to pr-intrxln,scat tt-intrxln fab POR,even dul yelgld FLOR,spty mbei-bri yelgld FLOR,tr-ltbn o STN, sl tr bn o STN w/spty blk o STN res"

6610.00 6630.00 "LS,ltbn-tn-crm,occ bn-ofwht,dns-tt mtx,pred sl ool dns tt PCKST,sl chlky, sl any-rr ANHY xls,POR AA,FLOR AA, o STNAA"

DEPTH	LITHOLOGY

6630.00 6650.00 "LS tan,crm-wh,occ ltbrn,rr brn,crpxl-micxl,occ gran-vfxl,v sl micsuc ip,pred sl ool dns chky-thn plty PKST/occ gran tex-occ grdg to dns GRNST,tr scat ool GRNST frag,sl anhy/POR fl-rr xln ANHY,tt-tr intxl POR,fr-tr scat mod bri-bri yel FLOR,fr ltbrn/tr brn STN,fr slow dif/v fnt-dull res ring CUT"

6650.00 6670.00 "LS AA,pred dns sl ool-chky PKST/occ gran tex & abnt wh thn chky-sl anhy plty prtgs,dol/occ DOL rich cmt,rr sl ool GRNST occ grdg to dns gran PKST,sl anhy/tr POR fl-rr xln ANHY,rr scat dull-mod bri FLOR,STNAA,p slow dif/v dull res ring CUT"

6670.00 6690.00 "LS tan-crm-wh,occ ltbrn,rr brn,micxl-crpxl,vfxl-gran/tr micsuc,chky thn plty-dns sl ool PKST/tr gran tex,incr scat-occ intbd ool-sl oom GRNST frag occ grdg to dns GRNST,sl anhy/tr POR fl-rr xln ANHY,fr-mg intxl POR,incr scat mod bri- bri yel FLOR,fr-g ltbrn/tr brn-rr blk pp dd o STN,g mod fast/tr fast stmg mlky CUT"

6690.00 6700.00 "LS AA,sl decr POR AA,tr scat FLOR AA,STN AA,p dif/v fnt res ring CUT"

6700.00 6710.00 "LS AA,pred thn plty chky-sl ool dns PKST/tr gran tex,decr GRNST AA-occ grdg to gran PKST,sl anhy,fr intxl/tr ool-pp vug POR,tr scat mod bri-dull yel FLOR,fr ltbrn-tr brn/v rr blk pp dd o STN,fr dif-tr slow stmg mlky CUT "

6710.00 6730.00 "LS tan,crm-wh,tr ltbrn-rr brn,crpxl-micxl,occ gran-vfxl,rr micsuc,pred chky thn plty-sl ool dns PKST/tr gran tex-occ grdg to dns GRNST,tr scat ool GRNST frag,sl anhy/POR fl-rr xln ANHY,tt-tr intxl POR,rr scat dull-mod bri yel FLOR,fr ltbrn-rr brn STN,p dif/v fnt res ring CUT"

6730.00 6750.00 "LS crm-wh,tan,tr ltbrn,rr brn,crpxl-micxl,tr gran-vfxl,pred chky thn plty-dns PKST/tr gran tex-occ grdg to dns GRNST,tr scat v sl ool GRNST frag,sl anhy/incr POR fl-tr xln ANHY,tt-tr intxl POR,rr scat dull-mod bri yel FLOR,no-v p dif CUT AA"

6750.00 6770.00 "LS AA,pred PKST AA/tr gran tex-occ grdg to dns chky GRNST ip,tr dns-sl ool GRNST frag,sl anhy/tr POR fl-xln ANHY,tt-tr intxl-rr sl ool POR,tr-rr scat dull yel FLOR,no vis-tr ltbrn STN,v p slow dif/v fnt res ring CUT "

6770.00 6790.00 "LS crm-tan-wh,occ ltbrn,occ ltbrn,crpxl-micxl,vfxl,occ sl gran,chky dns/tr sl gran tex-thn plty PKST,tr dns v sl ool GRNST grdg to dns gran PKST,sl anhy/tr POR fl-xln ANHY,rr sl dol frag,tt-tr intxl POR,tr scat dull-mod bri yel FLOR,STN AA,fr dif/fnt res ring-rr slow stmg mlky CUT"

6790.00 6810.00 "LS,ltbn-tn-crm, sl mott,mic-vf xln, mdns-dns mtx, scat grn mtx,rr microsuc mtx,v sl dolo,pred sl ool dns PCKST,v rr sl. ool GRNST,pred interxln fab POR,scat dul-spty yelgld FLOR,tr slo strmg sl dif CUT,tr ltbn o STN"

6810.00 6830.00 "LS AA,sl incr in grny mtx,sl inr in ool sl oom/ooc mdns GRNST,pred interxln to scat oom fab POR,tr-m ltbn-bn o STN,dul-scat mbri/bri yelgld FLOR,tr-slo strmg dif CUT"

DEPTH	LITHOLOGY

6830.00 6860.00 "LS,ltbn-bn-tn-crm,sl mott-mott,mic-pred vf xln, sl ool dns PCKST grdg to ool oom/ooc GRNST,rr ltbn CHT frgs,sl chlky, v sl dolo;pred mf-f interxln to f oom/ooc fab POR,mbri-bri yelgld FLOR,mf-f slo strmg dif CUT,mf-t ltbn-bn o STN tr spty blk dd o STNres"

6860.00 6890.00 "LS,ltbn-tn-bn,mott,mic-vf xln,mdns mtx,pred ool rich oom/occ GRNST,v rr ltgy-tn sl ool dns PKST,rr SH prtgs,v rr trnsl CHT frgs,tr foss frgs,v-sl dolo-chlky;pred mf-g oom/ooc fab POR,tr intrxln,mf-f fst to g slo strmg dif CUT,g-mbri-bri yelgld FLOR"

6890.00 6920.00 "LS,ltbn-tn -crm-bn,mott,mic-pred vf xln,grn-mdns mtx,v-sl dolo,pred ool rich oom/occ mdns GRNST,decr in dns sl ool occ tt PCKST,sl incr in calc fld casts-reduced;pred oom/ooc to intrxl fab POR,mf-f slow strmg dif/milky ring CUT,mf-g ltbn-mbn o STN,f FLOR"

6920.00 6950.00 "LS,ltbn-tn-occ bn,mott,pre vf xln,grn-microsuc mtx,mdns mtx ip,pred ool oom/occ GRNST,v rr PCKST,rr anhy xls,fri;pred oom/ooc fab POR to intrxln fab POR,dul-mbri yelgld FLOR,spty bri yelgld FLOR,mf-f slo strmg milky ring dif CUT"

6950.00 6980.00 "LS AA,mf-f occ g ltbn-bn o STN,tr spty blk dd o STN res,pred ool interxln to mg oom/ooc fab POR,smple fri,mg-dul-mbri yelgld FLOR,mf-fst-f slo strmg CUT"

6980.00 7010.00 "LS,ltbn-tn-crm-occ bn,mott,mic-pred vf xln,mdns-grn-microsuc mtx,pred ool poss oom/ooc GRNST w/sme sl ool dns PCKST,sl anhy-tr ANHY xls,poss sme cacl/chlky fld casts;pred mf ool-interxln to oom/ooc fab POR,even dul-mbri yelgld FLOR,spty bri yelgld FLOR"

7010.00 7030.00 "pr smpl qlty;LS, ltbn-tn-crm,occ bn,mic-vf xl,mdns-grn mtx,v sl dolo,pred ool rich GRNST,poss oom/ooc fab POR,ool-f-intrxln fab POR,mf-f mbn-ltbn o STN,even dul-mbri yelgld FLOR,fst-mf-f slo strmg CUT"

7030.00 7050.00 "pr smpl qlty, LS AA,poss oom/ooc fab POR to ool-mf f intrxln fab POR,mf-f ltbn-mbn o STN, even dul-mbri yelgld FLOR,scat bri yelgld FLOR,fast to f slo strmf dif/milky ring CUT,tr blk dd o STN res"

7050.00 7080.00 "LS tan,occ ltbrn,wh-crm,tr brn,gran-micsuc-vfxl,tr micxl-crpxl,pred ool GRNST,tr scat dns sl ool-thn plty PKST,chky-sl anhy/tr POR fl-xln ANHY,v sl dol frag,g ool-tr intxl POR,g-fr scat dull-mod bri yel FLOR,mg-fr ltbrn/tr brn-rr blk pp dd o STN,g fast-mod fast stmg mlky CUT"

7080.00 7090.00 "LS AA,pred ool-sl oom GRNST/tr PCKST AA,g ool-sl oom/tr intxl POR,FLOR-STN-CUT AA"

7090.00 7120.00 "LS tan,occ crm-wh,ltbrn,tr brn,gran-micsuc-vfxl,tr micxl-crpxl,ool-sl oom GRNST,tr scat dns-thn chky plty PKST,sl chky-anhy/rr POR fl-xl ANHY,g ool/tr intxl POR,g even mod bri-bri yel FLOR,mg-g ltbrn/brn STN,g mod fast dif/fr mod bri res ring-sl tr slow stmg mlky CUT"

7120.00 7130.00 "LS AA,pred ool-sl oom GRNST/tr PCKST AA,decr scat thn chky plty prtgs,sl anhy-chky/rr POR fl-xln ANHY,rr sl dol frag,v rr trnsl rhmb xl CALC,POR-FLOR AA,mg-fr lt brn/tr brn-rr blk pp dd o STN,g mod fast-fast stmg mlky CUT"

DEPTH	LITHOLOGY

7130.00 7140.00 "LS AA,pred GRNST AA/tr thn plty-rr dns sl ool PKST,sl chky-anhy/tr xl ANHY-POR fl,FLOR-STN-CUT AA"

7140.00 7160.00 "LS tan-crm,occ wh,tr ltbrn,gran-vfxl-micsuc,tr micxl-crpxl,ool-sl oom GRNST,incr scat thn chky plty-rr dns sl ool PKST,POR AA,g even mod bri-bri yel FLOR,fr-mg ltbrn/tr scat blk pp dd o STN,g fast-mod fast stmg mlky CUT"

7160.00 7180.00 "LS tan-ltbrn,occ crm-wh,rr brn,gran-vfxl-micsuc,tr micxl-crpxl,pred GRNST AA,sl incr thn chky plty-tr dns sl ool PKST,sl anhy/tr POR fl-xln ANHY,tr crm-tan CHT incl,v rr sl dol frag,POR-FLOR-STN-CUT AA"

7180.00 7200.00 "LS tan-ltbrn,occ crm-wh,tr brn,gran-vfxl-micsuc,tr micxl-crpxl,pred ool-sl oom GRNST,tr thn chky plty-dns sl ool PKST,sl anhy/tr POR fl-xln ANHY,tr crm-tan CHT incl,rr sl dol frag,POR-FLOR AA,mg-g ltbrn/tr brn-rr blk pp dd o STN,g mod fast-slow stmg CUT"

7200.00 7220.00 "LS tan,occ crm,tr ltbrn,wh,rr brn,gran-vfxl-micsuc,tr micxl-crpxl,pred GRNST AA,tr thn chky plty-dns sl ool PKST,sl anhy/tr POR fl-xln ANHY,tr crm-tan CHT,g ool/tr intxl POR,g even bri-mod bri yel FLOR,g ltbrn-brn/tr blk pp dd o STN,g fast stmg mlky CUT"

7220.00 7250.00 "LS tan-ltbrn,tr crm-wh,brn,gran-vfxl-micsuc,tr micxl-crpxl,ool-sl oom GRNST,tr dns sl ool-thn chky plty PKST,sl anhy/tr xln ANHY-rr POR fl,incr tan-crm CHT,v sl dol ip,POR-FLOR AA,g ltbrn-brn/sl incr blk pp dd o STN,g fast stmg-sl blooming mlky CUT"

7250.00 7280.00 "LS AA,gran-vfxl-micsuc,tr micxl-crpxl,ool-sl oom GRNST/tr PKST AA,sl anhy/tr xln ANHY-rr POR fl,tr tan-crm CHT,v sl dol ip,g ool/tr intxl POR,FLOR AA,g ltbrn-brn/rr-tr blk pp dd o STN,g fast-mod fast stmg/tr sl blooming mlky CUT"

7280.00 7310.00 "LS tan-crm-wh,tr ltbrn,rr brn,vfxl-micxl-gran,occ crpxl,ool-sl oom GRNST/sl incr dns sl ool-incr thn chky-sl anhy plty PKST,tr xln ANHY-POR fl,rr tan-crm CHT,vrr dol frag,fr-tr ool-intxl POR,fr dull-mod bri yel FLOR,tr-fr ltbr/rr brn-blk pp dd o STN,p-fr dif/fnt-dull res ring CUT"

7310.00 7330.00 "LS tan-crm-wh,tr ltbrn,rr brn,vfxl-gran-micsuc,tr micxl-crpxl,GRNST AA,abnt thn chky-sl anhy plty-tr dns sl ool PKST,tr xln ANHY & POR fl,rr tan-crm CHT,v rr dol frag,fr-mg ool/tr intxl POR,fr-mg mod bri/tr bri yel FLOR,fr-tr ltbrn/rr brn-vrr pp blk dd o STN,CUT AA"

7330.00 7340.00 "LS AA,pred ool-tr dns chky GRNST occ grdg to gran PKST ip,abnt thn chky plty-sl anhy & tr dns sl ool PKST,anhy/tr xln ANHY & POR fl,POR AA,sl incr FLOR AA,STN AA,g mod fast stmg mlky CUT"

7340.00 7350.00 "LS tan-ltbrn,crm-wh,tr brn,AA,pred ool GRNST/scat PKST AA,tr xln ANHY-POR fl,tr dol frag,rr crm-ltbrn CHT,g ool-intxl POR,mg-fr mod bri-dull/tr bri yel FLOR,fr-mg ltbr-tr brn STN,mg dif/mod bri res ring CUT"

7350.00 7370.00 "LS tan-crm-wh,tr ltbrn,rr brn,vfxl-micxl-gran,tr crpxl,GRNST AA/PKST AA,tr xln ANHY & POR fl,tr tan-crm CHT,rr dol frag,fr-mg ool/tr intxl POR,FLOR AA,fr-tr ltbrn/rr brn-vrr blk pp dd o STN,mg dif/mod bri res ring-tr mod fast stmg mlky CUT"

DEPTH	LITHOLOGY

7370.00 7400.00 "LS tan-crm-wh,tr ltbrn,rr brn,vfxl-micxl-gran,occ crpxl,pred ool GRNST,scat dns/sl gran tex-occ thn plty PKST,chky-sl anhy/tr xln ANHY-POR fl,tr crm-bf CHT incl-frag,v sl dol ip,mg-fr ool-intxl POR,g even mod bri-bri yel FLOR,fr ltbrn-rr brn/v rr blk pp dd o STN,g-fr mod fast-tr slow stmg mlky CUT"

7400.00 7410.00 "LS AA,pred ool GRNST/tr scat PKST AA,sl anhy/tr xln ANHY-POR fl,rr CHT AA,v rr dol frag,POR-FLOR-STN AA,g-mg mod fast-tr fast stmg mlky CUT"

7410.00 7430.00 "LS tan-ltbrn,tr brn,crm-wh,micxl-gran,occ crpxl,tr vfxl,pred sl ool-dns chky GRNST occ grdg to chky PKST/occ gran tex,tr thn chky plty-dns sl ool PKST,sl anhy/tr xln ANHY-rr POR fl,tr CHT AA,rr trnsl rhmb xl CALC,bcmg sl dol ip,fr ool-intxl POR,g even dull-mod bri/tr bri yel FLOR,fr-mg ltbrn-tr brn/v rr blk pp dd o STN,g mod fast-slow stmg mlky CUT"

7430.00 7470.00 7436.81 sl ool PKST/tr gran tex,tr thn plty chky-sl anhy frag,tr xln ANHY-POR fl,sl dol frag,rr crm-tan CHT,rr trnsl rhmb xl CALC,POR-FLOR AA,fr ltbrn/tr brn STN,mod fast-slow stmg mlky CUT"

7470.00 7500.00 "LS tan-ltbrn,occ brn,tr crm-wh,vfxl-gran,micxl-crpxl,tr micsuc,sl ool-occ dns GRNST,tr dns v sl ool PKST/tr gran tex,sl chky-anhy/tr xln ANHY-rr POR fl,bcmg dol/sl tr DOL rich cmt,rr brn-lt brn CHT,rr trnsl rhmb xl CALC,fr-tr ool/tr frac-intxl POR,g even mod bri-dull/tr bri yel FLOR,g ltbrn-occ brn STN,g fast stmg mlky CUT"

7500.00 7530.00 "LS AA,pred dns-sl ool/sl tr oom GRNST,tr dns-v sl ool-gran PKST,sl chky-anhy/tr xln ANHY-POR fl,dol/tr dol strk,tr crm-tan CHT incl,fr-mg sl ool-intxl/tr frac POR,g-fr dull-mod bri/tr scat bri yel FLOR,g ltbrn-occ brn STN,tr slow-rr mod fast stmg CUT"

7530.00 7550.00 "LS AA,sl incr dns v sl ool PKST,decr POR-FLOR-STN-CUT"

7550.00 7580.00 "LS crm-tan-ltbrn,crpxl-vfxl,gran-micsuc ip,pred v sl ooc-oom GRNST,scat dns v sl ool occ chk PKST,scat ANHY xl-v rr trnsl CHT frag,occ DOL cmt,tt-g intxl-sl ool POR,mfr-fr dull-bri yel FLOR,mfr ltbrn-tr blk STN,n-mg fast stmg mlky CUT"

7580.00 7600.00 "LS AA,pred sl ooc-oom GRNST w/v rr decr amnts sl ool dns occ chk PKST,fr-g intxl-tr ool POR,mfr-fr dull-bri yel FLOR,mfr ltbrn STN-tr blk dd o STN,fr mod fast-tr fast stmg mlky CUT"

7600.00 7620.00 "LS crm-tan-ltbrn,occ wh,crpxl-vfxl,occ gran,micsuc-suc ip,intbd sl ooc-oom GRNST & dns occ clky-plty sl ool PKST,anhy-tr ANHY xl-v rr CHT frag,occ DOL rich cmt,tt-mg intxl-tr ool POR,mfr dull-bri yel FLOR,tr-mfr ltbrn STN,tr fast-mfr slow-mod fast CUT"

7620.00 7650.00 "LS crm-tan-ltbrn,occ wh,crpxl-vfxl,occ gran,micsuc-suc ip,pred sl ooc-oom GRNST,w/tr dns occ clky-plty sl ool PKST,anhy-tr ANHY xl-v rr CHT frag,occ DOL rich cmt,fr-mg intxl-tr ool POR,fr-mg dull-bri yel FLOR,tr-fr ltbrn-rr blk STN,fr mod fast-fast CUT"

7650.00 7680.00 "LS AA,pred sl ooc-oom GRNST,w/v rr scat dns sl ool occ anhy PKST,POR-FLOR-STN-CUT AA"

DEPTH	LITHOLOGY

7680.00 7720.00 "LS tan-ltbrn,occ crm-wh,micxl-vfxl,occ gran,micsuc-suc ip,pred sl ooc-oom GRNST,w/v rr dns occ clky-plty sl ool PKST,anhy-tr ANHY xl-v rr CHT frag,occ DOL rich cmt,fr-mg intxl-tr ool POR,fr-mg dull-bri yel FLOR,mfr ltbrn-v rr blk STN,fr mod fast-fast CUT"

7720.00 7750.00 "LS AA,pred sl ooc-oom GRNST,w/rr-tr scat dns sl ool occ anhy chk ip PKST,POR-FLOR-STN-CUT AA"

7750.00 7770.00 "LS pred crm-tan,occ ltbrn,sl ooc-oom GRNST,w/incr sl ool dns occ chk sl chty PKST,v rr trnsl-ltbrn CHT frag,mg-tt intxl-v sl ool POR,mfr-mg dull-bri yel FLOR,mfr ltbrn STN,rr-tr blk dd o STN,fr slow-mfr mod fast stmg CUT"

7770.00 7790.00 "LS AA,w/sl incr dns sl ool PKST w/depth,rr trnsl-bf CHT frag,v sl decr intxl-ool POR,mg bri-dull yel FLOR,tr-fr ltbrn STN,tr-mg mod fast-fast stmg CUT"

7790.00 7820.00 "LS tan-ltbrn,occ crm-wh,micxl-vfxl,occ gran,micsuc-suc ip,pred sl ooc-oom GRNST,w/v rr dns occ clky-plty sl ool PKST,anhy-rr ANHY xl-v rr CHT frag,occ DOL cmt,fr-mg intxl-tr ool POR,fr-mg dull-bri yel FLOR,fr ltbrn-v rr blk STN,fr mod fast-tr fast CUT"

7600.00 7620.00 "LS crm-tan-ltbrn,occ wh,crpxl-vfxl,occ gran,micsuc-suc ip,intbd sl ooc-oom GRNST & dns occ clky-plty sl ool PKST,anhy-tr ANHY xl-v rr CHT frag,occ DOL rich cmt,tt-mg intxl-tr ool POR,mfr dull-bri yel FLOR,tr-mfr ltbrn STN,tr fast-mfr slow-mod fast CUT"

7620.00 7650.00 "LS crm-tan-ltbrn,occ wh,crpxl-vfxl,occ gran,micsuc-suc ip,pred sl ooc-oom GRNST,w/tr dns occ clky-plty sl ool PKST,anhy-tr ANHY xl-v rr CHT frag,occ DOL rich cmt,fr-mg intxl-tr ool POR,fr-mg dull-bri yel FLOR,tr-fr ltbrn-rr blk STN,fr mod fast-fast CUT"

7650.00 7680.00 "LS AA,pred sl ooc-oom GRNST,w/v rr scat dns sl ool occ anhy PKST,POR-FLOR-STN-CUT AA"

7680.00 7720.00 "LS tan-ltbrn,occ crm-wh,micxl-vfxl,occ gran,micsuc-suc ip,pred sl ooc-oom GRNST,w/v rr dns occ clky-plty sl ool PKST,anhy-tr ANHY xl-v rr CHT frag,occ DOL rich cmt,fr-mg intxl-tr ool POR,fr-mg dull-bri yel FLOR,mfr ltbrn-v rr blk STN,fr mod fast-fast CUT"

7720.00 7750.00 "LS AA,pred sl ooc-oom GRNST,w/rr-tr scat dns sl ool occ anhy chk ip PKST,POR-FLOR-STN-CUT AA"

7750.00 7770.00 "LS pred crm-tan,occ ltbrn,sl ooc-oom GRNST,w/incr sl ool dns occ chk sl chty PKST,v rr trnsl-ltbrn CHT frag,mg-tt intxl-v sl ool POR,mfr-mg dull-bri yel FLOR,mfr ltbrn STN,rr-tr blk dd o STN,fr slow-mfr mod fast stmg CUT"

7770.00 7790.00 "LS AA,w/sl incr dns sl ool PKST w/depth,rr trnsl-bf CHT frag,v sl decr intxl-ool POR,mg bri-dull yel FLOR,tr-fr ltbrn STN,tr-mg mod fast-fast stmg CUT"

7790.00 7820.00 "LS tan-ltbrn,occ crm-wh,micxl-vfxl,occ gran,micsuc-suc ip,pred sl ooc-oom GRNST,w/v rr dns occ clky-plty sl ool PKST,anhy-rr ANHY xl-v rr CHT frag,occ DOL cmt,fr-mg intxl-tr ool POR,fr-mg dull-bri yel FLOR,fr ltbrn-v rr blk STN,fr mod fast-tr fast CUT"

DEPTH	LITHOLOGY

7820.00 7850.00 "LS AA,pred GRNST AA,w/tr dns PKST AA,rr ANHY xl-cmt,v rr scat trnsl CHT frag,mfr-fr dull-bri yel FLOR,tr-mfr ltbrn STN,rr blk dd o STN,mfr slow-tr mod fast-fast stmg CUT"

7850.00 7880.00 "LS tan-ltbrn-crm,wh ip,micxl-vfxl,occ gran,micsuc ip,pred sl ooc-oom GRNST,w/tr dns occ cl ky-plty sl ool v sl chty PKST,anhy-tr ANHY xl,occ DOL cmt,mfr-mg intxl-tr ool POR,fr-mg dull-bri yel FLOR,mfr ltbrn-v rr blk STN,fr slow-mfr mod fast-tr fast CUT"

7880.00 7930.00 "LS tan-crm,wh-ltbrn ip,micxl-vfxl,occ gran,micsuc ip,pred sl ooc-oom GRNST,w/tr dns occ clky-plty sl ool PKST,anhy-tr ANHY xl,v rr CHT frag,occ DOL cmt,mfr-mg intxl-tr ool POR,fr-mg dull-bri yel FLOR,mfr ltbrn-rr blk STN,mg slow-mfr mod fast-fast CUT"

7930.00 7950.00 "LS pred GRNST AA,decr PKST AA,fr-mg intxl-tr ool POR,FLOR-STN-CUT AA"

7950.00 7970.00 "LS pred sl ooc-oom GRNST,w/rr-tr dns PKST AA,scat ANHY xl-v rr trnsl CHT frag,mg intxl-rr ool POR,fr-mg bri-dull yel FLOR,rr-tr ltbrn STN,v rr spty blk dd o STN,mg slow-fr fast-mod fast stmg CUT"

7970.00 8010.00 "LS tan-ltbrn,occ crm-wh,micxl-vfxl,gran,suc ip,pred sl ooc-oom GRNST,w/tr intbd dns sl ool chk-plty sl chty anhy PKST,rr scat ANHY xl-v rr CHT frag,sl dol,mfr-mg intxl-rr ool POR,fr bri-dull yel FLOR,mfr-fr ltbrn-rr blk dd o STN,mfr mod fast-fr slow CUT"

8010.00 8040.00 "LS AA,pred sl ooc-oom GRNST,w/scat dns PKST AA,fr-mg intxl-tr ool POR,mg bri-tr dull yel FLOR,mfr ltbrn STN,rr blk dd o STN,mfr-fr mod fast-fast-occ slow stmg CUT"

8040.00 8070.00 "LS tan-ltbrn,rr crm-wh,micxl-vfxl,gran,suc ip,pred v sl ooc-oom GRNST,w/rr dns sl ool chk-plty sl chty anhy PKST frag,rr ANHY xl-v rr CHT frag,sl dol,fr-mg intxl-v rr ool POR,fr bri-dull yel FLOR,mfr ltbrn-tr blk STN,fr slow-mod fast-mfr fast stmg CUT"

