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

SUBMIT IN T JCATE*
(Other instructions on reverse side)

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

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 [ ]

RECEIVED
AUG 08 1985
DIVISION OF OIL GAS & MINING

2. NAME OF OPERATOR: Phillips Petroleum 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: 795' FNL, 2090 FEL Sec. 18-T41S-R24E
At proposed prod. zone: Same

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

5. LEASE DESIGNATION AND SERIAL NO.: 14-20-603-353
6. IF INDIAN, ALLOTTEE OR TRIBE NAME: Navajo
7. UNIT AGREEMENT NAME: SW-I-4192
8. FARM OR LEASE NAME: Ratherford Unit
9. WELL NO.: 18-31
10. FIELD AND POOL, OR WILDCAT: Greater Aneth
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 18-T41S-R24E
12. COUNTY OR PARISH: San Juan
13. STATE: Utah

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any): 795' from Ratherford Unit Lease Line
16. NO. OF ACRES IN LEASE: 2560
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.: 1308'
19. PROPOSED DEPTH: 5900' Desert Creek
20. ROTARY OR CABLE TOOLS: Rotary
21. ELEVATIONS (Show whether DF, RT, GR, etc.): 5087 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'	175 cu ft (Circ to surface)
12-1/4"	9-5/8"	36#	1600'	1000 cu ft (Circ to surface)
8-3/4"	7"	23# & 26#	5900'	1500 cu ft (T.O.C. approx 2000')

Approval is requested to drill Ratherford Unit #18-31, 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: 8/12/85
BY: John R. Baza
WELL SPACING: Unit Well A-3

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 D. C. Gill — TITLE Area Manager — DATE August 5, 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

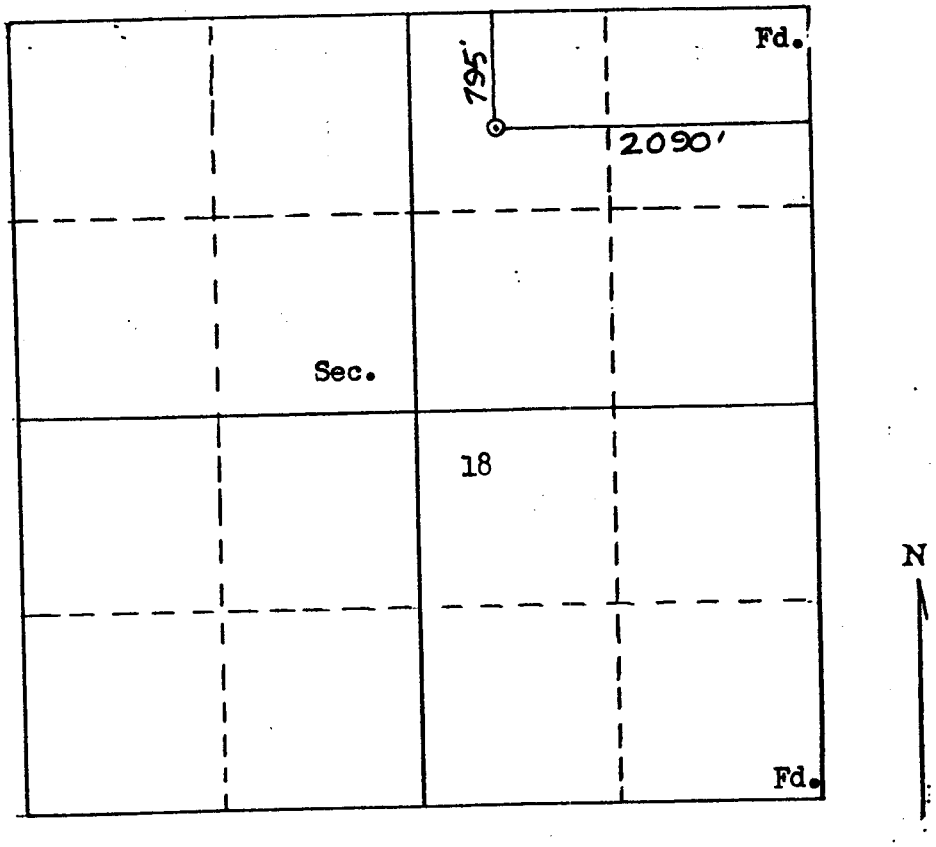
LEASE RATHERFORD UNIT WELL NO. 18-31

SEC. 18, T 41S, R 24E

County: San Juan State: Utah

LOCATION 795FN & 2090FE

ELEVATION 5087



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

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

SURVEYED Feb. 28, 19 85

FARMINGTON, N. M.

RATHERFORD UNIT #18-31

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 . . . . . 2687'
   DeChelly . . . . . 3026'
   Hermosa . . . . . 4902'
   Desert Creek Zone I . . . . . 5877'

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:

5877'	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 (175 cu. ft.) Class B cement. Cement will be brought to surface.

2. Surface Casing:

Surface casing will be cemented with 300 sks (1000 cu. ft.) "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 (1500 cu. ft.), caliper will be used with 15% excess. The top of the cement should be around 2000'. If other zones with hydrocarbon potential are encountered, they will be covered with cement.

c. Auxiliary Equipment:

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

5. Drilling Fluid:

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

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

6. Testing, logging, and coring:

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

7. Downhole Conditions:

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

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

CULTURAL RESOURCE REPORT

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

SURFACE USE PROGRAM

1. Existing Roads

   a. Access to existing lease roads is approximately 5 miles south of Montezuma Creek, Utah.

   b. The existing roads will be maintained in the same or better condition.

   c. Refer to the attached access road map for road information.

2. Access Roads

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

3. Location of Existing Wells.

   Locations of existing wells are shown on the attached maps.

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

5. Water Supply

   a. The source of water to drill the subject well is from the River Booster, NE/4 Sec. 5., or from the Water Injection Plant, SE/4 Sec. 17 in T41S-R24E, San Juan County, Utah.

   b. The drilling water will be trucked from the water source to the subject well.

   c. A water supply well will not be drilled on the lease.

6. Construction Materials

a. Only native soils will be used for construction of wellsite and the access road.

b. Pit run rock will be used on the wellsite and access road when needed.

c. The above materials are owned by the Navajo Tribe.

7. Waste Disposal

a. Cuttings: Cuttings will be contained in a fenced reserve pit until dry enough to cover. Upon abandonment, the reserve pit area will be backfilled, shaped to natural topography, and seeded.

b. Drilling Fluid: Drilling fluid will be contained in a fenced reserve pit until dry enough to cover. Upon abandonment, the reserve pit area will be backfilled, shaped to natural topography, and seeded.

c. Garbage/Trash: All garbage and trash will be put in the burn pit. The burn pit will be fenced on four sides. After the burn pit is no longer in use, the trash and garbage will be covered with a minimum of 4 feet of fill.

d. Salt: No salts are anticipated on this well. If salt is present, it will be disposed of in the reserve pit.

e. Chemicals: Chemicals will be disposed of in the reserve pit.

f. Sewage: Dry chemical toilets will be used.

8. Ancillary Facilities

No ancillary facilities are required.

9. Well Site Layout.

a. Refer to attached Rig Layout plat

b. There are no plans to line the reserve pit unless porous soil materials are encountered during construction.

10. Surface Reclamation Plans

a. Construction Program: The top 8 inches of surface material will be removed and stockpiled. A cross section of the drill site showing cuts and fills is attached.

b. Well Abandonment: All disturbed areas will be shaped to the natural topography and seeded in accordance with BLM requirements.

c. Producing Well: Those areas not needed for production purposes will be recontoured to the surrounding topography. Seeding will be in accordance with BLM requirements.

d. Pipelines and flowlines: Flowlines will be above ground and follow or be 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:

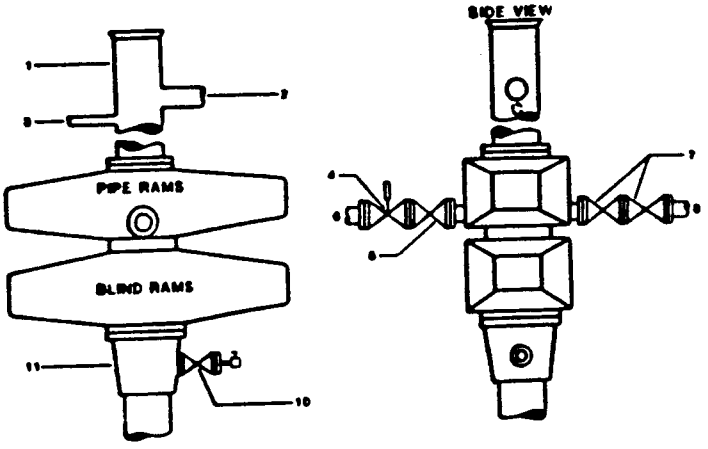
D. C. Gill
P. O. Box 2920
Casper, Wyoming 82602
307-237-3791

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 August 5, 1985

D. C. Gill
Area Manager

RCT/fb (18)
Casper - RC



1. BELL NIPPLE
2. FLOW LINE
3. FILL-UP LINE
4. 2" FE PRESSURE-OPERATED CHOKE LINE VALVE
5. 2" FE GATE VALVE
6. 2" FE CHOKE LINE TO MANIFOLD
7. 2" FE GATE VALVES
8. 2" FE KILL LINE
10. 2" SE OR FE GATE VALVE WITH NEEDLE VALVE
11. CASING HEAD HOUSING

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.

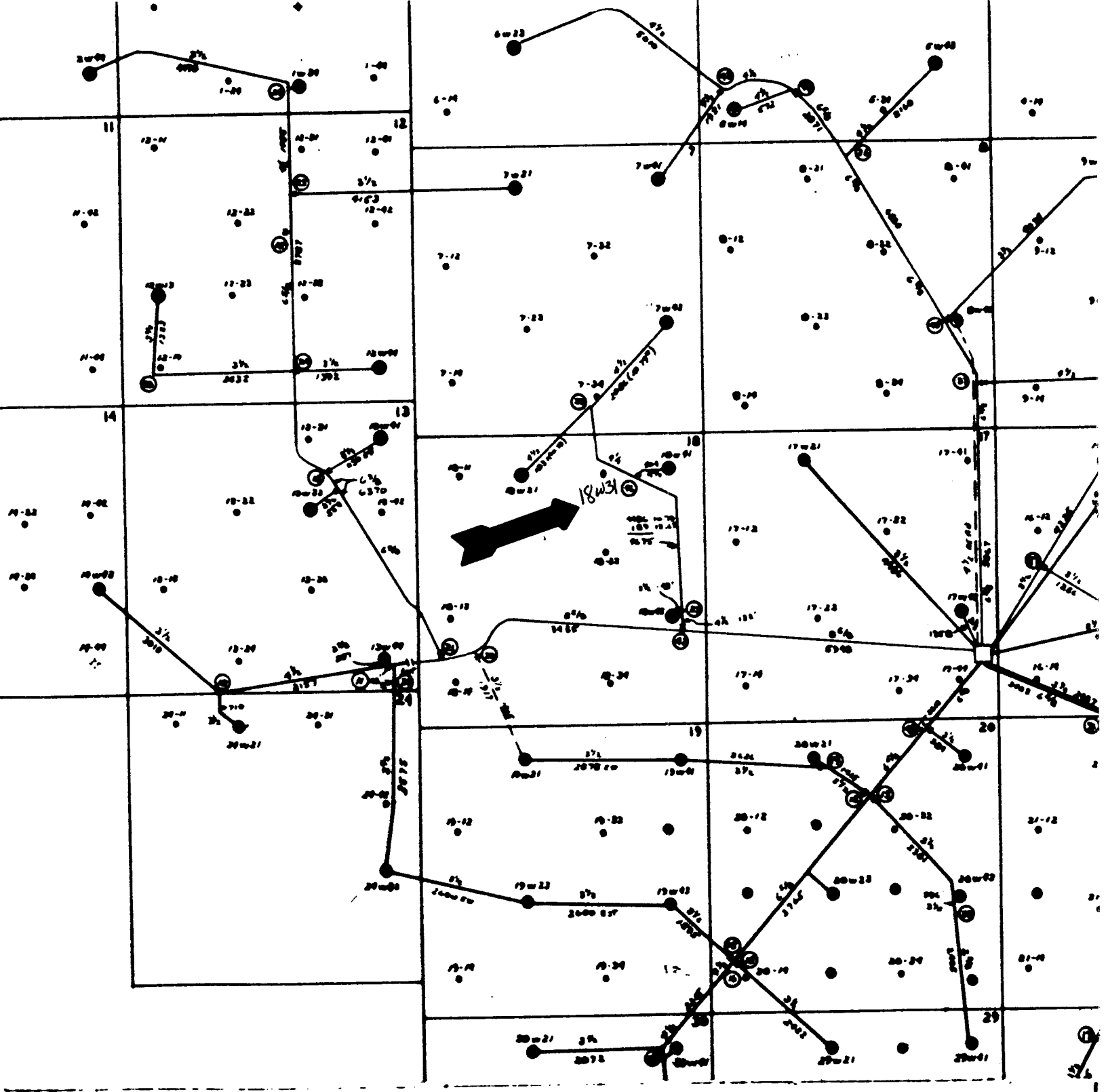
When testing the wellhead pack-off, use recorded test pressures and volumes to determine if pack-off is leaking. Pressure should be immediately released at the first indication of a leak.

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.

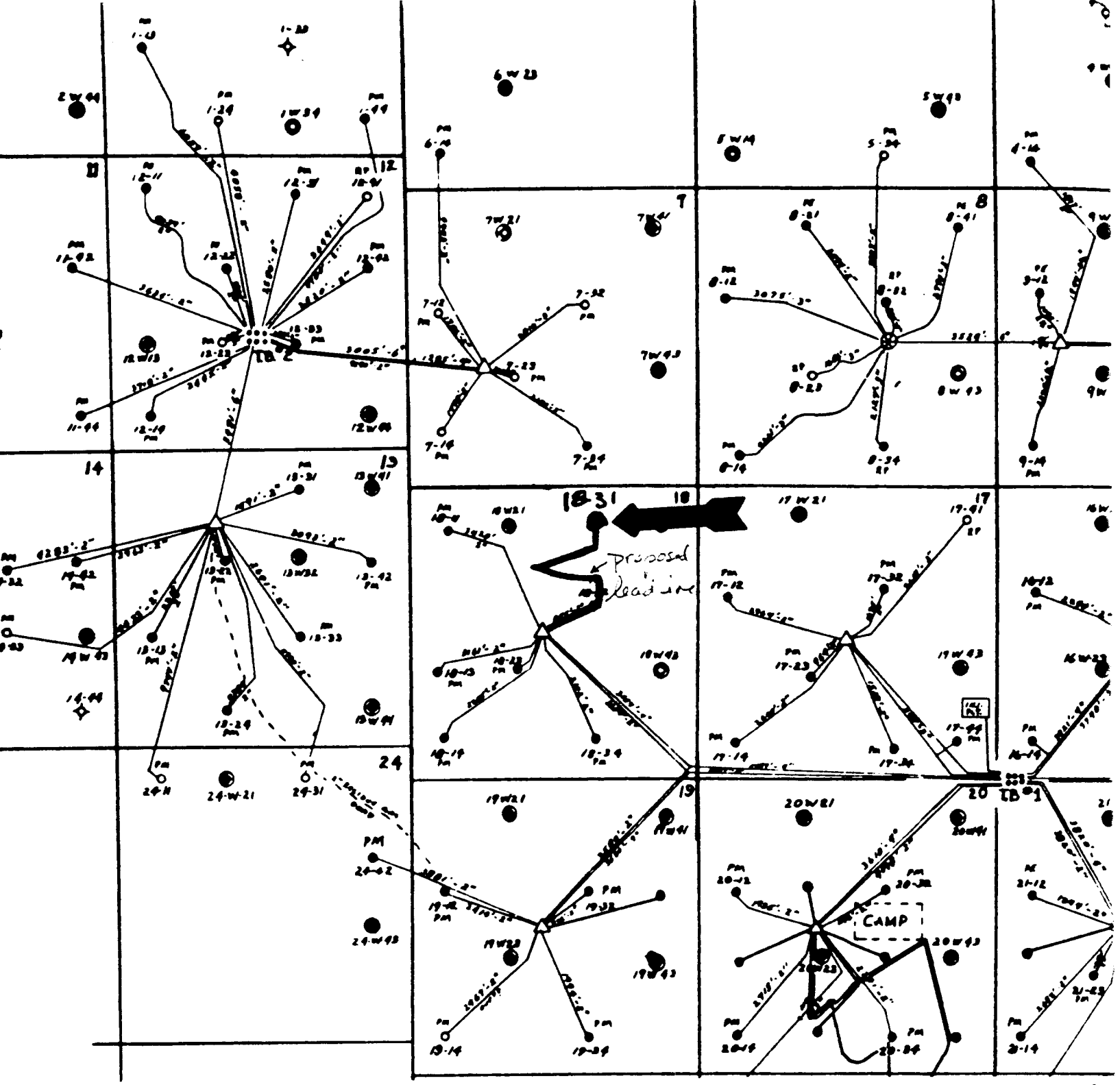
Pressure is to be released only through the pressure release lines that are vented back into the pump unit tanks. The lines are to be clamped down to direct the flow into unit tanks.



NO.	REVISION	BY	DATE	CHKD	APP'D

FOR BIDS	PHILLIPS PETROLEUM COMPANY BARTLESVILLE, OKLAHOMA	JA NO.	FILE CODE
FOR APPR		AFE NO.	SCALE 2.2"=1m
FOR CONST	RATHERFORD UNIT WELL 18-31 WATER INJECTION LINES NW NE SEC 18 T41S-R24E SAN JUAN CO., UTAH	DWG NO.	
DRAWN 3-30-84 BJM		SH NO	
CHECKED			
APP'D			

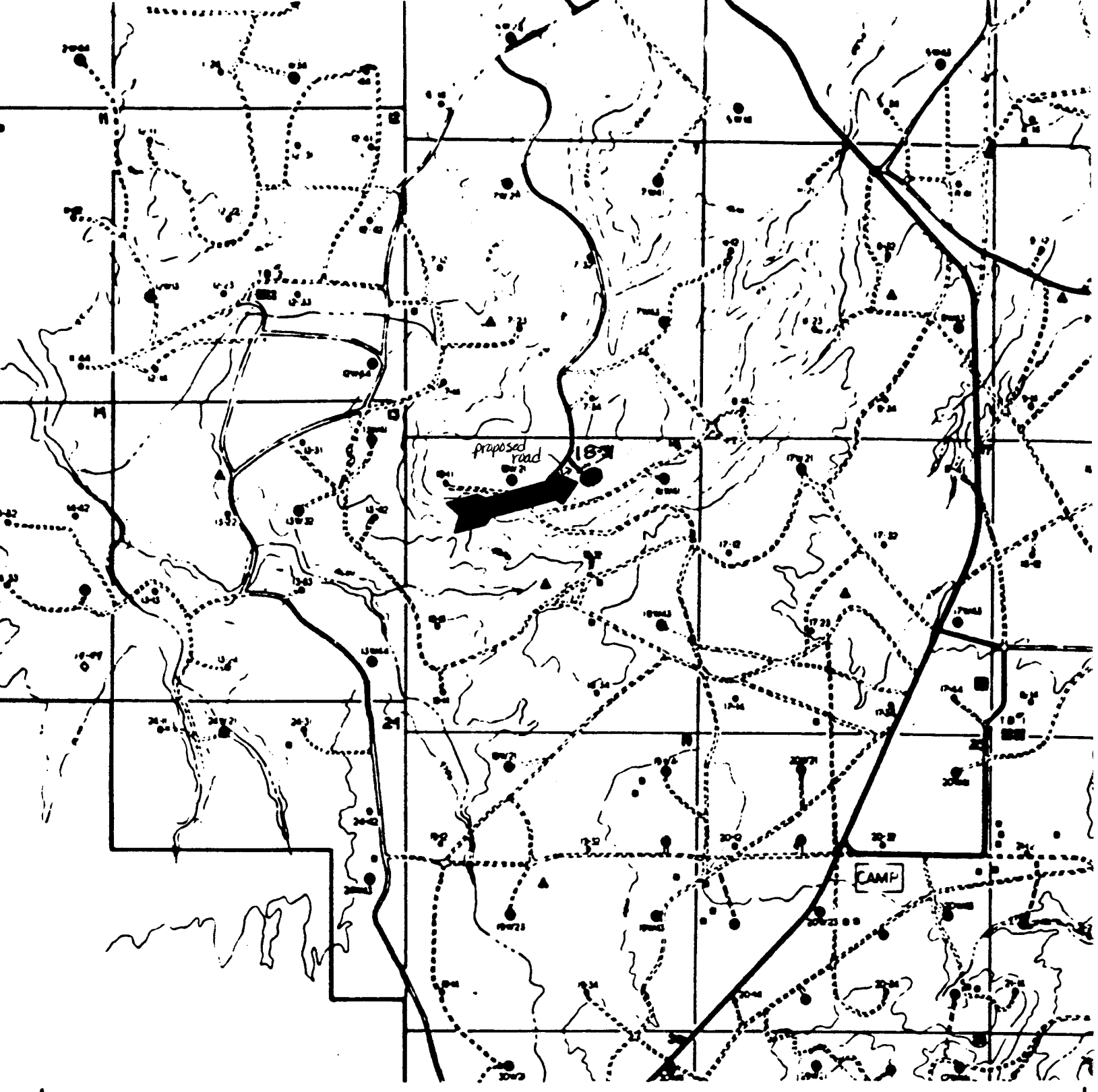
FORM 1779-S 8-81



NO	REVISION	BY	DATE	CHKD	APP'D

FOR BIDS	PHILLIPS PETROLEUM COMPANY BARTLESVILLE, OKLAHOMA	JA NO.	FILE CODE
FOR APPR		AFE NO.	SCALE 2.2" = 1 mi
FOR CONST	RATHERFORD UNIT WELL 18-31 : PROPOSED LEADLINE PLAT NW NE SEC. 18 T41S-R24E SAN JUAN CO., UTAH	DWG NO	
DRAWN 1-17-85 BJM			
CHECKED		SH NO.	
APP'D			

FORM 1779-S 8-81



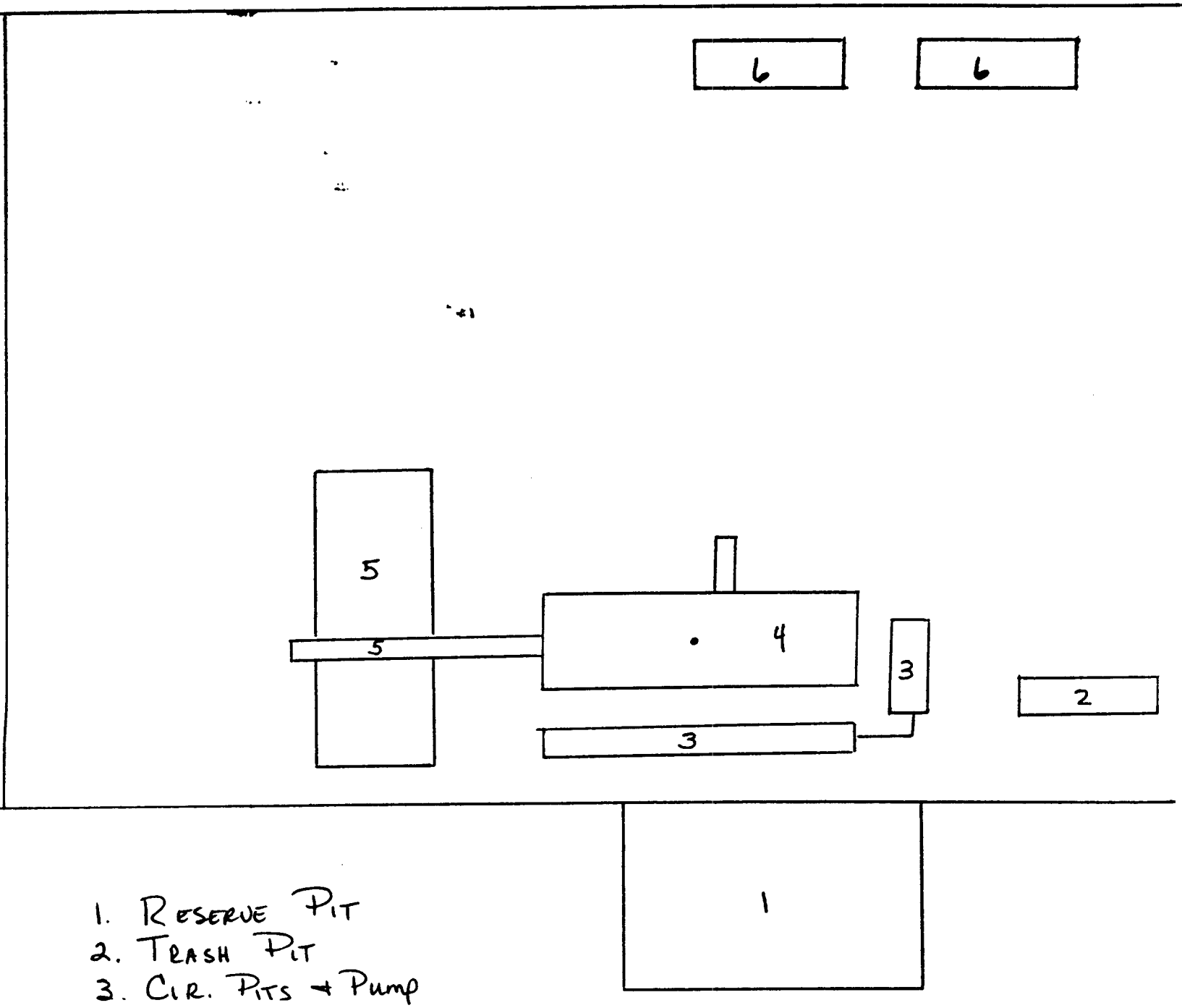
NO.	REVISION	BY	DATE	CHKD	APP'D

FOR BIDS	PHILLIPS PETROLEUM COMPANY BARTLESVILLE, OKLAHOMA	JA NO.	FILE CODE
FOR APPR		AFE NO.	SCALE 2.2"=1mi
FOR CONST	RATHERFORD UNIT WELL 18-31 PROPOSED ROAD PLAT NW NE SEC 18 T41S-R24E SAN JUAN CO., UTAH	DWG NO	
DRAWN 1-17-85 BJM		SH NO	
CHECKED			
APP'D			

FORM 1779-S 8-81

Rathford Unit # 18-31

NWNE Sec 18 T41S-R24E



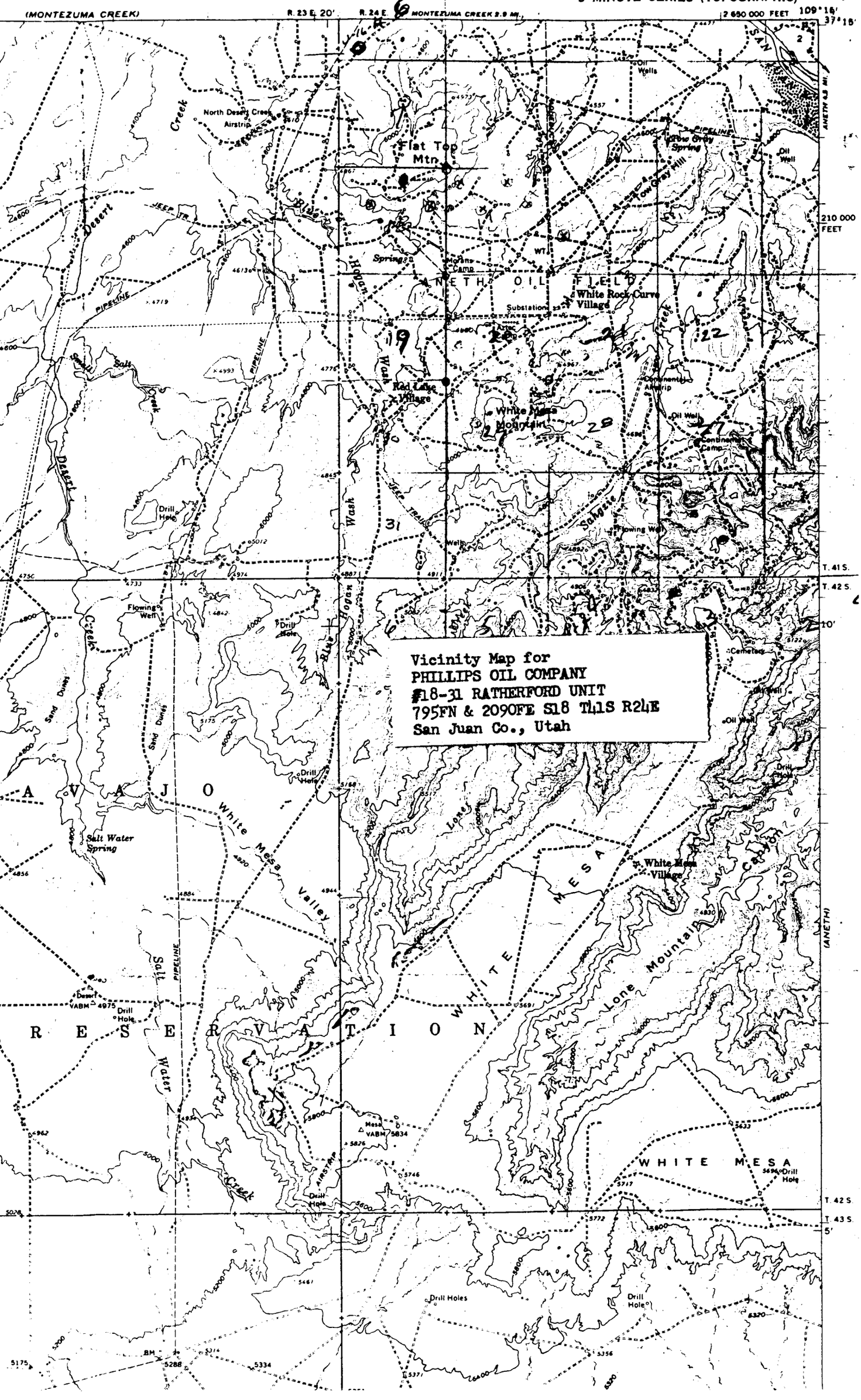
1. Reserve Pit
2. Trash Pit
3. Cir. Pits + Pump
4. Rig
5. Cat Walk + Pipe Racks
6. Trailers

Drilling Rig Layout

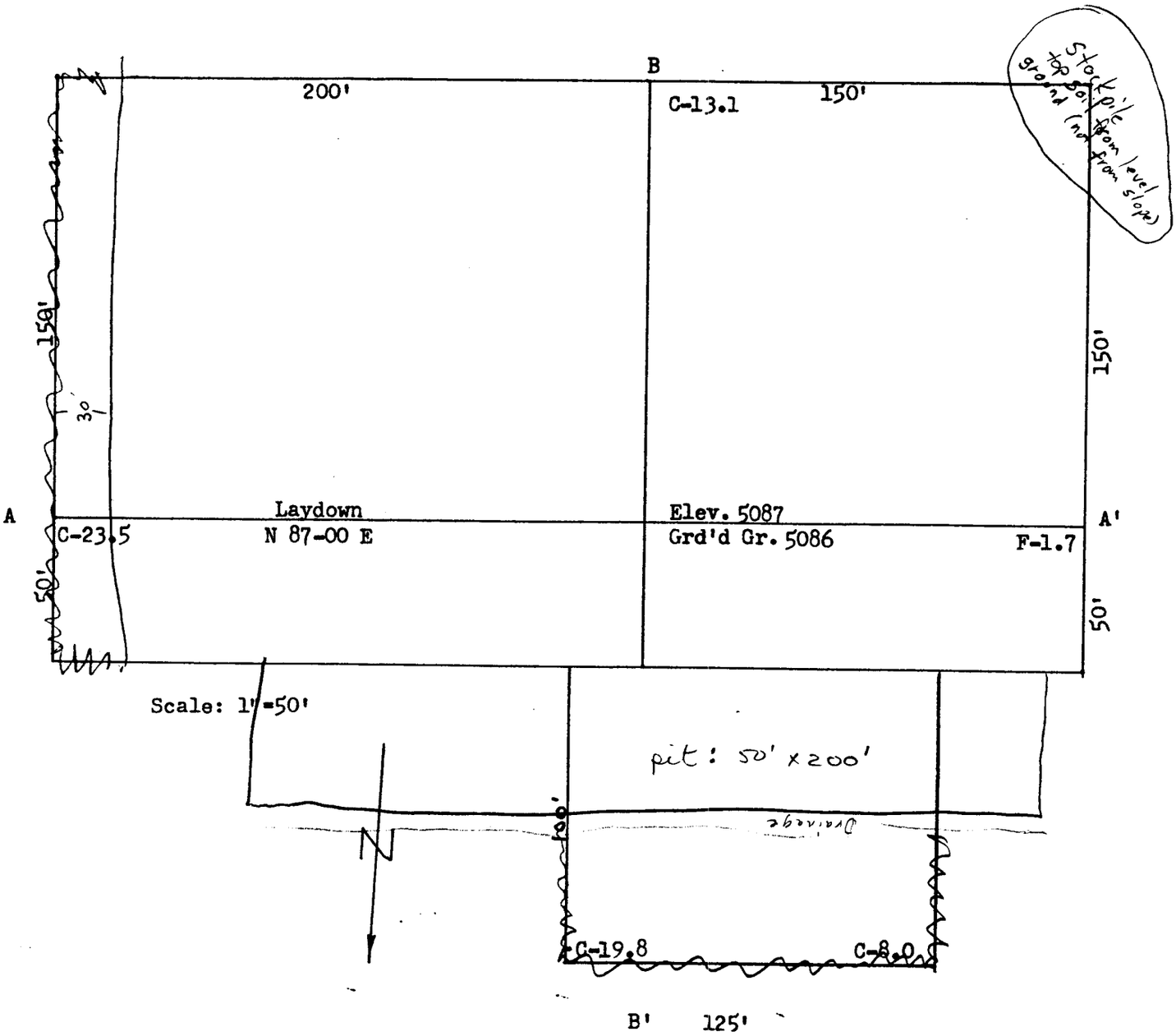
Outline of Location Approximately 300' x 350'
No Scale

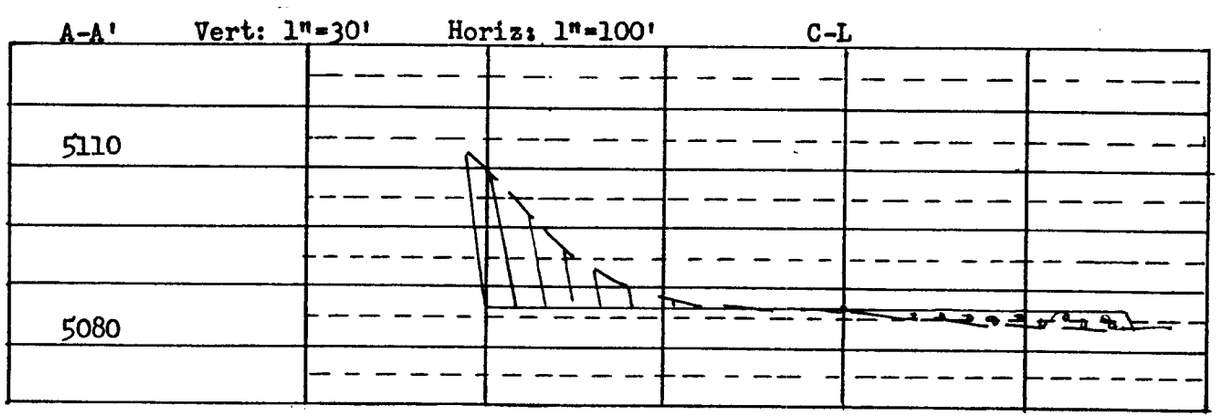
23 | 27

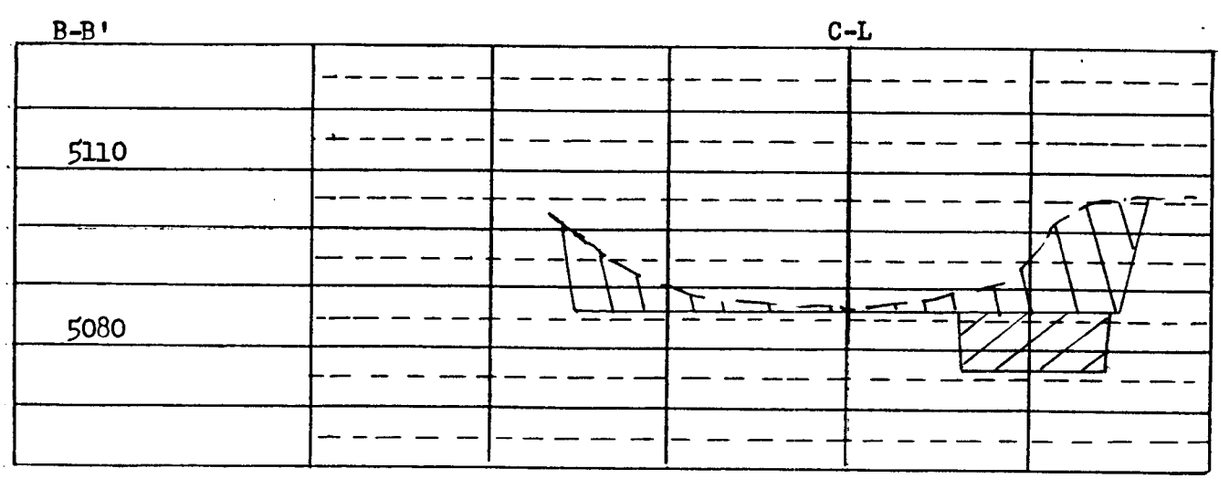
WHITE MESA VILLAGE QUADRANGLE
UTAH
5 MINUTE SERIES (TOPOGRAPHIC)



Profile for
PHILLII OIL COMPANY # 18-31 RATHERFORD IT
795FN & 2090FE S18 T41S R24E
SAN JUAN COUNTY, UTAH







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
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
1-14	POC-R259	41S	23E	1		SW	SW	12	4123375	646550	12	4122960	646600
		41S	23E	12	N 1/2	NW	NW						
7-11	POC-R258	41S	24E	7	E 1/2	W 1/2	NW	12	4122800	648200	12	4122800	648000
					S 1/2	NE	NW					(4122025	648200)
					NE	SE	NW						
					W 1/2	SW	NE						
7-13	POC-R257	41S	24E	7	N 1/2	NW	SW	12	412075	648200	12	(4122025	648500)
					W 1/2	NE	SW						
7-22	POC-R256	41S	24E	7	CT	SE	NW	12	4122450	648600	12	4121975	648575
					W 1/2	SE	NW					(4122025	648500)
					W 1/2	NE	SW						
7-44	POC-R253	41S	24E	*		SE	SE	12	4121625	649475	12	(4122025	648500)
					SW	NE	SE						
					S 1/2	NW	SE						
12-12	POC-R252	41S	23E	12	N 1/2	SW	NW	12	4122650	646560	12	4122300	646575
						SE	NW					(4122450	647150)
					NE	NE	SW						
12-21	POC-R251	41S	23E	12		NE	NW	12	4122975	646940	12	4122900	647150
					E 1/2	SE	NW					(4122450	647150)
					NE	NE	SW						
12-32	POC-R250	41S	23E	12	NE	SW	NE	12	4122650	647450	12	4122775	647375
					NW	SW	NE					(4122450	647150)
					E 1/2	SE	NW						
					NE	NE	SE						

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

Table 2 (Cont.)
Area Surveyed

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

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

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

blackbrush, shadscale, narrowleaf yucca, Mormon tea, snakeweed, rabbitbrush, and miscellaneous grasses. The access road and flow line extend from the eastern side of the pad. They descend the steep sandy-rocky slope of the bench, cross a wash that drains the south flank of Flat Top Mountain, and continue east to an existing flow line. The road and flow line route turn south along the east side of the existing flow line and cross a low sandy rise and a west-facing wash. Then they climb a sandy rocky slope before terminating at the satellite station in Section 18. The distance from the pad to the satellite station is approximately 600 ft.

Cultural Resources: A single site, DCA-85-10 (42SA16946), was encountered along the access road right-of-way. This site consists of two dry-laid rock enclosures built against large boulders, and two short segments of low dry-laid rock wall. An old dirt road cuts through the site area. No artifacts were noted in the vicinity of the features. The two enclosures are roughly 2 x 3m and 3 x 3m in size. Both are partially collapsed, although portions of the walls are presently 1.0 to 1.5m high. No evidence of roofing nor of a door or entrance was noted at either feature. They may have functioned as holding pens for sheep or as temporary shelters. The two wall segments are partially collapsed and may have been up to 1m in height. One extends roughly 3m from a large boulder where one of the enclosures was built. The other is isolated and crosses a shallow wash. It is roughly 4 to 5m long and may represent a dam or the edge of the old road. The old road is visible only for a short distance (ca. 26m) and has been partially obliterated by erosion. The construction technique indicates a possible Navajo origin for these features.

Recommendations: DCA-85-10 (42SA16946), is located along the access road right-of-way. Following on-site consultation with Jon Weichbrodt (Phillips Petroleum engineer) and Wayne Boysinger (Phillips Petroleum field foreman), the access road and flow line were routed through the site area along the existing road cut. No impact to the features will result if this route is followed. Archaeological clearance is recommended.

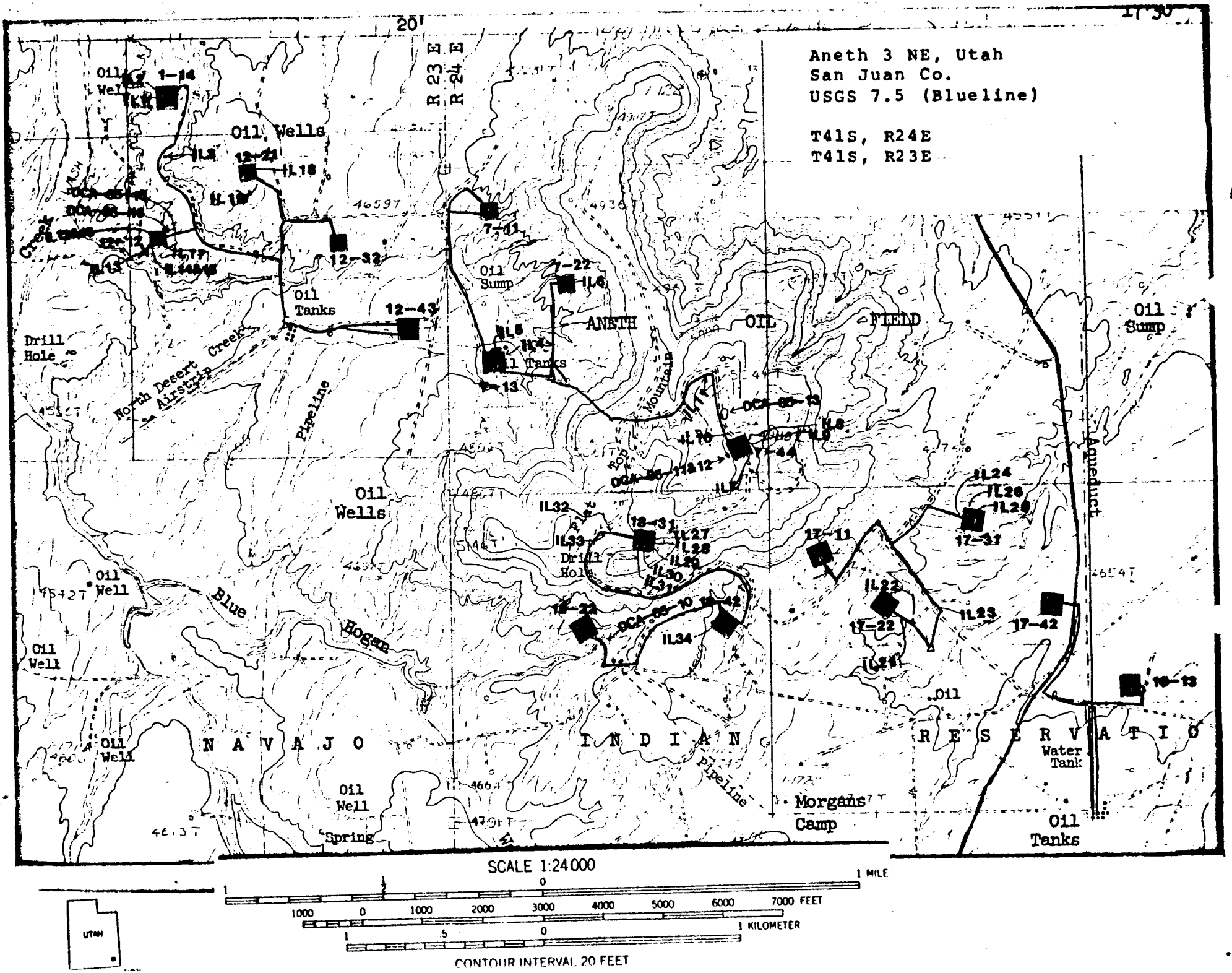
Well 18-31

The proposed well pad is in a small rincon on Flat Top Mountain. The scrubland community provides about 15 percent cover dominated by shadscale. From the west side of the pad, the pipeline goes west 600 ft paralleling the north side of a power line to a bladed dirt road. The pipeline crosses the road and follows the west and south side of the road as it descends Flat Top Mountain to well 18-42.

Cultural Resources: Seven prehistoric isolated loci (flakes, two cores, and one scraper) were found. IL 27-30 were in the east and south halves of the pad. IL 31 is in the east buffer zone. IL 32 and 33 are along the access route 125 ft and 25 ft respectively from the west end of the access route. There is a large outcrop of green siltstone and gray-green clayey chert all around the rincon and over much of the mesa on this part of Flat Top Mountain.

Recommendations: Archaeological clearance is recommended.

FIGURE 1



Aneth 3 NE, Utah
San Juan Co.
USGS 7.5 (Blueline)
T41S, R24E
T41S, R23E
R 23 E
R 24 E
Oil Wells
Oil Tanks
Oil Sump
ANETH
OIL
FIELD
Drill Hole
North Desert Creek Airstrip
Pipeline
Blue
Hogan
Oil Well
Spring
N A V A J O
I N D I A N
R E S E R V A T I O
Morgans Camp
Water Tank
Aqueduct
Top Mountain
Flat
1-14
12-21
12-32
12-43
7-11
7-22
18-31
17-11
17-22
17-31
17-42
16-13
IL24
IL26
IL28
IL32
IL33
IL34
SCALE 1:24000
1 MILE
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 5M 1-59

Application No. 57775

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. SL&M. (See letter of 3-16-61 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 ~~XXXXXXXXXXXX~~ ~~XXX~~ oil field ~~XXXX~~ 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: .....

PROOF

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 14,500 feet of 10-3/4 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 are 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

POOR COPY

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

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 [illegible] page 357, and indexed by [illegible]
5. [illegible] Application platted by [illegible] (2) aad (3) aac (4) aac (5) abd (6) abd (7) abd (8) abc (9) abc (10) bad
6. April 7, 1961 Application examined by [illegible]
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 J. S. & D. G.
13. ..... Application protested by .....

July 25, 1961 - Publisher paid [illegible]

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

POOR COPY

Application No. 32773

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.

POOR COPY

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.

Lewis Thompson
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

3 copies
Transmittal letter
Claim letter
10-13-67
Pub. - will

Form 107—6-57—2M

CHANGE APPLICATION NO.....

