UTAH OIL AND GAS CONSERVATION COMMISSION

REMARKS: 12-1-83 Operator name change from Phillips Petroleum to Phillips Oil Co.
Approved for Water Injection 6-18-86
12-11-69 Subsequent: & squeeze cement, & acidize
(Have Files) Well Log & 4 El. Log

DATE FILED	12-20-57		Nav-14-20-
LAND: FEE & PATENTED	STATE LEASE NO.	PUBLIC LEASE NO.	INDIAN 603-355
DRILLING APPROVED:	12-20-57		
SPUDDED IN:	1- 3-58		
COMPLETED:	2- 2-58		
INITIAL PRODUCTION:	1770 BOPD		
GRAVITY A. P. I.	42°		
GOR:	660:1		
PRODUCING ZONES:	Paradox: 5522-5690'		
TOTAL DEPTH:	5835' Paradox		020973
WELL ELEVATION:	4764 DF		
DATE ABANDONED:			
FIELD OR DISTRICT:	~~Rathorford~~ Aneth		
COUNTY:	San Juan		
WELL NO.	DESERT A-5 (Rotherford 17-12)		API 43-037-15726

LOCATION: 1980 FT. FROM (N) (S) LINE, 510 FT. FROM (E) (W) LINE. SW¼ NW¼ QUARTER - QUARTER SEC. 17
5

TWP.	RGE.	SEC.	OPERATOR	TWP.	RGE.	SEC.	OPERATOR

GEOLOGIC TOPS:

QUATERNARY	Star Point	Sinbad	Brazer
Recent	Wahweap	PERMIAN	Pilot shale
Alluvium	Masuk	Kaibab	Madison
Lake beds	Colorado	Coconino	Leadville
Pleistocene	Mancos	Cutler 2548'	Redwall
Lake beds	Upper	Hoskinnini	DEVONIAN
TERTIARY	Middle	DeChelly 2651'	Upper
Pliocene	Lower	White Rim	Middle
Humboldt	Emery	Organ Rock 2800'	Lower
Salt Lake	Blue Gate	Cedar Mesa	Ouray
Miocene	Ferron	Halgaite tongue	Elbert
Bishop conglomerate	Frontier	Phosphoris	Guilmette
Oligocene	Dakota	Park City	Simonson dolomite
Norwood	Burro Canyon	Rico (Goodridge) 4040'	Sevy dolomite
Eocene	Cedar Mountain	Supai	North Point
Duchesne River	Buckhorn	Bird Springs	SILURIAN
Uinta	JURASSIC	CARBONIFEROUS	Laketown dolomite
Bridger	Morrison	Pennsylvanian	ORDOVICIAN
Green River	Salt Wash	Oquirrh	Eureka quartzite
Upper	San Rafeal Gr.	Weber	Pogonip limestone
Middle	Summerville	Morgan	CAMBRIAN
Lower	Bluff sandstone	Hermosa	Lynch
Wasatch	Curtis	Upper 4545'	Bowman
Colton	Entrade	Lower	Tapeats
Flagstaff	Moab tongue	Molas	Ophir
Almy	Carmel	Paradox 5514'	Tintic
Paleocene	Glen Canyon Gr.	A	PRE-CAMBRIAN
Current Creek	Navajo	B	
North Horn	Kayento	C	
CRETACEOUS	Wingate 1090'	Manning Canyon	
Montana	TRIASSIC	Mississippian	
Mesaverde	Chinle 1535'	Chainman shale	
Price River	Shinarump 2355'	Humbug	
Blackhawk	Moenkap[illegible] 2415'	Joana limestone	

VISIBLE CROZET VIRGINIA #78846-8

Scout Report sent out	☑
Noted in the NID File	☑
Location map pinned	☑
Approval or Disapproval Letter	☑
Date Completed, P. & A. or operations suspended	2-2-58
Pin changed on location map	☐
Affidavit and Record of A & P	☐
Water Shut-Off Test	☐
Gas-Oil Ratio Test	☐
Well Log Filed	☑

PHILLIPS PETROLEUM COMPANY - WELL NO. DESERT A-5 RATHER -FORD

API 43-037-15926

Sec. 17, T. 41 S, R. 24 E, San Juan County 17-12

MICROFICHE

E-R440

FILE NOTATIONS

Entered in N I D File	✓	Checked by Chief	✓
Entered On S R Sheet	✓	Copy N I D to Field Office	✓
Location Map Pinned	✓	Approval Letter	✓
Card Indexed	✓	Disapproval Letter	
I W R for State or Fee Land			

COMPLETION DATA:

Date Well Completed	2-2-58	Location Inspected	
OW ✓ WW	TA	Bond released State of Fee Land	
GW OS	PA		

LOGS FILED

Driller's Log 2-14-58

Electric Logs (No.) 4

E I E-I ✓ GR GR-N Micro ✓

Lat Mi-L Sonic Others 2 - Radioactive

Form 9-331 b
(April 1952)

Budget Bureau No. 42-R-359.3.
Approval expires 12-31-55.

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Indian Agency Navajo

Allottee Tribal

Lease No. 14-20-603-355

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL	X	SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO REDRILL OR REPAIR WELL		SUBSEQUENT REPORT OF REDRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

Denver, Colorado December 19, 19 57

Desert "A"
Well No. 5 is located 1980 ft. from {N/S} line and 510 ft. from {E/W} line of sec. 17

SW/4 NW/4 Sec. 17 (¼ Sec. and Sec. No.) 41S (Twp.) 24E (Range) S.L.M. (Meridian)

Ratherford (Field) San Juan (County or Subdivision) Utah (State or Territory)

The elevation of the ~~derrick~~ ground floor above sea level is 4587 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Drill 17-1/4" hole to approximately 150', set 150' of 13-3/8" conductor pipe and cement to surface. Drill 11" hole to approximately 1400', set 8-5/8" casing and cement to surface. Drill 7-7/8" hole to TD of 5800', run 5½" casing and cement with approximately 600 sacks. Complete in Paradox formation.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Phillips Petroleum Co.

Address 1200 Denver Club Building

Denver 2, Colorado

By W. M. Schul

Title Division Supt.

Company PHILLIPS PETROLEUM COMPANY

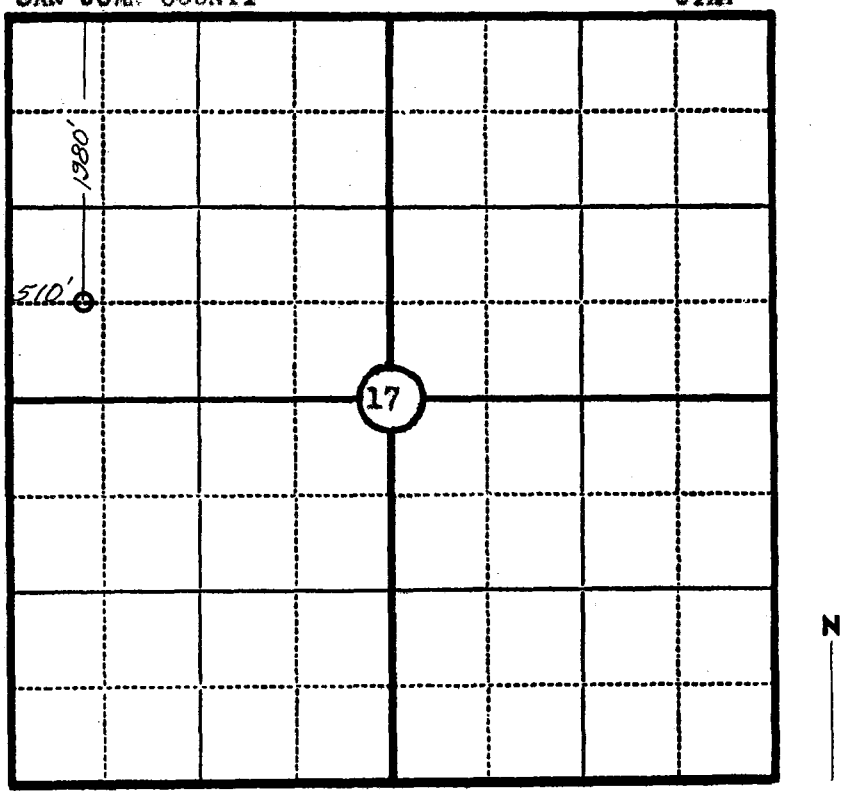
Lease DESERT Well No. A-5

Sec. 17, T. 41 SOUTH, R. 24 EAST S.L.M.

Location 1980' FROM THE NORTH LINE AND 510' FROM THE WEST LINE.

Elevation 4587.0 UNGRADED GROUND

SAN JUAN COUNTY UTAH



Scale—4 inches equal 1 mile.

This is to certify that the above plat was prepared from field notes of actual surveys made by me or under my supervision and that the same are true and correct to the best of my knowledge and belief.

James P. Leese

Seal:

Registered Land Surveyor.
JAMES P. LEESE
UTAH REG. NO. 1472

Surveyed 15 DECEMBER, 1957

SAN JUAN ENGINEERING COMPANY, FARMINGTON, N. M.

December 20, 1957

Phillips Petroleum Company
1200 Denver Club Building
Denver 2, Colorado

Attention: W. M. Schul, Division Superintendent

Gentlemen:

This is to acknowledge receipt of your notice of intention to drill Well No. Desert A-5, which is to be located 1980 feet from the north line and 510 feet from the west line of Section 17, Township 41 South, Range 24 East, SLBM, San Juan County, Utah.

Please be advised that insofar as this office is concerned, approval to drill said well is hereby granted.

This approval terminates within 90 days if the above mentioned well is not spudded in within said period.

Yours very truly,

OIL & GAS CONSERVATION COMMISSION

CLEON B. FEIGHT
SECRETARY

CBF:cn

cc: Phil McGrath
USGS, Farmington,
New Mexico

10

Form 9-331 b
(April 1952)

Budget Bureau No. 42-R-359.3.
Approval expires 12-31-55.

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Indian Agency Navajo

Allottee Tribal

Lease No. 14-20-603-355

SUNDRY NOTICES AND REPORTS ON WELLS 1-27-58

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	X
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO REDRILL OR REPAIR WELL		SUBSEQUENT REPORT OF REDRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

Denver, Colorado January 10, 19 58

Desert "A"
Well No. 5 is located 1980 ft. from [N] line and 510 ft. from [W] line of sec. 17

SW/4 NW/4 Sec. 17 — (¼ Sec. and Sec. No.)
43S — (Twp.)
24E — (Range)
S.L.M. — (Meridian)
Rathersford — (Field)
San Juan — (County or Subdivision)
Utah — (State or Territory)

The elevation of the derrick floor above sea level is 4598 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Drilled 17½" hole to 180'. Ran 13-3/8" OD 27.1# SW SJ casing set at 179'. Cemented with 175 sacks regular cement. Pumped plug to 148' at 7:20 p.m. January 3, 1958. WOC 24 hours, tested casing with 500# for 30 minutes, held OK.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Phillips Petroleum Company

Address 1200 Denver Club Building

Denver 2, Colorado

By W. M. Sahl

Title Division Superintendent

Form 9-331 b
(April 1952)

Budget Bureau No. 42-R-359.3.
Approval expires 12-31-55.

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Indian Agency Navajo

Allottee Tribal

Lease No. 14-20-603-355

1d

1-27-52

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	X
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO REDRILL OR REPAIR WELL		SUBSEQUENT REPORT OF REDRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

Denver, Colorado January 10, 1958

Desert "A"
Well No. 5 is located 1980 ft. from {N} line and 510 ft. from {E} line of sec. 17

SW/4 NW/4 Sec. 17 (¼ Sec. and Sec. No.) 41S (Twp.) 24E (Range) S.L.M. (Meridian)

Rutherford (Field) San Juan (County or Subdivision) Utah (State or Territory)

The elevation of the derrick floor above sea level is 4998 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Drilled to 1540'. Ran 8-5/8" OD 24# J-55 casing set at 1540' RKB. Cemented with 390 cu.ft. Diesel "D" 12.4# slurry, 20% Diesel "D" with 2% calcium chloride, 2# per sack Tuf Plug and 1/4# per sack Flocele, followed with 150 cu.ft. 15.4# neat cement. Plug pumped to 1504' at 1:45 a.m. January 7, 1958, cement circulated. WOC 27 hours, tested casing with 900# for 30 minutes, held OK.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Phillips Petroleum Company

Address 1200 Denver Club Building

Denver 2, Colorado

By W. H. Schul

Title Division Superintendent

U. S. GOVERNMENT PRINTING OFFICE 16—84371b-7

Form 9-331 b
(April 1952)

Budget Bureau No. 42-R359.4.
Approval expires 12-31-60.

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Indian Agency Navajo

Allottee Tribal

Lease No. 14-20-603-355

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	X
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO REDRILL OR REPAIR WELL		SUBSEQUENT REPORT OF REDRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

Denver, Colorado February 6, 1958

Well No. Desert "A" 5 is located 1980 ft. from {N/S} line and 510 ft. from {E/W} line of sec. 17

SW/4 NW/4 Sec. 17 (¼ Sec. and Sec. No.) 41S (Twp.) 24E (Range) S.L.M. (Meridian)

Ratherford (Field) San Juan (County or Subdivision) Utah (State or Territory)

The elevation of the derrick floor above sea level is 4764 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Drilled 7-7/8" hole to 5735'. Ran 5½" OD 15.5# and 14# J-55 casing set 5730' RKB. Cemented with 369 sacks regular cement and 278 sacks Diacel "D", 2% calcium chloride. Total 1590 cu.ft. 11# slurry. Pumped plug to 5699' at 7:25 pm. 1-29-58. WOC 24 hours. Tested casing with 500# for 30 minutes, held OK.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Phillips Petroleum Company

Address 1200 Denver Club Building

Denver 2, Colorado

By W. H. Schul

Title Division Superintendent

U. S. GOVERNMENT PRINTING OFFICE 16—8437b-8

PHILLIPS PETROLEUM COMPANY

1200 Denver Club Building
Denver 2, Colorado

February 6, 1958

Mr. Cleon B. Feight
Secretary
Utah Oil & Gas Conservation Commission
Salt Lake City, Utah

Dear Mr. Feight:

Attached you will find two copies of each of the following logs run on Phillips Petroleum Company - Aztec Oil & Gas Company's Desert "A" #5, San Juan County, Utah.

1. Schlumberger Induction-Electrical Log.
2. Schlumberger MicroLogging.

Very truly yours,

PHILLIPS PETROLEUM COMPANY

W. M. Schul
Division Superintendent

CCK:lb

Attachment

5

It's Performance That Counts
FLITE FUEL — TROP-ARTIC

Form 9-330

Budget Bureau No. 42-R355.4.
Approval expires 12-31-60.

U. S. LAND OFFICE Navajo
SERIAL NUMBER 14-20-603-355
LEASE OR PERMIT TO PROSPECT

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOG OF OIL OR GAS WELL

LOCATE WELL CORRECTLY

Company Phillips Petroleum Company (Aztec Oil & Gas Co.) Address 1200 Denver Club Building (Denver 2, Colorado)

Lessor or Tract Desert "A" Field Rutherford State Utah

Well No. 5 Sec. 17 T 41S R. 24E Meridian S.L.M. County San Juan

Location 1980 ft. [N.] of N. Line and 510 ft. [E.] of W. Line of Sec. 17 Elevation 4764 (Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed [signature]

Date February 13, 1958 Title Division Superintendent

The summary on this page is for the condition of the well at above date:

Commenced drilling January 3, 1958 Finished drilling February 2, 1958

OIL OR GAS SANDS OR ZONES

(Denote gas by G)

No. 1, from 5522 to 5690 No. 4, from to

No. 2, from to No. 5, from to

No. 3, from to No. 6, from to

IMPORTANT WATER SANDS

No. 1, from to No. 3, from to

No. 2, from to No. 4, from to

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated From—	Perforated To—	Purpose
13-3/8"	27.1#	8R	Armco	160'	Baker				
8-5/8"	24#	8R	J-55	1502'	Baker				
5-1/2"	14#	8R	J-55	5566'					
5-1/2"	15.5#	8R	J-55	192'	Baker				

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
13-3/8"	179'	175	Circ.		
8-5/8"	1540'	500 cu. ft.	Circ.		
5-1/2"	5730'	647	Halliburton		

FOLD | MARK

PLUGS AND ADAPTERS

Heaving plug—Material Length Depth set

Adapters—Material Size

SHOOTING RECORD

Size	Shot used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from 0 feet to 5735 feet, and from ---- feet to ---- feet

Cable tools were used from ---- feet to ---- feet, and from ---- feet to ---- feet

DATES

February 13, 1958 — Put to producing February 2, 1958

The production for the first 24 hours was 295 barrels of fluid of which 100 % was oil; ---- % emulsion; ---- % water; and ---- % sediment.

Gravity, °Bé. 42

If gas well, cu. ft. per 24 hours ----

Gallons gasoline per 1,000 cu. ft. of gas ----

Rock pressure, lbs. per sq. in. 440

EMPLOYEES

Moran Bros., Inc., Driller

----, Driller

----, Driller

----, Driller

FORMATION RECORD

FROM—	TO—	TOTAL FEET	FORMATION
0	1090	1090	Sand and shale.
1090	1535	445	Wingate
1535	2355	820	Chinle
2355	2415	60	Shinarump
2415	2548	133	Moenkopi
2548	2651	103	Cutler
2651	2800	149	De Chelly Member
2800	4040	1240	Organ Rock Member
4040	4545	505	Rico
4545	5514	969	Upper Hermosa
5514	5635	121	Paradox

[OVER]

16—43094-2 U. S. GOVERNMENT PRINTING OFFICE

HISTORY OF OIL OR GAS WELL

It is of the greatest importance to have a complete history of the well. Please state in detail the dates of redrilling, together with the reasons for the work and its results. If there were any changes made in the casing, state fully, and if any casing was "sidetracked" or left in the well, give its size and location. If the well has been dynamited, give date, size, position, and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position, and results of pumping or bailing.

Spudded 1:00 a.m. January 3, 1958. Drilled 17½" hole to 180'. Ran 13-3/4" OD 27.1# Armco SW SJ casing set at 179', cemented with 175 sacks regular cement. Pumped plug to 148' at 7:20 p.m. January 3. WOC 24 hours, tested casing with 500# for 30 minutes, held OK. Drilled to 1540'. ~~[illegible]~~ Ran 8-5/8" OD 24# J55 casing set 1540' RKB. Cemented with 350 cu.ft. Diacel "D" 12.4# slurry, 20% Diacel "D" with 2% calcium chloride, 2# per sack Tuf Plug and 1/4# per sack Flocele, followed with 150 cu.ft. 15.4# neat cement. Plug pumped to 1504' at 1:45 a.m. 1-7-58, cement circulated. WOC 27 hours, tested casing with 500# for 30 minutes, held OK. Drilled 7-7/8" hole to 5735'. Ran 5½" OD 15.5# and 14# J-55 casing set 5730' RKB. Cemented with 369 sacks regular cement and 278 sacks Diacel "D", 2% calcium chloride. Total 1590 cu. ft. 11# slurry. Pumped plug to 5699' at 7:25 p.m. 1-29-58. WOC 24 hours, tested casing with 500# for 30 minutes, held OK. Perforated 4 holes per foot, total 440 holes, using Schlumberger depths. Lane-Wells 5500' equals Schlumberger 5501'. Perforated 5520-36', 5544-61', 5570-77' 5598-5624', 5628-58', 5672-76', 5682-90' with Lane Wells "E" gun, 15/32" holes. Ran 2-7/8" OD 6.5# EUE tubing set 5690, packer at 5499. Displaced water with 126 barrels oil, spotted 37 barrels 15% acid on formation, pressured casing to 1500#. Started acid in formation at 900#, Maximum pressure 300#, minimum 900#, average 8.3 barrels perminute. Flushed with 37 barrels oil at rate 9 barrels per minute at 900#. Acidized with total of 12,000 gals. Dowell 15% regular acid. Job complete at 4:45 p.m. 2-1-58 Shut in for darkness. 2-2-58, swabbed 2 hours, well kicked off, flowed 7 barrels oil 1st hr, 85 2nd hr, 85 next 45 minutes thru 3/4" choke. Shut in 4 hours, moved out rotary. Opened well 4 hours to tanks, flowed 293 barrels oil on 3/4" choke, average 73.85 BOPH, GOR 660, ITP 300, FTP 440. Shut in for tank room.

Form 9-331
(May 1963)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

SUNDRY NOTICES AND REPORTS ON WELLS

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

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

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: Navajo

1. OIL WELL [X] GAS WELL [ ] OTHER

7. UNIT AGREEMENT NAME: SW-I-4192

2. NAME OF OPERATOR: Phillips Petroleum Company

8. FARM OR LEASE NAME: Ratherford Unit

3. ADDRESS OF OPERATOR: Drawer 1150, Cortez, Colorado

9. WELL NO.: 17-12

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

1980 ft. from North Line and 510 ft. from West line of Sec. 17-41S-24E

10. FIELD AND POOL, OR WILDCAT: Greater Aneth Field

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: 17-41S-24E S.L.M.

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 4764 DF

12. COUNTY OR PARISH: San Juan

13. STATE: Utah

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

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

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

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

Squeeze cement Zone II (5628-58) and Zone III (5673-76 and 5682-90), acidize Zone I (5520-36, 5544-61, 5570-77 and 5596-5624) with 7500 gallons 15% in three stages.

PRESENT PRODUCTION: Well shut down 7-25-69. Last test 7-17-69: 2 BOPD, 5 MCFGPD, 5 BWPD from Zone I with Zone II isolated by packer. Production test before setting packer was 14 BOPD, 19 MCFGPD, 1020 BWPD from Zone I and Zone II commingled.

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

SIGNED C. M. Holes TITLE District Superintendent DATE 9-19-69

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

Orig & 2 cc: USGS, Farmington, NM
2 cc: Utah Oil & Gas Cons Comm. Salt Lake
1 cc: Denver office
1 cc: File

*See Instructions on Reverse Side

Form 9-331
(May 1963)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

SUNDRY NOTICES AND REPORTS ON WELLS

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

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

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: Navajo

1. OIL WELL [X] GAS WELL [ ] OTHER

7. UNIT AGREEMENT NAME: SW-I-4192

2. NAME OF OPERATOR: Phillips Petroleum Company

8. FARM OR LEASE NAME: Ratherford Unit

3. ADDRESS OF OPERATOR: P. O. Drawer 1150, Cortez, Colorado 81321

9. WELL NO.: 17-12

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 1980' FNL and 510' FWL Sec. 17

10. FIELD AND POOL, OR WILDCAT: Greater Aneth

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: 17-41S-24E S.L.M.

14. PERMIT NO.:

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 4764 DF

12. COUNTY OR PARISH: San Juan

13. STATE: Utah

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

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

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

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

On October 18, 1969 laid down 3½" tubing and p acker (packer had been set to test Zone I), ran cement retainer and set at 5626'. Squeezed Zone II & III perforations with 250 sx. cement, no holding pressure. Resqueezed with 150 sx. cement, reversed out 105 sx., holding pressure 4500#. Set packer at 5498', acidized Zone I perforations with 7500 gallons 15% regular acid in 3 equal stages separated by 400 gallons oil and mothball block. Swabbed well, pulled packer, reran 2½" tubing and pumping equipment, started well pumping October 26, 1969. Producing from Zone I perforations 5520-36, 5544-61, 5570-77 and 5596-5624' in Paradox Formation.