8070.00 8100.00 "LS AA,pred GRNST AA,w/scat intbd sl ool dns occ chk-plty PKST AA,sl decr intxl POR,fr-mg dull-bri yel FLOR,STN-CUT AA"

8100.00 8130.00 "LS tan-ltbrn,rr crm-wh,micxl-vfxl,gran-suc ip,pred sl ooc-oom GRNST,rr dns sl ool v rr chk-plty sl anhy PKST,v rr ANHY xl-trnsl CHT frag,sl DOL cmt,mg intxl-tr ool POR,mg dull-tr bri yel FLOR,fr ltbrn-rr blk STN,mfr-mg mod fast-fast occ slow stmg CUT"

8130.00 8170.00 "LS pred GRNST AA,w/sl incr dns PKST,sl decr FLOR-POR,STN-CUT AA"

8170.00 8200.00 "LS tan-ltbrn,rr crm-wh,micxl-vfxl,gran-suc ip,pred sl ooc-oom GRNST,rr dns sl ool v rr chk-plty sl anhy PKST,v rr ANHY xl-trnsl CHT frag,sl DOL cmt,mg intxl-tr ool POR,mg dull-tr bri yel FLOR,fr ltbrn-rr blk STN,mfr-mg mod fast-fast occ slow stmg CUT"

8200.00 8230.00 "LS pred sl ooc-oom GRNST AA,w/rr scat PKST frag AA,fr-mg intxl-tr ool POR,mg dull-fr bri yel FLOR,tr ltbrn STN-rr blk dd o STN,mfr-mg slow-mod fast stmg-tr fast stmg mlky CUT"

DEPTH	LITHOLOGY

8230.00 8260.00 "LS tan-ltbrn,occ crm-wh,tr brn,gran-vfxl-sl micsuc,tr crpxl,ool-sl oom GRNST,tr scat dns sl ool PKST/tr gran tex,tr-rr thn plty frag,sl anhy/tr xln ANHY-rr POR fl,tr crm-ltbrn CHT,rr dol frag,g-mg intxl-oolPOR,g even mod bri/scat bri yel FLOR,fr-g ltbrn/tr scat brn STN,v rr blk pp dd o STN,g mod fast stmg mlky CUT"

8260.00 8270.00 "LS AA,pred GRNST AA/tr PKST AA,POR-FLOR-STN-CUT AA"

8270.00 8290.00 "LS AA,pred ool-sl oom GRNST/tr scat-occ intbd dns sl ool-chky thn plty PKST,sl anhy/tr xln ANHY-rr POR fl,tr intbd-scat CHT AA,rr dol-sl dol frag,POR-FLOR-STN AA,g-mg fast stmg mlky-sl blooming CUT"

8290.00 8320.00 "LS tan-ltbrn,tr crm-wh,brn,AA,pred ooc-sl oom GRNST,tr dns sl ool-chk plty-sl anhy PKST,tr ANHY xl & CHT AA,tr dol frag/sl DOL cmt,g ool-intxl/rr oom POR,g even mod bri-dull/tr bri yel FLOR,STN AA,g-mg mod fast-slow stmg mlky CUT"

8320.00 8360.00 "LS tan-crm,ltbrn,tr brn,wh,vfxl-gran-micsuc,occ micxl-tr crpxl,pred sl ool-occ sl oom GRNST,tr scat dns sl ool GRNST/tr gran tex,tr thn chky plty prtgs,sl anhy/tr xln ANHY,tr crm-tan CHT incl-frag,POR AA,g even mod bri-dull/scat bri yel FLOR,STN-CUT AA"

8360.00 8390.00 "LS tan,occ ltbrn,crm,tr wh,vfxl-gran-micsuc,occ crpxl,pred sl ool-oom GRNST/tr PKST AA,sl anhy/tr xln ANHY-rr POR fl,tr CHT AA,g-mg ool-intxl /tr sl oom POR,FLOR AA,mg-fr ltbrn/tr scat brn-v rr blk pp dd o STN,g fast stmg mlky CUT"

8390.00 8420.00 "LS AA,pred sl ool-oom GRNST/tr PKST AA,tr-rr thn chky plty prtgs,sl anhy/tr xln ANHY frag/sl tr-tr POR fl,g even dull-mod bri/tr scat bri yel FLOR,fr-mg ltbrn/tr brn-v rr blk pp dd o STN,g fast-mod fast/tr slow stmg mlky CUT"

8420.00 8450.00 "LS tan-ltbrn,occ crm-wh,tr brn,wh,vfxl-gran-micsuc,tr micxl-crpxl,pred sl ool-oom GRNST,tr scat-intbd dns PKST/tr gran tex,rr thmn plty chky frag,sl anhy/tr xln ANHY-sl POR fl,tr CHT AA,sl dol frag,g-fr ool-intxl POR,FLOR-STN AA,g fast-mod fast stmg CUT"

8450.00 8480.00 "LS AA,pred sl ool-oom GRNST,tr scat-occ intbd dns v sl ool PKST,rr thn plty chky frag,sl anhy/tr xln ANHY,tr POR fl,rr crm-tan CHT frag,g-fr ool-intxl POR,FLOR-STN AA,g fast dif/tr mod fast stmg mlky CUT"

8480.00 8500.00 "LS AA,pred GRNST AA,tr dns v sl ool-sl incr scat thn chky plty PKST,sl anhy/tr xln ANHY-POR fl,bcmg incr dol/sl tr DOL rich cmt ip,rr crm-tan CHT,g ool-intxl POR,g even dull-mod bri/tr scat bri yel FLOR,fr-mg ltbrn/tr brn-v rr pp dd o STN,g fast dif/tr slow stmg mlky CUT"

8500.00 8530.00 "LS tan-ltbrn,occ crm-wh,tr brn,wh,vfxl-gran-micsuc,tr micxl-crpxl,pred sl ool-oom GRNST,tr scat dns PKST/tr gran tex,rr thn plty chky frag,sl anhy/tr xln ANHY-sl POR fl,tr CHT AA,sl dol/tr DOL cmt ip,POR AA,FLOR-STN AA,g fast-mod fast stmg CUT"

8530.00 8569.00 "LS tan-ltbrn,occ crm-wh,tr brn,wh,vfxl-gran-micsuc,tr micxl-crpxl,pred sl ool-oom GRNST,tr PKST AA,rr thn plty chky frag,sl anhy/tr xln ANHY-sl POR fl,sl incr crm-tan CHT,dol/tr DOL cmt,g-fr ool-intxl POR,g even mod bri-dull yel/scat bri yel FLOR,fr-mg ltbrn/tr scat brn-v rr blk pp dd o STN,g fast dif/tr fast stmg mlky CUT"

FORMATION TOPS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #16-13 SE 1-A HORIZONTAL LATERAL LEG #1

FORMATION NAME		SAMPLES MEASURED DEPTH	SAMPLES TRUE VERTICAL DEPTH	DATUM KB:4706'
LOWER ISMAY		5447'	5444'	-738'
GOTHIC SHALE		5519'	5500'	-794'
DESERT CREEK		5531'	5507'	-801'
UPPER DC 1-A ZONE		5543'	5513'	-807'
LOWER DC 1-A ZONE		5592'	5527'	-821'

GEOLOGICAL SUMMARY

AND

ZONES OF INTEREST

The Mobil Exploration and Production U.S., Inc., Ratherford Unit #16-13 Southeast Horizontal Lateral Leg #1 was a re-entry of the Mobil Ratherford Unit #16-21 located in Section 16, T41S, R24E, and was sidetracked in a southeasterly direction from 5410' measured depth, 5408' true vertical depth, on July 26, 1998. The lateral reached a measured depth of 8569', true vertical depth of 5562.3' at total depth, with a horizontal displacement of 3001' and true vertical plane of 135.2 degrees on August 1, 1998 in the upper Desert Creek 1-A porosity bench. The curve and lateral were drilled with fresh water and brine water with polymer sweeps as the drilling fluid. The proposed target line was used as a reference point throughout the lateral and the gamma neutron log helped define contacts between formations and their members in the curve and lateral section.

The objectives of the Ratherford Unit #16-13 southeast lateral leg #1 were to penetrate and drill the lower payzone in the Desert Creek 1-A porosity bench, identify and define its lithology, facies, hydrocarbon and gas potential and to evaluate the effective porosity and permeability. It is noted here that the Desert Creek 1-A porosity bench has been divided into the upper and lower payzones by a defined hard streak that has developed in this part of the Ratherford Unit. In this southeasterly direction the lower payzone has a better-developed porosity and will be targeted for drilling for the entire lateral. These objectives were met in the lower payzone of the Desert Creek 1-A porosity bench, until reaching a measured depth of 6350', when the well path was leveled and then turned upward and the upper 1-A zone was acquired. Both the upper and lower 1-A porosity zones penetrated in the lateral had consistent lithology throughout their lengths penetrated in the lateral, which was in a carbonate facies, and had a fair hydrocarbon and gas shows, with effective porosity and permeability. The transition zone encountered had no effective porosity or permeability, with no to very poor hydrocarbon and gas shows.

The curve portion of the lateral was completed on July 27, 1998 at a measured depth of 5606', true vertical depth of 5527', with a horizontal displacement of 41'. This placed the bit in the lower payzone of the Desert Creek 1-A porosity bench. The curve was started in the lower portion of the Upper Ismay before encountering the typical stratigraphic section of the Lower Ismay, Gothic Shale, Desert Creek and the 1-A porosity bench carbonate cycle of the Upper Paradox Formation.

The curve section began in the lower 36'of the Upper Ismay carbonate cycle of the Upper Paradox Formation and was penetrated from a measured depth of 5410', true vertical depth 5408' to a measured depth of 5447', true vertical depth 5444.' The basal portion of the Upper Ismay Formation was an earthy to clean limestone. These carbonates were cream, brown, light gray brown, dark brown, brown, and cryptocrystalline to microcrystalline, moderately dense to dense, earthy to argillaceous, chalky, slightly silty and very slightly dolomitic in part. Associated with these chalky to earthy limestones were dark brown chert fragments that were occasionally platy. A tight intercrystalline to poor intercrystalline fabric porosity, no visible cut, stain, and oil stain was logged for these carbonates. The Hovenweep Shale, which defines the Upper and Lower Ismay contact, was represented by thinly black carbonaceous shale partings. This contact is suggested to be at the measured depths of 5439' and 5541', true vertical depths 5436.5' to 5438'.

The top of the Lower Ismay carbonate cycle of the Upper Paradox Formation was picked at a measured depth of 5447', true vertical depth 5444', based primarily on sample identification and a slight increase in the rate of penetration. The top of this formation contained thinly interbedded carbonaceous black shale partings that graded to shaley argillaceous limestone, which is possibly a gradational base to the overlying Hovenweep Shale. The Lower Ismay eventually graded to a light gray, gray, gray brown, dark gray brown, brown, cream and tan, cryptocrystalline to microcrystalline, chalky to slightly marly, occasionally intraclastic, slightly anhydritic, earthy, chalky and occasionally dolomitic in part, limestone. It was noted with depth that these carbonates had an increase in silty matrix and contained very thinly interbedded very fine grain calcareous sandstones. Associated with this interval were trace amounts of calcite fracture filling, rare anhydrite crystals light brown to dark brown chert fragments and scattered off-white chalky carbonaceous matter. This limestone facies had a tight to trace intercrystalline fabric porosity, no visible to very spotty dull to moderately bright yellow gold florescence, no visible to trace light brown oil stain and a spotty black dead oil stain resin and no visible to a good streaming diffused cut. This good cut was associated with the very fine-grained sandstones near the base of the Lower Ismay before the interval graded into the Gothic Shale.

The Gothic Shale was penetrated at a measured depth of 5519', true vertical depth 5500' and continued through to a measured depth of 5531', true vertical depth 5507' and was picked primarily by a decrease in penetration rate and cuttings. This shale member of the Upper Paradox Formation was seven feet thick in this southeasterly direction. This shale is dark brown to black to dark gray black shale, carbonaceous, occasionally grainy to silty, soft to slightly firm, sooty, slightly fissile, subblocky to subplaty, calcareous to slightly dolomitic and slightly micaceous, with micro pyrite inclusions. Very thinly interbedded limestones and clean to very argillaceous dolomites to dolomitic limestones were associated with this shale member and increased towards the top of the Desert Creek Member of the Upper Paradox Formation.

The top of the Desert Creek Member of the Upper Paradox Formation was picked at a measured depth of 5531', true vertical depth 5507' and was penetrated to a measured depth of 5543', true vertical depth 5513'. This transition zone was approximately seven feet thick. The top was picked based on an increase in penetration rate and carbonate rocks in the samples. The transition zone between the Gothic Shale and the top of the Desert Creek was thinly interbedded carbonaceous shale, as described above, and thinly interbedded argillaceous limestones and limey dolomites. Once the Desert Creek was penetrated the lithology was limestone, light gray, gray brown and brown, microcrystalline to very fine crystalline, a moderately dense matrix to tight matrix, earthy, slightly silty and very slightly argillaceous. This transition zone had a poor to trace intercrystalline fabric porosity development, no visible to weak slow diffused cut, no visible to rare black to dark brown oil stain and no visible to a spotty dull to moderately bright yellow florescence.

The top of the Desert Creek 1-A porosity bench was encountered at a measured depth of 5543', true vertical depth of 5514', at a horizontal displacement of approximately 41' and was picked by a significant increase in the penetration rate. A grainstone facies was penetrated at this depth and defined the upper payzone of the 1-A porosity bench. The upper payzone was approximately seven feet thick in this southeasterly direction. These grainstones were, light brown, cream and tan microcrystalline to very fine crystalline, with a granular to slightly microsucrosic matrix and were very slightly dolomitic. These grainstones had trace amounts of anhydrite crystals and rare light brown chert. This grainstone facies had a reduced to good oomoldic, oolicastic to moderately fair oolitic to good intercrystalline fabric porosity development. A fair brown, light brown, brown oil stain to traces of black bitchimum stain* filling casts, a fair bright to occasionally bright yellow-gold fluorescence and a fair slow streaming to trace fast diffused cut. The hard streak that defines the upper and lower payzones was penetrated at a measured depth of 5562', true vertical depth 5521, and its lithology was a slightly oolitic dense packstone facies. These packstones were cream, tan, and white to occasionally light brown, cryptocrystalline to microcrystalline, slightly chalky, dense to occasionally grainy, clean and very slightly anhydritic. This packstone facies had a moderately fair intercrystalline to trace oolitic fabric porosity, trace to moderately fair light brown oil stain, scattered

dull to moderately bright yellow gold florescence and a moderately fair slow streaming cut. Some thinly interbedded oolitic grainstones were associated with this hard streak. The top of the lower payzone was penetrated at a measured depth of 5592', true vertical depth 5528', and was consistent to what was drilled in the upper payzone as described above. However, porosity had more of a reduced development and more calcite to anhydrite filled casts. This lower payzone is targeted for the entire southeast lateral because it appears to be better developed and thicker. The upper payzone thins rapidly towards the edge of the field, but still appears to be developed at the 21-21 wellbore.

The curve portion of the lateral was completed at a measured depth of 5606', true vertical depth 5527', at a horizontal displacement of 41', bearing 131.5 degrees, with an inclination of 89.2 degrees, on July 27, 1998, in the lower 1-A porosity zone. At this point a trip was made to lay down the curve assembly and pickup the lateral assembly.

Drilling resumed July 27, 1998, after the trip was made for the lateral assembly, in the lower pay zone of the Desert Creek 1-A porosity bench of the Upper Paradox Formation. Sliding to control vertical depth, horizontal plane direction and to put the lateral assembly out far enough to begin rotating was required. Starting at a measured depth of 5606', true vertical depth 5527.5' to a measured depth of 6353', true vertical depth 5537.5', the lower pay zone in the 1-A porosity bench was penetrated and was a limestone grainstone facies. At 5528.2', 5531.7', and 5535.1' true vertical depths, the bit glanced off the bottom of the hard streak separating the upper and lower 1-A porosity zones, forcing the bit down across the lower pay zone. However, the bit never glanced off the bottom because sliding straight up was used to control the angle of the bit. For approximately 730', of the lateral, the facies of the lower 1-A bench was a light brown, brown, cream to tan, microcrystalline to very fine crystalline, moderately dense, grainy and microsucrosic, slightly chalky, slightly dolomitic, with occasional calcite or chalky filled casts. A slight algal development was associated with this facies, but was not prominent throughout this interval, and trace amounts of light brown chert, anhydrite crystals, calcite fracture fill and rare carbonaceous shale partings were logged. These grainstones had a moderately fair to good oomoldic, oolicastic, pinpoint vuggy and sucrosic to microsucrosic fabric porosity development, a moderately fair to good light brown to brown oil stain, a moderately bright to bright yellow-gold florescence, and a moderate to moderately fair fast to slow streaming diffused cut. Based on the 16-23 southeast lateral leg #2, it is assumed that this lower pay zone may be only one foot thick.

At the measured depth of 6353', as the well path was oriented approximately horizontal, the lithology became a very dense, slightly oolitic limestone packstone, with decreasing amounts of thinly interbedded, slightly oolicastic to oomoldic limestone grainstone. The bit was pulled slightly upward by the tight, dense packstone lithology, and reached a true vertical depth of 5536.7', at a measured depth of 6410', with a horizontal displacement of 836', before being oriented downward to try to reacquired the porosity zone. The lateral was continued slowly downward until reaching a measured depth of 6670', true vertical depth 5544.5', with a horizontal displacement of 1103'. The carbonates drilled from 6410' measured depth to 6670' measured depth were the typical dense to tight slightly oolitic occasionally chalky packstone facies. These packstones were predominately tight with scattered thin streaks of intercrystalline porosity development, with a weak to no visible light brown oil stain, no visible to weak streaming cut and a poor spotty dull to moderately bright yellow fluorescence. After reaching the measured depth of 6670', the well path was oriented upward, until reaching a measured depth of 6834', 5539' true vertical depth, with a horizontal displacement of 1268', when a zone of porosity was encountered.

Upon reaching the measured depth of 6834' the lithology of the lateral returned to a slightly oolicastic to oomoldic limestone grainstone, with traces of algal material. This grainstone had a fair to moderately good sample show, and an increase in the associated background gases was noted. The remainder of the southeast lateral from a measured depth of 6834', true vertical depth 5539' to the total depth of 8596', true vertical depth 5562.3', remained in the predominately slightly oolitic to slightly algal limestone grainstone facies with very thinly interbedded very slightly oolitic limestone

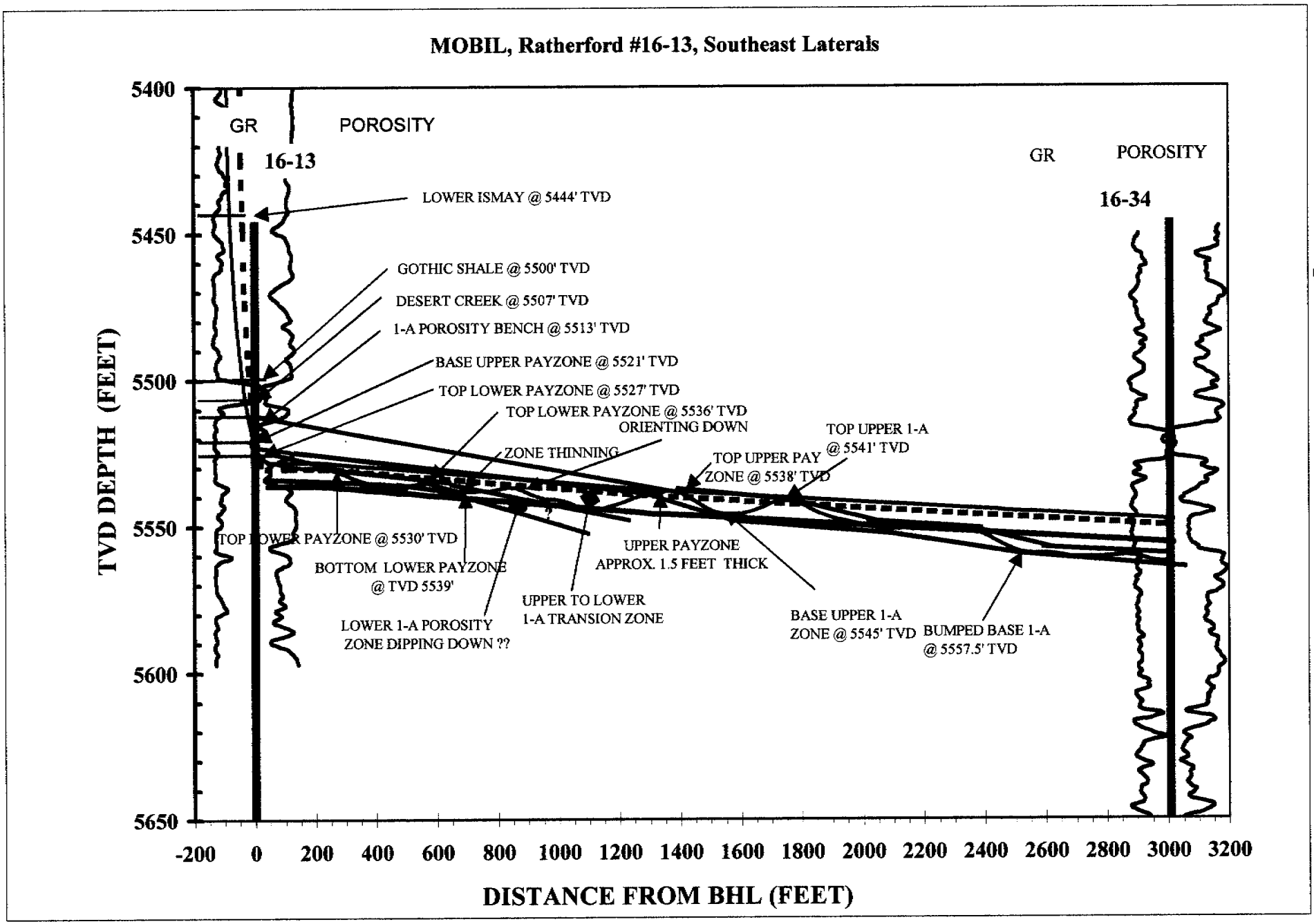
packstones. Throughout this interval the porosity zone ranged in thickness from one and a half feet (1.5') to approximately four feet (4'). The bit bumped the top and base of the porosity zone at several points, with a calculated dip of 89°. The grainstones through this interval were light brown, tan and cream, predominately very fine crystalline to occasionally microcrystalline, moderately dense to grainy with a slightly sucrosic matrix in part. These grainstones had a slight algal development, rare to trace amounts of calcite fracture fill, and some anhydrite to dolomite cement, with streaks to scattered fragments of off-white to cream, cryptocrystalline, dense, chalky and anhydritic limestone packstones. The amount of packstones increased as the well path bumped or very shallowly penetrated the top and base of this porosity streak. Porosity for the grainstone facies was fair to good intercrystalline, with traces of oolicastic to oomoldic porosity development with scattered, rare algal porosity development. A moderately fair to poor light brown to brown with traces of black dead oil stain, a moderately good dull to spotty moderately bright to bright yellow gold fluorescence and a good fast to occasionally slow streaming milky ring cut was observed. The thinly interbedded packstone facies was tan to cream, some white, cryptocrystalline to microcrystalline, dense to tight, slightly anhydritic, chalky to slightly chalky, and very slightly oolitic. This dense packstone had no visible porosity development.

In tracking the lateral in this southeasterly direction, there are three possible interpretations for the interval from 6350' measured depth, to 6837' measured depth. The first possibility was that as the lower 1-A porosity bench dipped downward, the bench thinned and pinched out at or near the measured depth of 6350', 5537' true vertical depth. And then the lateral was turned downward and then upward to encounter the upper 1-A porosity bench at the measured depth of 6837', 5539' true vertical depth, as the zone dipped downward. The second possibility is that the bit was near the top of the lower 1-A zone, which continued to dip downward, when it was turned toward the horizontal. The bit penetrated through the upper to lower 1-A transition zone, and then acquired the downward dipping upper 1-A porosity zone at the measured depth of 6837', 5539' true vertical depth. The third and most probable scenario was that the drill bit was at the base of the lower 1-A porosity zone when well path was leveled and the zone turned sharply upward. As the well path was then turned downward, the lower 1-A zone had thinned and had turned upward to a true vertical depth above 5537'. As the well path continued downward and then upward in search of the lower 1-A porosity bench, very scattered, very poor porosity streaks were seen in the 1-A to 1-B porosity zone. The lower porosity bench was finally reacquired at the measured depth of 6837', 5539' true vertical depth, only 2 vertical feet lower than where the porosity was lost.

From the beginning of the 16-13 southeast lateral leg#1 to its termination on July 23, 1998, at a measured depth of 7238', 5554.0' true vertical depth, and a horizontal displacement of 1700.7', the lithology remained consistent while in the porosities, for what is defined in the Desert Creek 1-A porosity bench. For what is expected in an injection well, i.e. flushed samples, sample shows remained moderately fair to good throughout the lateral and only decreased when the bit penetrated the bottom of the lower payzone in the 1-A porosity bench, and penetrated the presumed 1-A to 1-B transition zone. Porosity was predominately intercrystalline, oomoldic, oolicastic, interoolitic and occasionally had some *Ivanovia* algal development. This re-entry into the 16-13 well bore may help in the development and production in the Ratherford Unit and will enhance the overall performance of the zone after treatment and returning the well to the water flood plan.

*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 producable 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.