Surrense
Legal

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 situated at* ~~a~~ *point*s are 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.* ~~XXXXXXXX~~ 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

RECEIVED
WAYNE D. CRIDDLE
STATE ENGINEER
PROCESSING
DEPARTMENT

September 11, 1961

Phillips Petroleum Company
Bartlesville,
Oklahoma

Gentlemen: RE: APPROVED APPLICATION NO. 32773

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

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

Note error in date
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

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)* [illegible] *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 55 3M 8-57

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

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

March 26, 1962

RECEIVED
APR 2- 1962
PRODUCTION
DEPARTMENT

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
STATE ENGINEER
403 STATE CAPITOL
SALT LAKE CITY, UTAH

ADDRESS ALL COMMUNICATIONS TO:

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, 1
Expiration Date: April 30

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

Gentlemen:

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

This is to acknowledge receipt of your Permanent Change Application No. a-4025, which proposes to change the point of diversion of 6.0 sec.-ft. of water initiated by Application No. 32773. The was to have been diverted from ten 12.75-inch O.D. wells located within S½N½NE¼ and SE¼NE¼ of Sec. 5, T41S, R24E, SLB&M. It is now proposed to divert the 6.0 sec.-ft. of water from a total of [illegible] wells 12.75 inches O.D. between 30 and 50 ft. deep, ten of these being the same as heretofore described and thirty-one wells to be located within NW¼ Sec. 3, ½ Sec. 4, NW¼ 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 oil 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 controlled 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 filings.

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.

Stofner Smith

JEC:gm
Attach.

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

12/8/65

OPERATOR Phillips Petroleum Co. DATE 8-9-85

WELL NAME Rathburn Unit 18-31

SEC NW NE 18 T 41S R 24E COUNTY San Juan

43-037-31181
API NUMBER

Indian
TYPE OF LEASE

CHECK OFF:

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

PROCESSING COMMENTS:

Unit Well

Water ✓

APPROVAL LETTER:

SPACING:

- [x] A-3 Rathburn Unit (UNIT)
- [ ] c-3-a _____ CAUSE NO. & DATE
- [ ] c-3-b
- [ ] c-3-c

STIPULATIONS:

11/2/84
25020

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

August 12, 1985

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

Gentlemen:

Re: Well No. Ratherford Unit 18-31 - NW NE Sec. 18, T. 41S, R. 24E
795' FNL, 2090' FEL - 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 43-037-31181.

Sincerely,

R. J. Firth
Associate Director, Oil & Gas

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

w/ok

DIVISION OF OIL, GAS AND MINING

SPUDDING INFORMATION API #43-037-31181

NAME OF COMPANY: Phillips Oil Company

WELL NAME: Ratherford Unit 18-31

SECTION NW NE 18 TOWNSHIP 41S RANGE 24E COUNTY San Juan

DRILLING CONTRACTOR Energy Search

RIG # 9

SPUDDED: DATE 10-31-85

TIME 11:00 PM

HOW Rotary

DRILLING WILL COMMENCE

REPORTED BY David Jones

TELEPHONE #

DATE 11-1-85 SIGNED AS

9-331
1973

RECEIVED
NOV 12 1985
DIVISION OF OIL, GAS & MINING

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.)

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

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

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

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 795' FNL, 2090' FEL)
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
14-20-603-353

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
Navajo

7. UNIT AGREEMENT NAME
SW-I-4192

8. FARM OR LEASE NAME
Ratherford Unit

9. WELL NO.
#18-31

10. FIELD OR WILDCAT NAME
Greater Aneth

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec 18, T41S, R24E

12. COUNTY OR PARISH
San Juan

13. STATE
Utah

14. API NO.
43-037-31181

15. ELEVATIONS (SHOW DF, KDB, AND WD)
5087' ung. G.L.

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 117' G.L. on 10-12-85. Ran 116.5' 13-3/8" 54.5# K-55 Butt casing. Set at 128.5' RKB, cemented with 177 cu.ft. (150 sx) Class "B" cement to surface.

Spudded well 10-31-85 with Energy Search Drilling Rig #2. Drilled 12-1/4" hole to 1613'. Ran 9-5/8" 36# K-55 ST&C casing, set at 1613'. Cemented with 731 cu.ft. (395 sx) Howco Light cement; tailed with 354 cu.ft. (300 sx) Class "B" cement. Circulated to surface, fell back; pumped 100 sx Class "B" as top job. Job complete 11-3-85.

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 November 8, 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-Well File (RC)
1-Casper Office
1-J. Weichbrodt
1-Chevron USA, Inc.
1-Texaco, Inc.
1-Shell Oil Co.
1-Mobil Oil Corp.

*See Instructions on Reverse Side

9-331
1973

RECEIVED

NOV 2 1985

DIVISION OF OIL GAS & MINING

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.)

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

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

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

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 795' FNL, 2090' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
14-20-603-353

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
Navajo

7. UNIT AGREEMENT NAME
SW-I-4192

8. FARM OR LEASE NAME
Ratherford Unit

9. WELL NO.
#18-31

10. FIELD OR WILDCAT NAME
Greater Aneth

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 18, T41S, R24E

12. COUNTY OR PARISH: San Juan
13. STATE: Utah

14. API NO.
43-037-31181

15. ELEVATIONS (SHOW DF, KDB, AND WD)
5087' ung. G.L.

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 5959'. Ran 5943' 7" 23# and 26# K-55 ST&C casing; set at 5956'. Cemented with 1122 cu.ft. (550 sx) Class B Howco Light; tailed with 370 cu.ft. (300 sx) Class B with 18% salt. Pressure tested casing to 1500 psi. Job complete 11-13-85. TOC ± 2000'. Plug back total depth 5935'.

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 November 15, 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-Well File (RC)
1-Casper Office
1-J. Weichbrodt
1-Chevron USA, Inc.
1-Texaco, Inc.
1-Mobil Oil Corp.
1-Shell Oil Co.

*See Instructions on Reverse Side

EXPRESS MAIL ROUTING SLIP

PAM	2.6		7:40
TAMI	2-6		11:00
VICKY			2:35 PC
CLAUDIA	2.7		8:22 SJ
STEPHANE	2-6		4:00 SJ
CHARLES	CP	2-7	8:03
RULA	RM	2-7	1:30
MARY ALICE	MAP	2-7	11:48
CONNIE	CAS	2-7	2:25
MILLIE	MAS	2-7	8:00

EXPRESS MAIL ROUTING SLIP

PAM	2.6		7:40
TAMI	2-6		11:00
VICKY			2:35 VC
CLAUDIA	2.7		8:22 CJ
STEPHANE	2-6		4:00 S
CHARLES	CP	2-7	8:03
RULA	RM	2-7	1:30
MARY ALICE	MAP	2-7	11:48
CONNIE	CR	2-7	3:28
MILLIE	MS	2-7	8:08

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)

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

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

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

RECEIVED
JAN 29 1986
DIVISION OF OIL GAS & MINING

b. TYPE OF COMPLETION: NEW WELL [XX] 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 795' FNL & 2090' FEL, NW NE

At top prod. interval reported below

At total depth

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

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: Navajo

7. UNIT AGREEMENT NAME: SW-I-4192

8. FARM OR LEASE NAME: Ratherford Unit

9. WELL NO.: #18-31

10. FIELD AND POOL, OR WILDCAT: Greater Aneth

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec. 18-T41S-R24E

API #43-037-31181

14. PERMIT NO.: --

DATE ISSUED: 8-12-85

12. COUNTY OR PARISH: San Juan

13. STATE: 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
10/31/85	11/12/85	12/17/85	GR 5094', RKB 5107'	--

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
5959'	5926'	--	→	0 - 5959'	--

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*: 5858' - 5912' Desert Creek Zone I

25. WAS DIRECTIONAL SURVEY MADE: No

26. TYPE ELECTRIC AND OTHER LOGS RUN: Contact, SDL-DSN, Dual Guard-Micro Guard CBL

27. WAS WELL CORED: No

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

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	54.5#	128'	17-1/2"	177 cu.ft. Class B	--
9-5/8"	36#	1613'	12-1/4"	731 cu.ft. Howco Lite & 354 cu.ft.Class B	
7"	23# & 26#	5956'	8-3/4"	1122cu.ft.Howco Lite & 370 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"	5717'	--

31. PERFORATION RECORD (Interval, size and number)

5912-5892', 2 SPF, 4" HSC Gun, 40 shots
5891-5886', 2 SPF, 4" HSC Gun, 10 shots
5872-5858', 2 SPF, 4" HSC Gun, 28 shots

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

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
5858-5912' - 50 gal 28% HCL. 4000 gal 28% HCL	Break down in 1 ft intervals w/ Acidized entire zone w/remaining containing 1 gal/1000 A-250 corrosion inhibitor, 3 gal/1000 W-802 non-

(CONTINUED ON BACK)

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing or shut-in)
12/17/85	Pumping 1-1/2"	Producing

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
1/8/86	24	--	→	70	49	2	700

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
--	--	→	70	49	2	40.0

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

TEST WITNESSED BY: --

35. LIST OF ATTACHMENTS: None

86 0218

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

SIGNED D. C. Gill TITLE Area Manager DATE January 24, 1986

*(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 -			
emulsifier, 2 gal/1000 F-801 fines suspender and 6 gal/1000 U-42 iron agent. Used 112 ball sealers for diverting.			

Distribution:
4 - BLM, Farmington, NM
2 - Utah O&G CC, Salt Lake City, UT
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

38. **GEOLOGIC MARKERS**

NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
LOG TOPS		
Shinarump	2660'	
DeChelly	2977'	
Hermosa	4880'	
Ismay	5700'	
Desert Creek Zone I	5852'	

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 3160-5
(December 1989)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires September 30, 1990

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

RECEIVED
JUN 25 1990
DIVISION OF
OIL, GAS & MINING

5. Lease Designation and Serial No.: 14-20-603-353
6. If Indian, Allottee or Tribe Name: Navajo
7. If Unit or CA, Agreement Designation: SW-I-4192
8. Well Name and No.: Ratherford Unit #18-31
9. API Well No.: 43-037-31181
10. Field and Pool, or Exploratory Area: Greater Aneth
11. County or Parish, State: San Juan County, Utah

1. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other
2. Name of Operator: Phillips Petroleum Company
3. Address and Telephone No.: P. O. Box 1150, Cortez, CO (303) 565-3426
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 795' FNL & 2090' FEL, NW NE, Sec 18-T41S-R24E

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
	[ ] Other Vent Produced Gas	

(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.)*

This well will be tested through a portable tester from approximately 7/4/90 to 7/7/90. The produced gas of approximately 9 MCFD will be flared.

This gas flaring was verbally approved by Kenny Howell on 6/18/90.

OIL AND GAS
DFN | RJF
1-JPB ✓ | GLH
DTS | SLS
2 MICROFILM
3 FILE

3 - BLM, Farmington
2 - Utah, O&GCC
1 - Cortez, PPCo
1 - Casper, PPCo

14. I hereby certify that the foregoing is true and correct
Signed S. H. Oden Title District Superintendent Date June 22, 1990

(This space for Federal or State office use)
Approved by _____ Title _____ Date _____
Conditions of approval, if any:

ACCEPTED BY THE STATE OF UTAH DIVISION OF OIL, GAS, AND MINING
DATE: 7-6-90
BY: John R. Baza

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 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.: 14-20-603-353
6. If Indian, Allottee or Tribe Name: Navajo Tribal
7. If Unit or CA, Agreement Designation: Ratherford Unit SW-I-4192
8. Well Name and No.: Ratherford Unit #18-31
9. API Well No.: 43-037-31181
10. Field and Pool, or Exploratory Area: Greater Aneth
11. County or Parish, State: San Juan, Utah

1. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other
2. Name of Operator: Phillips Petroleum Company
3. Address and Telephone No.: 5525 Hwy 64 NBU 3004, Farmington, NM 87401 (505) 599-3412
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): Unit B, 795' FNL & 2090' FEL Sec. 18, T41S, R24E

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
[ ] Subsequent Report	[ ] Recompletion	[ ] New Construction
[ ] Final Abandonment Notice	[ ] Plugging Back	[ ] Non-Routine Fracturing
	[ ] Casing Repair	[ ] Water Shut-Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[ ] Other _____	[ ] 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.)*

12-14-91 thru 12-23-91
MI & RU. Pulled production equipment. Had to strip out well. Ran bit, scraper and bailer to clean out well to PBTD of 5935'. Halco stimulated well w/5800 gals. 20% HCl. Swabbed well clean. Welchem performed scale inhibition squeeze. Pressure to 500# - okay. Returned well to production.

RECEIVED
JAN 27 1992
DIVISION OF
OIL, GAS & MINING

(CORRECTED REPORT: Originally submitted as Ratherford Unit #18-32 on ~~report~~ dated 1-9-92, Unit G, 2140' FNL & 1830' FEL, Sec. 18, T41S, R24E.)

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

Signed L. E. Robinson Title Sr. Drlg. & Prod. Engr. Date 1-20-92

(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

2

FORM 10

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

MONTHLY OIL AND GAS PRODUCTION REPORT

RECEIVED
AUG 16 1993
DIVISION OF
OIL, GAS & MINING

OPERATOR NAME AND ADDRESS:

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

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

5. LEASE DESIGNATION & SERIAL NO.

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.)

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: 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) 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)

FORM 11

STATE OF UTAH
/ISION 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. fc

ENTITY NUMBER	PRODUCT	GRAVITY BTU	BEGINNING INVENTORY	VOLUME PRODUCED	DISPOSITIONS TRANSPORTED	USED ON SITE	FLARED/VENTED	OTHER	ENDING INVENTORY
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 ~~ASSO~~ production reports will be compiled and sent from the Cortez, Co. office in the future.

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

Date: 9/5/93

Name and Signature: Lowell B Sheffield

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

(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.

File Rathford Unit (GC)

RECEIVED
BLM
27 AM 11:44
070 FARMINGTON, NM

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

ARES/543

JUL 2 0 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

RECEIVED
BLM
93 JUN 27 AM 11:44
070 FARMINGTON, NM

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. Smith, 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

PHONE CONVERSATION DOCUMENTATION FORM

Route original/copy to:

[] Well File _____

(Location) Sec___Twp___Rng___

(API No.) _____

[] Suspense

(Return Date) _____

(To - Initials) _____

XXX Other

OPERATOR CHANGE

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

2. DOGM Employee (name) L. CORDOVA (Initiated Call XXX)

Talked to:

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

of (Company/Organization) MOBIL

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

(NEED TO CONFIRM HOW OPERATOR WANTS THE WELLS SET UP - MEPNA AS PER BIA APPROVAL OR MOBIL OIL CORPORATION AS PER SUNDRY DATED 9-8-93?)

4. Highlights of Conversation:

MR. COX CONFIRMED THAT THE WELLS SHOULD BE SET UNDER ACCOUNT N7370/MEPNA AS PER BIA APPROVAL, ALSO CONFIRMED THAT PRODUCTION & DISPOSITION REPORTS WILL NOW BE HANDLED OUT OF THEIR CORTEZ OFFICE RATHER THAN DALLAS.

MEPNA-

PO DRAWER G

CORTEZ, CO 81321

(303)565-2212

*ADDRESS CHANGE AFFECTS ALL WELLS CURRENTLY OPERATORED BY MEPNA, CURRENTLY REPORTED OUT OF DALLAS (MCELMO CREEK).

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	API	Entity	Sec	Twp	Rng	Lease Type
SEE ATTACHED	43037-31181					

OPERATOR CHANGE DOCUMENTATION

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

Lec 2. (Rule R615-8-10) Sundry or other legal documentation has been received from new operator (Attach to this form). (Reg. 8-31-93) (Rec'd 9-14-93)

N/A 3. The Department of Commerce has been contacted if the new operator above is not currently operating any wells in Utah. Is company registered with the state? (yes/no) _____ If yes, show company file number: _____.

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 -

ENTITY REVIEW

✓ 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)

✓ 1. (Rule R615-3-1) The new operator of any fee lease well listed above has furnished a proper bond.

N/A

__ 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 19 93.

FILING

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

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

COMMENTS

931006 BIA/Blm Approved 7-9-93.

12W-44	43-037-16405	14-20-603-246A	SEC. 12, T41S, R23E	SE/SE 660 FSL; 660 FEL	PA'd
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	PA'd
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 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 #17-22 4303731170	06280	41S 24E 17	DSCR					
RATHERFORD UNIT #17-42 4303731177	06280	41S 24E 17	DSCR					
RATHERFORD UNIT #17-31 4303731178	06280	41S 24E 17	DSCR					
RATHERFORD UNIT #18-31 4303731181	06280	41S 24E 18	DSCR					
RATHERFORD UNIT #18-42 4303731182	06280	41S 24E 18	DSCR					
RATHERFORD UNIT #7-44 4303731189	06280	41S 24E 7	DSCR					
THERFORD UNIT #12-12 4303731190	06280	41S 23E 12	DSCR					
RATHERFORD UNIT #12-21 4303731201	06280	41S 23E 12	DSCR					
RATHERFORD UNIT 12-43 4303731202	06280	41S 23E 12	DSCR					
RATHERFORD UNIT #12-32 4303731203	06280	41S 23E 12	DSCR					
RATHERFORD UNIT 18-22 4303731236	06280	41S 24E 18	DSCR					
RATHERFORD 11-41 4303731544	06280	41S 23E 11	DSCR					
RATHERFORD 13-14 4303731589	06280	41S 23E 13	DSCR					
					TOTALS			

MMENTS:

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

Date:

me and Signature:

Telephone Number:

/93)

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- DTS	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
(address) C/O MOBIL OIL CORP
PO DRAWER G
CORTEZ CO 81321
phone (303) 564-5212
account no. N7370

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

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

Name:	API:	Entity:	Sec	Twp	Rng	Lease Type:
** SEE ATTACHED **	037-31181					

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

LRC 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/LRC 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.

VTS 8/5/95

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 UIC 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.: 14-20-603-353
6. If Indian, Allottee or Tribe Name: NAVAJO TRIBAL
7. If Unit or CA, Agreement Designation: RATHERFORD UNIT
8. Well Name and No.: RATHERFORD 18-31
9. API Well No.: 037-31181
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. 18, T41S, R24E
795' FNL & 2090' FEL (NW/NE)

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.)*

BOTTOM HOLE LOCATION:

LATERAL #1 1393' NORTH & 975' WEST F/SURFACE SPOT (ZONE 1B/1C).
LATERAL #2 1768' NORTH & 1768' WEST F/SURFACE SPOT (ZONE 1a).
LATERAL #3 1093' SOUTH & 1302' EAST F/SURFACE SPOT (ZONE 1a).

SEE ATTACHED.

NOV 05 1997

14. I hereby certify that the foregoing is true and correct
Signed: Sue Moseley for Title: SHIRLEY HOUCHINS/ENV & REG TECH Date: 10-30-97

(This space for Federal or State office use)
Approved by: John R. Baza Title: Associate Director Utah DOGM Date: 11/21/97
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.

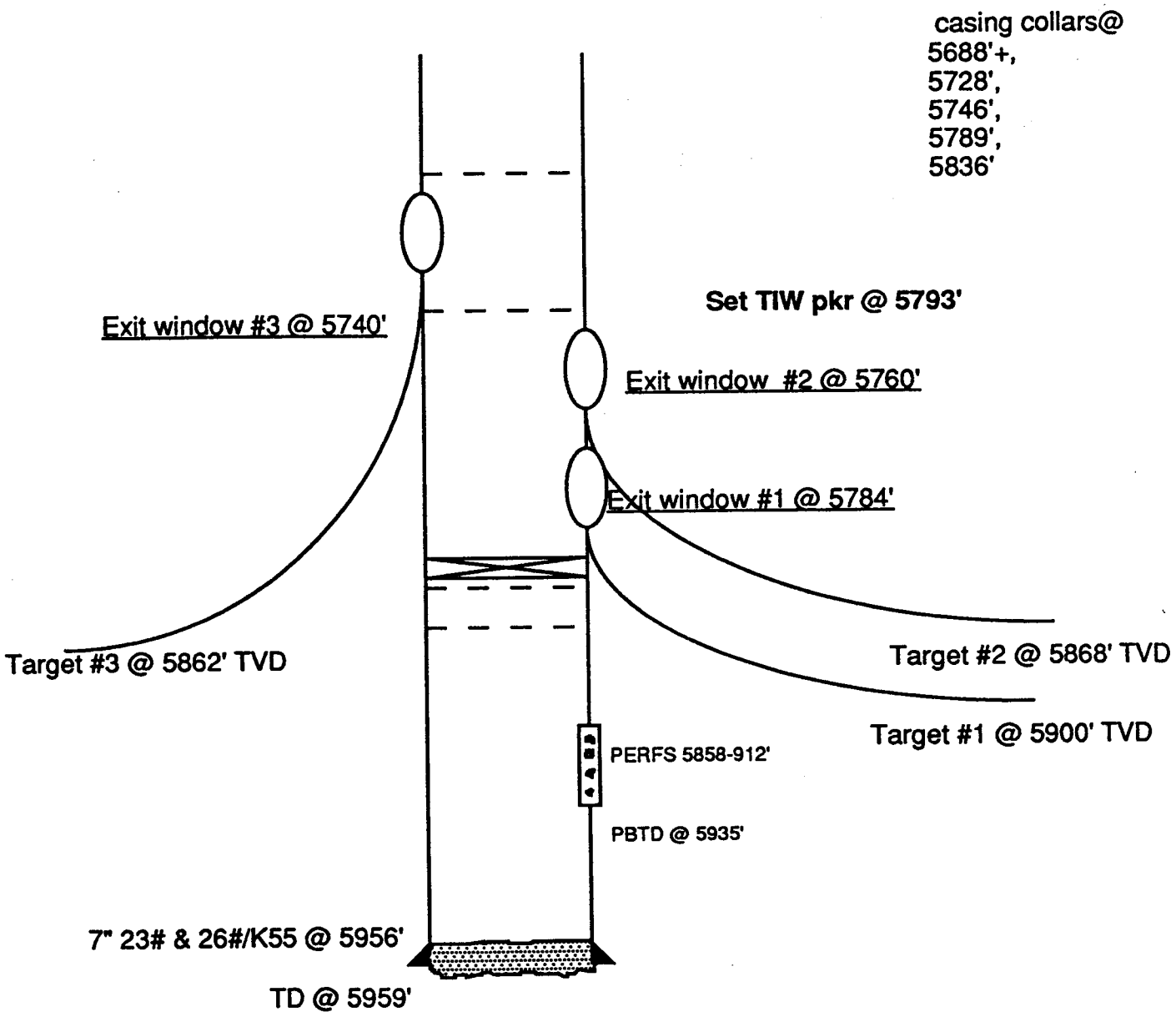
* See Instruction on Reverse Side

Ratherford Unit Well #18-31
Horizontal Drilling Procedure

The objective of this procedure is to prepare this wellbore for sidetracking, sidetrack the subject well and drill several short radius horizontal laterals (1700-2500 feet each).

1. Prepare location and dig working pit.
2. MIRU WSU, reverse unit, and H2S equipment. Bullhead kill weight fluid down tubing.
3. ND wellhead and NU BOP's. Pressure test BOP's to working pressure.
4. Continue to POH with related equipment (tubing and rods for producers or tubing and packer for injectors).
5. RU wireline to run any logs desired and run gage ring for casing size and weight.
6. Set retrievable bridge plug on wireline and pressure test casing to 1000 psi.
7. RDMO WSU.
8. MIRU 24 hr. WSU. NU BOP's and pressure test with chart.
9. PU tubing, drilling collars, and drill pipe in derrick and run in hole. Then POH and stand back.
10. Run packer on wireline and set using GR/CCL log to correlate with. RD wireline.
11. PU drillpipe with UBHO sub in string and latch into packer to survey the hole and obtain orientation of keyway. POH w/gyro and drill string.
12. Orient whipstock on surface to desired bearing and RIH on drill pipe. Latch into packer. Shear 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.

Whipstock plan for Ratherford #18-31



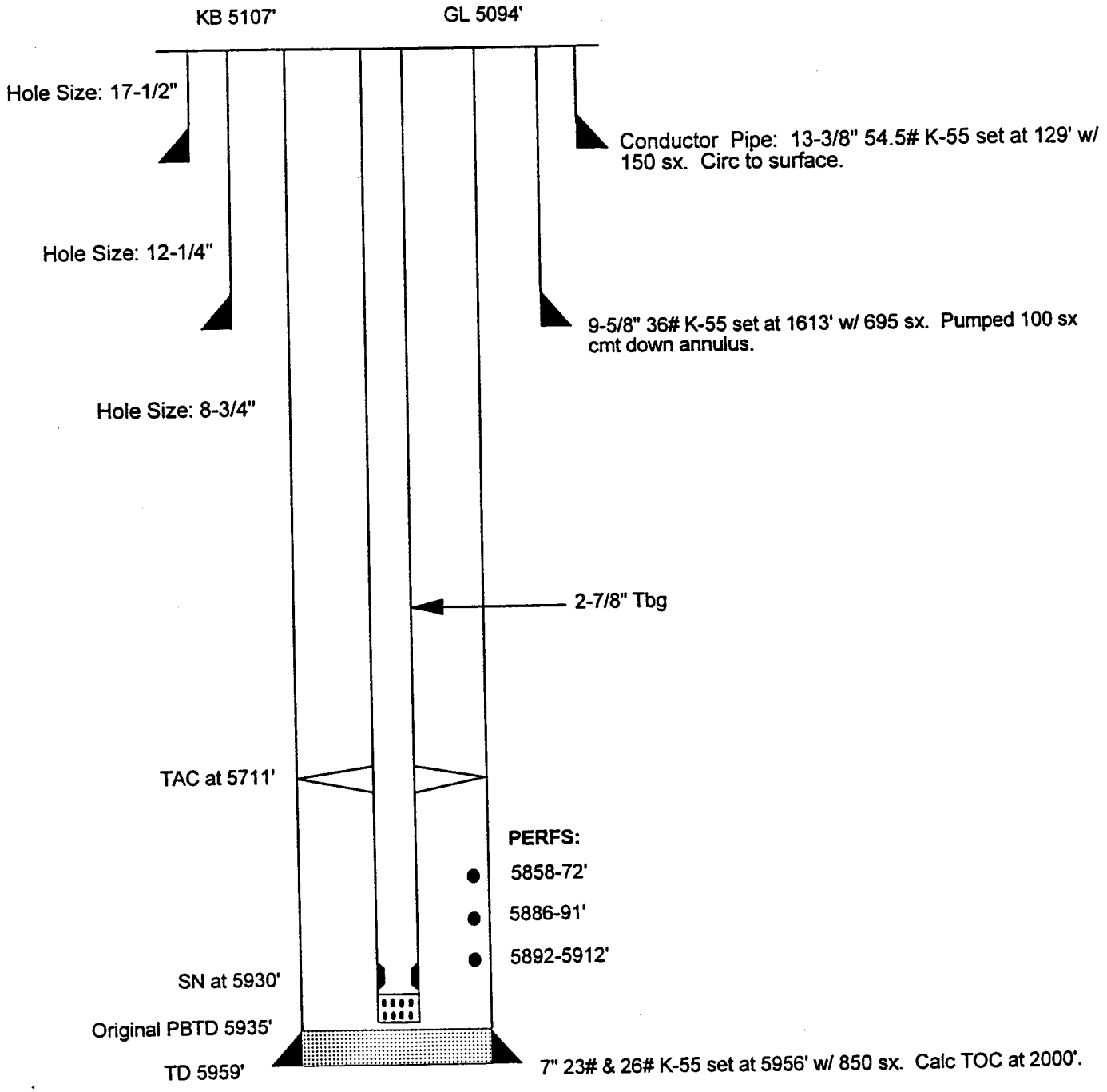
Window	Btm-Top of window	Extension length	Curve radius	Bearing	Horiz Displ
1	5784-76	-	116	325	1700
2	5760-52	24	108	315	2500
3	5740-32	44	122	130	1700

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

RATHERFORD UNIT # 18-31
GREATER ANETH FIELD
795' FNL & 2090' FEL
SEC 18-T41S-R24E
SAN JUAN COUNTY, UTAH
API 43-037-31181
PRISM 0043068

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 6-24-96 R.U. # 18-31

WORKSHEET
APPLICATION FOR PERMIT TO DRILL

APD RECEIVED: 11/03/97

API NO. ASSIGNED: 43-037-31181

WELL NAME: RATHERFORD 18-31 MULTI-LEG
OPERATOR: MOBIL EXPL & PROD INC (N7370)

PROPOSED LOCATION:
NWNE 18 - T41S - R24E (Surface)
SURFACE: 0795-FNL-2090-FEL
BOTTOM: ~~0607-FSL-1335-FWL~~ (Multi-Lateral)
SAN JUAN COUNTY
GREATER ANETH FIELD (365)

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

PROPOSED PRODUCING FORMATION: DSCR

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

RECEIVED AND/OR REVIEWED:

✓ Plat
✓ Bond: Federal [✓] State [] Fee []
(Number ALREADY BONDED)
N Potash (Y/N)
N Oil shale (Y/N)
✓ Water permit
(Number NAVAJO ALLOTMENT)
N RDCC Review (Y/N)
(Date: _____)

LOCATION AND SITING:

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

COMMENTS: _____

STIPULATIONS: _____

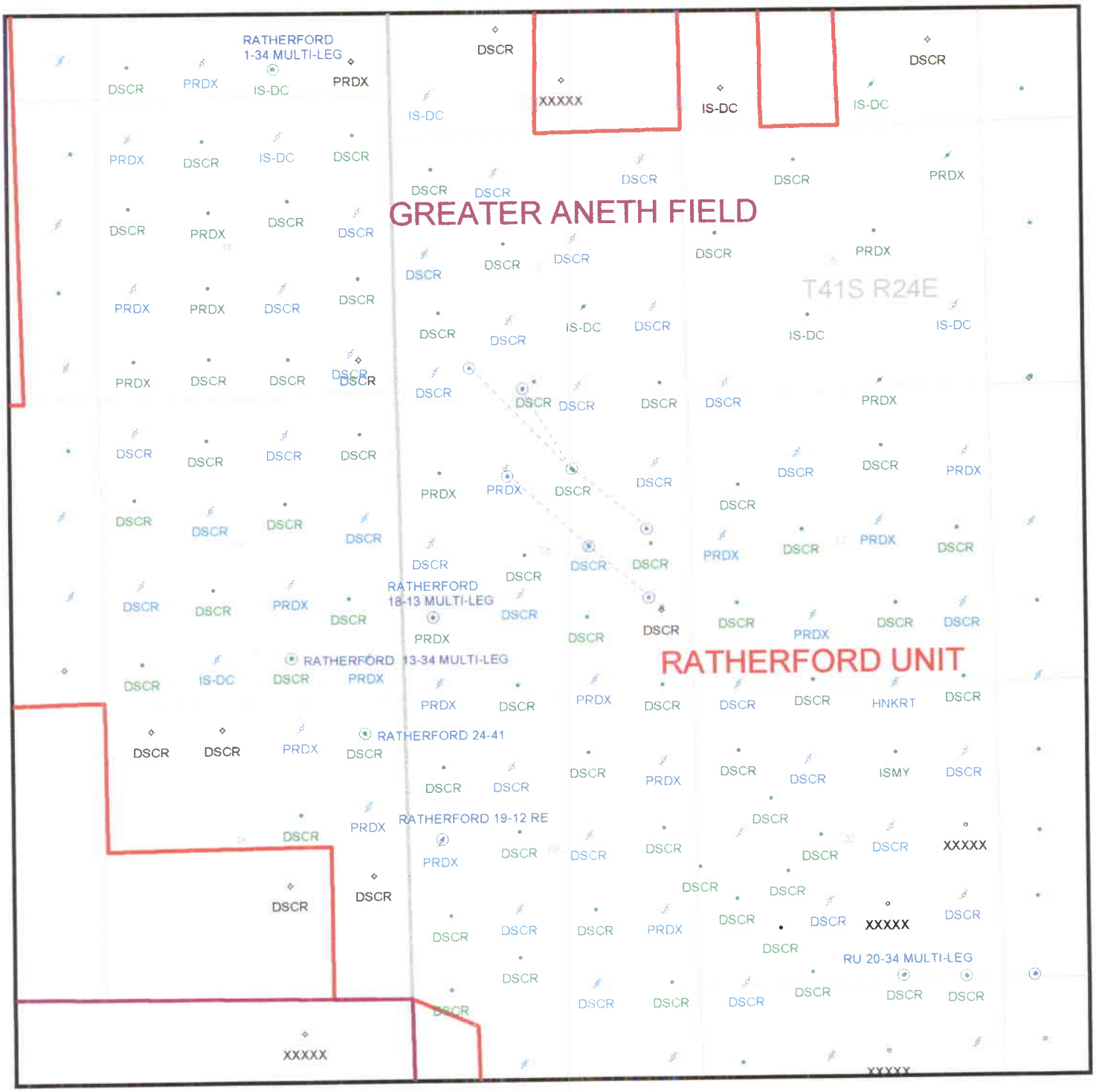
DIVISION OF OIL, GAS & MINING

OPERATOR: MOBIL (N7370)

FIELD: GREATER ANETH (365)

SEC. TWP. RNG.: SEC. 18, T41S, R24E

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



DATE PREPARED:
5-NOV-1997

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

Michael O. Leavitt
Governor
Ted Stewart
Executive Director
James W. Carter
Division Director

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

November 21, 1997

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

Re: Ratherford 18-31 Well (Re-entry), 795' FNL, 2090' FEL, NW NE, Sec. 18, T. 41 S., R. 24 E., San Juan County, Utah

Gentlemen:

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

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date. The API identification number assigned to this well is 43-037-31181.

Sincerely,

John R. Baza
Associate Director

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

Operator: Mobil Exploration & Producing U.S., Inc.

Well Name & Number: Ratherford 18-31 (Re-entry)

API Number: 43-037-31181

Lease: 14-20-603-353

Location: NW NE **Sec.** 18 **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 following 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 John R. Baza (801)538-5334.

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

DIVISION OF OIL, GAS AND MINING

SPUDDING INFORMATION

Name of Company: MOBIL E & P

Well Name: RATHERFORD UNIT 18-31 (SDTRK)

Api No. 43-037-31181

Section: 18 Township: 41S Range: 24E County: SAN JUAN

Drilling Contractor: BIG "A"

Rig # 25

SPUDDED:

Date: 12/8/97

Time: _____

How: ROTARY

Drilling will commence: _____

Reported by: BENNY BRIGGS

Telephone NO.: 1-801-651-3473

Date: 12/8/97 Signed: JLT

ROCKY MOUNTAIN GEO-ENGINEERING
Well Logging • Consulting Geology • Coal Bed Methane Services • Computerized Logging Equipment & Software
ROCKY MOUNTAIN GEO-ENGINEERING CORP.
2450 INDUSTRIAL BLVD. • GRAND JUNCTION, CO 81505
(970) 243-3044 • (FAX) 241-1085

Monday, January 12, 1998

RECEIVED
JAN 15 1998
DIV. OF OIL, GAS & MINING

Division of Oil & Gas Mining
State of Utah
1636 W. North Temple
Salt Lake City, UT 84116

Re: Ratherford Unit #18-31 Legs 1, 2 & 3
Sec. 18, T41S, R24E 4303731181
San Juan County, Utah DRC

Dear Sirs:

Enclosed are the final computer colored logs and geology reports for the above referenced well.
IN ~~WELL~~ LOG FILE

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

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

Sincerely,

Bill Nagel
Senior Geologist

BN/dn

Enc. 1 Final Computer Colored Log & 1 Geology Report

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

RECEIVED
JAN 15 1998
DIV. OF OIL, GAS & MINING

MOBIL

RATHERFORD UNIT #18-31
NW HORIZONTAL LATERAL LEG #1
1-C & B POROSITY BENCHES
DESERT CREEK MEMBER
PARADOX FORMATION
SECTION 18, T41S, R24E
SAN JUAN, UTAH

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

MICROFICHE

RECEIVED
JAN 15 1998
DIV. OF OIL, GAS & MINING

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WELL SUMMARY

OPERATOR:	MOBIL EXPLORATION & PRODUCTION U.S. INC.
NAME:	RATHERFORD UNIT #18-31 NW HORIZONTAL LATERAL LEG #1 IN 1-B & C POROSITY BENCH, DESERT CREEK
LOCATION:	SECTION 18, T41S, R24E
COUNTY/STATE:	SAN JUAN, UTAH
ELEVATION:	KB: 5107' GL: 5094'
SPUD DATE:	12/10/97
COMPLETION DATE:	12/16/97
DRILLING ENGINEER:	SIMMON BERRARA / BENNY BRIGGS
WELLSITE GEOLOGY:	DAVE MEADE / MARVIN ROANHORSE
MUDLOGGING ENGINEERS:	DAVE MEADE / MARVIN ROANHORSE
CONTRACTOR:	BIG "A" RIG 25
TOOLPUSHER:	J. DEES / M. SMITH
HOLE SIZE:	4 3/4"
CASING RECORD:	KICK OFF POINT IN WINDOW AT 5781' MEASURED DEPTH
DRILLING MUD:	M-I
ENGINEER:	DANNE BEASON
MUD TYPE:	FRESH WATER & BRINE WATER W/ POLYMER SWEEPS
DIRECTIONAL DRILLING CO:	SPERRY-SUN
ELECTICAL LOGGING:	NA
TOTAL DEPTH:	6925' MEASURED DEPTH; 5886.72' TVD
STATUS:	TOH & LAYING DOWN LATERAL ASSEMBLY - PREPARING WELL FOR LEG #2

DRILLING CHRONOLOGY
RATHERFORD UNIT #18-31
1-C & B NW HORIZONTAL LATERAL LEG #1

DATE	DEPTH	DAILY	ACTIVITY
12/07/97	0'	0'	LAY DOWN LATERAL ASSEMBLY & COLLARS-TIH-PULL PACKER-TOH-TIH WITH BRIDGE PLUG & SET-BEGIN RIG DOWN ON RATHERFORD UNIT #18-32
12/08/97	0'	0'	RIG DOWN & MOVE RIG-RIG UP DRLG RIG ON RATHERFORD UNIT #18-31-PICK UP PIPE-TIH W/ RETRIEVE ASSEMBLY
12/09/97	5773'	0'	LOOSING CIR-PUMP LCM MAT & TRY TO RETRIEVE BRIDGE PLUG-PUMP LCM PILL-TOH-CHANGE RETRIEVE ASSEMBLY-TIH-LATCH ONTO BRIDGE PLUG-TOH
12/10/97	5773'	0'	RETRIEVE BRIDGE PLUG-TIH W/ PACKER-SET PACKER-TOH-P.U. WHIPSTOCK-TIH-SET WHIPSTOCK & ORIENT-MILL W/ STARTER MILL-TOH
12/11/97	5773'	8'	TOH-L.D. STARTER MILL- P.U. WINDOW MILL & WATERMELON MILL-TIH-CIRC-MILL FROM 5773'-5780.5'-TOH-CHANGE MILL-TIH-CIRC-MILL FROM 5780.5'-5781'
12/12/97	5781'	26'	MILL-WORK PIPE & REAM W/ MILL-TOH-L.D. MILL ASSEMBLY-P.U. CURVE ASSEMBLY-ORIENT & TEST CURVE ASSEMBLY-TIH-R.U. & RUN GYRO DATA-TIME DRLG 5782'-5786'-DIR DRLG 5793'-5807'-POOH W/WIRELINE & L.D. PUP JNT-LOSS OF PULSE ON MWD,ATTEMPT TO START-TOH FOR MWD-CHANGE OUT MWD-TIH
12/13/97	5807'	177'	TIH-P.U. SWIVEL & 2 JNTS AOH D.P.-BREAK CIRC & SURVEY-DIR DRLG CURVE W/SURVEYS TO TD OF 5984'(MD),5900.96' (TVD)-CIRC SWEEP & SMPLS OUT-L.D. 50 JNTS AOH D.P. & TOH-L.D. CURVE ASSEMBLY & P.U. LATERAL ASSEMBLY W/NB #2-P.U. 50 JNTS PH-6 D.P. & TIH
12/14/97	5984'	442'	WASH THROUGH PH-6 D.P. & TEST MWD-TIH W/LATERAL ASSEMBLY-CIRC & THAW OUT POWER SWIVEL MOTOR-CIRC-DIR DRLG & SURVEYS
12/15/97	6426'	499'	DIR DRLG & SURVEYS
12/16/97	6861'	64'	DIR DRLG & SURVEYS TO TD OF 6925'-PUMP 10 BBL SWEEP & SMPLS OUT-TOH-L.D. LATERAL ASSEMBLY-P.U. RETRIEVING HOOK-TIH-LATCH INTO & RETRIEVE WHIPSTOCK-TOH
12/17/97	5750'	2'	TOH-P.U. WHIPSTOCK & STARTER MILL-TIH-ORIENT & SET WHIPSTOCK-MILL FROM 5750'-5752'

DAILY ACTIVITY

Operator: MOBIL
Well Name: RATHERFORD UNIT #18-31 NW 1-C & B HORIZONTAL LATERAL LEG #1

DATE	DEPTH	DAILY	DATE	DEPTH	DAILY
12/07/97	0'	0'			
12/08/97	0'	0'			
12/09/97	0'	0'			
12/10/97	0'	0'			
12/11/97	5773'	8'			
12/12/97	5781'	26'			
12/13/97	5807'	177'			
12/14/97	5984'	442'			
12/15/97	6426'	499'			
12/16/97	6861'	64'			
12/17/95	6925	TD			

BIT RECORD

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #18-31 NW 1-C & B HORIZONTAL LATERAL LEG #1

RUN	SIZE	MAKE	TYPE	IN/OUT	FTG	HRS	FT/HR
#1 (RR)	4 3/4"	STC	MF-15GP	5782'/ 5984'	202'	16.5	12.2
#2	4 3/4"	HTC	STR-20	5984'/ 6925'	941'	43	21.9

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : MOBIL (UTAH)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/18-31 1A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
5773.00	0.06	69.58	5771.82	45.80 S	83.22 W	10.22	0.00
5782.00	4.40	316.91	5780.81	45.55 S	83.45 W	10.56	49.15
5792.00	8.70	316.52	5790.74	44.72 S	84.24 W	11.68	43.00
5802.00	13.80	316.40	5800.55	43.30 S	85.58 W	13.61	51.00
5812.00	19.20	314.90	5810.13	41.28 S	87.57 W	16.41	54.16
5822.00	24.20	311.90	5819.42	38.75 S	90.26 W	20.03	51.20
5832.00	29.20	311.90	5828.35	35.75 S	93.60 W	24.41	50.00
5842.00	33.90	314.80	5836.87	32.15 S	97.40 W	29.53	49.38
5852.00	36.90	310.30	5845.02	28.24 S	101.67 W	35.18	39.73
5862.00	41.10	311.70	5852.79	24.11 S	106.42 W	41.29	42.91
5872.00	45.30	316.10	5860.08	19.36 S	111.34 W	48.00	51.66
5882.00	49.80	320.00	5866.83	13.87 S	116.26 W	55.32	53.40
5892.00	54.80	323.20	5872.95	7.67 S	121.17 W	63.22	56.03
5902.00	59.70	326.60	5878.36	0.79 S	125.99 W	71.62	56.72
5912.00	64.20	330.80	5883.06	6.75 N	130.57 W	80.42	58.29
5922.00	65.00	328.80	5887.35	14.56 N	135.12 W	89.42	19.76
5932.00	66.30	323.20	5891.47	22.11 N	140.21 W	98.53	52.64
5942.00	70.10	318.80	5895.19	29.31 N	146.05 W	107.79	55.79
5952.00	76.00	319.20	5898.10	36.53 N	152.32 W	117.29	59.12
5961.00	81.50	320.00	5899.86	43.25 N	158.04 W	126.08	61.73
5984.00	91.60	318.70	5901.24	60.65 N	172.98 W	148.90	44.27
6004.55	89.60	320.40	5901.03	76.28 N	186.31 W	169.35	12.77
6036.31	91.70	323.10	5900.67	101.22 N	205.97 W	201.05	10.77
6068.06	97.70	324.80	5898.06	126.79 N	224.58 W	232.67	19.64
6099.95	97.20	325.50	5893.93	152.74 N	242.65 W	264.29	2.68
6131.70	92.90	326.20	5891.14	178.90 N	260.40 W	295.91	13.72
6163.47	88.60	327.40	5890.72	205.48 N	277.79 W	327.65	14.05
6195.13	86.00	324.90	5892.21	231.74 N	295.40 W	359.27	11.39
6226.97	89.20	327.00	5893.54	258.09 N	313.21 W	391.07	12.02
6258.72	87.50	323.50	5894.46	284.16 N	331.30 W	422.80	12.25
6290.59	90.80	327.20	5894.93	310.37 N	349.41 W	454.65	15.55
6322.34	91.00	327.90	5894.43	337.16 N	366.44 W	486.37	2.29
6354.05	88.10	326.90	5894.68	363.87 N	383.53 W	518.05	9.67
6385.94	89.20	329.50	5895.43	390.96 N	400.32 W	549.87	8.85
6417.77	88.20	330.20	5896.16	418.48 N	416.31 W	581.58	3.83
6448.79	85.30	329.00	5897.91	445.19 N	431.98 W	612.45	10.12
6480.60	86.70	326.90	5900.13	472.08 N	448.81 W	644.14	7.92
6512.30	88.80	325.80	5901.38	498.45 N	466.37 W	675.80	7.48

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : MOBIL (UTAH)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/18-31 1A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
6544.09	91.10	324.80	5901.41	524.58 N	484.46 W	707.59	7.89
6575.23	90.40	323.90	5901.00	549.88 N	502.61 W	738.72	3.66
6606.97	91.10	322.60	5900.58	575.31 N	521.60 W	770.44	4.65
6638.83	92.90	323.50	5899.47	600.76 N	540.74 W	802.27	6.32
6670.68	92.20	322.80	5898.05	626.22 N	559.82 W	834.07	3.11
6701.78	92.80	322.80	5896.70	650.97 N	578.60 W	865.11	1.93
6733.67	92.60	322.30	5895.19	676.26 N	597.97 W	896.94	1.69
6765.32	88.50	320.50	5894.89	700.98 N	617.71 W	928.52	14.15
6797.05	89.80	321.20	5895.36	725.59 N	637.74 W	960.16	4.65
6828.67	93.60	322.30	5894.42	750.40 N	657.31 W	991.71	12.51
6860.50	96.00	323.70	5891.76	775.73 N	676.39 W	1023.40	8.72
6892.00	94.50	326.90	5888.88	801.52 N	694.25 W	1054.77	11.18
*6925.00	93.00	326.90	5886.72	829.10 N	712.23 W	1087.68	4.55

THE DOGLEG SEVERITY IS IN DEGREES PER 100.00 FEET.
N/E COORDINATE VALUES GIVEN RELATIVE TO WELL SYSTEM REFERENCE POINT.
TVD COORDINATE VALUES GIVEN RELATIVE TO WELL HEAD.
THE VERTICAL SECTION ORIGIN IS WELL HEAD.
THE VERTICAL SECTION WAS COMPUTED ALONG 325.00 (TRUE).
CALCULATION METHOD: MINIMUM CURVATURE.