PREVIOUS PRODUCTION (Greater Aneth, Paradox Formation, Desert Creek Zones I, II, and III): Well has been shut down since 7-25-69. *

*(Production prior to shut down with all zones open was 14 BO, 19 MCFG, 1020 BW in 24 hrs pumping on 3-14-69. Last test prior to shut down from Zone I only with packer set at 5625.77' on 7-17-69 was 2 BO, 13 MCFG, and 5 BW in 24 hours pumping)

PRESENT PRODUCTION (Greater Aneth, Paradox Formation, Desert Creek Zone I):

46 BOPD, 52 MCFGPD, 4 BWPD.

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

SIGNED C. M. Boles TITLE Dist. Supt. DATE 12-8-69

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

Orig. & 2 cc: USGS, Farmington, NM
2 cc: Utah Oil & Gas Cons. Comm, Salt Lake
1 cc: Denver
1 cc: Superior Oil, Cortez, Colo
1 cc: File

*See Instructions on Reverse Side

STATE OF UTAH

OIL & GAS CONSERVATION COMMISSION

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

SUNDRY NOTICES AND REPORTS ON WELLS

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

5. LEASE DESIGNATION AND SERIAL NO.: 96-004192

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: Navajo

7. UNIT AGREEMENT NAME: Ratherford Unit

8. FARM OR LEASE NAME:

9. WELL NO.:

10. FIELD AND POOL, OR WILDCAT: N/A

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

1. OIL WELL [XX] GAS WELL [ ] OTHER

2. NAME OF OPERATOR: Phillips Oil Company

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

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

14. PERMIT NO.: See Attached

15. ELEVATIONS (Show whether DF, RT, GR, etc.):

12. COUNTY OR PARISH: San Juan

13. STATE: Utah

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

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

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

To show change of Operator only. Phillips Oil Company assumed operations effective December 1, 1983 from Phillips Petroleum Company. See attached for list of wells.

100 wells 17-12

RECEIVED DEC - 8 1983

Org. & 3-BLM
1-The Navajo Nation
1-Mary Wiley Black
1-Lawrence E. Brock
1-Cheveron USA
1-Ralph Faxel
1-Royal Hogan
1-W. O. Keller
1-Dee Kelly Corp.
1-Robert Klabzuba
1-Micheal J. Moncrief
1-Richard B. Moncrief
1-Lee W. Moncrief
1-Mary H. Morgan
1-W. A. Moncrief
1-W. A. Moncrief, Jr.
1-L. F. Peterson
1-Shell Oil Co.
1-Southland Royalty Co.
1-Superior Oil Co.
1-Leroy Shave
1-Texaco, Inc.
1-Wade Wiley, Jr.
1-Edwin W. Word, Jr.
1-File

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

SIGNED A. E. Stuart TITLE Area Manager DATE 12/6/83

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

WELL NO.	WELL LOCATION	API NO.	STATUS
E14-12	SW NW Sec.14-T41S-R24E	43-037-15998	Act.
E14-13	NW SW Sec.14-T41S-R24E	43-037-15999	SI
10-44	SE SE Sec.10-T41S-R24E	43-037-30451	Act.
15-12	SW NW Sec.15-T41S-R24E	43-037-15715	Act.
15-14	SW SW Sec.15-T41S-R24E	43-037-15716	SI
15-22	SE NW Sec.15-T41S-R24E	43-037-30449	Act.
15-32	SW NE Sec.15-T41S-R24E	43-037-15717	Act.
15-33	NW SE Sec.15-T41S-R24E	43-037-15718	SI
15-41	NE NE Sec.15-T41S-R24E	43-037-15719	Act.
15-42	SE NE Sec.15-T41S-R24E	43-037-3-448	SI
16-12	SW NW Sec.16-T41S-R24E	43-037-15720	Act.
16-14	SW SW Sec.16-T41S-R24E	43-037-15721	Act.
16-32	SW NE Sec.16-T41S-R24E	43-037-15723	Act.
16-34	SW SE Sec.16-T41S-R24E	43-037-15724	SI
16-41	NE NE Sec.16-T41S-R24E	43-037-15725	Act.
17-12	SW NW Sec.17-T41S-R24E	43-037-15726	Act.
17-14	SW SW Sec.17-T41S-R24E	43-037-15727	Act.
17-23	NE SW Sec.17-T41S-R24E	43-037-15728	Act.
17-32	SW NE Sec.17-T41S-R24E	43-037-15729	Act.
17-34	SW SE Sec.17-T41S-R24E	43-037-15730	Act.
17-41	NE NE Sec.17-T41S-R24E	43-037-15731	Act.
17-44	SE SE Sec.17-T41S-R24E	43-037-15732	Act.
18-11	NW NW Sec.18-T41S-R24E	43-037-15733	SI
18-13	NW SW Sec.18-T41S-R24E	43-037-15734	Act.
18-14	SW SW Sec.18-T41S-R24E	43-037-15735	Act.
18-23	NE SW Sec.18-T41S-R24E	43-037-30244	Act.
18-32	SW NE Sec.18-T41S-R24E	43-037-15736	Act.
18-34	SW SE Sec.18-T41S-R24E	43-037-15737	Act.
19-12	SW NW Sec.19-T41S-R24E	43-037-15739	Act.
19-14	SW SW Sec.19-T41S-R24E	43-037-15740	SI
19-32	SW NE Sec.19-T41S-R24E	43-037-15743	Act.
19-34	SW SE Sec.19-T41S-R24E	43-037-15744	Act.
20-12	SW NW Sec.20-T41S-R24E	43-037-15746	Act.
20-14	SW SW Sec.20-T41S-R24E	43-037-15747	Act.
20-32	SW NE Sec.20-T41S-R24E	43-037-15749	Act.
20-34	SW SE Sec.20-T41S-R24E	43-037-15750	Act.
21-12	SW NW Sec.21-T41S-R24E	43-037-15752	Act.
21-14	SW SW Sec.21-T41S-R24E	43-037-15753	Act.
21-23	NE SW Sec.21-T41S-R24E	43-037-13754	Act.
21-32	SW NE Sec.21-T41S-R24E	43-037-15755	Act.
21-33	NW SE Sec.21-T41S-R24E	43-037-30447	SI
21-34	SW SE Sec.21-T41S-R24E	43-037-15756	Act.
22-12	SW NW Sec.22-T41S-R24E	43-037-15757	SI
22-14	SW SW Sec.22-T41S-R24E	43-037-15758	SI
24-42	SE NE Sec.24-T41S-R24E	43-037-15863	Act.
28-11	NW NW Sec.28-T41S-R24E	43-037-30446	Act.
28-12	SW NW Sec.28-T41S-R24E	43-037-15336	Act.
29-12	SW NW Sec.29-T41S-R24E	43-037-15337	Act.
29-32	SW NE Sec.29-T41S-R24E	43-037-15339	Act.

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

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

SUNDRY NOTICES AND REPORTS ON WELLS

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

RECEIVED
MAY 06 1985
DIVISION OF OIL
GAS & MINING

1. OIL WELL ☐ GAS WELL ☐ OTHER Flowline

2. NAME OF OPERATOR: Phillips Oil Company

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

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: SW SW Sec. 16 & SE SE Sec. 17 of T41S-R24E San Juan Co., Utah

5. LEASE DESIGNATION AND SERIAL NO.: 14-20-603-353 14-20-603-355

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: Navajo A.5

7. UNIT AGREEMENT NAME: SW-I-4192

8. FARM OR LEASE NAME: Ratherford Unit 17.12

9. WELL NO.:

10. FIELD AND POOL, OR WILDCAT: Greater Aneth

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 16 & 17 T41S-R24E

14. PERMIT NO.:

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 4760' MSL

12. COUNTY OR PARISH: San Juan Co.

13. STATE: Utah

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

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

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

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

Phillips Oil Company requests approval to install a flowline as shown on the attached Plat A-2A. This flowline will connect Tank Battery 1 with the Water Injection Plant. The line will be used to carry oil-water emulsion from the Water Injection Plant to Tank Battery 1. The proposed flowline will parallel an existing water line connecting the two locations.

5- BLM, Farmington
2- Utah O&GCC, Salt Lake City, Utah
1- P. J. Adamson
1- B. Conner, 318-B-TRW
1- J. R. Weichbrodt
1- C. M. Anderson
1- P. Rooney
1- File

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

SIGNED A. E. Stuart TITLE Area Manager DATE February 4, 1985

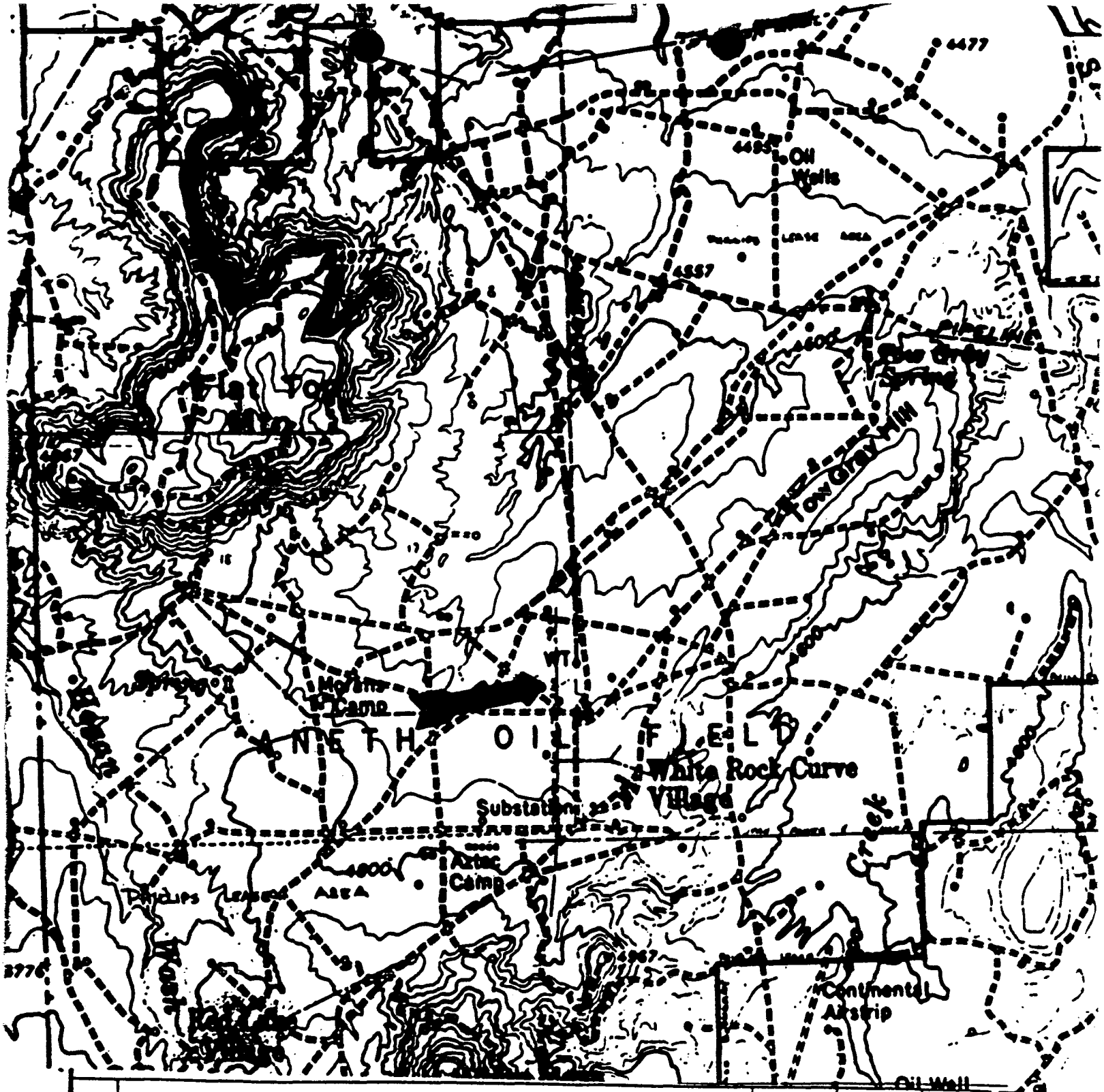
(This space for Federal or State office use)

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



NO.	REVISION	BY	DATE	CHKD	APP'D

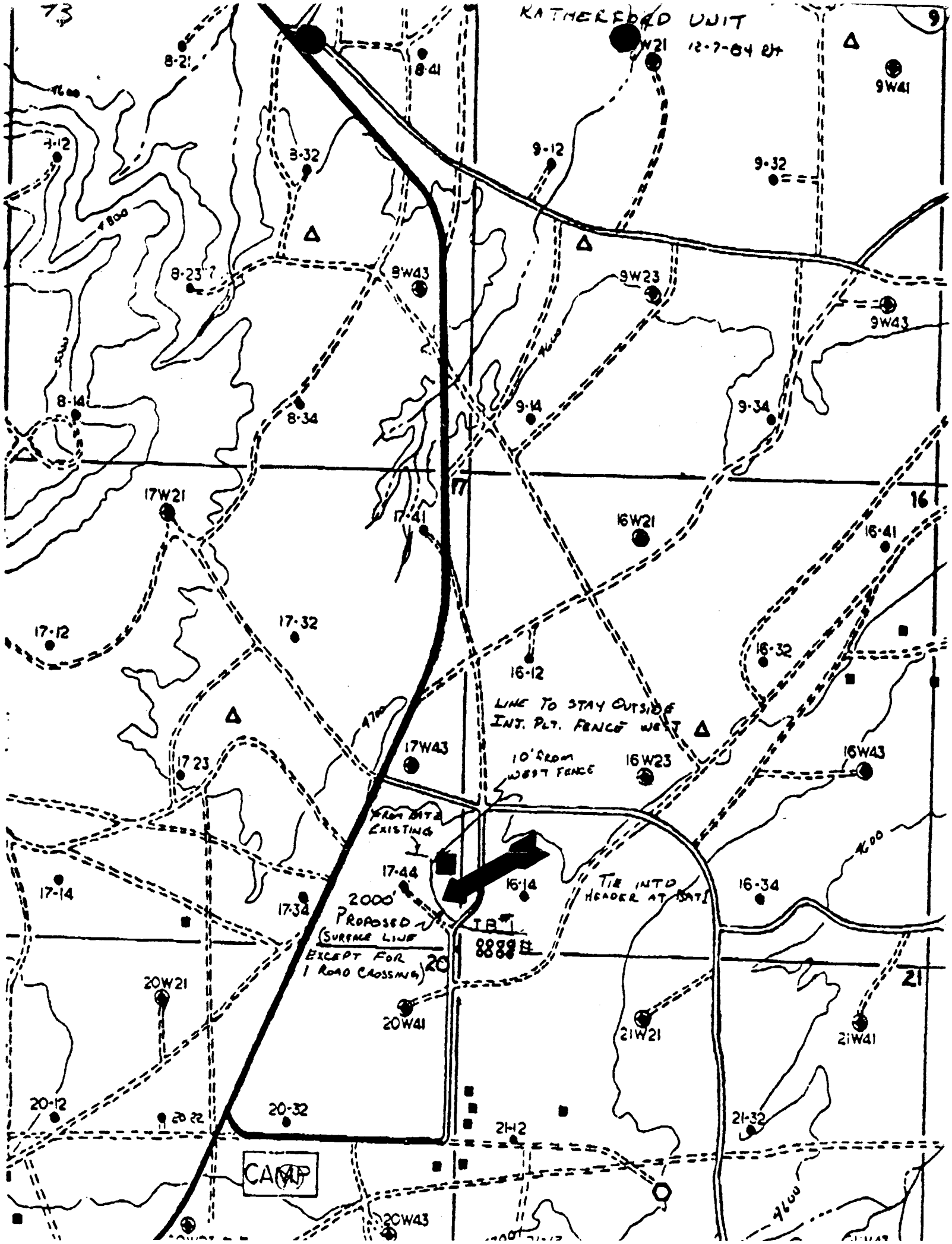
FOR BIDS
FOR APPR
FOR CONST
DRAWN
CHECKED
APP'D

PHILLIPS PETROLEUM COMPANY
BARTLESVILLE, OKLAHOMA

RATHERFORD UNIT
PROPOSED FLOWLINE PLAT
SEC. 16 & 17 T41S-R24E
SAN JUAN CO., UTAH

JA NO
FILE CODE
AFE NO
SCALE 2.2" = 1 mi
DWG NO A2A
SH NO.

FORM 1779-S 8-81


73
KATHERFORD UNIT
12-7-84 RH
9
8-21
8-41
9W21
9W41
7-12
8-32
9-12
9-32
8-23
8W43
9W23
9W43
8-14
8-34
9-14
9-34
17
16
17W21
17-41
16W21
16-41
17-12
17-32
16-12
16-32
LINE TO STAY OUTSIDE
INT. PLT. FENCE WEST
10' FROM
WEST FENCE
17W43
16W23
16W43
17-23
FROM BAT'L
EXISTING
17-44
16-14
TIE INTO
HEADER AT BAT'L
16-34
17-14
17-34
2000'
PROPOSED
(SURFACE LINE
EXCEPT FOR
1 ROAD CROSSING)
20
21
20W21
20W41
21W21
21W41
20-12
20-22
20-32
21-12
21-32
CAMP
20W43

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

PHILLIPS PETROLEUM COMPANY
CASPER, WYOMING 82602
BOX 2920
EXPLORATION AND PRODUCTION GROUP

RECEIVED
JUN 12 1986
DIVISION OF
OIL, GAS & MINING

June 9, 1986

State of Utah
Division of Oil, Gas, and Mining
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Attn: Gil Hunt

RE: Ratherford Unit
San Juan County
Class II Injection Well
Conversions

Dear Mr. Hunt:

Enclosed are applications of conversions for twelve more injection wells in the Ratherford Unit. The well numbers are:

11-W44	13-W24	17-W34
12-W22	13-W42	18-W23
12-W31	17-W12	18-W32
12-W42	17-W23	18-W34

We appreciate the effort put forth in revising and streamlining the UIC program for enhanced recovery wells, the elimination of duplication makes permitting much easier.

The additional information required should not be a burden on the regulated industry. We have listed, on each well bore schematic, the logs on file for that well. We have also enclosed a copy of our letters to mineral lease operators and landowners in the area informing them of these proposed well conversions. The enclosed Attachment 6 is a supplement to the original informational package on the conversion program sent in February 1986. Please contact Renee Taylor at (307) 237-3791 with any questions.

Thank you again for your efforts to make this program more workable for all involved.

Sincerely,

PHILLIPS PETROLEUM COMPANY

D. C. Gill
Area Manager

RCT/fb (23)
Attach
cc: B. J. Murphy - Casper w/o attach
J. R. Weichbrodt - Cortez w/attach.
Casper RC

Casing & Cementing Program
Ratherford Unit

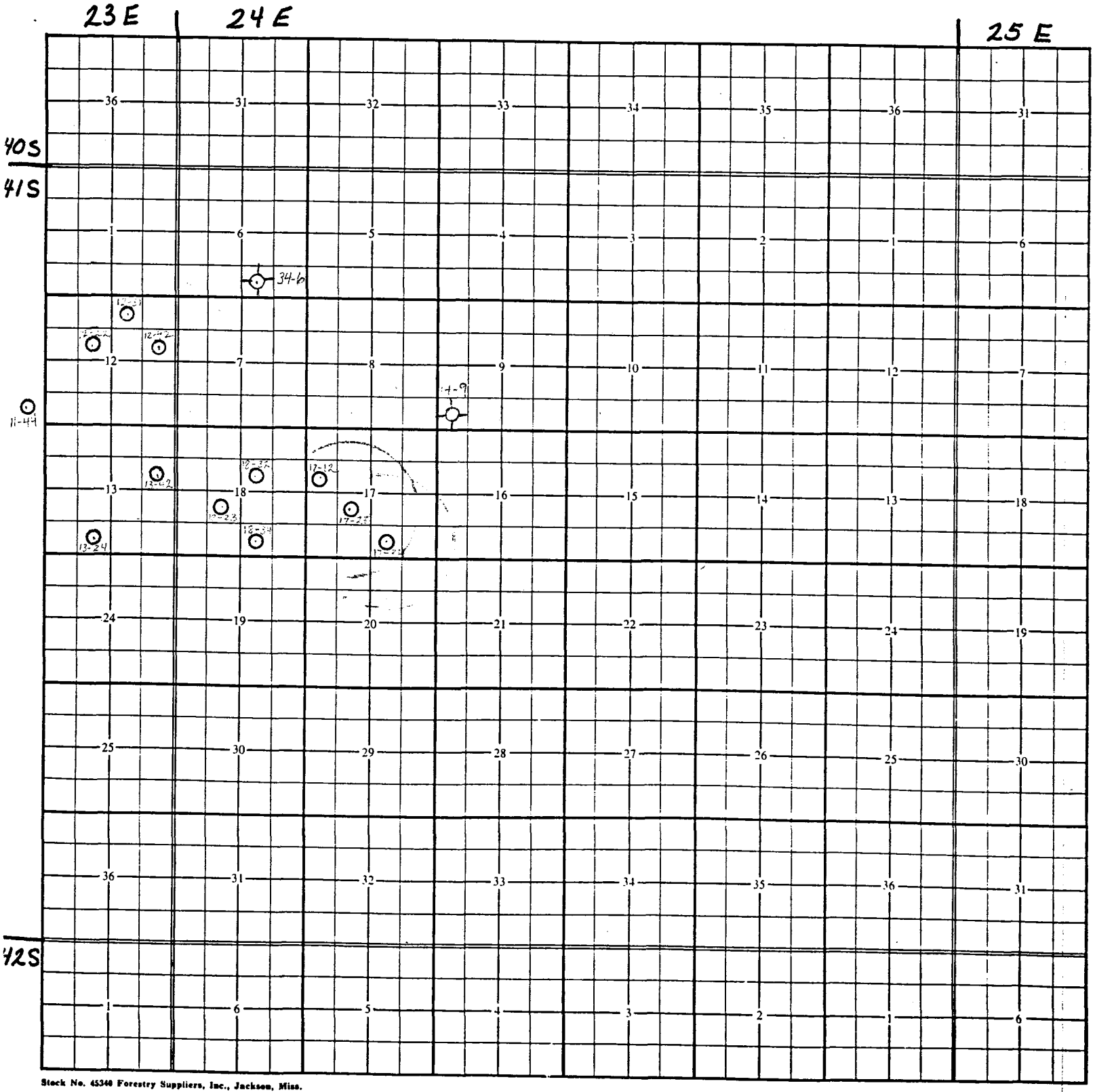
The casing and cementing program at the Ratherford Unit has been designed so that injected fluid or formation water will not be able to enter any fresh water strata. All wells have at least two strings of casing set at approximately 1600' and 5700' (TD). The majority of wells also have a string of casing set at approximately 140'. The following is a summary of the casing and cementing program:

Casing Depth	Range of Casing Sizes	Range of Cement (sx)
140'	20" -13 5/8"	175 - 125
1600'	13 3/8" - 8 5/8"	800 - 200
5700'	8 5/8" - 5 1/2"	900 - 200