ROCKY MOUNTAIN GEO-ENGINEERING CORP. 2450 INDUSTRIAL BLVD. GRAND JUNCTION, CO 81505 (970) 243-3044



MOBIL

RATHERFORD UNIT #16-13
NW HORIZONTAL LATERAL LEG #2
UPPER 1-A POROSITY BENCH
DESERT CREEK MEMBER
PARADOX FORMATION
SECTION 16, T41S, R24E
SAN JUAN, UTAH

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

TABLE OF CONTENTS

WELL SUMMARY

OPERATOR:	MOBIL EXPLORATION & PRODUCTION U.S. INC.
NAME:	RATHERFORD UNIT #16-13 NW HORIZONTAL LATERAL LEG #2 IN 1-A UPPER POROSITY BENCH, DESERT CREEK
LOCATION:	SECTION 16, T41S, R24E
COUNTY/STATE:	SAN JUAN, UTAH
ELEVATION:	KB:4706' GL:4694'
SPUD DATE:	7/25/98
COMPLETION DATE:	8/08/98
DRILLING ENGINEER:	BENNY BRIGGS / SIMON BARRERA
WELLSITE GEOLOGY:	DAVE MEADE / MARVIN ROANHORSE
MUDLOGGING ENGINEERS:	DAVE MEADE / MARVIN ROANHORSE
CONTRACTOR: **TOOLPUSHER:**	BIG "A" RIG 25 J. DEES
HOLE SIZE:	4 ¾"
CASING RECORD:	SIDETRACK IN WINDOW AT 5391' MEASURED DEPTH
DRILLING MUD: **ENGINEER:** **MUD TYPE:**	M-I DANE BEASON/RON WESTENBERG FRESH WATER & BRINE WATER W/ POLYMER SWEEPS
DIRECTIONAL DRILLING CO:	SPERRY-SUN
ELECTICAL LOGGING:	NA
TOTAL DEPTH:	8081' MEASURED DEPTH; TRUE VERTICAL DEPTH-5494'
STATUS:	MOVING RIG TO R.U. #16-43 LOCATION

DRILLING CHRONOLOGY
RATHERFORD UNIT #16-13
1-A NW HORIZONTAL LATERAL LEG #2

DATE	DEPTH	DAILY	ACTIVITY
8/02/98	8569'/ 5382'	9'	LATCH ONTO WHIPSTOCK #1 & WORK FREE-TOH-P.U. WHIPSTOCK #2 & STARTER MILL-ORIENT-TIH-SET @ 5382'-MILL W/STARTER MILL 5382' TO 5384'-TOH-L.D. STARTER MILL-P.U. WINDOW MILL & WATER MELON MILLS-TIH-CIR OUT GAS THRU GAS BUSTER (30+' FLARE)-MILL W/WINDOW MILLS 5382' TO 5391'-PUMP SWEEP & CIR OUT-PUMP 160 BBLS BRINE-L.D. 12 JTS PIPE-TOH-L.D. MILLS-P.U. CURVE ASSEM.-ORIENT & TEST-TIH-R.U. GYRO DATA-TIH
8/03/98	5391'	212'	DIR DRLG & WIRELINE SURVEYS TO 5427'-PULL GYRO & RIG DOWN GYRO DATA-DIR DRLG & SURVEYS TO 5603' (T.D. CURVE)-PUMP 10 BBL SWEEP-PUMP 190 BBLS BRINE-L.D. 132 JTS AOH
8/04/98	5603'	975'	L.D. 132 JTS APH-TOH;L.D. CURVE ASSEM.-P.U. LATERAL ASSEMBLY- ORIENT & TEST-P.U. PH 6-TIH-CIRC GAS THRU GAS BUSTER-DIR DRLG & SURVEYS
8/05/98	6578'	810'	DIR DRLG & SURVEYS
8/06/98	7388'	242'	DIR DRLG & SURVEYS
8/07/98	7630'	356'	DIR DRLG & SURVEYS
8/08/98	7956'	125'	DIR DRLG & SURVEYS TO 8081'-PUMP SWEEP & CIR SPLS-L.D. 2 JTS D.P-TOH TO WINDOW-CIR GAS & DISPLACE HOLE W/BRINE-TOH-L.D. LATERAL ASSEM.-PICK UP RETRIEVABLE BRIDGE PLUG-TIH-SET BRIDGE PLUG @ 5232'-TOH
8/09/98	8081'	TD	L.D. DRG STRING-NIPPLE DOWN-RIG DOWN

DAILY ACTIVITY

Operator: MOBIL
Well Name: RATHERFORD UNIT #16-13 NW 1-A HORIZONTAL LATERAL LEG #2

DATE	DEPTH	DAILY	DATE	DEPTH	DAILY
8/02/98	8569'/ 5382'	9'			
8/03/98	5391'	212'			
8/04/98	5603'	975'			
8/05/98	6578'	810'			
8/06/98	7388'	242'			
8/07/98	7630'	356'			
8/08/98	7956'	125'			
8/09/98	8081'	TD			

BIT RECORD

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #16-13 NW 1-A HORIZONTAL LATERAL LEG #2

RUN	SIZE	MAKE	TYPE	IN/OUT	FTG	HRS	FT/HR
#1 (RR)	4 3/4"	STC	MF-37P	5391'/ 5603'	212'	20.5	10.3
#2 (RR)	4 3/4"	STC	MF-2GP	5603'/ 8081'	2478'	107	23.2

MUD REPORT

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #16-13 NW 1-A HORIZONTAL LATERAL LEG #2

DATE	DEPTH	WT	VIS	PLS	YLD	GEL	PH	WL	CK	CHL	CA	SD	OIL	WTR
8/02/98	5382'	NO	CHECK	-	-	-	-	-	-	-	-	-	-	-
8/03/98	5457'	9.1	27	1	1	0/0	10.0	NC	NC	58000	2600	TR	1%	99%
8/04/98	5676'	9.3	26	1	1	0/0	10.5	NC	NC	106000	1600	1%	0%	99%
8/05/98	7104'	9.0	26	1	1	0/0	10.5	NC	NC	64000	3200	1%	0%	99%
8/06/98	7519'	8.9	26	1	1	0/0	10.5	NC	NC	58000	3000	1%	0%	99%
8/07/98	7740'	8.8	27	1	1	0/0	10.5	NC	NC	47000	3800	1%	1%	98%
8/08/98	8065	8.6	27	1	1	0/0	10.5	NC	NC	30000	3600	1%	7%	92%

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/16-13 2A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
5200.00	0.32	218.74	5197.94	45.05 N	83.94 W	91.21	0.00
5382.00	0.29	207.49	5379.94	44.25 N	84.47 W	91.02	0.04
5391.00	3.60	315.00	5388.93	44.43 N	84.68 W	91.29	41.08
5401.00	7.30	327.71	5398.89	45.19 N	85.24 W	92.23	38.70
5411.00	12.00	331.41	5408.74	46.64 N	86.08 W	93.84	47.38
5421.00	16.80	333.17	5418.42	48.84 N	87.23 W	96.22	48.19
5431.00	21.50	334.21	5427.87	51.78 N	88.68 W	99.32	47.12
5441.00	26.10	334.90	5437.02	55.42 N	90.41 W	103.12	46.08
5451.00	30.30	335.40	5445.83	59.71 N	92.40 W	107.56	42.07
5461.00	34.40	338.50	5454.27	64.64 N	94.48 W	112.51	44.22
5471.00	38.30	335.40	5462.33	70.08 N	96.81 W	118.01	43.10
5481.00	42.70	331.40	5469.93	75.88 N	99.73 W	124.17	51.08
5491.00	47.00	330.80	5477.02	82.06 N	103.13 W	130.95	43.21
5501.00	51.50	326.10	5483.55	88.50 N	107.10 W	138.31	57.36
5511.00	54.90	322.20	5489.54	94.98 N	111.80 W	146.22	46.16
5521.00	58.20	317.70	5495.05	101.36 N	117.17 W	154.52	49.98
5531.00	59.00	321.40	5500.26	107.86 N	122.70 W	163.03	32.58
5541.00	62.40	321.90	5505.15	114.70 N	128.11 W	171.69	34.28
5551.00	66.90	321.00	5509.43	121.76 N	133.74 W	180.67	45.73
5561.00	71.40	322.00	5512.99	129.07 N	139.56 W	189.95	45.96
5571.00	76.50	322.20	5515.76	136.65 N	145.46 W	199.48	51.04
5603.00	90.30	321.30	5519.43	161.56 N	165.09 W	230.98	43.21
5645.00	90.10	315.80	5519.28	193.02 N	192.89 W	272.88	13.10
5677.00	90.60	314.50	5519.08	215.71 N	215.45 W	304.88	4.35
5709.00	91.40	314.20	5518.53	238.08 N	238.33 W	336.87	2.67
5741.00	90.60	313.80	5517.97	260.30 N	261.35 W	368.86	2.80
5773.00	90.70	313.10	5517.60	282.31 N	284.58 W	400.85	2.21
5804.00	90.40	313.50	5517.31	303.57 N	307.14 W	431.83	1.61
5836.00	89.70	314.20	5517.28	325.73 N	330.21 W	463.82	3.09
5868.00	89.80	314.40	5517.42	348.08 N	353.11 W	495.82	0.70
5900.00	90.10	313.80	5517.45	370.35 N	376.09 W	527.82	2.10
5931.00	90.40	313.50	5517.31	391.75 N	398.53 W	558.81	1.37
5963.00	90.90	313.30	5516.95	413.73 N	421.77 W	590.79	1.68
5994.00	91.60	312.80	5516.27	434.89 N	444.42 W	621.77	2.77
6026.00	92.40	312.10	5515.16	456.48 N	468.02 W	653.72	3.32
6058.00	89.60	310.80	5514.60	477.65 N	492.00 W	685.65	9.65
6090.00	90.20	312.80	5514.65	498.98 N	515.85 W	717.59	6.53
6122.00	90.40	312.80	5514.48	520.72 N	539.33 W	749.57	0.63

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/16-13 2A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
6153.00	89.50	314.70	5514.51	542.16 N	561.72 W	780.56	6.78
6185.00	88.90	314.20	5514.96	564.57 N	584.56 W	812.56	2.44
6217.00	91.10	314.00	5514.96	586.83 N	607.54 W	844.55	6.90
6249.00	90.60	313.80	5514.48	609.02 N	630.60 W	876.54	1.68
6280.00	90.70	314.00	5514.13	630.51 N	652.93 W	907.53	0.72
6312.00	90.90	313.10	5513.69	652.56 N	676.12 W	939.52	2.88
6344.00	90.10	312.10	5513.41	674.22 N	699.68 W	971.49	4.00
6375.00	89.40	312.10	5513.54	695.00 N	722.68 W	1002.45	2.26
6407.00	89.20	313.70	5513.93	716.78 N	746.12 W	1034.42	5.04
6439.00	88.30	313.30	5514.63	738.80 N	769.32 W	1066.41	3.08
6471.00	86.90	312.80	5515.97	760.63 N	792.69 W	1098.36	4.65
6502.00	89.20	313.30	5517.03	781.78 N	815.32 W	1129.32	7.59
6534.00	92.30	317.00	5516.61	804.45 N	837.88 W	1161.31	15.08
6565.00	91.70	317.70	5515.52	827.24 N	858.87 W	1192.26	2.97
6597.00	91.00	317.50	5514.77	850.86 N	880.45 W	1224.22	2.27
6628.00	90.40	317.00	5514.39	873.63 N	901.49 W	1255.19	2.52
6660.00	90.80	317.50	5514.06	897.12 N	923.21 W	1287.17	2.00
6692.00	91.10	317.90	5513.53	920.79 N	944.74 W	1319.13	1.56
6724.00	91.20	317.50	5512.88	944.45 N	966.27 W	1351.09	1.29
6755.00	89.60	317.50	5512.67	967.31 N	987.21 W	1382.05	5.16
6787.00	88.60	317.20	5513.17	990.84 N	1008.89 W	1414.02	3.26
6818.00	89.50	316.80	5513.68	1013.51 N	1030.03 W	1445.00	3.18
6850.00	89.40	316.80	5513.99	1036.83 N	1051.94 W	1476.98	0.31
6881.00	89.80	317.00	5514.21	1059.47 N	1073.12 W	1507.96	1.44
6913.00	92.20	317.50	5513.65	1082.96 N	1094.83 W	1539.93	7.66
6945.00	90.90	315.20	5512.78	1106.10 N	1116.91 W	1571.91	8.25
6977.00	90.40	315.10	5512.42	1128.79 N	1139.48 W	1603.91	1.59
7008.00	90.60	315.10	5512.15	1150.75 N	1161.36 W	1634.91	0.65
7039.00	90.90	315.20	5511.74	1172.72 N	1183.22 W	1665.90	1.02
7070.00	92.20	314.50	5510.91	1194.58 N	1205.19 W	1696.89	4.76
7102.00	93.40	315.80	5509.34	1217.23 N	1227.73 W	1728.85	5.53
7134.00	93.00	315.60	5507.56	1240.10 N	1250.04 W	1760.80	1.40
7166.00	93.20	316.10	5505.83	1263.03 N	1272.30 W	1792.75	1.68
7198.00	91.10	315.60	5504.63	1285.97 N	1294.57 W	1824.72	6.75
7229.00	88.60	314.70	5504.71	1307.95 N	1316.43 W	1855.72	8.57
7260.00	87.60	313.80	5505.73	1329.57 N	1338.63 W	1886.70	4.34
7292.00	88.50	314.00	5506.82	1351.74 N	1361.67 W	1918.67	2.88
7323.00	89.60	314.00	5507.34	1373.27 N	1383.97 W	1949.66	3.55

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/16-13 2A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
7355.00	90.60	314.00	5507.28	1395.50 N	1406.98 W	1981.66	3.13
7387.00	88.20	313.70	5507.62	1417.67 N	1430.06 W	2013.65	7.56
7418.00	89.20	313.10	5508.32	1438.96 N	1452.58 W	2044.63	3.76
7450.00	90.90	313.10	5508.29	1460.82 N	1475.94 W	2076.61	5.31
7482.00	91.10	312.60	5507.73	1482.58 N	1499.40 W	2108.58	1.68
7514.00	91.70	312.80	5506.95	1504.28 N	1522.91 W	2140.54	1.98
7545.00	91.70	312.20	5506.03	1525.21 N	1545.75 W	2171.50	1.93
7577.00	92.30	312.10	5504.92	1546.67 N	1569.46 W	2203.44	1.90
7609.00	91.50	312.60	5503.85	1568.22 N	1593.10 W	2235.39	2.95
7641.00	91.30	312.40	5503.07	1589.83 N	1616.69 W	2267.35	0.88
7672.00	92.50	312.40	5502.05	1610.72 N	1639.56 W	2298.30	3.87
7704.00	90.50	312.20	5501.21	1632.25 N	1663.22 W	2330.25	6.28
7735.00	91.10	313.30	5500.78	1653.29 N	1685.98 W	2361.22	4.04
7767.00	90.30	312.20	5500.38	1675.01 N	1709.48 W	2393.20	4.25
7799.00	89.90	311.50	5500.33	1696.36 N	1733.32 W	2425.15	2.52
7831.00	91.80	311.90	5499.85	1717.64 N	1757.21 W	2457.09	6.07
7863.00	91.80	311.40	5498.85	1738.90 N	1781.10 W	2489.02	1.56
7894.00	91.80	311.00	5497.88	1759.31 N	1804.42 W	2519.94	1.29
7925.00	90.40	310.80	5497.28	1779.60 N	1827.84 W	2550.85	4.56
7957.00	92.10	311.50	5496.58	1800.65 N	1851.93 W	2582.77	5.75
7988.00	92.20	311.90	5495.42	1821.26 N	1875.06 W	2613.70	1.33
8020.00	91.50	311.90	5494.39	1842.62 N	1898.87 W	2645.63	2.19
8047.00	90.10	311.70	5494.01	1860.61 N	1918.99 W	2672.59	5.24
* 8081.00	90.10	311.70	5493.95	1883.23 N	1944.38 W	2706.53	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 315.00 (TRUE).
CALCULATION METHOD: MINIMUM CURVATURE.

* Projected to Bit @ TD *

SAMPLE DESCRIPTIONS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #16-13 NW 1-A HORIZONTAL LATERAL LEG #2

DEPTH	LITHOLOGY

5391.00 5400.00 "LS tan-crm-wh,occ ltbrn,crpxl-sl micxl,chky-sl anhy/tr xln ANHY-POR fl,tr tan-ltbrn CHT,abnt thn-plty-sl mrly prtgs,tt-rr intxl POR,NFSOC"

5400.00 5410.00 "LS AA,rr-tr CALC fl frac,rr intxl-frag POR,v rr spty dull yel FLOR,v rr dkbrn STN-blk dd o STN,n-v p slow dif CUT,w/intbd brn-mbrn crpxl-micxl rthy lmy DOL arg-mrly ip,tr trnsl-bf-brn CHT frag"

5410.00 5420.00 "LS AA,bcmg brn-mbrn,rthy,n-v rr intxl POR,n-v rr p FLOR-STN-CUT,w/incr DOL AA grdg to lmy dol MRLST,n-v rr intxl POR,n-v p FLOR-STN-CUT,scat dkbrn-dkgybrn CHT frag"

5420.00 5430.00 "LS & DOL AA,v mrly ip,bcmg anhy,POR-FLOR-STN-CUT AA,scat CRIN fos,tr CHT frag AA,w/thn scat blk-dkgy v sl carb mica SH lams"

5430.00 5450.00 "LS crm-tan,crpxl-micxl,dol ip,sl mrly,occ arg-chk,dns,sl anhy w/thn intbd m-dkbrn rthy micxl-crpxl DOL v mrly,LS & DOL v rr intxl-frac POR,rr dull yel FLOR,n-v p STN,n-v p slow dif CUT,thn blk-dkgy sl carb calc-dol SH lams,rr CHT frag"

5450.00 5461.00 "LS crm-tan-ltgybrn,crpxl-micxl,rthy-cln,occ arg,sl dol,anhy ip,grdg to MRLST ip,tt-v rr intxl POR,NFSOC,thn mbrn-brn micxl-crpxl DOL v rthy,tt,NFSOC,scat dkbrn CHT frag,rr thn blk SH lams-ptgs"

5461.00 5470.00 "LS crm-tan,occ ltgy-gy,crpxl-micxl,occ v slty-sl gran,grdg to v lmy SLTST ip,sl dol-anhy,tt-v rr intxl POR,NFSOC,rr thn DOL AA,NFSOC,scat CHT frag,rr thn blk SH ptgs"

5470.00 5480.00 "LS wh-crm-ltgy,occ tan,crpxl-vfxl,rr gran,arg-rthy ip,v rr alg mat-frac,sl dol,anhy ip,tt-tr intxl-vug POR,mfr dull-tr bri yel FLOR,tr ltbrn STN,rr blk dd o STN,tr slow-rr mod fast stmg CUT,v rr dkbrn CHT frag,scat DOL lams AA"

5480.00 5500.00 "LS pred crm-wh-ltgy,occ tan,crpxl-vfxl,AA,bcmg slty-v slty,grdg to lmy SLTST ip,scat alg mat,occ anhy,sl chty,rr mic fos,tt-mfr intxl-vug POR,mfr ltbrn-rr blk STN,vp slow dif CUT,w/rr ltbrn micxl DOL lams,scat dkbrn-trnsl CHT frag"

5500.00 5520.00 "DOL tan,micxl-vfxl-crpxl,rthy,sl slty tex-gran ip,sl anhy-v sl chky/rr xln ANHY incl,tt-tr inxl-v rr vug POR,g even bri yel FLOR,fr-mg ltbrn STN,g fast stmg mlky CUT,occ intbd in LS AA/tr CHT AA"

5520.00 5530.00 "LS AA,crpxl-micxl,dns chky-sl anhy/tr POR fl-xln ANHY,tr xl CALC,tr sl slty frag,rr alg mat,sl chty,rr mic fos,tt-fr intxl-rr vug POR,g-fr mod bri/scat bri yel FLOR,fr ltbrn-vrr blk STN,tr slow dif CUT,w/DOL & CHT frag AA"

DEPTH	LITHOLOGY

5530.00 5550.00 "SH blk-dkbrnblk-dkgyblk,sbblky-sbplty,sft-frm-occ hd,carb,calc-sl lmy-arg ip,rr pp mica,sooty,LS tan-lbrngy,crm-wh,micxl-crpxl,rthy-chky,sl anhy,tt-tr inxl POR,fr dull-rr bri yel FLOR,fr ltbrn-tr brn STN,CUT AA"

5550.00 5560.00 "LS lt-mgybrn,dkbrn-brngy,occ crm-wh,tr tan,crpxl-micxl,tr vfxl,dns,rthy,sl chky,occ sl slty-dol,sl anhy/tr POR fl-rr xln ANHY,rr CHT AA,tt-tr intxl POR,tr dull yel-orng mnrl FLOR,fr scat ltbrn-brn STN,tr dif CUT "

5560.00 5570.00 "LS AA,crpxl-micxl,vfxl-gran ip,pred dns PKST/occ gran tex,tr-rr sl ool-dns GRNST,chky-sl anhy/tr POR fl-rr xln ANHY,rr fos,tt-tr intxl-rr ool POR,tr dull yel FLOR,STN-CUT AA"

5570.00 5590.00 "LS tan-ltbrn,occ brn,tr crm-wh-ltgy,vfxl-micxl-gran,tr crpxl,pred ool-sl oom GRNST,tr dns PKST incl,sl chky-anhy/tr plty prtgs,rr xln ANHY-POR fl,g ool-oom/tr intxl POR,fr-mg bri/spty bri yel FLOR,g ltbrn-brn/tr blk STN,g slow-fast stmg mlky CUT"

5590.00 5603.00 55"LS AA,vfxl-gran,micxl,tr crpxl,pred ool-sl oom GRNST,tr dns sl ool PKST incl,sl chky-anhy/tr plty prtgs,rr xln ANHY-POR fl,POR AA,mg-g bri/spty bri yel FLOR,g ltbrn-brn/tr blk STN,g slow-fast stmg mlky CUT"

5603.00 5620.00 "LS crm-tan-ltbrn,rr ltgy-wh,crpxl-vfxl,gran-micsuc ip,pred ooc-oom GRNST,occ ANHY-DOL cmt,tr dns chk sl ool PKST,v rr ANHY fl POR,tr-fr bri-dull yel FLOR,tt-g ool-tr intxl POR,fr ltbrn-brn STN,tr blk dd o STN,mfr-mg slow-mod fast stmg mlky CUT"

5620.00 5640.00 "LS tan-ltbrn,occ crm-rr wh,micxl-vfxl,rr crpxl,gran-micsuc,pred ooc-oom GRNS,w/rr dns sl ool PKST,tr ANHY xl-POR fl,occ DOL cmt,v rr CHT frag,mg ool-tr intxl POR,mg bri yel FLOR,fr ltbrn-tr blk STN,fr-mg slow-fast stmg CUT"

5640.00 5660.00 "LS AA,pred g ooc-oom GRNST,w/rr scat dns sl ool PKST lams-incl,rr ANHY fl POR,occ tt-pred mg ool-tr intxl POR,fr bri-rr dull yel FLOR,fr ltbrn STN-tr blk dd o STN,fr mod fast-fast stmg mlky CUT"

5660.00 5680.00 "LS tan-ltbrn,rr crm-wh,micxl-vfxl,gran-micsuc,sl suc,pred ooc-oom GRNSt,w/rr dns crpxl occ chk sl ool PKST,rr ANHY xl-POR fl,occ DOL cmt,v sl chty,mg ool-fr intxl POR,mg bri-tr dull yel FLOR,mf ltbrn STN-tr blk dd o STN,fr-mg mod fast-fast stmg mlky CUT"

5680.00 5700.00 "LS AA,pred ooc-oom GRNST,w/sl incr sl ool PKST,rr scat trnsl-bf CHT frag,sl incr ANHY fl POR,tr tt-pred mg ool-intxl POR,fr bri-tr dull yel FLOR,fr ltbrn-brn-tr blk STN,fr-mg mod fast-fast stmg mlky CUT"

5700.00 5720.00 "LS tan-ltbrn,occ wh-crm,micxl-vfxl,gran-micsuc,rr suc,pred ooc-oom GRNST,rr scat crpxl sl rthy-chk occ ool PKST incl,sl DOL cmt,rr ANHY xl-POR fl,v rr bf CHT frag,fr-mg ool-fr intxl POR,fr-mg bri-tr dull yel FLOR,mg ltbrn-rr blk STN,mg fast stmg CUT"

DEPTH	LITHOLOGY

5720.00 5740.00 "LS AA,pred GRNST AA,n-v rr scat PKST frag,mg ool-fr intxl POR,fr-mg bri-tr dull yel FLOR,fr-mg ltbrn STN,tr blk dd o STN,fr slow-mg mod fast-fast stmg mlky CUT"

5740.00 5770.00 "LS tan-brn,rr wh-crm,micxl-vfxl,gran-micsuc,rr suc,pred g ooc-oom GRNST,v rr scat crpxl sl rthy-chk occ ool PKST incl,sl DOL cmt,rr ANHY xl-POR fl,v rr bf CHT frag,mg ool-fr intxl POR,mg bri-tr dull yel FLOR,mg brn STN-tr blk dd o STN,mg fast stmg CUT"

5770.00 5800.00 "LS AA,v rr bf-ltgybrn CHT frag,POR-FLOR-STN-CUT AA"

5800.00 5820.00 "LS tan-brn,rr wh-crm,micxl-vfxl,gran-micsuc,rr suc,pred g ooc-oom GRNST,v rr scat crpxl sl rthy-chk occ ool PKST incl,sl DOL cmt,rr ANHY xl-POR fl,v rr bf CHT frag,mg ool-fr intxl POR,mg bri-tr dull yel FLOR,mg brn STN-tr blk dd o STN,mg fast stmg CUT"

5820.00 5840.00 "LS AA,pred ooc-oom GRNST,POR-FLOR-STN-CUT AA,w/v rr blk carb SH lams-prob STYOL"

5840.00 5860.00 "LS AA,pred ooc-oom GRNST AA,w/v rr scat sl ool PKST frag,pred fr-mg POR-FLOR-STN-CUT AA"

5860.00 5890.00 "LS tan-brn,v rr wh-crm,micxl-vfxl,gran-rr suc,pred g ooc-oom GRNST,rr scat crpxl sl rthy-chk plty ip occ ool PKST incl,sl DOL cmt,rr ANHY xl-POR fl,v rr bf CHT frag,mg ool-fr intxl POR,mg bri-tr dull yel FLOR,mg brn STN-tr blk dd o STN,mg fast stmg CUT"

5890.00 5920.00 "LS tan-ltbrn,rr crm-brn,micxl-vfxl,gran-micsuc ip,sl suc,pred g ooc-oom GRNST,v rr crpxl sl rthy-chk occ ool PKST frag,sl DOL cmt,rr ANHY xl-POR fl,v rr bf CHT frag,mg ool-tr intxl POR,mg bri-dull yel FLOR,fr brn STN-tr blk dd o STN,mg mod fast stmg CUT"

5920.00 5950.00 "LS AA,pred tan ooc-oom GRNST AA,w/v rr scat dns occ chk-v sl plty ool ip PKST,g intool-fr intxl POR,g bri-tr dull yel FLOR,mfr-fr ltbrn-tr brn STN,tr blk dd o STN,mg mod fast-fast stmg mlky CUT"

5950.00 5980.00 "LS AA,pred ooc-oom GRNST AA,w/v rr scat sl ool PKST frag,pred mg ool-intxl POR,mg bri-rr dull FLOR,STN-CUT AA"