5773'INTERPOLATED GYRO, 5782'-5792'INTERPOLATED MWD
DIRECTIONS, 5825'-5942' AZI HAVE MAG.INTERFERENCE
* 6925' PROJECTED TO BIT

MUD REPORT

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #18-31 NW 1-C & B HORIZONTAL LATERAL LEG #1

DATE	DEPTH	WT	VIS	PLS	YLD	GEL	pH	WL	CK	CHL	CA	SD	OIL	WTR
12/10/97	5935'	8.4	26	–	–	–	7.4	N/C	–	1000	320	–	0%	100%
12/11/97	5776'	8.4	26	–	–	–	7.4	N/C	–	1000	320	–	0%	100%
	5780'	8.4	26	–	–	–	7.4	N/C	–	4000	480		0%	100%
12/12/97	5782'	8.4	26	–	–	–	11.6	N/C	–	4200	480	–	0%	100%
12/13/97	5910'	8.4	26	–	–	–	11.6	N/C	–	4100	480	–	0%	100%
12/14/97	6043'	8.4	26	–	–	–	11.7	N/C	–	4000	400	–	0%	100%
12/15/97	6400'	8.4	26	–	–	–	11.6	N/C	–	4200	460	–	0%	100%
12/16/97	6900'	8.5	27	1	1	0/0	11.6	46.9	–	4800	480	–	0%	100%
12/17/97	6924'	8.3	27	1	1	0/0	11.6	N/C	–	4700	460	–	0%	100%

SAMPLE DESCRIPTIONS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #18-31 NW 1-C & B HORIZONTAL LATERAL LEG #1

DEPTH	LITHOLOGY

5782.00 5790.00 "LS wh-crm,tan-brn,crpxl-micxl,rthy-chk,occ arg,plty ip,rr trnsl-dkbrn CHT frag,dol ip,tt,NFSOC,w/intbd DOL brn-dkbrn,micxl,rthy,v sl slty,lmy,mrly,occ grdg to dol LS,tt-v rr intxl POR,NFSOC"

5790.00 5800.00 "LS AA,bcmg ltgybrn-ltgy,occ grdg to MRLST,decr intbd DOL,NFSOC"

5800.00 5810.00 "LS ltgy-gybrn,wh-crm,occ mgybrn-brn,crpxl-micxl,chky-sl anhy/rr xl ANHY incl,mrly-sl arg-tr sl slty strk,rr DOL & CHT frag AA,NFSOC"

5807.00 5820.00 "LS wh-crm,pred plty,AA,dns,tt,mrly-sl dol,NFSOC,DOL brn-mbrn,occ dkbrn,micxl,rr crpxl,rthy-arg,sl mrly,rr mic fos,rr dns,v sl lmy,tt-v rr intxl POR,NFSOC"

5820.00 5830.00 "DOL AA,decr shy,NFSOC,LS wh-crm-tan,crpxl-micxl,occ cln,rthy-slty ip,occ plty,v sl dol,mrly ip,occ grdg to v lmy-sl sdy SLTST-ltgy-crm,NFSOC"

5830.00 5840.00 "LS crm-tan-ltgy,crpxl-micxl,rthy,occ cln,chk ip,sl-v slty,w/v rr trnsl-bf CHT frag,tt,NFSOC,grdg to v lmy ltgy-crm sl sdy occ mica SLTST"

5840.00 5850.00 "LS crm-tan-wh,crpxl,micxl ip,occ plty,chk-rthy,occ cln-dns,sl dol,anhy ip,v sl slty,v rr trnsl CHT frag,tt,w/thn intbd blk carb SH & DOL brn-mbrn,micxl,rthy,v sl slty,arg ip,tt-v rr intxl POR,v rr dull yel FLOR,n-v rr dkbrn STN,p slow stmg CUT"

5850.00 5860.00 "SH blk-dkgy,sbblky-sbplty,frm,rthy,mica,sl slty,dol-calc carb,w/scat LS & DOL incl AA"

5861.00 5870.00 "LS wh-crm-tan,occ gy,crpxl,occ micxl,cln-dns,occ rthy-chk,dol,sl slty tt,NFSOC,v rr trnsl CHT frag,v rr thn rthy brn micxl tt DOL NFSOC & blk carb SH"

5870.00 5890.00 "LS tan-ltbrn,occ crm-brn,rr wh,crpxl-vfxl,pred ooc-oom GRNST,w/dns tt v sl fos-ool PKST incr w/depth,v rr CHT frag,v rr v thn rthy brn DOL incl,g-tt intxl-ool POR,tr-g dull-bri yel FLOR,n-fr ltbrn-tr blk STN,n-g slow-mod fast stmg CUT"

5890.00 5900.00 "LS wh-crm,occ tan-ltbrn,crpxl-micxl,rthy-chk,occ plty,v sl dol,pred tt v sl chty PKST,W/v rr thn vfxl ooc-oom GRNST w/tr POR-FLOR-STN-CUT AA"

5900.00 5910.00 "LS pred wh-crm-tan dns tt sl fos PKST AA,w/v rr scat trnsl-bf CHT frag,occ ANHY incl-v rr styl,n-v rr v thn ltbrn-brn occ arg GRNST w/v p spty intxl POR-v rr FLOR-STN-CUT"

5910.00 5930.00 "LS crm-tan,occ lt-mbrn,crpxl-micxl,rr vfxl,v sl fos,dns,occ chk-sl arg,dol ip,scat Cor fos-ool,v rr styl,v sl mrly,tt-v rr intxl POR,n-v rr dull yel FLOR,n-v p spty brn-blk STN,n-v p dif-slow stmg CUT,w/v thn brn micxl rthy sl fos lmy mrly DOL tt NFSOC"

5930.00 5940.00 "LS intbd PKST AA,w/incr & bcmg pred brn-mbrn micxl-vfxl,gran-micsuc ooc-oom GRNST sl dol,v sl anhy,w/rr trnsl CHT frag,tt-fr intxl-ool POR,tr-fr dull-rr bri yel FLOR,fr spty brn STN,rr spty blk dd o STN,fr slow-mod fast stmg CUT"

DEPTH	LITHOLOGY

5940.00 5950.00 "LS AA,sl incr PKST,POR-FLOR-STN-CUT AA"

5950.00 5960.00 "LS pred wh-crm-tan dns plty occ chk sl chty PKST,w/thn intbd GRNST & POR-FLOR-STN-CUT AA"

5960.00 5970.00 "LS ltbrn-brn-ltbrngy,occ crm-wh,dkbrn,micxl-gran-crpxl,occ vfxl-micsuc ip,ooc-oom-sl ool GRNST/decr chky plty-occ dns scat-occ intbd PCKST,sl anhy/tr xl ANHY incl,sl dol/tr DOL cmt,rr CHT AA,g-fr ooc-oom-intxl POR/tr POR fl,fr spty mod bri-bri yel FLOR,g ltbrn-brn/scat dkbrn & blk dd o STN,g mod fast-fast stmg mlky CUT "

5970.00 5984.00 "LS AA,pred GRNST AA/tr scat PCKST AA,incr POR & FLOR,STN AA/incr dkbrn-blk STN,g blooming-fast stmg mlky CUT"

5984.00 6000.00 "LS crm-tan,occ lt-mbrn,crpxl-vfxl,gran-suc ip,intbd ooc-oom GRNST & dns tt sl anhy ip occ chk v sl plty PKST,occ DOL rich cmt,tt-g intxl-ool POR,n-fr dull yel FLOR,n-g brn STN-rr blk dd STN,n-fr dif-mod fast-slow stmg CUT"

6000.00 6010.00 "LS AA,incr plty-chk dns sl fos PKST,tt-tr intxl-ool POR,fr dull-bri yel FLOR,STN-CUT AA"

6010.00 6020.00 "LS crm-tan,occ lt-mbrn,micxl-vfxl,gran-suc ip,pred ooc-oom-sl alg GRNST w/thn intbd dns tt sl anhy ip occ chk v sl plty PKST,occ DOL rich cmt,v rr trnsl CHT frag,tr-g intxl-ool POR,tr-fr dull yel FLOR,fr brn STN-rr blk dd STN,rr-g slow-mod fast stmg CUT"

6020.00 6030.00 "LS AA,sl incr fos PKST,v sl incr FLOR,POR-STN-CUT AA"

6030.00 6050.00 6030.90 0 "LS crm-tan,occ lt-dkbrn,crpxl-vfxl,gran-suc ip,intbd ooc-oom GRNST & dns tt sl anhy ip occ chk v sl plty occ ool PKST,occ DOL rich cmt,tr-g intxl-ool POR,tr-g dull yel FLOR,tr-g brn STN-tr blk dd STN,tr-g dif-slow-mod fast stmg CUT"

6050.00 6070.00 "LS AA,pred ooc-oom GRNST w/scat ANHY fl POR,incr thn intbd PKST w/depth,n-v rr alg mat,tt-g intxl-ool POR,fr dull-bri yel FLOR,n-g brn-dkbrn STN,n-fr spty blk dd o STN,n-g slow-fast stmg CUT"

6070.00 6080.00 "LS crm-tan-brn,occ wh,micxl-vfxl,gran-micsuc,pred ooc-oom sl alg GRNST,incr crpxl occ plty chk dns PKST,scat ANHY fl POR,v rr trnsl-clr CHT frag,sl DOL rich cmt,POR-FLOR-STN-CUT AA"

6080.00 6090.00 "LS AA,pred ooc-oom sl alg GRNST,decr PKST AA,fr-g intxl-ool POR,fr-g dull-bri yel FLOR,tr-fr brn-dk brn STN,tr spty blk dd o STN,fr-g slow-fast stmg CUT"

6090.00 6100.00 "LS AA,pred intbd GRNST AA & PKST AA,decr POR-FLOR-STN-CUT"

6100.00 6110.00 "LS crm-tan,occ lt-dkbrn,crpxl-vfxl,gran-suc ip,pred ooc-oom GRNST,w/dns tt sl anhy ip occ chk v sl plty occ ool PKST,occ DOL rich cmt,v rr trnsl CHT FRAGtr-g intxl-ool POR,tr-g dull yel FLOR,tr-g brn STN-tr blk dd STN,tr-g dif-slow-mod fast stmg CUT"

6110.00 6120.00 "LS AA,pred GRNST AA,decr ool-intxl POR & dull-bri yel FLOR,STN-CUT AA,incr dns sl anhy occ plty-chk PKST"

DEPTH	LITHOLOGY

6120.00 6140.00 "LS crm-tan,occ lt-dkbrn,crpxl-vfxl,gran-suc ip,intbd ooc-oom GRNST & dns tt sl anhy ip occ chk v sl plty occ ool PKST,occ DOL rich cmt,tr-g intxl-ool POR,tr-g dull yel FLOR,tr-g brn STN-tr blk dd STN,tr-g dif-slow-mod fast stmg CUT"

6140.00 6150.00 "LS pred intbd GRNST & PKST AA,incr POR-FLOR-STN-CUT w/ depth"

6150.00 6170.00 "LS tan-brn-dkbrn,rr crm-wh,micxl-vfxl,gran-micsuc,occ crpxl,intbd ooc-oom GRNST w/scat ANHY xl-POR fl,v rr trnsl CHT frag,occ DOL rich cmt, & dns tt occ plty chk ip PKST,tt-g intxl-fr ool POR,mfr dull-bri yel FLOR,tr-fr brn-rr blk STN,n-g mod fast CUT"

6170.00 6200.00 "LS tan-brn-dkbrn,rr crm-wh,micxl-vfxl,gran-micsuc,occ crpxl,intbd ooc-oom GRNST w/scat ANHY xl-POR fl,v rr trnsl CHT frag,occ DOL rich cmt, & dns tt occ plty chk ip PKST,tt-g intxl-fr ool POR,mfr dull-bri yel FLOR,tr-fr brn-rr blk STN,fr mod fast CUT"

6200.00 6220.00 "LS tan-ltbrn,occ m-dkbrn,wh-crm,micxl-gran,micsuc-vfxl,occ crpxl,ooc-oom GRNST/tr scat-occ intbd dns-plty chky PCKST,sl anhy/tr POR fl & rr xln ANHY incl,fr-g ooc-oom-intxl POR,g scat mod bri-bri yel FLOR,g-fr ltbrn/scat brn-dkbrn-blk dd o STN,CUT AA"

6220.00 6250.00 "LS AA,pred ooc-oom-sl ool GRNST/decr scat-occ intbd dns-plty chky PCKST,sl anhy/tr POR fl & rr xl ANHY incl,sl dol/occ DOL cmt strk,g ooc-oom-tr intxl POR,FLOR AA,g ltbrn-brn/tr scat dkbrn & blk dd o STN,g blooming-fast stmg mlky CUT"

6250.00 6260.00 "LS AA,pred ooc-oom-sl ool GRNST/tr scat-occ intbd dns-plty chky PCKST,sl anhy/tr POR fl & rr xl ANHY incl,sl dol AA,POR,g-fr even dull-mod bri/scat bri yel FLOR,g ltbrn-brn/scat dkbrn & blk dd o STN,CUT AA, "

6270.00 6290.00 "LS tan-ltbrn,occ m-dkbrn,wh-crm,micxl-gran,micsuc-vfxl,occ crpxl,pred GRNST AA/sl incr scat-occ intbd PCKST AA,sl anhy/tr POR fl & rr xln ANHY incl,g ooc-oom-intxl POR,FLOR AA,g ltbrn-brn/scat dkbrn-blk dd o STN,g fast stmg-sl blooming mlky CUT"

6290.00 6310.00 "LS AA,pred ooc-oom-sl ool GRNST/tr scat-occ intbd dns-plty chky PCKST,sl anhy/tr POR fl & rr xl ANHY incl,sl dol AA,POR,g-fr even dull-mod bri/scat bri yel FLOR,g ltbrn-brn/scat dkbrn & blk dd o STN,CUT AA"

6310.00 6340.00 "LS tan-ltbrn,occ m-dkbrn,wh-crm,micxl-gran,micsuc-vfxl,occ crpxl,pred GRNST AA/incr scat-occ intbd dns-plty chky PCKST,sl anhy/tr POR fl & rr xln ANHY incl,POR-FLOR AA,g ltbrn-brn/tr dkbrn-blk dd o STN,g slow-mod fast stmg mlky CUT"

6340.00 6360.00 "LS AA,pred GRNST AA intbd/chky plty-occ dns PCKST,sl anhy/tr POR fl & rr xl ANHY incl,sl dol/tr DOL cmt,g ooc-oom-intxl POR,g even dull-mod bri/scat bri yel FLOR,g ltbrn-brn/scat dkbrn & blk dd o STN,g slow stmg mlky CUT "

6360.00 6380.00 "LS tan-ltbrn,occ m-dkbrn,wh-crm,micxl-gran,vfxl-micsuc,occ crpxl,pred ooc-oom GRNST/PCKST AA,sl anhy/tr POR fl & rr xln ANHY incl,POR-FLOR AA,g ltbrn-brn/tr dkbrn-blk dd o STN,g-fr slow-mod fast stmg mlky CUT"

6380.00 6390.00 "LS AA,pred GRNST AA intbd/chky plty-occ dns PCKST,sl anhy/tr POR fl & rr xl ANHY incl,v sl dol,POR AA,fr-g even dull-mod bri,tr scatbri yel FLOR,STN AA,g-fr slow stmg mlky CUT"

DEPTH	LITHOLOGY

6390.00 6410.00 "LS tan-ltbrn,occ m-dkbrn,wh-crm,micxl-gran,vfxl-micsuc,occ crpxl,pred ooc-oom GRNST/decr PCKST AA,sl anhy AA,g ooc-oom-intxl POR,g even mod bri-dull/incr scat bri yel FLOR,g ltbrn-brn/tr dkbrn-blk dd o STN,g mod fast-fast stmg mlky CUT"

6410.00 6440.00 "LS AA,pred GRNST AA intbd/chky plty-occ dns PCKST,sl anhy/tr POR fl,rr xl ANHY incl,v sl dol,g ooc-oom-intxl POR,g even dull-mod bri/decr scat bri yel FLOR,g ltbrn/scat brn-dkbrn & tr blk dd o STN,g slow stmg mlky-dif CUT "

6440.00 6460.00 "LS tan-ltbrn,occ m-dkbrn,wh-crm,micxl-gran,vfxl-micsuc,occ crpxl,pred ooc-oom GRNST/incr PCKST AA,sl anhy AA,sl dol/tr DOL cmt,g ooc-oom-intxl POR,g even dull-mod bri/tr scat bri yel FLOR,g ltbrn-brn/tr dkbrn-blk STN,g mod fast-fast stmg mlky CUT"

6460.00 6480.00 "LS AA,pred ooc-oom GRNST intbd/chky plty-occ dns PCKST,sl anhy/tr POR fl & rr xl ANHY incl,tr trnsl-wh CHT frag,sl dol/tr DOL cmt,g-fr ooc-oom-intxl POR,g-fr even mod bri-dull/tr scat bri yel FLOR,g-fr ltbrn-occ brn/tr scat dkbrn-rr blk STN,CUT AA"

6480.00 6500.00 "LS tan-ltbrn,occ m-dkbrn,wh-crm,micxl-gran,vfxl-micsuc,occ crpxl,pred dns-tt sl anhy occ plty-chk PKST,w/thn intbd ooc-oom GRNST sl anhy-rr ANHY fl POR sl DOL rich cmt,tt-tr intxl-ool POR,tr-mfr dull-bri yel FLOR,tr-fr brn-rr blk STN,tr fr mod fast CUT"

6500.00 6510.00 "LS pred ooc-oom GRNST,w/thn PKST AA,fr-g ool-intxl POR,fr-g dull-bri yel FLOR,fr lt-dkbrn STN,rr-tr spty blk dd o STN,fr-g mod fast-fast stmg CUT"

6510.00 6520.00 "LS tan-brn-crm,occ wh,crpxl-micxl,occ vfxl-gran,micsuc ip,pred chk dns sl anhy fos sl arg PKST,w/thn intbd ooc-oom GRNST occ DOL rich cmt,v rr trnsl CHT frag,tt-tr intxl-ool POR,n-fr dull-bri yel FLOR,n-tr brn-rr blk STN,v p slow dif-tr mod fast stmg CUT"

6520.00 6530.00 "LS AA,bcmg pred ooc-oom GRNST,w/rr-g intxl-ool POR,tr-g dull-bri yel FLOR,n-g brn-v rr blk STN,n-g mod fast stmg CUT"

6530.00 6544.00 "LS tan-ltbrn,occ m-dkbrn,wh-crm,micxl-gran,vfxl-micsuc,occ crpxl,pred dns-tt sl anhy occ plty-chk PKST,w/thn intbd ooc-oom GRNST sl anhy-rr ANHY fl POR sl DOL rich cmt,tt-tr intxl-ool POR,tr-mfr dull-bri yel FLOR,tr-fr brn-rr blk STN,tr fr mod fast CUT"

6550.00 6580.00 "LS tan-ltbrn,occ m-dkbrn,wh-crm,micxl-gran,micsuc-vfxl,occ crpxl,pred intbd ooc-oom GRNST & dns-plty chky PCKST,sl anhy-tr ANHY fl POR,occ DOL rich cmt,v rr scat CHT frag,rr-g ool-intxl POR,tr-g dull-bri yel FLOR,n-fr dkbrn-brn-rr blk STN,n-fr fast CUT "

6580.00 6600.00 "LS tan-ltbrn,m-dkbrn ip, occ wh-crm,micxl-gran,vfxl-micsuc,pred ooc-oom GRNST w/thn dns occ chk PCKST AA,sl anhy AA,sl DOL cmt,tr-g ool-intxl POR,fr-g dull-bri yel FLOR,fr-g ltbrn-brn-rr dkbrn STN-rr blk dd o STN,fr-g mod fast-fast stmg mlky CUT"

6600.00 6610.00 "LS AA,pred sl ooc-oom GRNST,w/incr dns chk sl anhy plty PKST w/depth,sl decr POR-FLOR-STN-CUT AA"

6610.00 6630.00 "LS tan-ltbrn,occ m-dkbrn,wh-crm,crpxl-micxl,occ vfxl-gran, sl micsuc,pred dns-plty chky occ chty ool PCKST w/thn ooc-oom GRNST,anhy-tr ANHY fl POR,occ DOL cmt,v rr scat CHT frag,tt-tr intxl-ool POR,n-fr dull-bri yel FLOR,tr spty brn-rr blk STN,fr CUT AA "

DEPTH	LITHOLOGY

6630.00 6640.00 "LS tan-ltbrn,m-dkbrn ip, occ wh-crm,micxl-gran,vfxl-micsuc,pred ooc-oom GRNST w/thn dns occ chk PCKST AA,sl anhy AA,sl DOL cmt,tr-g ool-intxl POR,fr-g dull-bri yel FLOR,fr-g ltbrn-brn-rr dkbrn STN-rr blk dd o STN,fr-g mod fast-fast stmg mlky CUT"

6640.00 6650.00 "LS AA,pred ooc-oom GRNST,w/thn dns occ chk-plty v sl ool PKST incl,fr-g POR-FLOR-STN-CUT AA"

6650.00 6670.00 "LS tan-ltbrn,m-dkbrn ip,rr wh-crm,micxl-gran,vfxl-micsuc,pred ooc-oom GRNST w/thn crpxl dns occ chk sl ool PCKST,rr ANHY fl POR,sl DOL cmt,fr-g ool-intxl POR,fr-g dull-bri yel FLOR,fr-g brn-rr dkbrn STN-rr blk dd o STN,fr-g mod fast-fast stmg mlky CUT"

6670.00 6720.00 "LS tan-ltbrn,m-dkbrn ip,tr-rr wh-crm,micxl-gran,vfxl-micsuc,pred ooc-oom GRNST/tr thn dns crpxl sl ool-chky plty PCKST,sl anhy/rr xl ANHY incl & fl POR,tr tan-trnsl CHT frag-incl,sl dol/tr DOL cmt strk,g ool-intxl POR,g even dull-mod bri/scat bri yel FLOR,g-fr ltbrn-brn/scat dkbrn-blk dd o STN,g slow blooming-fast stmg mlky CUT "

6720.00 6730.00 "LS AA,pred ooc-oom GRNST/rr scat chky plty-occ intbd dns PCKST,g ooc-oom-intxl POR,g even mod bri-dull/scat bri yel FLOR,g brn-ltbrn/scat blk STN,g blooming-fast stmg mlky CUT"

6730.00 6750.00 "LS AA,rr wh-crm,gran-vfxl-micsuc,occ micxl-crpxl,pred ooc-oom GRNST/tr PCKST AA,sl anhy/tr POR fl-rr xl ANHY incl,sl dol/tr DOL cmt,g ooc-oom-intxl POR,g even mod b/tr bri yel FLOR,g ltbrn/scat brn-dkbrn-tr blk dd o STN,CUT AA"

6750.00 6760.00 "LS AA,pred ooc-oom GRNST/sl incr PCKST AA,sl anhy/tr xl ANHY & POR fl,rr-tr trnsl-occ wh CHT frag-incl,POR-FLOR-STN AA,g mod fast-slow stmg mlky CUT"

6760.00 6780.00 "LS tan-ltbrn,m-dkbrn ip,tr wh-crm,gran-vfxl-micsuc,occ micxl-crpcl,pred GRNST AA/tr scat-intbd PCKST AA,anhy AA,dol/tr DOL cmt,g ooc-oom-intxl POR,FLOR AA,g brn-ltbrn/scat dkbrn-rr blk dd o STN,g mod fast stmg-slow blooming mlky CUT"

6780.00 6790.00 "LS AA,pred GRNST AA/sl decr scat-occ intbd PCKST AA,sl anhy/tr xl ANHY,rr chky-anhy POR fl,sl dol AA,POR-FLOR AA,g brn-ltbrn/tr dkbrn-rr blk dd o STN,g slow-mod fast stmg mlky CUT"

6790.00 6800.00 "LS AA,pred ooc-oom GRNST/sl decr PCKST AA,sl anhy/tr xl ANHY frag,rr anhy-sl chky POR fl,POR-FLOR-STN AA,g mod fast stmg mlky CUT"

6800.00 6810.00 "LS AA,pred ooc-oom-sl ool GRNST/tr scat-occ intbd chky plty-dns PCKST,sl anhy AA,sl dol/tr DOL cmt,rr tan-trnsl CHT,POR-FLOR-STN-CUT AA"

6810.00 6820.00 "LS AA,pred GRNST AA/incr scat chky plty-occ intbd dns sl ool PCKST,sl anhy AA,rr CHT AA,g ooc-oom-intxl POR,g even mod bri-dull/scat bri yel FLOR,g ltbrn-brn-scat dkbrn/rr blk dd o STN,g fast stmg-blooming mlky CUT"

6820.00 6830.00 "LS AA,GRNST AA,decr chky plty-occ dns sl ool PCKST,sl dol/tr DOL cmt,sl anhy AA,POR-FLOR-STN AA,g slow-mod fast stmg mlky CUT"

6830.00 6850.00 "LS tan-ltbrn,m-dkbrn ip,incr wh-crm,gran-vfxl-micsuc,occ micxl-crpxl,ooc-oom GRNST/scat chky plty-occ intbd dns sl ool PCKST,anhy AA,dol/tr DOL cmt,g ooc-oom-intxl POR,FLOR-STN AA,g mod fast-slow stmg mlky CUT"

DEPTH	LITHOLOGY

6850.00 6860.00 "LS AA,pred ooc-oom-sl ool GRNST/incr dns ool-sl agal crpxl & decr chky plty PCKST,sl anhy/rr xl ANHY,rr chky-anhy POR fl,sl dol/tr DOL cmt,fr-g ooc-oom-ool/tr intxl POR,FLOR AA,g brn-ltbrn/tr dkbrn-tr blk dd o STN,g slow-mod fast stmg mlky CUT"

6860.00 6870.00 "LS pred intbd GRNST & PKST AA,sl decr POR & FLOR-STN-CUT AA"

6870.00 6880.00 "LS AA,ooc-oom-sl ool GRNST/intbd dns sl ool chky PCKST,sl anhy,sl dol,g-fr ooc-oom POR/tr POR fl,FLOR-STN AA,g-fr mod fast-slow stmg mlky CUT"

6880.00 6900.00 "LS tan-brn,occ crm-wh,crpxl-micxl,occ vfxl-gran,rr micsuc,pred cln-ool dns occ plty-chk PKST,w/rr-tr thn intbd ooc-oom GRNST,occ ANHY fl POR,rr trnsl CHT frag,occ DOL cmt,tt-rr thn intxl-ool POR,tr-fr dull-bri yel FLOR,tr spty brn-rr blk STN,n-tr fr CUT"

6900.00 6910.00 "LS AA,sl incr ooc-oom GRNST,tt-tr ool-rr fr intxl POR,tr fr dull-bri yel FLOR,tr-fr spty brn-tr spty blk dd o STN,rr-tr fr mod fast-fast stmg CUT"

6910.00 6920.00 "LS pred sl ool arg dns-sl chty rr chk-plty PKST,w/v thn ool GRNST AA,v rr scat thn stks POR-FLOR-STN-CUT"

6920.00 6925.00 "LS tan-brn,occ crm-wh,crpxl-micxl,occ vfxl-gran,rr micsuc,pred cln-ool dns occ plty-chk PKST,w/rr-tr thn intbd ooc-oom GRNST,occ ANHY fl POR,rr trnsl CHT frag,occ DOL cmt,tt-rr thn intxl-ool POR,tr dull-bri yel FLOR,tr spty brn-rr blk STN,n-tr frstmg CUT"

FORMATION TOPS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #18-31 NW 1-C & B HORIZONTAL LATERAL LEG #1

FORMATION NAME		SAMPLES MEASURED DEPTH	SAMPLES TRUE VERTICAL DEPTH	DATUM KB:5107'
LOWER ISMAY		5804'	5802'	-695'
GOTHIC SHALE		5846'	5840'	-733'
DESERT CREEK		5861'	5852'	-745'
DC 1-A ZONE		5869'	5857'	-750'
DC 1-B ZONE		5921'	5886'	-779'
DC 1-C ZONE		5952'	5898'	-791'

GEOLOGICAL SUMMARY

AND

ZONES OF INTEREST

The Mobil Exploration and Production U.S. Inc., Ratherford Unit #18-31 Northwest Horizontal Lateral Leg #1 was a re-entry in to the 1-C and 1-B zones of the Mobil Ratherford Unit #18-31 well, located in Section 18, T41S, R24E. Retrieval of the bridge plug prior to kicking off to the northwest Lateral Leg #1 was begun on December 9, 1997. After completing the preparations of well, milling for lateral leg #1 was begun on December 10th. The curve section was completed on December 13, 1997 at a measured depth of 5984', 5625.5' true vertical depth, 3 feet into the 1-C porosity zone and the lateral section was begun in the 1-C porosity zone on December 14, 1997. The lateral reached a measured depth of 6925', true vertical depth of 5887', with a horizontal displacement of 1087.7' and true vertical plane of 327 degrees, on December 16, 1997 in the upper Desert Creek 1-B zone. The only problems encountered were lost circulation in to old perforations while retrieving the bridge plug and trouble retrieving the bridge plug, no significant problems were encountered while drilling the curve or lateral sections. Fresh water with polymer sweeps was used as drilling fluid through out the lateral, with a minor amount of oil added to the drilling fluid to facilitate the rotating and sliding of the drill pipe, near the end of the lateral section. The background gases noted on the accompanying mud log were only moderate through out the lateral section, and increased significantly due to the oil added to the drilling fluid. The samples had good oil shows through out the 1-C and 1-B zones drilled.

The primary objective of the Ratherford Unit #18-31 Leg 2 horizontal lateral was the effective porosity, staining and reservoir properties in the 1-C and 1-B zones of the Desert Creek Member of the Upper Paradox Formation. The very basal 26' of the Upper Ismay, the Lower Ismay, the Gothic Shale and the transition zone at the top of the Desert Creek, the 1-A and 1-B porosity zones as well as the 1-A to 1-B transition and very thin 1-B to 1-C transition zones were penetrated while drilling the curve section. The curve was landed 3 feet into the 1-C porosity horizon. Kick off point for this lateral was at a measured depth of 5782', 5782' true vertical depth, near the base of the Upper Ismay member of the Paradox Formation.

The basal 26' of the Upper Ismay seen in the curve section of this well was predominately white to cream to tan, occasionally brown, cryptocrystalline to microcrystalline, chalky to clean and slightly argillaceous to occasionally slightly dolomitic and with scattered marly streaks, and had scattered anhydrite crystals and rare fracture filling. Through out the Upper Ismay were very thin interbedded browns, microcrystalline, limy, and argillaceous to clean dolomites. Dark brown to smoky gray to tan chert fragments and thin interbeds of dark gray to black shale were also noted in Upper Ismay. No visible staining or gas increases and only mineral fluorescence were noted in the scattered very thin porosity streaks. The Hovenweep marker between the Upper Ismay and Lower Ismay was noted as predominately a very dark gray to dark brown limy marlstone and was very poorly developed in this lateral.

The top of the Lower Ismay was picked at 5804' measured depth, 5802' true vertical depth, and was based primarily on the slight change in lithology as well as comparison to the well log for the original well bore. The Lower Ismay was predominately limestone, light gray to light gray brown to brown to cream, occasionally white, cryptocrystalline to microcrystalline, dense, occasionally to slightly chalky, slightly fossiliferous and slightly silty. Scattered through out the Lower Isamy were brown to translucent chert and thin black carbonaceous shale partings. No shows were noted in these limestones. Through out the limestones from a measured depth of 5820' to 5835' in the Lower Ismay, cream to light gray, slightly sandy, very limy siltstones were noted. The siltstones were noted as interbeds and to thin laminations. These siltstones had a very limestone rich cement and graded to a very silty to very slightly sandy limestone and had no visible sample shows. The basal 3' of the Lower Ismay to the top of the Gothic Shale, had limestones which were became increasingly shaley and graded to a medium brown to medium gray, dense, slightly anhydritic, increasingly shaley, dark brown to gray brown, cryptocrystalline, very argillaceous to clean, dense dolomite and very limy to dolomitic shale. These basal limestones and dolomites had no visible sample shows.

The top of the Gothic Shale was encountered at 5846' measured depth, 5840' true vertical depth and was predominantly gray brown to black, silty, carbonaceous, soft to moderately firm, calcareous to slightly dolomitic and slightly micaceous. Scattered within the Gothic were very thin, cryptocrystalline to microcrystalline, earthy, limestone and dolomite partings and inclusions, with very rare scattered anhydrite crystals. The top of the Gothic was a fairly gradational contact with no visible decrease or increase in penetration rate noted. The base of the Gothic was marked by an abrupt decrease in penetration rate as well as a sharp lithology change. The top of the Gothic was marked by an slight increase in shale in the samples and a slight decrease in penetration rate.

The top of the Desert Creek is commonly picked at the sharp contact between the base Gothic Shale and the top of the Desert Creek transition zone facies change, which occurred at a measured depth of 5861' and a true vertical depth of 5852'. The top of the Desert Creek was marked by a significant decrease in penetration rate and marked increase in limestones and thinly interbedded dolomites in the samples. The lithology of the transition zone in this well was primarily limestone white to cream to tan, occasionally light gray, cryptocrystalline to microcrystalline, platy, argillaceous to very slightly silty in part, slightly anhydritic with occasional carbonaceous shale partings. Also thin interbedded brown, cryptocrystalline to microcrystalline, argillaceous, very limy dolomites were seen. Only very minor intercrystalline porosities were noted, with no visible sample show or gas increases. No to a very minor gas increase was noted at the very base of the transition zone, as the penetration rate increased at the very top of the 1-A porosity zone.

The top of the Desert Creek 1-A zone was picked at 5869' measured depth, 5857.4' true vertical depth and was based on sample identification as well as the significant increase in the penetration rate. The top of the 1-A zone was approximately flat to the top on the porosity log for this well. The porosity of the 1-A zone was in an oolicastic to oomoldic limestone grainstone, which was tan to brown, occasionally cream to medium brown, with scattered white fragments, very fine to cryptocrystalline, with a granular to microsucrosic to traces of sucrosic texture, very rare scattered translucent to clear chert fragments were noted, scattered anhydrite crystals to inclusions and rare anhydrite porosity filling, with a dolomite rich cement and had a well developed oomoldic to oolicastic to intercrystalline porosity. Light brown to brown stain, with a trace of black bitchimum (dead oil staining) staining was noted in the samples along with a good yellow gold fluorescence and a moderately fast to fast streaming to milky cut was noted through the zone. As the curve continued and the transition zone from the 1-A to 1-B zone was penetrated, a significant increase in the amount of tight, dense, very slightly oolitic limestone was noted. The 1-A to 1-B transition zone at the base of the 1-A was from a measured depth of 5887', 5867' true vertical depth, to a measured depth of 5921', 5886' true vertical depth. This basal portion of the 1-A zone was a white to cream to tan, cryptocrystalline to microcrystalline, dense, chalky, very slightly oolitic to occasionally fossiliferious limestone. These limestones had scattered translucent to clear to buff Chert fragments, rare anhydrite inclusions and crystals, as well as scattered styolites. Also noted in this tight limestone were very thin

streaks of light brown to brown oolicastic to oolmoldic limestone grainstone. These thin grainstones had traces of intercrystalline porosity, with traces of dull yellow fluorescence, a rare spotty stain and a slow diffuse to fair cut.

The top of the 1-B porosity zone was picked at 5921' measured depth, 5886' true vertical depth and was based partially on sample identification but mainly on a slight change in the penetration rate and the drill rate to porosity log correlation. The top of the 1-B zone was flat to the top on the porosity log for this well. The top of the 1-B zone was near the base of the tight limestones of the 1-A to 1-B transition zone. The top of the best porosity in the 1-B zone was at a measured depth of 5937', 5893' true vertical depth, in an oolicastic to oomoldic limestone grainstone, which was brown to medium brown, with scattered white fragments, very fine to cryptocrystalline, with a granular to microsucrosic texture, scattered anhydrite crystals to inclusions and rare anhydrite porosity filling, with a dolomite rich cement and had a fair to good oolitic to intercrystalline porosity. A fair light brown to brown stain, with a trace of black bitchimum (dead oil staining) staining was noted in the samples along with a fair fluorescence and a slow to moderately fast streaming milky cut was noted through the zone. As the curve continued downward, the very thin transition zone from the 1-B to 1-C zone was penetrated at a measured depth of 5948', with a true vertical depth of 5897'. This thin transition zone was seen as an increase in the thin, tight, chalky, occasionally platy limestone packstone, with a decrease in the penetration rate and a decrease in the amount of porosity and sample show.

The top of 1-C porosity zone was picked at a measured depth of 5952', with a true vertical depth of 5898'. The 1-C zone was predominately an oolicastic to oolmoldic limestone grainstone with dense limestone packstone at the top and base of the zone. The grainstones were light brown to brown, occasionally gray brown to medium brown, microcrystalline to very finely crystalline, oolicastic to oolmoldic, slightly dolomitic cement, scattered anhydrite crystals to porosity filling, with fair to good intercrystalline to oolitic porosity and a fair to good sample show. The packstones were white to cream, occasionally tan, cryptocrystalline to microcrystalline, occasionally platy, chalky, and very slightly oolitic.

The curve section was completed at a measured depth of 5984', 5901' true vertical depth, and a vertical section (horizontal displacement) of 149', in the interbeded oolicastic to oolmoldic limestone grainstones and tight packstones at or near the base of the 1-C porosity zone, 2' below the proposed target line, with an 91.6 degree angle, on December 13,1997. The well bore was slid and slowly turned toward a 90 degree angle, to move away from the base of the zone, to acquire the target line and best porosity of the 1-C zone. The lateral section was to be drilled in the porosity zones of the 1-C and 1-B.

The lithology of the 1-C porosity zone through out its length penetrated in the lateral remained fairly consistent with only very minors variations in porosity type and rock classification being noted. The lithology of the 1-C was a light to medium brown, occasionally gray brown, microcrystalline to very finely crystalline, microsucrosic to occasionally sucrosic, oolicastic to oomoldic limestone grainstone, with very rare scattered anhydrite crystals to inclusions and some porosity filling, slightly dolomitic, with a trace of dolomite rich cement. The 1-C was a cream to tan, cryptocrystalline, occasionally oolitic to very slightly fossiliferous, anhydritic limestone packstone with scattered translucent chert fragments in the base and the 1-C to 1-B transition zones. The good oolicastic to oolmoldic limestones had fair to good visible porosity and sample shows through out the good oolicastic to oolmoldic limestones penetrated in the lateral, with the tight packstones showing very poor to predominately no visible sample shows.

As the well path was oriented upward toward the target line, the well bore after encountering the tight packstones at the base of the 1-C zone, which was at a measured depth of 5985', 5901' true vertical depth, the good oolicastic to oolmoldic grainstones were penetrated and pulled the lateral assembly upwards at an increasing steeper upward angle. The well path reached an upward angle of almost 98 degrees and traveled upward through the 1-C porosity zone, into and through the 1-C to 1-B

transition zone and into the good oolicastic to oolmoldic limestones of the 1-B porosity zone, before the upward trend of the well path could be halted and the well path turned downward. The 1-C to 1-B transition was at a measured depth of 6069', a true vertical depth of 5898', with an apparent dip of almost 92 degrees. The base of the 1-B porosity zone was encountered at a measured depth of 6081', true vertical depth of 5896', with a dip of 91 degrees.

The 1-C to 1-B transition zone was a very tight, slightly oolitic, anhydritic limestone packstone, with no to very rare thin streaks of intercrystalline porosity, but only a very poor fluorescence, a very rare spotty light brown stain and a very poor slow diffuse to slow streaming cut. These packstones had scattered chert fragments. The porosity of the 1-B zone was in a very oolicastic to oolmoldic limestone grainstone, with a fair to good sample show. The grainstones in the 1-B porosity zone were consistent as the well path continued upward to the top of the 1-B zone at a true vertical depth 5890' and a horizontal displacement of 320'. The top of the 1-B porosity zone was not penetrated, and just bumped against, as the lateral assembly was being oriented downward when the top was encountered. Only a slight increase in packstone was noted in the samples, but no measurable change in sample show.

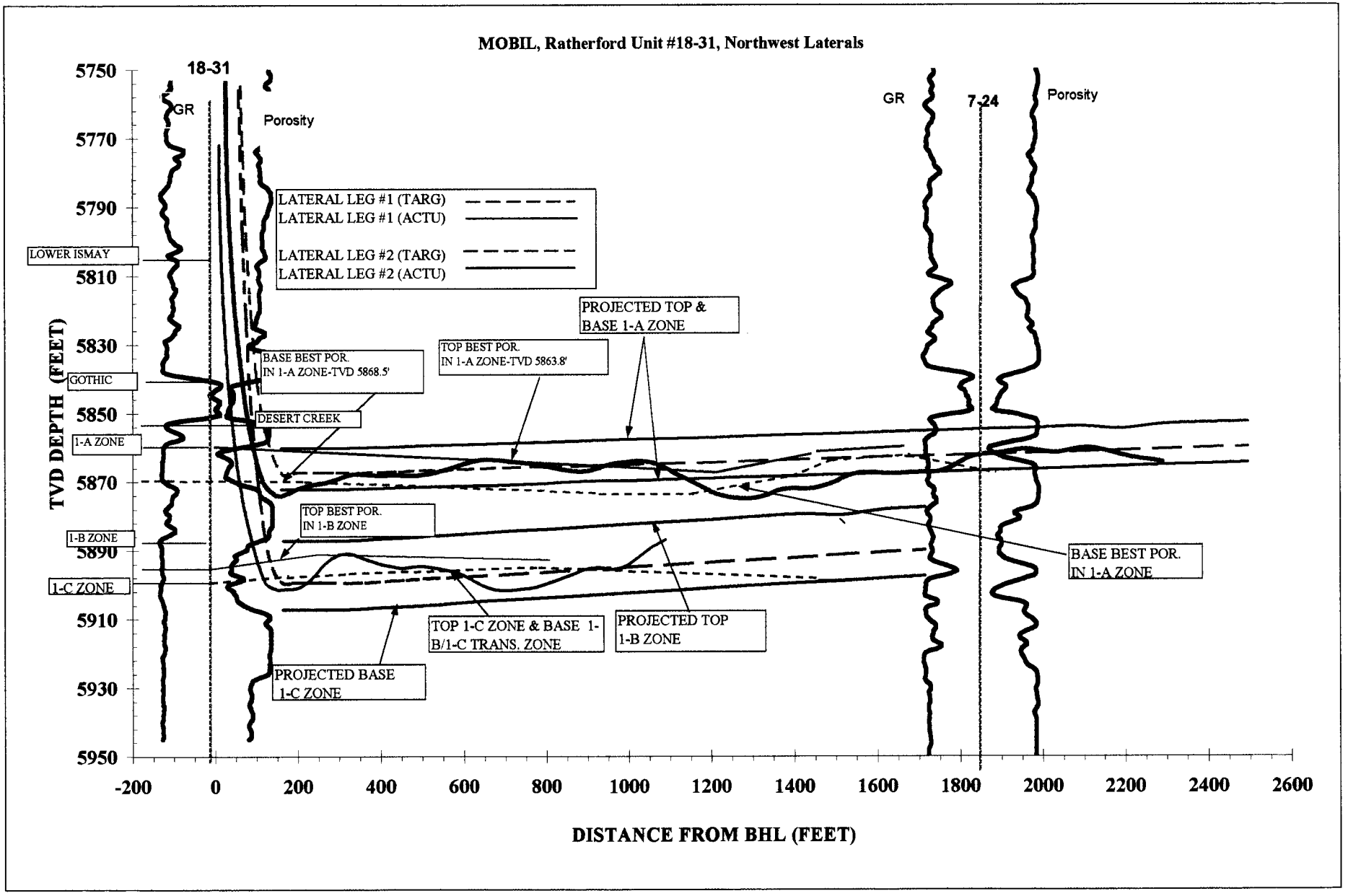
As the well path was continued downward, through the 1-B porosity, the base of the 1-B zone was bumped several times at a true vertical depth of 5895', with horizontal displacements of 460' and 518', before being forced downward to reenter the 1-C zone. At this time the base of the 1-B zone had an apparent dip angle of 90.3 degrees. The transition zone between the 1-B and the 1-C was drilled from a measured depth of 6453' with a true vertical depth of 5898' to a measured depth of 6497' with a true vertical depth of 5900'. The lithology returned to the very tight, slightly cherty, limestone packstone through the transition zone. At a measured depth of 6500' the lithology became predominately the good oolicastic to oolmoldic limestone grainstones with a fair to very good sample show. The well was continued in the good porosity of the 1-C zone to a measured depth of 6730' with a true vertical depth of 5895', when the top of the 1-C zone was encountered as the well path was turned upward to reenter the 1-B zone. The top of the 1-C, (the base of the 1-C to 1-B transition zone) was encountered at measured depths of 6730' and 6808', with true vertical depths of 5895' and 5894.5', before finally penetrating the transition zone and continuing upward in to the 1-B zone.

At a measured depth of 6843' with a true vertical depth of 5893' the base of the 1-B porosity zone was penetrated. The porosity zone of the 1-B appeared to have thinned to just over 1' thick as the 1-B to 1-A transition zone was penetrated at a measured depth of 6855', with a true vertical depth of 5891.6'. The porosity zone was a very good oolicastic to oolmoldic limestone grainstone with a good sample show. As the well path continued upward into the lithology became predominately a very oolictic limestone packstone with trace to abundant anhydrite filled porosity. There were very minor amounts of interoolitic porosity, but the oolites were predominately well cemented with limestone to very slightly dolomite and some anhydrite cement. As the well path continued upward into the tight oolitic limestones in the upper 1-B zone, the well bore was being slowly turned downward when the decision was made to terminate the lateral at a measured depth of 6925', 5887' true vertical depth, and a horizontal displacement of 1088'.

While drilling the lateral section, the well-flowed very minor amounts of water and oil, beginning when the formation forced the well path upward and the 1-B porosity zone was penetrated. The back ground gas in the lateral was only moderately high, with the background gases increasing as oil was added to the drilling fluid at a measured depth of 6840'. Through out the length of the lateral drilled in the 1-C and 1-B porosities, the oolicastic to oolmoldic limestone grainstones were consistent. The top of the 1-B was appeared to trend slightly upward to a horizontal displacement of 320' and then dipped slowly downward at 89.6 degrees, and then thin as the 1-B to 1-A transition thickened and or the 1-A above dipped downward. The 1-C zone appeared to thicken and dip downward at an 89.2 degree angle to a horizontal displacement of approximately 700'. The best drilling and porosity in the 1-C zone, appeared to be at the proposed target line to 3' below the line, with the best porosity in the 1-B zone to be 4' above the proposed target line at a horizontal displacement of 300' and 1' above the

line at a horizontal displacement of 1000'. The limestone packstones at the base of the 1-C zone and at the 1-C to 1-B transition zone was predominately a cream to white to tan, cryptocrystalline to occasionally microcrystalline, occasionally platy, chalky, dense, very slightly anhydritic, occasionally very slightly fossiliferous to very slightly oolitic, with very rare, very thin, scattered light brown to tan, microcrystalline limestone grainstone streaks. The tight limestone packstones had no visible sample shows, while the thin grainstones has poor to occasionally moderately fair sample show. The lithology of the porosity zones in the 1-C and 1-B were the predominately oolicastic to oolmoldic limestone grainstones, with good sample shows. Of interest was the very tight, very oolitic limestone packstones with very rare interoolitic porosity, above the good oolicastic to oolmoldic grainstones in the 1-B beginning at a horizontal displacement of 1015' and continued to the lateral termination. The lateral was terminated, at a measured depth of 6925', 5887' true vertical depth and a horizontal displacement of 1088' on December 16, 1997.

In tracking the well bore through the 1-C and 1-B porosity benches, the intercrystalline to oolicastic to oolmoldic porosity was very good with only very minor changes in rock classification, from predominately intercrystalline and oolitic porosities in the limestone grainstones with scattered tight, occasionally to very oolitic limestone packstones inclusions in the porosity zones. At the base of the 1-C zone and in the transition zones between the 1-C and 1-B, the packstones became the predominate lithology, with the very oolitic limestones packstone predominate above the 1-B porosity zone. Sample shows were good and stayed fairly consistent throughout the best porosities in the 1-C, the 1-B in the curve and lateral sections, with the porosity and sample show in 1-A zone while drilling the curve being fair to good. The background gases were low through the curve section, then began low in the lateral section and slowly increased through the length of the lateral, but was rather erratic as the lateral encountered the packstones at the base of the 1-C and in the transition zones between porosity zones. The background gas increased sharply and remained rather consistent as the oil was added to the drilling fluid. The effective or best porosity was associated with the oolicastic and oolmoldic to very minor algal limestone grainstone facies, which had fair to good intercrystalline to oolitic porosities. Very minor anhydrite plugging was noted throughout. The well produced only very minor amounts of oil and water flow while drilling the 1-C and 1-B porosity zones in the lateral.