TOWNSHIP PLAT

Owner PHILLIPS PETROLEUM Date 6/13/86

Township 41S Range 24E County SAN JUAN

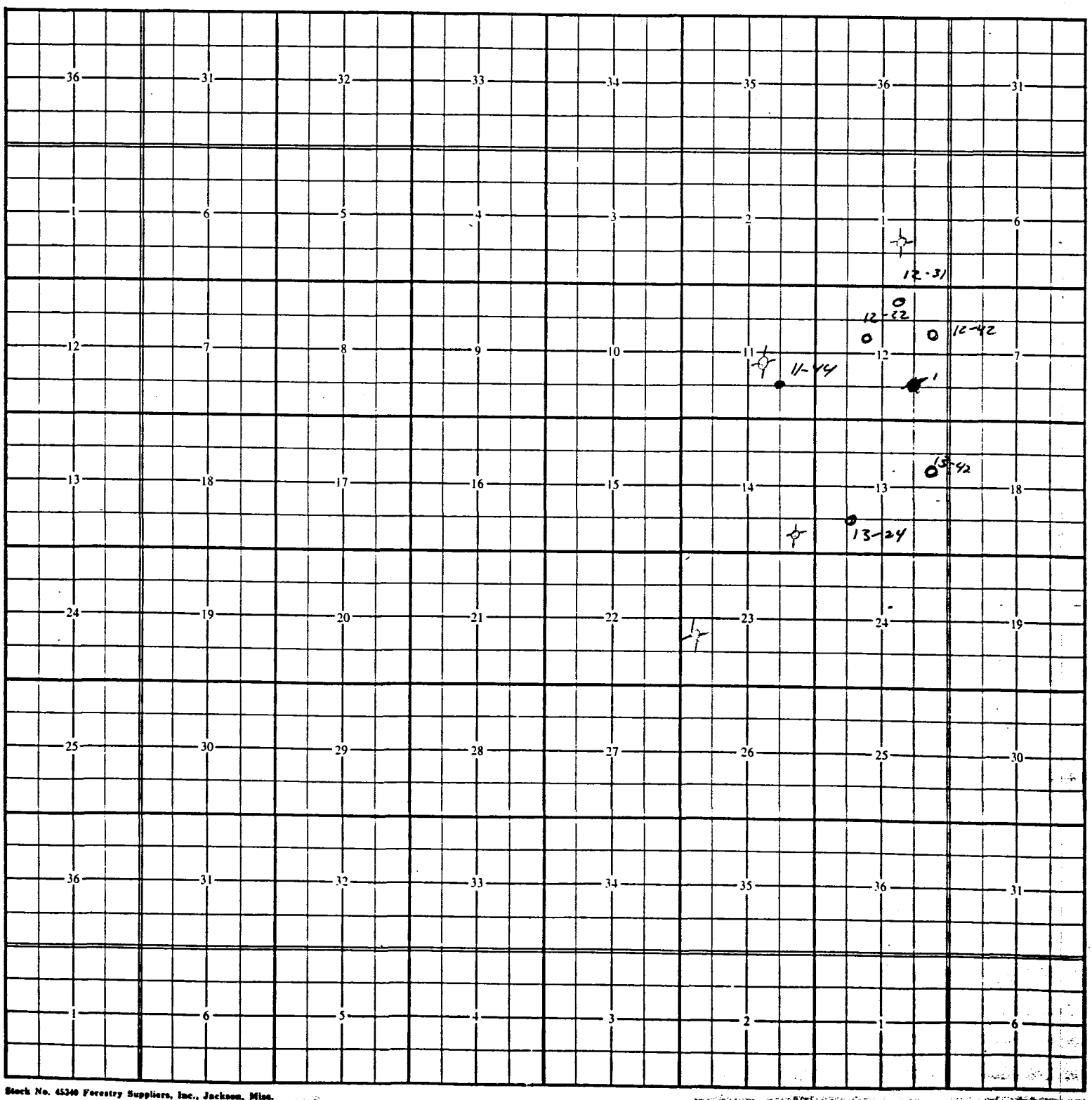


Stock No. 45340 Forestry Suppliers, Inc., Jackson, Miss.

TOWNSHIP PLAT

Owner Phillips Petroleum Date 6/12/86

Township 41S Range 23E County San Juan



Stock No. 45340 Forestry Suppliers, Inc., Jackson, Miss.

P.O. Box 2920, Casper, Wyoming 82602

RECEIVED
JUN 12 1986
DIVISION OF
OIL, GAS & MINING

June 10, 1986

Mobile Oil Corp.
P.O. Box 5444
Denver, CO 80217
Attn: Joint Interest Advisor

Re: Ratherford Unit
Injection Well Conversions

Dear Sirs,

Phillips Petroleum Company has made application to the State of Utah, Division of Oil, Gas and Mining to convert twelve existing producing wells to water injection wells in the Ratherford Unit secondary recovery project. The revised rule 502(b)(12) requires that you are notified of these plans and are provided with a copy of the application for injection well (Form DOGM-UIC-1). Under Rule 503 you are provided with the opportunity to object to the proposed application.

"Applications for Injection Well" are attached for the following existing wells:

11-W44	13-W24	17-W34
12-W22	13-W42	18-W23
12-W31	17-W12	18-W32
12-W42	17-W23	18-W34

Please contact Renee Taylor or Blair Murphy at (307) 237-3791 with any questions.

Sincerely,

D. C. Gill
Area Manager

RCT/lt (17)
cc: B. J. Murphy-Casper
J. R. Weichbrodt-Cortez
Casper-RC
St. of Utah OG&M/UIC

P.O. Box 2920, Casper, Wyoming 82602

June 10, 1986

Navajo Tribe
Minerals Department
P.O. Box 146
Window Rock, AZ 86515

Re: Ratherford Unit
Injection Well Conversions

Dear Sirs,

Phillips Petroleum Company has made application to the State of Utah, Division of Oil, Gas and Mining to convert twelve existing producing wells to water injection wells in the Ratherford Unit secondary recovery project. The revised rule 502(b)(12) requires that you are notified of these plans and are provided with a copy of the application for injection well (Form DOGM-UIC-1). Under Rule 503 you are provided with the opportunity to object to the proposed application.

"Applications for Injection Well" are attached for the following existing wells:

11-W44	13-W24	17-W34
12-W22	13-W42	18-W23
12-W31	17-W12	18-W32
12-W42	17-W23	18-W34

Please contact Renee Taylor or Blair Murphy at (307) 237-3791 with any questions.

Sincerely,

D. C. Gill
Area Manager

RCT/lt (17)
cc: B. J. Murphy-Casper
J. R. Weichbrodt-Cortez
Casper-RC
St. of Utah OG&M/UIC

P.O. Box 2920, Casper, Wyoming 82602

June 10, 1986

Texaco, Inc.
P.O. Box 3360
Casper, WY 82602
Attn: A. J. Sanford

Re: Ratherford Unit
Injection Well Conversions

Dear Sirs,

Phillips Petroleum Company has made application to the State of Utah, Division of Oil, Gas and Mining to convert twelve existing producing wells to water injection wells in the Ratherford Unit secondary recovery project. The revised rule 502(b)(12) requires that you are notified of these plans and are provided with a copy of the application for injection well (Form DOGM-UIC-1). Under Rule 503 you are provided with the opportunity to object to the proposed application.

"Applications for Injection Well" are attached for the following existing wells:

11-W44	13-W24	17-W34
12-W22	13-W42	18-W23
12-W31	17-W12	18-W32
12-W42	17-W23	18-W34

Please contact Renee Taylor or Blair Murphy at (307) 237-3791 with any questions.

Sincerely,

D. C. Gill
Area Manager

RCT/lt (17)
cc: B. J. Murphy-Casper
J. R. Weichbrodt-Cortez
Casper-RC
St. of Utah OG&M/UIC

UIC CHECKLIST FOR APPLICATION APPROVAL

OPERATOR Phillips WELL NUMBER Ratherford 17-12

SEC. 17 T. 41S R. 24E COUNTY San Juan

API # 43-037-15726

NEW WELL _____ DISPOSAL WELL _____ ENHANCED RECOVERY WELL ✓

- Plat showing surface ownership	Yes Feb. 86*	No _____
- Application forms complete	Yes ✓	No _____
- Schematic of well bore	Yes ✓	No _____
- Adequate geologic information	Yes Feb. 86	No _____
- Rate and Pressure information	Yes Feb. 86	No _____
- Fluid source	Yes Feb. 86	No _____
- Analysis of formation fluid	Yes Feb. 86	No _____
- Analysis of injection fluid	Yes Feb. 86	No _____
- USDW information	Yes Feb. 86	No _____
- Mechanical integrity test	Yes _____	No ✓

Comments: _____

*Info submitted in Feb. 1986

Reveiwed by Dorothy Swindel

UTAH
NATURAL RESOURCES
OIL, GAS AND MI[redacted]

3 Triad Center, Suite 350, Salt Lake City, UT 84180-1203

Ph. (801)538-5340

APPLICATION FOR INJECTION WELL

Operator: Phillips Petroleum Company Telephone: (307)237-3791

Address: P. O. Box 2920

City: Casper State: Wyoming Zip: 82602

Well no.: 17 W12 Field or Unit name: Ratherford Unit

Sec.: 17 Twp.: 41S Rng.: 24E County: San Juan Lease no. 14-20-603-353

	YES	NO
Is this application for expansion of an existing project?	X	
Will the proposed well be used for: Enhanced recovery?	X	
Disposal?		
Storage?		
Is this application for a new well to be drilled?		X
Has a casing test been performed for an existing well?		X

(If yes, date of test:)

Injection interval: from 5520' to 5624'

Maximum injection: rate 500 BWPD pressure 3000 psig

Injection zone contains X oil, X gas or ____ fresh water within 1/2 mile.

Additional information as required by Rule 502 should accompany this form.

I hereby certify that the foregoing is true and correct to the best of my knowledge:

Signed: DC Gill Title: Area Manager Date: 6-9-86

D.C. Gill

(This space for DOGM approval)

RECEIVED
JUN 12 1986
DIVISION OF
OIL, GAS & MINING

Approved by: Title: Date:

DOGM-UIC-1 (2/86)

LOCATION: SW NW - S[redacted]17 - T41S - R24E

FIELD: GREATER ANETH

RESERVOIR: Desert Creek Zone I

[redacted] COMPLETION: injector

PRESENT STATUS: Conversion

RKB 4766'

GL 4748'

178.70'

Well #: 17W12

1540'

SURFACE CASING: 13 3/8"
27.1# Armco

INTERMEDIATE CASING: 8 5/8"
24# J-55

PRODUCTION CASING: 5 1/2"
14#/15.5#

PERFORATIONS:
5520 - 36
5544 - 61
5570 - 77
5596 - 5624

PACKER: Baker model AB
Tension type or similar
Set @ 5420'

Logs on file:
Gamma Ray
SP
Neutron Porosity
Electrical / Resistivity
Caliper
Microlog

RECEIVED
JUN 12 1986
DIVISION OF
OIL, GAS & MINING

PBTD: 5626'

OTD: 5735'

5730'

Phillips Petroleum Company

STATE OF UTAH
NATURAL RESOURCES
Oil, Gas & Mining

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

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

July 18, 1986

072104

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

Gentlemen:

RE: Injection Well Approval - Cause No. UIC-083

Insofar as this Division is concerned, administrative approval is hereby granted to convert the following wells to Class II enhanced recovery injection wells:

RATHERFORD UNIT - San Juan County, Utah

#11-44, Sec. 11, T41S, R23E
#12-22, Sec. 12, T41S, R23E
#12-31, Sec. 12, T41S, R23E
#12-42, Sec. 12, T41S, R23E
#13-24, Sec. 13, T41S, R23E
#13-42, Sec. 13, T41S, R23E
#17-12, Sec. 17, T41S, R24E
#17-23, Sec. 17, T41S, R24E
#17-34, Sec. 17, T41S, R24E
#18-23, Sec. 18, T41S, R24E
#18-32, Sec. 18, T41S, R24E
#18-34, Sec. 18, T41S, R24E

This approval is conditional upon full compliance with the UIC rules and regulations adopted by the Board of Oil, Gas and Mining, and construction and operation of the wells as outlined in the application submitted.

If you have any questions concerning this matter, please do not hesitate to call or write.

Best regards,

Dianne R. Nielson

Dianne R. Nielson
Director

mfp
7627U

Affidavit of Publication

ADM-358

STATE OF UTAH,

County of Salt Lake **SS.**

BEFORE THE DIVISION OF OIL, GAS AND MINING DEPARTMENT OF NATURAL RESOURCES STATE OF UTAH CAUSE NO. UIC-083

IN THE MATTER OF THE APPLCIATION OF PHILLIPS PETROLEUM COMPANY, FOR ADMINISTRATIVE APPROVAL TO INJECT FLUID INTO WELLS TO BE CONVERTED TO ENHANCED RECOVERY INJECTION WELLS LOCATED IN SECTIONS 11, 12 AND 13, TOWNSHIP 41 SOUTH, RANGE 23 EAST; AND SECTIONS 17, AND 18, TOWNSHIP 41 SOUTH, RANGE 24 EAST, S.L.M. SAN JUAN COUNTY, UTAH.

THE STATE OF UTAH TO ALL INTERESTED PARTIES IN THE ABOVE ENTITLED MATTER.

Notice is hereby given that Phillips Petroleum Company, P.O. Box 2920, Casper, Wyoming 82602, has requested administrative approval from the Division to convert the following listed wells to enhanced recovery water injection wells:

RATHERFORD UNIT
San Juan County, Utah
#11-44, Sec. 11, T41S, R23E
#12-22, Sec. 12, T41S, R23E
#12-31, Sec. 12, T41S, R23E
#12-42, Sec. 12, T41S, R23E
#13-24, Sec. 13, T41S, R23E
#13-42, Sec. 13, T41S, R23E
#17-12, Sec. 17, T41S, R24E
#17-23, Sec. 17, T41S, R24E
#17-34, Sec. 17, T41S, R24E
#18-23, Sec. 18, T41S, R24E
#18-32, Sec. 18, T41S, R24E
#18-34, Sec. 18, T41S, R24E

Injection Interval: Desert Creek 5317' to 5712'
Maximum Estimated Surface Pressure: 3000 psig
Maximum Estimated Water Injection Rate: 500 BWPD

Approval of this Application will be granted unless objections are filed with the division of Oil, Gas and Mining within fifteen days after publication of this Notice. Objections, if any, should be mailed to the Division of Oil, Gas and Mining, Attention: UIC Program Manager, 355 West North Temple, 3 Triad Center, Suite 350, Salt Lake City, Utah 84180-1203.

DATED this 20th day of June, 1986.

STATE OF UTAH
DIVISION OF OIL

Sharon Payne

Being first duly sworn, deposes and says that he/she is legal advertising clerk of THE SALT LAKE TRIBUNE, a daily newspaper printed in the English language with general circulation in Utah, and published in Salt Lake City, Salt Lake County, in the State of Utah, and of the DESERET NEWS, a daily newspaper printed in the English language with general circulation in Utah, and published in Salt Lake City, Salt Lake County, in the State of Utah.

That the legal notice of which a copy is attached hereto

Cause No. UIC-083

was published in said newspaper on

July 2, 1986

Sharon Payne
Legal Advertising Clerk

Subscribed and sworn to before me this 10th day of July A.D. 19 86

B. J. Davis
Notary Public

My Commission Expires

March 01,1988

NOTARY PUBLIC
B. J. DAVIS
STATE OF UTAH

AFFIDAVIT OF PUBLICATION

Public notice

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

IN THE MATTER OF THE APPLICATION OF PHILLIPS PETROLEUM COMPANY, FOR ADMINISTRATIVE APPROVAL TO INJECT FLUID INTO WELLS TO BE CONVERTED TO ENHANCED RECOVERY INJECTION WELLS LOCATED IN SECTIONS 11, 12 AND 13, TOWNSHIP 41 SOUTH, RANGE 23 EAST: AND SECTIONS 17, AND 18, TOWNSHIP 41 SOUTH, RANGE 24 EAST, S.L.M. SAN JUAN COUNTY, UTAH

* * *

CAUSE NO. UIC-083

THE STATE OF UTAH TO ALL INTERESTED PARTIES IN THE ABOVE ENTITLED MATTER.

Notice is hereby given that Phillips Petroleum Company, P.O. Box 2920, Casper, Wyoming 82602, has requested administrative approval from the Division to convert the following listed wells to enhanced recovery water injection wells:

RATHERFORD UNIT
SAN JUAN COUNTY, UTAH
#11-44, Sec. 11, T41S, R23E
#12-22, Sec. 12, T41S, R23E
#12-31, Sec. 12, T41S, R23E
#12-42, Sec. 12, T41S, R23E
#13-24, Sec. 13, T41S, R23E
#13-42, Sec. 13, T41S, R23E
#17-12, Sec. 17, T41S, R24E
#17-23, Sec. 17, T41S, R24E
#17-34, Sec. 17, T41S, R24E
#18-23, Sec. 18, T41S, R24E
#18-32, Sec. 18, T41S, R24E
#18-34, Sec. 18, T41S, R24E

INJECTION INTERVAL: Desert Creek 5317' to 5712'

MAXIMUM ESTIMATED SURFACE PRESSURE: 3000 psig

MAXIMUM ESTIMATED WATER INJECTION RATE: 500 BWPD

Approval of this Application will be granted unless objections are filed with the Division of Oil, Gas and Mining withing fifteen days after publication of this Notice. Objections, if any, should be mailed to the Division of Oil, Gas and Mining, Attention: UIC Program Manager, 355 West North Temple, 3 Triad Center, Suite 350, Salt Lake City, Utah 84180-1203.

DATED this 20th day of June, 1986.

STATE OF UTAH
DIVISION OF OIL,
GAS AND MINING
s/ Marjorie L. Anderson
Administrative Assistant

Published in The San Juan Record July 2, 1986.

I, Joyce Martin, being duly sworn, depose and say that I am the publisher of **The San Juan Record**, a weekly newspaper of general circulation published at Monticello, Utah every Wednesday; that notice of Cause No. UIC-083

a copy of which is hereunto attatched, was published in the regular and entire issue of each number of said newspaper for a period of one issues, the first publication having been made on July 2, 1986. and the last publication having been made on _____.

Joyce A. Martin
Publisher

Subscribed and sworn to before me this 2nd day of July, A.D. 1986.

Ingrid K Adams
Notary Public residing at Monticello, Utah

My commission expires December 2, 1987

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

---ooOoo---

IN THE MATTER OF THE APPLICATION OF PHILLIPS PETROLEUM COMPANY, FOR ADMINISTRATIVE APPROVAL TO INJECT FLUID INTO WELLS TO BE CONVERTED TO ENHANCED RECOVERY INJECTION WELLS LOCATED IN SECTIONS 11, 12 AND 13, TOWNSHIP 41 SOUTH, RANGE 23 EAST; AND SECTIONS 17, AND 18, TOWNSHIP 41 SOUTH, RANGE 24 EAST, S.L.M. SAN JUAN COUNTY, UTAH	:	CAUSE NO. UIC-083

---ooOoo---

THE STATE OF UTAH TO ALL INTERESTED PARTIES IN THE ABOVE ENTITLED MATTER.

Notice is hereby given that Phillips Petroleum Company, P.O. Box 2920, Casper, Wyoming 82602, has requested adminstrative approval from the Division to convert the following listed wells to enhanced recovery water injection wells:

RATHERFORD UNIT - San Juan County, Utah

#11-44, Sec. 11, T41S, R23E	#17-12, Sec. 17, T41S, R24E
#12-22, Sec. 12, T41S, R23E	#17-23, Sec. 17, T41S, R24E
#12-31, Sec. 12, T41S, R23E	#17-34, Sec. 17, T41S, R24E
#12-42, Sec. 12, T41S, R23E	#18-23, Sec. 18, T41S, R24E
#13-24, Sec. 13, T41S, R23E	#18-32, Sec. 18, T41S, R24E
#13-42, Sec. 13, T41S, R23E	#18-34, Sec. 18, T41S, R24E

INJECTION INTERVAL: Desert Creek 5317' to 5712'
MAXIMUM ESTIMATED SURFACE PRESSURE: 3000 psig
MAXIMUM ESTIMATED WATER INJECTION RATE: 500 BWPD

Approval of this Application will be granted unless objections are filed with the Division of Oil, Gas and Mining within fifteen days after publication of this Notice. Objections, if any, should be mailed to the Division of Oil, Gas and Mining, Attention: UIC Program Manager, 355 West North Temple, 3 Triad Center, Suite 350, Salt Lake City, Utah 84180-1203.

DATED this 20th day of June, 1986.

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

Marjorie L. Anderson
MARJORIE L. ANDERSON
Administrative Assistant

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

June 23, 1986

Newspaper Agency Corporation
Legal Advertising
143 South Main - Mezzanine Floor
Salt Lake City, Utah 84110

Gentlemen:

RE: Cause No. UIC-083

Enclosed is a Notice of Application of Administrative Approval before the Division of Oil, Gas and Mining, Department of Natural Resources, State of Utah.

It is requested that this notice be published ONCE ONLY, as soon as possible, but no later than the 2nd day of July, 1986. In the event that said notice cannot be published by this date, please notify me immediately by calling 538-5340.

Upon completion of this request, please send proof of publication and statement of cost to the Division of Oil, Gas and Mining, 355 West North Temple, 3 Triad Center, Suite 350, Salt Lake City, Utah 84180-1203.

Sincerely,

Marlayne Poulsen
for
Marjorie L. Anderson
Administrative Assistant

mfp

Enclosure

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

June 23, 1986

San Juan Record
Legal Advertising
Box 879
Monticello, Utah 84535

Gentlemen:

RE: Cause No. UIC-083

Enclosed is a Notice of Application of Administrative Approval before the Division of Oil, Gas and Mining, Department of Natural Resources, State of Utah.

It is requested that this notice be published ONCE ONLY, as soon as possible, but no later than the 2nd day of July, 1986. In the event that said notice cannot be published by this date, please notify me immediately by calling 538-5340.

Upon completion of this request, please send proof of publication and statement of cost to the Division of Oil, Gas and Mining, 355 West North Temple, 3 Triad Center, Suite 350, Salt Lake City, Utah 84180-1203.

Sincerely,

Marlayne Poulsen
for
Marjorie L. Anderson
Administrative Assistant

mfp

Enclosure

UIC-083

Publication was sent to the following:

Utah State Department of Health
Water Pollutioncontrol
Attn: Loren Morton
4241 State Office Building
Salt Lake City, Utah 84114

U.S. Environmental Protection Agency
Suite 1300
Attn: Mike Streiby
999 18th Street
Denver, Colorado 80202-2413

Bureau of Land Management
Fluid Minerals Caller Service #4104
Farmington, New Mexico 87499

Phillips Petroleum Company
PO Box 2920
Casper Wyoming 82602

Mobil Oil Corporation
PO Box 5444
Denver, Colorado 80217

Navajo Tribe
Minerals Development
PO Box 146
Window Rock, Arizona 86515

Texaco, Incorporated
PO Box 3360
Casper, Wyoming 82602

Newspaper Agency Corporation
Legal Advertising
143 South Main - Mezzanine Floor
Salt LakeCity, Utah 84110

San Juan Record
Legal Advertising
Box 879
Monticello, Utah 84535

Marlayne Poulsen
June 23, 1986

UTAH NATURAL RESOURCES
Oil Gas & Mining
3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

DOGM 56 64 23
7/85

CC: GLH (DTS 2-3-87)
Commencement

JAN 30 1987

DIVISION OF
OIL, GAS & MINING

PRODUCING ENTITY ACTION

Operator Name Phillips Petroleum Company
Address P. O. Box 2920
City Casper State Wyoming Zip 82604
Utah Account No. N0772

Authorized Signature Meredith K. Widdes
Effective Date December, 1986 Telephone (307) 237-3791

ACTION CODE

- A Establish new entity for new well(s).
- B Add new well(s) to existing entity.
- C Delete well(s) from existing entity.
- D Establish new entity for well(s) being deleted from existing entity.
- E Change well(s) from one entity to another existing entity.
- F Other. (Specify using attachments if necessary.)