5980.00 6000.00 "LS tan-brn,v rr crm-wh,micxl-vfxl,gran-micsuc ip,occ suc,pred ooc-oom GRNST,v rr scat crpxl sl rthy-chk occ ool PKST frag,tr DOL cmt,rr ANHY xl-POR fl,mg ool-fr intxl POR,mg bri-tr dull yel FLOR,fr brn STN-tr blk dd o STN,mg mod fast-fast stmg CUT"

6000.00 6040.00 "LS crm-tan-ltbrn,rr wh-brn,micxl-vfxl,gran-micsuc,occ suc,pred g ooc-oom GRNS,v rr-sl tr dns sl ool occ chk PKST frag,tr DOL-ANHY cmt-rr ANHY xl,v rr trnsl-bf CHT frag,mg ool-fr intxl POR,mg bri yel FLOR,fr brn-tr blk STN,fr-mg mod fast-fast stmg CUT"

DEPTH	LITHOLOGY

6040.00 6060.00 "LS AA,pred ooc-oom GRNST,w/incr dns crpxl occ chk-plty sl ool occ chty PKST,v rr scat trnsl-bf CHT frag,incr ANHY cmt-POR fl,fr-mg ool-intxl POR,fr bri-dull yel FLOR,mfr-fr ltbrn STN-tr-mfr blk dd o STN,mfr-mg mod fast-fast-tr slow stmg mlky CUT"

6060.00 6080.00 "LS AA,incr PKST-sl incr CHT frag,mfr-fr ool-fr intxl POR,mfr-mg bri-dull yel FLOR,mfr ltbrn-tr brn STN,rr-tr blk dd o STN,mg slow-mfr mod fast stmg CUT"

6080.00 6120.00 "LS crm-tan-ltgy,occ wh-ltbrn,crpxl-vfxl,occ gran-micsuc ip,pred intbd dns sl ool anhy sl chk PKST & g ooc-oom GRNST,rr DOL cmt,incr ANHY xl-POR fl,rr scat CHT frag,tt-fr ool-mg intxl POR,fr bri-dull yel FLOR,tr ltbrn-rr blk STN,n-mg slow-mfr mod fast CUT"

6120.00 6130.00 "LS tan-crm,occ ltbrn,tr brn,gran-vfxl-sl micsuc,occ micxl-tr crpxl,ool-sl oom GRNST/tr dns sl ool PKST incl-frag,chky-sl anhy/tr POR fl-xln ANHY-rr prtgs,dol/tr DOL cmt,rr crm-brn CHT,fr-g ool-sl oom/tr intxl POR,FLOR-STN-CUT AA"

6130.00 6140.00 "LS AA,ool-sl oom GRNST/PKST AA,fr-g ool-sl oom/tr intxl POR& sl incr POR fl,g-mg mod bri-bri yel FLOR,fr-mg ltbrn/scat brn-tr blk dd o STN,g mod fast-slow stmg mlky CUT"

6140.00 6150.00 "LS AA,pred ool-sl oom GRNST,sl incr dns sl ool PKST/tr gran tex,dol/tr DOL cmt,chky-sl anhy/POR fl-tr xln ANHY,tr CHT AA,POR AA,mg-fr mod bri/scat bri spty yel FLOR,STN-CUT AA"

6150.00 6180.00 "LS tan-ltbrn-crm,tr brn,rr wh,gran-vfxl-sl micsuc,tr micxl,rr crpxl,ool-sl oom GRNST,tr dns sl ool PKST/tr gran tex,sl-occ v chky-sl anhy/tr POR fl-xln ANHY,dol/tr DOL cmt,tr crm-brn CHT,mg-g ool-sl oom/tr intxl POR,g mod bri-spty bri yel FLOR,g-mg ltbrn/tr brn-rr blk pp dd o STN,g mod fast-tr slow stmg mlky CUT"

6180.00 6210.00 "LS tan-ltbrn,occ brn,tr crn-wh,vfxl-gran-sl micsuc,occ micxl,tr crpxl,pred ool-sl oom GRNST,tr scat-occ intbd dns PKST/tr gran tex,sl chky-anhy/sl tr POR fl-rr xln ANHY,dol/tr DOL cmt,tr ltbrn CHT,g-mg ool-sl oom/tr intxl POR,g mod bri-scat bri yel FLOR,g-mg ltbrn/tr brn-rr blk dd o STN,g fast stmg mlky CUT"

6210.00 6240.00 "LS AA,vfxl-gran-sl micsuc,occ micxl,tr crpxl,pred ool-sl oom GRNST/occ dns strk,tr scat-occ intbd dns PKST/tr gran tex,incr chky-anhy/occ POR fl-tr xln ANHY,sl dol/rr DOL cmt,tr CHT AA,tt-mg ool/tr intxl-rr oom POR,POR-FLOR AA,g fast stmg mlky CUT"

6240.00 6280.00 "LS tan-ltbrn-brn,rr crn-wh,vfxl-gran-sl micsuc,tr micxl-crpxl,pred ool-sl oom GRNST,tr scat-occ intbd dns sl ool PKST/tr gran tex,sl chky-anhy/tr POR fl-rr xln ANHY,dol/tr DOL cmt,rr tan-ltbrn CHT,g-mg ool-sl oom/tr intxl POR,g-mg even dull-mod bri/tr scat bri yel FLOR,g-mg ltbrn-brn/rr blk dd o STN,g fast stmg mlky CUT"

DEPTH	LITHOLOGY

6280.00 6310.00 "LS AA,pred ool-sl oom GRNST,tr scat-occ intbd dns sl ool PKST/tr gran tex,sl chky-anhy/tr POR fl-rr xln ANHY,dol/tr DOL cmt,tr ltbrn-tan CHT incl,g ool-sl oom/tr intxl POR,g mod bri-dull/scat bri yel FLOR,g ltbrn-brn/rr blk dd o STN,g fast stmg mlky CUT"

6310.00 6340.00 "LS AA,gran-vfxl-sl micsuc,occ micxl,tr crpxl,pred ool-sl oom GRNST/tr dns sl ool PKST/tr gran tex,sl chky-anhy/tr POR fl-xln ANHY,dol/tr DOL cmt,rr crm-brn CHT,POR-FLOR-STN-CUT AA"

6340.00 6370.00 "LS ltbrn-brn,occ tan,rr crm-wh incl,vfxl-gran-micsuc,occ micxl,tr crpxl,pred ool-sl oom GRNST,tr scat-occ intbd dns sl ool PKST/tr gran tex,chky-sl anhy/tr POR fl-xln ANHY,dol/tr DOL cmt,rr ltbrn-tan CHT,g-mg ool-sl oom/tr intxl POR,g-mg"

6370.00 6390.00 "LS tan-crm-ltbrn,occ brn,rr wh incl,vfxl-gran-sl micsuc,tr micxl-crpxl,pred ool-sl om GRNST/tr dns strk ip,tr scat-occ intbd dns sl ool PKST/tr gran tex,chky-sl anhy/tr POR fl-rr xln ANHY,rr CHT AA,POR-FLOR AA,mg ltbrn-scat brn/rr blk dd o STN,CUT AA"

6390.00 6410.00 "LS tan-ltbrn/occ crm incl,tr brn,rr wh,vfxl-gran-sl mic suc,tr micxl-crpxl,ool-sl oom GRNST,tr dns sl ool PKST/tr gran tex,bcmg chky-sl anhy/tr POR fl-xln ANHY,tr tan-crm CHT,dol/tr DOL cmt,g-mg intxl-ool/TR oom POR,g dull-mod bri/tr bri yel FLOR,fr- mg ltbrn/tr brn-rr blk STN,g fast-mod fast stmg mlky CUT"

6410.00 6430.00 "LS AA,pred ool-sl oom GRNST,tr PKST AA,chky-sl anhy AA,tr CHT AA,dol/tr DOL cmt-rr strk ip,POR-FLOR-STN-CUT AA"

6430.00 6460.00 "LS AA,vfxl-gran-micsuc,tr micxl-crpxl,pred ool-sl oom GRNST,tr intbd-scat dns sl ool PKST,chky-sl anhy/tr POR fl-rr xln ANHY,dol/tr DOL cmt,mg-fr ool-intxl/tr sl oom POR,g mod bri-bri yel FLOR,STN AA,g fast-mod fast stmg mlky CUT"

6460.00 6490.00 "LS tan-ltbrn/occ crm incl,tr brn,rr wh,vfxl-gran-sl micsuc,tr micxl-crpxl,pred ool-sl oom GRNST,tr PKST AA/tr gran tex,chky-sl anhy/tr POR fl-rr xln ANHY,tr CHT AA,v rr agl-mic fos incl,dol/tr DOL cmt,mg intxl-fr ool POR,FLOR-STN-CUT AA"

6490.00 6530.00 "LS AA,vfxl-gran-sl micsuc,occ micxl,tr crpxl,pred ool-sl oom GRNST,sl incr scat-occ intbd chky dns sl ool PKST/tr gran tex,sl anhy/tr POR fl-xln ANHY,dol/tr DOL cmt-rr dol strk,rr crm-tan CHT incl,mg-g ool-sl ool-intxl POR,g-mg even dull-mod bri/scat spty bri yel FLOR,mg-g ltbrn/tr brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"

6530.00 6550.00 "LS tan-ltbrn-occ brn/crm incl,rr wh,vfxl-gran-sl micsuc,tr micxl-crpxl,pred ool-sl oom GRNST,tr scat-intbd dns sl ool PKST/tr gran tex,sl chky-anhy/rr POR fl-xln ANHY,dol/tr DOL cmt,tr CHT AA,POR-FLOR-STN-CUT AA"

DEPTH	LITHOLOGY

6550.00 6580.00 "LS AA,pred ool-oom GRNST,tr PKST AA,sl chky-anhy/tr POR fl-rr xln ANHY,tr CHT AA & mic fos-agl mat,dol/tr DOL cmt,g-mg ool-sl oom/tr intxl POR,g mod bri-bri yel FLOR,mg-fr ltbrn/tr brn-blk dd o STN,g fast stmg-sl blooming mlky CUT"

6580.00 6600.00 6579.31 0 "LS tan,occ ltbrn,crm,tr brn,wh,vfxl-gran-sl micsuc,tr micxl-crpxl,pred ool-sl oom GRNST,sl incr scat-intbd dns sl ool PKST/tr gran tex-rr thn chky plty prtgs,sl anhy/tr POR fl-rr xln ANHY,incr CHT AA,mg-fr ool-intx/tr oom POR,g even mod bri- yel FLOR,fr-mg ltbrn/tr brn-blk pp dd o STN,g fast stmg-sl blooming mlky CUT"

6600.00 6630.00 "LS AA,pred ool-sl oom GRNST,tr scat-intbd dns sl ool-rr thn chky plty PKST,sl chky-anhy/tr xln ANHY-sl tr POR fl,tr tan-brn CHT incl,dol/tr DOL cmt,tr CHT AA,g-mg ool-sl oom-intxl POR,FLOR-STN AA,g fast stmg-sl blooming mlky CUT"

6630.00 6650.00 "LS AA,pred ool-sl oom GRNST,tr PKST AA,sl incr chky-sl anhy/tr POR fl-xln ANHY,rr CHT AA,dol/tr DOL rich cmt,POR-FLOR-STN-CUT AA"

6650.00 6680.00 "LS tan-ltbrn-occ brn/crm incl,rr wh,vfxl-gran-sl micsuc,tr micxl-crpxl,pred ool-sl oom GRNST,tr scat-intbd dns sl ool PKST/tr gran tex,sl chky-anhy/rr POR fl-xln ANHY-rr tnh plty prtgs,ooc dol/rr DOL cmt,tr CHT AA,POR-FLOR-STN-CUT AA"

6680.00 6700.00 "LS AA,vfxl-gran-sl micsuc,tr micxl-crpxl,pred ool-sl oom GRNST,tr scat-intbd PKST AA/tr gran tex,sl chky-anhy/rr POR fl-xln ANHY-plty prtgs,sl dol/tr DOL cmt,tr CHT AA,POR-FLOR-STN-CUT AA"

6700.00 6730.00 "LS tan-crm-ltbrn,tr brn,wh,vfxl-gran-sl micsuc,tr micxl-crpxl,pred ool-sl oom GRNST,sl incr PKST AA/tr gran tex,chky-sl anhy/tr POR fl-rr xln ANHY,tr CHT AA,dol/tr DOL cmt,mg ool-intxl/tr sl oom POR,FLOR-STN AA,g mod fast stmg mlky CUT"

6730.00 6750.00 "LS AA,vfxl-gran-sl micsuc,tr micxl-crpxl,pred ool-sl oom GRNST,tr PKST AA/tr gran tex,chky-sl anhy/tr POR fl-rr xln ANHY,tr CHT AA,v rr agl-mic fos incl,dol/tr DOL cmt,mg intxl-fr ool POR,FLOR-STN-CUT AA"

6790.00 6810.00 "LS tan-ltbrn,occ brn,v rr crm,micxl-vfxl,gran-micsuc,rr suc,pred ooc-oom GRNST,rr scat dns crpxl sl ool anhy PKST,v sl DOL cmt-rr ANHY xl-POR fl,tr-g ool-intxl POR,fr-mg bri-rr dull yel FLOR,mfr-fr ltbrn-rr blk STN,mfr-mg slow-mod fast stmg CUT"

6810.00 6850.00 "LS AA,pred ooc-oom GRNST,w/rr scat dns sl ool occ anhy rr chk PKST frag,v rr trnsl CHT frag,mfr-mg ool-intxl POR,fr-mg bri-tr dull yel FLOR,mfr-fr ltbrn-rr brn STN,rr-tr blk dd o STN,mfr-mg slow-fast stmg mlky CUT"

6850.00 6900.00 "LS tan-ltbrn,rr brn-v rr crm-wh,micxl-vfxl,gran-micsuc,sl suc,pred ooc-oom GRNST,tr dns crpxl sl ool chk ip anhy sl chty PKST,sl DOL cmt-tr ANHY xl-POR fl,fr ool-mg intxl POR,fr-mg bri-tr dull yel FLOR,mfr ltbrn-tr blk STN,mg slow-fr fast stmg CUT"

DEPTH	LITHOLOGY

6900.00 6920.00 "LS AA,pred ooc-oom GRNST,tr scat dns sl chty anhy PKST frag,mfr-mg ool-fr intxl POR-occ ANHY fl,mg bri-tr dull yel FLOR,fr ltbrn-tr brn STN,tr spty blk dd o STN,mg slow stmg-fr mod fast-fast stmg mlky CUT"

6920.00 6930.00 "LS AA,pred sl ooc-oom GRNST,scat dns sl ool occ anhy rr chk PKST,mfr-fr ool-mg intxl POR,fr-mg bri-fr dull yel FLOR,fr ltbrn-tr brn STN,tr-mfr blk dd o STN,fr slow stmg-mfr mod fast-fast stmg mlky CUT"

6930.00 6960.00 "LS tan-ltbrn,v rr crm-wh,micxl-vfxl,gran-micsuc,sl suc ip,pred ooc-oom GRNST,tr sl ool anhy dns crpxl occ chk PKST,occ DOL-ANHY cmt,rr ANHY xl-POR fl,fr ool-fr-mg intxl POR,mg bri-tr dull yel FLOR,mfr-fr ltbrn STN-sl tr blk dd o STN,fr mod fast-fast CUT"

6960.00 6990.00 "LS AA,sl incr ANHY fl POR-cmt,mfr-fr ool-fr-mg intxl POR,mg bri-tr dull yel FLOR,fr lt brn-tr brn STN-sl tr-tr blk dd o STN,mg slow-fr mod fast-fast stmg mlky CUT"

6990.00 7030.00 "LS pred ooc-oom GRNST AA,scat sl anhy occ ool dns-crpxl PKST w/v p-ANHY fl POR,GRNST-fr-mg ool-intxl POR,mg bri-rr dull yel FLOR,mfr ltbrn-rr brn STN,sl tr blk dd o STN,mg slow-fr mod fast-fast stmg mlky CUT"

7030.00 7060.00 "LS tan-ltbrn,rr brn-v rr wh,micxl-vfxl,gran-micsuc,suc ip,pred ooc-oom GRNST,tr sl ool anhy crpxl occ chk PKST,tr DOL-ANHY cmt,rr ANHY xl-POR fl,fr-mg ool-intxl POR,mg bri-rr dull yel FLOR,fr ltbrn STN-tr blk dd o STN,fr-mg slow-mod fast-fast stmg CUT"

7060.00 7100.00 "LS AA,sl incr dns PKST w/depth,pred g ooc-oom GRNST,mg intxl-ool POR,FLOR-CUT AA,fr ltbrn-v rr brn STN-tr-mfr blk dd o STN"

7100.00 7150.00 "LS tan-ltbrn,tr brn-rr wh,micxl-vfxl,gran-micsuc,v rr suc,pred ooc-oom GRNST,w/incr sl ool anhy crpxl chty PKST,sl DOL-tr ANHY cmt,scat ANHY xl-incr POR fl,mg-tr ool-intxl POR,mg bri-rr dull yel FLOR,mfr ltbrn-tr blk STN,fr-mg slow-mod fast stmg mlky CUT"

7150.00 7210.00 "LS AA,incr crm,bcmg ltgy,pred ooc-oom GRNST,incr crpxl dns sl ool anhy PKST w/depth,rr DOL cmt,incr ANHY cmt-POR fl,mg intxl-ool POR-bcmg tt w/depth,fr bri-tr dull yel FLOR,mfr-rr ltbrn-brn STN-rr-v rr blk dd o STN,mg slow-fast stmg CUT-decr to slow dif"

7210.00 7220.00 "LS tan-ltgy,rr brn-v rr wh,crpxl-micxl,occ vfxl-gran,rr micsuc,pred dns sl ool anhy sl chty PKST,w/thn stks ooc-oom GRNST,rr DOL cmt,abnt ANHY fl POR,pred tt w/stks fr ool-intxl POR,fr bri yel FLOR,tr-mfr ltbrn-tr brn-rr blk STN,n-fr slow-mod fast CUT"

7220.00 7230.00 "LS AA,bcmg pred ooc-oom GRNST w/stks dns sl ool crpxl chk-plty ip anhy v sl chty PKST,rr trnsl CHT frag,tt-fr ool-intxl POR,mfr-fr bri-tr dull yel FLOR,n-fr ltbrn-brn STN,tr blk dd o STN,n-mg slow-mfr mod fast stmg mlky CUT"

DEPTH	LITHOLOGY

7230.00 7250.00 "LS tan-ltbrn,rr brn,occ wh-crm,micxl-vfxl,occ crpxl,gran-suc ip,pred ooc-oom GRNST,decr dns sl ool PKST,tr-rr ANHY xl-POR,fl,rr DOL cmt,v rr CHT frag,tt-mg intxl-mfr ool POR,fr-mg bri yel FLOR,fr-mg ltbrn-brn-v rr blk STN,mfr slow-mg mod fast stmg CUT"

7250.00 7280.00 "LS crm-tan,ltgy-wh ip,crpxl-vfxl,gran-suc ip,pred sl ooc-oom GRNST w/thn intbd dns sl ooc occ chty PKST stks,rr-tr trnsl-clr CHT frag,v sl DOL cmt-ANHY xl-POR fl,mg bri yel FLOR,mfr ltbrn STN-rr spty blk dd o STN,fr-mg mod fast-fast-tr slow stmg mlky CUT"

7280.00 7290.00 "LS AA,vfxl-gran-micxl,tr crpxl,rr micsuc ip,pred ool-sl oom GRNST/occ dns strk,tr dns sl ooc PKST/tr gran-vfxl tex,chky-sl anhy/tr POR fl-xln ANHY,sl dol,tr crm-ltbrn CHT,tt-mg intxl-fr ool POR,g-mg mod bri-bri yel FLOR,STN AA,fr-mg slow stmg mlky CUT"

7290.00 7300.00 "LS AA,pred GRNST AA,tr-sl incr PKST AA,POR-FLOR-STN-CUT AA"

7300.00 7320.00 "LS tan-crm,wh,occ ltbrn,rr brn,crpxl-micxl,tr vfxl-gran,pred chky dns-thn plty PKST/v rr gran tex,tr sl ool-dns sl dol GRNST,sl anhy/tr POR fl-xln ANHY,tr trnsl rhmb xl CALC,tr CHT AA,tt-fr intxl-rr ool POR,tr scat mod bri-spty bri yel FLOR,fr ltbrn-rr brn & blk STN,p dif/rr slow stmg CUT,w/rr SH ltgy,plty-irreg,frm,sl slty,tr pp mica & blk carb incl"

7320.00 7340.00 "LS AA,crpxl-micxl,tr vfxl,pred chky dns-thn plty PKST,v rr ip,anhy/tr xln ANHY & sl incr POR fl,tr xl CALC AA,v rr crm-ltbrn CHT,rr sl dol frag,tt-tr intxl POR,tr scat dull-mod bri yel

7340.00 7360.00 "LS crm-wh-tan,rr ltbrn,AA,pred PKST AA/rr gran tex-occ grdg to chky dns v sl ool GRNST ip,anhy/tr xln ANHY & sl incr POR fl,tr xl CALC AA,v rr crm-ltbrn CHT,rr sl dol frag,tt-tr intxl POR,tr scat dull-mod bri yel FLOR,tr ltbrn/v rr blk STN,fr dif/rr slow stmg mlky CUT"

7360.00 7380.00 "LS AA,crpxl-micxl,tr vfxl-sl gran,pred chky dns-thn plty PKST intbd/rr chky sl ool-dns GRNST,sl anhy/tr xln ANHY-POR fl,tr trnsl-clr rhmb xl CALC,rr crm-tan CHT,tt-tr inxl-v rr ool POR,tr scat dull-mod bri yel FLOR,no-rr ltbrn/v rr brn STN,fr dif/mod bri-dull res ring CUT"

7380.00 7390.00 "LS AA,pred cln-chky dns-thn plty PKST,v rr sl ool GRNST frag,tr CALC AA,anhy/tr POR fl-xln ANHY,POR AA,mg-fr scat dull-mod bri/tr bri yel FLOR,no-v rr ltbrn-sl brn/pp blk dd o STN,fr dif/tr slow stmg mlky CUT"

7390.00 7400.00 "LS AA,chky dns-thn plty PKST,v rr GRNST AA frag,anhy AA,POR-FLOR-STN-CUT AA"

7400.00 7410.00 "LS crm-wh,tan,AA,pred chky dns-thn plty PKST,anhy/tr xln ANHY-POR fl,rr CHT AA,POR-FLOR AA,no-rr ltbrn STN,fr dif/fnt res ring CUT"

DEPTH	LITHOLOGY

7410.00 7420.00 "LS AA,pred PKST AA,anhy AA,rr blk SH lam-strk,tt-tr inxl POR,mg scat dull-mod bri/tr bri yel FLOR,no-rr ltbrn STN,fr dif/fnt res ring CUT"

7420.00 7430.00 "LS AA,chky dns-thn plty PKST,v rr GRNST AA,anhy/tr xln ANHY-POR fl,tr trsl-clr rhmb xl CALC,v sl arg-mrly ip,tt-tr intxl POR,FLOR AA,no-rr ltbrn STN,CUT AA"

7430.00 7440.00 "LS wh-crm,occ tan,crpxl-micxl,v rr vfxl-gran,pred dns chk-plty sl chty PKST,w/v rr thn stks v sl ool GRNST,v rr trnsl CHT frag-ANHY xl,v rr DOL cmt,tt-v rr intxl POR,n-mfr bri yel-rr dull yel FLOR,n-v rr spty ltbrn-blk STN,n-v p slow dif-resid ring CUT"

7440.00 7450.00 "LS AA,v sl incr tan-ltbrn,sl incr gran fab,rr ool mat,rr frac-pred CALC-v rr ANHY fl,tt-v rr intxl-frac POR,tr spty bri-v rr dull yel FLOR,n-rr intxl-v rr frac POR,n-rr spty ltbrn STN,n-v p slow dif-resid ring CUT"

7460.00 7480.00 "LS AA,pred dns chk-plty v sl anhy PKST,v rr CHT frag,v rr thn stks GRNST-occ rr CALC-ANHY fl FRAC,tt-v rr intxl-frac POR,n-v rr spty bri-dull yel FLOR,n-v p fnt ltbrn STN-v rr spty blk dd o STN,n-v p slow dif CUT"

7480.00 7490.00 "LS crm-wh,rr tan-ltgy,crpxl-micxl,v rr gran,pred v sl ool dns chk-plty chty PKST,v rr v thn stks GRNST,v sl dol,rr ANHY-CALC fl frag,tt-v rr intxl-frac POR,n-v p spty FLOR,v rr spty ltbrn-blk STN,v p slow dif-resid ring CUT"

7490.00 7500.00 "LS AA,n-v rr GRNST,n-v p intxl-v rr frac POR-pred CALC-occ ANHY fl,n-v p fnt dull-v rr spty bri yel FLOR,n-v p vis STN,v p slow dif-resid ring CUT"

7500.00 7520.00 "LS crm-wh,rr tan-ltgy,crpxl-micxl,v rr gran,pred v sl ool dns chk-plty chty PKST,v rr v thn stks GRNST,rr scat ool mat,v sl dol,v rr ANHY-CALC fl frag,n vis-v rr p intxl-frac POR,n-p spty dull-bri FLOR,n-rr spty ltbrn-blk STN,v p slow dif-resid ring CUT"

7520.00 7530.00 "LS AA,n-v p v rr vis POR-FLOR-STN-CUT"

7530.00 7550.00 "LS crm-wh,rr tan,crpxl,sl micxl,v rr gran fab,pred dns chk v sl chty PKST w/v rr ool mat,n-v rr vis stks GRNST,sl dol,rr trnsl CHT frag-n-v p vis ANHY-CALC fl frag,n-v p vis intxl-frac POR,n vis FLOR-STN-CUT"

7550.00 7580.00 "LS crm-wh,tr tan,v rr ltbrn,crpxl-micxl,occ vfxl-v sl gran,chky dns-thn plty PKST,sl tr gran tex,v rr sl dol ool GRNST frag pos cvgs,anhy/tr xl ANHY-POR fl,tr trnsl-clr rhmb xl CALC,tt-tr intxl POR,tr scat mod bri-bri yel FLOR,tr ltbrn-v rr brn STN,fr dif/fnt res ring CUT"