MOBIL, Ratherford Unit #18-31, Northwest Laterals
18-31
GR
Porosity
7-24
GR
Porosity
LATERAL LEG #1 (TARG)
LATERAL LEG #1 (ACTU)
LATERAL LEG #2 (TARG)
LATERAL LEG #2 (ACTU)
LOWER ISMAY
GOTHIC
DESERT CREEK
1-A ZONE
1-B ZONE
1-C ZONE
PROJECTED TOP & BASE 1-A ZONE
BASE BEST POR. IN 1-A ZONE-TVD 5868.5'
TOP BEST POR. IN 1-A ZONE-TVD 5863.8'
TOP BEST POR. IN 1-B ZONE
BASE BEST POR. IN 1-A ZONE
TOP 1-C ZONE & BASE 1-B/1-C TRANS. ZONE
PROJECTED TOP 1-B ZONE
PROJECTED BASE 1-C ZONE
TVD DEPTH (FEET)
5750
5770
5790
5810
5830
5850
5870
5890
5910
5930
5950
-200
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
DISTANCE FROM BHL (FEET)

RECEIVED
JAN 15 1998
DIV. OF OIL, GAS & MINING

MOBIL

RATHERFORD UNIT #18-31
NW HORIZONTAL LATERAL LEG #2
1-A POROSITY BENCH
DESERT CREEK MEMBER
PARADOX FORMATION
SECTION 18, T41S, R24E
SAN JUAN, UTAH

GEOLOGY REPORT
by

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

MICROFICHE

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RECEIVED
JAN 15 1998
& MINING

WELL SUMMARY

OPERATOR:	MOBIL EXPLORATION & PRODUCTION U.S. INC.
NAME:	RATHERFORD UNIT #18-31 NW HORIZONTAL LATERAL LEG #2 IN 1-A POROSITY BENCH, DESERT CREEK
LOCATION:	SECTION 18, T41S, R24E
COUNTY/STATE:	SAN JUAN, UTAH
ELEVATION:	KB: 5107' GL: 5094'
SPUD DATE:	12/10/97
COMPLETION DATE:	12/22/97
DRILLING ENGINEER:	SIMMON BERRARA / BENNY BRIGGS
WELLSITE GEOLOGY:	DAVE MEADE / MARVIN ROANHORSE
MUDLOGGING ENGINEERS:	DAVE MEADE / MARVIN ROANHORSE
CONTRACTOR:	BIG "A" RIG 25
TOOLPUSHER:	J. DEES / M. SMITH
HOLE SIZE:	4 3/4"
CASING RECORD:	KICK OFF POINT IN WINDOW AT 5759' MEASURED DEPTH
DRILLING MUD:	M-I
ENGINEER:	DANNE BEASON
MUD TYPE:	FRESH WATER & BRINE WATER W/ POLYMER SWEEPS
DIRECTIONAL DRILLING CO:	SPERRY-SUN
ELECTICAL LOGGING:	NA
TOTAL DEPTH:	8095' MEASURED DEPTH; 5864.1' TVD
STATUS:	TOH & LAYING DOWN LATERAL ASSEMBLY - PREPARING TO PICK UP WHIPSTOCK FOR LEG #30

DRILLING CHRONOLOGY
RATHERFORD UNIT #18-31
1-A NW HORIZONTAL LATERAL LEG #2

DATE	DEPTH	DAILY	ACTIVITY
12/17/97	5750'	6'	TOH-P.U. WHIPSTOCK & STARTER MILL-TIH-ORIENT & SET WHIPSTOCK-PUMP 10 BBL SWEEP-TOH-P.U.WINDOW & WATERMELLON MILLS-TIH-MILL FROM 5750'-5756'
12/18/97	5756'	5'	MILL FROM 5756'-5757'-TOH-L.D. WINDOW & WATER-MELLON MILL-P.U. NEW WINDOW & WATERMELLON MILLS-TIH-CUT 70'DRLG LINE-MILL FROM 5757'-5759'-CIRC OUT SWEEP-PUMP 370 STKS 10# BRINE, L.D. 12 JNTS AOH, POOH-L.D. MILLS-P.U. CURVE ASSEMBLY & ORIENT,P.U. 10 JNTS PH-6 OFF RACKS,TIH-SWIVEL UP,BREAK CIRC-R.U. GYRO DATA-SEAT GYRO-TIME DRLG FROM 5759'-5761' @ 2 MIN/INCH
12/19/97	5761'	186'	TIME DRLG W/WIRELINE SURVEYS FROM 5761'-5763' @ 1 MIN/INCH-DIR DRLG W/WIRELINE SURVEYS TO 5792'-PULL GYRO & R.D. GYRO DATA-DIR DRLG & SURVEYS TO 5947' TD OF CURVE-PUMP 10 BBL SWEEP & CIRC OUT SMPLS-PUMP 10 BBLS 10# BRINE-L.D. 75 JNTS AOH-TOOH-L.D. CURVE ASSEMBLY-M.U. LATERAL ASSEMBLY & P.U. 14 JNTS PH-6 TUBEING OFF RACKS,SURGE PRESSURE TEST & ORIENT-TIH
12/20/97	5947'	829'	TIH & BREAK CIRC-DIR DRLG & SURVEYS
12/21/97	6776'	710'	DIR DRLG & SURVEYS
12/22/97	7486'	609'	DIR DRLG & SURVEYS TO TD OF 8095'(MD)-CIRC OUT SMPLS & PUMP 10 BBL SWEEP-TOH

DAILY ACTIVITY

Operator: MOBIL
Well Name: RATHERFORD UNIT #18-31 NW 1-A HORIZONTAL LATERAL LEG #2

DATE	DEPTH	DAILY	DATE	DEPTH	DAILY
12/17/97	5750'	6'			
12/18/97	5756'	5'			
12/19/97	5761'	186'			
12/20/97	5947'	829'			
12/21/97	6776'	710'			
12/22/97	7486'	609'			
	8095'	TD			

BIT RECORD

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #18-31 NW 1-A HORIZONTAL LATERAL LEG #2

RUN	SIZE	MAKE	TYPE	IN/OUT	FTG	HRS	FT/HR
#1 (RR)	4 3/4"	STC	MF-15GP	5759'/ 5947'	188'	18.5	10.2
#2	4 3/4"	HTC	STR-20	5947'/ 8095'	2,148'	63.5	33.8

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : MOBIL (UTAH)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/18-31 2A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
5750.00	0.07	15.10	5748.82	45.82 S	83.24 W	26.46	0.00
5759.00	4.00	315.00	5757.81	45.59 S	83.46 W	26.78	44.06
5769.00	8.10	320.37	5767.75	44.80 S	84.15 W	27.83	41.34
5779.00	12.90	321.99	5777.58	43.38 S	85.29 W	29.64	48.09
5789.00	18.00	322.78	5787.22	41.27 S	86.92 W	32.28	51.04
5799.00	22.80	323.75	5796.59	38.47 S	89.00 W	35.73	48.12
5809.00	26.60	323.56	5805.67	35.11 S	91.47 W	39.86	38.01
5819.00	32.10	323.80	5814.39	31.16 S	94.37 W	44.70	55.01
5829.00	36.50	324.70	5822.65	26.59 S	97.66 W	50.26	44.29
5839.00	41.50	326.00	5830.41	21.41 S	101.24 W	56.45	50.66
5849.00	45.90	327.40	5837.64	15.63 S	105.03 W	63.21	45.05
5859.00	49.40	329.10	5844.38	9.35 S	108.91 W	70.40	37.18
5869.00	53.70	329.30	5850.60	2.62 S	112.92 W	77.99	43.03
5879.00	58.10	328.80	5856.20	4.47 N	117.18 W	86.02	44.19
5889.00	62.70	328.20	5861.14	11.89 N	121.72 W	94.48	46.29
5899.00	67.90	327.70	5865.32	19.58 N	126.54 W	103.33	52.20
5909.00	73.30	327.00	5868.64	27.52 N	131.63 W	112.54	54.40
5919.00	78.40	326.90	5871.08	35.65 N	136.92 W	122.02	51.01
5946.00	89.80	324.40	5873.85	57.78 N	152.05 W	148.37	43.21
5968.00	92.50	323.30	5873.41	75.54 N	165.02 W	170.10	13.25
5998.96	93.20	320.20	5871.87	99.82 N	184.16 W	200.80	10.25
6030.78	90.80	317.90	5870.76	123.83 N	205.00 W	232.52	10.44
6062.51	91.20	317.40	5870.21	147.28 N	226.37 W	264.21	2.02
6094.34	93.20	317.50	5868.98	170.71 N	247.88 W	295.99	6.29
6126.17	91.20	318.10	5867.76	194.27 N	269.25 W	327.76	6.56
6157.98	88.70	317.90	5867.79	217.91 N	290.53 W	359.52	7.88
6189.77	90.30	317.40	5868.07	241.40 N	311.94 W	391.27	5.27
6221.55	90.20	316.50	5867.93	264.62 N	333.64 W	423.03	2.85
6253.41	89.50	316.00	5868.01	287.64 N	355.67 W	454.89	2.70
6284.05	90.60	314.70	5867.99	309.43 N	377.20 W	485.52	5.56
6315.84	91.30	314.60	5867.46	331.77 N	399.81 W	517.31	2.22
6347.69	92.00	315.80	5866.54	354.36 N	422.25 W	549.14	4.36
6379.52	92.50	316.00	5865.29	377.20 N	444.38 W	580.95	1.69
6411.28	91.90	314.70	5864.07	399.78 N	466.68 W	612.68	4.51
6443.00	90.40	314.90	5863.44	422.12 N	489.19 W	644.39	4.77
6474.84	89.20	314.20	5863.55	444.46 N	511.88 W	676.23	4.36
6506.66	89.40	315.80	5863.94	466.96 N	534.37 W	708.05	5.07
6537.63	88.90	315.80	5864.40	489.16 N	555.96 W	739.01	1.61

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : MOBIL (UTAH)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/18-31 2A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
6567.98	89.30	315.10	5864.87	510.78 N	577.25 W	769.36	2.66
6599.70	88.30	313.00	5865.54	532.83 N	600.04 W	801.06	7.33
6631.45	88.80	313.10	5866.34	554.50 N	623.24 W	832.79	1.61
6662.45	89.50	313.50	5866.80	575.76 N	645.79 W	863.77	2.60
6694.20	90.30	314.90	5866.85	597.89 N	668.56 W	895.51	5.08
6725.95	93.30	315.80	5865.86	620.47 N	690.86 W	927.24	9.86
6757.70	90.80	313.00	5864.72	642.66 N	713.52 W	958.97	11.82
6789.60	90.90	314.20	5864.25	664.66 N	736.62 W	990.85	3.77
6821.37	90.70	313.50	5863.80	686.66 N	759.53 W	1022.61	2.29
6852.18	87.70	311.40	5864.23	707.45 N	782.26 W	1053.38	11.88
6884.03	86.60	309.80	5865.82	728.15 N	806.41 W	1085.10	6.09
6915.21	86.30	307.90	5867.75	747.67 N	830.64 W	1116.04	6.16
6947.02	86.60	306.80	5869.72	766.94 N	855.88 W	1147.50	3.58
6977.74	86.40	306.50	5871.59	785.24 N	880.48 W	1177.84	1.17
7009.56	87.10	306.60	5873.40	804.16 N	906.00 W	1209.27	2.22
7041.32	89.40	306.30	5874.37	823.02 N	931.54 W	1240.66	7.30
7073.09	89.20	305.40	5874.76	841.62 N	957.28 W	1272.02	2.90
7104.99	90.90	305.20	5874.73	860.06 N	983.32 W	1303.46	5.37
7136.75	92.80	304.90	5873.70	878.28 N	1009.30 W	1334.73	6.06
7168.53	92.30	304.70	5872.29	896.40 N	1035.37 W	1365.97	1.69
7200.20	89.40	305.20	5871.82	914.54 N	1061.33 W	1397.15	9.29
7232.04	90.20	307.90	5871.93	933.50 N	1086.90 W	1428.64	8.84
7263.80	91.50	310.70	5871.46	953.61 N	1111.47 W	1460.24	9.72
7295.58	93.10	313.00	5870.18	974.80 N	1135.13 W	1491.94	8.81
7327.34	93.10	312.80	5868.47	996.38 N	1158.36 W	1523.63	0.63
7359.06	90.90	312.40	5867.36	1017.84 N	1181.69 W	1555.30	7.05
7390.94	89.60	316.10	5867.22	1040.08 N	1204.52 W	1587.17	12.30
7422.83	89.50	316.30	5867.47	1063.10 N	1226.59 W	1619.06	0.70
7453.85	90.20	316.10	5867.55	1085.49 N	1248.06 W	1650.07	2.35
7485.64	90.80	316.30	5867.27	1108.43 N	1270.07 W	1681.85	1.99
7517.33	89.80	318.60	5867.11	1131.77 N	1291.49 W	1713.51	7.91
7549.10	90.60	318.40	5867.00	1155.57 N	1312.54 W	1745.22	2.60
7580.24	94.00	320.00	5865.75	1179.12 N	1332.87 W	1776.24	12.06
7611.98	93.80	319.80	5863.59	1203.34 N	1353.27 W	1807.80	0.89
7643.86	91.10	319.70	5862.23	1227.65 N	1373.85 W	1839.53	8.48
7675.71	90.60	320.70	5861.75	1252.11 N	1394.23 W	1871.25	3.51
7706.81	90.70	321.10	5861.40	1276.25 N	1413.84 W	1902.18	1.33
7738.72	91.60	320.90	5860.76	1301.04 N	1433.92 W	1933.91	2.89

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : MOBIL (UTAH)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/18-31 2A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
7770.37	89.20	319.50	5860.54	1325.35 N	1454.18 W	1965.43	8.78
7802.09	88.90	319.80	5861.06	1349.52 N	1474.71 W	1997.04	1.34
7833.70	89.80	319.70	5861.42	1373.65 N	1495.14 W	2028.54	2.86
7865.53	91.90	321.10	5860.95	1398.17 N	1515.42 W	2060.22	7.93
7897.34	90.90	318.90	5860.17	1422.53 N	1535.86 W	2091.90	7.60
7929.11	89.20	317.90	5860.15	1446.28 N	1556.95 W	2123.61	6.21
7960.94	87.70	318.40	5861.01	1469.98 N	1578.18 W	2155.38	4.97
7992.67	88.10	318.40	5862.17	1493.70 N	1599.23 W	2187.03	1.26
8024.41	89.40	317.50	5862.86	1517.26 N	1620.49 W	2218.72	4.98
8062.00	88.50	317.90	5863.55	1545.06 N	1645.78 W	2256.26	2.62
* 8095.00	89.00	317.90	5864.27	1569.54 N	1667.90 W	2289.21	1.52 *

THE DOGLEG SEVERITY IS IN DEGREES PER 100.00 FEET.
N/E COORDINATE VALUES GIVEN RELATIVE TO WELL SYSTEM REFERENCE POINT.
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.

5750 INTERPOLATED GYRO, 5759 MWD ANGLE,GYRO TF AZIM
5769-5809 INTERPOLATED AZI, 5946 END OF BUILD
*8095 BIT PROJECTION, 5818-5919 AZ MAG.INTERFERENCE

MUD REPORT

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #18-31 NW 1-A HORIZONTAL LATERAL LEG #2

DATE	DEPTH	WT	VIS	PLS	YLD	GEL	pH	WL	CK	CHL	CA	SD	OIL	WTR
12/17/97	6924'	8.3	27	1	1	0/0	11.6	N/C	–	4700	460	–	4%	96%
12/18/97	5757'	8.3	27	1	1	0/0	11.6	N/C	–	4600	460	–	4%	96%
12/19/97	5762'	8.4	27	1	1	0/0	11.7	N/C	–	4100	420	–	2%	98%
12/20/97	6076'	8.4	27	1	1	0/0	11.7	N/C	–	4400	480	–	2%	98%
12/21/97	7050'	8.5	27	1	1	0/0	11.8	N/C	–	12000	160	–	2%	98%
12/22/97	7460'	8.5	27	1	1	0/0	11.7	N/C	–	1600	320	–	2%	98%

SAMPLE DESCRIPTIONS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #18-31 NW 1-A HORIZONTAL LATERAL LEG #2

DEPTH	LITHOLOGY

5759.00 5770.00 "LS tan,ltgybrn-ltgy,wh,occ ltbrn,crpxl-micxl,chky-mrly,occ grdg to MRLST,sl anhy,scat tan-brn CHT frag,tt,NFSOC/tr scat DOL brn,crpxl,sl arg-chky,occ shy ip,tt,NFSOC"

5770.00 5780.00 "LS AA,crpxl-micxl,chky-sl anhy/rr xl ANHY incl,tr slty strk,tt,NFSOC/tr SH blk,plty,sl slty,tr pp carb incl,intbd in LS,rr-tr DOL AA,NFSOC,tr CHT AA"

5780.00 5790.00 "LS brn-crm,occ wh,dkbrn-dkgybrn ip,crpxl,occ micxl-chk,sl arg,mrly,v sl anhy,chty-tr brn CHT frag,w/v thn blk calc-dol sl carb SH ptgs & dkbrn micxl rthy-mrly sl arg lmy DOL incl,tt,NFSOC"

5790.00 5800.00 "LS AA,incr dkbrn,mrly,dol ip,grdg to v lmy shy MRLST,w/v rr thn SH AA & scat DOL AA,rr scat ltbrn-dkbrn CHT frag,NFSOC"

5800.00 5810.00 "LS pred crm-gy,occ tan,crpxl-micxl,cln-dns,slty-sdy ip,,v sl sil,occ chky,dns,tt,NFSOC,w/scat trnsl-mot CHT frag,v rr brn-dkbrn micxl rthy lmy sl mrly tt DOL & v thn blk plty sl carb SH lams"

5810.00 5830.00 "LS AA,incr slty-sdy (litho),sil ip,sl dol,dns,tt,chty-scat trnsl-brn-mot CHT frag,,occ anhy-tr ANHY lams,rr thn intbd brn-dkbrn micxl-crpxl rthy shy lmy tt DOL,NFSOC"

5830.00 5840.00 "LS AA,CHT AA,incr brn-dk brn micxl arg DOL w/rr intxl POR,rr spty dull yel FLOR,rrspty brn STN,n-v p slow dif CUT"

5840.00 5850.00 "LS pred crm-gy,occ tan,crpxl-micxl,cln-dns,slty-sdy ip,,v sl sil,occ chky,dns,tt,NFSOC,w/v rr trnsl CHT frag,v rr brn-dkbrn micxl rthy lmy sl mrly tt DOL grdg to blk plty sl carb SH"

5850.00 5860.00 "SH blk-dkgybrn,sbblky-sbplty,mica,sl dol-calc,carb-sooty,w/v rr scat wh plty crpxl dns LS & thn dkbrn v shy DOL incl"

5860.00 5870.00 "SH AA,w/thn wh-crm-brn crpxl-micxl v sl dol rthy-cln v sl anhy dns tt & v rr brn-dkbrn crpxl-micxl v shy sl calc DOL lams"

5870.00 5880.00 "LS wh-crm-tan,occ brn,crpxl-micxl,cln-rthy,dns,sl arg,occ dol w/thn mbrn-brn micxl sl arg-lmy tt DOL incl,v rr brn CHT frag,tt-v rr intxl POR,tr spty dull yel FLOR,n vis STN,v rr g fast stmg CUT"

5880.00 5890.00 "LS AA,tt-tr intxl POR,incr scat mod bri yel FLOR,n-rr ltbrn STN,fr dif/sl tr slow stmg CUT w/DOL & CHT AA"

5890.00 5910.00 "LS tan/occ crm incl,occ wh,brn,micxl-vfxl-gran,occ crpxl,ooc-oom GRNST/scat-occ intbd dns PCKST,sl chky/rr plty frag,sl anhy/tr xl ANHY frag,sl dol,rr brn-tan CHT frag,g-fr ooc-oom-tr intxl POR,g even mod bri-dull yel/tr scat bri yel FLOR,fr ltbrn/tr scat brn & blk dd o STN,g blooming-fast stmg mlky CUT "

5910.00 5920.00 "LS AA,ooc-oom-sl ool GRNST,scat-occ intbd PCKST AA,sl chky/tr plty frag,sl anhy AA,rr CHT AA,POR-FLOR-STN AA,g fast-sl blooming mlky CUT

DEPTH	LITHOLOGY

5920.00 5930.00 "LS tan-crm-wh,crpxl-micxl,sl vfxl,v chky-sl anhy occ dns-sl ool PCKST,rr scat ltbrn-brn GRNST frag AA,tt-tr intxl-rr ooc POR,fr dull-mod bri/rr scat bri yel FLOR,n-tr ltbrn & vrr blk pp STN,fr slow dif/mod bri res ring CUT"

5930.00 5947.00 "LS AA,pred PCKST AA,vrr GRNST AA,POR-FLOR-STN-CUT AA/fnt res ring "

5947.00 5960.00 "LS crm-wh,occ lt-mbrn,crpxl-micxl,v rr vfxl-gran,pred dns-chky sl anhy PKST,v sl DOL cmt,rr trnsl-bf CHT frag,w/thn ooc-oom GRNST stks w/tr intxl-rr ool POR,tr spty dull-bri yel FLOR,rr spty brn STN,tr fr slow-mod fast stmg CUT & v rr brn micxl arg DOL"

5960.00 5970.00 "LS pred plty-dns PKST AA,decr rthy brn micxl DOL lams w/v rr spty intxl POR-rr dull yel FLOR,n-v rr spty brn-blk STN,v rr slow stmg-dif CUT"

5970.00 5990.00 "LS wh-crm,tan-ltgy ip,crpxl-micxl,w/v rr stks vfxl-micsuc,pred dns chky rthy-cln sl plty PKST,rr stks ooc-oom GRNST,tr ANHY xl-incl-rr frac fl,occ DOL rich cmt,tt-v rr stky intxl-ool POR,spty dull-bri yel FLOR,rr spty brn-blk STN,rr fr slow stmg-dif CUT"

5990.00 6000.00 "LS AA,w/incr sl ooc-oom GRNST,sl incr ANHY xl-incl,incr intxl-v sl incr ool POR,tr-fr dull-bri yel-rr mnrl FLOR,tr brn-spty blk STN,tr-fr slow-fast stmg CUT"

6000.00 6010.00 "LS AA,pred PCKST AA,vrr GRNST AA,POR-FLOR-STN-CUT AA "

6010.00 6030.00 "LS tan-crm-wh,occ ltgy,crpxl-micxl,scat stks vfxl-gran,suc ip,intbd sl ool dns PKST & ooc-oom GRNST,tr ANHY xl-POR fl,rr DOL rich cmt,v rr trnsl-clr CHT frag,tr-fr intxl-ool POR,tr-fr dull-bri yel FLOR,fr spty brn-tr blk STN,tr-fr slow-fast stmg CUT"

6030.00 6050.00 "LS AA,pred sl ool dns occ plty PKST,scat ooc-oom sl suc GRNST,tr ANHY xl-incl-occ POR fl,rr scat trnsl-clr CHT frag,tr-fr intxl-rr-tr ool POR,fr dull-bri yel FLOR,tr-fr spty brn-dkbrn STN,tr blk dd o STN,fr mod fast-fast stmg CUT"

6050.00 6060.00 "LS AA,sl incr ooc-oom GRNST,sl incr POR-FLOR-STN-CUT AA"

6060.00 6080.00 "LS tan-crm-wh,occ ltgy,crpxl-micxl,scat stks vfxl-gran,suc ip,intbd sl ool dns PKST & ooc-oom GRNST,tr ANHY xl-POR fl,rr DOL rich cmt,v rr trnsl-clr CHT frag,tr-fr intxl-ool POR,tr-fr dull-bri yel FLOR,fr spty brn-tr blk STN,tr-fr slow-fast stmg CUT"

6080.00 6100.00 "LS AA,bcmg pred ooc-oom GRNST,scat trnsl-bf CHT frag,tt-tr intxl-ool POR,tr-fr dull-bri yel FLOR,tr brn STN,rr-tr spty blk dd o STN,tr-fr slow-mod fast-rr fast stmg mlky CUT"

6100.00 6120.00 "LS tan-crm-wh,occ ltgy,crpxl-micxl,occ vfxl-gran,suc ip,pred sl ool anhy dns PKST w/ooc-oom GRNST tr ANHY xl-POR fl,rr DOL rich cmt,v rr trnsl-bf CHT frag,tr-fr intxl-ool POR,fr dull-bri yel FLOR,fr ltbrn-brn STN-tr blk dd o STN,tr-fr slow-fast stmg CUT"

6120.00 6140.00 "LS tan-crm-brn-mbrn,occ wh,crpxl-vfxl,gran-suc ip,ooc-oom GRNST,tr ANHY xl-POR fl,decr dns sl ool anhy sl chky PKST,rr DOL rich cmt,v rr trnsl-bf CHT frag,tt-g intxl-ool POR,fr-g dull-bri yel FLOR,fr ltbrn-brn STN-tr blk dd o STN,no-g mod fast stmg CUT"

6140.00 6160.00 "LS AA,pred ooc-oom GRNST w/thn stks v sl ool PKST,tr amnt ANHY fl ool-intxl POR,tt-g intxl-ool POR,fr-g dull-bri yel FLOR,fr brn-dkbrn STN,rr-tr spty blk dd o STN,fr-g slow stmg-mod fast-fast stmg CUT"

DEPTH	LITHOLOGY

6220.00 6240.00 "LS AA,pred ooc-oom GRNST,decr scat thn sl fos-ool PKST frag AA,decr ANHY-CHT,fr-g ool-fr intxl POR,fr-g dull-bri yel FLOR,g brn-mbrn STN,tr blk dd o STN,fr-g mod fast-fast stmg mlky CUT"

6240.00 6260.00 "LS AA,scat ANHY xl-incl-rr POR fl,POR-FLOR-STN-CUT AA"

6260.00 6280.00 "LS tan-brn,occ mbrn-scat wh-crm,crpxl-vfxl,gran-micsuc ip,pred ooc-oom GRNST w/scat thn dns tt sl rthy-chk PKST,v rr ANHY xl-incl,sl DOL rich cmt,v rr CHT frag,fr-g intxl-ool POR,fr-g dull-bri yel FLOR,fr-g brn-tr-fr blk dd o STN,fr-g mod fast-fast CUT"

6280.00 6290.00 "LS AA,scat ANHY xl-incl-rr POR fl,POR-FLOR-STN-CUT AA"

6290.00 6310.00 "LS tan/scat crm incl,ltbrn,occ brn,rr wh frag,micxl-gran,occ micsuc,crpxl,ooc-oom-sl ool GRNST,tr intbd-scat dns sl ool PCKST,sl chky-anhy,v rr xl ANHY incl,vrr brn-tan CHT frag-incl,sl dol/rr DOL cmt strk,g ooc-oom POR/tr POR fl,g even mod bri-bri yel FLOR,g-fr ltbrn/scat brn & blk dd o STN,g blooming-fast stmg mlky CUT "

6310.00 6340.00 "LS AA,pred ooc-oom GRNST,decr scat-intbd sl fos-ool PKST frag AA,decr ANHY-CHT,sl dol AA,g ool-oom/fr intxl POR,g even mod bri/scat bri yel FLOR,g ltbrn/scat brn & tr blk dd o STN,g blooming-fast stmg mlky CUT"

6340.00 6370.00 "LS AA,vfxl-gran,micsuc-crpxl ip,pred ooc-oom GRNST w/tr scat thn dns tt sl chk-ool PCKST,sl anhy/v rr xl ANHY incl,sl dol/rr DOL cmt,v rr tan-pp wh CHT incl,g ool-oom-tr intxl POR,g even mod bri-bri yel FLOR,g ltbrn-scat brn & blk dd o STN, g blooming-fast stmg mlky CUT "

6370.00 6380.00 "LS AA,bcmg incr ltbrn-brn,pred ooc-oom GRNST/v sl incr wh chky plty PCKST frag,sl anhy/rr xl ANHY incl,rr CHT AA,v sl dol,POR-FLOR AA,g ltbrn-brn/incr scat blk dd o STN,g fast stmg mlky CUT"

6380.00 6410.00 "LS tan-ltbrn/tr crm-occ wh incl,occ brn,tr scat dkbrn,vfxl-gran-micsuc ip,occ micxl-crpxl,ooc-oom GRNST/scat dns sl ool-fos PCKST,sl chky-anhy/tr POR fl & rr xln ANHY incl,v sl dol/rr DOL cmt strk,vrr tan-trnsl CHT incl,g ooc-oom-sl ool/tr intxl POR,g even mod bri-bri yel FLOR,g-fr ltbrn/scat brn & blk dd o STN,g fast stmg mlky CUT "

6410.00 6420.00 "LS AA,pred GRNST AA/abnt scat wh chky plty thn PCKST frag-prtgs,sl anhy/rr xln ANHY incl,POR AA,g-fr even dull-mod bri/scat bri yel FLOR,STN AA,g dif/tr slow stmg mlky CUT"

6420.00 6440.00 "LS AA,pred GRNST AA,decr scat chky plty PCKST frag/incr scat-intbd dns sl ool tt PCKST,sl dol/tr DOL cmt strk,rr CHT incl AA,fr-g ooc-oom-sl ool/tr intxl POR,g-fr even mod bri/scat bri yel FLOR,STN AA,g fast stmg mlky CUT"

6440.00 6450.00 "LS AA,decr scat PCKST frag,POR-FLOR-STN-CUT AA"

6450.00 6460.00 "LS AA,vfxl-gran-micsuc ip,occ micxl-crpxl,ooc-oom GRNST/rr scat dns sl ool-fos PCKST,sl chky-anhy/tr POR fl & rr xln ANHY incl,v sl dol/rr DOL cmt,POR-FLOR-STN-CUT AA"

6460.00 6480.00 "LS tan-ltbrn/tr crm-occ wh incl,occ brn-dkbrn,vfxl-gran-micsuc,occ micxl-crpxl,ooc-oom GRNST/tr scat dns sl ool-fos PCKST,sl chky-anhy/tr POR fl & rr xln ANHY incl,v sl dol,g ooc-oom-sl ool/tr intxl POR,FLOR-STN AA,g blooming-fast stmg mlky CUT"

6480.00 6510.00 "LS tan-ltbrn/tr crm-occ wh incl,occ brn,tr scat dkbrn,vfxl-gran-micsuc ip,occ micxl-crpxl,ooc-oom GRNST/scat dns sl ool-fos PCKST,sl chky-anhy/rr POR fl & xln ANHY incl, POR-FLOR-STN-CUT AA"

DEPTH	LITHOLOGY

6510.00 6530.00 "LS AA,pred ooc-oom GRNST,rr-tr scat-intbd sl fos-ool PKST frag,sl chky-anhy/tr xl ANHY & POR fl,rr tan-wh CHT incl,sl dol,g ool-oom/intxl POR,g even mod bri/scat bri yel FLOR,g ltbrn/scat brn & tr blk dd o STN,g fast-mod fast stmg mlky CUT"

6530.00 6550.00 "LS AA,pred GRNST AA/rr scat-occ intbd dns sl fos-ool PCKST,sl chky-anhy/tr xl ANHY & POR fl,rr CHT AA,v sl dol,g ool-oom/ tr intxl POR,g even mod bri/scat bri yel FLOR,g ltbrn/scat brn & tr blk dd o STN,g fast-mod fast stmg mlky CUT"

6550.00 6570.00 "LS AA,pred GRNST AA,tr scat-occ intbd dns sl ool tt PCKST,sl chky-anhy/tr xln ANHY-POR fl,vrr tan-occ pp wh CHT incl,n-v sl dol,g ooc-oom-sl ool/tr intxl POR,g even mod bri/scat bri yel FLOR,g ltbrn-scat brn & blk dd o STN,g blooming-fast stmg mlky CUT"

6570.00 6590.00 "LS tan-ltbrn/tr crm-occ wh incl,occ brn,tr scat dkbrn,vfxl-gran-micsuc,occ micxl-crpxl,ooc-oom GRNST/tr scat dns sl ool tt PCKST,sl chky-anhy/tr POR fl & rr xln ANHY,n-v sl dol,POR-FLOR-STN-CUT AA"

6590.00 6600.00 "LS AA,pred GRNST AA/tr scat PCKST frag AA,POR-FLOR-STN AA,g fast stmg mlky CUT"

6600.00 6620.00 "LS AA,pred GRNST AA/tr scat-occ intbd dns sl ool-fos tt PCKST,sl chky-anhy/tr POR fl & rr xl ANHY incl,rr CHT AA,n-v sl dol,g ooc-oom/tr intxl POR,g even mod bri-bri yel FLOR,g ltbrn/scat brn & blk dd o STN,g mod fast-fast stmg mlky CUT"

6620.00 6640.00 "LS tan-occ ltbrn/tr crm-wh incl,tr brn-dkbrn,vfxl-gran-micsuc,occ micxl-crpxl,ooc-oom GRNST/tr scat dns sl ool tt PCKST,v sl chky-anhy/tr POR fl & rr xln ANHY,n-v sl dol,g ooc-oom-ool/intxl POR,g even mod bri-scat bri yel FLOR,STN AA,CUT AA"

6640.00 6650.00 "LS AA,pred GRNST AA/tr scat PCKST frag AA,POR-FLOR-STN AA,g fast stmg mlky CUT"

6650.00 6670.00 "LS AA,vfxl-gran-micsuc,occ micxl-crpxl ip,pred ooc-oom GRNST/tr scat-intbd dns sl ool tt PCKST,v sl chky-anhy/vrr xl ANHY incl,vrr tan-trnsl CHT incl,n-rr sl DOL cmt,g ool-oom-tr intxl POR,g even mod bri-bri yel FLOR,g ltbrn/ scat brn & blk dd o STN,g slow-mod fast stmg mlky CUT"

6670.00 6700.00 "LS tan-ltbrn/tr crm-occ wh incl,occ brn-dkbrn,vfxl-gran-micsuc,occ micxl-crpxl,ooc-oom GRNST/tr scat dns sl ool-fos PCKST,sl chky-anhy/tr POR fl & rr xln ANHY incl,n-v sl dol,g ooc-oom-sl ool/tr intxl POR,g even mod bri/ scat bri yel FLOR,g ltbrn-scat brn & blk dd o STN,g blooming-fast stmg mlky CUT "

6700.00 6720.00 "LS AA,pred GRNST AA/tr scat-occ intbd dns sl ool-fos tt PCKST,sl chky-anhy/tr POR fl & rr xl ANHY incl,rr CHT AA,n-v sl dol,g ooc-oom/tr intxl POR,g even mod bri-bri yel FLOR,g ltbrn/scat brn & blk dd o STN,g mod fast-fast stmg mlky CUT"

6720.00 6730.00 "LS AA,pred GRNST AA/tr scat PCKST frag AA,POR-FLOR-STN AA,g fast stmg mlky CUT"

6730.00 6740.00 "LS AA,g ooc-oom/intxl POR,g even mod bri-scat bri yel FLOR,g ltbrn/scat brn & incr blk dd o STN, CUT AA"

6740.00 6750.00 "LS AA,sl decr scat PCKST frag,POR-FLOR-STN AA,g blooming-fast stmg mlky CUT"

6750.00 6770.00 "LS tan-occ ltbrn/tr crm-wh incl,tr brn-dkbrn,vfxl-gran-micsuc,occ micxl-crpxl,ooc-oom GRNST/tr scat dns sl ool tt PCKST,v sl chky-anhy/tr POR fl & rr xln ANHY,n-sl dol,g ooc-oom-ool/intxl POR,g even mod bri-scat bri yel FLOR,STN AA,CUT AA"

DEPTH	LITHOLOGY

6770.00 6800.00 "LS AA,pred ooc-oom GRNST,tr scat-occ intbd dns sl ool tt PCKST,sl chky-anhy/tr POR fl & rr xln ANHY incl,rr tan-trnsl CHT incl,n-sl dol,g ooc-oom/intxl POR,FLOR AA,g ltbrn/scat brn & blk dd o STN,g fast stmg mlky CUT"

6800.00 6830.00 "LS AA,vfxl-gran,occ micsuc-micxl,crpxl ip,pred ooc-oom-sl ool GRNST/tr scat-intbd dns sl ool tt PCKST,v sl chky-anhy/vrr xl ANHY incl,vrr tan-trnsl-pp wh CHT incl,n-v sl dol,g ool-oom-tr intxl POR,g even mod bri-bri yel FLOR,g ltbrn/ scat brn & blk dd o STN,g blooming-fast stmg mlky CUT "

6830.00 6850.00 "LS AA,pred ooc-oom GRNST/sl incr scat-intbd dns sl ool PCKST,sl chky-anhy/tr POR fl & rr xl incl,vrr tan-trnsl CHT incl,n-v sl dol,POR AA,g even mod bri-bri yel FLOR,g-fr ltbrn/scat brn & blk dd o STN,CUT AA"

6850.00 6880.00 "LS tan/occ crm-wh incl,ltbrn,occ brn,tr dkbrn,vfxl-gran-micxl,occ micsuc,crpxl,ooc-oom GRNST,sl incr scat-occ intbd dns sl ool tt PCKST,sl chky-anhy/tr POR fl & rr xln ANHY,n-v sl dol,g ooc-oom/tr intxl POR,FLOR AA,g-fr ltbrn-brn/scat blk dd o STN,CUT AA"

6880.00 6890.00 "LS tan-brn,rr crm,crpxl-vfxl,occ gran-micsuc,pred ooc-oom GRNST,w/scat dns sl ool PKST,occ ANHY xl-incl-rr POR fl,rr DOL rich cmt,tr-fr ool-tr intxl POR,fr-g dull-bri yel FLOR,fr brn-rr-tr blk STN,fr-g mod fast stmg CUT"

6890.00 6910.00 "LS AA,pred ooc-oom GRNST,w/sl incr dns tt sl ool occ anhy PKST,fr-g ool-tr intxl POR,fr-g dull-bri yel FLOR,fr-g ltbrn-tr brn STN,tr spty blk dd o STN,fr-g mod fast-fast stmg CUT"

6910.00 6920.00 "LS AA,incr ool POR,FLOR-STN-CUT AA"

6920.00 6940.00 "LS tan-brn,rr crm,crpxl-vfxl,occ gran-micsuc,pred ooc-oom GRNST,w/scat dns sl ool PKST,occ ANHY xl-incl-rr POR fl,rr DOL rich cmt,fr-g ool-tr intxl POR,fr-g dull-bri yel FLOR,fr brn STN-tr blk dd o STN,fr-g mod fast-fast stmg CUT"

6940.00 6970.00 "LS tan-ltbrn,occ brn-crm,crpxl-vfxl,occ gran-micsuc,intbd ooc-oom GRNST & dns sl ool tt PCKST-rr plty-sl chky,tr ANHY xl-incl-incr POR fl,n-v sl dol,g intxl-fr ool POR,fr-g dull-bri yel FLOR,fr ltbrn-brn STN-tr blk dd o STN,fr mod fast-fast stmg CUT"

6970.00 7000.00 "LS AA,v rr wh chk PKST frag,v rr scat trnsl-clr CHT frag,sl incr ANHY fl POR,POR-FLOR-STN-CUT AA"

7000.00 7020.00 "LS tan-ltbrn,occ brn-wh-crm,crpxl-vfxl,dns-gran,occ micsuc,pred ooc-oom GRNS,incr sl ool-occ plty-chk PKST,v rr scat trnsl CHT frag,v sl DOL cmt,occ ANHY xl-POR fl,tt-g intxl-ool POR,p-fr dull-bri yel FLOR,tr-fr brn-rr spty blk STN,n-g mod fast stmg CUT"

7020.00 7030.00 "LS tan-ltbrn,occ brn-rr wh,crpxl-vfxl,dns,gran-micsuc ip,pred intbd ooc-oom GRNST & v sl ool-rr plty PKST,incr ANHY xl-incl-POR fl,rr trnsl-bf CHT frag,v sl DOL cmt,tt-fr intxl-tr ool POR,tr-fr dull-bri yel FLOR,tr-fr brn-rr blk STN,v p-fr slow-fast CUT"

7030.00 7040.00 "LS AA,incr tt dns v sl ool anhy occ plty PKST,scat thn ooc-oom GRNST,decr POR-FLOR-STN-CUT"

7040.00 7060.00 "LS wh-crm,occ tan-ltbrn,crpxl-micxl,rr vfxl-gran-micsuc,pred sl ool chk anhy ip PKST,w/v thn sl ooc-oom GRNST-abnt ANHY fl POR,v rr DOL cmt,rr trnsl CHT frag,tt-tr intxl-ool POR,tr spty dull-bri yel FLOR,rr-tr spty brn-rr blk STN,p slow-spty mod fast CUT"

DEPTH	LITHOLOGY

7060.00 7070.00 "LS AA,incr ooc-oom GRNST stks,pred PKST AA,tr intxl-ool POR,tr spty dull-bri yel FLOR,tr brn-ltbrn STN,rr spty blk dd o STN,tr slow-mod fast stmg CUT"

7070.00 7090.00 "LS tan-ltbrn,occ brn-rr wh,crpxl-vfxl,tr gran-micsuc,intbd ooc-oom GRNST & sl ool-dns plty PKST,tr ANHY xl-incl-POR fl,v rr trnsl-bf CHT frag,v sl DOL cmt,tt-fr intxl-tr ool POR,tr spty dull-bri yel FLOR,tr-fr brn-rr blk STN,v p-fr slow-mod fast CUT"

7090.00 7100.00 "LS wh-crm,occ tan,pred dns plty occ chk sl ool PKST,w/tr thn ooc-oom GRNST stks,v rr trnsl-clr CHT frag,rr-tr stky POR-FLOR-STN-CUT AA"

7100.00 7120.00 "LS wh-crm,occ tan-ltbrn,crpxl-micxl,rr-tr vfxl-rr gran-micsuc,pred sl ool-dns plty PKST w/thn stk sl ooc-oom GRNST,rr ANHY xl-incl-POR fl,v sl DOL cmt,rr CHT frag,tt-tr intxl-ool POR,rr-tr spty dull-bri yel FLOR,rr spty brn-blk STN,rr p slow-mod fast CUT"

7120.00 7130.00 "LS AA,pred dns sl ool occ plty-chk PKST,thn stks ooc-oom GRNST,pred dns tt,w/v rr ool-intxl POR,rr spty FLOR-STN-CUT"

7130.00 7140.00 "LS AA,dns sl ool-chky plty PCKST/rr GRNST frag AA,sl anhy/rr xl ANHY incl & POR fl,n-v sl DOL cmt,rr CHT AA,POR-FLOR-STN-CUT AA"

7140.00 7150.00 "LS AA,pred PCKST AA/tr GRNST AA,n-sl dol,rr xl ANHY,rr CHT,POR-FLOR-STN AA,p-fr dif/v fnt res ring CUT"

7150.00 7160.00 "LS AA,crpxl-micxl,rr-tr vfxl,rr gran-micsuc,pred dns sl ool-chky plty PCKST/rr ooc-oom GRNST frag,sl anhy/rr xl ANHY incl & POR fl,n-v sl DOL cmt,rr CHT frag,tt-tr intxl-ool POR,FLOR-STN-CUT AA"

7160.00 7180.00 "LS tan-ltbrn,wh-crm,occ brn,crpxl-micxl,tr vfxl-gran-micsuc,pred PKCST AA/incr ooc-oom GRNST,chky-sl anhy/tr POR fl-rr xl ANHY,rr CHT,tt-tr intxl-incr ool POR,fr-g mod bri-bri yel FLOR,fr-tr ltbrn/spty brn-blk STN,g-fr slow stmg mlky CUT"

7180.00 7200.00 "LS tan-ltbrn,occ wh-crm,brn,crpxl-micxl,vfxl-gran-sl micsuc,pred PKCST grdg to sl ooc-oom GRNST,chky-sl anhy/tr POR fl-rr xl ANHY,rr CHT,tt-tr intxl-ool POR,g even mod bri-bri yel FLOR,fr-g ltbrn-tr brn/rr blk pp STN,g mod fast-slow stmg mlky CUT"

7200.00 7230.00 "LS tan-ltbrn,occ wh-crm,brn,crpxl-micxl,vfxl-gran-sl micsuc,pred PKCST grdg to sl ooc-oom GRNST,sl chky-anhy/tr POR fl-vrr xl ANHY,rr tan-trnsl CHT,fr-g intxl-ool POR,FLOR AA,fr-g ltbrn-tr brn/blk pp dd o STN,g fast stmg-sl blooming mlky CUT"

7230.00 7260.00 "LS tan-ltbrn,occ crm-wh,brn,vfxl-crpxl,micxl-gran-sl micsuc,pred ooc-oom GRNST,w/scat-intbd dns sl ool PKST,sl chky-anhy/tr ANHY xl-incl-POR fl,sl dol/rr DOL cmt,fr-g ool/intxl POR,g even dull-mod bri/tr spty bri yel FLOR,STN AA,g mod fast stmg mlky CUT"

7260.00 7290.00 "LS tan-ltbrn/crm-occ wh incl,occ brn,vfxl-gran-micxl,crpxl,ooc-oom GRNST/intbd-scat dns sl ool-fos PCKST,sl chky-anhy/tr POR fl & rr xln ANHY,tr tan sil-CHT incl,g-fr ool-intxl POR,g even mod bri/scat bri yel FLOR,g ltbrn/scat brn & blk dd o STN,g fast-sl blooming mlky CUT"

7290.00 7320.00 "LS AA,vfxl-gran-micxl,crpxl-sl micsuc,pred ooc-oom GRNST/intbd-scat dns sl ool-fos PCKST,sl chky-anhy/tr POR fl & rr xln ANHY,tr CHT AA,g-fr ool-intxl POR,g even mod bri/scat bri yel FLOR,g ltbrn/scat brn & blk dd o STN,g blooming-fast stmg mlky CUT"

DEPTH	LITHOLOGY

7320.00 7350.00 "LS tan-ltbrn/incl AA,occ brn,crm-wh,vfxl-gran,micxl-crpxl,sl micsuc,pred GRNST AA,incr scat chky plty-dns sl ool-fos PCKST frag,anhy/tr POR fl & xln ANHY incl,rr CHT AA,g-fr ool-tr intxl POR,FLOR AA,STN AA,g blooming-fast stmg mlky CUT"

7350.00 7380.00 "LS AA,vfxl-gran-micxl,crpxl-sl micsuc,pred ooc-oom GRNST,scat chky dns sl ool-fos PCKST,sl anhy/tr POR fl & rr xln ANHY,rr CHT AA,g-fr ool-intxl POR,g even dull-mod bri/tr scat bri yel FLOR,g ltbrn-scat brn/tr blk dd o STN,g blooming-fast stmg mlky CUT"

7380.00 7410.00 "LS tan-ltbrn,occ brn,crm-wh,vfxl-micxl-gran,crpxl,sl micsuc,pred ooc-oom GRNST/scat-occ intbd dns-plty sl ool PKST,sl chky-anhy/tr ANHY xl-incl-POR fl,v sl dol/rr DOL cmt,tr tan-ltbrn CHT incl,POR-FLOR-STN AA,g fast stmg-sl blooming mlky CUT"

7410.00 7450.00 "LS tan-ltbrn-brn,tr crm-wh,vfxl-gran-micxl,sl micsuc,occ crpxl,pred ooc-oom GRNST,tr scat-intbd dns sl ool-rr chky plty PCKST,sl anhy/tr POR fl-rr xl ANHY incl,sl dol,rr CHT AA,g ooc-oom/fr intxl POR,g even mod bri-dull/tr scat bri yel FLOR,g ltbrn-brn STN,sl incr scat blk dd o STN,g blooming-fast stmg mlky CUT"

7450.00 7480.00 "LS AA,pred ooc-oom GRNST,tr dns sl ool-fos/rr chky plty PCKST,sl anhy/tr POR fl & rr xln ANHY incl-POR fl,tr CHT AA,g oom-ooc-intxl POR,g even dull-mod bri/tr scat bri yel FLOR,g ltbrn-scat brn/tr blk pp dd o STN,g blooming-fast stmg mlky CUT"

7490.00 7520.00 "LS tan-ltbrn,occ brn,crm-wh,vfxl-gran-micxl,sl micsuc,incr crpxl,pred ooc-oom GRNST,incr scat dns sl ool/vrr chky plty PCKST,sl anhy/tr POR fl-rr xl ANHY incl,n-v sl dol,tr CHT AA,g ooc-oom/tr intxl POR,g even dull-mod bri/tr scat bri yel FLOR,fr-g ltbrn/tr scat brn & rr blk pp dd o STN,g blooming mlky CUT"

7520.00 7550.00 "LS AA,pred ooc-oom GRNST/scat dns sl ool-rr chky plty PCKST,sl chky-anhy/tr POR fl & rr xln ANHY frag,POR-FLOR-STN-CUT AA"

7550.00 7580.00 "LS tan-ltbrn,occ brn,crm-wh,vfxl-gran-micxl,sl micsuc,incr crpxl,pred ooc-oom GRNST,incr scat dns sl ool/vrr chky plty PCKST,sl anhy/tr POR fl-rr xl ANHY incl,n-v sl dol,tr CHT AA,POR-FLOR-STN-CUT AA"