BRACKET WELLS TO BE GROUPED TOGETHER.

(Use black ink or typewriter ribbon.)

Action Code	Current Entity No.	New Entity No.	API No.	Well Name	Well Location Sec.	T	R	Q/Q	County	Producing Formation
C	06280		4303715728	Ratherford Unit Well #17-23	17	41S	24E	NESW	San Juan	PRDX

Explanation of action:
Well converted to a water injection well effective 11/20/86.

C	06280		4303730244	Ratherford Unit Well #18-23	18	41S	24E	NESW	San Juan	DSCR

Explanation of action:
Well converted to a water injection well effective 11/17/86

C	06280		4303715840	Ratherford Unit Well #1-44	1	41S	23E	SESE	San Juan	PRDX

Explanation of action:
Well converted to a water injection well effective 12/15/86

C	06280		4303715842	Ratherford Unit Well #11-44	11	41S	23E	SESE	San Juan	PRDX

Explanation of action:
Well converted to a water injection well effective 12/5/86

an equal opportunity employer

UTAH NATURAL RESOURCES
Oil Gas & Mining
3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

JAN 30 1987
DIVISION OF OIL, GAS & MINING

CC: GLH (DTS 2-3-87)

DOGM 56 64 23
7/85

PRODUCING ENTITY ACTION

Operator Name: Phillips Petroleum Company
Address: P. O. Box 2920
City: Casper State: Wyoming Zip: 82602
Utah Account No. N0772

Authorized Signature: Meredith K. Wickiker
Effective Date: December, 1986 Telephone: (307) 237-3791

ACTION CODE

- A Establish new entity for new well(s).
- B Add new well(s) to existing entity.
- C Delete well(s) from existing entity.
- D Establish new entity for well(s) being deleted from existing entity.
- E Change well(s) from one entity to another existing entity.
- F Other. (Specify using attachments if necessary.)

BRACKET WELLS TO BE GROUPED TOGETHER.

(Use black ink or typewriter ribbon.)

Action Code	Current Entity No.	New Entity No.	API No.	Well Name	Well Location Sec.	T	R	Q/Q	County	Producing Formation
C	06280		4303715845	Ratherford Unit Well #12-22	12	41S	23E	SENW	San Juan	PRDX

Explanation of action:
Well converted to a water injection well effective 12/30/86.

C	06280		4303715850	Ratherford Unit Well #12-42	12	41S	23E	SENE	San Juan	DSCR

Explanation of action:
Well converted to a water injection well effective 12/23/86.

C	06280		4303715726	Ratherford Unit Well #17-12	17	41S	24E	SWNW	San Juan	PRDX

Explanation of action:
Well converted to a water injection well effective 12/12/86.

C	06280		4303715862	Ratherford Unit Well #24-31	24	41S	23E	NWNE	San Juan	PRDX

Explanation of action:
Well converted to a water injection well effective 12/13/86.

an equal opportunity employer

UTAH NATURAL RESOURCES
Oil Gas & Mining
3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

DOGM 56 64 23
7/85

CC: GLH (DTS 2-3-87)

JAN 30 1987
DIVISION OF
OIL, GAS & MINING

PRODUCING ENTITY ACTION

Operator Name Phillips Petroleum Company
Address P. O. Box 2920
City Casper State Wyoming Zip 82604
Utah Account No. N0772

Authorized Signature Meredith K. Widdes
Effective Date December, 1986 Telephone (307) 237-3791

ACTION CODE

- A Establish new entity for new well(s).
- B Add new well(s) to existing entity.
- C Delete well(s) from existing entity.
- D Establish new entity for well(s) being deleted from existing entity.
- E Change well(s) from one entity to another existing entity.
- F Other. (Specify using attachments if necessary.)

BRACKET WELLS TO BE GROUPED TOGETHER.

(Use black ink or typewriter ribbon.)

Action Code	Current Entity No.	New Entity No.	API No.	Well Name	Well Location Sec.	T	R	Q/Q	County	Producing Formation
C	06280		4303715728	Ratherford Unit Well #17-23	17	41S	24E	NESW	San Juan	PRDX

Explanation of action:
Well converted to a water injection well effective 11/20/86.

C	06280		4303730244	Ratherford Unit Well #18-23	18	41S	24E	NESW	San Juan	DSCR

Explanation of action:
Well converted to a water injection well effective 11/17/86

C	06280		4303715840	Ratherford Unit Well #1-44	1	41S	23E	SESE	San Juan	PRDX

Explanation of action:
Well converted to a water injection well effective 12/15/86

C	06280		4303715842	Ratherford Unit Well #11-44	11	41S	23E	SESE	San Juan	PRDX

Explanation of action:
Well converted to a water injection well effective 12/5/86

an equal opportunity employer

UTAH
NATURAL RESOURCES
Oil Gas & Mining
3 Triad Center • Suite 350 • Salt Lake City, UT 84180-1203 • 801-538-5340

JAN 30 1987
DIVISION OF
OIL GAS & MINING

CC: BLM
(DTS 2-3-87)

DOGM 56 64 23
7/85

PRODUCING ENTITY ACTION

Operator Name Phillips Petroleum Company
Address P. O. Box 2920
City Casper State Wyoming Zip 82602
Utah Account No. N0772

Authorized Signature Meredith K. Widiker
Effective Date December, 1986 Telephone (307) 237-3791

ACTION CODE

- A Establish new entity for new well(s).
- B Add new well(s) to existing entity.
- C Delete well(s) from existing entity.
- D Establish new entity for well(s) being deleted from existing entity.
- E Change well(s) from one entity to another existing entity.
- F Other. (Specify using attachments if necessary.)

BRACKET WELLS TO BE GROUPED TOGETHER.

(Use black ink or typewriter ribbon.)

Action Code	Current Entity No.	New Entity No.	API No.	Well Name	Well Location Sec.	T	R	Q/Q	County	Producing Formation
C	06280		4303715845	Ratherford Unit Well #12-22	12	41S	23E	SENW	San Juan	PRDX

Explanation of action:

Well converted to a water injection well effective 12/30/86.

C	06280		4303715850	Ratherford Unit Well #12-42	12	41S	23E	SENE	San Juan	DSCR

Explanation of action:

Well converted to a water injection well effective 12/23/86.

C	06280		4303715726	Ratherford Unit Well #17-12	17	41S	24E	SWNW	San Juan	PRDX

Explanation of action:

Well converted to a water injection well effective 12/12/86.

C	06280		4303715862	Ratherford Unit Well #24-31	24	41S	23E	NWNE	San Juan	PRDX

Explanation of action:

Well converted to a water injection well effective 12/13/86.

an equal opportunity employer

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

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

SUNDRY NOTICES AND REPORTS ON WELLS

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

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.: 17W12

10. FIELD AND POOL, OR WILDCAT: Greater Aneth

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

12. COUNTY OR PARISH: San Juan

13. STATE: Utah

1. OIL WELL ☐ GAS WELL ☐ OTHER Water Injector

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.* See also space 17 below.) At surface: 1980' FNL, 510' FWL SW NW

API# 43-037-15726

14. PERMIT NO.:

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 4766' RKB

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

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF	☐	PULL OR ALTER CASING	☐
FRACTURE TREAT	☐	MULTIPLE COMPLETE	☐
SHOOT OR ACIDIZE	☐	ABANDON*	☐
REPAIR WELL	☐	CHANGE PLANS	☐
(Other)			☐

SUBSEQUENT REPORT OF:

WATER SHUT-OFF	☐	REPAIRING WELL	☐
FRACTURE TREATMENT	☐	ALTERING CASING	☐
SHOOTING OR ACIDIZING	☐	ABANDONMENT*	☐
(Other) Convert to water injection			XX

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

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

Dec. 1, 1986 through Dec. 9, 1986

MI & RU 12/1/86. COOH w/pump, rods, and tbg. CO to 5626'. GIH w/cmt retainer set at 5586'. Sqz below cmt retainer w/50 sx Class B cmt. Perf Zone I 5520-36', 5544-66', and 5570'-5577'. Acidize Zone I w/6000 gal 28% HCL. Swab back load. Run Duoline tbg and wtr inj pkr, set at 5465'. Conduct UIC test. RD WS 12/9/86. HU to injection 12/12/86.

Production Before	Shut-in
Injection After	96 BWPD @ 2025 psi

AUG 4 1987
DIVISION OF OIL GAS & MINING

4-BLM, Farmington, NM	1-Chieftain
2-Utah O&G CC, SLC, UT	1-Mobil Oil
1-M. Williams, B'Ville	1-Texaco, Inc.
1-J. Landrum, Denver	1-Chevron USA
1-J. Reno, Cortez	1-File RC

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

SIGNED D. C. Gill TITLE Area Manager DATE 7/27/87

(This space for Federal or State office use)

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.

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

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

SUNDRY NOTICES AND REPORTS ON WELLS

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

5. LEASE DESIGNATION AND SERIAL NO.

6. IF INDIAN, ALLOTTEE OR TRIBE NAME
SW-I-4192

1. OIL WELL ☐ GAS WELL ☐ OTHER WATER INJECTION & WATER SUPPLY WELLS

7. UNIT AGREEMENT NAME
RATHERFORD UNIT #7960041920

2. NAME OF OPERATOR
PHILLIPS PETROLEUM COMPANY

8. FARM OR LEASE NAME

3. ADDRESS OF OPERATOR
152 N. DURBIN, 2ND FLOOR, CASPER, WYOMING 82601

9. WELL NO.
VARIOUS (see attached)

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

10. FIELD AND POOL, OR WILDCAT
GREATER ANETH

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sections 1 thru 30
T41S - R23E & 24E

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.)

12. COUNTY OR PARISH: San Juan

13. STATE: Utah

RECEIVED
MAR 20 1989
DIVISION OF
OIL, GAS & MINING

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

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	☐	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 OWNERSHIP			XX
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

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

This is to advise all Water Injection and Water Supply Wells on the Ratherford Unit, listed on the attached sheet, were sold to Phillips Petroleum Company, effective August 1, 1985.

(former Operator - Phillips Oil Company)

3 - BLM, Farmington, NM
2 - ~~Utah~~ O&G CC, SLC, UT
1 - File

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

SIGNED S. H. Oden TITLE District Superintendent DATE March 17, 1989

(This space for Federal or State office use)

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.

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.

RECEIVED
MAY 0 8 1991
DIVISION OF
OIL GAS & MINING

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: SW-I-4192
8. Well Name and No.: Ratherford Unit #17W12
9. API Well No.: 43.037-15726
10. Field and Pool, or Exploratory Area: Greater Aneth
11. County or Parish, State: San Juan, Utah

1. Type of Well: ☐ Oil Well ☐ Gas Well ☒ Other Water Injection
2. Name of Operator: Phillips Petroleum Company
3. Address and Telephone No.: 300 W. Arrington, Suite 200, Farmington, NM 87401 (505) 599-3412
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 1980' FNL & 510' FWL, Sec. 17, 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
	☐ Recompletion	☐ New Construction
☐ Subsequent Report	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
☐ Final Abandonment Notice	☐ Altering Casing	☐ Conversion to Injection
	☒ Other Clean Out & Stimulate	☐ Dispose Water (Note: Report results of multiple completion on Wel 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.)*

April 23, 1991 thru April 30, 1991

MI & RU well service unit 4/23/91. ND WH, NU BOP's. COOH w/pkr. TIH w/5-1/2" csg scraper and 4-3/4" bit. Tag fill @ 5540'. RU swivel and drill out from 5540' to 5591'. Circ. hole clean. RIH w/Baker Model R-3 Pkr & set. Test annulus to 1000 psi - okay. RU Dowell. Test lines to 4000 psi. Pump 1000 gals 28% HCl and 336 gals 40# gelled brine w/2 ppg rock salt diverter, 2000 gals 28% HCl acid. Max. pressure 3300 psi, avg. 3100 psi. Final rate 2900 psi @ 2 BPM - ISIP 2900 psi, 5 min.-2100 psi, 10 min.-1900 psi, 15 min.-1780 psi.SI for 3 hours. Check well for pressure, 300 psi. Swab back 52 bbls fluid. Release pkr, pump 15 bbls wtr down tbg. COOH, L/D workstring & pkr. TIH w/Baker 5-1/2" Inverted Lok-set pkr w/on-off tool. Test tbg to 3000 psi. Set pkr @ 5472 RKB & test annulus to 1200 psi. Pull on-off tool and circ. pkr fluid. ND BOP's and NU WH. Land tbg. and ran MIT test to 1080 psi for 45 min - okay.Pump plug out & COOH w/sandline. RD & MO well service unit and returned well to injection 4-30-91.

Prior Injection Rate - 46 BWPD @ 2700 psi
Post Injection Rate - 427 BWPD @ 650 psi

cc: 5 - BLM, 2 - Utah O&GCC, 1 - EPA, 1 - N. Anstine, 1 - V.S. Shaw, 1 - Chieftain
1 - Mobil Oil, 1 - Texaco, 1 - Chevron, 1 - PPCO, Houston, 1 PPCO, Farmington

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

Signed [signature] Title Sr. Drlg. & Prod. Engr. Date 5-3-91

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

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

*See Instruction on Reverse Side

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED
JUN 1 4 1991
DIVISION OF
OIL GAS & MINING

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: SW-I-4192
8. Well Name and No.: Ratherford Unit #17W12
9. API Well No.: 43-037-15726
10. Field and Pool, or Exploratory Area: Greater Aneth
11. County or Parish, State: San Juan, Utah

1. Type of Well: [ ] Oil Well [ ] Gas Well [X] Other Water Injection
2. Name of Operator: Phillips Petroleum Company
3. Address and Telephone No.: 300 W. Arrington, Suite 200, Farmington, NM 87401 (505) 599-3412
4. Location of Well (Footage, Sec., T., R., M., or Survey Description): 1980' FNL & 510' FWL, Sec. 17, 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
	[ ] Recompletion	[ ] New Construction
[ ] Subsequent Report	[ ] Plugging Back	[ ] Non-Routine Fracturing
	[ ] Casing Repair	[ ] Water Shut-Off
[ ] Final Abandonment Notice	[ ] Altering Casing	[ ] Conversion to Injection
	[X] Other Clean Out & Stimulate	[ ] 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.)*

April 23, 1991 thru April 30, 1991

MI & RU well service unit 4/23/91. ND WH, NU BOP's. COOH w/pkr. TIH w/5-1/2" csg scraper and 4-3/4" bit. Tag fill @ 5540'. RU swivel and drill out from 5540' to 5591'. Circ. hole clean. RIH w/Baker Model R-3 Pkr & set. Test annulus to 1000 psi - okay. RU Dowell. Test lines to 4000 psi. Pump 1000 gals 28% HCl and 336 gals 40# gelled brine w/2 ppg rock salt diverter, 2000 gals 28% HCl acid. Max. pressure 3300 psi, avg. 3100 psi. Final rate 2900 psi @ 2 BPM - ISIP 2900 psi, 5 min.-2100 psi, 10 min.-1900 psi, 15 min.-1780 psi.SI for 3 hours. Check well for pressure, 300 psi. Swab back 52 bbls fluid. Release pkr, pump 15 bbls wtr down tbg. COOH, L/D workstring & pkr. TIH w/Baker 5-1/2" Inverted Lok-set pkr w/on-off tool. Test tbg to 3000 psi. Set pkr @ 5472 RKB & test annulus to 1200 psi. Pull on-off tool and circ. pkr fluid. ND BOP's and NU WH. Land tbg. and ran MIT test to 1080 psi for 45 min - okay.Pump plug out & COOH w/sandline. RD & MO well service unit and returned well to injection 4-30-91.

Prior Injection Rate - 46 BWPD @ 2700 psi
Post Injection Rate - 427 BWPD @ 650 psi

cc: 5 - BLM, 2 - Utah O&GCC, 1 - EPA, 1 - N. Anstine, 1 - V.S. Shaw, 1 - Chieftain
1 - Mobil Oil, 1 - Texaco, 1 - Chevron, 1 - PPCO, Houston, 1 PPCO, Farmington

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

Signed [signature] Title Sr. Drlg. & Prod. Engr. Date 5-3-91

(This space for Federal or State office use)

Approved by _____ Title _____ Date ACCEPTED FOR RECORD
Conditions of approval, if any:

JUN 03 1991
FARMINGTON RESOURCE AREA
BY Smm

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
December 1989

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED
JUL 0 5 1991
DIVISION OF OIL GAS & MINING

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

5. Lease Designation and Serial No.: See Below

6. If Indian, Allottee or Tribe Name: Navajo Tribal

7. If Unit or CA, Agreement Designation: Ratherford SW-I-4192

8. Well Name and No.: See Below

9. API Well No.: 43-037-15726

10. Field and Pool, or Exploratory Area: Greater Aneth

11. County or Parish, State: San Juan, Utah

SUBMIT IN TRIPLICATE

1. Type of Well: [ ] Oil Well [ ] Gas Well [X] Other: Water Injection

2. Name of Operator: PHILLIPS PETROLEUM COMPANY,

3. Address and Telephone No.: 5525 Hwy 64, NBU 3004, Farmington, NM 87401 505-599-3455

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

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 MIT Compliance	

(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.)*

During the MIT test being performed by the EPA. (Mr. George Robin) from 6/18/91-6/27/91 four wells were found to have tubing hanger leaks. The four wells and their locations are listed below. Within 180 days these wells will have the tubing hanger seals repaired/replaced. A MIT will be performed at that time to ensure mechanical intergrity.

10W23, 1980 FSL, 1980 FWL, Sec. 10, T41S, R24E, Lease # 14-20-603-4043
19W43, 1980 FSL, 760 FEL, Sec. 19, T41S, R24E, Lease # 14-20-603-353
17W12, 1980 FNL, 760 FEL, Sec. 17, T41S, R24E, Lease # 14-20-603-353
18W12, 1980 FNL, 560 FWL, SEc. 18, T41S, R24E, Lease # 14-20-603-353

Distribution:
BLM-Farmington
Utah O&G, CC
EPA, San Francisco
Navajo EPA, Window Rock
Chieftain
Mobil
Texaco
Robert G. Flesher
W.R. Heuman
V.S. Shaw -Houston
N.D. Anstine -Bartlesv.
PPCo-Houston

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

Signed: W.R. Heuman for LOUIS ROBINSON Title: Sr. Drilling & Prod. Eng. Date: 7-1-91

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

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

*See Instruction on Reverse Side

FORM 10

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

MONTHLY OIL AND GAS PRODUCTION REPORT

OPERATOR NAME AND ADDRESS:

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

RECEIVED
AUG 16 1993
DIVISION OF
OIL, GAS & MINING

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 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)**

*931001 updated. fec

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 ~~ASSU~~ 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: 303 565 2212 ~~214 658 2528~~

(6/93)

FORM=NR0003.FRM 07/2

FORM 9

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

SUNDRY NOTICES AND REPORTS ON WELLS

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

5. LEASE DESIGNATION & SERIAL NO.

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

1. OIL WELL ☐ GAS WELL ☐ OTHER

7. UNIT AGREEMENT NAME: RATHERFORD UNIT

2. NAME OF OPERATOR: MOBIL OIL CORPORATION

8. FARM OR LEASE NAME

3. ADDRESS OF OPERATOR: P. O. BOX 633 MIDLAND, TX 79702

9. WELL NO.

RECEIVED SEP 13 1993 DIVISION OF OIL, GAS & MINING

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

10. FIELD AND POOL, OR WILDCAT: GREATER ANETH

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

14. API NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.)

12. COUNTY: 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)

STATE OF UTAH
DIVISION OF OIL, GAS AND MINING

OCT 25 1995

TRANSFER OF AUTHORITY TO INJECT - UIC FORM 5

Well name and number: _____

Field or Unit name: RATHERFORD UNIT API no. _____

Well location: QQ ____ section ____ township ____ range ____ county _____

Effective Date of Transfer: July 1, 1993

CURRENT OPERATOR

Transfer approved by:

Name Ed Hasely Company Phillips Petroleum Company

Signature Ed Hasely Address 5525 HWY. 64

Title Environmental Engineer Farmington, NM 87401

Date October 22, 1993 Phone (505) 599-3460

Comments:

NEW OPERATOR

Transfer approved by:

Name Shirley Todd Company Mobil Exploration & Producing North America

Signature Shirley Todd Address P O Box 633

Title Env. & Reg. Technician Midland, TX 79702

Date October 7, 1993 Phone (915) 688-2585

Comments:

(State use only)
Transfer approved by _____ Title UIC Manager

Approval Date 10-27-93

Lisha Cordova (801) 538-5340

(3/89)

BEFORE THE OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF UTAH

APPLICATION OF PHILLIPS PETROLEUM COMPANY FOR THE APPROVAL OF THE UNIT OPERATIONS AND PRESSURE MAINTENANCE PROGRAM FOR THE RATHERFORD UNIT IN THE GREATER ANETH AREA, SAN JUAN COUNTY, UTAH	)	CAUSE NO. 63

O R D E R

This Cause came on for hearing before the Oil and Gas Conservation Commission of the State of Utah at 10 o'clock a. m. on Wednesday, September 13, 1961, in the Crystal Room, Hotel Newhouse, Fourth South at Main Street, Salt Lake City, Utah, pursuant to notice duly and regularly given. The entire Commission, except Walter G. Mann, was present, Edward W. Clyde presiding. Appearances were made as follows: Cecil C. Hamilton, attorney, on behalf of Phillips Petroleum Company; Clair M. Senior, attorney, on behalf of Texaco, Inc.; Gordon Mayberry, attorney, on behalf of Continental Oil Company; R. R. Robison on behalf of Shell Oil Company. Others present included Carl Trawick, on behalf of United States Geological Survey; and J. R. White, on behalf of Texaco, Inc.

Evidence in support of the application was introduced by Phillips Petroleum Company, the applicant and Unit Operator of the Ratherford Unit, which embraces as the unit area the following described land in San Juan County, State of Utah, to wit:

TOWNSHIP 41 SOUTH, RANGE 23 EAST, SLBM

Section 1:	All	Sections 12 and 13:	All
Section 2:	S/2	Section 14:	S/2
Section 11:	E/2	Section 24:	All

TOWNSHIP 41 SOUTH, RANGE 24 EAST, SLBM

Section 3:	SW/4	Sections 15 through 21:	All
Section 4:	S/2	Section 22:	NW/4 and W/2 of the SW/4
Sections 5 through 9:	All		
Section 10:	S/2 and NW/4 and W/2 of NE/4		
Section 11:	S/2 of SW/4	Section 23:	NW/4 and W/2 of NE/4 and W/2 of SW/4
Section 14:	W/2		
		Section 29 and 30:	All
		Section 31:	W/2
		Section 32:	W/2

R. R. Robison on behalf of Shell Oil Company stated that (as contemplated by paragraph No. 5 of the Commission's order of February 24, 1959, in Cause No. 17 authorizing the drilling of certain test wells) Shell would submit to the Commission, as arbiter, the question as between Shell and Superior Oil Company

of the monetary value, if any, to be attributed to three test wells drilled within the Ratherford Unit area pursuant to said order of February 24, 1959.