DEPTH	LITHOLOGY

7580.00 7610.00 "LS AA,crpxl-micxl,tr vfxl,pred chky-anhy dns-thn plty PKST,v rr sl ool-dns GRNST frag,tr xln ANHY-POR fl,tr trnsl-clr xl CALC,POR AA,fr-tr scat dull-mod bri/rr bri yel FLOR,no-v rr ltbrn-brn STN,fr dif/v fnt res ring CUT"

7610.00 7620.00 "LS crm-wh,occ tan,crpxl-occ micxl,rr vfxl,chky-sl anhy dns-thn plty PKST,rr GRNST frag AA,tr xln ANHY-POR fl,tr xl CALC AA,rr wh-trnsl CHT,POR-FLOR-STN CUT AA"

7620.00 7630.00 "LS AA,chky-sl anhy dns-thn plty PKST,v rr GRNST AA,tr xln ANHY-POR fl,tr CALC AA,rr CHT AA,tt-tr intxl POR,fr scat dull-mod bri-rr bri yel FLOR,no-tr ltbrn-v rr brn STN,CUT AA"

7630.00 7640.00 "LS AA,PKST AA/tr vfxl-micsuc tex ip-occ grdg to dns GRNST,tr xl CALC AA,tr crm-wh-tan CHT,anhy/tr POR fl-xln ANHY,tt-sl tr intxl POR,tr scat dull-rr mod bri yel FLOR,STN-CUT AA"

7640.00 7650.00 "LS AA,PKST AA,tr CALC AA,sl incr CHT AA,anhy AA,POR AA,fr scat dull-tr mod bri-bri yel FLOR,tr-fr ltbrn STN,CUT AA"

7650.00 7660.00 "LS tan-crm,occ wh,crpxl,rr micxl,v rr vfxl-gran,pred dns occ chk PKST,v rr scat trnsl CHT frag,v rr ANHY-CALC xl-frac FL,tt-v rr intxl-frac POR,n-v rr spty yel FLOR,n-v spty brn STN,n-v p resid ring-dif CUT"

7660.00 7670.00 "LS AA,v rr ool mat,v sl incr GRNST stks,occ chty,tt-v rr frac-rr intxl POR,n-rr dull-bri yel FLOR,spty dkbrn-v rr spty blk STN,rr p slow dif-v rr slow stmg CUT"

7670.00 7690.00 "LS tan-crm-ltgy,rr wh-v rr brn,crpxl-micxl,incr gran-micsuc,pred dns sl chk-plty v sl chty PKST,incr v sl ooc-oom GRNST,rr trnsl CHT frag,v sl DOL cmt,rr ANHY xl,n-tr intxl-rr ool POR,sl tr dull-bri yel FLOR,rr-tr spty brn-blk STN,tr dif-rr mod fast CUT"

7690.00 7700.00 "LS AA,pred intbd dns PKST & incr amnt sl ooc-oom GRNST,incr intxl-tr ool POR,fr bri-tr dull yel FLOR,tr ltbrn-rr brn STN,rr spty blk dd o STN,fr slow dif-tr slow-mod fast stmg mlky CUT"

7700.00 7710.00 "LS AA,incr v sl ooc-oom GRNST,w/scat intbd PKST incl-frag,mfr-fr intxl-v rr ool POR,fr bri-rr dull yel FLOR,n-tr spty ltbrn-v rr spty blk dd o STN,mfr-fr slow-rr-tr mod fast stmg CUT"

7710.00 7720.00 "LS AA,scat trnsl-bf CHT frag,pred intbd PKST & GRNST,POR-FLOR-STN-CUT AA"

7720.00 7730.00 "LS tan-wh,occ crm-ltbrn,crpxl-vfxl,occ gran-micsuc,pred dns occ chk-plty chty PKST,w/mfr intbd v sl ooc-oom GRNST,scat trnsl CHT frag-abnt ANHY xl,mfr intxl-ool POR,rr-mfr FLOR-STN,mfr slow-rr-tr mod fast stmg CUT"

DEPTH	LITHOLOGY

7730.00 7740.00 "LS AA,decr chk-plty PKST frag,mfr slow dif-rr mod mod fast stmg CUT,sl incr POR-FLOR,rr-tr ltbrn STN-v rr spty blk dd o STN"

7740.00 7750.00 "LS AA,pred GRNST w/v rr ool mat,POR-STN-CUT AA,fr bri-tr dull yel FLOR"

7750.00 7770.00 "LS ltbrn-occ brn,rr crm-wh,crpxl-micxl,occ vfxl-gran,v rr micsuc,pred dns v sl ool anhy chty PKST,w/thn v sl ooc GRNST,rr ANHY xl-v rr CHT frag,mfr intxl-v rr ool POR,tr-mfr bri-rr dull yel FLOR,rr-tr ltbrn-v rr spty blk STN,mfr slow dif-tr mod fast CUT"

7770.00 7780.00 "LS AA,pred intbd occ plty-chk v sl ool PKST & v sl ooc-oom GRNST,v rr CHT frag-abnt ANHY xl,tt-fr intxl-v rr ool POR,mfr-fr bri-rr dull yel FLOR,n-v p ltbrn STN,mfr-fr slow dif-tr mod fast stmg CUT"

7780.00 7800.00 "LS tan-crm,rr wh,crxpl-micxl,tr vfxl-gran,micsuc ip,GRNST AA,bcmg pred dns PKST AA,n-mfr intxl-v rr ool POR,mfr FLOR,STN-CUT AA"

7800.00 7820.00 "LS tan-ltbrn-crm,tr wh,vfxl-micxl-crxpl,sl gran-micsuc ip,ool-dns GRNST occ grdg to dns PKST/vfxl-gran tex,scat dns sl ool-thn plty PKST,sl chky-anhy/tr xln ANHY-POR fl,no-fr intxl-v rr sl ool POR,mg dull-mod bri/scat bri yel FLOR,fr ltbrn/rr brn STN,mg dif/bri ring-rr slow stmg mlky CUT"

7820.00 7840.00 "LS AA,micxl-crxpl,vfxl-sl gran-micsuc ip,GRNST AA,scat dns sl ool-thn plty PKST,sl chky-anhy/tr xln ANHY-POR fl,tr crm-ltbrn CHT,POR-FLOR-STN AA,fr dif/fnt res ring CUT"

7840.00 7850.00 "LS AA,pred sl ool-dns GRNST occ grdg to dns PKST/vfxl-gran tex,scat dns sl ool-thn plty PKST,tr trnsl-clr xl CALC,sl chky-anhy/tr xln ANHY-POR fl,no-fr intxl-v rr sl ool POR,FLOR-STN-CUT AA"

7850.00 7870.00 "LS tan,crm-wh,occ ltbrn,AA,ool-dns GRNST occ grdg to dns PKST/vfxl-gran tex,scat dns sl ool-thn plty PKST,sl chky-anhy/tr xln ANHY-POR fl,tr xl CALC,rr CHT AA,no-fr intxl-v rr sl ool POR,FLOR-STN-CUT AA"

7870.00 7900.00 "LS tan,crm-wh,occ ltbrn,vfxl-micxl-gran,occ crpxl,sl ool-dns GRNST occ grdg to dns PKST/vfxl-gran tex,scat dns-thn plty PKST,sl chky-anhy/tr xln ANHY-POR fl,tr trnsl-clr xl CALC,rr crm-wh CHT,fr intxl-tr sl ool POR,mg dull-mod bri yel FLOR,fr ltbrn-tr brn STN,mg-g dif/mod bri res ring-rr slow stmg mlky CUT"

7900.00 7920.00 "LS tan,crm-wh,occ ltbrn,AA,sl ool-dns GRNST occ grdg to dns PKST/vfxl-gran tex,scat PKST AA,sl chky-anhy/tr xln ANHY-POR fl,tr CALC AA,rr CHT AA,POR AA,g-mg even dull-mod bri/tr bri yel FLOR,mg ltbrn-tr brn/v rr blk pp dd o STN,g slow-mod fast stmg CUT"

7920.00 7930.00 "LS AA,pred GRNST AA,scat-occ intbd PKST AA,anhy AA,tr trnsl-clr rhmb xl CALC,rr CHT,POR-FLOR-STN-CUT AA"

DEPTH	LITHOLOGITHOLOGY

7930.00 7950.00 "LS tan-ltbrn,crm-wh,tr brn,vfxl-gran,micxl-crpxl,sl ool-dns GRNST,scat dns-thn plty PKST/occ vfxl-gran tex,sl chky-anhy/tr xln ANHY-POR fl,tr CALC AA,tr crm-tan CHT,POR-FLOR,mg-g ltbrn-brn/v rr blk pp dd o STN,mg-g mod fast stmg mlky CUT"

7950.00 7960.00 "LS tan,crm-wh,occ ltbrn,AA,GRNST AA,scat PKST AA,sl chky-anhy/tr xln ANHY-POR fl,tr CALC AA,tr CHT AA,POR-FLOR-STN AA,g dif/bri res ring-tr slow stmg mlky CUT"

7960.00 7980.00 "LS tan,crm-wh,occ ltbrn,vfxl-gran-micxl,occ crpxl,ool-dns GRNST occ grdg to dns PKST/vfxl-gran tex,scat dns sl ool-thn plty PKST,sl chky-anhy/tr xln ANHY-POR fl,tr CALC AA,rr CHT AA,mg ool-intxl POR,g even dull-mod bri/tr bri yel FLOR,fr-mg ltbrn-tr brn/ v rr blk pp dd o STN,g dif/bri res ring-tr fast stmg mlky CUT"

7980.00 8000.00 "LS tan-crm-wh,occ ltbrn,vfxl-gran-micxl,occ crpxl,ool-dns GRNST,scat dns sl ool-thn plty PKST/tr vfxl-sl gran tex,sl chky-anhy/tr xln ANHY-POR fl,tr CALC AA,rr CHT AA,fr-mg ool-intxl POR,FLOR AA,tr-fr ltbrn/ rr brn STN,mg dif/bri res ring-tr slow stmg mlky CUT "

8000.00 8010.00 "LS AA,pred dns plty-chk sl anhy-chy PKST,n-v rr stks GRNST,tr trnsl CHT frag,tr dull-bri yel FLOR,n-v rr intxl POR,n-v p spty ltbrn STN-v rr blk dd o STN,n-v p slow dif CUT"

8010.00 8020.00 "LS AA,n-v r vis POR,n-v p FLOR-STN-CUT AA"

8020.00 8030.00 "LS crm-tan-ltbrn,occ wh-brn,crpxl-micxl,rr vfxl-gran,pred dns sl plty-chk chty PKST,rr-tr v sl ool GRNST,scat ANHY-CHT frag,tt-v rr intxl POR,tr-mfr bri-dull yel FLOR,rr spty brn STN-v rr spty blk dd o STN,v p slow stmg-mfr slow dif CUT"

8030.00 8050.00 "LS crm-tan-wh,rr ltbrn-brn,crpxl-micxl,rr-tr vfxl-gran ip,pred dns sl plty-chk chty anhy PKST w/thn stks v sl ool GRNST,tr ANHY-trnsl CHT frag,tt-rr intxl POR,tr bri-dull yel FLOR,rr spty brn STN-v rr spty blk dd o STN,rr p slow dif-resid ring CUT"

8050.00 8060.00 "LS AA,v rr gran-micsuc tex,pred PKST AA,bcmg v sl slty ip,n-v rr stks GRNST AA,decr vis POR-FLOR-STN-CUT"

8060.00 8070.00 "LS AA,occ ltgy-v chk arg sl slty PKST frag,v rr dns crpxl-rthy v lmy DOL frag,n-v rr intxl POR,n-v p fnt yel FLOR,n-v p v spty ltbrn-blk STN,n-v p slow dif CUT"

8070.00 8081.00 "LS crm-wh-ltgy,occ trnsl,ltbrn ip,crpxl-micxl,rthy-chk,sl slty,pred dns PKST,occ dol,v rr v thn stks GRNST,abnt ANHY xl-v rr trnsl CHT frag,rr CALC xl,n-v r vis intxl POR,tr mnrl-v p spty bri-fnt dull yel FLOR,n vis STN,n-v p slow dif-resid ring CUT"

FORMATION TOPS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #16-13 NW 1-A HORIZONTAL LATERAL LEG #2

FORMATION NAME		SAMPLES MEASURED DEPTH	SAMPLES TRUE VERTICAL DEPTH	DATUM KB:4706'
LOWER ISMAY		5454'	5448'	-742'
GOTHIC SHALE		5531'	5500'	-794'
DESERT CREEK		5548'	5508'	-802'
UPPER DC 1-A ZONE		5565'	5514'	-808'

limey, becoming marly with depth, and had scattered crinoid fossils. The dolomites had traces of minor intercrystalline to earthy porosity, but as with the limestones, no to only a very poor visible porosity and no to very poor, minor sample shows. Scattered throughout the Upper Ismay carbonates were translucent to buff to dark brown chert fragments. The basal carbonates became increasingly marly and graded into the thin, very fossiliferous, carbonaceous Hovenweep Shale. The Hovenweep Shale, which defines the Upper and Lower Ismay contact, was represented by an slight increase in the black carbonaceous, dolomitic to calcareous, occasionally silty shale. This contact is fairly well represented in the samples from measured depths of 5449' and 5454', true vertical depths 5444' to 5448'.

The top of the Lower Ismay member of the Upper Paradox Formation was picked at a measured depth of 5454', true vertical depth 5448', based primarily on sample identification and a decrease in the rate of penetration. The upper 14' of the Lower Ismay was thinly interbedded tan to light gray dense, very slightly anhydritic limestones, some argillaceous, brown to medium brown dolomites, with very thin black carbonaceous shale partings and rare chert fragments. The Lower Ismay, from measured depths of 5468' to 5507', became a white to cream to light gray, cryptocrystalline to microcrystalline, becoming granular, chalky, slightly to very silty, occasionally anhydritic, chalky and occasionally dolomitic in part. This limestone had streaks of algal material, scattered light chert fragments, and very rare thin brown, earthy dolomites. It was noted that these limestones occasionally graded to very limey siltstones. Associated with the limestones were streaks of intercrystalline to rare vuggular porosities and a moderate sample show. There were trace amounts of calcite fracture filling, rare anhydrite crystals light brown to dark brown chert fragments. The basal 24 feet of the Lower Ismay was a dense, slightly dolomitic limestone packstone and thin earthy dolomites. These limestones and dolomites became slightly marly to very marly with depth, and had scattered light chert fragments. The thin dolomites had thin streaks of intercrystalline porosity, with a trace of moderately fair sample show. This sample show in the dolomites decreased as the Lower Ismay carbonates graded into limey to dolomitic carbonaceous shales of the Gothic Shale.

The Gothic Shale was penetrated at a measured depth of 5531', true vertical depth 5500' and continued to a measured depth of 5548', true vertical depth 5508'. The top of the Gothic was picked by a decrease in the penetration rate and a significant increase in the amount of black carbonaceous shale in the cuttings. This shale member of the Upper Paradox Formation was seen to be eight feet thick in this northwesterly direction. This shale is black to dark gray shale, carbonaceous, occasionally grainy to silty, soft to slightly firm, sooty, slightly fissile, subblocky to subplaty, calcareous to slightly dolomitic and slightly micaceous, with very rare micro pyrite inclusions. Very thin partings of dense, very slightly argillaceous, occasionally dolomitic limestones and clean to very argillaceous limey dolomites were noted in this shale member. The Gothic overlays the top of the Desert Creek Member with a sharp contact.

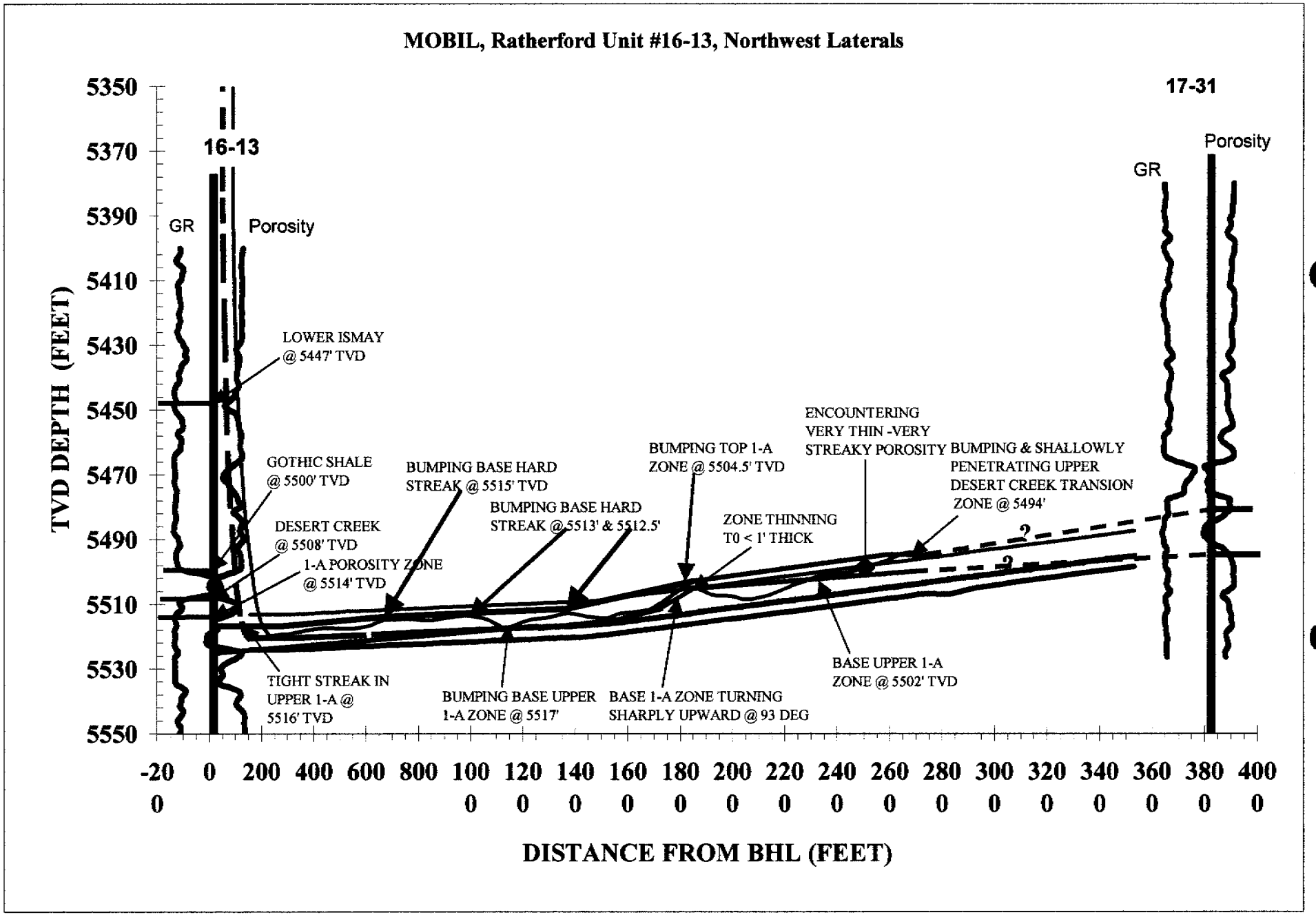
The top of the Desert Creek Member of the Upper Paradox Formation was picked at a measured depth of 5548', in an increase in penetration rate and the amount of dense limestone packstone in the samples. This transition zone was approximately seven feet thick. The transition zone between the Gothic Shale and the top of the Desert Creek was predominately a dense limestone packstone and had thinly interbedded argillaceous limey dolomites and very thin black carbonaceous shale partings. The limestone of the transition zone are cream to white to light gray, brown to medium brown, cryptocrystalline to microcrystalline, with very rare very fine crystalline streaks, dense to slightly silty, and very slightly dolomitic. Scattered in the limestones are very thin, brown, slightly argillaceous, earthy, limey dolomites. The transition zone had poor to a slight trace of intercrystalline porosity, with a very poor, weak sample show. Near the base of the transition zone the dense limestones became increasingly oolitic and graded in to the oolicastic to oomoldic limestones of the upper 1-A porosity bench.

The top of the Desert Creek Upper 1-A porosity zone was encountered at a measured depth of 5555', true vertical depth of 5514', with a horizontal displacement of approximately 192'. The top was picked on the lithology becoming predominately a good oolicastic to oomoldic limestone grainstone and a significant increase in the penetration rate. These limestone grainstones marked the upper pay zone, which was split in to two zones. The upper porosity streak was only three-foot thick in this northwesterly direction. These limestone grainstones are tan to light brown to cream, microcrystalline to very fine crystalline, with a granular to slightly microsucrosic matrix and were very slightly dolomitic. The grainstones have a very minor amount of anhydrite crystals in the oolicastic matrix and very rare light brown chert fragments. The grainstone facies had a moderately good oomoldic to oolicastic fabric, with a moderately fair oolitic to fair intercrystalline porosity development. The sample show was only moderately fair with a trace of brown to light brown oil stain and had minor traces of black bitchimum stain* filling on the crystal faces and in the oolicasts and molds. The grainstones had a spotty trace of bright to occasionally dull yellow fluorescence and a moderately fair slow streaming to trace fast streaming cut. The approximately 1 foot thick hard streak that split the Upper 1-A zone was noted at a measured depth of 5573', with a true vertical depth 5516'. This dense slightly oolitic limestone packstone facies was cream to tan, occasionally white, cryptocrystalline to very slightly microcrystalline, slightly chalky to occasionally platy, clean and very slightly anhydritic. These packstones had very minor streaks of oolicastic to oomoldic limestone grainstone, with a very poor sample show. The top of the lower part of the Upper 1-A porosity zone was penetrated at a measured depth of 5583', true vertical depth 5517', and was in a very good oolicastic limestone grainstone as described above. However, porosity was much better developed and had a much better sample show. As soon as the 1-A zone was penetrated an increase in the background gases and an intermittent flare was noted. This lower zone in the Upper 1-A was the target zone for the entire northwest lateral, as it appeared to be better developed as well as thicker on the vertical well log for the 16-13 well as well as the offset logs.

The curve portion of the lateral was completed at a measured depth of 5603', true vertical depth 5519.4', at a horizontal displacement of 231', bearing 321.3 degrees, with an inclination of 90.3 degrees, on August 4, 1998, in the lower portion of the Upper 1-A porosity zone. At this point a trip was made to lay down the curve assembly and pickup the lateral assembly.

Drilling of the northwest lateral was resumed also on August 4, 1998, in the lower pay zone of the Desert Creek Upper 1-A porosity bench of the Upper Paradox Formation. The lateral was slid at the start to control the vertical depth, horizontal plane direction and to put the lateral assembly out far enough to begin rotating. Starting at the measured depth of 5603', true vertical depth 5519.4' to a measured depth of 7280', true vertical depth 5506', and a horizontal displacement of 1907', the 1-A porosity bench was an oolicastic to oomoldic limestone grainstone facies. This limestone grainstone was a tan to light brown, very slightly brown, microcrystalline to very fine crystalline, granular to microsucrosic, oolicastic to oomoldic, slightly dolomitic, with occasionally calcite and anhydrite filled casts to cement. These grainstones had a fair to good oolitic to intercrystalline porosity, a moderately good bright yellow fluorescence, a moderately fair light brown to brown oil stain, with trace to poor black bitchimum* stain, and a moderate to moderately fair fast to slow streaming cut. Throughout the first 1676' of the lateral section, there were scattered dense limestone packstone within the limestone grainstones, also when the bottom of the hard streak in upper part of the 1-A porosity zone and the base of the Upper 1-A zone was encountered. These dense packstones were cream to tan, occasionally white, cryptocrystalline to microcrystalline, slightly oolitic, some chalky to platy, with some anhydrite inclusions. Throughout the Upper 1-A zone were translucent to light brown chert fragments. This Upper 1-A porosity zone was seen to dip slightly upward and have thickness ranging from 2.5 feet to 7 feet.

At the measured depth of 7035', with a horizontal displacement of 1660' after the base of the 1-A zone was encountered the formation began pushing the well path upward to angle of 93°. As the well path reached a true vertical depth of 5504.5' and a measured depth of 7208', at the top of the 1-A zone, the porosity zone became very thin, decreasing to approximately 1 and a half-foot thick. After


MOBIL, Ratherford Unit #16-13, Northwest Laterals
16-13
17-31
GR
Porosity
GR
Porosity
TVD DEPTH (FEET)
5350
5370
5390
5410
5430
5450
5470
5490
5510
5530
5550
LOWER ISMAY @ 5447' TVD
GOTHIC SHALE @ 5500' TVD
DESERT CREEK @ 5508' TVD
1-A POROSITY ZONE @ 5514' TVD
BUMPING BASE HARD STREAK @ 5515' TVD
BUMPING BASE HARD STREAK @ 5513' & 5512.5'
BUMPING TOP 1-A ZONE @ 5504.5' TVD
ENCOUNTERING VERY THIN -VERY STREAKY POROSITY
ZONE THINNING T0 < 1' THICK
BUMPING & SHALLOWLY PENETRATING UPPER DESERT CREEK TRANSION ZONE @ 5494'
?
?
TIGHT STREAK IN UPPER 1-A @ 5516' TVD
BUMPING BASE UPPER 1-A ZONE @ 5517'
BASE 1-A ZONE TURNING SHARPLY UPWARD @ 93 DEG
BASE UPPER 1-A ZONE @ 5502' TVD
-200 0 200 400 600 800 1000 1200 1400 1600 1800 2000 2200 2400 2600 2800 3000 3200 3400 3600 3800 4000
DISTANCE FROM BHL (FEET)

Form 3160-5
(November 1994)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires November 30, 2000

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE – Other instructions on reverse side

5. Lease Serial No.
14-20-603-355

6. If Indian, Allottee or Tribe Name
NAVAJO TRIBAL

7. If Unit or CA/Agreement, Name and/or No.
RATHERFORD UNIT

1. Type of Well
[X] Oil Well [ ] Gas Well [ ] Other

8. Well Name and No.
RATHERFORD 16-13

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

9. API Well No.
43-037-31168

3a. Address
P.O. Box 633, Midland TX 79702

3b. Phone No. (*include area code*)
(915) 688-2585

10. Field and Pool, or Exploratory Area
GREATER ANETH

4. Location of Well (*Footage, Sec., T., R., M., or Survey Description*)
SEC. 16, T41S, R24E
1980' FSL & 660' FWL

11. County or Parish, State
SAN JUAN UT

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

TYPE OF SUBMISSION	TYPE OF ACTION			
[ ] Notice of Intent	[ ] Acidize	[ ] Deepen	[ ] Production (Start/Resume)	[ ] Water Shut-Off
[X] Subsequent Report	[ ] Alter Casing	[ ] Fracture Treat	[ ] Reclamation	[ ] Well Integrity
[ ] Final Abandonment Notice	[ ] Casing Repair	[ ] New Construction	[ ] Recomplete	[X] Other
	[ ] Change Plans	[ ] Plug and Abandon	[ ] Temporarily Abandon	
	[ ] Convert to Injection	[ ] Plug Back	[ ] Water Disposal	

13. Describe Proposed or Coommpleted Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the final site is ready for final inspection.)