7580.00 7600.00 "LS tan-ltbrn,occ brn,crm-wh,vfxl-gran-micxl,crpxl-sl micsuc,pred ooc-oom GRNST/scat-occ intbd dns sl ool/vrr chky plty PCKST frag,sl anhy/tr POR fl-rr xl ANHY incl,n-v sl dol,tr tan-trnsl CHT,g ooc-oom-intxl POR,FLOR-STN-CUT AA"

7600.00 7620.00 "LS AA,pred ooc-oom GRNST,scat dns sl ool-fos/rr chky plty PCKST,sl anhy/tr POR fl & rr xln ANHY incl-POR fl,tr CHT AA,g oom-ooc-intxl POR,g even dull-mod bri/tr scat bri yel FLOR,g ltbrn-scat brn/tr blk pp dd o STN,g blooming-fast stmg mlky CUT"

7620.00 7630.00 "LS crm-tan,occ wh-brn,crpxl-micxl,occ vfxl-gran,rr micsuc,pred dns-v sl ool occ plty PKST,w/thn intbd ooc-oom GRNST,v rr trnsl-clr CHT frag,v sl anhy-tr ANHY fl POR,tt-fr ool-intxl POR,tr-fr dull-bri yel FLOR,n-fr brn-spty blk STN,n-g mod fast stmg CUT"

7630.00 7640.00 "LS AA,incr ooc-oom GRNST intbds,incr POR,fr FLOR-STN-CUT"

7640.00 7680.00 "LS tan-brn,occ crm-rr wh,micxl-vfxl,occ crpxl,gran-micsuc ip,pred ooc-oom GRNST,w/thn intbd sl anhy dns occ plty PKST,rr DOL cmt,v sl anhy-rr ANHY xl-POR fl,v rr trnsl CHT frag,fr-g intxl-ool POR,g bri-dull yel FLOR,fr brn-tr spty blk STN,g fast stmg CUT"

DEPTH	LITHOLOGY

7680.00 7700.00 "LS AA,pred ooc-oom GRNST,w/v rr thn PKST AA,fr-g intxl-ool POR,fr-g bri-tr dull yel FLOR,fr-g ltbrn-brn STN,tr spty blk dd o STN,fr-g mod fast-fast stmg CUT "

7700.00 7720.00 "LS tan-ltbrn,occ brn,rr crm-wh,micxl-vfxl,rr crpxl,gran-micsuc,suc ip,ooc-oom GRNST,w/rr thn dns ooc plty sl ool PKST,n-v rr CHT frag,sl DOL rich cmt,fr-g intxl-fr ool POR,g bri-tr dull yel FLOR,fr brn-mbrn STN,rr blk dd o STN,fr-g mod fast-fast stmg CUT"

7720.00 7740.00 "LS AA,v sl incr PKST AA,POR-FLOR-STN-CUT AA"

7740.00 7750.00 "LS tan-ltbrn,rr brn-crm-wh,micxl-vfxl,tr crpxl,gran-micsuc,ooc-oom GRNST,w/tr intbd dns ooc plty sl ool PKST,v rr CHT frag,sl DOL rich cmt,tr-g intxl-ool POR,fr bri-tr dull yel FLOR,tr-fr brn-mbrn STN,tr blk dd o STN,n-g mod fast-fast stmg CUT"

7750.00 7770.00 "LS AA,pred intbd ooc-oom GRNST & dns sl ool occ plty PKST,tt-g intxl-fr ool POR,fr bri-tr dull yel FLOR,fr ltbrn-brn STN-tr spty blk dd o STN,tr v p slow-g mod fast-fast stmg CUT"

7770.00 7810.00 "LS tan-ltbrn,occ brn,rr crm-wh,micxl-vfxl,rr crpxl,gran-micsuc,suc ip,ooc-oom GRNST,w/rr thn dns ooc plty sl ool PKST,n-v rr CHT frag,sl DOL rich cmt,fr-g intxl-fr ool POR,g bri-tr dull yel FLOR,fr brn-mbrn STN,rr blk dd o STN,fr-g mod fast-fast stmg CUT"

7810.00 7860.00 "LS tan-ltbrn,occ brn,rr crm-wh,micxl-vfxl,rr crpxl,gran-micsuc,suc ip,ooc-oom GRNST,w/rr thn dns ooc plty sl ool PKST,n-v rr CHT frag,sl DOL rich cmt,fr-g intxl-fr ool POR,g bri-tr dull yel FLOR,fr brn-mbrn STN,rr blk dd o STN,fr-g mod fast-fast stmg CUT"

7860.00 7900.00 "LS AA,pred ooc-oom GRNST,w/scat dns sl ool v sl anhy occ plty PKST incl,fr-g ool-fr intxl POR,fr-g dull-bri yel FLOR,fr ltbrn-tr brn STN,rr spty blk dd o STN,fr-g mod fast-fast stmg mlky CUT"

7900.00 7910.00 "LS tan-ltbrn,rr brn-crm-wh,micxl-vfxl,tr crpxl,gran-micsuc,ooc-oom GRNST,w/tr intbd dns ooc plty sl ool PKST,v rr CHT frag,sl DOL rich cmt,tr-g intxl-ool POR,fr bri-tr dull yel FLOR,tr-fr brn-mbrn STN,tr blk dd o STN,n-g mod fast-fast stmg CUT"

7910.00 7930.00 "LS tan-ltbrn,occ brn,rr crm-wh,micxl-vfxl,rr crpxl,gran-micsuc,suc ip,ooc-oom GRNST,w/rr thn dns ooc plty sl ool PKST,n-v rr CHT frag,sl DOL rich cmt,fr-g intxl-fr ool POR,g dull-tr bri yel FLOR,fr brn-mbrn STN,rr blk dd o STN,fr-g mod fast-fast stmg CUT"
7930.00 7960.00 "LS AA,pred ooc-oom GRNST,incr intbd dns sl ool v sl anhy PKST,w/v rr trnsl-clr-bf CHT frag,fr-g ool-fr intxl POR,fr-g dull-tr bri yel FLOR,tr-fr ltbrn-brn STN,rr-tr spty blk dd o STN,fr-g mod fast-fast-tr slow stmg mlky CUT"

7960.00 7980.00 "LS tan-ltbrn-crm,occ brn,micxl-vfxl-gran,crpxl-sl micsuc,pred oom-ooc GRNST/intbd-scat dns sl ool PCKST,chky-sl anhy/tr POR fl,vrr xln ANHY incl,sl dol/occ DOL cmt strk,g-fr ool-intxl POR,g even dull/scat mod bri-spty bri yel FLOR, fr-g ltbrn/tr brn & blk dd o STN,g mod fast-fast stmg mlky CUT"

7980.00 8000.00 "LS AA,pred ooc-oom GRNST/scat-occ intbd PCKST AA,sl incr chky-sl anhy/tr scat xl ANHY & POR fl,tr tan-ltbrn CHT incl,sl dol/tr DOL cmt strk,g ool-intxl POR,g even mod bri-dull/scat spty bri yel FLOR,g-fr ltbrn/scat brn & tr blk dd o STN,CUT AA"

8000.00 8030.00 "LS AA,micxl-vfxl,crpxl,gran-sl micsuc,pred oom-ooc GRNST/incr intbd-scat dns sl ool PCKST,chky-sl anhy AA,vrr xl ANHY incl,sl dol/tr DOL cmt strk,g ool-fr intxl POR,g even mod bri-dull/scat spty bri yel FLOR,g fast-mod fast stmg mlky CUT"

DEPTH	LITHOLOGY

8030.00 8050.00 "LS tan-crm-ltbrn,rr brn,wh,micxl-vfxl,occ crpxl,gran-sl micsuc,ooc-oom GRNST/tr scat-intbd dns sl ool PCKST,tr tan-ltbrn CHT incl-frag,tr DOL rich cmt,g-fr ool-intxl POR,g-fr even dull-mod bri/tr scat bri yel FLOR,fr-g ltbrn-occ brn/rr blk dd o STN,fr-g dif/tr slow stmg mlky CUT"

8050.00 8095.00 "LS AA,micxl-vfxl-gran,occ crpxl-sl micsuc,pred ooc-oom GRNST/sl incr scat-intbd dns sl ool PCKST,chky-sl anhy/tr xl ANHY incl-POR fl,rr tan-ltbrn CHT-sil incl-frag,sl dol/rr DOL cmt,g-fr ool-intxl POR,g-fr even dull-mod bri/tr scat bri spty yel FLOR,g-fr ltbrn/rr brn & blk pp dd o STN,g-fr dif/tr slow stmg mlky CUT"

FORMATION TOPS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #18-31 NW 1-A HORIZONTAL LATERAL LEG #2

FORMATION NAME		SAMPLES MEASURED DEPTH	SAMPLES TRUE VERTICAL DEPTH	DATUM KB:5107'
LOWER ISMAY		5806'	5803'	-696'
GOTHIC SHALE		5851'	5839'	-732'
DESERT CREEK		5871'	5852'	-745'
DC 1-A ZONE		5882'	5858'	-751'

GEOLOGICAL SUMMARY

AND

ZONES OF INTEREST

The Mobil Exploration and Production U.S. Inc., Ratherford Unit #18-31 Northwest Horizontal Lateral LEG #2 was a re-entry of the Mobil Ratherford Unit #18-31 located in Section 18, T41S, R24E. The southwest Lateral LEG #2 was begun on December 17, 1997. After completing drilling of the lateral LEG #1, milling was begun on December 17th. The curve section was completed on December 19, 1997 at a measured depth of 5947', 5873.9' true vertical depth, 15 feet into the 1-A zone and 5' below the base of the best porosity in the 1-A zone. The lateral section was begun in the 1-A zone on December 20, 1997. The lateral reached a measured depth of 8095', true vertical depth of 5864', with a horizontal displacement of 2289.2' and true vertical plane of 318 degrees, on December 22, 1997 in the upper Desert Creek 1-A zone. The no significant problems were encountered while drilling this lateral, with no noticeable water flows and only very minor oil flows were encountered through out the 1-A porosity zone penetrated. This lateral used fresh water with polymer sweeps as the drilling fluid. The background gases noted on the accompanying mud log were only moderately high through out the lateral section and occasionally erratic. The drill cuttings had good oil shows through out the 1-A zone drilled.

The primary objective of the Ratherford Unit #18-31 Leg 2 horizontal lateral was the effective porosity, staining and reservoir properties in the 1-A zone of the Desert Creek Member of the Upper Paradox Formation. The very basal portion of the Upper Ismay, the Lower Ismay, the Gothic Shale and the transition zone at the top of the Desert Creek were penetrated while drilling the curve section. The curve was landed 15 feet into the 1-A horizon of the Desert Creek. Kick off point for this lateral was at a measured depth of 5750', 5750' true vertical depth, near the middle of the Upper Ismay member of the Paradox Formation.

The Upper Ismay seen in the curve section of this well was predominately white to cream to tan, occasionally brown, cryptocrystalline to microcrystalline, chalky to clean and slightly argillaceous to occasionally slightly dolomitic and with scattered marly streaks, and had scattered anhydrite crystals and rare fracture filling. Through out the Upper Ismay were very thin interbedded browns, microcrystalline, limy, and argillaceous to clean dolomites. Dark brown to smoky gray to tan chert fragments and thin interbeds of dark gray to black shale were also noted in Upper Ismay. No visible staining or gas increases and only mineral fluorescence were noted in the scattered very thin porosity streaks. The Hovenweep marker between the Upper Ismay and Lower Ismay was noted as predominately a very dark gray to dark brown limy marlstone and was very poorly developed in this lateral.

The top of the Lower Ismay was picked at 5806' measured depth, 5803' true vertical depth, and was based primarily on the slight change in lithology as well as comparison to the well log for the original well bore. The Lower Ismay was predominately limestone, light gray to light gray brown to brown to cream, occasionally white, cryptocrystalline to microcrystalline, dense, occasionally to slightly chalky, slightly fossiliferous and slightly silty. Scattered through out the Lower Isamy were brown to translucent chert and thin black carbonaceous shale partings. No shows were noted in these limestones. Through out the limestones of the Lower Ismay, cream to light gray, slightly sandy, very limy siltstones were noted. The siltstones were noted as thin interbeds and laminations. These siltstones had a very limestone rich cement and graded to a very silty to very slightly sandy limestone

and had no visible sample shows. From a measured depth of 5832' to 5837', a brown to dark brown, microcrystalline to some very finely crystalline dolomite was noted. This dolomite had scattered intercrystalline porosity, with a trace to fair sample show, and a moderate gas increase. The basal 2' to 3' of the Lower Ismay above the top of the Gothic Shale, had limestones which were became increasingly shaley and graded to a medium brown to medium gray, dense, slightly anhydritic, increasingly shaley, dark brown to gray brown, cryptocrystalline, very argillaceous to clean, dense dolomite and very limy to dolomitic shale. These basal limestones and dolomites had no visible sample shows. The Lower Ismay in this lateral had only marginal production potential.

The top of the Gothic Shale was encountered at 5851' measured depth, 5839' true vertical depth and was predominantly gray brown to black, silty, carbonaceous, soft to moderately firm, calcareous to slightly dolomitic and slightly micaceous. Scattered within the Gothic were very thin, cryptocrystalline to microcrystalline, earthy, limestone and dolomite partings and inclusions, with very rare scattered anhydrite crystals. The top of the Gothic was a fairly gradational contact with no visible decrease or increase in penetration rate noted. The base of the Gothic was marked by an abrupt decrease in penetration rate as well as a sharp lithology change. The top of the Gothic was marked by an slight increase in shale in the samples and a slight decrease in penetration rate.

The top of the Desert Creek is commonly picked at the Gothic Shale to transition zone facies change, which in this lateral occurred at a measured depth of 5871' and a true vertical depth of 5852'. The top of the Desert Creek was marked by a significant decrease in penetration rate and marked increase in limestones and thinly interbedded dolomites in the samples. The lithology of the transition zone in this well was primarily limestone white to cream to tan, occasionally light gray, cryptocrystalline to microcrystalline, platy, argillaceous to very slightly silty in part, slightly anhydritic with occasional carbonaceous shale partings. Also thin interbedded brown, cryptocrystalline to microcrystalline, argillaceous, very limy dolomites were seen. Only very minor intercrystalline porosities were noted, with no visible sample show or gas increases. A very minor gas increase was noted at the very base of this transition zone, as the penetration rate increased at the very top of the 1-A porosity zone.

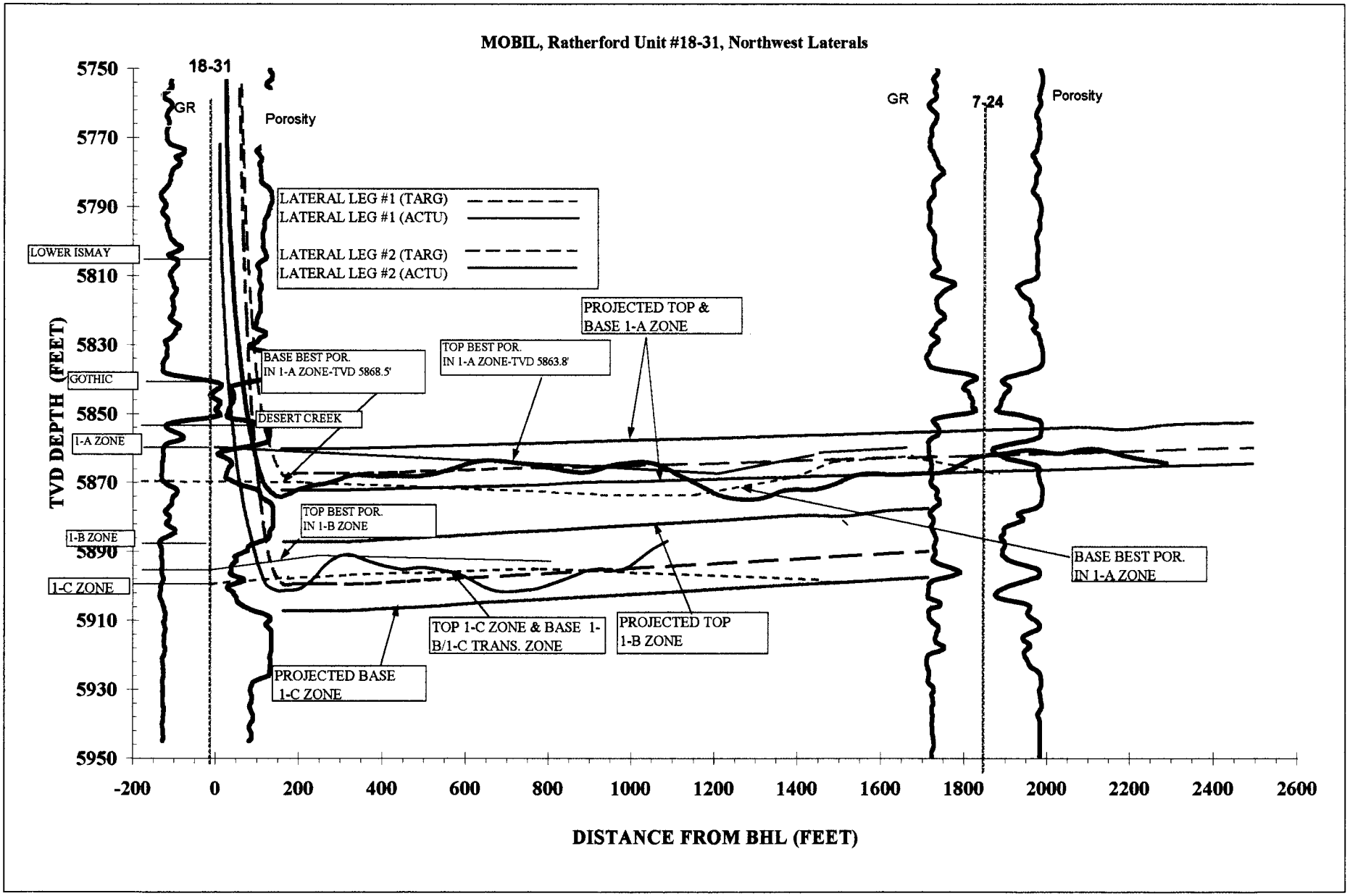
The top of the Desert Creek 1-A zone was picked at 5869' measured depth, 5857.4' true vertical depth and was based on sample identification as well as the significant increase in the penetration rate. The top of the 1-A zone was approximately flat to the top on the porosity log for this well. The porosity of the 1-A zone was in an oolicastic to oomoldic limestone grainstone, which was tan to brown to dark brown to gray brown, very fine to cryptocrystalline, with a granular to microsucrosic to traces of sucrosic texture, very rare scattered translucent to clear chert fragments were noted, scattered anhydrite crystals to inclusions and some porosity filling, with a dolomite rich cement and had a well developed oomoldic to oolicastic to intercrystalline and some algal porosity development. Light brown to brown stain, with a trace to abundant black bitchimum (dead oil staining) staining was noted in the samples along with a good yellow gold fluorescence and a moderately fast to fast streaming to milky cut was noted through out the curve section. As drilling was continued in the lateral, the amounts of bitchimum (dead oil staining) varied. Scattered with in the very good, porous oolitic grainstones were thin, tight, dense, slightly oolictic limestone packstones, white to cream with no to visible porosity development and had no visible sample show.

The curve section was completed at a measured depth of 5947', 5873.9' true vertical depth, and a vertical section (horizontal displacement) of 148', in a tight, oolitic, occasionally chalky, platy in part, limestone packstone with thin interbedded oolicastic to oolmoldic limestone grainstones which had traces of oolitic to intercrystalline porosity, approximately 6' below the proposed target line, and 5' below the best porosity in the 1-A zone. The well bore was slowly turned upward a 93 degree angle to reacquire the best porosity of the 1-A zone, as the proposed target line was near the very base of the best porosity. The base of the best porosity was encountered at a true vertical depth of 5870'. The lateral section was drilled through out its length in the 1-A zone. The lithologies of the 1-A porosity zone through out its length in the lateral remained fairly consistent with only very minor variations in

porosity type and rock classification being noted. The 1-A zone porosity was a light to medium brown, occasionally dark brown to gray brown, micro to very finely crystalline, microsucrosic to occasionally sucrosic, oolicastic to oomoldic to some algal limestone grainstone, with very rare scattered anhydrite crystals to inclusions and some porosity filling, slightly dolomitic, with a trace of dolomite rich cement, and very thin, scattered cream to tan, cryptocrystalline, occasionally oolitic to very slightly fossiliferous limestone packstone inclusions to laminations. These tight packstones were predominate at the top and base of the 1-A zone.

The 1-A porosity zone had good visible porosity and a good sample show through its length. Of note was that the 1-A zone dipped downward at 89.6 degrees to horizontal displacement of 1000', where top of the 1-A porosity zone was encountered. From 1000' to 1850' of horizontal displacement the 1-A zone dipped downward through a shallow trough with the top and base of the best porosity dropping approximately 5 vertical feet. At a horizontal displacement of 1210', the base of the best porosity zone in the 1-A zone was encountered at a measured depth of 5874.5'. An increase in the tight, slightly oolitic, packstones was noted, with a decrease in visible porosity, a decrease in sample show and a significant decrease in the penetration rate and background gas. As the well path was turned upward to regain the best porosity of the 1-A, the porosity was reacquired at a true vertical depth of 5873, and a horizontal displacement of 1350'. As the well bore continued upward at approximately a 91-degree angle, the top was encountered at horizontal displacements of 1545', 1815', 1945', and 2060', with true vertical depth of 5867', 5863' and 5861' respectively. The top of the 1-A zone appeared level at a true vertical depth of 5961' from 1945' to the lateral's termination at 2289' of horizontal displacement. The 1-A zone had appeared to thin to approximately 2' in thickness from a horizontal displacement of 1815' to 2150', then either dipped downward slightly or possibly thickened slightly to the lateral's termination at a measured depth of 8095', 5864.3' true vertical depth and a horizontal displacement of 2289'. The decision to terminate the lateral at this time was due to the drill string having to be slid almost constantly to stay in the thin zone. No noticeable water or oil flows were noted while drilling the lateral. The background gas in the lateral was moderately high, and rather erratic through out. Through out the length of the lateral drilled in the 1-A, the oolicastic to oolmoldic limestone grainstones were consistent, with increases in the tighter, slightly oolitic, occasionally platy to chalky packstone increasing as the top or the base was encountered. This determination was made due to the penetration rate and the quality of porosity decreasing significantly, but predominately only slightly, when the amount of packstone increased. The best drilling and porosity appeared to be 3 to 4 feet above the proposed target line, until reaching a horizontal displacement of 950' and then from 10' up to 2' below the proposed target line. The limestone packstones at the top and base of the 1-A was predominately a cream to white to tan, cryptocrystalline to occasionally microcrystalline, occasionally platy, chalky, dense, very slightly anhydritic, occasionally very slightly fossiliferous to very slightly oolitic, with very rare, very thin, scattered light brown to tan, microcrystalline to very finely crystalline limestone grainstone streaks. The tight limestone packstones had no visible sample shows, while the thin grainstones has a poor to occasionally moderately fair sample show. The lateral was terminated, at a measured depth of 8095', 5864' true vertical depth and a horizontal displacement of 2289' on December 22, 1997.

In tracking the well bore through the 1-A porosity bench, the intercrystalline to oolicastic to oolmoldic and minor algal porosity was very good with only very minor changes in rock classification, from predominately intercrystalline and oolitic porosities in the limestone grainstones to the tight limestone packstones in thin laminations and inclusions with in the 1-A porosity zone as well as at the top of the zone. Sample shows were predominated good and stayed fairly consistent throughout the length of the lateral, until the top of the 1-A zone was penetrated. The background gases were low through the curve section, and began low in the lateral section and increased, but were rather erratic through the lateral. The background gas decreased slightly upon penetrating the packstones at the top and base of the 1-A zone. The effective or best porosity was associated with the oolicastic and oolmoldic to very minor algal limestone grainstone facies, which had fair to good intercrystalline to oolitic porosities. Very minor anhydrite plugging was noted throughout. The well produced only minor amounts of oil and no noticeable water flows while drilling the 1-A zone.


MOBIL, Ratherford Unit #18-31, Northwest Laterals
18-31
GR
Porosity
7-24
GR
Porosity
LATERAL LEG #1 (TARG)
LATERAL LEG #1 (ACTU)
LATERAL LEG #2 (TARG)
LATERAL LEG #2 (ACTU)
LOWER ISMAY
GOTHIC
DESERT CREEK
1-A ZONE
1-B ZONE
1-C ZONE
PROJECTED TOP & BASE 1-A ZONE
BASE BEST POR. IN 1-A ZONE-TVD 5868.5'
TOP BEST POR. IN 1-A ZONE-TVD 5863.8'
TOP BEST POR. IN 1-B ZONE
BASE BEST POR. IN 1-A ZONE
TOP 1-C ZONE & BASE 1-B/1-C TRANS. ZONE
PROJECTED TOP 1-B ZONE
PROJECTED BASE 1-C ZONE
TVD DEPTH (FEET)
5750
5770
5790
5810
5830
5850
5870
5890
5910
5930
5950
-200
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
DISTANCE FROM BHL (FEET)

RECEIVED
JAN 15 1998
DIV. OF OIL, GAS & MINING

MOBIL

RATHERFORD UNIT #18-31
SE HORIZONTAL LATERAL LEG #3
1-A POROSITY BENCH
DESERT CREEK MEMBER
PARADOX FORMATION
SECTION 18, T41S, R24E
SAN JUAN, UTAH

GEOLOGY REPORT
by

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

MICROFICHE

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WELL SUMMARY

OPERATOR:	MOBIL EXPLORATION & PRODUCTION U.S. INC.
NAME:	RATHERFORD UNIT #18-31 SE HORIZONTAL LATERAL LEG #3 IN 1-A POROSITY BENCH, DESERT CREEK
LOCATION:	SECTION 18, T41S, R24E
COUNTY/STATE:	SAN JUAN, UTAH
ELEVATION:	KB: 5107' GL: 5094'
SPUD DATE:	12/10/97
COMPLETION DATE:	12/31/97
DRILLING ENGINEER:	SIMMON BERRARA
WELLSITE GEOLOGY:	DAVE MEADE / MARVIN ROANHORSE
MUDLOGGING ENGINEERS:	DAVE MEADE / MARVIN ROANHORSE
CONTRACTOR:	BIG "A" RIG 25
TOOLPUSHER:	J. DEES / M. SMITH
HOLE SIZE:	4 3/4"
CASING RECORD:	KICK OFF POINT IN WINDOW AT 5741' MEASURED DEPTH
DRILLING MUD:	M-I
ENGINEER:	RON WESTENBURG
MUD TYPE:	FRESH WATER & BRINE WATER W/ POLYMER SWEEPS
DIRECTIONAL DRILLING CO:	SPERRY-SUN
ELECTICAL LOGGING:	NA
TOTAL DEPTH:	7546' MEASURED DEPTH; 5865.5' TVD
STATUS:	TOH & LAYING DOWN LATERAL ASSEMBLY - PREPARE TO MOVE RIG

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DRILLING CHRONOLOGY
RATHERFORD UNIT #18-31
1-A SE HORIZONTAL LATERAL LEG #3

DATE	DEPTH	DAILY	ACTIVITY
12/23/97	8095'	2'	TOH-LAY DOWN LATERAL ASSEMBLY-P.U. RETRIEVING HOOK-TIH-LATCH INTO WHIPSTOCK & TOH-LAY DOWN WHIPSTOCK-P.U. WHIPSTOCK & STARTER MILL-TIH-SET WHIPSTOCK-MILL W/STARTER MILL 5731' TO 5733'-TOH TO CASING & SHUT DOWN FOR HOLIDAYS
12/24/97	5733'	0'	SHUT DOWN FOR HOLIDAYS & DRY WATCH
12/25/97	5733'	0'	SHUT DOWN FOR HOLIDAYS & DRY WATCH
12/26/97	5733'	0'	SHUT DOWN FOR HOLIDAYS & DRY WATCH
12/27/97	5733'	1'	START UP EQUIPMENT AFTER SHUT DOWN-RIG UP DOWELL-SPOT ACID IN DRL PIPE & TUBING-REVERSE OUT & DISPLACE W/BRINE WATER-TOH-L.D. STARTER MILL-TIH W/ PH6 TUBING-RIG UP DOWELL-SPOT ACID-REVERSE OUT & DISPLACE W/BRINE WATER-TOH-P.U. WINDOW & WATER MELLON MILLS-TIH-MILL 5733' TO 5734'
12/28/97	5734'	44'	MILL 5734' TO 5741'-PUMP 10 BBL SWEEP-TOH-L.D. MILL ASSEMBLY-P.U. & ORIENT CURVE ASSEMBLY-TIH-RIG UP & RUN GYRO-TIME DRLG @ 2 MIN/INCH FROM 5741'-5743'-TIME DRLG @ 1 MIN/INCH FROM 5743'-5745'-DIR DRLG W ITH WIRELINE SURVEYS TO 5778'-PULL GYRO
12/29/97	5778'	172'	PULL GYRO & L.D PUP JNT-DIR DRLG & SURVEYS TO 5940' TD OF CURVE-PUMP SWEEP & CIRC SMPLS OUT-PUMP 10 BBLS BRINE-L.D. 51 JNTS PH-6 & TOH-L.D. CURVE ASSEMBLY -P.U. & TEST LATERAL ASSEMBLY-TIH W/LATERAL ASSEMB-LY-SWIVEL UP,BREAK CIRC-DIR DRLG & SURVEYS
12/30/97	5950'	1130'	DIR DRLG & SURVEYS
12/31/97	7080'		DIR DRLG & SURVEYS-PUMP SWEEP & CIR. SPLS @ 7546' (TD)-L.D. 2 JTS PIPE-WRK TT HOLE-P.U. 1 JT PIPE-CIR. & WRK PIPE-L.D. 2 JTS PIPE-TOH-L.D. DRL COLLARS-TOH-L.D. LATERAL ASSEMBLY-PICK UP RETRIEVING HOOK-TIH-PULL WHIPSTOCK-TOH-PREPARE TO MOVE RIG

DAILY ACTIVITY

Operator: MOBIL
Well Name: RATHERFORD UNIT #18-31 SE 1-A HORIZONTAL LATERAL LEG #3

DATE	DEPTH	DAILY	DATE	DEPTH	DAILY
12/23/97	8095'	2'			
12/24/97	5733'	0'			
12/25/97	5733'	0'			
12/26/97	5733'	0'			
12/27/97	5733'	1'			
12/28/97	5734'	44'			
12/29/97	5778'	172'			
12/30/97	5950'	1130'			
12/31/97	7080'	466'			
	7546'	TD			

BIT RECORD

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #18-31 SE 1-A HORIZONTAL LATERAL LEG #3

RUN	SIZE	MAKE	TYPE	IN/OUT	FTG	HRS	FT/HR
#1 (RR)	4 3/4"	HTC	STR-20	5741'/ 5940'	199'	18.5	10.8
#2	4 3/4"	HTC	STR-20	5940'/ 7546'	1606'	33	48.7

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : MOBIL (UTAH)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/18-31,3A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
5700.00	0.19	336.51	5698.82	45.94 S	83.22 W	-34.22	0.00
5732.00	0.10	352.09	5730.82	45.86 S	83.25 W	-34.29	0.30
5741.00	3.90	130.00	5739.81	46.05 S	83.01 W	-33.99	44.16
5751.00	8.40	133.57	5749.75	46.78 S	82.22 W	-32.92	45.14
5761.00	13.40	134.73	5759.57	48.10 S	80.87 W	-31.03	50.05
5771.00	19.20	135.31	5769.16	50.08 S	78.89 W	-28.24	58.02
5781.00	24.30	135.66	5778.45	52.72 S	76.29 W	-24.55	51.02
5791.00	28.60	135.90	5787.40	55.92 S	73.19 W	-20.12	43.01
5801.00	30.80	136.07	5796.09	59.48 S	69.74 W	-15.19	22.02
5811.00	33.80	136.20	5804.54	63.33 S	66.04 W	-9.88	30.01
5821.00	36.50	136.31	5812.71	67.49 S	62.06 W	-4.16	27.01
5831.00	40.70	136.40	5820.53	72.00 S	57.76 W	2.04	42.00
5841.00	45.10	134.20	5827.85	76.84 S	52.97 W	8.82	46.47
5851.00	50.40	134.00	5834.57	81.99 S	47.65 W	16.20	53.02
5861.00	55.20	133.10	5840.62	87.47 S	41.88 W	24.14	48.53
5871.00	59.10	132.50	5846.04	93.18 S	35.72 W	32.53	39.32
5881.00	62.60	134.90	5850.91	99.21 S	29.41 W	41.25	40.79
5891.00	66.20	136.70	5855.23	105.68 S	23.12 W	50.22	39.49
5901.00	70.50	137.90	5858.92	112.51 S	16.82 W	59.43	44.42
5911.00	75.90	138.60	5861.81	119.65 S	10.45 W	68.90	54.41
5940.00	90.00	142.10	5865.36	141.76 S	7.86 E	97.14	50.07
5976.00	89.70	139.10	5865.45	169.57 S	30.70 E	132.52	8.37
6007.00	87.30	136.70	5866.27	192.56 S	51.48 E	163.21	10.95
6039.00	87.80	134.90	5867.63	215.48 S	73.76 E	195.01	5.83
6070.00	88.20	131.20	5868.72	236.63 S	96.40 E	225.95	12.00
6102.00	88.20	129.60	5869.72	257.35 S	120.76 E	257.93	5.00
6134.00	88.40	130.30	5870.67	277.89 S	145.28 E	289.91	2.27
6165.00	89.60	131.40	5871.21	298.17 S	168.72 E	320.91	5.25
6197.00	89.50	128.90	5871.46	318.80 S	193.18 E	352.90	7.82
6228.00	90.60	128.90	5871.44	338.26 S	217.30 E	383.90	3.55
6260.00	90.70	127.90	5871.07	358.14 S	242.38 E	415.88	3.14
6292.00	91.10	127.30	5870.57	377.66 S	267.73 E	447.85	2.25
6323.00	91.20	126.30	5869.95	396.23 S	292.55 E	478.79	3.24
6355.00	91.80	125.10	5869.11	414.89 S	318.52 E	510.69	4.19
6387.00	91.50	124.50	5868.19	433.15 S	344.79 E	542.55	2.10
6418.00	91.30	125.90	5867.43	451.01 S	370.11 E	573.43	4.56
6450.00	92.50	125.20	5866.37	469.61 S	396.13 E	605.31	4.34
6482.00	93.40	125.90	5864.72	488.19 S	422.13 E	637.17	3.56

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : MOBIL (UTAH)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/18-31,3A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
6514.00	90.20	126.30	5863.72	507.03 S	447.97 E	669.08	10.08
6545.00	91.40	128.90	5863.29	525.94 S	472.53 E	700.05	9.24
6577.00	88.50	128.60	5863.31	545.97 S	497.48 E	732.04	9.11
6609.00	88.20	128.80	5864.23	565.97 S	522.45 E	764.01	1.13
6641.00	91.10	130.30	5864.43	586.34 S	547.12 E	796.01	10.20
6672.00	89.40	129.10	5864.29	606.14 S	570.97 E	827.01	6.71
6703.00	89.70	128.60	5864.54	625.59 S	595.11 E	858.00	1.88
6735.00	90.40	129.80	5864.51	645.81 S	619.91 E	889.99	4.34
6767.00	88.80	129.60	5864.73	666.25 S	644.53 E	921.99	5.04
6799.00	87.40	130.00	5865.79	686.72 S	669.10 E	953.97	4.55
6830.00	88.30	130.20	5866.96	706.67 S	692.79 E	984.95	2.97
6862.00	90.50	130.30	5867.29	727.35 S	717.21 E	1016.95	6.88
6893.00	90.40	131.00	5867.05	747.54 S	740.73 E	1047.94	2.28
6925.00	90.20	130.20	5866.88	768.37 S	765.03 E	1079.94	2.58
6956.00	91.10	131.90	5866.53	788.72 S	788.40 E	1110.93	6.20
6988.00	89.50	131.00	5866.36	809.90 S	812.39 E	1142.92	5.74
7020.00	88.60	129.80	5866.89	830.64 S	836.75 E	1174.91	4.69
7052.00	91.30	131.30	5866.92	851.44 S	861.06 E	1206.91	9.65
7084.00	92.30	131.00	5865.92	872.49 S	885.15 E	1238.89	3.26
7116.00	90.40	131.00	5865.16	893.47 S	909.29 E	1270.87	5.94
7147.00	90.20	131.90	5865.00	914.00 S	932.53 E	1301.86	2.97
7179.00	91.20	132.10	5864.61	935.41 S	956.30 E	1333.84	3.19
7211.00	89.50	130.90	5864.41	956.61 S	980.27 E	1365.83	6.50
7243.00	88.70	131.00	5864.92	977.58 S	1004.43 E	1397.82	2.52
7274.00	89.10	131.90	5865.51	998.09 S	1027.67 E	1428.80	3.18
7306.00	91.50	132.60	5865.34	1019.61 S	1051.35 E	1460.77	7.81
7338.00	89.00	131.70	5865.20	1041.08 S	1075.07 E	1492.75	8.30
7370.00	88.90	131.90	5865.79	1062.41 S	1098.92 E	1524.73	0.70
7401.00	90.40	132.40	5865.98	1083.21 S	1121.91 E	1555.70	5.10
7433.00	91.50	133.70	5865.45	1105.05 S	1145.29 E	1587.65	5.32
7465.00	90.40	134.40	5864.92	1127.29 S	1168.28 E	1619.57	4.07
7497.00	89.00	133.50	5865.09	1149.50 S	1191.32 E	1651.49	5.20
7512.00	89.60	134.20	5865.27	1159.89 S	1202.14 E	1666.45	6.15
7546.00	89.60	134.20	5865.51	1183.60 S	1226.51 E	1700.36	0.00

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

THE DOGLEG SEVERITY IS IN DEGREES PER 100.00 FEET.
N/E COORDINATE VALUES GIVEN RELATIVE TO WELL SYSTEM REFERENCE POINT.
TVD COORDINATE VALUES GIVEN RELATIVE TO WELL HEAD.
THE VERTICAL SECTION ORIGIN IS WELL HEAD.
THE VERTICAL SECTION WAS COMPUTED ALONG 130.00 (TRUE).
CALCULATION METHOD: MINIMUM CURVATURE.

5700 TIE ON,5732 INTERPOLATED TO TOP WHIPIPSTOCK
5741-5821 INTERPOLATED,5831-5911 AZIMUTH INTER.
7547 EXTRAPOLATED TO TOTAL DEPTH

MUD REPORT

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #18-31 SE 1-A HORIZONTAL LATERAL LEG #3

DATE	DEPTH	WT	VIS	PLS	YLD	GEL	pH	WL	CK	CHL	CA	SD	OIL	WTR
12/28/97	5741'	8.7	27	--	--	0/0	10.5	N/C	--	41000	4000	--	4%	96%
12/29/97	5852'	8.6	27	2	1	0/0	11.0	N/C	--	38000	2400	--	10%	90%
12/30/97	6520'	8.6	27	2	1	0/0	11.5	N/C	--	38000	2400	--	10%	90%
12/31/97	7461'	8.6	27	2	1	0/0	11.6	N/C	--	39000	2400	--	10%	90%

SAMPLE DESCRIPTIONS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #18-31 NW 1-A HORIZONTAL LATERAL LEG #3

DEPTH	LITHOLOGY

5741.00 5750.00 "LS tan-crm,occ ltbrngy,wh,ltbrn,crpxl-micxl,chk-sl anhy/rr xl ANHY frag,mrly ip,rr GAST fos,NFSOC/scat DOL brn,micxl-crpxl,sl suc,rthy,occ calc ip,NFSOC"

5750.00 5760.00 "LS tan-crm-ltbrn,occ ltgybrn,wh,crpxl-occ micxl,chky-sl anhy-occ mrly,tr scat tan CHT frag,pred dns,tt,NFSOC"

5760.00 5770.00 "LS tan-crm-wh,occ ltgybrn,crpxl-micxl,chky-mrly,occ grdg to MRLST,sl anhy,incr scat tan CHT frag,rr blk SH lam,tt,NFSOC"

5770.00 5780.00 "LS AA,bcmg incr mrly-chky,grdg to MRLST ip,w/incr scat-occ intbd blk SH,CHT AA,tt,n-tr dull yel FLOR,n-vrr ltbrn STN,p dif /tr v fnt res ring CUT"

5780.00 5790.00 "LS AA intbd/DOL dkbrnblk-blk,crpxl-micxl,rthy,calc grdg to dol LS,sl shy-chty,occ arg,tr scat dkbrn-blk-dkbrnblk CHT frag,tt,NFSOC "

5790.00 5800.00 "LS tan-ltbrn-gybrn,occ dkgybrn,crpxl-micxl,rthy-chk,dol-shy,scat gybrn-dkbrn CHT frag,sl-v mrly,rr mic fos,v thn dkgy-blk lmy-dol occ plty-sbblky SH & rr scat dkgybrn micxl rthy mrly DOL lams,tt,NFSOC"

5800.00 5810.00 "LS AA,sl incr dkgy-blk calc-dol occ mic fos v sl carb SH lams-incl,tr DOL AA,scat CHT frag AA"

5810.00 5830.00 "LS tan-brn-dkbrn,occ dkgybrn,crpxl-micxl,rthy-chk,sl dol,sl shly-v mrly,occ grdg to v lmy MRLST,tt-v rrintxl POR,NFSOC,w/scat trnsl-dkbrn CHT frag,thn dkgy-blk lmy-dol occ plty-sbblky scat mic fos SH & rr-tr dkgybrn micxl rthy lmy mrly DOL tt lams"

5830.00 5840.00 "LS AA,sl mrly,bcmg v slty,grdg to v lmy SLTST,tt,NFSOC,CHT AA,incr arg-mrly DOL AA,NFSOC,decr carb-calc-dol SH AA"

5840.00 5850.00 "LS wh-crm,tan-brn ip,crpxl-micxl,v chk,sl anhy,rthy,occ sl dol,mica ip,bcmg v slty-grdg to lmy SLTST,w/rr scat CHT-SH-DOL AA,n vis POR,n-v rr mnrl FLOR,NSOC"

5850.00 5860.00 "LS crm-tan-ltbrn,crpxl,chk-plty,dns,sl anhy,occ chty,tt,NFSOC,w/thn intbd brn micxl rthy sl lmy DOL-tr intxl POR,tr dull yel FLOR,n-v rr ltbrn STN,rr slow stmg CUT,v rr scat CHT frag

5860.00 5870.00 "LS AA,w/v rr thn DOL AA,n-v rr POR-FLOR-STN-CUT AA,w/LS & DOL grdg to dkgy-blk carb SH,n-v rr trnsl-bf CHT frag"

5870.00 5886.00 "SH dkgy-blk-v dkgybrn,sbblky-sbplty,sft-mfrm,rthy,sl slty,mica,calc-dol,carb-sooty,w/v rr scat dns LS & DOL frag"

5886.00 5904.00 "LS crm-tan,occ wh-brn,crpxl-micxl,rthy-chk,plty ip,occ slty-v slty,anhy ip,v sl chty,sl mrly,tt,NFSOC,w/thn blk carb SH lams & brn-mbrn crpxl dns calc sl mrly DOL sl anhy-scat ANHY xl-frag fl,tt,NFSOC"

DEPTH	LITHOLOGY

5904.00 5920.00 "LS wh-crm,occ ltgy-ltbrn,m-dkbrn ip,crpxl-micxl,scat vfxl-gran,occ micsuc-suc,pred plty rthy-chk PKST cvgs,bcmg v sl ooc-oom GRNST,v rr mic fos,scat ANHY xl-incl,occ DOL cmt,tt-tr g intxl-rr ool POR,tr fr bri yel FLOR-ltbrn-brn STN-slow-mod fast stmg CUT"

5920.00 5940.00 "LS tan-crm,occ wh-brn,crpxl-vfxl,gran-micsuc-suc ip,pred ooc-oom GRNST,w/tr dns plty occ chk PKST,tr ANHY xl-POR fl,occ DOL cmt-v rr crpxl dkbrn DOL frag,fr-g intxl-ool POR,mfr-fr dull-bri yel FLOR,fr ltbrn-brn STN-rr blk dd o STN,fr-g mod fast stmg CUT"

5940.00 5950.00 "LS AA,crpxl-vfxl,gran-micsuc-suc ip,pred GRNST AA,w/tr PKST AA,tr ANHY xl-POR fl,occ DOL cmt-v rr crpxl dkbrn DOL frag,POR-FLOR-STN-CUT AA"

5950.00 5970.00 "LS tan-ltgybrn-ltbrn,occ crm-wh,brn,ltgy,micxl-gran-crpxl,ooc-oom GRNST/tr PKST AA,chky-sl anhy/tr POR fl,tan-ltbrn CHT frag,rr GAST,sl dol AA,fr-g intxl-ool POR,fr dull-mod bri yel FLOR,fr ltbrn-brn/rr blk dd o STN,fr-g mod fast-fast stmg mlky CUT"

5970.00 5990.00 "LS AA,micxl-gran-crpxl,occ micsuc,GRNST AA/tr PCKST AA,chky-sl anhy/tr POR fl,tr CHT AA,rr SH cvgs,sl dol/tr DOL cmt,g intxl-ool POR,g mod bri-scat bri yel FLOR,fr ltbrn-brn/rr blk dd o STN,g mod fast stmg mlky CUT"

5990.00 6010.00 "LS tan-ltbrn-crm,occ brn,wh.ltgybrn,micxl-vfxl-gran,crpxl ip,ooc-oom GRNST/tr dns-rr plty PCKST,sl-occ v chky,sl anhy/tr POR fl-rr xln ANHY incl,tr CHT AA,g ool-intxl POR,g even bri-mod bri yel FLOR,g ltbrn/tr brn & blk dd o STN,g mod fast stmg mlky CUT"

6010.00 6020.00 "LS AA,pred ooc-oom GRNST/tr scat PCKST AA,POR-FLOR-STN-CUT AA"

6020.00 6040.00 "LS tan-ltbrn-crm,occ brn,wh,ltgybrn,micxl-vfxl-gran,occ crpxl-sl micsuc,ooc-oom GRNST/tr dns-rr plty PCKST,chky-sl anhy/tr POR fl & xln ANHY incl,tr tan-ltbrn CHT frag,POR-FLOR AA,g-fr ltbrn/tr scat brn & blk dd o STN,g blooming-fast stmg mlky CUT"

6040.00 6060.00 "LS AA,pred ooc-oom GRNST/tr scat-occ intbd dns-rr sl agal chky plty PCKST frag,sl anhy.tr chky-anhy POR fl,rr xln ANHY incl,tr tan-ltbrn CHT frag,sl dol/tr DOL cmt,g ool-intxl POR,g even mod bri-spty bri yel FLOR,g ltbrn/scat brn & blk dd o STN,CUT AA"

6060.00 6070.00 "LS AA,ooc-oom GRNST/tr PCKST AA,chky-sl anhy/tr POR fl & rr xln ANHY incl,CHT AA,POR-FLOR-STN-CUT AA"

6070.00 6090.00 "LS tan-ltbrn-crm,occ brn,wh,micxl-vfxl-gran,occ crpxl-sl micsuc,ooc-oom GRNST/tr dns-rr plty PCKST,chky-sl anhy/tr POR fl &rr xln ANHY incl,rr tan-ltbrn CHT frag,sl dol/tr DOL cmt,POR-FLOR-STN AA,g slow-mod fast stmg mlky CUT"

6090.00 6110.00 "LS AA,ooc-oom GRNST/tr PCKST AA,chky-sl anhy/tr POR fl & rr xln ANHY incl,rr tan-ltbrn CHT frag,sl dol/tr DOL cmt strk,g ool-intxl POR,g even mod bri-spty bri yel FLOR,g ltbrn-brn/tr dkbrn & blk dd o STN,g mod fast stmg-sl blooming mlky CUT"