No objection to the granting of the application was filed or expressed. The Shell Oil Company, Texaco, Inc. and Continental Oil Company expressed their support of the application of Phillips Petroleum Company.

FINDINGS OF FACT

The Commission finds that:

1. The unitized operation of the Ratherford Unit Area will enable pressure maintenance operations to be initiated and permit such Area to be operated in a manner which will prevent waste, protect correlative rights and result in greater ultimate recovery of oil and gas.

2. The Ratherford Unit Agreement has been approved by the various signatory parties as fair, reasonable and acceptable.

3. The water injection pressure maintenance program proposed by the applicant appears to be proper and designed to result in the greatest economic recovery of oil and gas to the end that all concerned, including the general public, may realize and enjoy the greatest good from the oil and gas resources of the unitized lands.

O R D E R

THEREFORE, IT IS ORDERED BY THE COMMISSION, and subject to its continuing jurisdiction, that:

1. Unit operation of the Ratherford Unit Area under the Ratherford Unit Agreement is approved.

2. The plan and program of water injection pressure maintenance operations proposed by applicant in its application filed herein should be and the same is hereby approved and the unit operator is authorized to proceed with and under such plan and program as soon as the Ratherford Unit Agreement becomes effective and operative.

3. If, at any time or from time to time, it appears necessary or desirable to the unit operator to alter or modify the hereby approved plan of pressure maintenance, any such alteration or modification shall be submitted for

and shall be subject to approval by the Commission or its delegated representative, which approval may be given without notice or hearing, unless otherwise ordered or directed by the Commission.

Dated this 13th day of September, 1961.

THE OIL AND GAS CONSERVATION
COMMISSION OF THE STATE OF UTAH

Edward W. Clyde, Commissioner presiding

C. R. Henderson, Chairman

M. V. Hatch, Commissioner

C. S. Thomson, Commissioner

Walter G. Mann, Commissioner

Sept 29, 1993

TO: Lisha Cordova - Utah Mining Oil & Gas

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

Here is copy of Rathford Unit Successor Operator.

4 pages including this one.

Re: Rathrford Unit (GC)

RECEIVED
BLM
27 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

DESIGNATION OF OPERATOR

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

070 FARMINGTON, NM

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. Fitts
Attorney-in-Fact

Mobil Exploration and Producing
North America Inc.

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

APPROVED BY	TITLE	DATE
	ACTING AREA DIRECTOR	7/9/93

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-VLC/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 Operator
☐ Designation of Agent
☐ Operator Name Change Only

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

TO (new operator) M E P N A
(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	43-037-15726					

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 –

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

NTITY REVIEW

Lec 1. (Rule R615-8-7) Entity assignments have been reviewed for all wells listed above. Were entity changes made? (yes/no) ____ (If entity assignments were changed, attach copies of Form 6, Entity Action Form).

N/A 2. State Lands and the Tax Commission have been notified through normal procedures of entity changes.

OND VERIFICATION (Fee wells only)

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

__ 2. A copy of this form has been placed in the new and former operators' bond files.

__ 3. The former operator has requested a release of liability from their bond (yes/no) ___. Today's date _____ 19___. If yes, division response was made by letter dated _____ 19___.

LEASE INTEREST OWNER NOTIFICATION RESPONSIBILITY

N/A 1. (Rule R615-2-10) The former operator/lessee of any **fee lease** well listed above has been notified by letter dated _____ 19___, of their responsibility to notify any person with an interest in such lease of the change of operator. Documentation of such notification has been requested.

DTS 11-10-93

N/A 2. Copies of documents have been sent to State Lands for changes involving **State leases**.

FILMING

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

FILING

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

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

COMMENTS

931006 BIA/Bhm Approved 7-9-93.

iE71/34-35

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	

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 **	037-15726					

OPERATOR CHANGE DOCUMENTATION

N/A 1. (Rule R615-8-10) Sundry or other legal documentation has been received from former operator (Attach to this form).

N/A 2. (Rule R615-8-10) Sundry or other legal documentation has been received from new operator (Attach to this form).

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

N/A 4. **(For Indian and Federal Wells ONLY)** The BLM has been contacted regarding this change (attach Telephone Documentation Form to this report). Make note of BLM status in comments section of this form. Management review of **Federal and Indian** well operator changes should take place prior to completion of steps 5 through 9 below.

Lec 5. Changes have been entered in the Oil and Gas Information System (Wang/IBM) for each well listed above. (8-3-95)

LWP 6. Cardex file has been updated for each well listed above. 8-31-95

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

Lec 8. Changes have been included on the monthly "Operator, Address, and Account Changes" memo for distribution to State Lands and the Tax Commission. (8-3-95)

Lec 9. A folder has been set up for the Operator Change file, and a copy of this page has been placed there for reference during routing and processing of the original documents.

- OVER -

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

ENTITY REVIEW

LEC 1. (Rule R615-8-7) Entity assignments have been reviewed for all wells listed above. Were entity changes made? (yes/no) ____ (If entity assignments were changed, attach copies of Form 6, Entity Action Form).

N/A 2. State Lands and the Tax Commission have been notified through normal procedures of entity changes.

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

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

___ 2. A copy of this form has been placed in the new and former operators' bond files.

___ 3. The former operator has requested a release of liability from their bond (yes/no) ___. Today's date _____ 19___. If yes, division response was made by letter dated _____ 19___.

LEASE INTEREST OWNER NOTIFICATION RESPONSIBILITY

N/A 1. (Rule R615-2-10) The former operator/lessee of any **fee lease** well listed above has been notified by letter dated _____ 19___, of their responsibility to notify any person with an interest in such lease of the change of operator. Documentation of such notification has been requested.

DTS 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 4 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

STATE OF UTAH
INVENTORY OF INJECTION WELLS

OPERATOR	API NO.	WELL	TNS	RGE	SE	WELLTYPE	INDIAN COUNT
MEPNA (MOBIL	43-037-15722	16W23	41S	24E	16	INJW	Y
MEPNA (MOBIL	43-037-16414	16W21	41S	24E	16	INJW	Y
MEPNA (MOBIL	43-037-16416	17W21	41S	24E	17	INJW	Y
MEPNA (MOBIL	43-037-15726	17W12	41S	24E	17	INJW	Y
MEPNA (MOBIL	43-037-15731	17W41	41S	24E	17	INJW	Y
MEPNA (MOBIL	43-037-16417	17W43	41S	24E	17	INJW	Y
MEPNA (MOBIL	43-037-15728	17W23	41S	24E	17	INJW	Y
MEPNA (MOBIL	43-037-15730	17W34	41S	24E	17	INJW	Y
MEPNA (MOBIL	43-037-15729	17W32	41S	24E	17	INJW	Y
MEPNA (MOBIL	43-037-15727	17W14	41S	24E	17	INJW	Y
MEPNA (MOBIL	43-037-31153	18W12	41S	24E	18	INJW	Y
MEPNA (MOBIL	43-037-15737	18W34	41S	24E	18	INJW	Y
MEPNA (MOBIL	43-037-15736	18W32	41S	24E	18	INJW	Y
MEPNA (MOBIL	43-037-30244	18W23	41S	24E	18	INJW	Y
MEPNA (MOBIL	43-037-15735	18W14	41S	24E	18	INJW	Y
MEPNA (MOBIL	43-037-16418	18W21	41S	24E	18	INJW	Y
MEPNA (MOBIL	43-037-15738	18W41	41S	24E	18	INJW	Y
MEPNA (MOBIL	43-037-15741	19W21	41S	24E	19	INJW	Y
MEPNA (MOBIL	43-037-15742	19W23	41S	24E	19	INJW	Y
MEPNA (MOBIL	43-037-15745	19W41	41S	24E	19	INJW	Y
MEPNA (MOBIL	43-037-16420	19W43	41S	24E	19	INJW	Y
MEPNA (MOBIL	43-037-15748	20W23	41S	24E	20	INJW	Y
MEPNA (MOBIL	43-037-15751	20W41	41S	24E	20	INJW	Y
MEPNA (MOBIL	43-037-16423	20W21	41S	24E	20	INJW	Y
MEPNA (MOBIL	43-037-16424	20W43	41S	24E	20	INJW	Y
MEPNA (MOBIL	43-037-16427	21W43	41S	24E	21	INJW	Y
MEPNA (MOBIL	43-037-16425	21W21	41S	24E	21	INJW	Y
MEPNA (MOBIL	43-037-16431	28W21	41S	24E	28	INJI	Y
MEPNA (MOBIL	43-037-16433	29W41	41S	24E	29	INJW	Y
MEPNA (MOBIL	43-037-16432	29W21	41S	24E	29	INJW	Y
MEPNA (MOBIL	43-037-15338	29W23	41S	24E	29	INJI	Y
MEPNA (MOBIL	43-037-16434	29W43	41S	24E	29	INJW	Y
MEPNA (MOBIL	43-037-15343	30-41	41S	24E	30	INJW	Y
MEPNA (MOBIL	43-037-16435	30W21	41S	24E	30	INJI	--

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 17-W-12
9. API Well No.: 43-037-15726
10. Field and Pool, or exploratory Area: GREATER ANETH
11. County or Parish, State: SAN JUAN UT

1. Type of Well: [ ] Oil Well [ ] Gas Well [X] 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)
1980'FNL & 510' FWL
SEC. 17, 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
	[X] Other SIDETRACK/INJECTOR	[ ] 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.)*

18 41 24

BHL:
LATERAL #1 1182' NORTH & 923' WEST F/SURFACE SPOT. (ZONE 1b/1c) 360 x 281 = 110 FEL x 362 FNL
LATERAL #2 975' SOUTH & 1393' EAST F/SURFACE SPOT. (ZONE 1b/1c) 297 x 425 =
LATERAL #3 1004' NORTH & 1115' WEST F/SURFACE SPOT. (ZONE 1a) 306 x 340 =
LATERAL #4 1202' SOUTH & 1202' EAST F/SURFACE SPOT. (ZONE 1a) 366 x 366 =

14. I hereby certify that the foregoing is true and correct
Signed: Sue Mosley for Title: SHIRLEY HOUCHINS/ENV & REG TECH Date: 12-23-97

(This space for Federal or State office use)
Approved by: John R. Baza Title: Associate Director Utah DOGM Date: 1/29/98
Conditions of approval, if any:

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

* See Instruction on Reverse Side

Ratherford Unit Well #17-12
Horizontal Drilling Procedure

The objective of this procedure is to prepare this wellbore for sidetracking, sidetrack the subject well and drill multilateral short radius horizontal laterals (1500-1700 feet).

1. Prepare location and dig working pit.

2. MIRU WSU, reverse unit, and H2S equipment. Bullhead kill weight fluid down tubing.

3. ND wellhead and NU BOP's. Pressure test BOP's to working pressure.

4. Continue to POH with related equipment (tubing and rods for producers or tubing and packer for injectors).

5. RU wireline to run any logs desired and run gage ring for casing size and weight.

6. Set retrievable bridge plug on wireline and pressure test casing to 1000 psi.

7. RDMO WSU.

8. MIRU 24 hr. WSU. NU BOP's and pressure test with chart.

9. PU tubing, drilling collars, and drill pipe in derrick and run in hole. Then POH and stand back.

10. Run packer on wireline and set using GR/CCL log to correlate with. RD wireline.

11. PU drillpipe with UBHO sub in string and latch into packer to survey the hole and obtain orientation of keyway. POH w/gyro and drill string.

12. Orient whipstock on surface to desired bearing and RIH on drill pipe. Latch into packer. Shear stater mill bolt and make starter cut.

13. POH w/ starter mill and pick up window mill and watermelon mill and continue to mill window. Drill 1-2 ft of formation

14. POH w/ mills and PU curve building assembly and drill string with UBHO sub in string and RIH.

15. RU gyro to assist in time drilling and starting out of the casing window. POH w/ gyro when inclination dictates it must be pulled.

16. Finish drilling the curve using the MWD.

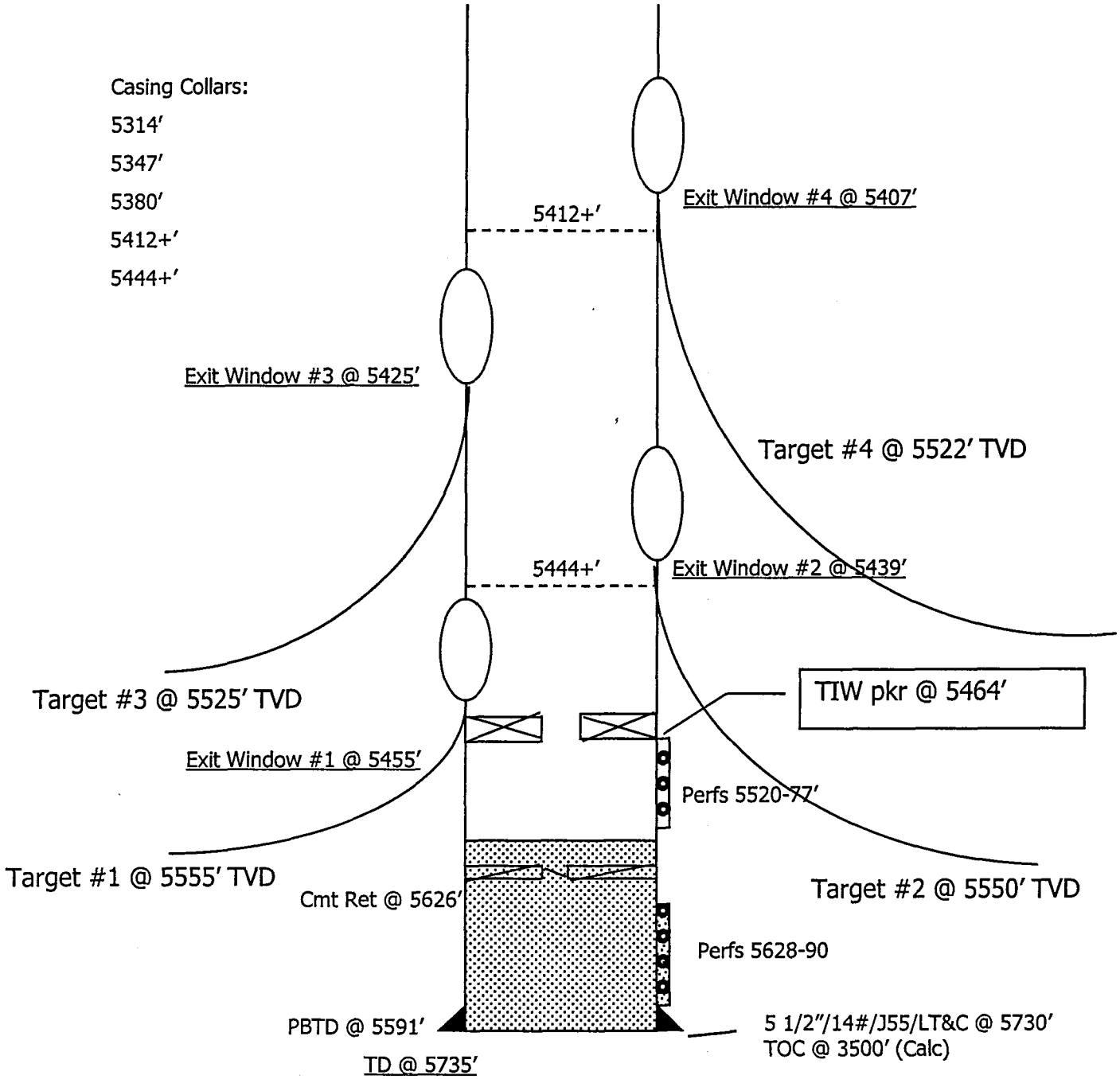
17. POH once curve is finished and PU lateral motor to drill the lateral using MWD.

18. Once lateral TD is reached, POH w/ directional equipment.

19. PU retrieving hook and RIH on drill pipe. Retrieve whipstock and PU new whipstock oriented for desired bearing to start in hole.

20. Repeat steps 12 through 19 for each subsequent lateral.

Ratherford Unit #17-12



Window	Btm-Top of Window	Ext length	Curve Radius	Bearing	Horiz Displ
1	5455-49	-------	100	322	1500
2	5439-33	16	111	125	1700
3	5425-19	30	100	312	1500
4	5407-01	46	115	135	1700

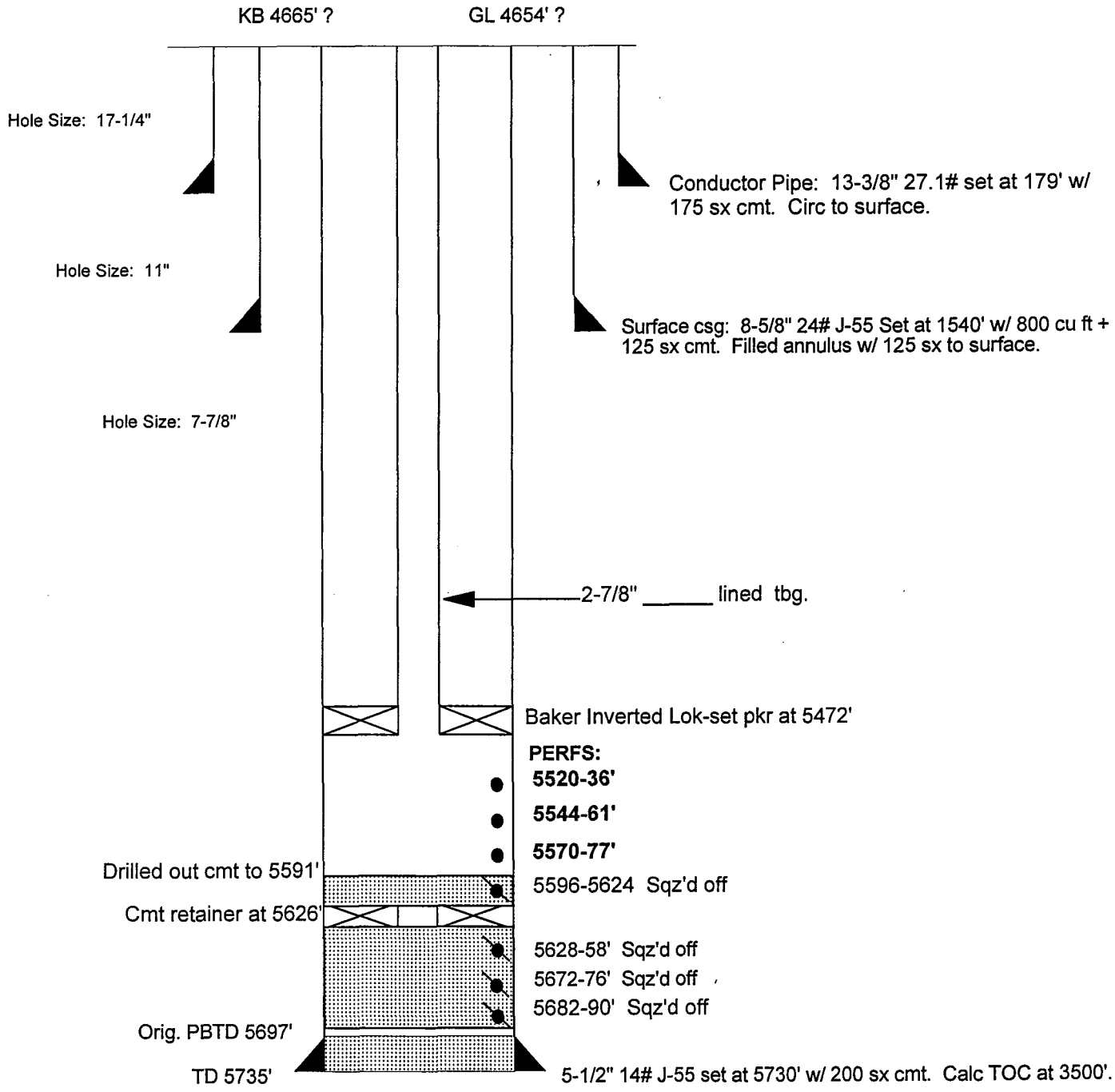
The double spline is 2.42 ft long and the bottom of the whipstock, the latch, the debris and the shear sub are 8.68 ft long. These lengths must be added to the extension lengths to determine the entire whipstock assembly length.

RATHERFORD UNIT # 17W-12

GREATER ANETH FIELD
1980' FNL & 510' FWL
SEC 17-T41S-R24E
SAN JUAN COUNTY, UTAH
API 43-037-15726
PRISM 0043046

INJECTOR

Capacities:	bbl/ft	gal/ft	cuft/ft
2-7/8" 6.5#	.00579	.2431	.0325
5-1/2" 14#	.0244	1.0249	.1370
5-1/2" 15.5#	.0238	.9997	.1336
2-7/8x5.5"14#	.0164	.6877	
.0919			
2-7/8x5.5"15.5#	.0158	.6625	
.0886			



L. A. TUCKER 6-7-96 R.U. # 17W-12

WORKSHEET
APPLICATION FOR PERMIT TO DRILL

APD RECEIVED: 12/29/97

API NO. ASSIGNED: 43-037-15726

WELL NAME: RU 17-W-12 (MULTI LEG)
OPERATOR: MOBIL EXPL & PROD (N7370)

PROPOSED LOCATION:
SWNW 17 - T41S - R24E
SURFACE: 1980-FNL-0510-FWL
BOTTOM: ~~1187-FNL-0360-FEL~~ 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 ALLOCATION)
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: 1. Directional drilling

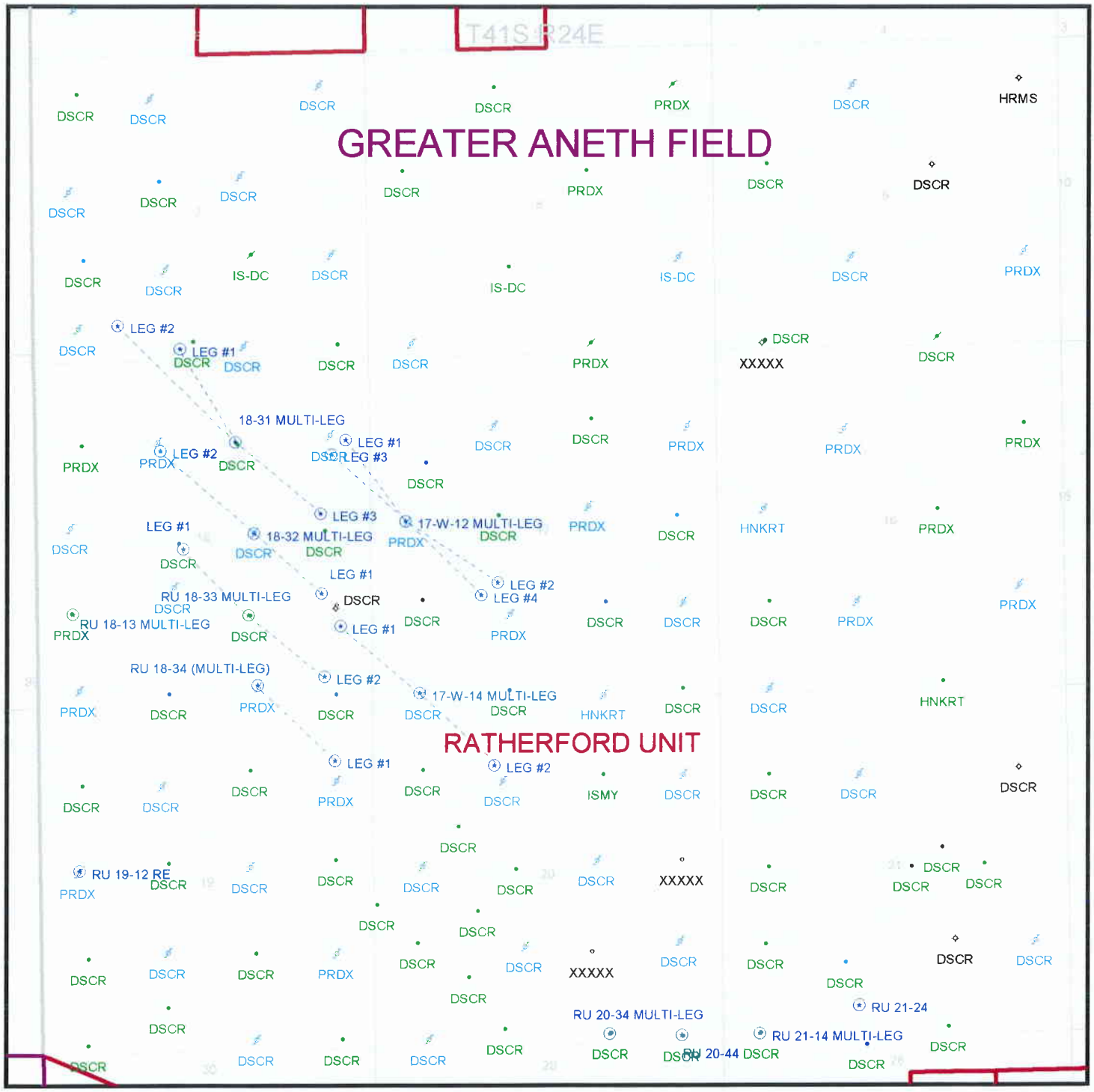
DIVISION OF OIL, GAS & MINING

OPERATOR: MOBIL EXPL & PROD (N7370)

FIELD: GREATER ANETH (365)

SEC. TWP. RNG.: SEC. 17, □T41S, R24E

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



DATE PREPARED:
5-JAN-1998

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

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

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

January 29, 1998

Mobil Exploration & Producing
P.O. Box 633
Midland Tx 79702

Re: Ratherford Unit 17-W-12(Re-Entry), 1980' FNL, 510' FWL, SW NW, SEC. 17, T.41 S., R.24 E., San Juan County, Utah

Gentlemen:

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

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date. The API identification number assigned to this well is 43-037-15726.