BHL:

LATERAL #1; 2132' SOUTH & 2111' EAST FROM SURFACE SPOT (ZONE 1a).
LATERAL #2; 1883' NORTH & 1944' WEST FROM SURFACE SPOT (ZONE 1a).

CONVERSION OF PUMPING SYSTEM

FORM 15 ATTACHED TO COPY FOR STATE OF UTAH

RECEIVED
DIV. OF OIL, GAS & MINING

14. I hereby certify that the foregoing is true and correct
Name (*Printed/Typed*)

Title SHIRLEY HOUCHINS/ENV & REG TECH

Date 11-04-99

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by	Title	Date
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.	Office	

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.

(*Instructions on reverse*)

Form 15

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

ORIGINAL FILING ☐
AMENDED FILING ☐

RECEIVED
DIV OF OIL, GAS & MINING

DESIGNATION OF WORKOVER OR RECOMPLETION

1. Name of Operator	2. Utah Account Number	5. Well Name and Number
MOBIL EXPLORATION/PRODUCING U.S.	N-	Rattlesnake 16-13
3. Address of Operator		**6. API Well Number**
P. O. DRAWER G		43-037-31168
CORTEZ, COLORADO 81321	**4. Telephone Number** 970.564.5207	**7. Field Name** GREATER ANETH / **8. Field Code Number** 1767900

9. Location of Well
Footage : 1980' FSL & 660 FWL
QQ, Sec, T., R.: Sec 16, T41S, R24E
County : SAN JUAN
State : UTAH

COMPLETE ALL SECTIONS. ATTACH ADDITIONAL SHEETS IF NEEDED.

10. TYPE OF WORK (Check One)
- ☑ Production enhancement
- ☐ Conven to injection
- ☐ Recompletion
- ☐ Repair well

11.
Date work commenced 10/6/99
Date work completed 10/8/99

12. THE FOLLOWING EXPENSES FOR OPERATIONS ARE SUBMITTED FOR DESIGNATION AS WORKOVER OR RECOMPLETION EXPENSES UNDER U.C.A. 59-5-102(4):

	Expenses	Division Approval
a. Location preparation and cleanup	$ 1600	
b. Move-in, rig-up and rig-down (including trucking)	1050	
c. Rig charges (including fuel)	6600	
d. Drill pipe or other working string	—	
e. Water and chemicals for circulating fluid (including water hauling)	8400	
f. Equipment purchase	1750	
g. Equipment rental	1750	
h. Cementing	—	
i. Perforating	—	
j. Acidizing	—	
k. Fracture stimulation	—	
l. Logging services	—	
m. Supervision and overhead	750	
n. Other (itemize)		
o. Total submitted expenses	$ 21900	
p. Total approved expenses		$

13. LIST CONTRACTORS PROVIDING SERVICES VALUED AT MORE THAN $3,000.00.

Contractor	Location (city, state)	Services Provided
Dine' Well Service	Montezuma Creek, UT	Rig
MI Drilling Fluids	Farmington, NM	Completion Fluids

14. LIST WORKING INTEREST OWNERS WHO TAKE PRODUCT IN KIND AND ARE AUTHORIZED TO SHARE IN THE TAX CREDIT.

Name	Address	Utah Account No.	Percent of Interest
Chieftain			21.38
Texaco			4.45

I hereby certify that the foregoing is true and correct

Name & Signature David C. Newman D.C. Title Operations Engineer Date 11/2/99

(State Use Only)

Form 3160-4
(July 1992)

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*

5. LEASE DESIGNATION AND SERIAL NO.: 14-20-603-355

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: NAVAJO TRIBAL

1a. TYPE OF WELL: OIL WELL [X] GAS WELL [ ] DRY [ ] Other

b. TYPE OF COMPLETION: NEW WELL [ ] WORK OVER [ ] DEEP-EN [ ] PLUG BACK [ ] DIFF. RESVR. [ ] Other X SIDETRACK

7. UNIT AGREEMENT NAME: RATHERFORD UNIT SW-I-4192

2. NAME OF OPERATOR: MOBIL PRODUCING TX & NM INC.*
*MOBIL EXPLORATION & PRODUCING US INC. AS AGENT FOR MPTM

8. FARM OR LEASE NAME, WELL NO.: RATHERFORD 16-13

3. ADDRESS AND TELEPHONE NO.: P.O. Box 633, Midland TX 79702 (915) 688-2585

9. API WELL NO.: 43-037-31168

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements*)*
At surface: 1980' FSL & 660' FWL
At top prod. interval reported below: LAT #1 2132' FSL & 2111' FEL F/SURF SPOT
At total depth: LAT #2 1883' FNL & 1944' FWL F/SURF

10. FIELD AND POOL, OR WILDCAT: GREATER ANETH

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: SEC. 16, T41S, R24E

14. PERMIT NO. | DATE ISSUED

12. COUNTY OR PARISH: SAN JUAN | 13. STATE: UT

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
07-13-98	08-10-98	08-20-98	4693' GR	

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
*#24	*#24		→	X	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION - TOP, BOTTOM, NAME (MD AND TVD)*
LAT #1 (5398-5562' TVD)(5400-8569' TMD) LAT #2 (5389-5494' TVD)(5391-8081' TMD)

25. WAS DIRECTIONAL SURVEY MADE: YES

26. TYPE ELECTRIC AND OTHER LOGS RUN: NO

27. WAS WELL CORED: NO

28. 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#	118'	18"	150 SXS SURFACE	
9 5/8"	36 & 40#	1592'	12 1/4"	695 SXS SURFACE	
7"	23 & 26#	5616'	8 3/4"	850 SXS TOC @ 1110' CBL	
ORIGINAL	CASING	UNDISTURBED			

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2 7/8"		5149' TAC

31. PERFORATION RECORD (*Interval, size and number*)

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

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
5538-8570'	LAT #1 ACIDIZE W/42000 GALS 15% HCL ACID
7652-8064' & 5625-7515'	LAT #2 ACIDIZE W/33000 GALS 15% HCL ACID

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (*Flowing, gas lift, pumping - size and type of pump*)	WELL STATUS (*Producing or shut-in*)
8-27-98	2.5" X 2" X 24' PUMP	PRODUCING

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL - BBL.	GAS - MCF.	WATER - BBL.	GAS - OIL RATIO
9-10-98				501	132	349	263

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL - BBL.	GAS - MCF.	WATER - BBL.	OIL GRAVITY - API (CORR.)

34. DISPOSITION OF GAS (*Sold, used for fuel, vented, etc.*)

TEST WITNESSED BY

RECEIVED
NOV 09 1998
DIV. OF OIL, GAS & MINING

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 Sue Mosely for TITLE SHIRLEY HOUGHINS/ENV & REG TECH DATE 11-05-98

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

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.

WTC 2-25-99 pm

Form 3160-5
(June 1990)

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

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.: 14-20-603-355
6. If Indian, Allottee or Tribe Name: NAVAJO TRIBAL
7. If Unit or CA, Agreement Designation: RATHERFORD UNIT
8. Well Name and No.: RATHERFORD 16-13
9. API Well No.: 43-037-31168
10. Field and Pool, or exploratory Area: GREATER ANETH
11. County or Parish, State: SAN JUAN UT

1. Type of Well: [X] 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. 16, T41S, R24E
1980' FSL & 660' FWL

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

TYPE OF SUBMISSION	TYPE OF ACTION	
[ ] Notice of Intent	[ ] Abandonment	[ ] Change of Plans
[X] Subsequent Report	[ ] Recompletion	[ ] New Construction
[ ] Final Abandonment Notice	[ ] Plugging Back	[ ] Non-Routine Fracturing
	[ ] Casing Repair	[ ] Water Shut-Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[X] Other SIDETRACK	[ ] 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: 2132' SOUTH & 2111' EAST FROM SURFACE SPOT (ZONE 1a).
LATERAL #2: 1883' NORTH & 1944' WEST FROM SURFACE SPOT (ZONE 1a).

SEE ATTACHED PROCEDURE. (7-13-98 -- 8-20-98)

14. I hereby certify that the foregoing is true and correct
Signed Faye Moseley for Title SHIRLEY HOUCHINS/ENV & REG TECH Date 11-05-98

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
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.

* See Instruction on Reverse Side

WTC 1-25-99 RJK

ATTACHMEHT – FORM 3160-5
RATHERFORD UNITY – WELL #16-W-43
14-20-603-355
NAVAJO TRIBAL
SAN JUAN, UTAH

07-27-98	MIRU NAVAJO WEST RIG #15. CALLED NAVAJO EPA AT 11:45 ON 07-24-98 TALKED TO CHARLENE MANUELITO. REPORTED INTENT TO DIG EARTH PIT AND LIKE. OK. CALLED B.L.M. ON 07-24-98 AT 11:52. TALKED TO ANSWER MACHINE, INFORMED OF INTENT TO MOVE IN AND PREP. WELL FOR DRLG. TOOLS, OK.
07-28-98	SITP @ 05:00 HRS 1350#. R/U PUMP, PIT, LINES TO WELLHEAD. KILL TBG W/ 30 BBL 11.6# MUD. R/D WELLHEAD, CUT OFF SLIP HANGER. N/U BOPE, R/U RIG FLOOR. SITP INCREASE TO 500#, KILL TBG W/ 13# KILL MUD. COULD NOT KILL WELL. SWIFN.
07-29-98	SITP 0 PSI. R/U & PUMP 15 BBL 15.9# KILL FLUID DOWN 2 3/8" TBG. TBG ON VACUUM. RELEASE FROM ON-OFF TOOL, RELEASE BAKER LOK-SET PKR. PUMP 15 BBL 15.9# KILL FLUID DOWN TBG. POOH & LD 2 3/8" PLASTIC LINED TBG & PKR. MIRU SCHLUMBERGER WL, RIH W/ METT TOOL, LOG FROM 5500'-1483'. SDFN.
07-30-98	RDMO SCHLUMBERGER, R/U PERF TRUCK. RIH & PERF 5470', 4 SPF, 5469', 4 SPF. POOH W/ GUNS. PRESSURE TEST CSG TO 1000# GOOD. RDMO SCHLUMBERGER. MIRU TBG TESTER, M/U RETAINER STINGER, RIH 2 7/8" TBG, TESTING TO 5000# WHILE RIH. SWI & SDFN.
07-31-98	FINISH RIH WITH 2 7/8" WS, TESTING TO 5000# WHILE RIH. STING INTO RETAINER. MIRU DOWELL, PRESSURE TEST LINES TO 5500#. STING INTO RETAINER. TRY TO EIR, PRESSURE UP TO 5200#. PULL OUT OF RETAINER, TRY TO STING BACK IN, CAN'T GET IN. PUMP INTO TBG, CIRC AROUND CASING. PRESSURE TEST CASING TO 500# - GOOD – BEFORE POOH. POOH W/ TBG & STINGER, LOST 1 ½" OFF BOTTOM OF STINGER ASSY. RETAINER STILL HOLDING (WELL NOT FLOWING). SWI & SDFN.
08-01-98	TIH & TAG RETAINER. DRILL OUT CMT RETAINER, LD SWIVEL JUNK TO 5675' (BOTTOM PERF @ 5606'). CIRC CLEAN. R/U WELL TO TANK. SDFN.
08-02-98	POOH W/ REMAINING 56 STDS IN HOLE, LD DC'S, BIT. P/U CMT RETAINER & SET @ 5452.24'. STING IN, TEST BACKSIDE TO 500#. READY TO CMT IN AM. LEAVE TBG STUNG IN, SWI & SDFN.
08-03-98	MIRU DOWELL, PRESSURE TEST LINES, PRESS UP ON BACKSIDE TO 500#. EIR @ 1.5 BPM @ 650#. PMP 50 SX CLASS B 15.6# CMT W/ .4% FLUID LOSS CONTROL & .1% DISPERSANT. FOLLOW W/ 50 SX CLASS B NEAT CMT MIXED @ 15.6#, TOTAL CMT PUMPED 24 BBL. DISPLACE TBG W/ FW, MAX PRESSURE 1620#, AVG PRESSURE 850#. SQZ OLD DESERT CREEK PERFS F/5469-5606' STING OUT OF RETAINER. RDMO DOWELL. POOH W/ STINGER ASSY. P/U MILL TOOTH BIT & SCRAPER, RIH AND TAG RETAINER AT 5451.48' (RETAINER SET AT 5452.24'). CIRC. POOH LAYING DOWN 2 7/8" WS. SWI & SDFN.
08-04-98	N/D BOP & WELLHEAD. N/U NEW TBG HEAD & TEST TO 1000#. RDMO NAVAJO WEST RIG #15. LAST REPORT FOR PREP JOB.
08-10-98	MOVE MONTEZUMA RIG 25, NOTIFIED JIM THOMPSON W/ STATE UTAH @ 6:30 AM ABOUT STARTING DRILLING OPERATIONS.
08-11-98	FIN RIGGING UP, NU BOP, PRESS TESTED TO 2000# HIGH PRESS, 250# LOW, HELD OK. RIH W/ ANCHOR LATCH ASSEMBLY, & 2.875" AOHDP. LATCH INTO PKR @ 5431'. GYRO DATA PKR KEYWAY SET @ 264 GTF, PULL GYRO TO SURFACE SURVEYING EVERY 200'. POH W/ ANCHOR LATCH ASSEMBLY ORIENT WHIPSTOCK & RIH. FINAL REPORT FOR REENTRY.

ATTACHMEHT – FORM 3160-5
RATHERFORD UNITY – WELL #16-W-43
14-20-603-355
NAVAJO TRIBAL
SAN JUAN, UTAH
PAGE 2

08-12-98	RIH W/ TIW LATCH ASSEMBLY, WEATHERFORD, WHIPSTOCK, STARTING MILL & 2.875" AOHDP, LATCHED TIW PKR @ 5431' W/ GTF @ 264, TOP OF WHIPSTOCK @ 5416 W/ FACE @ 340 DEG. MILLED WINDOW FROM 5416-5418'. POH W/ STARTING MILL. RIH W/ WINDOW & WATERMELLON MILLS. MILLED WINDOW FROM 5416-5422' & FORMATION TO 5423'. POH W/ MILLS. FINAL REPORT FOR LATERAL 1.
08-12-98	LATERAL 1A1. POH W/ GYRO. SLIDE DRILL CURVE 1 W/ MWD FROM 5452-5464'. RIH W/ CURVE DRILLING ASSEMBLY, GYRO, DRILLED CURVE W/ GYRO FROM 5423-5452'.
08-13-98	SLIDE DRILL CURVE FROM 5464-5639 MD, 90.1 ANGLE, 343.7 DIRECTION, 5550' TVD, 218' VS. PUMPED SWEEP & CIRC CLEAN. POH & LD AOHDP, LD CURVE DRILLING ASSEMBLY. RIH W/ LATERAL ASSEMBLY.
08-14-98	SLIDE & ROTATE DRILLED LATERAL 1A1 FROM 5639-6850'.
08-15-98	SLIDE & ROTATE DRILLED LATERAL 1A1 FROM 6850-7470'.
08-16-98	SLIDE & ROTATE DRILLED LATERAL 1A1 FROM 7470-8000'
08-17-98	SLIDE & ROTATE DRILLED LATERAL 1A1 FROM 8000-8298' TD. 5551' TVD. PUMPED POLYMER SWEEP & CIRC HOLE CLEAN. POH & LD MWD & MUD MOTOR. RIH W/ SUPERHOOK. LATCH INTO WHIPSTOCK. RELEASE AND POOH.
08-18-98	TIH AND LATCH INTO TIW PKR. SHEAR OFF WIHIPSTOCK AND MILL CSG. W/ STARTER MILL 5401-5403' AND CIRC. TOOH LAY DOWN STARTER MILL. TIH W/ CSG. AND WATERMELON MILLS. MILL WINDOW FROM 5401-5409' (1' FORMATION). CIRC. SWEEP TO SURFACE. LAY DOWN MILLS. FINAL REPORT LATERAL 2.
08-18-98	LATERAL 2A1. RU GYRODATA. ORIENT TOOLFACE OF WHIPSTOCK. TIME DRILL FROM 5409-5411'. AND DRILL W/ WT. FROM 5411-5419'.
08-19-98	SLIDE DRILL AND SURVEYS FROM 5419-5437 W/ GYRO. POOH W/ GYRO AND RD SAME. SLIDE/DRILL AND SURVEYS FROM 5437 - 5625' TD. LAST SURVEY AT 5599' MD. 80.20 ANGLE, 138.10 AZ, 5539.50' TVD, 51.33 VS. PUMP AND CIRC. SWEEP TO SURFACE. POOH LAYING DOWN. DP AND CURVE BUILDING ASSY. PU LATERAL BUILDING ASSY. AND TIH.
08-20-98	FINISH IN HOLE W/ LATERAL BUILDING ASSY. SLIDE/ROTATE DRILL AND SURVEYS FROM 5625-7400' LAST SURVEY AT 7295' MD, 87.50 ANGLE, 130.40 AZ, 5567.81' TVD, 1745.47 VS.
08-21-98	SLIDE/ROTATE DRILL AND SURVEYS FROM 7400' - 7551' TD. (SURVEY AT BIT AT 7551' MD, 90.40 ANGLE, 129.40 AZ, 5567.45' AZ, 2000.31 VS). PUMP AND CIRC. SWEEP. POOH TO WINDOW. PUMP 10#. KILL WELL. (WELL DEAD). POOH TO 2200" WELL CAME IN. DISPLACE HOLE WITH 13.8 PPG MUD. CONTINUE OUT OF HOLE. LAYING DOWN SPERRY SUN'S TOOLS. PU TIH. PH6 TBG. GUIBERSON PKR AND SET PKR. AT 5272' (WINDOW AT 5400') W/ TAILPIPE AT 5638' (END OF CURVE AT 5625'). DISPLACE HOLE W/ 10# BRINE TEST TO 500# OK. POOH LAYING DOWN DRILL STRING.
08-22-98	FINISH LAYING DOWN ALL DRILLSTRING. ND. BOP STACK, CHOKE MANIFOLD, GAS SEPERATOR AND ALL AUX. FINAL DRLG. REPORT.

ATTACHMEHT – FORM 3160-5
RATHERFORD UNITY – WELL #16-W-43
14-20-603-355
NAVAJO TRIBAL
SAN JUAN, UTAH
PAGE 3

COMPLETION

08-25-98	MIRU NAVAJO WEST RIG #36. SI CSG. PRESS AT 14:30 WAS 0 PSI. ND WELL HEAD CAP, NU BOPE. RU PUMP, PIT, AND FLOW LINES TO TEST TANKS, SIFN.
08-26-98	SIP AT 07:30 WAS 0 PSI. RIH WITH GUIBERSON ON/OFF TOOL, TO 5272'. TAG UP ON GUIBERSON PACKER. RELEASE FROM ON/OFF TOOL. SPACE OUT 2.875" TBG. RU AND CIRC. ON TOP OF PACKER. REVC. CLEAN. MIRU TEFTELLER SLICK-LINE UNIT. RIH WITH RETV. TOOL. LATCH ONTO 'F' PLUG, RELEASE, AND RDMO TEFTELLER. PREP. RIG FLOOR FOR COILED TBG. SIFN.
08-28-98	MIRU DOWELL COILED TBG. UNIT. SI PRESS AT 06:00 WAS 291 PSI. RIH WITH COILED TBG. TO 7551'. DOWELL ACIDIZE LATERAL 2A1 F5638-7551' WITH 27300 GAL 15% HCL ACID. POH WITH COILED TBG. RDMO DOWELL COILED TBG. UNIT. WELL SI 1.5 HRS. OPEN WELL UP TO TEST TANKS, FLOW TBG. PH TO 7, SIFN.
08-29-98	SI TBG. PRESS AT 06:30 WAS 1100 PSI. RU TO PUMP. KILL WELL. RELEASE PACKER, POH, LAY DOWN PACKER, RETURN TO DRLG. RIG. PICK-UP RETV. TOOLS FOR WHIPSTOCK. RIH TO 5401 LATCH ONTO WHIPSTOCK. RELEASE, POH, LAY DOWN WHIPSTOCK & RUNNING TOOLS. PICK-UP RETV. WHIPSTOCK. ORIENT TO 340 DEG. (WINDOW FACE) AND 264 DEG AZ (TIW PACKER KEYWAY) RIH TO 5431' SET RETV. WHIPSTOCK. POH FROM 5431' TO 5245'. SIFN.
08-30-98	SIP AT 07:30 WAS 200 PSI. RIH W/ 2.875" PH-6 TBG. TAILPIPE, PACKER , RUN ON 2.875" PH-6 TBG. TO 5571.56' PACKER DEPTH OF 5261.95'. SET PACKER. RU AND TEST TO 300 PSI. OK. RIG FLOOR FOR COILED TBG. SIFN.
08-31-98	SI WO DOWELL TO FIXES COIL TBG.
09-01-98	MIRU DOWELL COIL. RIH W/ COIL TBG LATERAL 1A1 F/5582-8298'. ACIDIZED SAME W/ 37800 GALS 15% HCL ACID. POH W/ COIL TBG RIG DN EQUIP MO. SWISDFN.
09-02-98	SI 8 HRS TP 1100#. RIH W/ WEATHERFORD SUPER HOOK. FISHED REENTRY GUIDE @ 5431'. POH W/ TBG LAY DN TOOLS & GUIDE. RIH W/ GUIB. G-6 IN/OUT PKR ON/OFF TOOL TO 5322'. SET @ 5322' WOULDN'T SET PKR @ 5310' LOAD BACK SIDE TEST TO 500# OK. POH LAY DN 2.875" PH-6 TBG SWISDFN.
09-03-98	WO CMT LINE TBG TO BE TRUCKED IN ARRIVED ON LOC. @ 15:30. REMOVED PROTECTORS TALLY & RAN 100 - JTS 2.875" CMT LINE TBG DRIFT W/ 2" SWISDFN.
09-04-98	CIRC WELL BORE. ND BOP INSTALL INJ TREE. MIT TEST TO 1000# OK 30 MIN OK, RDMO RIG & EQUIP. G-6 GUIB PKR @ 5318.64'. TURN TO PRODUCTION.

Mobil

San Juan County
Utah
Ratherford Unit
RU 16-43 - MWD Survey Leg #1

SURVEY REPORT

10 September, 1998

sperry-sun
DRILLING SERVICES
A DIVISION OF [illegible]

Survey Ref: svy3145

Sperry-Sun Drilling Services

Survey Report for RU 16-43

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 Survey							
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
200.00	0.330	87.920	200.00	0.02 N	0.58 E	-0.18	0.165
400.00	0.200	99.950	400.00	0.02 S	1.49 E	-0.52	0.070
600.00	0.120	118.270	600.00	0.18 S	2.02 E	-0.85	0.047
800.00	0.100	112.550	800.00	0.34 S	2.37 E	-1.13	0.011
1000.00	0.430	326.230	999.99	0.21 N	2.11 E	-0.51	0.258
1200.00	0.680	306.780	1199.98	1.55 N	0.75 E	1.20	0.155
1400.00	1.170	309.900	1399.96	3.57 N	1.77 W	3.96	0.246
1600.00	1.200	310.190	1599.92	6.23 N	4.94 W	7.53	0.015
1800.00	1.370	312.850	1799.86	9.21 N	8.29 W	11.47	0.090
2000.00	1.350	309.390	1999.81	12.33 N	11.86 W	15.61	0.042
2200.00	1.130	320.400	2199.76	15.34 N	14.94 W	19.49	0.162
2400.00	0.930	328.720	2399.73	18.25 N	17.04 W	22.94	0.125
2600.00	1.190	348.790	2599.70	21.67 N	18.29 W	26.58	0.225
2800.00	1.910	346.160	2799.62	26.95 N	19.49 W	31.95	0.362
3000.00	1.900	341.230	2999.51	33.32 N	21.35 W	38.58	0.082
3200.00	1.950	346.630	3199.40	39.77 N	23.21 W	45.28	0.094
3400.00	1.460	343.380	3399.31	45.52 N	24.72 W	51.20	0.250
3600.00	1.180	355.030	3599.26	50.02 N	25.63 W	55.74	0.193
3800.00	1.020	3.470	3799.22	53.85 N	25.70 W	59.36	0.114
4000.00	0.540	6.030	3999.20	56.56 N	25.49 W	61.85	0.241
4200.00	0.530	353.750	4199.19	58.42 N	25.50 W	63.60	0.057
4400.00	0.420	336.950	4399.18	60.01 N	25.88 W	65.23	0.088
4600.00	0.430	352.980	4599.18	61.43 N	26.26 W	66.69	0.059
4800.00	0.380	5.220	4799.17	62.83 N	26.29 W	68.02	0.050
5000.00	0.450	0.890	4999.17	64.28 N	26.22 W	69.36	0.038
5200.00	0.190	356.910	5199.17	65.40 N	26.23 W	70.41	0.130
5400.00	0.230	353.080	5399.16	66.13 N	26.29 W	71.12	0.021
MWD Survey Leg #1							
5416.00	0.330	3.510	5415.16	66.20 N	26.29 W	71.20	0.699
5423.00	4.400	340.000	5422.16	66.48 N	26.38 W	71.48	58.564
5433.00	9.000	355.560	5432.09	67.62 N	26.58 W	72.62	49.042
5443.00	14.200	0.910	5441.88	69.63 N	26.62 W	74.53	53.046
5453.00	18.900	3.590	5451.46	72.47 N	26.50 W	77.16	47.604
5463.00	22.300	5.210	5460.82	75.98 N	26.22 W	80.37	34.471
5473.00	25.800	6.300	5469.95	80.03 N	25.81 W	84.04	35.279
5483.00	30.800	3.100	5478.75	84.75 N	25.43 W	88.36	52.235
5493.00	35.800	2.000	5487.11	90.24 N	25.19 W	93.44	50.362
5503.00	40.600	359.300	5494.97	96.42 N	25.13 W	99.23	50.811