6110.00 6130.00 "LS tan-ltbrn-crm,occ brn,rr wh,vfxl-gran,sl micsuc,micxl-occ crpxl,ooc-oom GRNST/tr scat-intbd dns-vrr plty PCKST,chky-sl anhy/tr POR fl & xln ANHY,sl dol/tr DOL cmt strk,g ool-intxl POR,FLOR AA,g ltbrn-brn/incr scat blk dd o STN,CUT AA"

DEPTH	LITHOLOGY

6130.00 6160.00 "LS AA,vfxl-gran-sl micsuc,micxl-occ crpxl,ooc-oom GRNST/decr scat-intbd dns-plty PCKST,chky-sl anhy/tr POR fl & xln ANHY,sl dol/tr DOL cmt strk,g oom-ooc-tr intxl POR,g even bri-mod bri yel FLOR,g ltbrn-brn/incr scat blk dd o STN,g blooming-fast stmg mlky CUT"

6160.00 6180.00 "LS AA,ooc-oom GRNST/tr PCKST AA,chky-sl anhy/tr POR fl & rr xln ANHY,rr tan-ltbrn CHT frag,sl dol/tr DOL cmt strk,POR AA,g even bri-mod bri yel FLOR,g ltbrn-brn/sl decr blk dd o STN,g fast stmg-blooming mlky CUT"

6180.00 6200.00 "LS tan-ltbrn-crm,occ brn,wh,vfxl-gran,micxl-occ crpxl-sl micsuc,ooc-oom GRNST/tr dns-rr plty PCKST,chky-sl anhy/sl incr POR fl & rr xln ANHY,vrr tan CHT frag,sl dol/tr DOL cmt,POR-FLOR-STN-CUT AA"

6200.00 6210.00 "LS AA,pred ooc-oom GRNST/PCKST AA,POR-FLOR-STN-CUT AA"

6210.00 6230.00 "LS tan-ltbrn-crm,occ brn,wh,vfxl-gran-sl micsuc,micxl-occ crpxl,ooc-oom GRNST/tr dns-vrr plty PCKST,chky-sl anhy/tr POR fl & rr xln ANHY,rr tan-trnsl CHT frag,POR-FLOR AA,g ltbrn-brn/scat blk dd o STN,g blooming-fast stmg mlky CUT"

6230.00 6240.00 "LS AA,ooc-oom GRNST/tr PCKST AA,chky-sl anhy/tr POR fl & rr xln ANHY incl,CHT AA,POR-FLOR-STN-CUT AA"

6240.00 6260.00 "LS AA,vfxl-gran-sl micsuc,micxl-occ crpxl,ooc-oom GRNST/tr dns-rr plty PCKST,chky-sl anhy/tr POR fl & rr xln ANHY,sl dol/tr DOL cmt,g oom-ooc-tr intxl POR,g even bri-mod bri yel FLOR,g ltbrn-brn/incr scat blk dd o STN,g blooming-fast stmg mlky CUT"

6260.00 6280.00 "LS tan-ltbrn-crm,occ brn,rr wh,vfxl-gran,sl micsuc,micxl-occ crpxl,ooc-oom GRNST/tr scat-intbd dns-vrr plty PCKST,chky-sl anhy/tr POR fl & xln ANHY,sl dol/tr DOL cmt strk,g ool-intxl POR,FLOR AA,g ltbrn-brn/incr scat blk dd o STN,CUT AA"

6280.00 6300.00 "LS tan-ltbrn,occ wh-crm-brn,micxl-vfxl,rr crpxl,gran-micsuc,occ suc,pred ooc-oom GRNST,scat plty occ chk dns PKST,scat ANHY xl-incl-v rr POR fl,ooc DOL rich cmt,fr-g intxl-fr ool POR,fr-g dull-bri yel FLOR,g ltbrn-brn-rr blk STN,fr-g mod fast-fast CUT"

6300.00 6330.00 "LS AA,w/scat brn-dkbrn CHT frag,fr-g intxl-ool POR,g bri-fr dull yel FLOR,fr-g brn-dkbrn STN,rr-tr blk dd o STN,fr-g mod fast-fast stmg mlky CUT"

6330.00 6360.00 "LS ltbrn-brn,occ gybrn-crm,v rr wh,micxl-vfxl,gran-micsuc ip,occ crpxl,pred ooc-oom GRNST,scat tr dns occ plty-chk ool PKSTincl,tr ANHY xl-incl,v rr DOL cmt,fr-g ool-fr intxl POR,g bri-fr dull yel FLOR,g ltbrn-brn-rr blk STN,fr-g mod fast-fast stmg CUT"

6360.00 6390.00 "LS AA,sl incr v ool PKST,w/tr ANHY fl POR,v rr trnsl-bf CHT frag,fr-g ool-tr intxl POR,FLOR-STN-CUT AA"

6390.00 6420.00 "LS AA,w/scat dns ool occ plty PKST,sl incr ANHY fl POR,n-v rr bf CHT frag,POR-FLOR-STN-CUT AA"

6420.00 6440.00 "LS ltbrn-brn,occ gybrn-crm,v rr wh,micxl-vfxl,gran-micsuc ip,occ crpxl,pred ooc-oom GRNST,scat tr dns occ plty-chk ool PKSTincl,ANHY AA,CHT AA,v rr DOL cmt,fr-g ool-tr intxl POR,g bri-fr dull yel FLOR,g ltbrn-brn-rr blk STN,fr-g mod fast-fast stmg CUT"

DEPTH	LITHOLOGY

6440.00 6470.00 "LS AA,w/rr scat dns ool occ plty PKST,occ ANHY fl POR,v rr trnsl-bf CHT frag,POR-FLOR-STN-CUT AA"

6470.00 6500.00 "LS ltbrn-brn,occ gybrn-crm,v rr wh,micxl-vfxl,gran-micsuc ip,occ crpxl,pred ooc-oom GRNST,incr amnt dns occ plty-chk ool PKST frag & ANHY AA,CHT AA,v rr DOL cmt,fr ool-tr intxl POR,g bri-fr dull yel FLOR,g ltbrn-brn-rr blk STN,fr-g mod fast-fast stmg CUT"

6500.00 6520.00 "LS AA,bcmg pred dns occ plty-chk sl ool anhy PKST,w/intbd ooc-oom GRNST,decr intxl-ool POR,fr-g dull-fr bri yel FLRO,tr-fr ltbrn-brn STN,tr-fr mod fast-fast-occ slow stmg CUT"

6520.00 6550.00 "LS crm-ltbrn,occ brn-tr wh,crpxl-vfxl,gran-micsuc,intbd ooc-oom GRNST & dns anhy occ plty-chk v sl ool PKST,tr ANHY xl-incl-POR fl,DOL rich cmt ip,v rr trnsl CHT frag,tt-fr intxl-ool POR,fr-g dull-bri yel FLOR,rr-fr ltbrn-brn-rr blk STN,tr-g mod fast CUT"

6550.00 6580.00 "LS AA,sl incr ooc-oom GRNST,incr ool-intxl POR,fr-g dull-bri yel FLOR,tr ltbrn-brn STN,rr blk dd o STN,fr-g mod fast-fast stmg mlky CUT"

6580.00 6610.00 "LS ltbrn-brn,occ gybrn-crm,v rr wh,micxl-vfxl,gran-micsuc ip,occ crpxl,pred ooc-oom GRNST,rr scat dns occ plty-chk ool PKSTincl,ANHY AA,CHT AA,v rr DOL cmt,fr-g ool-tr intxl POR,g bri-fr dull yel FLOR,g ltbrn-brn-rr blk STN,fr-g mod fast-fast stmg CUT"

6610.00 6640.00 "LS ltbrn-brn,crm-wh ip,occ gybrn-mbrn,AA,scat intbd PKST,rr ANHY fl POR,n-v rr trnsl-clr CHT frag,fr-g intxl-ool POR,fr-g dull-bri yel FLOR,fr-mg ltbrn-brn STN,rr blk dd o STN,fr-g mod fast-fast stmg CUT"

6640.00 6680.00 "LS crm-tan-ltbrn,occ brn,rr wh,crpxl-vfxl,gran-micsuc,occ crpxl-dns,pred ooc-oom GRNS,w/incr amnts sl ool tt PKST,scat ANHY xl-POR fl,occ DOL rich cmt,tt-g intxl-ool POR,tr-g dull-bri yel FLOR,rr-fr ltbrn STN,rr blk dd o STN,rr-fr slow-mod fast stmg CUT"

6680.00 6710.00 "LS ltbrn-tan,occ brn,AA,pred ooc-oom GRNST,rr scat trnsl-bf CHT frag,occ anhy-scat ANHY xl-POR fl,fr-g ool-tr intxl POR,fr-g dull-bri yel FLOR,fr ltbrn-brn STN,rr blk dd o STN,fr-g mod fast-fast stmg mlky CUT"

6710.00 6730.00 "LS tan-ltbrn/occ crm-wh incl,occ brn,vfxl-gran-sl micsuc,micxl-occ crpxl,ooc-oom GRNST/tr scat-intbd sl ool dns PCKST,chky-sl anhy/tr POR fl-rr xln ANHY incl-frag,rr tan-crm CHT incl,sl dol-occ DOL cmt strk,g ooc-oom/tr intxl POR,g even bri-mod bri yel FLOR,g ltbrn/scat brn-dk brn & blk dd o STN,g mod fast-slow stmg mlky CUT"

6740.00 6770.00 "LS AA,pred GRNST AA,tr intbd-rr scat PCKST AA,chky-sl anhy/tr POR fl-rr xln ANHY,tr tan-crm pp CHT incl,sl dol/tr DOL cmt strk,g ooc-oom/tr intxl POR,g even bri-mod bri yel FLOR,g ltbrn-brn/scat dkbrn & blk dd o STN,g slow blooming-mod fast stmg mlky CUT"

6770.00 6800.00 "LS tan-ltbrn/tr crm-wh incl,occ brn,vfxl-gran-sl micsuc,micxl-occ crpxl,ooc-oom GRNST/tr scat-intbd sl ool dns PCKST,chky-sl anhy/tr POR fl-rr xln ANHY incl,rr CHT AA,sl dol-tr DOL cmt strk,POR-FLOR-STN AA,g fast-sl blooming mlky CUT"

6800.00 6830.00 "LS tan-ltbrn/tr crm-wh incl,occ brn,vfxl-gran-micxl,sl micsuc-occ crpxl,ooc-oom GRNST/tr intbd-rr scat sl ool dns PCKST,chky-sl anhy/tr POR fl-rr xln ANHY,rr tan-trnsl CHT frag,sl dol-tr DOL cmt strk,POR AA,g even bri-mod bri yel FLOR-STN-CUT AA"

DEPTH	LITHOLOGY

6830.00 6850.00 "LS tan-ltbrn/tr crm-rr wh incl,occ brn,vfxl-gran-sl micsuc,micxl-sl crpxl,oom-ooc GRNST,tr scat-intbd dns sl ool PCKST,chky-sl anhy/tr POR fl-rr xln ANHY incl,rr tan-ltbrn CHT incl,sl dol/tr DOL cmt,g oom-ooc POR,g even bri-mod bri yel FLOR,g ltbrn-brn/scat dkbrn & blk dd o STN,g blooming-fast stmg mlky CUT"

6860.00 6890.00 "LS AA,vfxl-gran-sl micsuc,micxl-sl crpxl,oom-ooc GRNST,tr intbd-rr scat dns sl ool PCKST,chky-sl anhy/tr POR fl-rr xln ANHY incl,rr CHT AA,sl dol/tr DOL cmt,g oom-ooc POR,g even bri-mod bri yel FLOR,STN-CUT AA"

6890.00 6920.00 "LS AA,ooc-oom GRNST,tr-rr scat-intbd dns sl ool PCKST,chky AA,rr CHT AA,sl dol/rr DOL cmt,g oom-ooc/tr intxl POR,g even bri-mod bri yel FLOR,g ltbrn-brn/scat brn & blk dd o STN,G fast-sl blooming mlky CUT"

6920.00 6940.00 "LS AA,ooc-oom GRNST/tr scat-intbd sl ool dns PCKST,chky-sl anhy/tr POR fl-rr xln ANHY incl,rr CHT AA,sl dol-tr DOL cmt strk,POR-FLOR-STN AA,g fast-sl blooming mlky CUT"

6940.00 6954.00 "LS tan-ltbrn,occ brn-tr dkbrn,crm-rr wh incl,vfxl-gran-sl micsuc,micxl-occ crpxl,ooc-oom GRNST,rr-tr PCKST AA,chky-sl anhy/tr POR fl & rr xl ANHY incl,rr CHT AA,sl dol/tr DOL cmt,g oom-ooc/tr intxl POR,g even bri-mod bri yel FLOR,g ltbrn-brn/scat dkbrn-blk dd o STN,g mod fast-slow stmg mlky CUT"

6960.00 6980.00 "LS AA,vfxl-gran-sl micsuc,micxl-occ crpxl,ooc-oom GRNST,rr-tr intbd dns sl ool PCKST,chky-sl anhy/tr POR fl & rr xl ANHY incl,rr CHT AA,sl dol/tr DOL cmt,POR-FLOR AA,g ltbrn-brn/scat blk dd o & tr dkbrn STN,CUT AA "

6980.00 6990.00 "LS AA/sl incr brn-dk brn frag,ooc-oom GRNST,sl chky-anhy/tr xl ANHY & POR fl,sl dol/tr DOL cmt,vrr CHT AA,POR-FLOR-STN AA,g blooming-fast stmg mlky CUT"

6990.00 7010.00 "LS ltbrn-tan-brn/tr crm-rr wh incl,occ dkbrn,vfxl-gran-sl micsuc,micxl-occ crpxl,ooc-oom GRNST/rr dns sl ool PCKST incl-frag,sl chky-anhy/tr POR fl & rr xl ANHY incl,rr crm-tan CHT,vsl dol/rr DOL cmt,g oom-ooc/tr intxl POR,g even mod bri-bri yel FLOR,g ltbrn-brn/scat dkbrn & blk dd o STN,g mod fast-fast stmg CUT"

7010.00 7030.00 "LS AA,ooc-oom GRNST,sl chky-anhy/tr xl ANHY & POR fl,sl dol/tr DOL cmt,vrr CHT AA,POR-FLOR-STN-CUT AA"

7030.00 7047.00 "LS ltbrn-tan-brn,occ dkbrn,tr crm-rr wh incl,vfxl-gran-micxl,sl micsuc-crpxl,ooc-oom GRNST,rr dns sl ool PCKST frag-incl,sl chky-anhy/tr POR fl & vrr xl ANHY,rr crm-tan CHT incl,vsl dol/rr DOL cmt,g oom-ooc/tr intxl POR,g even mod bri-dull/scat bri yel FLOR,g ltbrn-brn/scat dkbrn & blk dd o STN,g blooming-fast stmg mlky CUT"

7060.00 7090.00 "LS AA,ooc-oom GRNST,tr intbd-scat dns sl ool PCKST,sl chky-anhy/tr POR fl-vrr xln ANHY incl,rr tan-crm CHT incl-frag,sl dol/tr DOL cmt,g ooc-oom/tr intxl POR,FLOR AAA,g ltbrn-brn/scat dkbrn &"

7082.00 7089.00 "blk dd o STN,g mod fast-fast stmg mlky CUT"

7090.00 7120.00 "LS ltbrn-tan-brn,occ dkbrn,tr crm-rr wh incl,vfxl-gran-micxl,sl micsuc-crpxl,ooc-oom GRNST/rr dns sl ool PCKST frag-incl,sl chky-anhy/tr POR fl & vrr xl ANHY,rr crm-tan CHT incl,sl dol/rr DOL cmt,POR AA,g even mod bri-dull/scat bri yel FLOR,STN- CUT AA"

DEPTH	LITHOLOGY

7120.00 7150.00 "LS AA,ooc-oom GRNST/sl incr scat-intbd dns sl ool PCKST,sl chky-anhy/tr POR fl-rr xln ANHY incl,rr crm-trsl CHT incl,sl dol/tr DOL cmt ip,POR-FLOR AA,g ltbrn-fr brn/tr scat dkbrn & blk dd o STN,g mod fast-fast stmg mlky CUT"

7150.00 7180.00 "LS AA,GRNST AA/tr scat-intbd PCKST AA,sl chky-anhy/tr POR fl-rr xln ANHY incl,rr CHT AA,vsl dol/tr DOL cmt ip,g ooc-oom/tr xln POR,FLOR AA,g ltbrn-fr brn/tr scat dkbrn & blk dd o STN,g mod fast-fast stmg mlky CUT"

7180.00 7200.00 "LS AA,ooc-oom GRNST/tr scat-intbd dns sl ool PCKST,sl chky-anhy/tr POR fl-rr xln ANHY incl,rr CHT AA,sl dol/tr DOL cmt ip,POR-FLOR AA,g ltbrn-fr brn/tr scat dkbrn & blk dd o STN,g mod fast-fast stmg mlky CUT"

7200.00 7220.00 "LS tan-ltbrn/tr crm-wh incl,occ brn,vfxl-gran-micxl,occ micsuc-crpxl,ooc-oom GRNST/rr intbd dns sl ool PCKST,sl chky-anhy/tr POR fl-rr xl ANHY incl,rr crm-trnsl CHT incl,sl dol/tr DOL cmt,POR-FLOR-STN AA,g mod fast-sl blooming mlky CUT"

7220.00 7250.00 "LS tan-ltbrn,rr crm-wh-brn,crpxl-vfxl,gran-micsuc,pred ooc-oom GRNST,scat tr v sl ool rr plty-chk anhy PKST,v sl DOL rich cmt,tr ANHY xl-incl,fr-g ool-fr intxl POR,fr-g dull-bri yel FLOR,fr ltbrn-brn-rr spty blk STN,fr-g mod fast-fast stmg CUT"

7250.00 7280.00 "LS AA,sl incr ool PKST,fr-g intxl-ool POR,fr-g dull-bri yel FLOR,fr-g ltbrn-tr brn STN,spty blk dd o STN,fr-g mod fast-fast stmg mlky CUT"

7280.00 7320.00 "LS tan-ltbrn,rr crm-wh-brn,crpxl-vfxl,gran-micsuc,pred ooc-oom GRNST,scat tr v sl ool rr plty-chk anhy PKST,sl DOL rich cmt,tr ANHY xl-incl,rr bf CHT frag,fr-g ool-fr intxl POR,fr-g dull-bri yel FLOR,fr ltbrn-brn-rr blk STN,fr-g mod fast-fast stmg CUT"

7320.00 7350.00 "LS AA,incr ool PKST,sl incr ANHY fl POR,rr-tr trnsl-bf CHT frag,fr-g intxl-ool POR,fr-g dull-bri yel FLOR,fr-g ltbrn-tr brn STN,spty blk dd o STN,fr-g mod fast-fast stmg mlky CUT"

7350.00 7370.00 "LS tan-ltbrn,rr crm-wh-brn,crpxl-vfxl,gran-micsuc,pred ooc-oom GRNST,scat tr v sl ool rr plty-chk anhy PKST,sl DOL rich cmt,tr ANHY xl-incl,rr bf CHT frag,fr-g ool-fr intxl POR,fr-g dull-bri yel FLOR,fr ltbrn-brn-rr blk STN,fr-g mod fast-fast stmg CUT"

7370.00 7400.00 "LS tan-ltbrn,rr crm-wh-brn,crpxl-vfxl,gran-micsuc,pred ooc-oom GRNST,scat tr v sl ool rr plty-chk anhy PKST,v sl DOL rich cmt,tr ANHY xl-incl,fr-g ool-fr intxl POR,fr-g dull-bri yel FLOR,fr ltbrn-brn-rr spty blk STN,fr-g mod fast-fast stmg CUT"

7400.00 7430.00 "LS AA,sl incr ool PKST,sl incr ANHY fl POR,rr trnsl-bf CHT frag,fr-g intxl-ool POR,fr-g dull-bri yel FLOR,fr-g ltbrn-tr brn STN,spty blk dd o STN,fr-g mod fast-fast stmg mlky CUT"

7430.00 7440.00 "LS AA,incr ool dns occ plty-chk anhy PKST,v sl incr trnsl CHT frag,fr intxl-ool POR,fr-g dull-bri yel FLOR,fr ltbrn-brn STN,v rr spty blk dd o STN,fr slow-fast stmg mlky CUT"

7440.00 7470.00 "LS tan-ltbrn,occ crm-brn-ltgy,crpxl-vfxl,occ gran-micsuc,pred ooc-oom GRNST,w/intbd ool rr plty-chk anhy dns PKST,sl DOL rich cmt,rr-tr ANHY xl-incl,fr-g ool-fr intxl POR,fr-g dull-bri yel FLOR,fr ltbrn-brn STN-rr spty blk STN,fr-g slow-fast stmg CUT"

DEPTH	LITHOLOGY

7470.00 7500.00 "LS tan-ltbrn,rr crm-brn-ltgy,crpxl-vfxl,gran-micsuc,pred ooc-oom GRNST,scat ool rr plty-chk anhy dns PKST,occ DOL rich cmt,tr ANHY xl-incl,fr-g ool-tr intxl POR,fr-g dull-bri yel FLOR,tr-fr ltbrn-brn-rr spty blk STN,fr-g slow-mod fast-fast stmg CUT"

7500.00 7530.00 "LS AA,ooc-oom GRNST w/rr scat dns ool v rr chk-plty PCKST,anhy-tr ANHY xl-POR fl-rr ANHY cmt,v rr trnsl-clr CHT frag,sl dol-tr DOL cmt,POR-FLOR AA,tr-fr ltbrn-brn STN,rr spty blk dd o STN,fr-g slow-fast stmg mlky CUT"

7530.00 7546.00 "LS AA,incr ool dns occ plty-chk anhy PKST,v sl incr trnsl CHT frag,fr intxl-ool POR,fr-g dull-bri yel FLOR,fr ltbrn-brn STN,v rr spty blk dd o STN,fr slow-fast stmg mlky CUT"

FORMATION TOPS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #18-31 SE 1-A HORIZONTAL LATERAL LEG #3

FORMATION NAME		SAMPLES MEASURED DEPTH	SAMPLES TRUE VERTICAL DEPTH	DATUM KB:5107'
LOWER ISMAY		5807'	5802'	-695'
GOTHIC SHALE		5860'	5840'	-733'
DESERT CREEK		5886'	5853'	-746'
DC 1-A ZONE		5905'	5860'	-753'

GEOLOGICAL SUMMARY

AND

ZONES OF INTEREST

The Mobil Exploration and Production U.S. Inc., Ratherford Unit #18-31 Northwest Horizontal Lateral Leg #3 was a re-entry of the Mobil Ratherford Unit #18-31 located in Section 18, T41S, R24E. The southwest Lateral Leg #3 was begun on December 23, 1997. After completing drilling of the lateral Leg #2, milling was begun on December 23rd and finished of the 28th, after shutting down for the Christmas holidays. The curve section was completed on December 29, 1997 at a measured depth of 5940', 5865' true vertical depth, 5 feet into the 1-A porosity and the lateral section was begun in the 1-A porosity zone also on December 29, 1997. The lateral reached a measured depth of 7546', true vertical depth of 5865', with a horizontal displacement of 1700' and true vertical plane of 134 degrees, on December 31, 1997 in the upper Desert Creek 1-A zone. There were no significant problems encountered while drilling this lateral, with no noticeable oil or water flows were encountered while drilling the 1-A porosity zone. This lateral used fresh water with polymer sweeps as the drilling fluid, with oil added to the drilling fluid to facilitate the rotating and sliding of the drill pipe. The background gases noted on the accompanying mud log were only moderately high and erratic through out the lateral section. The cuttings samples had fair to good oil shows through out the 1-A zone drilled.

The primary objective of the Ratherford Unit #18-31 Leg 2 horizontal lateral was the effective porosity, staining and reservoir properties in the 1-A zone of the Desert Creek Member of the Upper Paradox Formation. The lower one half of the Upper Ismay, the Lower Ismay, the Gothic Shale and the transition zone at the top of the Desert Creek were penetrated while drilling the curve section. The curve was landed 5 feet into the 1-A porosity horizon. Kick off point for this lateral was at a measured depth of 5741', 5741' true vertical depth, in the upper middle of the Upper Ismay member of the Paradox Formation.

The Upper Ismay seen in the curve section of this well was predominately white to cream to tan, occasionally brown, cryptocrystalline to microcrystalline, chalky to clean and slightly argillaceous to occasionally slightly dolomitic and with scattered marly streaks, and had scattered anhydrite crystals and occasional fracture filling. Through out the Upper Ismay were thin interbedded brown, microcrystalline to microsucrosic, very slightly limy, occasionally argillaceous to clean dolomites. Tan to some dark brown to smoky gray chert fragments and thin laminations of dark gray to black, slightly carbonaceous shale was also noted in Upper Ismay. Very minor gas increases and only mineral fluorescence, with no visible staining was noted in the scattered very thin porosity streaks in the limestones and minor dolomites. The Hovenweep marker between the Upper Ismay and Lower Ismay was very poorly developed in this lateral.

The top of the Lower Ismay was picked at 5807' measured depth, 5802' true vertical depth, and was based primarily on the slight change in lithology as well as comparison to the well log for the original well bore. The Lower Ismay was predominately limestone, which was tan to brown dark brown, and occasionally dark gray brown to white, cryptocrystalline to microcrystalline, dense, occasionally to slightly chalky, slightly fossiliferous, some marly and slightly silty. Scattered through out the Lower Isamy were brown to translucent chert and thin black carbonaceous shale partings. No shows were noted in these limestones. In the limestones near the base of the Lower Ismay, cream to light gray, slightly sandy, very limy siltstones were noted as very thin interbeds and laminations. These

siltstones had a very limestone rich cement and graded to a very silty to very slightly sandy limestone but displayed no shows. The lower 5' to 10' of the Lower Ismay to the top of the Gothic Shale, had limestones which were became increasingly shaley and graded to a medium brown to medium gray, dense, slightly anhydritic, increasingly shaley, dark brown to gray brown, cryptocrystalline, very argillaceous to clean, dense dolomite and very limy to dolomitic shale. The limestones, dolomites and thin siltstones of the Lower Ismay had no sample or gas shows.

The top of the Gothic Shale was encountered at 5860' measured depth, 5640' true vertical depth and was predominantly gray brown to black, silty, carbonaceous, soft to moderately firm, calcareous to slightly dolomitic and slightly micaceous. Scattered within the Gothic were very thin, cryptocrystalline to microcrystalline, earthy, limestone and dolomite partings and inclusions, with very rare scattered anhydrite crystals. The top of the Gothic was a fairly gradational contact with no visible decrease or increase in penetration rate noted. The base of the Gothic was marked by an abrupt decrease in penetration rate as well as a sharp lithology change. The top of the Gothic was marked by an slight increase in shale in the samples

The top of the Desert Creek is commonly picked at the Gothic Shale to transition zone facies change, which in this lateral occurred at a measured depth of 5886' and a true vertical depth of 5853' and was marked by a significant decrease in penetration rate and marked increase in limestones and thinly interbedded dolomites in the samples. The lithology of the transition zone in this well was primarily a white to cream, occasionally light brown to light gray, with some medium to dark brown, cryptocrystalline to microcrystalline, platy, argillaceous to very slightly silty in part, slightly anhydritic limestones with very thin carbonaceous shale partings. Also thin interbedded brown, cryptocrystalline to microcrystalline, argillaceous, very limy dolomites were seen. Only very minor intercrystalline porosities were noted in the limestones and dolomites, with only a very spotty weak mineral fluorescence. No significant gas increases were noted in the transition zone, above the 1-A porosity zone.

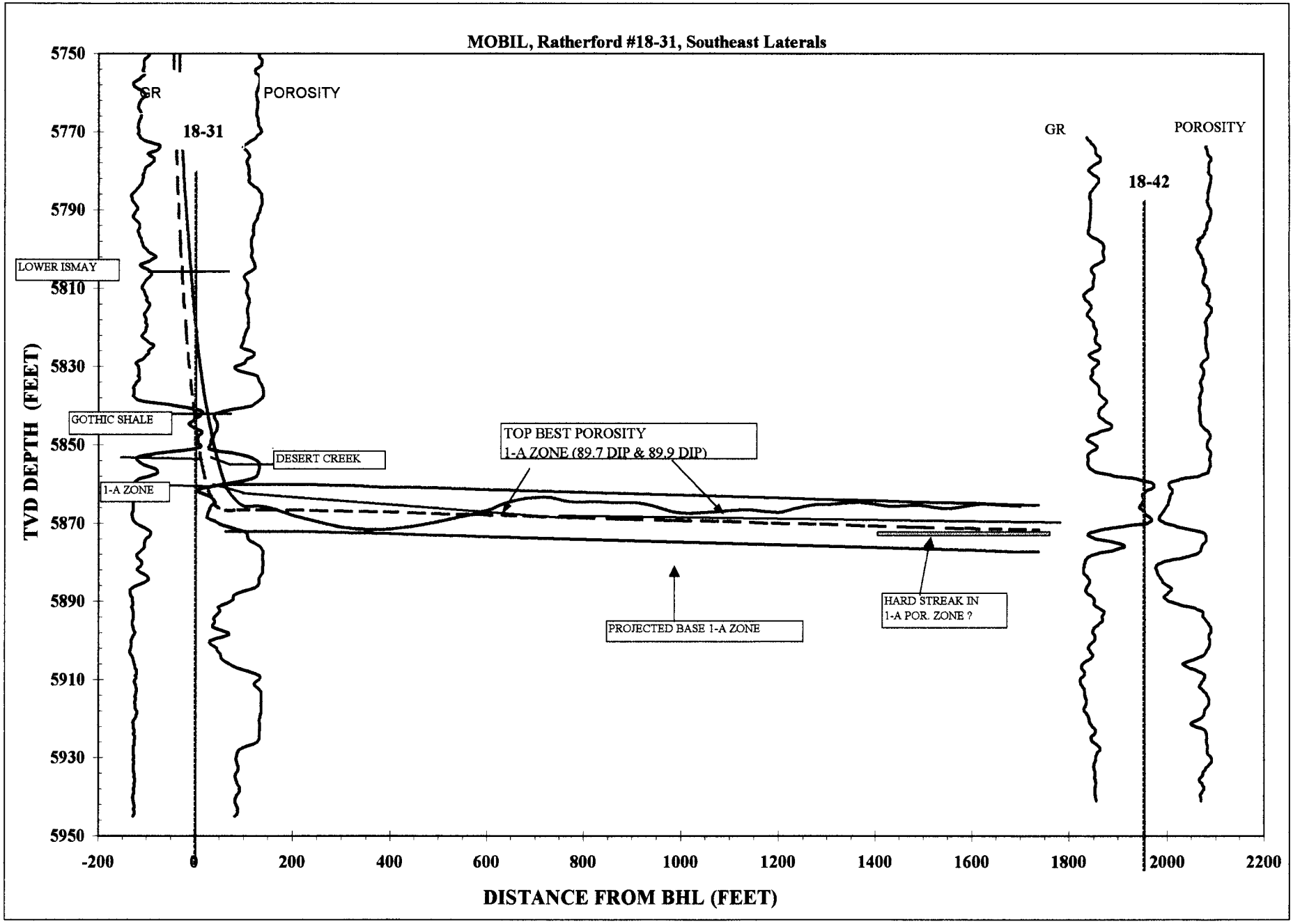
The top of the Desert Creek 1-A zone was picked at 5905' measured depth, 5860' true vertical depth and was based on sample identification as well as the significant increase in the penetration rate. The top of the 1-A zone was approximately 2' low to the top on the porosity log for this well. The porosity of the 1-A zone was in an oolicastic to oomoldic limestone grainstone, which was tan to brown to dark brown to gray brown, very fine to cryptocrystalline, with a granular to microsucrosic to traces of sucrosic texture, very rare scattered translucent to clear chert fragments were noted, scattered anhydrite crystals to inclusions and some porosity filling, with a dolomite rich cement and had a well developed oomoldic to oolicastic to intercrystalline and some algal porosity development. Light brown to brown stain, with a trace to abundant black bitchimum (dead oil staining) staining was noted in the samples along with a good yellow gold fluorescence and a moderately fast to fast streaming to milky cut was noted through out the length of the lateral. As the lateral was continued, the amounts of bitchimum (dead oil staining) appeared to be rather erratic. Scattered with in the very good, porous oolitic grainstones were thin, tight, dense, slightly oolictic limestone packstones, white to cream with no to visible porosity development and had no visible sample show.

The curve section was completed at a measured depth of 5940', 5865' true vertical depth, and a vertical section (horizontal displacement) of 97', in the oolicastic to oolmoldic limestone grainstone porosity, approximately 2' above the proposed target line, with a 90-degree angle. The well bore remained level for approximately 100', before being slowly pulled downward toward the base of the best porosity of the 1-A zone, as the zone slowly dipped slightly downward with an 89.7 degree dip rather than the projected dip angle of 89.8 degrees. At a horizontal displacement of 350' the well path was oriented upward after nearing the base at a true vertical depth of 5871.5'. The well path encountered the top of the best porosity at a horizontal displacement of 700', with a true vertical depth of 5863'. At this time the well path was leveled off and drilled to termination anywhere from 2' to 5.5' above the proposed target line. A probable tight streak with in the upper part of the 1-A zone was

encountered from a horizontal displacement of 1400' to 1700' when the lateral leg was terminated. This tight streak was at a true vertical depth of 5866', this determination was due to the fact that when the well bore was turn down to regain the target line, the bit was forced back upward as the true vertical depth of 5866' was reached. The top of the zone from a horizontal displacement of 1350' to the lateral's termination appeared to be at a true vertical depth of 5864'. The lateral section was drilled through out its length in the porosity zone of the 1-A. The lithology of the 1-A porosity zone through out its length in the lateral remained fairly consistent with only very minor variations in porosity type being noted. The lithology of the 1-A was a light to medium brown, occasionally dark brown to gray brown, microcrystalline to very finely crystalline, microsucrosic to occasionally sucrosic, oolicastic to oomoldic limestone grainstone, with very rare scattered anhydrite crystals to inclusions and some porosity filling, slightly dolomitic, with a trace of dolomite rich cement, and very thin, scattered cream to tan, cryptocrystalline, occasionally oolitic to very slightly fossiliferous limestone packstone inclusions to laminations.

The 1-A porosity zone had good visible porosity and a good sample show through its length. Of note was that the tight streak encountered approximately 2' below the top of the lateral from 1350 to the end of the lateral section in the 1-A porosity. The background gas in the lateral was only moderately high, with the background gases decreasing over the last 246' of the lateral. Through out the length of the lateral drilled in the 1-A, the oolicastic to oolimoldic limestone grainstones were consistent. The top of the 1-A was encountered at a measured depth of 6508', 5863' true vertical depth, with a horizontal displacement of 650', at 7182', 5864' true vertical depth, with a horizontal displacement of 1340' and again at a measured depth of 7435', at a true vertical depth of 5865', with a horizontal displacement of 1587'. This determination was made due to the rapid changes in angles and the rate of penetration decreasing slightly, with no significant increase in the amount of packstone. The base of the 1-A was encountered not encountered while drilling the lateral. The best drilling and porosity appeared to from 5' to 6' above and below the proposed target line through out the lateral. The limestone packstones at the top and in the tight streak encountered near the end of the lateral were predominately a cream to white to tan, cryptocrystalline to occasionally microcrystalline, occasionally platy, chalky, dense, very slightly anhydritic, occasionally very slightly fossiliferous to very slightly oolitic, with very rare, very thin, scattered light brown to tan, microcrystalline to very finely crystalline limestone grainstone streaks. The tight limestone packstones had no visible sample shows, while the thin grainstones had poor to occasionally moderately fair sample show. The lithology remained the in the predominately oolicastic to oolmoldic limestone grindstones as the well path continued to its termination. The lateral was terminated, at a measured depth of 7546', 5865.5' true vertical depth and a horizontal displacement of 1700' on December 31, 1997.

In tracking the well bore through the 1-A porosity bench, the intercrystalline to oolicastic to oolmoldic and minor algal porosity was very good with only very minor changes in rock classification, from predominately intercrystalline and oolitic porosities in the limestone grainstones to the tight limestone packstones in thin laminations and inclusions with in the 1-A porosity zone as well as at the top of the zone. Sample shows were predominated good and stayed fairly consistent throughout the length of the lateral. The background gases were low through the curve section, and began low in the lateral section, slowly increased through the middle of the lateral and then decreased significantly over the last 246' of the lateral. The effective or best porosity was associated with the oolicastic and oolmoldic to very minor algal limestone grainstone facies, which had fair to good intercrystalline to oolitic porosities. Very minor anhydrite plugging was noted throughout. The well produced only minor amounts of oil and gas with a very minor, very slow water flow while drilling the 1-A zone.


MOBIL, Ratherford #18-31, Southeast Laterals
GR
POROSITY
18-31
GR
POROSITY
18-42
LOWER ISMAY
GOTHIC SHALE
DESERT CREEK
1-A ZONE
TOP BEST POROSITY
1-A ZONE (89.7 DIP & 89.9 DIP)
PROJECTED BASE 1-A ZONE
HARD STREAK IN
1-A POR. ZONE ?
TVD DEPTH (FEET)
5750
5770
5790
5810
5830
5850
5870
5890
5910
5930
5950
-200
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
DISTANCE FROM BHL (FEET)

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.: 14-20-603-353
6. If Indian, Allottee or Tribe Name: NAVAJO TRIBAL
7. If Unit or CA, Agreement Designation: RATHERFORD UNIT
8. Well Name and No.: RATHERFORD 18-31
9. API Well No.: 43-037-31181
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. 18, T41S, R24E
795' FNL & 2090' FEL (NW/NE)

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.)*

BOTTOM HOLE LOCATION:

LATERAL #1 829' NORTH & 712' WEST F/SURFACE SPOT (ZONE 1B/1C).
LATERAL #2 1570' NORTH & 1668' WEST F/SURFACE SPOT (ZONE 1a).
LATERAL #3 1184' SOUTH & 1227' EAST F/SURFACE SPOT (ZONE 1a).

SEE ATTACHED.

14. I hereby certify that the foregoing is true and correct
Signed Joe Mosley for Title SHIRLEY HOUCHINS/ENV & REG TECH Date 4-3-98

(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**

04/23/98
RJK

DRILLED FOOTAGE CALCULATION FOR DIRECTIONAL AND HORIZONTAL WELLS

Unit, Well Name:	Ratherford Unit, Well 18-31
Surface Location:	795' FNL, 2090' FEL(NW/NE), Sec. 18, T. 41S, R. 24E
API Well #:	43-037-31181
Well Completion:	Horizontal, Producer, 3 Laterals

First leg description:		Lateral #1A1
Kick Off Point	KOP MD:	5782.00
End of Leg	EOL MD:	6925.00
	Footage drilled:	1143.00
Maximum Recorded Depth		5901.24

Second leg description:		Lateral #2A1
	KOP MD:	5759.00
	EOL MD:	8095.00
	Footage drilled:	2336.00
Maximum Recorded Depth		5874.75

Third leg description:		Lateral #3A1
	KOP MD:	5732.00
	EOL MD:	7546.00
	Footage drilled:	1814.00
Maximum Recorded Depth		5871.46

Total Footage Drilled (MD):	***5293.00***
Deepest point (TVD):	***5901.24***

ATTACHMENT - FORM 3160-5
RATHERFORD UNIT - WELL #18-31
14-20-603-353
NAVAJO TRIBAL
SAN JUAN, UTAH

11-26-97	MIRU NAVAJO WEST #15, RIG UP PUMP & LINES TO TANK & PIT. WELL HEAD PSI 1350# OPEN & FLOW TO TANK, CALLED NAVAJO EPA @ 10:24 ON 11-25-97, LEFT MESSAGE ON ANSWERING MACHINE OF IMPENDING INTENT TO DIG SURFACE PIT & LINE. 24 HOUR NOTICE. CALLED BLM @ 10:27 ON 11-25-97, TALK TO MIKE FLANIKEN'S ANSWERING MACHINE, MESSAGE INTENT TO PREP.
11-27-97	SITP @ 7:30 WAS 0 PSI, RIG DN WELL HEAD, NU BOPE. REL. TBG ANCHOR. POH W/TBG & BHA. RU BASIN WL UT. RIH W/GAUGE RING TO 5860'. RIH & LOG W/GAMMA RAY & CCL. SET BRIDGE PLUG @ 5700'. RIH TEST BRIDGE PLUG. SIFN.
11-29-97	SITP @ 7:30 WAS 0 PSI, FIN LD TBG. ND BOPE, DIG OUT AROUND WELLHEAD. WELD ON 9 5/8" CSG NIPPLE UP TBG HEAD. TEST TO 2000 PSI. 30 MIN. HELD OK. SIFN.
11-30-97	WELL SHUT IN. WELD ON BASE PLATE 9 5/8". IN PLACE W/READY CMT.
12-01-07	WELL SHUT IN. RIG DOWN MOVE OFF NAVAJO WEST RIG #36. CMT CELLAR PLATE IN PLACE. TURN WELL OVER TO DRLG. TOOLS.
12-08-97	MOVE IN RIG UP NAVAJO RIG #25. NOTIFIED JIM THOMPSON W/STATE OF UTAH @ 4:00 PM 12-07-97. STARTING DRILLING OPERATIONS.
12-09-97	FIN RIGGING UP, TEST BOP STACK. TIH W/RET. HD. DC'S AOHDP TO RETRIVE RBP. LATCH ON RBP. POOH WAITING ON O/S TO RETRIEVE RBP.
12-10-97	TIH W/O/S & GRAPPLE. ENGAGE RBP & POOH W/SAME. WL SET TIW BIG BORE PKR. @ 5791'. RIH W/ANCHOR LATCH ASSY. & ORIENT SUB. RAN GYRO. POOH W/ANCHOR LATCH ASSY. PU WHIPSTOCK & STARTER MILLS
12-11-97	PU WHIPSTOCK ASSY/STARTER MILL. ORIENT WHIPSTOCK TO 325 AZ. W/ANCHOR LATCH @ 242. TIH TO TOP OF TIW BIG BORE PKR @ 5791' (TOP OF PKR). SHEAR BOLT F/WHIPSTOCK & START MILLING ON 7" CSG W/STARTER MILL F / 5773-75'. POOH W/STARTER MILL. TIH W/CSG MILL & WATERMELON MILL. MILL WINDOW F/5772-5779.5'.
12-12-97	CONTINUE TO MILL WINDOW TO 5782' (1' FORMATION) PUMP SWEEP. HANG SWIVEL BACK. LD AOHDP & POOH LD MILLS. LATERAL #1A1.
12-12-97	TIH W/CURVE BLDG ASSY, TIME DRILL FROM 5782-5786', USING GYRO.
12-13-97	SLIDE/DRILL & SURVEY F/5786-5960' W/GYRO.
12-14-97	SLIDE DRILL & SURVEY F/5960-5974' TD (LAST SURVEY @ 5961', ANGLE 81.50, AZ. 320, 5899.86 TVD, VERTICAL SECT. 126.08-PROJECTED AT TD 5974', ANGLE, 320 AZ. 5900.96 TVD, VERTICAL SECTION 148.88.) CIRC SWEEP., POOH W/CURVE ASSY, TIH W/LATERAL BUILDING ASSY. SLIDE/ROTATE DRILL F/5974-6200'.
12-15-97	SLIDE & ROTATE DRILL LATERAL 1A1 F/6200-6705'.
12-16-97	SLIDE & ROTATE DRILL LATERAL 1A1 F/6705-6925' TD, LS 6925' MD, 93 DEG ANGLE, 326 DIRECTION, 5886.72 TVD, 1087' VS, PUMP HEC POLY SWEEP & CIRC HOLE CLEAN, POOH W/ 2 7/8" AOHDP.
12-17-97	RIH W/WHIPSTOCK, CUT WINDOW F/5750-5752' W/STARTING MILL, POOH, RIH W/WINDOW & WATERMELLON MILLS.
12-18-97	FINISH RIH W/MILLS, MILL WINDOW F/5750-5758 & CUT 1' FORMATION 5759', PUMP SWEEP & CIRC HOLE CLEAN, LATERAL #2A1

ATTACHMENT - FORM 3160-5
RATHERFORD UNIT - WELL #18-31
14-20-603-353
NAVAJO TRIBAL
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PAGE 2

12-19-97	FIN POOH W/MILLS, RIH W/CURVE ASSY, SLIDE DRILL CURVE 2A1 F/5792-5864'
12-20-97	SLIDE DRILL CURVE 2A1 F/5864-5646', LANDED CURVE @ 5946 TMD, 89.8 ANGLE, 324 AZ, 5873.85 TVD, 148' VS, PUMP SWEEP & CIRC HOLE CLEAN. POOH W/AOHDP & CURVE ASSY., RIH W/AOHDP, SLIDE & ROTATE DRILL LATERAL 2A1 F/5947-6237'.
12-21-97	SLIDE & ROTATE DRILL LATERAL 2A1 F/6237-7115'.
12-22-97	SLIDE & ROTATE DRILL LATERAL 2A1 F/7115-7925'.
12-23-97	SLIDE & ROTATE DRILL LATERAL 2A1 F/7925-8095' TD. 8095 TMD, 89 DEG ANGLE, 317 DEG AZ, 2289'VS, PUMP HEC POLYMER SWEEP & CIRC CLEAN. POOH W/WHIPSTOCK, FINAL REPORT LATERAL #2A1. RIH W/WHIPSTOCK FOR LATERAL #3.
12-24-97	CUT WINDOW FOR LATERAL #3A1, W/STARTING MILL F/5732-5734', CIRC CLEAN. CLOSED WELL IN, DRAIN RIG, SD FOR CHRISTMAS.
12-27-97	START UP RIG ENGINES & CHECK FOR FROZEN LINES. WO/DOWELL, RU DOWELL, POOH W/DP, DC'S & STARTER MILL, LAY DOWN MILL.
12-28-97	TIH W/PICKLE TBG. POOH. RIH W/CSG & WATERMELON MILLS, MILL WINDOW F/5732-5740'. LATERAL #3A1.
12-29-97	CONT. IN HOLE W/CURVE ASSY TO 5725'. RU GYRO DATA, TIME DRILL F/5741-45', SLIDE DRILL W/WT F/5745-5940' TD. PUMP SWEEP & CIRC CLEAN.
12-30-97	LD AOHDP, POOH W/CURVE BLDG. ASSY. & LD SAME., TIH W/LATERAL BLDG ASSY., SLIDE/ROTATE DRILL & SURVEY FROM 5940=6700'.
12-31-97	SLIDE/ROTATE DRILL & SURVEY F/6700-7546' TD. LATERAL #3A1., LAST SURVEY @ 7512' MD, 89.60 ANGLE, 134.20 AZ., 5865.27 TVD, 1666.45 VERTICAL SECTION. POOH, LD DC'S & TBG.
01-01-98	FINISH LD TOOLS, RIH W/RBP ON DP TO 4615(+/-), RELEASE F/RBP. TEST TO 600#,OK., POOH,LD DP, ND & RIG DOWN TO MOVE OFF. FINAL REPORT PENDING COMPLETION.

COMPLETION:

01-20-98	MOVE IN RIG UP NAVAJO WEST RIG #36. SICP @ 7:30 WAS 0 PSI. RIH TO 4616', RELEASE RETV. BRIDGE PLUG. POOH TO 2766'. SIFN.
01-21-98	SICP @ 7:30 WAS 250 PSI. SITP @ 7:30 WAS 0 PSI. FIN OUT OF HOLE W/TBG & BP, RIH, SET PKR @ 5651.40'. TEST TO 1000 PSI, OK. RIG UP CT UNIT, SIFN.
01-22-98	SITP @ 5:30 WAS 50 PSI. RU & RIH W/CT TO 5950'. CIRC TO BTM @ 7550'. ACIDIZE LATERAL 3A1 F/7550-5950' W/22,260 GALS OF 15% HCL ACID. POOH, RD DOWELL, SIFN.
01-23-98	SITP @ 6:30 AM WAS 600 PSI. OPEN TO TEST TANK. RU & PUMP BRINE DN TBG., WELL DEAD. RELEASE PKR., POOH, LD PKR. PICK-UP RETV TOOLS FOR WHIPSTOCK. RIH TO 5732' LATCH ONTO & RELEASE, POOH TO 3500' SIFN.
01-24-98	SIP @ 7:30 WAS 0 PSI. FIN OUT OF HOLE W/WHIPSTOCK. RIH W/RETV. WHIPSTOCK TO 5758'. SET WHIPSTOCK, POOH, RIH W/TAIL PIPE & PKR TO 5867', SET PKR @ 5651'. TEST TO 750 PSI. OK. SIFN.
01-26-98	LATERAL #2A1 -- MIRU DOWELL CTU, SITP =160#, TIH TO 8095', ACIDIZE W/32,240 GALS 15% HCL, OPEN WELL TO 160#, FLOWED 40 BBLS, DIED. SIFN.