Sincerely,

John R. Baza
Associate Director

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

Operator: Mobil Exploration & Producing

Well Name & Number: Ratherford Unit 17-W-12(Re-Entry)

API Number: 43-037-15726

Lease: 14-20-603-353

Location: SW NW **Sec.** 17 **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 17-12

Api No. 43-037-15726

Section 17 Township 41S Range 24E County SAN JUAN

Drilling Contractor BIG "A"

Rig # 25

SPUDDED:

Date 1/19/98

Time

How ROTARY

Drilling will commence

Reported by BENNY BRIGGS

Telephone # 1-801-651-3473

Date: 1/19/98 Signed: JLT

ROCKY MOUNTAIN GEO-ENGINEERING

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

PASON ROCKY MOUNTAIN GEO-ENGINEERING CORP.

2450 INDUSTRIAL BLVD. • GRAND JUNCTION, CO 81505

(970) 243-3044 • (FAX) 241-1085

RECEIVED
MAR 06 1998
DIV. OF OIL, GAS & MINING

Wednesday, March 04, 1998

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

Re: Ratherford Unit#17-12, Legs 1,2,3,&4
Sec. 17, T41S, R24E
San Juan County, Utah
43 037 15726 DRL

Dear Sirs:

Enclosed is the final computer colored log for the above referenced well.
ID 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

Bill Nagel
Senior Geologist

BN/dn

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

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

MOBIL

RATHERFORD UNIT #17-12
NW HORIZONTAL LATERAL LEG #4
UPPER 1-A POROSITY BENCH
DESERT CREEK MEMBER
PARADOX FORMATION
SECTION 17, T41S, R24E
SAN JUAN, UTAH

GEOLOGY REPORT
by

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

TABLE OF CONTENTS

WELL SUMMARY 3

DAILY WELL CHRONOLOGY 4

DAILY ACTIVITY 5

BIT RECORD 6

MUD RECORD 7

SAMPLE DESCRIPTIONS 8

FORMATION TOPS 14

GEOLOGIC SUMMARY AND ZONES OF INTEREST 15

WELL PLOTS 19

WELL SUMMARY

OPERATOR:	MOBIL EXPLORATION & PRODUCTION U.S. INC.
NAME:	RATHERFORD UNIT #17-12 SE HORIZONTAL LATERAL LEG #4 IN 1-A UPPER POROSITY BENCH, DESERT CREEK
LOCATION:	SECTION 17, T41S, R24E
COUNTY/STATE:	SAN JUAN, UTAH
ELEVATION:	KB:4754' GL:4765'
SPUD DATE:	1/20/98
COMPLETION DATE:	2/11/98
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
HOLE SIZE:	4 3/4"
CASING RECORD:	SIDETRACK IN WINDOW AT 5408' 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:	7157' MEASURED DEPTH; TVD-5541.7'
STATUS:	TOH & LAY DOWN TOOLS – PREPARE WELL & RIG FOR MOVE TO R.U. #18-43B LOCATION

DRILLING CHRONOLOGY
RATHERFORD UNIT #17-12
1-A SE HORIZONTAL LATERAL LEG #4

DATE	DEPTH	DAILY	ACTIVITY
2/07/98	5464'	0'	ADJUST & CHANGE AS NEEDED ALL FAN BELTS ON UNIT-TIH-W/ HOOK ASSEMBLY-CIR OUT (40ppm H2S NOTED)-LATCH IN TO WHIPSTOCK-PULL 38 STDS-P.U. CIR SWEDGE & CIR 50 BBLS 10# BRINE & CHK FOR FLOW-TOH-L.D. WHIPSTOCK #3-P.U. & ORIENT WHIPSTOCK #4 & STARTER MILL-TIH-SET WHIPSTOCK-& MILL W/STARTER MILL 5400' TO 5402'-PUMP 10 BBLS BRINE-TOH-L.D. STARTER MILL-P.U. WINDOW & WATERMELLON MILLS-TIH-MILL FROM 5402' TO 5408'-CIR & TOH-L.D. MILLS-P.U. & TEST CURVE ASSEMBLY-ORIENT & TEST MWD & MUD MOTOR-P.U. JTS TUBING-TIH
2/08/98	54O8'	8'	TIH-RIG UP GYRO DATA & RUN GYRO-TIME DRLG FROM 5408'-5411'-DIR DRLG & SURVEYS FROM 5411'-5435'-PULL GYRO-DIR DRLG & SURVEYS TO 5478'-TOH DUE TO PRESSURE LOSS (NO DIFFERENCIAL AT MOTOR)-CHANGE OUT MUD MOTOR & BIT-TEST MOTOR & MWD-TIH W/CURVE ASSEMBLY-DIR DRLG & SURVEYS
2/09/98	5484'	72'	DIR DRLG & SURVEYS TO 5598'-CIR SPLS & SWEEP-L.D. 8 JTS PIPE-TOH-L.D. CURVE ASSEMBLY-P.U. LATERAL ASSEMBLY & BIT-TEST-TIH-TO 5400'-CUT DRLG LINE-TIH-CIR
2/10/98	5598'	114'	DIR DRLG & SURVEYS
2/11/98	6820'	1122'	DIR DRLG & SURVEYS TO 7157' TD-CIRC SWEEP & SMPLS OUT- TOH-L.D. LATERAL BHA-TIH-RETRIEVE WHIPSTOCK-TOH & PREPARE TO MOVE RIG

DAILY ACTIVITY

Operator: **MOBIL**
Well Name: **RATHERFORD UNIT #17-12 SE 1-A HORIZONTAL LATERAL LEG #4**

DATE	DEPTH	DAILY	DATE	DEPTH	DAILY
2/07/98	5464'	0'			
2/08/98	54O8'	8'			
2/09/98	5484'	72'			
2/10/98	5598'	114'			
2/11/98	6820'	1122'			
TD	7157'	337'			

BIT RECORD

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #17-12 SE 1-A HORIZONTAL LATERAL LEG #4

RUN	SIZE	MAKE	TYPE	IN/OUT	FTG	HRS	FT/HR
#1 (RR)	4 3/4"	STC	MF-15GP	5408'/ 5478'	72'	9.5	7.6
#2	4 3/4"	STC	MF-3P	5478'/ 5598'	120'	16.0	10.0
#3	4 3/4"	STC	MF-3P	5598'/ 7157'	1559'	32.0	48.7

MUD REPORT

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #17-12 SE 1-A HORIZONTAL LATERAL LEG #4

DATE	DEPTH	WT	VIS	PLS	YLD	GEL	pH	WL	CK	CHL	CA	SD	OIL	WTR
2/07/98	5402'	8.9	26	1	1	0/0	11.6	NC	NC	60 K	2000	--	0%	100%
2/08/98	5428'	9.0	26	1	1	0/0	11.2	NC	NC	68 K	4000	--	0%	100%
2/09/98	5540'	9.0	26	1	1	0/0	11.5	NC	NC	72 K	2400	--	0%	100%
2/10/98	5843'	9.0	26	1	1	0/0	11.6	NC	NC	70K	2800	--	0%	100%
2/11/98	7157'	9.0	27	1	1	0/0	12.0	NC	NC	68K	3200	--	TR%	100%

SAMPLE DESCRIPTIONS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #17-12 SE 1-A HORIZONTAL LATERAL LEG#3

DEPTH	LITHOLOGY
5426.00 5440.00	"LS wh-crm-brn-ltbrn,crpxl-micxl,rthy-cln,occ chk,sl dol,v sl anhy,mrly ip,occ grdg to v lmy SH,rr scat Crin fos,tt,NFSOC,w/scat DOL frag brn,crpxl-micxl,arg-sl shy,lmy,dns,NFSOC,v thn blk-dkgybrn SH sl carb,mica,dol-lmy,slty ip,tr lt-dkbrn-brn CHT frag"
5440.00 5450.00	"LS AA,mrly-v shy ip,v rr Crin fos,v rr ANHY xl,tt,NFSOC,v thn SH AA,occ v arg DOL,rr scat CHT frag AA"
5450.00 5460.00	"LS crm-wh,occ ltbrn-brn,crpxl-micxl,rthy-arg,mrly ip,sl dol,scat Cor fos,v sl anhy,dns,scat ltbrn-brn CHT frag,tt,NFSOC,w/v thn dkgy-dkgybrn-blk,sl carb,mica,sl slty,dol-calc SH ptgs & mbrn-gybrn DOL frag,micxl,rthy,shy,sl lmy,tt,NFSOC"
5460.00 5470.00	"LS AA,incr CHT frag,grdg to lmy arg DOL AA,w/NFSOC,bcmg v thn dkgy-blk calc-dol carb SH"
5470.00 5480.00	"LS AA,bcmg ltgy-gybrn,micxl,slty-sdy,tt-rr intxl POR,NFSOC/tr DOL & SH AA"
5480.00 5490.00	"LS ltgy-gybrn.occ mgybrn,micxl-crpxl,sl gran,rthy-slty-sl sdy,grdg to calc-lmy SLTST,tr chky-mrly plty prtgs,sl anhy,tt-rr intxl POR,NFSOC,tr thn brn crpxl DOL,arg-sl shy,tt-rr intxl POR,NFSOC"
5490.00 5500.00	"LS AA,intbd/thn brn args l dol prtgs,rr blk SH lam,pred chky-occ mrly,sl anhy,tr trnsl CHT incl,tt-rr intxl POR,NFSOC"
5500.00 5510.00	"LS ltgy-gybrn-off wh,occ tan-ltbrn,crpxl-micxl,chky-anhy,mrly-sl slty,cln-rr mot/blk SH lam,v sl dol,tt-rr intxl POR/fl,v rr dull orng mnrl FLOR,NSOC"
5510.00 5520.00	"SH dkbrnblk-brngy-blk,sbblky-sbplty-blky,sft-mfrm,occ brit,sl slty,carb,calc-lmy,sooty/scat LS & tr DOL AA,"
5520.00 5530.00	"LS lt-mgybrn,occ brn,off wh,crpxl-micxl,chky-sl anhy/tr POR fl,occ mrly,rr xl ANHY incl,v rr brn CHT,tt-rr intxl POR,NFSOC,tr DOL,brn,crpxl,thn plty-arg,NFSOC/scat SH AA"
5530.00 5540.00	"LS AA/sl incr brn,crpxl-micxl,occ vfxl,dns-chky plty PCKST,sl anhy/tr POR fl,intbd/thn arg-sl dol prtgs,sl mrly,rr xln ANHY,rr brn CHT,tt-tr intxl POR,n-rr dull orng mnrl FLOR,NSOC"
5540.00 5560.00	"LS ltbrn-tan-mbrngy,crm,occ off wh-ltgy,crpxl-micxl,vfxl,sl gran,pred PCKST,grdg to ool GRNST,chky-sl anhy AA,sl mrly,rr sdy-slty frag,v rr CHT,tt-tr intxl-rr sl ool POR,fr scat mod bri-bri yel FLOR,n-tr ltbrn-brn/blk pp STN,fr-g fast stmg mlky CUT"
5560.00 5570.00	"LS AA,crpxl-micxl,vfxl-gran,pred oom-ooc GRNST/tr dns-plty PCKST,chky-sl anhy/tr POR fl-xl ANHY,tr sdy-slty frag,tt-tr intxl-ool POR,FLOR AA,fr ltbrn/tr brn-blk dd o STN,fr slow-mod fast stmg mlky CUT"
5570.00 5590.00	LS ltbrn-tan,crm,occ off wh,ltgy,micxl-vfxl-sl gran,crpxl,pred ool GRNST/PCKST AA,chky-sl anhy/tr xl ANHY-POR,rr sdy-slty frag,fr ool-intxl POR,incr FLOR AA,STN AA,g mod fast-fast stmg mlky CUT"

DEPTH	LITHOLOGY

5594.00 5600.00 "LS crm-wh-ltbrn,crpxl-micxl,rr vfxl-gran,sl micsuc,pred dns chky-sl ool PCKST,w/thn stks ooc-oom GRNST,scat tan CHT frag-v rr ANHY xl-incl,tt-rr ool-intxl POR,tr dull-bri yel FLOR,tr brn-blk STN,fr mod fast-slow stmg CUT,w/scat brn crpxl DOL & blk SH cvgs"

5600.00 5620.00 "LS pred PCKSTAA,decr ooc-oom GRNST stks,v rr CHT frag,sl DOL cmt,v rr ANHY xl-incl,rr ool-rr-tr intxl POR,rr-tr spty dull-bri yel FLOR,rr-tr spty brn-tr spty blk STN,tr slow-rr mod fast stmg CUT"

5620.00 5640.00 "LS crm-ltgybrn-wh,occ tan,crpxl-micxl,occ vfxl-sl mic suc,pred dns-chky plty PCKST/tr agal mat-mic fos,tr blk SH lam,rr ool GRNST,anhy/tr xln ANHY-POR fl,tt-tr intxl-rr ool POR,fr dull-mod bri yel/tr bri yel FLOR,n-rr brn STN,fr slow stmg mlky CUT"

5640.00 5650.00 "LS AA,dns-chky plty PCKST,anhy/tr POR fl-rr xl ANHY,cln-rr SH lam,v rr calc xl,v sl dol,tt-rr intxl-frac POR,g-fr scat mod bri-bri yel FLOR,n-tr blk pp dd o STN,tr slow stmg-fr dif/v fnt res ring CUT"

5650.00 5670.00 "LS AA,crpxl-micxl,rr vfxl,dns-chky plty PCKST/rr agal mat,tr blk SH lam,anhy/tr xln ANHY-POR fl,rr xl calc,tt-tr intxl-frac POR,fr scat dull-mod bri/tr scat bri yel FLOR,n-rr blk dd o-v rr brn STN,fr slow stmg mlky CUT/fnt res ring"

5670.00 5690.00 "LS AA,crpxl-micxl,tr vfxl,pred dns-chky plty PCKST/tr agal mat-mic fos,rr blk SH lam,anhy/tr xln ANHY-POR fl,v sl dol,POR,fr even dull-mod bri/tr scat bri yel FLOR-STN AA,fr slow stmg mlky CUT/fr fnt res ring"

5690.00 5710.00 "LS crm-ltgybrn-wh,rr tan,crpxl-micxl,occ vfxl,pred dns-chky plty PCKST/tr agal mat-mic fos,anhy/tr xln ANHY-POR fl,rr xl calc incl,tt-tr frac-intxl POR,FLOR AA,n-sl incr pp blk dd o STN,fr slow stmg mlky CUT/mod bri res ring"

5710.00 5730.00 "LS crm-ltgybrn-wh,crpxl-micxl,occ vfxl,dns-chky plty PCKST/rr agal mat-mic fos,anhy/tr xln ANHY-POR fl,rr xl calc incl,cln,tt-tr frac-intxl POR,g even dull/scat spty mod bri-bri yel FLOR,n-tr pp blk dd o STN,fr slow stmg mlky CUT/g bri res ring"

5730.00 5750.00 "LS AA,crpxl-micxl,tr vfxl,dns-chky plty PCKST/rr agal mat-vrr mic fos,anhy AA,tr xl calc,cln,tt-tr frac-intxl POR,fr even dull-mod bri/tr scat spty bri yel FLOR,rr orng mnrl FLOR,n-fr blk pp dd o STN,g-fr slow-mod fast stmg mlky CUT/g bri res ring"

5750.00 5770.00 "LS crm-ltgybrn-wh,rr tan,crpxl-micxl,rr vfxl,dns-chky plty PCKST/decr agal mat-mic fos,anhy/tr xln ANHY-POR fl,rr xl calc incl,cln,tt-tr frac-intxl-v rr vug POR,FLOR AA,n-fr pp blk dd o STN,fr slow stmg mlky CUT/g bri res ring"

5770.00 5790.00 "LS crm-ltgybrn-wh,tr tan,crpxl-micxl,tr vfxl,dns-chky plty PCKST/tr agal mat-mic fos,anhy/tr xln ANHY-POR fl,rr xl calc,cln,tt-tr intxl-frac-v rr vug POR,fr-g FLOR AA,n-tr pp blk dd o-rr ltbrn STN,fr-g slow stmg mlky CUT"

5790.00 5810.00 "LS AA,crpxl,occ micxl,tr vfxl,pred sl ool dns-chky plty PCKST,anhy/tr xl ANHY incl-POR fl,rr xl calc incl,tt-tr intxl-frac POR,fr scat mod bri-dull/tr spty bri yel FLOR,vrr dull orng mnrl FLOR,n-tr blk dd o STN,g mod fast stmg mlky CUT"

5810.00 5830.00 "LS crm-ltgybrn-wh,tr tan,crpxl-micxl,tr vfxl,dns sl ool-chky plty PCKST/rr agal mat-mic fos,anhy/tr xln ANHY-POR fl,rr xl calc,cln,tt-tr intxl-frac-v rr vug POR,fr-g FLOR AA,n-tr pp blk dd o-v rr ltbrn STN,g-fr slow stmg mlky CUT"

DEPTH	LITHOLOGY

5830.00 5850.00 "LS AA,dns v sl ool-chky plty PCKST/rr agal mat-mic fos incl,anhy/tr xln ANHY-POR fl,rr xl calc,tt-tr intxl-rr frac-v rr vug POR,g scat dull-spty mod bri/tr bri yel FLOR,v rr dull orng mnrl FLOR,n-tr pp blk dd o-rr ltbrn STN,g fast-mod fast stmg mlky CUT"

5850.00 5870.00 "LS ltbrn,ltgybrn-crm,occ tan,micxl-crpxl-sl gran,pred dns fos PCKST occ grdg to GRNST ip,tr Crin-ool-mic fos,sl chky/scat plty frag-POR fl,tr xl ANHY incl,bcmg dol/tr DOL rich cmt,rr xl calc,tt-tr inxl POR,g even dull-mod bri/scat bri yel FLOR,g ltbrn-rr blk dd o STN,g mod fast-slow stmg mlky CUT"

5870.00 5890.00 "LS tan,crm-ltgybrn,tr wh,crpxl-micxl,sl gran,tr vfxl,dns sl ool-chky plty PCKST occ grdg to GRNST,rr agal mat-mic fos,anhy/tr xln ANHY-POR fl,rr xl calc,POR AA,fr-g FLOR AA,n-tr pp blk dd o-v rr ltbrn STN,g-fr slow stmg mlky CUT"

5890.00 5910.00 "LS pred crm-tan-wh crpxl-micxl,dns,chky ip,sl anhy-v sl chty,occ ool PCKST,w/thn rthy brn micxl-vfxl gran alg sl ooc-oom GRNST,v sl DOL cmt,rr ANHY xl-incl,tt-fr intxl-tr ool-alg POR,mfr dull-bri yel FLOR,tr spty brn STN-blk dd o STN,fr slow-mod fast CUT"

5910.00 5930.00 "LS ltbrn-brn micxl-vfxl,gran-micsuc,alg-ool GRNST w/thn intbd crm-wh-bf crpxl-sl micxl v sl ool PCKST,scat ANHY xl-incl-rr POR fl,v sl DOL cmt,v rr mic fos,tt-g intxl-tr alg-rr ool POR,fr-g dull-rr bri yel FLOR,fr ltbrn-rr blk STN,fr-g mod fast stmg CUT"

5930.00 5940.00 "LS AA,pred sl alg-v sl ooc-oom GRNST AA,w/v thn sl ool PCKST,v sl decr ool POR,pred intxl-occ alg POR AA,FLOR-STN-CUT AA"

5940.00 5960.00 "LS ltbrn-brn micxl-vfxl,gran-micsuc,ooc-oom GRNST w/thn intbd crm-wh-bf crpxl-sl micxl sl ool PCKST,scat ANHY incl-rr POR fl,v sl DOL cmt,rr Crin fos,rr CHTfrag,fr-g intxl-tr ool-alg POR,fr-g dull-rr bri yel FLOR,fr ltbrn-rr blk STN,fr-g mod fast stmg CUT"

5960.00 6000.00 "LS ltbrn-brn micxl-vfxl,gran-micsuc,ooc-oom sl alg GRNST w/thn intbd crm-wh-bf crpxl sl ool PCKST,scat ANHY incl-rr POR fl,occ DOL cmt,rr Crin fos,rr CHT frag,fr-g intxl-fr ool-rralg POR,fr-g dull-rr bri yel FLOR,fr ltbrn-rr blk STN,fr-g mod fast stmg CUT"

6000.00 6020.00 "LS brn-ltbrn,micxl-vfxl,occ gran-micsuc,ooc-oom v sl alg GRNST v sl DOL cmt occ ANHY xl-incl-v rr POR fl,w/scat crpxl anhy sl ool PCKSTfrag,rr bf-clr CHT frag,fr-g intxl-fr ool-v rr alg POR,fr-g dull-bri yel FLOR,fr-g ltbrn-rr blk STN,fr-g mod fast CUT"