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 16-43

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)
5513.00	44.500	356.100	5502.33	103.17 N	25.41 W	105.68	44.591
5523.00	48.400	351.300	5509.22	110.37 N	26.21 W	112.73	52.242
5533.00	52.400	347.700	5515.60	117.94 N	27.62 W	120.33	48.666
5543.00	56.100	344.800	5521.44	125.82 N	29.56 W	128.40	43.845
5553.00	59.700	341.400	5526.75	133.92 N	32.02 W	136.86	46.097
5563.00	62.900	338.000	5531.56	142.14 N	35.07 W	145.63	43.737
5573.00	64.500	341.800	5535.99	150.56 N	38.15 W	154.59	37.634
5583.00	67.100	346.400	5540.09	159.33 N	40.64 W	163.68	49.354
5593.00	71.800	347.200	5543.60	168.44 N	42.78 W	172.98	47.593
5603.00	75.600	344.700	5546.41	177.75 N	45.11 W	182.53	44.939
5613.00	80.200	345.000	5548.50	187.19 N	47.66 W	192.27	46.093
5639.00	90.100	343.700	5550.70	212.10 N	54.65 W	218.08	38.401
5667.00	88.000	340.900	5551.16	238.77 N	63.16 W	246.06	12.498
5698.00	89.200	342.300	5551.92	268.17 N	72.94 W	277.04	5.947
5730.00	91.700	342.800	5551.67	298.70 N	82.53 W	309.01	7.967
5762.00	94.100	343.400	5550.05	329.27 N	91.82 W	340.92	7.730
5794.00	92.600	341.100	5548.18	359.69 N	101.56 W	372.85	8.570
5825.00	89.400	340.200	5547.64	388.93 N	111.83 W	403.84	10.723
5857.00	89.600	340.500	5547.92	419.07 N	122.59 W	435.83	1.127
5889.00	89.500	340.400	5548.17	449.22 N	133.30 W	467.83	0.442
5921.00	89.600	339.700	5548.42	479.30 N	144.22 W	499.83	2.210
5953.00	91.000	339.800	5548.25	509.32 N	155.29 W	531.83	4.386
5984.00	93.500	340.200	5547.04	538.43 N	165.88 W	562.80	8.167
6016.00	93.400	340.400	5545.11	568.50 N	176.65 W	594.74	0.698
6048.00	92.000	341.200	5543.60	598.69 N	187.16 W	626.71	5.038
6080.00	93.400	341.600	5542.09	628.98 N	197.36 W	658.66	4.550
6111.00	93.400	341.400	5540.26	658.33 N	207.18 W	689.60	0.644
6143.00	88.900	341.200	5539.61	688.62 N	217.43 W	721.58	14.076
6175.00	89.600	341.400	5540.03	718.93 N	227.69 W	753.57	2.275
6207.00	91.400	342.300	5539.75	749.34 N	237.66 W	785.56	6.289
6239.00	89.500	341.200	5539.50	779.72 N	247.68 W	817.54	6.861
6270.00	85.900	340.000	5540.75	808.94 N	257.97 W	848.51	12.240
6302.00	84.900	340.000	5543.31	838.91 N	268.88 W	880.41	3.125
6333.00	86.000	339.500	5545.77	867.90 N	279.57 W	911.31	3.896
6364.00	86.800	339.300	5547.72	896.86 N	290.46 W	942.24	2.660
6396.00	87.600	338.600	5549.28	926.69 N	301.94 W	974.20	3.320
6428.00	88.300	337.900	5550.43	956.39 N	313.79 W	1006.16	3.093
6460.00	93.100	338.600	5550.04	986.10 N	325.64 W	1038.13	15.159
6492.00	92.400	338.400	5548.50	1015.84 N	337.35 W	1070.07	2.275
6523.00	88.200	337.700	5548.34	1044.59 N	348.94 W	1101.04	13.735
6555.00	88.500	336.500	5549.26	1074.05 N	361.39 W	1132.98	3.864
6587.00	90.400	336.300	5549.57	1103.37 N	374.20 W	1164.91	5.970
6618.00	85.900	334.600	5550.57	1131.55 N	387.07 W	1195.77	15.516
6650.00	85.500	334.200	5552.97	1160.32 N	400.85 W	1227.52	1.765
6682.00	87.400	334.600	5554.95	1189.13 N	414.65 W	1259.29	6.067

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 16-43

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)
6713.00	87.200	334.400	5556.41	1217.08 N	427.98 W	1290.10	0.912
6744.00	89.300	334.700	5557.35	1245.05 N	441.30 W	1320.93	6.843
6775.00	91.100	336.700	5557.25	1273.30 N	454.05 W	1351.83	8.680
6807.00	90.700	338.400	5556.74	1302.87 N	466.27 W	1383.79	5.457
6839.00	90.200	337.600	5556.49	1332.54 N	478.26 W	1415.77	2.948
6871.00	90.400	337.700	5556.32	1362.14 N	490.43 W	1447.74	0.699
6903.00	91.600	339.000	5555.77	1391.87 N	502.23 W	1479.71	5.528
6935.00	92.100	338.800	5554.73	1421.71 N	513.74 W	1511.69	1.683
6966.00	88.100	336.700	5554.68	1450.40 N	525.48 W	1542.65	14.573
6998.00	88.900	335.400	5555.52	1479.63 N	538.46 W	1574.55	4.769
7030.00	89.600	335.300	5555.94	1508.71 N	551.81 W	1606.43	2.210
7062.00	90.400	334.700	5555.94	1537.71 N	565.33 W	1638.30	3.125
7093.00	88.900	333.200	5556.13	1565.56 N	578.95 W	1669.11	6.843
7125.00	90.700	333.300	5556.24	1594.14 N	593.35 W	1700.87	5.634
7156.00	88.900	333.900	5556.35	1621.90 N	607.13 W	1731.66	6.121
7188.00	86.400	332.800	5557.66	1650.48 N	621.47 W	1763.40	8.534
7220.00	89.600	333.000	5558.77	1678.94 N	636.04 W	1795.12	10.019
7252.00	93.000	333.300	5558.05	1707.48 N	650.49 W	1826.86	10.666
7284.00	94.000	333.500	5556.09	1736.04 N	664.79 W	1858.57	3.187
7315.00	93.400	336.200	5554.09	1764.04 N	677.93 W	1889.37	8.904
7347.00	91.800	337.000	5552.64	1793.38 N	690.63 W	1921.27	5.589
7379.00	92.100	338.800	5551.55	1823.01 N	702.66 W	1953.23	5.699
7411.00	91.800	340.000	5550.46	1852.94 N	713.91 W	1985.20	3.863
7443.00	90.800	341.100	5549.74	1883.11 N	724.56 W	2017.19	4.645
7474.00	91.400	341.400	5549.14	1912.46 N	734.53 W	2048.18	2.164
7506.00	89.600	340.500	5548.86	1942.70 N	744.97 W	2080.18	6.289
7538.00	89.800	340.200	5549.03	1972.84 N	755.73 W	2112.18	1.127
7570.00	90.500	339.800	5548.95	2002.91 N	766.68 W	2144.18	2.519
7601.00	90.700	339.800	5548.62	2032.00 N	777.38 W	2175.17	0.645
7632.00	89.300	341.400	5548.62	2061.24 N	787.68 W	2206.17	6.858
7663.00	88.700	340.900	5549.16	2090.57 N	797.69 W	2237.16	2.519
7695.00	86.700	341.800	5550.45	2120.86 N	807.91 W	2269.13	6.853
7726.00	88.300	342.300	5551.80	2150.33 N	817.46 W	2300.08	5.407
7758.00	89.400	342.700	5552.44	2180.84 N	827.08 W	2332.05	3.658
7790.00	88.900	342.100	5552.92	2211.34 N	836.75 W	2364.02	2.441
7822.00	89.100	343.000	5553.48	2241.86 N	846.35 W	2395.99	2.881
7853.00	89.400	343.500	5553.88	2271.54 N	855.28 W	2426.95	1.881
7885.00	89.700	344.100	5554.13	2302.27 N	864.21 W	2458.88	2.096
7916.00	89.200	343.900	5554.43	2332.07 N	872.75 W	2489.81	1.737
7948.00	90.300	344.200	5554.57	2362.83 N	881.55 W	2521.74	3.563
7980.00	91.300	344.900	5554.12	2393.67 N	890.07 W	2553.65	3.814
8011.00	91.000	344.400	5553.50	2423.56 N	898.27 W	2584.55	1.881
8043.00	90.400	345.500	5553.11	2454.46 N	906.58 W	2616.44	3.915
8075.00	90.100	347.600	5552.97	2485.58 N	914.03 W	2648.24	6.629
8107.00	89.600	345.800	5553.05	2516.72 N	921.39 W	2680.04	5.838

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 16-43

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)
8138.00	89.200	345.600	5553.38	2546.76 N	929.04 W	2710.89	1.443
8169.00	88.800	344.800	5553.92	2576.73 N	936.96 W	2741.77	2.885
8200.00	90.400	344.900	5554.14	2606.65 N	945.06 W	2772.67	5.171
8231.00	91.300	344.900	5553.68	2636.57 N	953.14 W	2803.56	2.903
8263.00	92.300	344.600	5552.67	2667.43 N	961.55 W	2835.45	3.262
8298.00	92.300	344.600	5551.27	2701.15 N	970.84 W	2870.32	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 340.231° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 8298.00ft.,
The Bottom Hole Displacement is 2870.32ft., in the Direction of 340.231° (True).

Mobil

San Juan County
Utah
Ratherford Unit
RU 16-43 - MWD Survey Leg #2

SURVEY REPORT

10 September, 1998

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

Survey Ref: svy3147

Sperry-Sun Drilling Services

Survey Report for RU 16-43

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 Survey							
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
200.00	0.330	87.920	200.00	0.02 N	0.58 E	0.40	0.165
400.00	0.200	99.950	400.00	0.02 S	1.49 E	1.10	0.070
600.00	0.120	118.270	600.00	0.18 S	2.02 E	1.60	0.047
800.00	0.100	112.550	800.00	0.34 S	2.37 E	1.96	0.011
1000.00	0.430	326.230	999.99	0.21 N	2.11 E	1.39	0.258
1200.00	0.680	306.780	1199.98	1.55 N	0.75 E	-0.52	0.155
1400.00	1.170	309.900	1399.96	3.57 N	1.77 W	-3.73	0.246
1600.00	1.200	310.190	1599.92	6.23 N	4.94 W	-7.86	0.015
1800.00	1.370	312.850	1799.86	9.21 N	8.29 W	-12.35	0.090
2000.00	1.350	309.390	1999.81	12.33 N	11.86 W	-17.09	0.042
2200.00	1.130	320.400	2199.76	15.34 N	14.94 W	-21.40	0.162
2400.00	0.930	328.720	2399.73	18.25 N	17.04 W	-24.92	0.125
2600.00	1.190	348.790	2599.70	21.67 N	18.29 W	-28.17	0.225
2800.00	1.910	346.160	2799.62	26.95 N	19.49 W	-32.66	0.362
3000.00	1.900	341.230	2999.51	33.32 N	21.35 W	-38.38	0.082
3200.00	1.950	346.630	3199.40	39.77 N	23.21 W	-44.15	0.094
3400.00	1.460	343.380	3399.31	45.52 N	24.72 W	-49.20	0.250
3600.00	1.180	355.030	3599.26	50.02 N	25.63 W	-52.93	0.193
3800.00	1.020	3.470	3799.22	53.85 N	25.70 W	-55.61	0.114
4000.00	0.540	6.030	3999.20	56.56 N	25.49 W	-57.32	0.241
4200.00	0.530	353.750	4199.19	58.42 N	25.50 W	-58.59	0.057
4400.00	0.420	336.950	4399.18	60.01 N	25.88 W	-59.97	0.088
4600.00	0.430	352.980	4599.18	61.43 N	26.26 W	-61.21	0.059
4800.00	0.380	5.220	4799.17	62.83 N	26.29 W	-62.20	0.050
5000.00	0.450	0.890	4999.17	64.28 N	26.22 W	-63.14	0.038
5200.00	0.190	356.910	5199.17	65.40 N	26.23 W	-63.91	0.130
5400.00	0.230	353.080	5399.16	66.13 N	26.29 W	-64.45	0.021
MWD Survey Leg #2							
5402.00	0.240	354.900	5401.16	66.13 N	26.29 W	-64.46	0.624
5409.00	3.900	135.000	5408.16	65.98 N	26.13 W	-64.23	58.386
5419.00	7.700	149.800	5418.11	65.16 N	25.55 W	-63.25	40.530
5429.00	11.900	154.560	5427.96	63.65 N	24.77 W	-61.65	42.739
5439.00	16.300	156.900	5437.66	61.43 N	23.77 W	-59.40	44.359
5449.00	20.400	153.600	5447.15	58.57 N	22.45 W	-56.48	42.280
5459.00	24.400	154.200	5456.39	55.15 N	20.77 W	-52.92	40.065
5469.00	28.700	152.600	5465.33	51.16 N	18.77 W	-48.72	43.587
5479.00	32.600	151.600	5473.93	46.66 N	16.38 W	-43.90	39.331
5489.00	37.000	150.200	5482.14	41.67 N	13.60 W	-38.46	44.717

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 16-43

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)
5499.00	41.100	148.600	5489.91	36.25 N	10.39 W	-32.41	42.218
5509.00	45.200	147.900	5497.20	30.44 N	6.80 W	-25.80	41.278
5519.00	49.300	146.600	5503.99	24.27 N	2.82 W	-18.68	42.095
5529.00	53.500	144.700	5510.23	17.82 N	1.59 E	-11.05	44.544
5539.00	57.200	141.800	5515.91	11.23 N	6.51 E	-2.95	44.018
5549.00	60.000	138.800	5521.12	4.67 N	11.97 E	5.52	37.939
5559.00	62.400	135.900	5525.94	1.77 S	17.91 E	14.26	34.951
5569.00	65.800	137.700	5530.31	8.33 S	24.06 E	23.24	37.657
5579.00	69.300	135.100	5534.13	15.02 S	30.43 E	32.46	42.452
5589.00	74.000	136.600	5537.27	21.83 S	37.04 E	41.94	49.108
5599.00	80.200	138.100	5539.51	29.00 S	43.64 E	51.66	63.699
5625.00	89.800	142.200	5541.77	48.86 S	60.21 E	77.33	40.119
5650.00	88.900	136.900	5542.05	67.87 S	76.42 E	102.17	21.502
5682.00	89.400	134.000	5542.53	90.67 S	98.87 E	134.14	9.195
5714.00	88.100	133.100	5543.23	112.72 S	122.05 E	166.13	4.941
5745.00	88.500	133.100	5544.15	133.89 S	144.68 E	197.12	1.290
5776.00	89.300	134.800	5544.74	155.40 S	166.99 E	228.11	6.060
5807.00	89.600	134.700	5545.04	177.22 S	189.01 E	259.10	1.020
5838.00	89.800	134.500	5545.20	198.99 S	211.08 E	290.09	0.912
5870.00	89.900	135.000	5545.29	221.52 S	233.80 E	322.07	1.593
5902.00	90.500	135.500	5545.17	244.24 S	256.33 E	354.05	2.441
5934.00	88.500	135.200	5545.45	267.00 S	278.82 E	386.03	6.320
5966.00	88.500	135.500	5546.29	289.76 S	301.30 E	418.00	0.937
5998.00	89.600	136.200	5546.82	312.72 S	323.59 E	449.96	4.074
6029.00	90.000	136.600	5546.93	335.17 S	344.96 E	480.91	1.825
6061.00	90.900	136.800	5546.68	358.46 S	366.91 E	512.85	2.881
6093.00	91.500	136.600	5546.01	381.74 S	388.85 E	544.79	1.976
6125.00	89.400	134.300	5545.76	404.54 S	411.30 E	576.76	9.732
6156.00	87.900	133.800	5546.49	426.09 S	433.57 E	607.74	5.100
6188.00	88.100	133.400	5547.60	448.14 S	456.73 E	639.72	1.397
6219.00	88.600	133.300	5548.50	469.41 S	479.26 E	670.71	1.645
6251.00	88.200	132.700	5549.39	491.23 S	502.66 E	702.70	2.253
6283.00	88.900	132.600	5550.20	512.90 S	526.18 E	734.69	2.210
6314.00	88.700	132.600	5550.85	533.88 S	549.00 E	765.68	0.645
6346.00	88.400	132.900	5551.66	555.59 S	572.49 E	797.67	1.326
6378.00	88.500	133.800	5552.52	577.55 S	595.75 E	829.65	2.829
6409.00	88.500	134.100	5553.34	599.06 S	618.06 E	860.64	0.967
6440.00	88.300	134.700	5554.20	620.74 S	640.20 E	891.62	2.039
6472.00	88.400	134.800	5555.12	643.26 S	662.92 E	923.60	0.442
6504.00	88.600	134.800	5555.96	665.80 S	685.62 E	955.58	0.625
6536.00	87.800	134.700	5556.96	688.32 S	708.33 E	987.55	2.519
6568.00	88.300	135.400	5558.05	710.95 S	730.92 E	1019.51	2.687
6599.00	89.600	135.700	5558.62	733.08 S	752.63 E	1050.48	4.304
6631.00	90.100	135.900	5558.71	756.02 S	774.94 E	1082.45	1.683
6663.00	90.300	136.100	5558.59	779.04 S	797.17 E	1114.41	0.884

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 16-43

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)
6695.00	90.800	135.900	5558.29	802.05 S	819.40 E	1146.37	1.683
6727.00	90.900	135.500	5557.81	824.95 S	841.74 E	1178.34	1.288
6758.00	90.500	135.200	5557.43	847.01 S	863.53 E	1209.32	1.613
6790.00	89.500	135.400	5557.43	869.75 S	886.03 E	1241.30	3.187
6822.00	89.700	133.800	5557.66	892.22 S	908.82 E	1273.28	5.039
6854.00	89.600	133.600	5557.85	914.33 S	931.95 E	1305.28	0.699
6885.00	90.200	133.400	5557.91	935.67 S	954.44 E	1336.28	2.040
6916.00	90.100	132.900	5557.83	956.87 S	977.06 E	1367.28	1.645
6948.00	90.400	132.900	5557.69	978.65 S	1000.50 E	1399.28	0.938
6980.00	88.900	131.900	5557.88	1000.23 S	1024.13 E	1431.28	5.634
7012.00	88.100	131.000	5558.72	1021.40 S	1048.10 E	1463.25	3.762
7044.00	87.700	129.900	5559.89	1042.15 S	1072.44 E	1495.19	3.656
7075.00	87.500	129.700	5561.19	1061.97 S	1096.23 E	1526.11	0.912
7106.00	88.200	131.700	5562.35	1082.17 S	1119.72 E	1557.05	6.831
7138.00	88.200	131.300	5563.36	1103.37 S	1143.67 E	1589.02	1.249
7169.00	88.000	131.000	5564.39	1123.76 S	1167.00 E	1619.98	1.163
7200.00	87.800	130.400	5565.52	1143.96 S	1190.49 E	1650.93	2.039
7232.00	88.900	132.600	5566.44	1165.15 S	1214.44 E	1682.90	7.684
7264.00	89.300	131.900	5566.95	1186.66 S	1238.13 E	1714.89	2.519
7295.00	87.500	130.400	5567.81	1207.05 S	1261.46 E	1745.86	7.557
7326.00	88.400	129.600	5568.92	1226.97 S	1285.19 E	1776.79	3.883
7358.00	87.500	129.200	5570.06	1247.26 S	1309.90 E	1808.70	3.077
7390.00	89.500	129.700	5570.90	1267.59 S	1334.60 E	1840.61	6.442
7422.00	91.000	130.100	5570.76	1288.11 S	1359.15 E	1872.56	4.851
7454.00	92.900	130.400	5569.67	1308.78 S	1383.56 E	1904.49	6.011
7485.00	92.000	130.400	5568.35	1328.85 S	1407.14 E	1935.43	2.903
7516.00	90.400	129.400	5567.70	1348.73 S	1430.92 E	1966.37	6.086
7551.00	90.400	129.400	5567.46	1370.95 S	1457.96 E	2001.29	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 133.238° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 7551.00ft.,
The Bottom Hole Displacement is 2001.29ft., in the Direction of 133.238° (True).

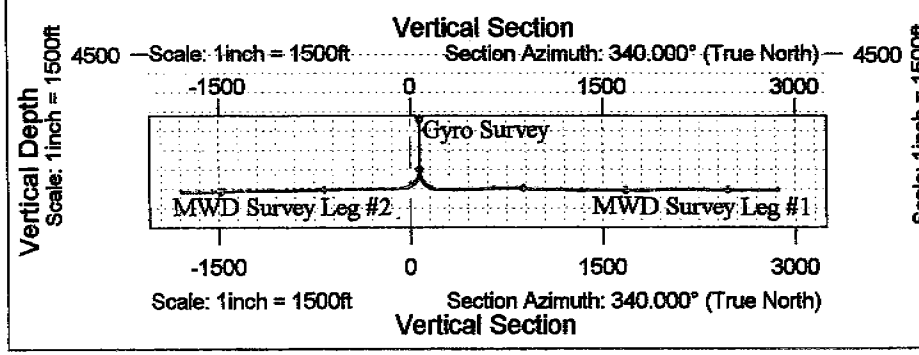
sperry-sun DRILLING SERVICES

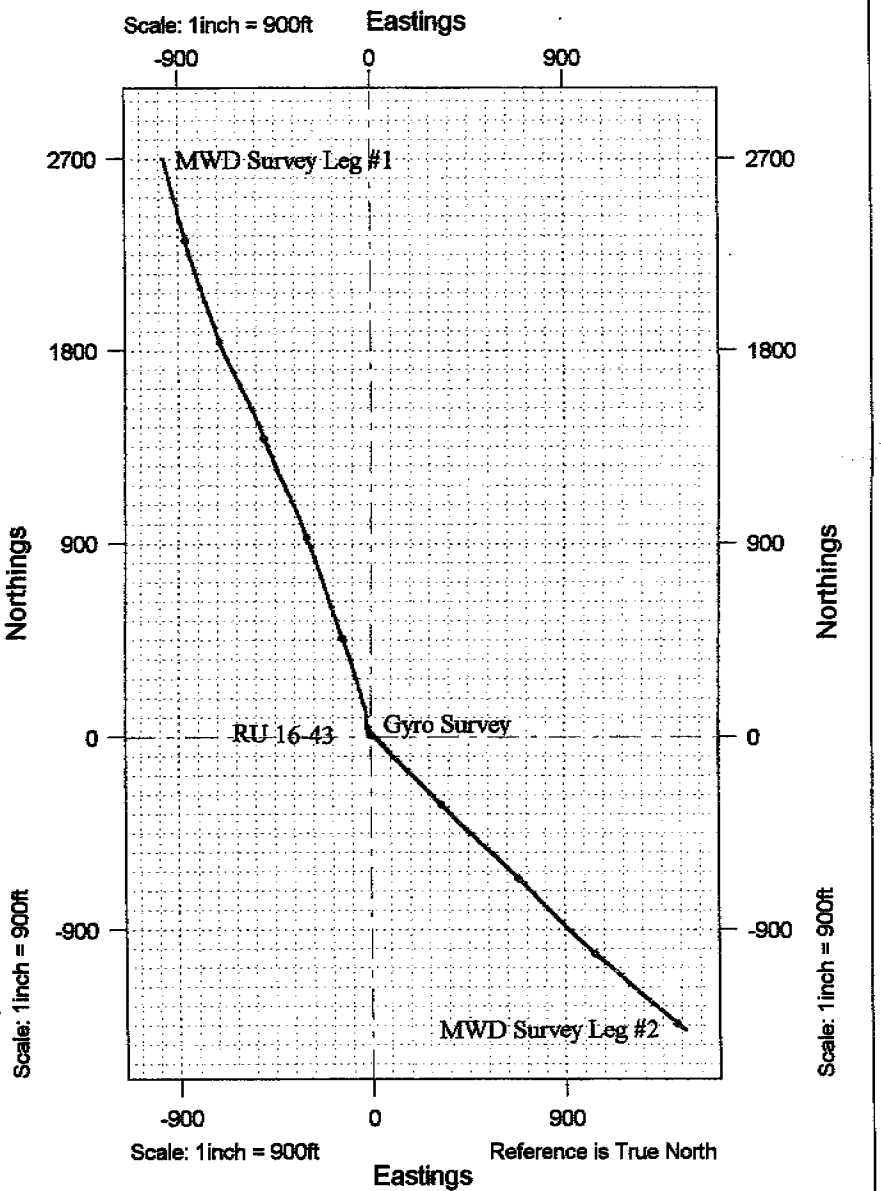
Mobil

DrillQuest

San Juan County
Utah
Ratherford Unit
RU 16-43 Leg #1 & Leg #2

Mobil





Prepared:	Checked:	Approved:

DRILLED FOOTAGE CALCULATION FOR DIRECTIONAL AND HORIZONTAL WELLS

Unit, Well Name:	Ratherford Unit, Well 16-13
API Well #:	43-037-31168
Well Completion:	Horizontal, Producer, 2 Laterals

First leg description:	Lateral #1
KOP MD:	5400.00
EOL MD:	8569.00
Footage drilled:	3169.00
Max. TVD Recorded	5562.26

Second leg description:	Lateral #2
KOP MD:	5200.00
EOL MD:	8081.00
Footage drilled:	2881.00
Max. TVD Recorded	5519.43

Total Footage Drilled (MD):	***6050.00***
Deepest point (TVD):	***5562.26***

Form 3160-5
(November 1994)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires November 30, 2000

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE – Other instructions on reverse side

5. Lease Serial No.
14-20-603-355

6. If Indian, Allottee or Tribe Name
NAVAJO TRIBAL

7. If Unit or CA/Agreement, Name and/or No.
RATHERFORD UNIT

1. Type of Well
[X] Oil Well [ ] Gas Well [ ] Other

8. Well Name and No.
RATHERFORD 16-13

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

9. API Well No.
43-037-31168

3a. Address
P.O. Box 633, Midland TX 79702

3b. Phone No. *(include area code)*
(915) 688-2585

10. Field and Pool, or Exploratory Area
GREATER ANETH

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
SEC. 16, T41S, R24E
1980' FSL & 660' FWL

11. County or Parish, State
SAN JUAN UT

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

TYPE OF SUBMISSION	TYPE OF ACTION			
[ ] Notice of Intent	[ ] Acidize	[ ] Deepen	[ ] Production (Start/Resume)	[ ] Water Shut-Off
[X] Subsequent Report	[ ] Alter Casing	[ ] Fracture Treat	[ ] Reclamation	[ ] Well Integrity
[ ] Final Abandonment Notice	[ ] Casing Repair	[ ] New Construction	[ ] Recomplete	[X] Other
	[ ] Change Plans	[ ] Plug and Abandon	[ ] Temporarily Abandon	
	[ ] Convert to Injection	[ ] Plug Back	[ ] Water Disposal	

13. Describe Proposed or Coommpleted Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the final site is ready for final inspection.)