ATTACHMENT - FORM 3160-5
RATHERFORD UNIT - WELL #18-31
14-20-603-353
NAVAJO TRIBAL
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01-27-98	SITP-120, BLED TO SLIGHT BLOW OF GAS, KILL WELL W/10# TOH W/TBG & PKR, P/U & TIH W/ RET HEAD FOR W/S, LATCH ON SHEAR, RE-ORIENTATE R/E GUIDE TIH LATCH INTO PKR PULL 10 JTS, SIFN.
01-28-98	TBG PSI=50, CSG PSI=150. RIH W/GUIBERSON UNI-VI PKR, SET & TEST TO 750#, TOP OF PKR @ 5705.32', BOTTOM OF T/P @ 5993.34'. SIFN.
01-29-98	RIG UP DOWELL CTU, STOPPED @ 6610, RIG DN SNUBBER, LOWER TBG, RIG UP SNUBBER, TIH ACIDIZE LATERAL 1A1 FROM 6925-6022', W/310 BBLS 15% HCL ACID. WELL DIED AFTER FLOWING 10 BBLS. SIFN.
01-30-98	TBG=0, CSG=190, BLED WELL INTO FLOW TANK, UNSET PKR, TOH W/CSG FLOWING OIL, KILL WELL, P/U W/S RET HD TIH LATCH ON W/S & RELEASE, TOH LD & SIFN.
01-31-98	TBG=0, CSG=0, BLED OFF IN 20 MIN., WO/PROD TBG, SWITCH OUT FLOATS, TIH W/ B/P, 1JT, P/S, S/N , TAC, & 2 7/8" TBG.
02-02-98	WHP=500, BLED DN TO 60#, START FLOWING OIL, KILL WELL W/10#, TIH W/TBG, KILL WELL 2 MORE TIMES, SIFN.
02-03-98	WHP=225#, BLED OFF IN 25 MIN. PUMP TO KILL WELL, P/U & TIH W/PUMP (2.50"X2"X24') & RODS, HUNG WELL, CK PUMP ACTION W UNIT, GOOD. RIG DN UT LEFT ON LOCATION. WELL READY FOR PRODUCTION

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

ENTITY ACTION FORM - FORM 6

OPERATOR MOBIL PRODUCING TX & NM, INC.

ADDRESS P. O. BOX 633

MIDLAND, TX 79702

OPERATOR ACCT. NO. N

ACTION CODE	CURRENT ENTITY NO.	NEW ENTITY NO.	API NUMBER	WELL NAME	WELL LOCATION QQ	SC	TP	RG	COUNTY	SPUD DATE	EFFECTIVE DATE
			43-037-31181	RATHERFORD 18-31	NW/NE	18	41S	24E	SAN JUAN	11-26-97	2-01-98

WELL 1 COMMENTS:

WELL 2 COMMENTS:

WELL 3 COMMENTS:

WELL 4 COMMENTS:

WELL 5 COMMENTS:

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

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

(3/89)

Signature Sue Moseley for SHIRLEY HOUGHTINS

Title ENV & REG TECH

Date 4-3-98

Phone No. 915) 688-2585

sperry-sun
DRILLING SERVICES
A DRESSER INDUSTRIES, INC. COMPANY

Mobil
San Juan County
Utah
Ratherford Unit
RU 18-31 - MWD Survey Leg 1

SURVEY REPORT

6 January, 1998

Survey Ref: svy2221

Sperry-Sun Drilling Services

Survey Report for RU 18-31

Mobil **Utah**
San Juan County **Ratherford Unit**

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
Gyro							
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
100.00	0.250	314.030	100.00	0.15 N	0.16 W	0.21	0.250
300.00	2.010	216.430	299.96	2.37 S	2.55 W	-0.47	1.029
500.00	3.170	220.400	499.75	9.40 S	8.22 W	-2.99	0.587
700.00	1.830	221.160	699.56	16.02 S	13.91 W	-5.14	0.670
900.00	1.370	216.880	899.48	20.33 S	17.44 W	-6.65	0.237
1100.00	1.440	224.380	1099.42	24.04 S	20.64 W	-7.86	0.098
1300.00	1.210	242.480	1299.37	26.81 S	24.27 W	-8.05	0.237
1500.00	0.970	258.410	1499.33	28.13 S	27.80 W	-7.10	0.192
1700.00	1.010	260.010	1699.30	28.78 S	31.19 W	-5.68	0.024
1900.00	1.380	264.320	1899.26	29.32 S	35.32 W	-3.76	0.190
2100.00	0.960	261.480	2099.21	29.81 S	39.38 W	-1.83	0.212
2300.00	0.550	262.300	2299.20	30.18 S	41.99 W	-0.64	0.205
2500.00	0.600	270.910	2499.19	30.29 S	43.98 W	0.41	0.050
2700.00	0.650	233.490	2699.17	30.95 S	45.94 W	1.00	0.202
2900.00	0.900	222.210	2899.16	32.79 S	47.91 W	0.62	0.146
3100.00	0.370	222.960	3099.14	34.43 S	49.41 W	0.14	0.265
3300.00	0.330	240.280	3299.14	35.19 S	50.35 W	0.05	0.056
3500.00	0.430	231.310	3499.14	35.94 S	51.43 W	0.06	0.058
3700.00	0.540	231.030	3699.13	37.00 S	52.75 W	-0.05	0.055
3900.00	0.770	230.020	3899.11	38.46 S	54.51 W	-0.24	0.115
4100.00	1.190	231.740	4099.08	40.61 S	57.17 W	-0.47	0.210
4300.00	1.230	236.120	4299.04	43.09 S	60.59 W	-0.55	0.050
4500.00	1.360	261.480	4498.99	44.64 S	64.72 W	0.55	0.291
4700.00	1.390	258.710	4698.93	45.47 S	69.44 W	2.59	0.036
4900.00	1.220	269.510	4898.88	45.96 S	73.95 W	4.77	0.149
5100.00	0.950	268.870	5098.85	46.01 S	77.74 W	6.90	0.135
5300.00	0.580	265.930	5298.83	46.11 S	80.40 W	8.34	0.186
5500.00	0.480	268.170	5498.82	46.21 S	82.25 W	9.32	0.051
5700.00	0.190	336.510	5698.82	45.94 S	83.22 W	10.11	0.223
5773.00	0.067	69.589	5771.82	45.81 S	83.23 W	10.21	0.281
MWD Survey Leg 1							
5782.00	4.400	316.910	5780.81	45.56 S	83.46 W	10.55	49.181
5792.00	8.700	316.520	5790.74	44.73 S	84.24 W	11.68	43.002
5802.00	13.800	316.400	5800.54	43.31 S	85.59 W	13.61	51.001
5812.00	19.200	314.900	5810.13	41.29 S	87.57 W	16.41	54.163
5822.00	24.200	311.900	5819.42	38.76 S	90.27 W	20.03	51.200

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 18-31

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)
5832.00	29.200	311.900	5828.35	35.76 S	93.61 W	24.40	50.000
5842.00	33.900	314.800	5836.87	32.16 S	97.41 W	29.53	49.377
5852.00	36.900	310.300	5845.02	28.25 S	101.68 W	35.18	39.727
5862.00	41.100	311.700	5852.79	24.12 S	106.42 W	41.28	42.912
5872.00	45.300	316.100	5860.08	19.37 S	111.34 W	48.00	51.664
5882.00	49.800	320.000	5866.83	13.88 S	116.27 W	55.32	53.399
5892.00	54.800	323.200	5872.94	7.68 S	121.17 W	63.21	56.034
5902.00	59.700	326.600	5878.35	0.80 S	126.00 W	71.62	56.723
5912.00	64.200	330.800	5883.06	6.74 N	130.58 W	80.42	58.288
5922.00	65.000	328.800	5887.34	14.55 N	135.12 W	89.42	19.758
5932.00	66.300	323.200	5891.47	22.10 N	140.22 W	98.53	52.644
5942.00	70.100	318.800	5895.19	29.31 N	146.06 W	107.78	55.785
5952.00	76.000	319.200	5898.10	36.52 N	152.33 W	117.29	59.124
5961.00	81.500	320.000	5899.85	43.24 N	158.05 W	126.08	61.729
5984.00	91.600	318.700	5901.24	60.64 N	172.99 W	148.89	44.273
6004.55	89.600	320.400	5901.02	76.27 N	186.32 W	169.35	12.773
6036.31	91.700	323.100	5900.66	101.21 N	205.98 W	201.05	10.769
6068.06	97.700	324.800	5898.06	126.78 N	224.59 W	232.67	19.636
6099.95	97.200	325.500	5893.93	152.73 N	242.66 W	264.29	2.682
6131.70	92.900	326.200	5891.13	178.90 N	260.41 W	295.91	13.720
6163.47	88.600	327.400	5890.72	205.47 N	277.80 W	327.65	14.052
6195.13	86.000	324.900	5892.21	231.73 N	295.41 W	359.26	11.386
6226.97	89.200	327.000	5893.54	258.08 N	313.22 W	391.07	12.017
6258.72	87.500	323.500	5894.45	284.16 N	331.31 W	422.80	12.251
6290.59	90.800	327.200	5894.93	310.36 N	349.42 W	454.65	15.554
6322.34	91.000	327.900	5894.43	337.15 N	366.45 W	486.37	2.293
6354.05	88.100	326.900	5894.68	363.86 N	383.53 W	518.04	9.674
6385.94	89.200	329.500	5895.43	390.96 N	400.33 W	549.87	8.850
6417.77	88.200	330.200	5896.15	418.47 N	416.31 W	581.58	3.835
6448.79	85.300	329.000	5897.91	445.18 N	431.98 W	612.45	10.115
6480.60	86.700	326.900	5900.13	472.07 N	448.82 W	644.13	7.921
6512.30	88.800	325.800	5901.37	498.44 N	466.37 W	675.80	7.477
6544.08	91.100	324.800	5901.40	524.57 N	484.46 W	707.58	7.892
6575.23	90.400	323.900	5900.99	549.88 N	502.62 W	738.72	3.660
6606.97	91.100	322.600	5900.58	575.30 N	521.60 W	770.44	4.651
6638.83	92.900	323.500	5899.47	600.75 N	540.74 W	802.26	6.316
6670.68	92.200	322.800	5898.05	626.21 N	559.83 W	834.06	3.107
6701.78	92.800	322.800	5896.69	650.96 N	578.61 W	865.11	1.929
6733.67	92.600	322.300	5895.19	676.25 N	597.98 W	896.94	1.687
6765.32	88.500	320.500	5894.89	700.97 N	617.72 W	928.51	14.147
6797.05	89.800	321.200	5895.36	725.58 N	637.75 W	960.16	4.653
6828.67	93.600	322.300	5894.42	750.39 N	657.31 W	991.71	12.510
6860.58	96.000	323.700	5891.75	775.79 N	676.45 W	1023.48	8.699
6892.00	94.500	326.900	5888.87	801.51 N	694.26 W	1054.76	11.209
6925.00	93.000	326.900	5886.72	829.09 N	712.24 W	1087.67	4.545

Continued...

Mobil
San Juan County

Utah
Ratherford Unit

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 325.000° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 6925.00ft.,
The Bottom Hole Displacement is 1093.01ft., in the Direction of 319.335° (True).

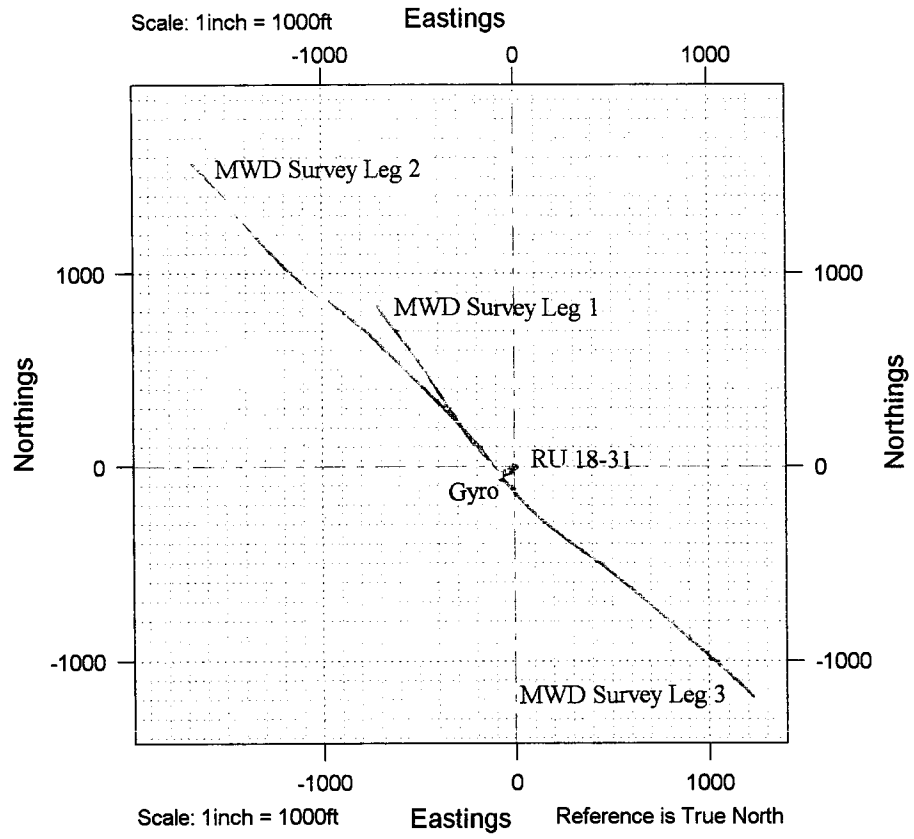
sperry-sun DRILLING SERVICES

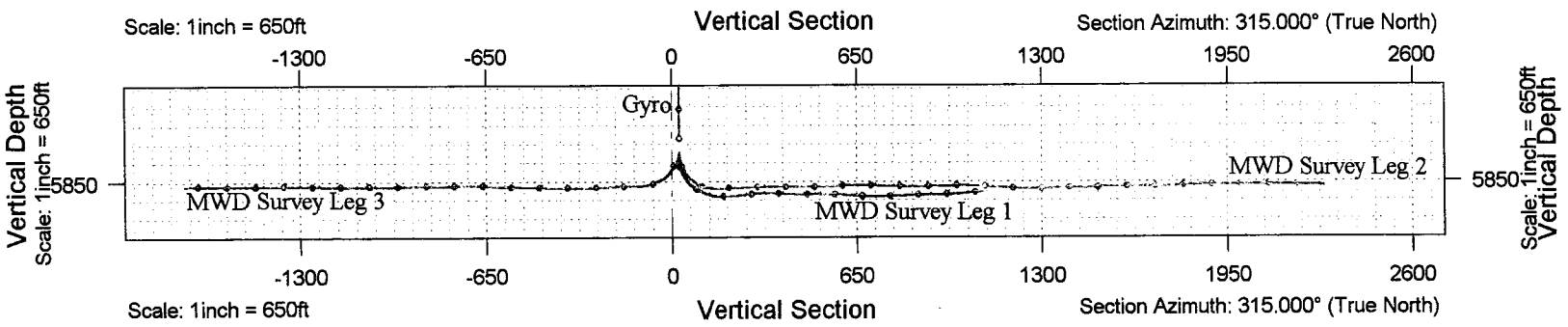
Mobil

DrillQuest

San Juan County
Utah
Ratherford Unit
RU 18-31 Leg #1, Leg #2,
& Leg #3

Mobil





Prepared:	Checked:	Approved:

sperry-sun
DRILLING SERVICES
A DRESSER INDUSTRIES, INC. COMPANY

Mobil
San Juan County
Utah
Ratherford Unit
RU 18-31 - MWD Survey Leg 2

SURVEY REPORT

6 January, 1998

Survey Ref: svy2256

Sperry-Sun Drilling Services

Survey Report for RU 18-31

Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
Gyro							
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
100.00	0.250	314.030	100.00	0.15 N	0.16 W	0.22	0.250
300.00	2.010	216.430	299.96	2.37 S	2.55 W	0.13	1.029
500.00	3.170	220.400	499.75	9.40 S	8.22 W	-0.83	0.587
700.00	1.830	221.160	699.56	16.02 S	13.91 W	-1.49	0.670
900.00	1.370	216.880	899.48	20.33 S	17.44 W	-2.04	0.237
1100.00	1.440	224.380	1099.42	24.04 S	20.64 W	-2.41	0.098
1300.00	1.210	242.480	1299.37	26.81 S	24.27 W	-1.80	0.237
1500.00	0.970	258.410	1499.33	28.13 S	27.80 W	-0.23	0.192
1700.00	1.010	260.010	1699.30	28.78 S	31.19 W	1.71	0.024
1900.00	1.380	264.320	1899.26	29.32 S	35.32 W	4.25	0.190
2100.00	0.960	261.480	2099.21	29.81 S	39.38 W	6.77	0.212
2300.00	0.550	262.300	2299.20	30.18 S	41.99 W	8.35	0.205
2500.00	0.600	270.910	2499.19	30.29 S	43.98 W	9.68	0.050
2700.00	0.650	233.490	2699.17	30.95 S	45.94 W	10.60	0.202
2900.00	0.900	222.210	2899.16	32.79 S	47.91 W	10.69	0.146
3100.00	0.370	222.960	3099.14	34.43 S	49.41 W	10.59	0.265
3300.00	0.330	240.280	3299.14	35.19 S	50.35 W	10.72	0.056
3500.00	0.430	231.310	3499.14	35.94 S	51.43 W	10.95	0.058
3700.00	0.540	231.030	3699.13	37.00 S	52.75 W	11.14	0.055
3900.00	0.770	230.020	3899.11	38.46 S	54.51 W	11.35	0.115
4100.00	1.190	231.740	4099.08	40.61 S	57.17 W	11.71	0.210
4300.00	1.230	236.120	4299.04	43.09 S	60.59 W	12.37	0.050
4500.00	1.360	261.480	4498.99	44.64 S	64.72 W	14.20	0.291
4700.00	1.390	258.710	4698.93	45.47 S	69.44 W	16.95	0.036
4900.00	1.220	269.510	4898.88	45.96 S	73.95 W	19.79	0.149
5100.00	0.950	268.870	5098.85	46.01 S	77.74 W	22.43	0.135
5300.00	0.580	265.930	5298.83	46.11 S	80.40 W	24.25	0.186
5500.00	0.480	268.170	5498.82	46.21 S	82.25 W	25.48	0.051
5700.00	0.190	336.510	5698.82	45.94 S	83.22 W	26.36	0.223
5750.00	0.073	15.107	5748.82	45.83 S	83.24 W	26.46	0.281
MWD Survey Leg 2							
5759.00	4.000	315.000	5757.81	45.60 S	83.47 W	26.77	44.043
5769.00	8.100	320.370	5767.75	44.81 S	84.16 W	27.83	41.344
5779.00	12.900	321.990	5777.58	43.39 S	85.30 W	29.64	48.086
5789.00	18.000	322.780	5787.22	41.28 S	86.92 W	32.28	51.042
5799.00	22.800	323.750	5796.59	38.48 S	89.00 W	35.72	48.117

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 18-31

Mobil **Utah**
San Juan County **Ratherford Unit**

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5809.00	26.600	323.560	5805.67	35.12 S	91.48 W	39.85	38.008
5819.00	32.100	323.800	5814.38	31.17 S	94.38 W	44.70	55.012
5829.00	36.500	324.700	5822.64	26.60 S	97.67 W	50.26	44.290
5839.00	41.500	326.000	5830.41	21.42 S	101.24 W	56.45	50.663
5849.00	45.900	327.400	5837.64	15.64 S	105.03 W	63.21	45.048
5859.00	49.400	329.100	5844.37	9.36 S	108.92 W	70.40	37.184
5869.00	53.700	329.300	5850.59	2.63 S	112.93 W	77.99	43.028
5879.00	58.100	328.800	5856.20	4.47 N	117.19 W	86.02	44.194
5889.00	62.700	328.200	5861.13	11.88 N	121.73 W	94.47	46.295
5899.00	67.900	327.700	5865.31	19.57 N	126.55 W	103.32	52.198
5909.00	73.300	327.000	5868.63	27.51 N	131.64 W	112.54	54.402
5919.00	78.400	326.900	5871.08	35.64 N	136.92 W	122.02	51.009
5946.00	89.800	324.400	5873.85	57.77 N	152.06 W	148.37	43.212
5968.00	92.500	323.300	5873.41	75.53 N	165.03 W	170.10	13.252
5998.96	93.200	320.200	5871.87	99.81 N	184.17 W	200.80	10.253
6030.78	90.800	317.900	5870.76	123.82 N	205.01 W	232.52	10.443
6062.51	91.200	317.400	5870.20	147.27 N	226.38 W	264.21	2.018
6094.34	93.200	317.500	5868.98	170.70 N	247.89 W	295.99	6.291
6126.17	91.200	318.100	5867.76	194.26 N	269.25 W	327.75	6.560
6157.98	88.700	317.900	5867.79	217.90 N	290.54 W	359.52	7.884
6189.77	90.300	317.400	5868.06	241.39 N	311.95 W	391.27	5.273
6221.55	90.200	316.500	5867.92	264.61 N	333.64 W	423.03	2.849
6253.41	89.500	316.000	5868.01	287.63 N	355.68 W	454.88	2.700
6284.05	90.600	314.700	5867.98	309.42 N	377.21 W	485.52	5.558
6315.84	91.300	314.600	5867.45	331.76 N	399.82 W	517.31	2.224
6347.69	92.000	315.800	5866.54	354.35 N	422.25 W	549.14	4.360
6379.52	92.500	316.000	5865.29	377.19 N	444.39 W	580.94	1.692
6411.28	91.900	314.700	5864.07	399.77 N	466.69 W	612.68	4.505
6443.00	90.400	314.900	5863.43	422.12 N	489.19 W	644.39	4.771
6474.84	89.200	314.200	5863.54	444.45 N	511.88 W	676.23	4.363
6506.66	89.400	315.800	5863.93	466.95 N	534.38 W	708.05	5.067
6537.63	88.900	315.800	5864.39	489.15 N	555.97 W	739.01	1.614
6567.98	89.300	315.100	5864.87	510.78 N	577.26 W	769.36	2.656
6599.70	88.300	313.000	5865.53	532.82 N	600.05 W	801.06	7.331
6631.45	88.800	313.100	5866.34	554.49 N	623.24 W	832.78	1.606
6662.45	89.500	313.500	5866.80	575.75 N	645.80 W	863.77	2.601
6694.20	90.300	314.900	5866.85	597.88 N	668.56 W	895.51	5.079
6725.95	93.300	315.800	5865.85	620.46 N	690.86 W	927.24	9.864
6757.70	90.800	313.000	5864.72	642.65 N	713.53 W	958.96	11.818
6789.60	90.900	314.200	5864.24	664.65 N	736.63 W	990.85	3.774
6821.37	90.700	313.500	5863.80	686.65 N	759.54 W	1022.61	2.291
6852.18	87.700	311.400	5864.23	707.44 N	782.26 W	1053.38	11.885
6884.03	86.600	309.800	5865.81	728.15 N	806.41 W	1085.10	6.091
6915.21	86.300	307.900	5867.75	747.67 N	830.65 W	1116.04	6.158
6947.04	86.600	306.800	5869.72	766.94 N	855.90 W	1147.52	3.576

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 18-31

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)
6977.74	86.400	306.500	5871.59	785.23 N	880.49 W	1177.84	1.173
7009.56	87.100	306.600	5873.39	804.15 N	906.01 W	1209.26	2.222
7041.32	89.400	306.300	5874.36	823.01 N	931.54 W	1240.65	7.303
7073.09	89.200	305.400	5874.75	841.61 N	957.29 W	1272.02	2.902
7104.99	90.900	305.200	5874.72	860.05 N	983.32 W	1303.46	5.366
7136.75	92.800	304.900	5873.70	878.28 N	1009.31 W	1334.72	6.056
7168.53	92.300	304.700	5872.29	896.39 N	1035.38 W	1365.97	1.694
7200.20	89.400	305.200	5871.82	914.53 N	1061.33 W	1397.15	9.292
7232.04	90.200	307.900	5871.93	933.49 N	1086.91 W	1428.64	8.844
7263.80	91.500	310.700	5871.46	953.60 N	1111.48 W	1460.24	9.719
7295.58	93.100	313.000	5870.18	974.79 N	1135.13 W	1491.94	8.811
7327.34	93.100	312.800	5868.46	996.38 N	1158.36 W	1523.63	0.629
7359.06	90.900	312.400	5867.36	1017.83 N	1181.70 W	1555.30	7.049
7390.94	89.600	316.100	5867.22	1040.07 N	1204.53 W	1587.17	12.301
7422.83	89.500	316.300	5867.47	1063.09 N	1226.60 W	1619.05	0.701
7453.85	90.200	316.100	5867.55	1085.48 N	1248.07 W	1650.07	2.347
7485.64	90.800	316.300	5867.27	1108.42 N	1270.07 W	1681.85	1.989
7517.33	89.800	318.600	5867.10	1131.77 N	1291.50 W	1713.51	7.914
7549.10	90.600	318.400	5866.99	1155.56 N	1312.55 W	1745.22	2.596
7580.24	94.000	320.000	5865.74	1179.11 N	1332.88 W	1776.24	12.065
7611.98	93.800	319.800	5863.59	1203.33 N	1353.28 W	1807.79	0.890
7643.86	91.100	319.700	5862.22	1227.64 N	1373.85 W	1839.53	8.475
7675.71	90.600	320.700	5861.75	1252.10 N	1394.24 W	1871.25	3.510
7706.81	90.700	321.100	5861.40	1276.24 N	1413.85 W	1902.18	1.326
7738.72	91.600	320.900	5860.76	1301.03 N	1433.93 W	1933.91	2.889
7770.37	89.200	319.500	5860.54	1325.34 N	1454.19 W	1965.42	8.779
7802.09	88.900	319.800	5861.06	1349.52 N	1474.72 W	1997.04	1.337
7833.70	89.800	319.700	5861.42	1373.64 N	1495.14 W	2028.53	2.865
7865.53	91.900	321.100	5860.95	1398.16 N	1515.43 W	2060.22	7.929
7897.34	90.900	318.900	5860.17	1422.52 N	1535.87 W	2091.89	7.595
7929.11	89.200	317.900	5860.14	1446.28 N	1556.96 W	2123.61	6.208
7960.94	87.700	318.400	5861.00	1469.98 N	1578.19 W	2155.38	4.967
7992.67	88.100	318.400	5862.17	1493.69 N	1599.24 W	2187.03	1.261
8024.41	89.400	317.500	5862.86	1517.25 N	1620.49 W	2218.72	4.981
8062.00	88.500	317.900	5863.55	1545.05 N	1645.79 W	2256.26	2.620
8095.00	89.000	317.900	5864.27	1569.53 N	1667.91 W	2289.21	1.515

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

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

Based upon Minimum Curvature type calculations, at a Measured Depth of 8095.00ft.,
The Bottom Hole Displacement is 2290.27ft., in the Direction of 313.259° (True).

spenny-sun
DRILLING SERVICES
A DRESSER INDUSTRIES, INC. COMPANY

Mobil
San Juan County
Utah
Ratherford Unit
RU 18-31 - MWD Survey Leg 3

SURVEY REPORT

6 January, 1998

Survey Ref: svy2258

Sperry-Sun Drilling Services

Survey Report for RU 18-31

Mobil **Utah**
San Juan County **Ratherford Unit**

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
Gyro							
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
100.00	0.250	314.030	100.00	0.15 N	0.16 W	-0.22	0.250
300.00	2.010	216.430	299.96	2.37 S	2.55 W	-0.43	1.029
500.00	3.170	220.400	499.75	9.40 S	8.22 W	-0.25	0.587
700.00	1.830	221.160	699.56	16.02 S	13.91 W	-0.36	0.670
900.00	1.370	216.880	899.48	20.33 S	17.44 W	-0.29	0.237
1100.00	1.440	224.380	1099.42	24.04 S	20.64 W	-0.35	0.098
1300.00	1.210	242.480	1299.37	26.81 S	24.27 W	-1.35	0.237
1500.00	0.970	258.410	1499.33	28.13 S	27.80 W	-3.21	0.192
1700.00	1.010	260.010	1699.30	28.78 S	31.19 W	-5.40	0.024
1900.00	1.380	264.320	1899.26	29.32 S	35.32 W	-8.21	0.190
2100.00	0.960	261.480	2099.21	29.81 S	39.38 W	-11.01	0.212
2300.00	0.550	262.300	2299.20	30.18 S	41.99 W	-12.76	0.205
2500.00	0.600	270.910	2499.19	30.29 S	43.98 W	-14.22	0.050
2700.00	0.650	233.490	2699.17	30.95 S	45.94 W	-15.30	0.202
2900.00	0.900	222.210	2899.16	32.79 S	47.91 W	-15.62	0.146
3100.00	0.370	222.960	3099.14	34.43 S	49.41 W	-15.72	0.265
3300.00	0.330	240.280	3299.14	35.19 S	50.35 W	-15.95	0.056
3500.00	0.430	231.310	3499.14	35.94 S	51.43 W	-16.30	0.058
3700.00	0.540	231.030	3699.13	37.00 S	52.75 W	-16.62	0.055
3900.00	0.770	230.020	3899.11	38.46 S	54.51 W	-17.04	0.115
4100.00	1.190	231.740	4099.08	40.61 S	57.17 W	-17.70	0.210
4300.00	1.230	236.120	4299.04	43.09 S	60.59 W	-18.71	0.050
4500.00	1.360	261.480	4498.99	44.64 S	64.72 W	-20.88	0.291
4700.00	1.390	258.710	4698.93	45.47 S	69.44 W	-23.97	0.036
4900.00	1.220	269.510	4898.88	45.96 S	73.95 W	-27.11	0.149
5100.00	0.950	268.870	5098.85	46.01 S	77.74 W	-29.98	0.135
5300.00	0.580	265.930	5298.83	46.11 S	80.40 W	-31.95	0.186
5500.00	0.480	268.170	5498.82	46.21 S	82.25 W	-33.30	0.051
5700.00	0.190	336.510	5698.82	45.94 S	83.22 W	-34.22	0.223
MWD Survey Leg 3							
5732.00	0.100	352.090	5730.82	45.86 S	83.25 W	-34.29	0.305
5741.00	3.900	130.000	5739.81	46.05 S	83.01 W	-33.99	44.164
5751.00	8.400	133.570	5749.75	46.77 S	82.22 W	-32.92	45.141
5761.00	13.400	134.730	5759.57	48.09 S	80.87 W	-31.04	50.046
5771.00	19.200	135.310	5769.16	50.08 S	78.89 W	-28.24	58.022
5781.00	24.300	135.660	5778.44	52.72 S	76.29 W	-24.56	51.016
5791.00	28.600	135.900	5787.40	55.91 S	73.19 W	-20.12	43.013
5801.00	30.800	136.070	5796.08	59.47 S	69.74 W	-15.20	22.016
5811.00	33.800	136.200	5804.53	63.33 S	66.04 W	-9.89	30.008
5821.00	36.500	136.310	5812.71	67.48 S	62.06 W	-4.16	27.007

Continued...

Mobil **Utah**
San Juan County **Ratherford Unit**

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5831.00	40.700	136.400	5820.52	72.00 S	57.76 W	2.04	42.004
5841.00	45.100	134.200	5827.85	76.83 S	52.97 W	8.81	46.473
5851.00	50.400	134.000	5834.57	81.98 S	47.65 W	16.19	53.021
5861.00	55.200	133.100	5840.61	87.47 S	41.88 W	24.14	48.532
5871.00	59.100	132.500	5846.04	93.17 S	35.72 W	32.53	39.324
5881.00	62.600	134.900	5850.91	99.21 S	29.41 W	41.24	40.793
5891.00	66.200	136.700	5855.23	105.67 S	23.12 W	50.21	39.489
5901.00	70.500	137.900	5858.91	112.50 S	16.82 W	59.43	44.422
5911.00	75.900	138.600	5861.80	119.64 S	10.45 W	68.90	54.414
5940.00	90.000	142.100	5865.36	141.75 S	7.86 E	97.13	50.067
5976.00	89.700	139.100	5865.45	169.57 S	30.70 E	132.52	8.375
6007.00	87.300	136.700	5866.26	192.56 S	51.48 E	163.21	10.946
6039.00	87.800	134.900	5867.63	215.47 S	73.76 E	195.01	5.833
6070.00	88.200	131.200	5868.71	236.62 S	96.40 E	225.94	11.998
6102.00	88.200	129.600	5869.72	257.35 S	120.76 E	257.93	4.998
6134.00	88.400	130.300	5870.67	277.89 S	145.28 E	289.91	2.274
6165.00	89.600	131.400	5871.21	298.16 S	168.72 E	320.90	5.251
6197.00	89.500	128.900	5871.46	318.79 S	193.18 E	352.90	7.819
6228.00	90.600	128.900	5871.43	338.26 S	217.30 E	383.89	3.548
6260.00	90.700	127.900	5871.07	358.13 S	242.38 E	415.88	3.140
6292.00	91.100	127.300	5870.57	377.65 S	267.73 E	447.85	2.253
6323.00	91.200	126.300	5869.94	396.22 S	292.55 E	478.79	3.241
6355.00	91.800	125.100	5869.11	414.89 S	318.52 E	510.69	4.191
6387.00	91.500	124.500	5868.18	433.14 S	344.79 E	542.54	2.096
6418.00	91.300	125.900	5867.43	451.01 S	370.11 E	573.42	4.561
6450.00	92.500	125.200	5866.37	469.60 S	396.13 E	605.31	4.341
6482.00	93.400	125.900	5864.72	488.18 S	422.13 E	637.17	3.561
6514.00	90.200	126.300	5863.71	507.02 S	447.97 E	669.08	10.078
6545.00	91.400	128.900	5863.28	525.93 S	472.53 E	700.04	9.236
6577.00	88.500	128.600	5863.31	545.96 S	497.48 E	732.03	9.111
6609.00	88.200	128.800	5864.23	565.96 S	522.45 E	764.01	1.127
6641.00	91.100	130.300	5864.43	586.33 S	547.12 E	796.00	10.203
6672.00	89.400	129.100	5864.29	606.13 S	570.97 E	827.00	6.712
6703.00	89.700	128.600	5864.53	625.58 S	595.11 E	857.99	1.881
6735.00	90.400	129.800	5864.51	645.80 S	619.91 E	889.99	4.341
6767.00	88.800	129.600	5864.73	666.24 S	644.53 E	921.99	5.039
6799.00	87.400	130.000	5865.79	686.71 S	669.10 E	953.97	4.550
6830.00	88.300	130.200	5866.95	706.67 S	692.79 E	984.95	2.974
6862.00	90.500	130.300	5867.29	727.34 S	717.21 E	1016.94	6.882
6893.00	90.400	131.000	5867.05	747.54 S	740.73 E	1047.94	2.281
6925.00	90.200	130.200	5866.88	768.36 S	765.03 E	1079.94	2.577
6956.00	91.100	131.900	5866.53	788.72 S	788.40 E	1110.93	6.205
6988.00	89.500	131.000	5866.36	809.90 S	812.39 E	1142.92	5.737
7020.00	88.600	129.800	5866.89	830.63 S	836.75 E	1174.91	4.687
7052.00	91.300	131.300	5866.92	851.44 S	861.06 E	1206.91	9.652

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 18-31

Mobil **Utah**
San Juan County **Ratherford Unit**

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
7084.00	92.300	131.000	5865.91	872.48 S	885.15 E	1238.88	3.262
7116.00	90.400	131.000	5865.16	893.47 S	909.29 E	1270.87	5.937
7147.00	90.200	131.900	5865.00	913.99 S	932.53 E	1301.86	2.974
7179.00	91.200	132.100	5864.60	935.40 S	956.30 E	1333.84	3.187
7211.00	89.500	130.900	5864.41	956.60 S	980.27 E	1365.82	6.503
7243.00	88.700	131.000	5864.91	977.57 S	1004.44 E	1397.81	2.519
7274.00	89.100	131.900	5865.51	998.09 S	1027.67 E	1428.80	3.177
7306.00	91.500	132.600	5865.34	1019.60 S	1051.35 E	1460.77	7.812
7338.00	89.000	131.700	5865.20	1041.07 S	1075.07 E	1492.74	8.303
7370.00	88.900	131.900	5865.79	1062.40 S	1098.92 E	1524.72	0.699
7401.00	90.400	132.400	5865.98	1083.20 S	1121.91 E	1555.70	5.100
7433.00	91.500	133.700	5865.45	1105.04 S	1145.29 E	1587.65	5.321
7465.00	90.400	134.400	5864.91	1127.29 S	1168.28 E	1619.56	4.074
7497.00	89.000	133.500	5865.08	1149.50 S	1191.32 E	1651.49	5.201
7512.00	89.600	134.200	5865.27	1159.89 S	1202.14 E	1666.45	6.146
7546.00	89.600	134.200	5865.50	1183.59 S	1226.51 E	1700.36	0.000

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

The Dogleg Severity is in Degrees per 100ft.
Vertical Section is from Well and calculated along an Azimuth of 130.000° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 7546.00ft.,
The Bottom Hole Displacement is 1704.47ft., in the Direction of 133.980° (True).

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.: 14-20-603-353

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

7. UNIT AGREEMENT NAME: RATHERFORD UNIT

8. FARM OR LEASE NAME, WELL NO.: RATHERFORD 18-31

9. API WELL NO.: 43-037-31181

10. FIELD AND POOL, OR WILDCAT: GREATER ANETH

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: SEC. 18, T41S, R24E

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

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 *(Report location clearly and in accordance with any State requirements)**
At surface: 795' FNL & 2090' FEL
At top prod. interval reported below: *#37
At total depth: *#37

14. PERMIT NO.:
DATE ISSUED: 11-04-97

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
12-08-97	01-01-98	02-03-98	5087' GR/5100' KB	

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
**#37			→	X	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION - TOP, BOTTOM, NAME (MD AND TVD)*
**#37 DSCR

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 K55	128'	18"	SURFACE / 150 SXS	
9 5/8"	36# K55	1613'	12 1/4"	SURFACE / 400 SXS	
7"	23 & 26# K55	5943'	8 3/4"	2000' CALC	

29. LINER RECORD

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

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2 3/8"	5640'	

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

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

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
5950-7550'	LAT #3A1/22260 GALS 15% HCL
5759-8095'	LAT #2A1/32240 GALS 15% HCL
6022-6925'	LAT #1A1/9610 GALS 15% HCL

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD *(Flowing, gas lift, pumping - size and type of pump)*	WELL STATUS *(Producing or shut-in)*
2-3-98	PUMPING / 2.50"X2"X24'	PRODUCING

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL - BBL.	GAS - MCF.	WATER - BBL.	GAS - OIL RATIO
2-4-98	24			539	189	62	351

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

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 Moseley for TITLE SHIRLEY HOUCHINS/ENV & REG TECH DATE 4-03-98

*(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 jurisdicton.

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.
** #4		LAT #1A1	829' N & 712' W F/SURFACE SPOT
		LAT #2A1	1570' N & 1668' W F/SURFACE SPOT
		LAT #3A1	1184' S & 1227' E F/SURFACE SPOT
**#20, 21 & 24		LAT #1A1	(5782-6925' TMD)(5781-5887' TVD)
		LAT #2A1	(5759-8095' TMD)(5756-5864' TVD)
		LAT #3A1	(5732-7546' TMD)(5731-5866' TVD)

38. GEOLOGIC MARKERS

NAME	TOP	
	MEAS. DEPTH	TRUE VERT. DEPTH

U.S. GOVERNMENT PRINTING OFFICE: 1992-774-672

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.: 14-20-603-353
6. If Indian, Allottee or Tribe Name: NAVAJO TRIBAL
7. If Unit or CA, Agreement Designation: RATHERFORD UNIT
8. Well Name and No.: RATHERFORD 18-31
9. API Well No.: 43-037-31181
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. 18, T41S, R24E
795' FNL & 2090' FEL

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	[X] 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.)*

LATERAL #1 829' NORTH & 712' WEST F/SURFACE SPOT (ZONE 1b/1c).
LATERAL #2 1570' NORTH & 1668' WEST F/SURFACE SPOT (ZONE 1A).
LATERAL #3 1184' SOUTH & 1227' EAST F/SURFACE SPOT (ZONE 1a).

12-08-97 -- 2-03-98 HORIZONTAL RECOMPLETION.

ATTACHED FORM 15

14. I hereby certify that the foregoing is true and correct
Signed Sue Mosley for Title SHIRLEY HOUCHINS/ENV & REG TECH Date 1-28-99

(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 3-1-99 RJK

ExxonMobil Production Compa
U.S. West
P.O. Box 4358
Houston, Texas 77210-4358

June 27, 2001

ExxonMobil
Production

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

Change of Name – Mobil Oil Corporation to
ExxonMobil Oil Corporation

Dear Mr. Thompson

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

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

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

The Federal Identification Number for MOC (13-5401570) will remain the same for EMOC.

A copy of the Certification, Bond Rider and a list of wells are attached.

If you have any questions please feel free to call Joel Talavera at 713-431-1010

Very truly yours,

Charlotte H. Harper

Charlotte H. Harper
Permitting Supervisor

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

RECEIVED
OIL, GAS AND MINING

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
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 1 DM
NATV AM MIN COORD
SOLID MIN TEAM
PETRO MGMT TEAM 2
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

BS 7/12/2001 GN 543 File

June 27, 2001

ExxonMobil Production

Certified Mail
Return Receipt Requested

RECEIVED #477 JUL 9 - 2001 Navajo Region Office RES - Minerals Section

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

RECEIVED JUL 05 2001 NAVAJO REGION OFFICE BRANCH OF REAL ESTATE SERVICES

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

NOTE: Check forwarded to Ella Isasi

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

NW Bond

FEDERAL INSURANCE COMPANY RIDER
to be attached to and form a part of

BOND NO 8027 31 97
wherein
Mobil Oil Corporation and Mobil Exploration and Producing U.S., Inc. is named as Principal and

FEDERAL INSURANCE COMPANY AS SURETY,

in favor of **United States of America, Department of the Interior Bureau of Indian Affairs**

in the amount of **$150,000.00**
bond date: 11/01/65

IT IS HEREBY UNDERSTOOD AND AGREED THAT effective **June 1, 2001** the name of the Principal is changed

FROM: **Mobil Oil Corporation and Mobil Exploration and Producing U.S., Inc.**

TO : **ExxonMobil Oil Corporation**

All other terms and conditions of this Bond are unchanged.

Signed, sealed and dated this 12th of June, 2001.

ExxonMobil Oil Corporation
By :

FEDERAL INSURANCE COMPANY
By: Mary Pierson
Mary Pierson, Attorney-in-fact

Chubb Surety

POWER OF ATTORNEY

Federal Insurance Company
Vigilant Insurance Company
Pacific Indemnity Company

Attn.: Surety Department
15 Mountain View Road
Warren, NJ 07059

Know All by These Presents, That **FEDERAL INSURANCE COMPANY,** an Indiana corporation, **VIGILANT INSURANCE COMPANY,** a New York corporation, and **PACIFIC INDEMNITY COMPANY,** a Wisconsin corporation, do each hereby constitute and appoint R.F. Bobo, Mary Pierson, Philana Berros, and Jody E. Specht of Houston, Texas----------

each as their true and lawful Attorney-in-Fact to execute under such designation in their names and to affix their corporate seals to and deliver for and on their behalf as surety thereon or otherwise, bonds and undertakings and other writings obligatory in the nature thereof (other than bail bonds) given or executed in the course of business, and any instruments amending or altering the same, and consents to the modification or alteration of any instrument referred to in said bonds or obligations.

In Witness Whereof, said **FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY,** and **PACIFIC INDEMNITY COMPANY** have each executed and attested these presents and affixed their corporate seals on this 10th day of May, 2001.

Kenneth C. Wendel, Assistant Secretary

Frank E. Robertson, Vice President

STATE OF NEW JERSEY
County of Somerset } ss.

On this 10th day of May, 2001, before me, a Notary Public of New Jersey, personally came Kenneth C. Wendel, to me known to be Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY, the companies which executed the foregoing Power of Attorney, and the said Kenneth C. Wendel being by me duly sworn, did depose and say that he is Assistant Secretary of FEDERAL INSURANCE COMPANY, VIGILANT INSURANCE COMPANY, and PACIFIC INDEMNITY COMPANY and knows the corporate seals thereof, that the seals affixed to the foregoing Power of Attorney are such corporate seals and were thereto affixed by authority of the By-Laws of said Companies; and that he signed said Power of Attorney as Assistant Secretary of said Companies by like authority; and that he is acquainted with Frank E. Robertson, and knows him to be Vice President of said Companies; and that the signature of Frank E. Robertson, subscribed to said Power of Attorney is in the genuine handwriting of Frank E. Robertson, and was thereto subscribed by authority of said Companies and in deponent's presence.

Notarial Seal

KAREN A. PRICE NOTARY PUBLIC NEW JERSEY

Karen A. Price
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 JAN. 14, 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

F010601000187

CSC 45

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

CSC
CSC

5184334741

06/01 '01 09:01 NO.411 02/02
06/01 '01 09:06 NO.155 04/04

F010601000187

CSC 45

CERTIFICATE OF AMENDMENT

OF

MOBIL OIL CORPORATION

Under Section 805 of the Business Corporation Law

SAC

100 cc

STATE OF NEW YORK
DEPARTMENT OF STATE
FILED JUN 01 2001
TAX $
BY: SAC
NY | Albany

Filed by: EXXONMOBIL CORPORATION
(Name)

5959 Las Colinas Blvd.
(Mailing address)

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

Cust Ref # 165578MPJ

RECEIVED
JUL 05 2001
DIVISION OF CORPORATIONS
BUSINESS AND REAL ESTATE SERVICES

010601000195

State of New York } ss:
Department of State }

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

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
RATHERFORD UNIT 17-33	17-41S-24E	43-037-31134	6280	INDIAN	OW	P
RATHERFORD UNIT 17-11	17-41S-24E	43-037-31169	6280	INDIAN	OW	S
RATHERFORD UNIT 17-22	17-41S-24E	43-037-31170	6280	INDIAN	OW	P
RATHERFORD UNIT 17-42	17-41S-24E	43-037-31177	6280	INDIAN	OW	P
RATHERFORD UNIT 17-31	17-41S-24E	43-037-31178	6280	INDIAN	OW	P
18-11	18-41S-24E	43-037-15733	6280	INDIAN	OW	P
RATHERFORD 18-13	18-41S-24E	43-037-15734	6280	INDIAN	OW	P
RATHERFORD UNIT 18-44	18-41S-24E	43-037-31045	6280	INDIAN	OW	P
RATHERFORD UNIT 18-24	18-41S-24E	43-037-31079	6280	INDIAN	OW	P
RATHERFORD UNIT 18-33	18-41S-24E	43-037-31135	6280	INDIAN	OW	P
RATHERFORD UNIT 18-31	18-41S-24E	43-037-31181	6280	INDIAN	OW	P
RATHERFORD UNIT 18-42	18-41S-24E	43-037-31182	6280	INDIAN	OW	P
RATHERFORD UNIT 18-22	18-41S-24E	43-037-31236	6280	INDIAN	OW	P
19-42	19-41S-24E	43-037-30916	6280	INDIAN	OW	P
RATHERFORD UNIT 19-22	19-41S-24E	43-037-31046	6280	INDIAN	OW	P
RATHERFORD UNIT 19-31	19-41S-24E	43-037-31047	6280	INDIAN	OW	P
RATHERFORD UNIT 19-33	19-41S-24E	43-037-31048	6280	INDIAN	OW	P
RATHERFORD UNIT 19-11	19-41S-24E	43-037-31080	6280	INDIAN	OW	P
RATHERFORD UNIT 19-44	19-41S-24E	43-037-31081	6280	INDIAN	OW	P
RATHERFORD 19-97	19-41S-24E	43-037-31596	6280	INDIAN	OW	P

OPERATOR CHANGES DOCUMENTATION

Enter date after each listed item is completed

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 PO Box 4358 Houston, TX 77210-4358	N2700-Resolute Natural Resources Company 1675 Broadway, Suite 1950 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

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: 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

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 Dwt 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

7. UNIT or CA AGREEMENT NAME: UTU68931A

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

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
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.