6020.00 6040.00 "LS AA,incr ooc-oom mat-decr alg mat,decr PCKSTfrag,n-v rr Crin fos,v rr trnsl-bf CHT frag,rr ANHY POR fl,fr-g intxl-fr ool-v rr alg POR,fr-g dull-tr bri yel FLOR,fr-g ltbrn-brn STN,v rr spty blk dd o STN,fr-g mod fast-tr fast stmg CUT"

6040.00 6060.00 "LS crm-tan-brn,crpxl-vfxl,gran-micsuc ip,pred intbd ooc-oom sl alg GRNST & dns sl ool occ Crin fos PCKST,scat ANHY xl-incl,v rr CHT frag,v sl DOL cmt,tt-g intxl-fr ool-v sl alg POR,mg dull-rr bri yel FLOR,fr-g ltbrn-rr spty blk STN,fr-g slow-mod fast CUT"

6060.00 6080.00 "LS AA,decr PCKST,incr ool POR,FLOR-STN-CUT AA"

6080.00 6100.00 "LS brn-ltbrn,micxl-vfxl,occ gran-micsuc,ooc-oom v sl alg GRNST v sl DOL cmt occ ANHY xl-incl-v rr POR fl,w/scat crpxl Crin sl ool PCKSTfrag,rr bf-clr CHT frag,fr-g intxl-fr ool-v rr alg POR,fr-g dull-bri yel FLOR,fr-g ltbrn-rr blk STN,fr-g mod fast CUT"

6100.00 6110.00 "LS AA,incr PCKST,sl decr ool POR,FLOR-STN-CUT AA"

DEPTH	LITHOLOGY

6110.00 6140.00 "LS brn-ltbrn,micxl-vfxl,occ gran-micsuc,ooc-oom v sl alg GRNST v sl DOL cmt occ ANHY xl-incl-v rr POR fl,rr crpxl Crin fos,rr sl ool PCKSTfrag,bf-clr CHT frag,fr-g intxl-fr ool-v rr alg POR,fr-g dull-bri yel FLOR,fr-g ltbrn-rr blk STN,fr-g mod fast CUT"

6140.00 6160.00 "LS brn-ltbrn,micxl-vfxl,occ gran-micsuc,ooc-oom GRNST v sl DOL cmt occ ANHY xl-incl-v rr POR fl-v rr alg mat,w/rr crpxl sl ool PCKSTfrag,v rr bf-clr CHT frag,fr-g intxl-ool-POR,fr-g dull-bri yel FLOR,fr-g ltbrn STN-rr blk dd o STN,fr-g mod fast CUT"

6160.00 6170.00 "LS AA,decr PCKST,POR-FLOR-STN-CUT AA"

6170.00 6190.00 "LS ltbrn-brn,occ crm,micxl-vfxl,gran-micsuc,sl suc,pred ooc-oom GRNST,w/v rr scat crm-wh PCKSTfrag,sl anhy-tr ANHY xl-incl-rr POR fl,v rr CHT frag,sl DOL cmt,fr-g intxl-ool POR,fr-g dull-tr bri yel FLOR,fr-g brn-v rr spty blk STN,fr-g slow-fast stmg CUT"

6190.00 6210.00 "LS AA,pred ooc-oom GRNST,w/v rr scat PCKST& CHT frag,POR-FLOR-STN-CUT AA"

6210.00 6240.00 "LS ltbrn-brn,occ crm,micxl-vfxl,gran-micsuc,sl suc,pred ooc-oom GRNST,w/v rr scat crm-wh PCKSTfrag,sl anhy-tr ANHY xl-incl-rr POR fl,v rr CHT frag,sl DOL cmt,fr-g intxl-ool POR,fr-g dull-tr bri yel FLOR,fr-g brn-v rr spty blk STN,fr-g slow-fast stmg CUT"

6240.00 6270.00 "LS tan-ltbrn,occ crm-brn,crpxl-vflx,gran-micsuc,pred ooc-oom GRNST w/scat dns sl ool PCKSTincl,sl DOL rich cmt,occ ANHY xl-incl,tt-g intxl-ool POR,fr-g dull-bri yel FLOR,fr-g brn-ltbrn STN-spty blk dd o STN,fr-g slow-fast stmg CUT"

6270.00 6280.00 "LS AA,sl incr dns PCKST,POR-FLOR-STN-CUT AA"

6280.00 6310.00 "LS tan-ltbrn,occ crm-brn,crpxl-vflx,gran-micsuc,pred ooc-oom GRNST w/scat dns sl ool PCKSTincl,sl DOL rich cmt,occ ANHY xl-incl,v rr Crin fos frag,tt-g intxl-ool POR,fr-g dull-bri yel FLOR,fr-g brn-ltbrn STN-spty blk dd o STN,fr-g slow-fast stmg CUT"

6310.00 6330.00 "LS tan-ltbrn,occ crm-brn,crpxl-vflx,gran-micsuc,pred ooc-oom GRNST w/rr scat dns sl ool PCKSTincl,sl DOL rich cmt,occ ANHY xl-incl,v rr Crin fos frag,fr-g intxl-ool POR,fr-g dull-bri yel FLOR,fr-g brn-ltbrn STN-rr spty blk STN,fr-g mod fast-fast stmg CUT"

6330.00 6340.00 "LS AA,fr-g ltbrn-brn STN-rr-tr spty blk dd o STN,POR-FLOR-CUT AA"

6340.00 6360.00 "LS tan-ltbrn/occ crm incl,tr mbrn,vfxl-gran-sl micsuc,crpxl,ooc-oom GRNST,rr scat-intbd dns PCKST,chky-sl anhy/tr POR fl,rr xl ANHY incl,sl dol/tr DOL cmt strk,g ooc-oom/tr intxl POR,g even mod bri-bri yel FLOR,g ltbrn-scat brn/tr blk dd o STN,CUT AA"

6360.00 6390.00 "LS ltbrn-brn/tr crm incl,occ ltgybrn strk,tan,vfxl-gran-sl micsuc,occ crpxl,suc ip,pred oom-ooc GRNST/tr intbd-scat dns ool PCKST,occ chky/tr POR fl,sl anhy/v rr xl ANHY incl,tr mic fos,POR AA,g even mod bri-bri yel FLOR,g ltbrn-brn/scat blk dd o STN,g fast stmg-blooming mlky CUT"

6390.00 6410.00 "LS ltbrn-ltgybrn-tan,occ brn,tr crm,vfxl-gran,sl mic suc,crpxl,ooc-oom GRNST,rr intbd dns PCKST,chky-sl anhy/sl incr POR fl-tr xl ANHY,tr mic fos,rr tan CHT frag,sl dol/tr DOL cmt strk,POR-FLOR-STN AA,g fast stmg mlky CUT"

DEPTH	LITHOLOGY

6410.00 6440.00 "LS ltbrn-tan-ltgybrn,occ brn,crm,vfxl-gran-sl mic suc,occ crpxl,GRNST AA,rr intbd dns sl ool PCKST,chky-anhy/fr POR fl-rr xl ANHY,tr mic fos,v rr CHT AA,sl dol/tr DOL cmt,g ooc-oom/tr intxl POR,FLOR-STN AA,g fast stmg mlky-sl blooming mlky CUT"

6440.00 6460.00 "LS ltbrn-ltgybrn-tan,occ crm,brn,vfxl-gran,sl mic suc,tr crpxl,ooc-oom GRNST,rr dns sl ool PCKST,chky-sl anhy/tr POR fl-rr xl ANHY,v sl dol,v rr crm-trnsl CHT incl,POR AA,g even mod bri-bri yel FLOR,g-fr ltbrn/tr brn & scat blk dd o STN,CUT AA"

6460.00 6480.00 "LS AA,bcmg incr brn,vfxl-gran,sl mic suc,oom-ooc GRNST,rr dns-v sl ool PCKST incl,chky-sl anhy/tr POR fl-rr xl ANHY,sl dol,tr mic fos,v rr CHT AA,g oom-ooc POR,FLOR-STN AA,g fast stmg-sl blooming CUT"

6480.00 6500.00 "LS ltbrn-tan-brn,occ ltgybrn,crm,vfxl-gran,sl mic suc,tr crpxl,GRNST AA,rr dns sl ool PCKST,chky-sl anhy/AA,v sl dol,v rr crm-trnsl CHT,POR-FLOR AA,g-fr ltbrn/tr brn & scat blk dd o STN,CUT

6500.00 6530.00 "LS ltbrn-brn,occ tan,tr crm,ltgybrn,vfxl-gran,sl micsuc,rr crpxl,oom-ooc GRNST/rr PCKST AA,occ chky/tr POR fl,sl anhy/v rr xl ANHY,tr mic fos,v sl dol,POR AA,g even mod bri-bri yel FLOR,g ltbrn-fr brn/tr scat blk dd o STN,g fast stmg-blooming mlky CUT"

6530.00 6550.00 "LS ltbrn-tan-brn,occ ltgybrn,crm,vfxl-gran,sl mic suc,tr crpxl,GRNST AA,rr dns sl ool PCKST,chky-sl anhy/AA,v sl dol,v rr crm-trnsl CHT,POR-FLOR AA,g-fr ltbrn/tr brn & scat blk dd o STN,g fast stmg-blooming mlky CUT"

6550.00 6560.00 "LS AA,oom-ooc GRNST/tr PCKST AA,sl chky-anhy/tr POR fl,v rr xl ANHY,tr mic fos,g oom-ooc/tr intxl POR,FLOR AA,g ltbrn-brn/incr blk dd o STN,g fast stmg mlky CUT"

6560.00 6570.00 "LS AA,oom-ooc GRNST/sl incr dns sl ool PCKST,POR AA,decr scat FLOR AA,STN-CUT

6570.00 6590.00 "LS ltbrn-brn,occ mbrn-tan,rr crm,crpxl-vfxl,gran-micsuc ip,pred dns sl ool-chty-occ plty PCKST w/intbd ooc-oom GRNST,rr-tr trnsl CHT frag,scat ANHY xl-incl,sl DOL cmt,tt-fr intxl-ool POR,tr-fr dull-bri yel FLOR,tr-fr brn-mbrn-rr blk STN,tr mod fast CUT"

6590.00 6610.00 "LS AA,pred ooc-oom GRNST w/decr v sl ool dns occ plty PCKST,fr intxl-ool PCKST,fr dull-bri yel FLOR,fr brn-ltbrn STN-rr spty blk dd o STN,fr slow-mod fast stmg CUT"

6610.00 6620.00 "LS AA,incr ool-intxl POR,scat ANHY fl POR,fr FLOR-STN-CUT AA"

6620.00 6650.00 "LS ltbrn-brn,occ mbrn-tan,rr crm,crpxl-vfxl,gran-micsuc ip,pred sl ooc-oom GRNST w/scat intbd dns occ plty-sl ool PCKST,rr trnsl CHT frag,scat ANHY xl-incl,sl DOL cmt,tt-g intxl-ool POR,tr-fr dull-bri yel FLOR,tr-fr brn-mbrn-rr blk STN,tr mod fast CUT"

6650.00 6670.00 "LS ltbrn-brn-tan,occ mbrn-crm,micxl-vfxl,gran-micsuc,pred ooc-oom GRNST,tr dns-crpxl-v sl plty sl ool PCKST,rr ANHY xl-incl,sl DOL rich cmt,v rr trnsl CHT,fr-g intxl-ool POR,fr-g dull-bri yel FLOR,g-fr ltbrn-tr brn STN-rr blk dd o STN,g mod fast-fast CUT"

6670.00 6700.00 "LS AA,pred ooc-oom sl anhy v sl chty GRNST,w/rr thn v sl ooc dns PCKST incl,fr-g ool-intxl POR,fr-g dull-bri yel FLOR,fr-g lt-m brn-rr dkbrn STN-w/v rr scat blk dd o STN,fr-g stmg mlky CUT"

6700.00 6720.00 "LS ltbrn-brn-tan,occ mbrn-crm,micxl-vfxl,gran-micsuc,pred ooc-oom GRNST,tr dns-crpxl-sl plty sl ool PCKST,rr ANHY xl-incl,sl DOL rich cmt,rr trnsl-bf CHT,fr-g intxl-ool POR,fr dull-bri yel FLOR,fr-g lt-dk brn STN-rr blk dd o STN,g mod fast-fast stmg CUT"

DEPTH	LITHOLOGY
6720.00 6750.00	"LS AA,pred ooc-oom GRNST w/tr thn intbd dns-sl ool-v sl chky-occ plty PCKST,POR-FLOR-STN-CUT AA"
6750.00 6760.00	"LS ltbrn-mbrn-tan,occ crm,crpxl-vfxl,gran-micsuc ip,pred dns sl ool occ chty-sl plty PCKST w/tr intbd ooc-oom GRNST,v rr trnsl CHT frag,scat ANHY xl-incl,sl DOL cmt,tt-fr intxl-ool POR,tr-fr dull-bri yel FLOR,tr-fr brn-mbrn-rr blk STN,tr-fr mod fast CUT"
6760.00 6780.00	"LS ltbrn-brn-tan,occ mbrn-crm,micxl-vfxl,gran-micsuc,incr ooc-oom GRNST w/scat crpxl-sl plty sl ool PCKST,rr ANHY xl-incl,sl DOL rich cmt,tr trnsl CHT,fr-g intxl-ool POR,fr dull-bri yel FLOR,tr-fr lt-dk brn STN-rr blk dd o STN,fr mod fast-fast stmg CUT"
6780.00 6800.00	"LS AA,pred ooc-oom GRNST w/tr thn intbd dns-sl ool-v sl chky-occ plty PCKST,POR-FLOR-STN-CUT AA"
6800.00 6810.00	"LS AA,bcmg pred sl ool dns crpxl occ chky-plty PCKST,w/decr-thn intd ooc-oom GRNST,scat trnsl-bf CHT frag,occ ANHY xl-incl,tt-tr intxl-ool POR,tr-fr dull-bri yel FLOR,tr lt-mbrn STN-v rr spty blk dd o STN,tr-fr slow-mod fast stmg CUT"
6810.00 6840.00	"LS ltbrn-mbrn-tan,occ crm,crpxl-vfxl,gran-micsuc ip,pred dns sl ool occ chty-sl plty PCKST w/tr intbd ooc-oom GRNST,v rr trnsl CHT frag,scat ANHY xl-incl,sl DOL cmt,tt-fr intxl-ool POR,tr-fr dull-bri yel FLOR,tr-fr brn-mbrn-rr blk STN,tr-fr mod fast CUT"
6840.00 6860.00	"LS tan-ltbrn,occ ltgybrn-ltgy,tr wh,rrcrm,vfxl-gran,sl micsuc-suc,tr crpxl,oom-ooc GRNST/tr intbd-scat dns sl ool PCKST,chky-sl anhy/tr POR fl-rr plty frag-xln ANHY,chty/tr crm-tan CHT incl,sl dol/occ DOL cmt strk,fr-g oom-ooc /intxl POR,FLOR-STN-CUT AA"
6860.00 6890.00	"LS tan-ltbrn-crm,occ ltgybrn-ltgy,rr wh,brn,vfxl-gran-micxl,crpxl,sl micsuc,incr dns sl ool PCKST/tr scat-intbd GRNST AA,chky-anhy/sl incr POR fl-xl ANHY,sl chty/tr CHT AA,fr-g intxl-ool POR,g-fr even mod bri-dull/scat bri yel FLOR,fr-g ltbrn/tr brn-rr blk dd o STN,g-fr mod fast-fast stmg mlky CUT"
6890.00 6910.00	"LS tan-ltbrn,tr brn,occ wh-crm,crpxl-vfxl,gran-sl micsuc,intbd oom-ooc GRNST & thn dns sl ool occ chky PCKST,sl anhy-occ ANHY xl-incl-rr POR fl,tr crm-tan CHT frag,v sl DOL cmt,fr ool-intxl POR,mfr dull-bri yel FLOR,tr ltbrn-brn-v rr blk STN,tr-fr CUT AA"
6910.00 6920.00	"LS AA,incr & bcmg pred ooc-oom GRNST,decr PCKST AA,incr intxl-ool POR,incr FLOR-STN-CUT"
6920.00 6940.00	"LS tan-ltbrn,rr brn,v rr wh-crm,crpxl-vfxl,gran-micsuc ip,pred oom-ooc GRNST w/thn dns sl ool PCKST incl,rr ANHY xl-incl-v rr POR fl,tr trnsl-bf CHT frag,sl DOL cmt,fr-g intxl-fr ool POR,mg dull-bri yel FLOR,fr ltbrn-rr blk STN,tr-fr slow-mod fast CUT"
6940.00 6970.00	"LS tan-ltbrn,rr brn-crm,crpxl-vfxl,gran-micsuc,pred oom-ooc GRNST w/scat thn sl ool dns PCKST,tr ANHY xl-v rr POR fl,v rr trnsl-bf CHT frag,v sl DOL cmt,fr-g ool-intxl POR,fr-g dull-tr bri yel FLOR,fr brn-v rr blk STN,fr-g mod fast-fast stmg mlky CUT"
6970.00 7000.00	"LS AA,pred ooc-oom GRNST w/rr thn intbd dns-sl ool-occ sl chky-sl plty PCKST,fr-g intxl-oolPOR,fr-g dull-bri yel FLOR,fr-g ltbrn-brn STN w/rr-tr blk dd o STN,fr-g mod fast-fast stmg mlky CUT"
7000.00 7010.00	"LS tan-ltbrn,rr brn-crm,crpxl-vfxl,gran-micsuc,pred oom-ooc GRNST w/rr scat dns sl ool PCKST frag,tr ANHY xl-incl-rr POR fl,rr trnsl-bf CHT frag,occ DOL cmt,fr-g ool-intxl POR,fr-g dull-bri yel FLOR,fr-g brn-rr blk STN,fr-g mod fast-fast stmg mlky CUT"

FORMATION TOPS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #17-12 SE 1-A HORIZONTAL LATERAL LEG #4

FORMATION NAME		SAMPLES MEASURED DEPTH	SAMPLES TRUE VERTICAL DEPTH	DATUM KB:4765'
LOWER ISMAY		5476'	5470'	-705'
GOTHIC SHALE		5516'	5497'	-732'
DESERT CREEK		5545'	5511'	-746'
DC 1-A ZONE		5575'	5519'	-754'

GEOLOGICAL SUMMARY

AND

ZONES OF INTEREST

The Mobil Exploration and Production U.S. Inc., Ratherford Unit #17-12 Horizontal Lateral Leg #4 was a re-entry of the Mobil Ratherford Unit #17-12 located in Section 17, T41S, R24E, and was sidetracked in a northwesterly direction from a 5408' measured depth, 5408' true vertical depth, on February 7, 1998. The lateral reached a total measured depth of 7157', true vertical depth of 5541.7' at total depth, with a horizontal displacement of 1708' and true vertical plane degrees, on February 11, 1998, in the upper Desert Creek 1-A porosity zone. The only problem encountered while drilling the curve section was the mud motor and bit failing 72' in to the curve section. The lateral was drilled with out any significant problems. This lateral used fresh water with polymer sweeps as the drilling fluid, with 10# brine water spotted on bottom prior to trips. Only very minor amount of oil was noted while drilling the lateral through the 1-A porosity zone and that occurred near the middle of the lateral and then decreased again near the end of the lateral. The background gases noted on the accompanying mud log showed moderate to fair increases while drilling the 1-A porosity, and gradually decreases when the top and base of the 1-A zone was approached and bumped. While drilling the lateral, the top of the 1-A was bumped once, with the base approached but not encountered while drilling neither the curve nor the lateral section. The sample shows were fair to good while drilling the oolicastic to oomoldic limestone porosity in the lateral section in the 1-A zone, and decreased when in the tight limestones near the top of the 1-A zone of the Desert Creek was bumped.

The primary objective of the Ratherford Unit #17-12 Leg 4 horizontal lateral was the effective porosity and reservoir properties in the 1-A zone of the Desert Creek Member of the Upper Paradox Formation. The lower 2/3 (two thirds) of the Upper Ismay, the Lower Ismay, the Gothic Shale, the transition zone in the top of the Desert Creek and most of the 1-A porosity zone were penetrated while drilling the curve section. The curve was landed 3 feet into the 1-A porosity horizon. Kick off point for this lateral was at a measured depth of 5408', 5408' true vertical depth, in the upper ½ 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 brown, cryptocrystalline to microcrystalline, chalky to clean and slightly argillaceous, slightly shaley, occasionally slightly dolomitic and with scattered marly streaks, and had scattered anhydrite crystals and scattered micro fossils. Through out the Upper Ismay were very thin interbedded brown, cryptocrystalline to microcrystalline, limy, argillaceous to clean dolomites. Dark brown to tan chert fragments and thin interbeds of dark gray to black shale were also noted in Upper Ismay. Although very rare scattered intercrystalline porosities were seen, no to very poor visible sample shows and only minor gas increases were noted. The base of the Upper Ismay became predominately a medium to dark gray brown, limey, and argillaceous, microcrystalline, shaley dolomite, with very thin interbedded brown, cryptocrystalline to microcrystalline, dolomitic, shaley and marly limestone. These dolomites and limestones graded in the very thin black, carbonaceous, limey to dolomitic shales of the Hovenweep. 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 5475' measured depth, 5470' true vertical depth, at the base of the very thin Hovenweep shale. The Lower Ismay was predominately a cream to light gray to tan to some brown limestones. The limestones were microcrystalline to cryptocrystalline, clean, cherty with very rare scattered microfossils, and some slightly silty to slightly sandy streaks through out. Very little to no intercrystalline porosity, with only rare scattered, poor visible sample shows were noted in the limestones. Scattered with in the limestones were very rare, very thin, brown dolomites which were cryptocrystalline to microcrystalline, earthy to clean, with no visible porosity or sample shows and very thin limy siltstones and calcareous sands were also noted. The limestones and dolomites in and near the base of the Lower Ismay became increasingly argillaceous to shaley. The basal limestones and dolomites also became very marly and graded into the dolomitic to limey shales of the Gothic Shale.

The top of the Gothic Shale was at 5516' measured depth, 5497' true vertical depth. The Gothic Shale was predominantly dark gray to black, silty, carbonaceous, brittle to firm, subblocky to blocky to platy, calcareous to slightly dolomitic and slightly micaceous. The top of the Gothic was gradational from the very thin interbedding of very argillaceous, carbonaceous limestone and very argillaceous, limy dolomite, with the dolomites and limestones grading into very dolomitic, carbonaceous shale. The top of the Gothic was picked predominantly by a significant increase in penetration rate and a distinct increase in the percentage of shale in the samples.

Between the Gothic Shale and upper porosity members of the Desert Creek is a transitional zone, which appears to be rather gradational. The top of the Desert Creek is commonly picked at the Gothic Shale to transition zone facies change, which in this leg occurred at a measured depth of 5545' with a true vertical depth of 5511'. In this well the zone was predominately slightly dolomitic, cream to tan to brown, occasionally chalky to slightly platy limestone packstone, with thin brown, slightly limey, argillaceous, dolomites, very thin black carbonaceous shales and rare scattered brown to dark brown chert fragments. The limestones were cryptocrystalline to microcrystalline, argillaceous, with scattered anhydrite crystals and rare porosity filling, very rare intercrystalline porosity and a very rare, spotty, dull fluorescence, with no visible stain, and a very poor slow ring cut. The very thin interbedded dolomites were cryptocrystalline to microcrystalline, very slightly silty and had no visible porosity. The shales were predominately very thin parting in the limestones. The limestones became increasingly oolitic and graded into the oolicastic to oolmoldic limestone grainstones of the 1-A porosity zone.