BHL:

LATERAL #1; 2132' SOUTH & 2111' EAST FROM SURFACE SPOT (ZONE 1a).
LATERAL #2; 1883' NORTH & 1944' WEST FROM SURFACE SPOT (ZONE 1a).

CONVERSION OF PUMPING SYSTEM

FORM 15 ATTACHED TO COPY FOR STATE OF UTAH

RECEIVED
NOV 1 –
DIV. OF OIL, GAS & MINING

14. I hereby certify that the foregoing is true and correct
Name *(Printed/Typed)*

Title SHIRLEY HOUCHINS/ENV & REG TECH

Date 11-04-99

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title

Date

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office

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.

(Instructions on reverse)

Form 15

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

ORIGINAL FILING ☐
AMENDED FILING ☐

DESIGNATION OF WORKOVER OR RECOMPLETION

1. Name of Operator	2. Utah Account Number	3. Well Name and Number
MOBIL EXPLORATION/PRODUCING U.S.	N-	Rattlesnake 16-13
3. Address of Operator		**5. API Well Number**
P. O. DRAWER G		43-037-31168
CORTEZ, COLORADO 81321	4. Telephone Number 970.564.5207	7. Field Name GREATER ANETH — 8. Field Code Number 1767900

9. Location of Well
Footage : 1980' FSL & 660 FWL — County : SAN JUAN
QQ, Sec, T., R. : Sec 16, T41S, R24E — State : UTAH

COMPLETE ALL SECTIONS. ATTACH ADDITIONAL SHEETS IF NEEDED.

10. TYPE OF WORK (Check One)
- ☑ Production enhancement
- ☐ Recompletion
- ☐ Convert to injection
- ☐ Repair well

11.
Date work commenced 10/6/99
Date work completed 10/8/99

12. THE FOLLOWING EXPENSES FOR OPERATIONS ARE SUBMITTED FOR DESIGNATION AS WORKOVER OR RECOMPLETION EXPENSES UNDER U.C.A. 59-5-102(4):

	Expenses	Division Approval
a. Location preparation and cleanup	$ 1600	
b. Move-in, rig-up and rig-down (including trucking)	1050	
c. Rig charges (including fuel)	6600	
d. Drill pipe or other working string	—	
e. Water and chemicals for circulating fluid (including water hauling)	8400	
f. Equipment purchase	1750	
g. Equipment rental	1750	
h. Cementing	—	
i. Perforating	—	
j. Acidizing	—	
k. Fracture stimulation	—	
l. Logging services	—	
m. Supervision and overhead	750	
n. Other (itemize)		
o. Total submitted expenses	$ 21900	
p. Total approved expenses		$

13. LIST CONTRACTORS PROVIDING SERVICES VALUED AT MORE THAN $3,000.00.

Contractor	Location (city, state)	Services Provided
Dine' Well Service	Montezuma Creek, UT	Rig
MI Drilling Fluids	Farmington, NM	Completion Fluids

14. LIST WORKING INTEREST OWNERS WHO TAKE PRODUCT IN KIND AND ARE AUTHORIZED TO SHARE IN THE TAX CREDIT.

Name	Address	Utah Account No.	Percent of Interest
Chieftain			21.38
Texaco			4.45

I hereby certify that the foregoing is true and correct

Name & Signature David C. Newman D.C. Title Operations Engineer Date 11/2/99

(State Use Only)

Exhibit B

14. LIST WORKING INTEREST OWNERS WHO TAKE PRODUCT IN KIND AND ARE AUTHORIZED TO SHARE IN THE TAX CREDIT.

Ratherford Unit

Name	Address	Percent of Interest
MEPNA	P O Box 219063 Dallas TX 75221-9063	.7417002
Texaco Exploration & Production Inc.	P O Box 2100 Denver CO 80201-2100	.0445384
Chieftan International (US) Inc.	1201 Toronto Dominion Twr Edmonton Alberta TBJ-221 Canada	.2137614

ExxonMobil Production Comp
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

Charlotte H. Harper
Permitting Supervisor

ExxonMobil Production Company
a division of Exxon Mobil Corporation,
acting for ExxonMobil Oil Corporation

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
XXXXXXXXXXXXXXX
Navajo Area Office
NAVAJO REGION
P.O. Box 1060
Gallup, New Mexico 87305-1060

IN REPLY REFER TO:

RRES/543

AUG 30 2001

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,

DENNIS 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
NATV AM MIN COORD
SOLID MIN TEAM
PETRO MGMT TEAM
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

PBS 7/12/2001

543

File

June 27, 2001

ExxonMobil
Production

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 Jossie

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	F.A. Risch	Address	5959 Las Colinas Blvd. Irving, TX 75039
Vice President	K.T. Koonce	Address	800 Bell Street Houston, TX 77002
Secretary	F.L. Reid	Address	5959 Las Colinas Blvd. Irving, TX 75039
Treasure	B.A. Maher	Address	5959 Las Colinas Blvd. Irving, TX 75039

DIRECTORS

Name	D.D. Humphreys	Address	5959 Las Colinas Blvd. Irving, TX 75039
Name	P.A. Hanson	Address	5959 Las Colinas Blvd. Irving, TX 75039
Name	T.P. Townsend	Address	5959 Las Colinas Blvd. Irving, TX 75039
Name	B.A. Maher	Address	5959 Las Colinas Blvd. Irving, TX 75039
Name	F.A. Risch	Address	5959 Las Colinas Blvd. Irving, TX 75039

Sincerely,

Alex Correa

This is to certify that the above information pertaining to ExxonMobil Oil Corporation (Corporation) is trust 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

(CORPORATE SEAL)

Signature

AGENT AND ATTORNEY IN FACT
Title

SAL

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. Millican
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

[illegible] South, Suite 1400, Houston, Texas 77027-3301
[illegible] 713 297-4600 • Facsimile (713) 297-4750

NM 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 that said Power of Attorney was thereto subscribed by authority of said Companies and in deponent's presence.

Karen A. Price

Notarial Seal
KAREN A. PRICE
NOTARY PUBLIC
NEW JERSEY

Notary Public State of New Jersey
No. 2231647
Commission Expires Oct. 28, 2004

Notary Public

CERTIFICATION

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.

FEDERAL INSURANCE COMPANY · INDIANA ·
PACIFIC INDEMNITY COMPANY INCORPORATED JUL 16 1925 WISCONSIN
VIGILANT INSURANCE COMPANY · NEW YORK ·

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

15-10-0225 (Ed. 4-99) CONSENT

CERTIFICATE OF AMENDMENT

OF

CERTIFICATE OF INCORPORATION

OF

MOBIL OIL CORPORATION

(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.

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

JANICE M. PHILLIPS
MY COMMISSION EXPIRES
May 16, 2002

F010601000187

CSC 45

CERTIFICATE OF AMENDMENT

OF

MOBIL OIL CORPORATION

Under Section 805 of the Business Corporation Law

SRC

100 cc

STATE OF NEW YORK
DEPARTMENT OF STATE
FILED JUN 01 2001
TAX $ _____
BY: SRC

Filed by: EXXONMOBIL CORPORATION
(Name)

5959 Las Colinas Blvd.
(Mailing address)

Irving, TX 75039-2298
(City, State and Zip code)

Cust Ref # 165578MPT

RECEIVED
JUL 05 2001
REAL ESTATE SERVICES

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

STATE OF NEW YORK
DEPARTMENT OF STATE

Special Deputy Secretary of State

DOS-1266 (7/00)

Division of Oil, Gas and Mining

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
9-34	09-41S-24E	43-037-15711	6280	INDIAN	OW	S
10-12	10-41S-24E	43-037-15712	6280	INDIAN	OW	P
10-14	10-41S-24E	43-037-15713	6280	INDIAN	OW	S
10-32	10-41S-24E	43-037-15714	6280	INDIAN	OW	S
10-44	10-41S-24E	43-037-30451	6280	INDIAN	OW	S
11-14	11-41S-24E	43-037-16167	6280	INDIAN	OW	P
E14-12	14-41S-24E	43-037-15998	6280	INDIAN	OW	S
RATHERFORD 15-12	15-41S-24E	43-037-15715	6280	INDIAN	OW	P
15-32	15-41S-24E	43-037-15717	6280	INDIAN	OW	S
15-33	15-41S-24E	43-037-15718	6280	INDIAN	OW	P
15-41	15-41S-24E	43-037-15719	6280	INDIAN	OW	S
15-42	15-41S-24E	43-037-30448	6280	INDIAN	OW	P
15-22	15-41S-24E	43-037-30449	6280	INDIAN	OW	P
16-32	16-41S-24E	43-037-15723	6280	INDIAN	OW	P
16-41	16-41S-24E	43-037-15725	6280	INDIAN	OW	P
RATHERFORD UNIT 16-13	16-41S-24E	43-037-31168	6280	INDIAN	OW	P
RATHERFORD 16-77	16-41S-24E	43-037-31768	6280	INDIAN	OW	P
17-44	17-41S-24E	43-037-15732	6280	INDIAN	OW	P
RATHERFORD UNIT 17-24	17-41S-24E	43-037-31044	6280	INDIAN	OW	P
RATHERFORD UNIT 17-13	17-41S-24E	43-037-31133	6280	INDIAN	OW	P

OPERATOR CHANGES DOCUMENTATION

Enter date after each listed item is completed

1. (R649-8-10) Sundry or legal documentation was received from the **FORMER** operator on: 06/29/2001
2. (R649-8-10) Sundry or legal documentation was received from the **NEW** operator on: 06/29/2001
3. The new company has been checked through the **Department of Commerce, Division of Corporations Database on:** 04/09/2002
4. Is the new operator registered in the State of Utah: YES Business Number: 579865-0143
5. If **NO**, the operator was contacted 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 Communization 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):	**TO:** (New Operator):
N1855-ExxonMobil Oil Corporation	N2700-Resolute Natural Resources Company
PO Box 4358	1675 Broadway, Suite 1950
Houston, TX 77210-4358	Denver, CO 80202
Phone: 1 (281) 654-1936	Phone: 1 (303) 534-4600

CA No. **Unit:** **RATHERFORD**

OPERATOR CHANGES DOCUMENTATION

Enter date after each listed item is completed

1. (R649-8-10) Sundry or legal documentation was received from the **FORMER** operator on: 4/21/2006
2. (R649-8-10) Sundry or legal documentation was received from the **NEW** operator on: 4/24/2006
3. The new company was checked on the **Department of Commerce, Division of Corporations Database on:** 6/7/2006
4. Is the new operator registered in the State of Utah: YES Business Number: 5733505-0143
5. If **NO**, the operator was contacted contacted on:

6a. (R649-9-2)Waste Management Plan has been received on: requested

6b. Inspections of LA PA state/fee well sites complete on: n/a

6c. Reports current for Production/Disposition & Sundries on: ok

7. **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
8. **Federal and Indian Units:** The BLM or BIA has approved the successor of unit operator for wells listed on: not yet
9. **Federal and Indian Communization Agreements ("CA"):** The BLM or BIA has approved the operator for all wells listed within a CA on: n/a
10. **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:

1. Changes entered in the **Oil and Gas Database on:** 6/22/2006
2. Changes have been entered on the **Monthly Operator Change Spread Sheet on:** 6/22/2006
3. Bond information entered in RBDMS on: n/a
4. Fee/State wells attached to bond in RBDMS on: n/a
5. Injection Projects to new operator in RBDMS on: 6/22/2006
6. Receipt of Acceptance of Drilling Procedures for APD/New on: n/a

BOND VERIFICATION:

1. Federal well(s) covered by Bond Number: n/a
2. Indian well(s) covered by Bond Number: PA002769
3. (R649-3-1) The **NEW** operator of any fee well(s) listed covered by Bond Number n/a

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:

4. (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:

FORM 9

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

5. LEASE DESIGNATION AND SERIAL NUMBER:	See attached list
6. IF INDIAN, ALLOTTEE OR TRIBE NAME:	Navajo Tribe
7. UNIT or CA AGREEMENT NAME:	Ratherford Unit
8. WELL NAME and NUMBER:	See attached list
9. API NUMBER:	Attached
10. FIELD AND POOL, OR WILDCAT:	Greater Aneth

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 ☐ GAS WELL ☐ OTHER Unit Agreement

2. NAME OF OPERATOR: Resolute Natural Resources Company N2700

3. ADDRESS OF OPERATOR: 1675 Broadway, Suite 1950 CITY Denver STATE CO ZIP 80202 PHONE NUMBER: (303) 534-4600

4. LOCATION OF WELL
FOOTAGES AT SURFACE: See attached list COUNTY: San Juan
QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: STATE: UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
☐ NOTICE OF INTENT (Submit in Duplicate)	☐ ACIDIZE	☐ DEEPEN	☐ REPERFORATE CURRENT FORMATION
Approximate date work will start: _____	☐ ALTER CASING	☐ FRACTURE TREAT	☐ SIDETRACK TO REPAIR WELL
	☐ CASING REPAIR	☐ NEW CONSTRUCTION	☐ TEMPORARILY ABANDON
	☐ CHANGE TO PREVIOUS PLANS	☑ OPERATOR CHANGE	☐ TUBING REPAIR
	☐ CHANGE TUBING	☐ PLUG AND ABANDON	☐ VENT OR FLARE
☑ SUBSEQUENT REPORT (Submit Original Form Only)	☐ CHANGE WELL NAME	☐ PLUG BACK	☐ WATER DISPOSAL
Date of work completion:	☐ CHANGE WELL STATUS	☐ PRODUCTION (START/RESUME)	☐ WATER SHUT-OFF
_____	☐ COMMINGLE PRODUCING FORMATIONS	☐ RECLAMATION OF WELL SITE	☐ OTHER: _____
	☐ CONVERT WELL TYPE	☐ 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) Dwight E Mallory TITLE Regulatory Coordinator

SIGNATURE Dwight E Mallory DATE 4/20/2006

(This space for State use only)

APPROVED 6/27/06
Earlene Russell
Division of Oil, Gas and Mining
Earlene Russell, Engineering Technician

RECEIVED
APR 24 2006
DIV. OF OIL, GAS & MINING

(5/2000) (See Instructions on Reverse Side)

FORM 9

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

5. LEASE DESIGNATION AND SERIAL NUMBER:

SUNDRY NOTICES AND REPORTS ON WELLS

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: Ship Rock

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: UTU68931A

1. TYPE OF WELL: OIL WELL ☑ GAS WELL ☐ OTHER

8. WELL NAME and NUMBER: Ratherford

2. NAME OF OPERATOR: ExxonMobil Oil Corporation N1855

9. API NUMBER: attached

3. ADDRESS OF OPERATOR: P.O. Box 4358 CITY Houston STATE TX ZIP 77210-4358

PHONE NUMBER: (281) 654-1936

10. FIELD AND POOL, OR WILDCAT: Aneth

4. LOCATION OF WELL

FOOTAGES AT SURFACE:

COUNTY: San Juan

QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN:

STATE: UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
☑ NOTICE OF INTENT (Submit in Duplicate)	☐ ACIDIZE	☐ DEEPEN	☐ REPERFORATE CURRENT FORMATION
Approximate date work will start: 6/1/2006	☐ ALTER CASING	☐ FRACTURE TREAT	☐ SIDETRACK TO REPAIR WELL
	☐ CASING REPAIR	☐ NEW CONSTRUCTION	☐ TEMPORARILY ABANDON
	☐ CHANGE TO PREVIOUS PLANS	☑ OPERATOR CHANGE	☐ TUBING REPAIR
	☐ CHANGE TUBING	☐ PLUG AND ABANDON	☐ VENT OR FLARE
☐ SUBSEQUENT REPORT (Submit Original Form Only)	☐ CHANGE WELL NAME	☐ PLUG BACK	☐ WATER DISPOSAL
	☐ CHANGE WELL STATUS	☐ PRODUCTION (START/RESUME)	☐ WATER SHUT-OFF
Date of work completion:	☐ COMMINGLE PRODUCING FORMATIONS	☐ RECLAMATION OF WELL SITE	☐ OTHER:
	☐ CONVERT WELL TYPE	☐ 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) Laurie Kilbride TITLE Permitting Supervisor

SIGNATURE Laurie B. Kilbride DATE 4/19/2006

(This space for State use only)

APPROVED 6/27/06
Earlene Russell
Division of Oil, Gas and Mining
Earlene Russell, Engineering Technician

(See Instructions on Reverse Side)

RECEIVED
APR 21 2006
DIV. OF OIL, GAS & MINING

(5/2000)

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	SENW	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	SENW	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	SENW	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	SENW	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	SENW	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	SENW	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	SENW	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

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.

5.LEASE DESIGNATION AND SERIAL NUMBER: 14-20-603-355

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 16-13

2. NAME OF OPERATOR: RESOLUTE NATURAL RESOURCES

9. API NUMBER: 43037311680000

3. ADDRESS OF OPERATOR: 1675 Boradway Ste 1950 , Denver, CO, 80202

PHONE NUMBER: 303 534-4600 Ext

9. FIELD and POOL or WILDCAT: GREATER ANETH

4. LOCATION OF WELL
FOOTAGES AT SURFACE: 1980 FSL 0660 FWL
QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: Qtr/Qtr: NWSW Section: 16 Township: 41.0S Range: 24.0E Meridian: S

COUNTY: SAN JUAN

STATE: UTAH

11. CHECK APPROPRIATE BOXES TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION		
☐ NOTICE OF INTENT Approximate date work will start:	☐ ACIDIZE	☐ ALTER CASING	☐ CASING REPAIR
☑ SUBSEQUENT REPORT Date of Work Completion: 1/18/2012	☐ CHANGE TO PREVIOUS PLANS	☐ CHANGE TUBING	☐ CHANGE WELL NAME
☐ SPUD REPORT Date of Spud:	☐ CHANGE WELL STATUS	☐ COMMINGLE PRODUCING FORMATIONS	☐ CONVERT WELL TYPE
☐ DRILLING REPORT Report Date:	☐ DEEPEN	☐ FRACTURE TREAT	☐ NEW CONSTRUCTION
	☐ OPERATOR CHANGE	☑ PLUG AND ABANDON	☐ PLUG BACK
	☐ PRODUCTION START OR RESUME	☐ RECLAMATION OF WELL SITE	☐ RECOMPLETE DIFFERENT FORMATION
	☐ REPERFORATE CURRENT FORMATION	☐ SIDETRACK TO REPAIR WELL	☐ TEMPORARY ABANDON
	☐ TUBING REPAIR	☐ VENT OR FLARE	☐ WATER DISPOSAL
	☐ WATER SHUTOFF	☐ SI TA STATUS EXTENSION	☐ APD EXTENSION
	☐ WILDCAT WELL DETERMINATION	☐ OTHER	OTHER:

12. DESCRIBE PROPOSED OR COMPLETED OPERATIONS. Clearly show all pertinent details including dates, depths, volumes, etc.

1). Set cement retainer at 268' with tubing. 2). Pumped 235 bbls (1,000 sx) of Type 3, retarded, cement down the casing. Pumped 141 bbls (640 sx) Type 3 cement down the casing. Pumped at 3 bpm and 500-790 psi. 3). Circulated 11 bbls of Type 3 cement through the bradenhead, circulating 3 bbls to the surface. 4). Stung out of the Cement retainer and circulated 15 bbls out the casing, circulating 4 bbls of cement to the surface. 5). Laid the tubing down. 6). Rigged the service unit down. 6). Cut the wellhead off. Welded a plate on the casing stump. Installed a dry hole maker. 7). Plugging activity was completed 01/18/2012. Attachment: Well bore diagram. Final Status.

Accepted by the Utah Division of Oil, Gas and Mining
FOR RECORD ONLY
April 04, 2012

NAME (PLEASE PRINT)	PHONE NUMBER	TITLE
Sherry Glass	303 573-4886	Sr Regulatory Technician
SIGNATURE N/A		**DATE** 3/29/2012

RECEIVED: Mar. 29, 2012

Form 3160-5
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

5. Lease Serial No.
1420603355

6. If Indian, Allottee or Tribe Name
SHIPROCK

7. If Unit or CA/Agreement, Name and/or No.
7960041920

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
RATHERFORD 16-13

2. Name of Operator
RESOLUTE ANETH, LLC
Contact: SHERRY GLASS
E-Mail: sglass@resoluteenergy.com

9. API Well No.
43-037-31168-01-S1

3a. Address
1675 BROADWAY SUITE 1950
DENVER, CO 80202

3b. Phone No. (include area code)
Ph: 303-573-4886 Ext: 1580
Fx: 303-623-3628

10. Field and Pool, or Exploratory
ANETH

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 16 T41S R24E NWSW

11. County or Parish, and State
SAN JUAN COUNTY, UT

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

TYPE OF SUBMISSION	TYPE OF ACTION			
☐ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☒ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other
	☐ Change Plans	☒ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Resolute rigged up to plug and abandon the well based on a Notice of Intent approved July 25, 2011. 125 barrels of 18ppg mud was pumped down the well, followed by 130 barrels of 16# mud, finishing on a vacuum. When Resolute rigged up to begin work, they found that the tubing had parted as a result of corrosion. Two hundred-seventeen feet (217?) of tubing was recovered. The tubing string was located at 552?. Fishing efforts recovered 2? of pipe. All pipe was heavily corroded. The plugging procedure was modified following a discussion with Steve Mason with the BLM. The intent was to set a cement retainer just above the fish at 552?, bullhead cement down the production casing, sting out of the CR, perforate the production casing, set a cement retainer above the perforations, squeeze cement toward the intermediate casing shoe, switch valves to circulate cement to the surface through the intermediate casing/production casing annulus, sting out of the CR and fill the production casing above the CR with cement. Subsequent work found that a packer seat could not be found below 271? and that there was communication between the production casing and

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

Electronic Submission #128887 verified by the BLM Well Information System
For RESOLUTE ANETH, LLC, sent to the Farmington
Committed to AFMSS for processing by STEVE MASON on 01/23/2012 (11SXM1099SE)

Name *(Printed/Typed)* SHERRY GLASS — Title SR REGULATORY TECHNICIAN

Signature (Electronic Submission) — Date 01/20/2012

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By ACCEPTED — Title STEPHEN MASON PETROLEUM ENGINEER — Date 01/23/2012

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office Farmington

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make 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.

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

RECEIVED: Mar. 29, 2012

Additional data for EC transaction #128887 that would not fit on the form

32. Additional remarks, continued

intermediate casing below 271?. Resolute set a cement retainer at 268? and plugged the well as follows;
1). Set cement retainer at 268? with tubing.
2). Pumped 235 bbls (1,000 sx) of Type 3, retarded, cement down the casing. Pumped 141 bbls (640 sx) Type 3 cement down the casing. Pumped at 3 bpm and 500-790 psi.
3). Circulated 11 bbls of Type 3 cement through the bradenhead, circulating 3 bbls to the surface.

4). Stung out of the Cement retainer and circulated 15 bbls out the casing, circulating 4 bbls of cement to the surface.
5). Laid the tubing down.
6). Rigged the service unit down.
6). Cut the wellhead off. Welded a plate on the casing stump. Installed a dry hole maker.
7). Plugging activity was completed 01/18/2012.

Attachment: Well bore diagram. Final Status.

RECEIVED: Mar. 29, 2012

Revisions to Operator-Submitted EC Data for Sundry Notice #128887

	Operator Submitted	BLM Revised (AFMSS)
Sundry Type:	ABD FAN	ABD SR
Lease:	1420603355	1420603355
Agreement:	1420603355	7960041920 (UTU68931A)
Operator:	RESOLUTE ANETH, LLC 1675 BROADWAY SUITE 1950 DENVER, CO 80202 Ph: 303-573-4886	RESOLUTE ANETH, LLC 1675 BROADWAY SUITE 1950 DENVER, CO 80202 Ph: 303.534.4600
Admin Contact:	SHERRY GLASS SR REGULATORY TECHNICIAN E-Mail: sglass@resoluteenergy.com Ph: 303-573-4886 Ext: 1580 Fx: 303-623-3628	SHERRY GLASS SR REGULATORY TECHNICIAN E-Mail: sglass@resoluteenergy.com Ph: 303-573-4886 Ext: 1580 Fx: 303-623-3628
Tech Contact:	SHERRY GLASS SR REGULATORY TECHNICIAN E-Mail: sglass@resoluteenergy.com Ph: 303-573-4886 Ext: 1580 Fx: 303-623-3628	SHERRY GLASS SR REGULATORY TECHNICIAN E-Mail: sglass@resoluteenergy.com Ph: 303-573-4886 Ext: 1580 Fx: 303-623-3628
Location: State: County:	 UT SAN JUAN	 UT SAN JUAN
Field/Pool:	GREATER ANETH	ANETH
Well/Facility:	RATHERFORD UNIT 16-13 Sec 16 T41S R24E Mer NAV NWSW 1980FSL 660FWL	RATHERFORD 16-13 Sec 16 T41S R24E NWSW

RECEIVED: Mar. 29, 2012

RATHERFORD UNIT # 16-13 HZ
GREATER ANETH FIELD
Surface Loc: 1980' FNL & 660' FWL
SEC 16-T41S-R24E
SAN JUAN COUNTY, UTAH

API 43-037-31168

Permanent Abandonment

Final P&A, 1/18/2012

B.H. Location of Lateral 1A:
2132' South & 2111' East of Surface Location
B.H. Location of Lateral 2A:
1883' North & 1944' West of Surface Location

Lateral #1A1:
Curve Section:
MD: 5419-5606'
TVD: 5419-5528'
Az: 131.5 deg
Inc.: 8902 deg
Max Dog Leg : 60 @ 5510' & 5560' MD

Lateral Section:
MD: 5506-8569'
TVD: 5528-5562'
VS: 3001
Az: 135.2 deg
Length: 2963'
Max Dog Leg: 13 deg @ 5633'
12 @ 6425', 9 @ 5664', 5140',
6870', 7313' MD
8-20-98

Lateral #2A1:
Curve Section:
MD: 5390-5603'
TVD: 5390-5519'
Az: 60.3 deg
Inc.: 321 deg
Max Dog Leg : 57 @ 5501' MD

Lateral Section:
MD: 5603-8081'
TVD: 5519-5491'
VS: 2707
Az: 311.7 deg
Length: 2478'
Max Dog Leg: 15 deg @ 6534'
13 @ 5645', 9 @ 6058' & 6945 MD
8-20-98