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

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

(See Instructions on Reverse Side)

(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

FEDERAL APPROVAL OF THIS ACTION IS NECESSARY

FORM 9

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

5.LEASE DESIGNATION AND SERIAL NUMBER: 14-20-603-353

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: NAVAJO

7.UNIT or CA AGREEMENT NAME: RATHERFORD

1. TYPE OF WELL Oil Well

8. WELL NAME and NUMBER: RATHERFORD UNIT 18-31

2. NAME OF OPERATOR: RESOLUTE NATURAL RESOURCES

9. API NUMBER: 43037311810000

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: 0795 FNL 2090 FEL
QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: Qtr/Qtr: NWNE Section: 18 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: 2/12/2014	☐ ACIDIZE	☐ ALTER CASING	☐ CASING REPAIR
	☐ CHANGE TO PREVIOUS PLANS	☐ CHANGE TUBING	☐ CHANGE WELL NAME
	☐ CHANGE WELL STATUS	☐ COMMINGLE PRODUCING FORMATIONS	☐ CONVERT WELL TYPE
☐ SUBSEQUENT REPORT Date of Work Completion:	☐ DEEPEN	☐ FRACTURE TREAT	☐ NEW CONSTRUCTION
	☐ OPERATOR CHANGE	☐ PLUG AND ABANDON	☐ PLUG BACK
	☐ PRODUCTION START OR RESUME	☐ RECLAMATION OF WELL SITE	☐ RECOMPLETE DIFFERENT FORMATION
☐ SPUD REPORT Date of Spud:	☐ REPERFORATE CURRENT FORMATION	☐ SIDETRACK TO REPAIR WELL	☐ TEMPORARY ABANDON
	✓ TUBING REPAIR	☐ VENT OR FLARE	☐ WATER DISPOSAL
☐ DRILLING REPORT Report Date:	☐ 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.

Resolute proposes an attempt to repair the tubing/stuck ESP in the subject well to enhance oil production. The proposed procedure and wellbore schematic are attached.

Accepted by the Utah Division of Oil, Gas and Mining

Date: February 13, 2014

By: Dark K Quist

NAME (PLEASE PRINT)	PHONE NUMBER	TITLE
Sherry Glass	303 573-4886	Sr Regulatory Technician

SIGNATURE	DATE
N/A	2/11/2014

RECEIVED: Feb. 11, 2014

RESOLUTE
NATURAL RESOURCES

RU 18-31
7995' FNL, 2090' FEL
NWNE section 18-T41S-R24E
43-037-31181

Stuck Pump Repair

Recommendation

The production engineer and operations staff at Ratherford Unit recommend moving a workover rig onto triple lateral producing well **RU 18-31** to repair a stuck pump. The workover is expected to restore production to 123 BOPD + 142 BWPD + 81 MCF.

Job Scope

Job Scope includes: PT tbg, POOH with rods & pump; POOH Tubing & BHA, Make bit & scraper trip, RIH bha for top hold down pump, then new insert pump and rods.
(Acid planned? N; Change of tubing size? /N; Paraffin expected? /N)

Work History

11/6/2006: Rod Repair - PT tbg - OK; Pulled rods, 3/4 body break on #20; Re-ran rods w/29 new 3/4 & 4 new 7/8, plus new pump.
12/20/2006: Rod Repair - Pulled rods, 3/4 body break at #50; Fished & pulled remaining rods & 2" insert pump; Ran new rods & 6 x 1-1/2 SB's.
9/24/2007: Tbg & Pump Repair - PT tubing - failed; Pulled rods, pull rod was stuck; LD all tubing; Ran scraper to top of lateral at 5740'; Ran bha & new tbg; Ran new S87 rods & new 2" insert pump.
5/29/2009: Tubing Repair - Pulled & stood back rods & pump, Drop SV & PT tbg - failed/ vac; Pulled 47 stds, PT tbg - Good at 1500 psi; Went back to btm - tbg now tests OK at 1500 psi; Set pkr at 30', change wellhead out; Retrieve & LD pkr; Re-ran tbg & bha, set TAC; ran pump & rods & land, PT tbg - on vac; POH & stand back rods & pump; PU tbg & set pkr at 30'; PU on 7", changed tbg spool, test prim & sec seals - good; LD pkr & test jt; PT tbg w/90 jts out, blew hole in ttbg at 1800 psi - IPC jt; Replaced IPC, re-ran bha & tbg, set TAC, landed tbg, NU WH; Ran 2" insert pump & new T-66 rods, seat pump, PT tbg to 1000 psi, LS to 600 psi - good; Hung well on.
7/29/2011: Tubing Repair - Trouble unseating pump, pulled 20K over several times to get it loose; Pulled & LD all rods, Drop SV & PT tubing - failed; Pulled tbg - found IPC leak 2' from pin; Made b&s trip to 5739'; LD all tubing; Ran back new 2-7/8 tubing & bha w/IPC; Ran new 2" pump & new T-66 rods.
10/10/2011: Rod Repair - PT tbg to 550 psi - Good; Pulled rods, 3/4 pin break at 1960'; Fished & pulled remaining rods & 2" insert pump; Re-ran T-66 rods w/12 new 3/4 on bottom & new 2" insert pump; Land pump, PT tbg to 550 psi - Good; Long stroked to 500 psi; Hung well on.

Procedure

Horsley Witten: No

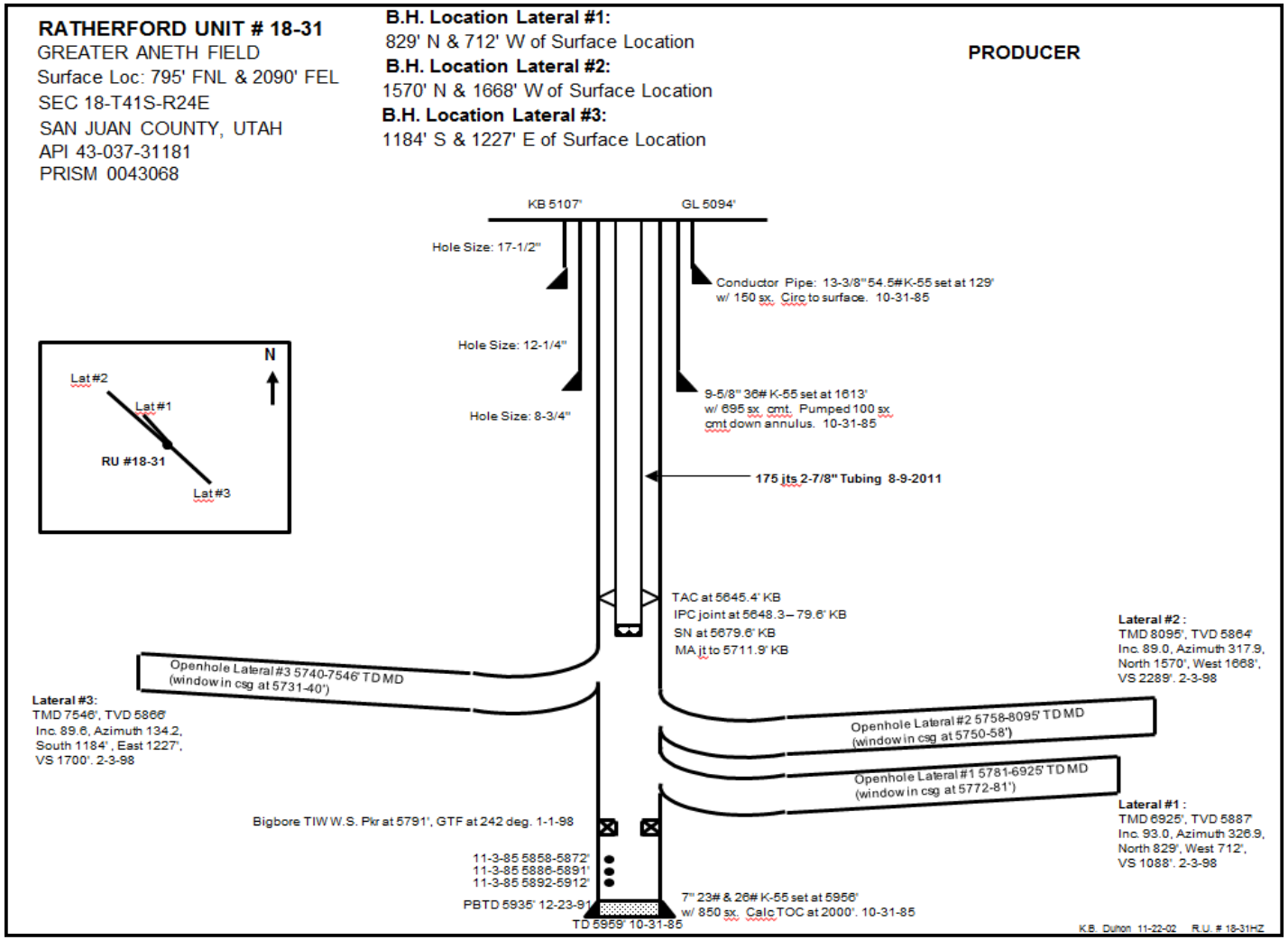
1. MIRU WSU, LOTO,
2. Pressure test tubing to 1000 psig.
3. Kill well as necessary.
4. POOH with rods and pump, perform backoff & fish as required. Stand back rods. Call and notify Bill Albert (970) 371-9682 to inspect rods. If unavailable, contact Tech Support (Virgil Holly (435) 444-0020.
5. NU BOPE to pull tubing. **NOTE: if rods are corrosion free & tubing PT's OK, tubing might not be pulled.**
6. Release the TAC @ 5645.4' KB. Install a packer & pressure test BOPE. LD packer.
7. POOH with tubing & BHA.
8. RIH with bit & scraper to top of window at 5731' KB'. POOH.

RECEIVED: Feb. 11, 2014

9. Run bit only to TIW pkr/PBD at 5791' KB. If any fill is encountered, CO using Global N2.
10. TOOH with tubing, standing back for inspection.
11. Call and notify Bill Albert to inspect tubing. If unavailable, contact Virgil H.
12. If tubing needs replacement, run new 2-7/8" J-55 FBNAU Seamless tubing.
13. TIH with bha for **top hold down pump** as follows: 3-1/2" x 41' mud anchor joint, one joint 3-1/2" tubing, 3-1/2" x 4' perforated sub, 3-1/2 to 2-7/8 changeover, 2-7/8 carbon steel SN, one jt 2-7/8 tubing, 7" TAC and 2-7/8 tubing to surface.
14. Set bottom of MA at ~5630 to 5640' KB; TAC at ~5525' KB.
15. ND BOP, NUWH. Change over for rods.
16. RIH w/ 1-1/4" x 26' gas anchor & top hold down 2" insert pump w/**modified plunger for solids handling***. Contact Tech Support for pump & rod details.
17. Land the pump, long stroke to test for good pumping action.
18. Leave enough polished rod for operators to correctly space pump as required.
19. Notify the Area Production Supervisor Alfred Redhouse (435) 619-7227 that well is ready.
20. RDMOL. Hook up appropriate chemical treatment.

*Harbison Fischer PAC type (pressure actuated plunger) is one example.

RECEIVED: Feb. 11, 2014



RECEIVED: Feb. 11, 2014

FEDERAL APPROVAL OF THIS ACTION IS NECESSARY

FORM 9

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

5.LEASE DESIGNATION AND SERIAL NUMBER: 14-20-603-353

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: NAVAJO

7.UNIT or CA AGREEMENT NAME: RATHERFORD

1. TYPE OF WELL Oil Well

8. WELL NAME and NUMBER: RATHERFORD UNIT 18-31

2. NAME OF OPERATOR: RESOLUTE NATURAL RESOURCES

9. API NUMBER: 43037311810000

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: 0795 FNL 2090 FEL
QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: Qtr/Qtr: NWNE Section: 18 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

- ✓ NOTICE OF INTENT — Approximate date work will start: 6/17/2014
- ☐ SUBSEQUENT REPORT — Date of Work Completion:
- ☐ SPUD REPORT — Date of Spud:
- ☐ DRILLING REPORT — Report Date:

TYPE OF ACTION

☐ ACIDIZE	☐ ALTER CASING	☐ CASING REPAIR
☐ CHANGE TO PREVIOUS PLANS	☐ CHANGE TUBING	☐ CHANGE WELL NAME
☐ CHANGE WELL STATUS	☐ COMMINGLE PRODUCING FORMATIONS	☐ CONVERT WELL TYPE
☐ 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: Rod Repair

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

Resolute Natural Resources respectfully submits this sundry as notice of rod repair on the above well. Attached are the procedures and schematic

Accepted by the Utah Division of Oil, Gas and Mining
Date: June 17, 2014
By: Dark K Quist

NAME (PLEASE PRINT)	PHONE NUMBER	TITLE
Erin Joseph	303 573-4886	Sr. Regulatory Analyst

SIGNATURE	DATE
N/A	6/17/2014

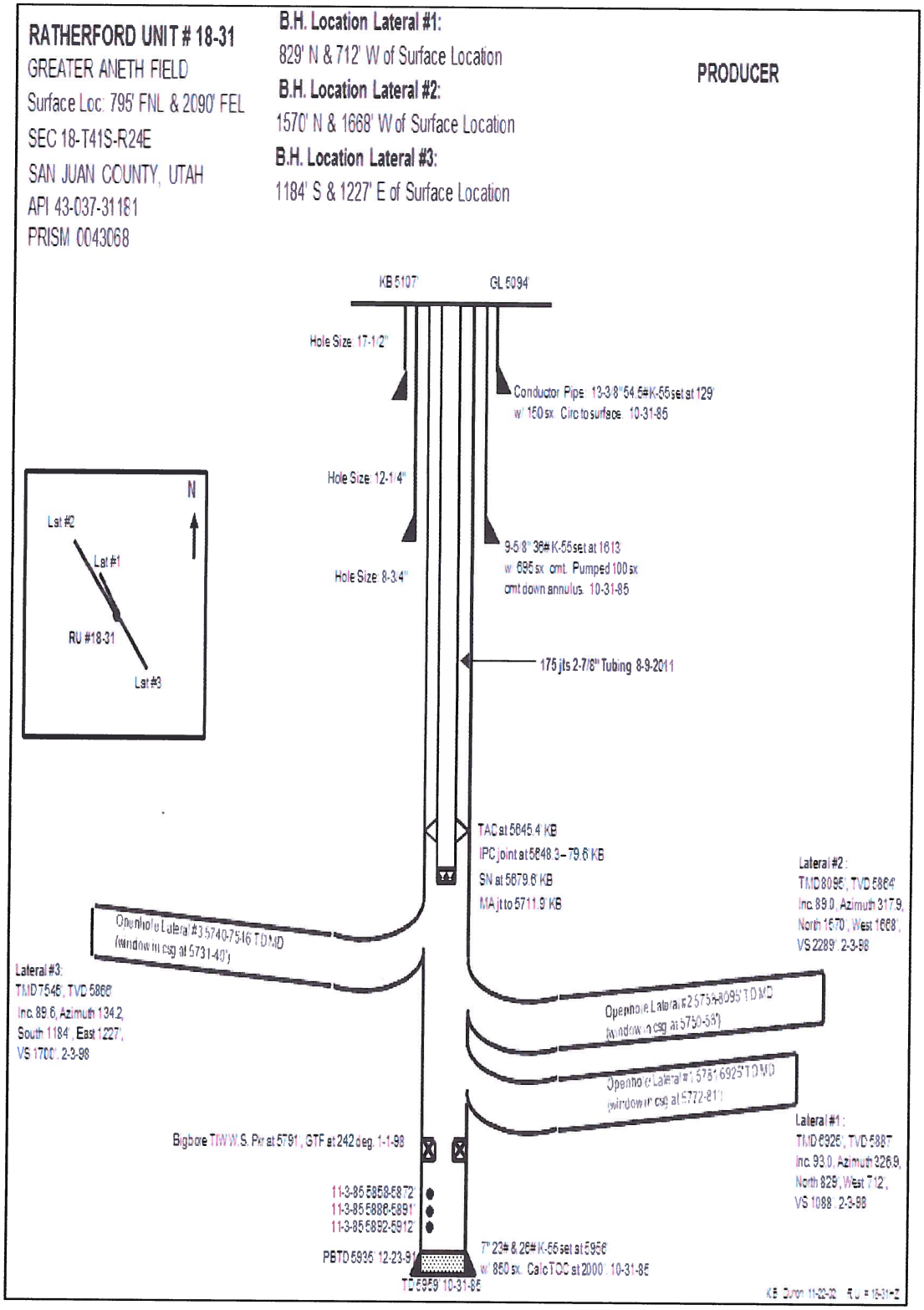
RECEIVED: Jun. 17, 2014

RESOLUTE
NATURAL RESOURCES

RU 18-31 Parted Rods

Procedure
Horsley Witten: No

1. MIRU WSU, LOTO.
2. Pressure test tubing to 1000 psig.
3. Kill well as necessary
4. POOH with rods and pump, fish parted rods as required. Stand back rods in derrick. Call Bill Albert (970) 371-9682 for inspection. If unavailable, contact Tech Support (Virgil Holly (435) 444-0020. Replace or re-run rods per inspection results.
5. Drop a standing valve. Re-pressure test the tubing to 2000 psi to confirm integrity.
6. If the tubing PT's OK & rods not badly corroded or worn, go to step 15, running rods and pump.
7. If the tubing fails the PT, NU BOPE & prepare to pull tubing.
8. Release the TAC @ 5645'. Install a packer. Pressure test BOPE, LD pkr.
9. Tag for fill, TOOH with tubing, standing back, looking for the leak.
10. Call & notify Bill Albert to inspect tubing. If unavail. contact Virgil Holly or Nate Dee.
11. Re-run or replace tubing per inspection results (tbg was new seamless in July 2011).
12. TIH with mud anchor, CSN, 1 x 3-1/2" blast jt, tubing, TAC, and tubing to surface.
13. Set BHA with mud anchor/EOT at ~5712', as before.
14. NDBOP, NUWH.
15. RIH with rods & new 2" insert pump. Contact Tech Support for pump and rod details.
16. Long stroke pump to test for good pumping action.
17. Leave enough polished rod for operators to correctly space pump as required.
18. Notify the Area Production Supervisor that well is ready to return to production.
19. RDMOL. Hook up appropriate chemical treatment.


RATHERFORD UNIT # 18-31
GREATER ANETH FIELD
Surface Loc: 795' FNL & 2090' FEL
SEC 18-T41S-R24E
SAN JUAN COUNTY, UTAH
API 43-037-31181
PRISM 0043068
B.H. Location Lateral #1:
829' N & 712' W of Surface Location
B.H. Location Lateral #2:
1570' N & 1668' W of Surface Location
B.H. Location Lateral #3:
1184' S & 1227' E of Surface Location
PRODUCER
KB 5107'
GL 5094'
Hole Size: 17-1/2"
Conductor Pipe: 13-3/8" 54.5# K-55 set at 129' w/ 150 sx. Circ to surface. 10-31-85
Hole Size: 12-1/4"
9-5/8" 36# K-55 set at 1613' w/ 695 sx. cmt. Pumped 100 sx cmt down annulus. 10-31-85
Hole Size: 8-3/4"
175 jts 2-7/8" Tubing 8-9-2011
N
Lat #2
Lat #1
RU #18-31
Lat #3
TAC at 5645.4' KB
IPC joint at 5648.3 – 79.6' KB
SN at 5679.6' KB
MA jt to 5711.9' KB
Lateral #2:
TMD 8095', TVD 5864'
Inc. 89.0, Azimuth 317.9,
North 1570', West 1668',
VS 2289' 2-3-98
Openhole Lateral #3 5740-7546' TDMD
(window in csg at 5731-40')
Lateral #3:
TMD 7546', TVD 5868'
Inc. 89.6, Azimuth 134.2,
South 1184', East 1227',
VS 1700' 2-3-98
Openhole Lateral #2 5750-8095' TDMD
(window in csg at 5750-55')
Openhole Lateral #1 5731-6925' TDMD
(window in csg at 5772-81')
Lateral #1:
TMD 6925', TVD 5887'
Inc. 93.0, Azimuth 326.9,
North 829', West 712',
VS 1088' 2-3-98
Bigbore TIW W.S. Pkr at 5791', GTF at 242 deg. 1-1-98
11-3-85 5858-5872'
11-3-85 5886-5891'
11-3-85 5892-5912'
PBTD 5936' 12-23-91
TD 5959' 10-31-85
7" 23# & 26# K-55 set at 5956' w/ 850 sx. Calc TOC at 2000'. 10-31-85

FORM 9

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

5.LEASE DESIGNATION AND SERIAL NUMBER: 14-20-603-353

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: NAVAJO

7.UNIT or CA AGREEMENT NAME: RATHERFORD

1. TYPE OF WELL Oil Well

8. WELL NAME and NUMBER: RATHERFORD UNIT 18-31

2. NAME OF OPERATOR: RESOLUTE NATURAL RESOURCES

9. API NUMBER: 43037311810000

3. ADDRESS OF OPERATOR: 1700 Lincoln Street, Suite 2800 , Denver, CO, 80203 4535

PHONE NUMBER: 303 534-4600 Ext

9. FIELD and POOL or WILDCAT: GREATER ANETH

4. LOCATION OF WELL
FOOTAGES AT SURFACE: 0795 FNL 2090 FEL
QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: Qtr/Qtr: NWNE Section: 18 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

- ☐ NOTICE OF INTENT — Approximate date work will start:
- ✓ SUBSEQUENT REPORT — Date of Work Completion: 6/20/2014
- ☐ SPUD REPORT — Date of Spud:
- ☐ DRILLING REPORT — Report Date:

TYPE OF ACTION

☐ ACIDIZE	☐ ALTER CASING	☐ CASING REPAIR
☐ CHANGE TO PREVIOUS PLANS	☐ CHANGE TUBING	☐ CHANGE WELL NAME
☐ CHANGE WELL STATUS	☐ COMMINGLE PRODUCING FORMATIONS	☐ CONVERT WELL TYPE
☐ 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: Rod Repair

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

Resolute Natural Resources is submitting this sundry as notice that the Rod repair on the above well was completed on 6/20/2014 according to previously submitted procedures

Accepted by the
Utah Division of
Oil, Gas and Mining
FOR RECORD ONLY
July 23, 2014

NAME (PLEASE PRINT)	PHONE NUMBER	TITLE
Erin Joseph	303 573-4886	Sr. Regulatory Analyst

SIGNATURE	DATE
N/A	7/1/2014

RECEIVED: Jul. 01, 2014

FEDERAL APPROVAL OF THIS ACTION IS NECESSARY

FORM 9

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

5.LEASE DESIGNATION AND SERIAL NUMBER: 14-20-603-353

SUNDRY NOTICES AND REPORTS ON WELLS

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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 18-31

2. NAME OF OPERATOR: RESOLUTE NATURAL RESOURCES

9. API NUMBER: 43037311810000

3. ADDRESS OF OPERATOR: 1700 Lincoln Street, Suite 2800 , Denver, CO, 80203 4535

PHONE NUMBER: 303 534-4600 Ext

9. FIELD and POOL or WILDCAT: GREATER ANETH

4. LOCATION OF WELL
FOOTAGES AT SURFACE: 0795 FNL 2090 FEL
QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: Qtr/Qtr: NWNE Section: 18 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: 11/12/2015	☐ ACIDIZE	☐ ALTER CASING	☐ CASING REPAIR
	☐ CHANGE TO PREVIOUS PLANS	☐ CHANGE TUBING	☐ CHANGE WELL NAME
	☐ CHANGE WELL STATUS	☐ COMMINGLE PRODUCING FORMATIONS	☐ CONVERT WELL TYPE
☐ SUBSEQUENT REPORT Date of Work Completion:	☐ DEEPEN	☐ FRACTURE TREAT	☐ NEW CONSTRUCTION
	☐ OPERATOR CHANGE	☐ PLUG AND ABANDON	☐ PLUG BACK
	☐ PRODUCTION START OR RESUME	☐ RECLAMATION OF WELL SITE	☐ RECOMPLETE DIFFERENT FORMATION
☐ SPUD REPORT Date of Spud:	☐ REPERFORATE CURRENT FORMATION	☐ SIDETRACK TO REPAIR WELL	☐ TEMPORARY ABANDON
	☐ TUBING REPAIR	☐ VENT OR FLARE	☐ WATER DISPOSAL
☐ DRILLING REPORT Report Date:	☐ WATER SHUTOFF	☐ SI TA STATUS EXTENSION	☐ APD EXTENSION
	☐ WILDCAT WELL DETERMINATION	✓ OTHER	OTHER: repair hole in tubing

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

Resolute proposes to attempt to repair a hole in the tubing of the subject well. The proposed procedure and wellbore diagram are attached.

Accepted by the Utah Division of Oil, Gas and Mining

Date: November 04, 2015

By: Dark K Quist

NAME (PLEASE PRINT)	PHONE NUMBER	TITLE
Sherry Glass	303 573-4886	Sr Regulatory Analyst
SIGNATURE N/A		**DATE** 11/3/2015

RECEIVED: Nov. 03, 2015

RESOLUTE
NATURAL RESOURCES

11/2/15

1420603353
UTU68931A
4303731181

RU 18-31 HIT Repair

Recommendation

The production engineer and operations staff at Ratherford Unit recommend moving a workover rig onto triple lateral producing well **RU 18-31** to repair a hole in tubing. The workover is expected to restore production to 87 BOPD + 228 BWPD + 31 MCF.

Job Scope

Job Scope includes: PT tbg, POOH with rods & pump; Tag for fill, POOH Tubing & BHA, RIH tubing & bha, then new insert pump and rods.
(Acid planned? N; Change of tubing size? /N; Paraffin expected? /N)

Work History

11/6/2006: Rod Repair - PT tbg - OK; Pulled rods, 3/4 body break on #20; Re-ran rods w/29 new 3/4 & 4 new 7/8, plus new pump.
12/20/2006: Rod Repair - Pulled rods, 3/4 body break at #50; Fished & pulled remaining rods & 2" insert pump; Ran new rods & 6 x 1-1/2 SB's.
9/24/2007: Tbg & Pump Repair - PT tubing - failed; Pulled rods, pull rod was stuck; LD all tubing; Ran scraper to top of lateral at 5740'; Ran bha & new tbg; Ran new S87 rods & new 2" insert pump.
5/29/2009: Tubing Repair - Pulled & stood back rods & pump, Drop SV & PT tbg - failed/ vac; Pulled 47 stds, PT tbg - Good at 1500 psi; Went back to btm - tbg now tests OK at 1500 psi; Set pkr at 30', change wellhead out; Retrieve & LD pkr; Re-ran tbg & bha, set TAC; ran pump & rods & land, PT tbg - on vac; POH & stand back rods & pump; PU tbg & set pkr at 30'; PU on 7", changed tbg spool, test prim & sec seals - good; LD pkr & test jt; PT tbg w/90 jts out, blew hole in ttbg at 1800 psi - IPC jt; Replaced IPC, re-ran bha & tbg, set TAC, landed tbg, NU WH; Ran 2" insert pump & new T-66 rods, seat pump, PT tbg to 1000 psi, LS to 600 psi - good; Hung well on.
7/29/2011: Tubing Repair - Trouble unseating pump, pulled 20K over several times to get it loose; Pulled & LD all rods, Drop SV & PT tubing - failed; Pulled tbg - found IPC leak 2' from pin; Made b&s trip to 5739'; LD all tubing; Ran back new 2-7/8 tubing & bha w/IPC; Ran new 2" pump & new T-66 rods.
10/10/2011: Rod Repair - PT tbg to 550 psi - Good; Pulled rods, 3/4 pin break at 1960'; Fished & pulled remaining rods & 2" insert pump; Re-ran T-66 rods w/12 new 3/4 on bottom & new 2" insert pump; Land pump, PT tbg to 550 psi - Good; Long stroked to 500 psi; Hung well on.
2/11/2014: Rod Repair - PT tbg to 1200 psi - good; #19 x 3/4" pin break, fished rods & pulled 2" pump; LD 149 x 3/4" T-66 rods, replaced by 3/4" reconditioned T-66; re-ran 74 x 7/8" T-66 from derrick w/2" insert pump; PU new 1.50 x 26' polish rod & new stuffing box, seated pump, PT tbg to 1000 - good test; Long stroked - good; Hung on, 35" space out. Returned to production.
6/19/2014: Rod Repair - Fish parted rods, #122 x 3/4 pin failure, Inspect rods, re-PT tubing to 2000 psi - good; LD 69 x 3/4" rods, replaced by 69 x 7/8" rods (80 x 3/4" & 143 x 7/8" T-66 now comprise the rod string); hang on, check pump action. Returned to production.

Procedure

Horsley Witten: No

1. MIRU WSU, LOTO.
2. Pressure test tubing to 1000 psig.

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3. Kill well as necessary.
4. POOH with rods and pump, stand back rods in derrick. Call Bill Albert (970) 371-9682 for inspection. If unavailable, contact Tech Support (Virgil Holly or Nate Dee). Replace or re-run rods per inspection results.
5. Drop a standing valve. Re-pressure test the tubing to 2000 psi to confirm the HIT, (expect failing PT).
6. NU & test BOPE; prepare to pull tubing.
7. Release the TAC @ 5645' KB. Install a packer. Pressure test BOPE, LD pkr.
8. PU tag jts & tag for fill: 5791' TIW pkr below laterals. TOOH with tbg, standing back, looking for HIT.
9. Call & notify Bill Albert to inspect tubing. If unavail. contact Virgil Holly or Nate Dee.
10. Re-run or replace tbg with new SMLS per inspection results (tbg was new SMLS in July 2011).
11. TIH with 3-1/2" x 31' mud anchor jt, CSN, 1 x 3-1/2" blast jt w/changeovers, 2 jts tubing, TAC, and tubing to surface.
12. Set BHA with mud anchor/EOT at ~5712', as before.
13. NDBOP, NUWH.
14. RIH with rods & new 2" insert pump. Contact Tech Support for pump and rod details.
15. Long stroke pump to test for good pumping action.
16. Leave enough polished rod for operators to correctly space pump as required.
17. Notify the Area Production Supervisor that well is ready to return to production.
18. RDMOL. Hook up appropriate chemical treatment.

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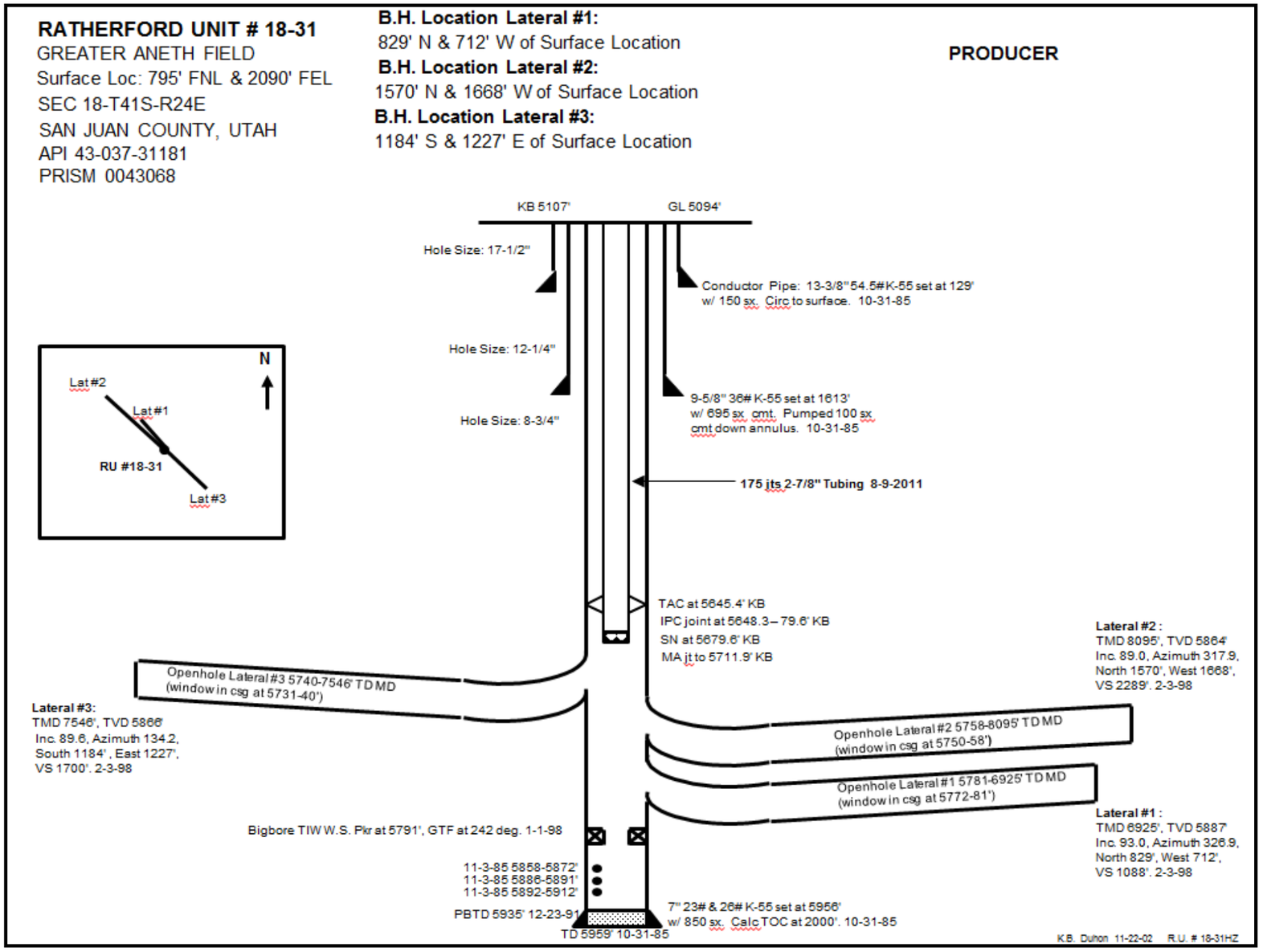

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Form 3160-5
(August 2007)

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.
1420603353

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.
UTU68931A

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

8. Well Name and No.
RATHERFORD 18-31

2. Name of Operator
RESOLUTE ANETH LLC (SA RNR CO) Contact: SHERRY GLASS
E-Mail: sglass@resoluteenergy.com

9. API Well No.
43-037-31181

3a. Address
1700 LINCOLN STREET SUITE 2800
DENVER, CO 80203

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

10. Field and Pool, or Exploratory
ANETH

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 18 T41S R24E Mer NAV NWNE 795FNL 2090FEL

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 Workover Operations
	☐ 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 proposes to attempt to repair a hole in the tubing in the subject well. The proposed procedure and wellbore schematics are attached.

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

Electronic Submission #322318 verified by the BLM Well Information System
For RESOLUTE ANETH LLC (SA RNR CO), sent to the Farmington

Name *(Printed/Typed)* JIM STYLER — Title PRODUCTION ENGINEER

Signature (Electronic Submission) — Date 11/03/2015

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 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.

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

RECEIVED: Nov. 03, 2015

FEDERAL APPROVAL OF THIS ACTION IS NECESSARY

FORM 9

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

5.LEASE DESIGNATION AND SERIAL NUMBER: 14-20-603-353

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill new wells, significantly deepen existing wells below current bottom-hole depth, reenter plugged wells, or to drill horizontal laterals. Use APPLICATION FOR PERMIT TO DRILL form for such proposals.

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: NAVAJO

7.UNIT or CA AGREEMENT NAME: RATHERFORD

1. TYPE OF WELL Oil Well

8. WELL NAME and NUMBER: RATHERFORD UNIT 18-31

2. NAME OF OPERATOR: RESOLUTE NATURAL RESOURCES

9. API NUMBER: 43037311810000

3. ADDRESS OF OPERATOR: 1700 Lincoln Street, Suite 2800 , Denver, CO, 80203 4535

PHONE NUMBER: 303 534-4600 Ext

9. FIELD and POOL or WILDCAT: GREATER ANETH

4. LOCATION OF WELL
FOOTAGES AT SURFACE: 0795 FNL 2090 FEL
QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: Qtr/Qtr: NWNE Section: 18 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: 12/20/2015	☐ ACIDIZE	☐ ALTER CASING	☐ CASING REPAIR
	☐ CHANGE TO PREVIOUS PLANS	☐ CHANGE TUBING	☐ CHANGE WELL NAME
	☐ CHANGE WELL STATUS	☐ COMMINGLE PRODUCING FORMATIONS	☐ CONVERT WELL TYPE
☐ SUBSEQUENT REPORT Date of Work Completion:	☐ DEEPEN	☐ FRACTURE TREAT	☐ NEW CONSTRUCTION
	☐ OPERATOR CHANGE	☐ PLUG AND ABANDON	☐ PLUG BACK
	☐ PRODUCTION START OR RESUME	☐ RECLAMATION OF WELL SITE	☐ RECOMPLETE DIFFERENT FORMATION
☐ SPUD REPORT Date of Spud:	☐ REPERFORATE CURRENT FORMATION	☐ SIDETRACK TO REPAIR WELL	☐ TEMPORARY ABANDON
	☐ TUBING REPAIR	☐ VENT OR FLARE	☐ WATER DISPOSAL
☐ DRILLING REPORT Report Date:	☐ WATER SHUTOFF	☐ SI TA STATUS EXTENSION	☐ APD EXTENSION
	☐ WILDCAT WELL DETERMINATION	✓ OTHER	OTHER: Rod Repair

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

Resolute Natural Resources respectfully submits this sundry as notice of a Rod repair on the above well, attached are the procedures and schematics

Accepted by the Utah Division of Oil, Gas and Mining

Date: December 17, 2015

By: Dark K Quist

NAME (PLEASE PRINT)	PHONE NUMBER	TITLE
Erin Joseph	303 573-4886	Sr. Regulatory Analyst

SIGNATURE	DATE
N/A	12/16/2015

RECEIVED: Dec. 16, 2015

Resolute
Natural Resources

Re: RU 18-31 Parted Rod Repair

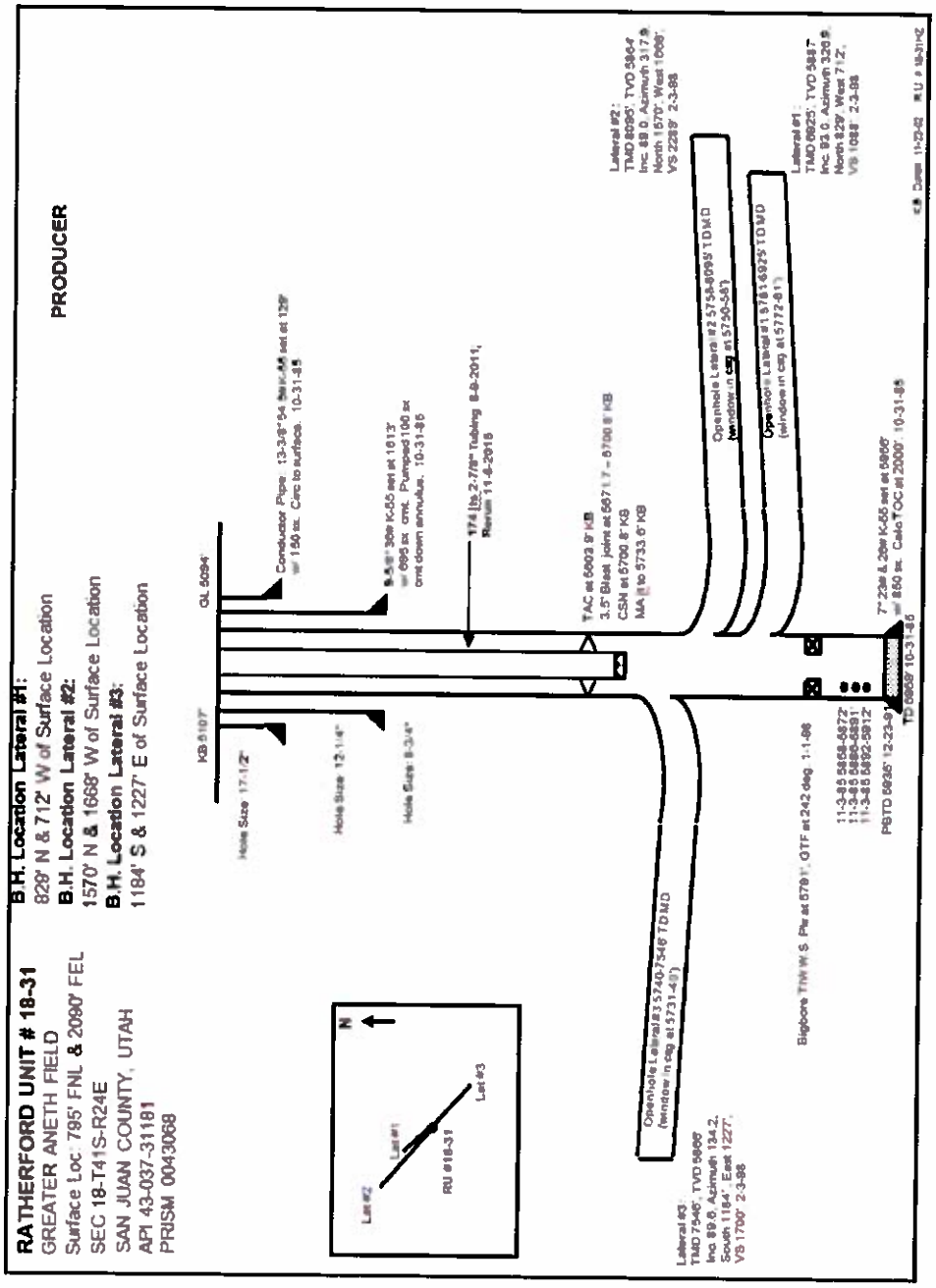
Procedure

Horsley Witten: No

1. MIRU WSU, LOTO.
2. Pressure test tubing to 1000 psig.
3. Kill well as necessary.
4. POOH with rods and pump, fishing parted rods as required. Stand back rods in derrick. Call Bill Albert (970) 371-9682 for inspection. If unavailable, contact Tech Support (Virgil Holly or Nate Dee). Replace or re-run rods per inspection results.

NOTE: Consider pulling the entire rod string & pump to make sure we don't have a backoff in the rod string - like could happen if the rod string was dropped when it parted.

5. Drop a standing valve. Re-pressure test the tubing to 1500 psi to confirm the tubing integrity. Retrieve SV.
6. IF tubing PT fails, NU & test BOPE; prepare to pull tubing. If tbg PT is good, go to step 14, running rods & pump.
7. Release the TAC @ 5604' KB. Install a packer. Pressure test BOPE, LD pkr.
8. TOOH with tbg, standing back, looking for HIT.
9. Call & notify Bill Albert to inspect tubing. If unavailable contact Virgil Holly or Nate Dee.
10. Re-run or replace tbg with new SMLS per inspection results (tbg was new SMLS in Aug 2011).
11. TIH with 3-1/2" x 31' mud anchor jt, CSN, 1 x 3-1/2" blast jt w/changeovers, 2 jts tubing, TAC, and tubing to surface.
12. Set BHA with mud anchor/EOT at ~5730', as before.
13. NDBOP, NUWH.
14. RIH with rods & new 2" insert pump. Contact Tech Support for pump and rod details.
15. Long stroke pump to test for good pumping action.
16. Leave enough polished rod for operators to correctly space pump as required.
17. Notify the Area Production Supervisor that well is ready to return to production.
18. RDMOL. Hook up appropriate chemical treatment.


RATHERFORD UNIT # 18-31
GREATER ANETH FIELD
Surface Loc: 795' FNL & 2090' FEL
SEC 18-T41S-R24E
SAN JUAN COUNTY, UTAH
API 43-037-31181
PRISM 0043068
B.H. Location Lateral #1:
828' N & 712' W of Surface Location
B.H. Location Lateral #2:
1570' N & 1668' W of Surface Location
B.H. Location Lateral #3:
1184' S & 1227' E of Surface Location
PRODUCER
N
Lat #2
Lat #1
Lat #3
RU #18-31
KB 5107'
GL 5094'
Hole Size 17-1/2"
Hole Size 12-1/4"
Hole Size 8-3/4"
Conductor Pipe: 13-3/8" 54 lbs/ft A53 set at 129' w/ 150 sx. Circ to surface. 10-31-85
5-5/8" 36# K-55 set at 1613' w/ 695 sx. cmt. Pumped 100 sx cmt down annulus. 10-31-85
174 jts 2-7/8" Tubing 8-8-2011, Reran 11-4-2015
TAC at 5603.8' KB
3.5' Blast joint at 5671.7' – 5700.8' KB
CSN at 5700.8' KB
MA at 5733.6' KB
Openhole Lateral #3 5740-7546' TDMD (window in csg at 5731-40')
Lateral #3:
TMD 7546'; TVD 5866'
Inc 89.8; Azimuth 134.2;
South 1184'; East 1227';
VS 1700' 2-3-88
Bigbore TNW W.S. Plug at 5791'; GTF at 242 deg. 1-1-88
11-3-85 5858-5872'
11-3-85 5880-5891'
11-3-85 5892-5912'
PBTD 5935' 12-23-91
TD 5966' 10-31-85
7" 23# & 26# K-55 set at 5966' w/ 850 sx. Calc TOC at 2000'. 10-31-85
Openhole Lateral #2 5758-8095' TDMD (window in csg at 5750-58')
Lateral #2:
TMD 8095'; TVD 5864'
Inc 89.0; Azimuth 317.8;
North 1570'; West 1668';
VS 2289' 2-3-88
Openhole Lateral #1 5781-8925' TDMD (window in csg at 5772-81')
Lateral #1:
TMD 8925'; TVD 5887'
Inc 89.0; Azimuth 320.8;
North 828'; West 712';
VS 1088' 2-3-88
KB # 18-31HZ

FORM 9

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

5.LEASE DESIGNATION AND SERIAL NUMBER: 14-20-603-353

SUNDRY NOTICES AND REPORTS ON WELLS

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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 18-31

2. NAME OF OPERATOR: RESOLUTE NATURAL RESOURCES

9. API NUMBER: 43037311810000

3. ADDRESS OF OPERATOR: 1700 Lincoln Street, Suite 2800 , Denver, CO, 80203 4535

PHONE NUMBER: 303 534-4600 Ext

9. FIELD and POOL or WILDCAT: GREATER ANETH

4. LOCATION OF WELL
FOOTAGES AT SURFACE: 0795 FNL 2090 FEL
QTR/QTR, SECTION, TOWNSHIP, RANGE, MERIDIAN: Qtr/Qtr: NWNE Section: 18 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

- ☐ NOTICE OF INTENT — Approximate date work will start:
- ✓ SUBSEQUENT REPORT — Date of Work Completion: 1/4/2016
- ☐ SPUD REPORT — Date of Spud:
- ☐ DRILLING REPORT — Report Date:

TYPE OF ACTION

☐ ACIDIZE	☐ ALTER CASING	☐ CASING REPAIR
☐ CHANGE TO PREVIOUS PLANS	☐ CHANGE TUBING	☐ CHANGE WELL NAME
☐ CHANGE WELL STATUS	☐ COMMINGLE PRODUCING FORMATIONS	☐ CONVERT WELL TYPE
☐ 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: Rod Repair

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

Resolute Natural Resources respectfully submits this sundry as notice that the rod repair on the above well was completed 1/4/16

Accepted by the Utah Division of Oil, Gas and Mining
FOR RECORD ONLY
February 16, 2016

NAME (PLEASE PRINT)	PHONE NUMBER	TITLE
Erin Joseph	303 573-4886	Sr. Regulatory Analyst

SIGNATURE	DATE
N/A	2/16/2016

RECEIVED: Feb. 16, 2016