The top of the Desert Creek 1-A porosity zone was picked at 5575' measured depth, 5519' true vertical depth, with a horizontal displacement of 126'. The pick was based on sample identification as well as a significant change in the penetration rate. The top of the porosity bench in this lateral was marked by a rather sharp facies change and drill rate increase. Of note is that the top of the porosity zone was flat with the top of the 1-A in the original well bore. The top of the 1-A porosity zone, in the curve section, was picked at the lithology change from a dense limestone packstone to a very oolicastic, clean to very slightly dolomitic, slightly anhydritic limestone grainstone. Noted in the limestone were rare algal material and very rare scattered chert fragments in the top of the 1-A porosity. The limestones were light brown to tan, some cream to light gray brown with fair to good intercrystalline to oolitic to very rare algal porosity and had a fair sample show. It appears that the 1-A porosity bench was probably defined by the interval from 5519' true vertical depth to 5537' true vertical depth. The base and top of the porosity zone were encountered while drilling the lateral section, although a tight streak was bumped above the base of the zone.

On February 9, 1998, the curve section was terminated 4' below the top of the 1-A porosity bench, at a measured depth of 5598', 5521' true vertical depth, with a horizontal displacement of 15.5' and an angle of 88.6 degrees. At this time a trip was made to change the bottom hole assemblies and bits. Upon resumption of drilling in the lateral section, the well bore was pulled slowly downward through some slightly streaky porosity to a true vertical depth of 5526', 5740' measured depth, with a horizontal displacement of 292'. At this time a tight streak was bumped and the well path was pushed upward. This tight streak was seen as a slight increase in the amount of scattered packstones in the samples. The well path was allow to slowly climb upwards to acquire the target line with in the porosity zone of the 1-A.

The well path continued very slowly upwards through the very good oolicastic to oolmoldic limestone porosity, with very good sample shows, to a horizontal displacement of 700', a measured depth of 6150', with a true vertical depth of 5523', near the top of the 1-A. At this time the well path was turned downward at a very shallow angle back toward the proposed target line. The well path was leveled out near the base of the zone at a measure depth of 6500', 5533.5' true vertical depth, with a horizontal displacement of 1052'. The well path remained approximately level at 5533.5 true vertical depth, tracking just above the base of the 1-A zone, until reaching a horizontal displacement of 1150', when the well path was bumped upward. At a measured depth of 6790', 5526' true vertical depth, with a horizontal displacement of 1342', the top of the 1-A zone was bumped. The top was noted as a sharp change in the angle of inclination, a slight increase in tight limestone packstone, and a very slight decrease in the sample show.

From 6790' to the lateral's termination, the well path was oriented downward with a few slides of the lateral assembly to control the rate of drop in the well path. The lateral was terminated on February 11, 1998, at a measured depth of 7157', 5541' true vertical depth, with 1708' of horizontal displacement. The top of the 1-A porosity zone had an apparent overall dip angle of approximately 89.7 degrees.

In tracking the well bore through the 1-A bench, the oolicastic limestone grainstone porosity was very good and was consistent through out its length, although the porosity showed thinning as the lateral was continued. The porosity thinned from a maximum thickness of approximately 18' at well bore to a thickness of 7.5' near the middle of the lateral and then thickened to approximately 16' at termination. In tracking the lateral through out it's length the predominant facies changes were associated with the vertical changes with in the limestones, with no noticeable lateral changes, as the environment of deposition changed when nearing the top or base of the 1-A zone. With the classification changes, the oolicastic to oomoldic limestones encountered were of varying thickness, from approximately 18' to 6.5' in the lateral and were continuous through the 1-A zone penetrated. The effective or the better porosity was associated with the very good oolicastic to oomoldic limestone grainstone facies which had fair to good, intercrystalline to oolitic porosities, and the absence of any major anhydrite plugging. The increasing amounts of tighter limestone packstone near the top and base of the 1-A zone had no to very poor visible porosity and no to very poor permeability.

The conclusion drawn from the northwesterly lateral in the 1-A zone, is that in this area the limestone porosities were consistent through the zone, with the minor amounts of anhydrite filled porosity and the very thin, platy limestone packstones near the top and base of the 1-A zone having an effect on the porosity. Staining was good to fair and there were sections where staining was poor, with some black dead oil staining trapped in the intercrystalline porosity. The lateral used the proposed target line as a reference point through the 1-A bench, with the well bore planing to following the line of best porosity after entering the 1-A porosity bench.

While drilling the lateral, the background gas was due in part to the minor amounts of oil encountered while drilling the lateral as well as the minor amounts of oil added to the mud system. A slow drop in the background gases was noted in the 1-A zone beginning at measured depth of 6380'. This lateral can be interpreted to having very good reservoir qualities through out. It appears that the porosities are well enough developed, in this northwesterly direction to enhance the overall performance of the zone.

RECEIVED
MAR 06 1998
DIV. OF OIL, GAS & MINING

MOBIL

RATHERFORD UNIT #17-12
NW HORIZONTAL LATERAL LEG #3
UPPER 1-A POROSITY BENCH
DESERT CREEK MEMBER
PARADOX FORMATION
SECTION 17, T41S, R24E
SAN JUAN, UTAH

GEOLOGY REPORT
by

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

TABLE OF CONTENTS

WELL SUMMARY 3
DAILY WELL CHRONOLOGY 4
DAILY ACTIVITY 5
BIT RECORD 6
SURVEY RECORD 7
MUD RECORD 9
SAMPLE DESCRIPTIONS 11
GEOLOGIC SUMMARY AND ZONES OF INTEREST 17
WELL PLOTS 21

WELL SUMMARY

OPERATOR:	MOBIL EXPLORATION & PRODUCTION U.S. INC.
NAME:	RATHERFORD UNIT #17-12 NW HORIZONTAL LATERAL LEG #3 IN 1-A UPPER POROSITY BENCH, DESERT CREEK
LOCATION:	SECTION 17, T41S, R24E
COUNTY/STATE:	SAN JUAN, UTAH
ELEVATION:	KB:4754' GL:4765'
SPUD DATE:	1/20/98
COMPLETION DATE:	2/6/98
DRILLING ENGINEER:	SIMMON BERRARA
WELLSITE GEOLOGY:	DAVE MEADE / MARVIN ROANHORSE
MUDLOGGING ENGINEERS:	DAVE MEADE / MARVIN ROANHORSE
CONTRACTOR:	BIG "A" RIG 25
TOOLPUSHER:	J. DEES
HOLE SIZE:	4 3/4"
CASING RECORD:	SIDETRACK IN WINDOW AT 5426' 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:	7010' MEASURED DEPTH; TVD- 1499.7'
STATUS:	TOH & LAY DOWN TOOLS - PREPARE WELL FOR SE LEG #4

DRILLING CHRONOLOGY
RATHERFORD UNIT #17-12
1-A NW HORIZONTAL LATERAL LEG #3

DATE	DEPTH	DAILY	ACTIVITY
2/1/98	6948'	109'	DIR DRLG & SURVEYS TO 7057'-SWIVEL MOTOR ON RIG FAILS-WORK & EVALUATE REPAIRS NEEDED ON POWER SWIVEL-DECISION MADE TO TERMINATE LEG #3 SIDETRACK WHEN POWER SWIVEL MOTOR FAILS TO RE-START- DRLG DOWN TO 7060' IN ORDER TO MAKE CONNECTION USING MWD & MUD MOTOR -PUMP SWEEP & CIRC SMPLS OUT @ 7060',TD OF LEG #3 SIDETRACK-TOH-L.D. LATERAL ASSEMBLY-P.U. HOOK ASSEMBLY-TIH-RETRIEVE WHIPSTOCK-TOH-L.D. OLD WHIPSTOCK-P.U. & ORIENT NEW WHIPSTOCK & STARTER MILL-BULLHEAD 25 BBLS 10# BRINE TO KILL FLOW-TIH
2/2/98	5419'	7'	TIH TO 4000' & DISPLACE HOLE W/10# BRINE-TOH-M.U. & ORIENT WHIPSTOCK-TIH & SET WHIPSTOCK @ 5419'-MILL 5414'-5421'-CIR OUT & CHECK FOR FLOW-DISPLACE W/80 BBLS 10# BRINE-REPLACE FAN BELTS ON DRAW WORKS MOTORS-TOH L.D. STARTER MILLS-P.U. WINDOW & WATERMELLON MILLS-TIH-MILL FROM 5421'-5426'-CIRC OUT & SPOT 40 BBLS 10# BRINE-CHANGE GRANT RUBBER-HANG SWIVEL L.D. 12 JNTS AOH & TOH-L.D. MILLS & P.U. CURVE BHA
2/3/98	5426'	144'	ORIENT & TEST MWD & MUD MOTOR-TIH-CIRC-R.U. & RUN GYRO DATA-TIME DRLG FROM 5426'-5435'-DIR DRLG & SURVEYS FROM 5435'-5454'-PULL GYRO-DIR DRLG & SURVEYS
2/4/98	5570'	117'	DIR DRLG & SURVEYS TO 5594' TD OF CURVE-CIRC SWEEP & SMPLS OUT-PUMP BRINE-L.D. 40 JNTS & TOH-L.D. CURVE ASSEMBLY & P.U. LATERAL BHA W/ NB #2-TEST MWD & MUD MOTOR -TIH TO WINDOW-CONTINUE TIH-SWIVEL UP,BREAK CIRC-DIR DRLG & SURVEYS TO 5635'-PUMP 10 BBL BRINE-POH DUE MWD FAILURE-REPLACE PROBE IN MWD & TEST-TIH-RIG REPAIRS, REPLACE HYDRAULIC HOSE ON POWER TONGS-TIH-CUT 40' DRLG LINE-P.U. SWIVEL & BREAK CIRC-CHANGE POP OFF PISTON ON #2 PUMP-DIR DRLG & SURVEYS
2/5/98	5687'	865'	DIR DRLG & SURVEYS-TRY NEW #1 DUPLEX PUMP ON HOLE,NO PULSE,SWITCH BACK TO PUMP #2-DIR DRLG & SURVEYS
2/6/98	6552'	458'	DIR DRLG & SURVEYS-PUMP SWEEP & CIRC OUT SMPLS @ 7010' TD OF LEG #3-TOH-L.D. LATERAL ASSEMBLY-P.U. HOOK ASSEMBLY-RIG SERVICE (ADJ. & CHANGE FAN BELTS ON RIG)

DAILY ACTIVITY

Operator: MOBIL
Well Name: RATHERFORD UNIT #17-12 NW 1-A HORIZONTAL LATERAL LEG #3

DATE	DEPTH	DAILY	DATE	DEPTH	DAILY
2/1/98	6984'	0			
2/2/98	5419'	7'			
2/3/98	5426'	144'			
2/4/98	5570'	117'			
2/5/98	5687'	865'			
2/6/98	6552'	458'			
TD	7010'				

BIT RECORD

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #17-12 NW 1-A HORIZONTAL LATERAL LEG #3

RUN	SIZE	MAKE	TYPE	IN/OUT	FTG	HRS	FT/HR
#1 (RR)	4 3/4"	STC	MF-3P	5426'/ 5594'	168'	18	10.5
#2	4 3/4"	STC	MF-15GP	5594'/ 7010'	1,416'	44	32.2

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/17-12 3A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
5400.00	0.29	329.37	5399.81	11.96 S	18.35 E	-21.64	0.00
5419.00	0.30	346.32	5418.81	11.87 S	18.31 E	-21.55	0.46
5426.00	4.60	312.00	5425.80	11.67 S	18.10 E	-21.26	62.22
5436.00	10.00	313.00	5435.72	10.80 S	17.17 E	-19.99	54.01
5446.00	16.30	314.00	5445.45	9.24 S	15.52 E	-17.72	63.04
5456.00	22.90	315.00	5454.87	6.88 S	13.13 E	-14.37	66.08
5466.00	29.50	316.00	5463.83	3.73 S	10.04 E	-9.96	66.15
5476.00	33.70	317.00	5472.35	0.07 N	6.44 E	-4.74	42.32
5486.00	35.80	318.00	5480.56	4.27 N	2.59 E	0.93	21.76
5496.00	38.00	319.00	5488.56	8.77 N	1.39 W	6.90	22.80
5506.00	39.70	320.00	5496.35	13.54 N	5.46 W	13.12	18.12
5516.00	42.40	321.00	5503.89	18.61 N	9.63 W	19.61	27.79
5526.00	47.40	322.00	5510.97	24.13 N	14.03 W	26.57	50.49
5536.00	53.50	322.40	5517.34	30.22 N	18.75 W	34.16	61.08
5546.00	60.00	323.20	5522.82	36.88 N	23.80 W	42.36	65.34
5556.00	66.20	323.30	5527.34	44.02 N	29.13 W	51.11	62.01
5566.00	73.10	323.40	5530.81	51.54 N	34.73 W	60.29	69.01
5594.00	88.00	323.00	5535.40	73.59 N	51.23 W	87.31	53.23
5606.00	88.50	321.90	5535.76	83.10 N	58.54 W	99.11	10.07
5637.00	92.50	319.80	5535.49	107.14 N	78.10 W	129.73	14.57
5669.00	92.90	317.50	5533.99	131.13 N	99.22 W	161.48	7.29
5700.00	92.10	314.90	5532.63	153.48 N	120.65 W	192.36	8.77
5732.00	91.50	313.00	5531.63	175.68 N	143.68 W	224.32	6.22
5764.00	91.10	311.40	5530.90	197.17 N	167.38 W	256.32	5.15
5796.00	92.70	311.60	5529.84	218.36 N	191.33 W	288.30	5.04
5827.00	93.20	311.20	5528.25	238.83 N	214.55 W	319.25	2.06
5859.00	87.80	310.20	5527.97	259.69 N	238.80 W	351.23	17.16
5891.00	89.90	309.30	5528.61	280.15 N	263.40 W	383.20	7.14
5923.00	91.60	309.50	5528.19	300.46 N	288.12 W	415.16	5.35
5954.00	87.50	308.20	5528.43	319.90 N	312.26 W	446.11	13.87
5986.00	86.50	308.40	5530.11	339.70 N	337.34 W	477.99	3.19
6018.00	88.70	308.60	5531.45	359.60 N	362.36 W	509.91	6.90
6050.00	90.50	308.40	5531.67	379.52 N	387.40 W	541.84	5.66
6082.00	92.50	310.20	5530.83	399.78 N	412.15 W	573.79	8.41
6113.00	90.90	311.40	5529.91	420.03 N	435.61 W	604.77	6.45
6145.00	88.50	311.00	5530.08	441.10 N	459.68 W	636.77	7.60
6177.00	89.40	312.60	5530.67	462.43 N	483.53 W	668.76	5.74
6209.00	90.50	313.80	5530.70	484.33 N	506.86 W	700.75	5.09

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/17-12 3A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
6240.00	89.50	314.20	5530.70	505.87 N	529.16 W	731.73	3.47
6272.00	88.80	314.00	5531.17	528.13 N	552.13 W	763.71	2.28
6303.00	88.20	310.90	5531.98	549.05 N	575.00 W	794.69	10.18
6335.00	90.40	311.00	5532.37	570.02 N	599.16 W	826.68	6.88
6367.00	91.10	308.70	5531.95	590.52 N	623.73 W	858.65	7.51
6399.00	90.50	308.40	5531.51	610.46 N	648.75 W	890.59	2.10
6430.00	90.10	309.60	5531.35	629.97 N	672.84 W	921.55	4.08
6462.00	90.50	309.60	5531.18	650.37 N	697.50 W	953.52	1.25
6494.00	93.40	307.90	5530.09	670.38 N	722.43 W	985.45	10.50
6526.00	96.20	310.20	5527.41	690.47 N	747.20 W	1017.29	11.31
6558.00	91.70	313.50	5525.21	711.76 N	770.96 W	1049.20	17.42
6589.00	87.00	314.90	5525.56	733.36 N	793.18 W	1080.16	15.82
6620.00	86.40	315.40	5527.34	755.30 N	815.01 W	1111.06	2.52
6653.00	88.20	313.70	5528.90	778.43 N	838.50 W	1143.99	7.50
6685.00	90.10	314.70	5529.37	800.73 N	861.43 W	1175.96	6.71
6717.00	91.30	316.00	5528.98	823.49 N	883.92 W	1207.91	5.53
6748.00	92.00	316.50	5528.09	845.88 N	905.35 W	1238.81	2.77
6779.00	89.40	316.70	5527.71	868.40 N	926.64 W	1269.70	8.41
6811.00	88.20	317.50	5528.38	891.83 N	948.42 W	1301.57	4.51
6842.00	85.60	317.50	5530.06	914.65 N	969.33 W	1332.38	8.39
6873.00	85.50	316.50	5532.46	937.26 N	990.41 W	1363.17	3.23
6905.00	85.60	311.90	5534.95	959.49 N	1013.28 W	1395.04	14.34
6937.00	86.50	309.30	5537.15	980.27 N	1037.51 W	1426.95	8.58
6968.00	89.00	306.80	5538.37	999.35 N	1061.90 W	1457.85	11.40
7010.00	89.00	306.80	5539.10	1024.51 N	1095.53 W	1499.67	0.00

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 312.00 (TRUE).
CALCULATION METHOD: MINIMUM CURVATURE.

SURVEYS- 5400 GYRO,5419 INTERPOLATED GYRO
5426 MWD INC/GYRO AZM, 5436-5516 INTER.MWD AZM
5526-5556 MAG.INTERFERENCE, 7010 PROJECTED TO BIT

MUD REPORT

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #17-12 NW 1-A HORIZONTAL LATERAL LEG #3

DATE	DEPTH	WT	VIS	PLS	YLD	GEL	pH	WL	CK	CHL	CA	SD	OIL	WTR
2/2/98	5419'	9.0	26	1	1	0/0	11.6	NC	NC	65 K	4000	–	0%	100%
2/3/98	5429'	9.2	26	1	1	0/0	11.6	NC	NC	75 K	3600	–	0%	100%
2/4/98	5592'	9.3	26	1	1	0/0	11.6	NC	NC	90 K	2400	–	0%	100%
2/5/98	5939'	9.3	26	1	1	0/0	11.5	NC	NC	93K	2400	–	0%	100%
2/6/98	6702'	8.9	26	1	1	0/0	11.6	NC	NC	60K	2000	–	0%	100%

SAMPLE DESCRIPTIONS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #17-12 SE 1-A HORIZONTAL LATERAL LEG#3

DEPTH	LITHOLOGY
5426.00 5440.00	"LS wh-crm-brn-ltbrn,crpxl-micxl,rthy-cln,occ chk,sl dol,v sl anhy,mrly ip,occ grdg to v lmy SH,rr scat Crin fos,tt,NFSOC,w/scat DOL frag brn,crpxl-micxl,arg-sl shy,lmy,dns,NFSOC,v thn blk-dkgybrn SH sl carb,mica,dol-lmy,slty ip,tr lt-dkbrn-brn CHT frag"
5440.00 5450.00	"LS AA,mrly-v shy ip,v rr Crin fos,v rr ANHY xl,tt,NFSOC,v thn SH AA,occ v arg DOL,rr scat CHT frag AA"
5450.00 5460.00	"LS crm-wh,occ ltbrn-brn,crpxl-micxl,rthy-arg,mrly ip,sl dol,scat Cor fos,v sl anhy,dns,scat ltbrn-brn CHT frag,tt,NFSOC,w/v thn dkgy-dkgybrn-blk,sl carb,mica,sl slty,dol-calc SH ptgs & mbrn-gybrn DOL frag,micxl,rthy,shy,sl lmy,tt,NFSOC"
5460.00 5470.00	"LS AA,incr CHT frag,grdg to lmy arg DOL AA,w/NFSOC,bcmg v thn dkgy-blk calc-dol carb SH"
5470.00 5480.00	"LS AA,bcmg ltgy-gybrn,micxl,slty-sdy,tt-rr intxl POR,NFSOC/tr DOL & SH AA"
5480.00 5490.00	"LS ltgy-gybrn.occ mgybrn,micxl-crpxl,sl gran,rthy-slty-sl sdy,grdg to calc-lmy SLTST,tr chky-mrly plty prtgs,sl anhy,tt-rr intxl POR,NFSOC,tr thn brn crpxl DOL,arg-sl shy,tt-rr intxl POR,NFSOC"
5490.00 5500.00	"LS AA,intbd/thn brn args l dol prtgs,rr blk SH lam,pred chky-occ mrly,sl anhy,tr trnsl CHT incl,tt-rr intxl POR,NFSOC"
5500.00 5510.00	"LS ltgy-gybrn-off wh,occ tan-ltbrn,crpxl-micxl,chky-anhy,mrly-sl slty,cln-rr mot/blk SH lam,v sl dol,tt-rr intxl POR/fl,v rr dull orng mnrl FLOR,NSOC"
5510.00 5520.00	"SH dkbrnblk-brngy-blk,sbblky-sbplty-blky,sft-mfrm,occ brit,sl slty,carb,calc-lmy,sooty/scat LS & tr DOL AA,"
5520.00 5530.00	"LS lt-mgybrn,occ brn,off wh,crpxl-micxl,chky-sl anhy/tr POR fl,occ mrly,rr xl ANHY incl,v rr brn CHT,tt-rr intxl POR,NFSOC,tr DOL,brn,crpxl,thn plty-arg,NFSOC/scat SH AA"
5530.00 5540.00	"LS AA/sl incr brn,crpxl-micxl,occ vfxl,dns-chky plty PCKST,sl anhy/tr POR fl,intbd/thn arg-sl dol prtgs,sl mrly,rr xln ANHY,rr brn CHT,tt-tr intxl POR,n-rr dull orng mnrl FLOR,NSOC"
5540.00 5560.00	"LS ltbrn-tan-mbrngy,crm,occ off wh-ltgy,crpxl-micxl,vfxl,sl gran,pred PCKST,grdg to ool GRNST,chky-sl anhy AA,sl mrly,rr sdy-slty frag,v rr CHT,tt-tr intxl-rr sl ool POR,fr scat mod bri-bri yel FLOR,n-tr ltbrn-brn/blk pp STN,fr-g fast stmg mlky CUT"
5560.00 5570.00	"LS AA,crpxl-micxl,vfxl-gran,pred oom-ooc GRNST/tr dns-plty PCKST,chky-sl anhy/tr POR fl-xl ANHY,tr sdy-slty frag,tt-tr intxl-ool POR,FLOR AA,fr ltbrn/tr brn-blk dd o STN,fr slow-mod fast stmg mlky CUT"
5570.00 5590.00	LS ltbrn-tan,crm,occ off wh,ltgy,micxl-vfxl-sl gran,crpxl,pred ool GRNST/PCKST AA,chky-sl anhy/tr xl ANHY-POR,rr sdy-slty frag,fr ool-intxl POR,incr FLOR AA,STN AA,g mod fast-fast stmg mlky CUT"

DEPTH	LITHOLOGY

5594.00 5600.00 "LS crm-wh-ltbrn,crpxl-micxl,rr vfxl-gran,sl micsuc,pred dns chky-sl ool PCKST,w/thn stks ooc-oom GRNST,scat tan CHT frag-v rr ANHY xl-incl,tt-rr ool-intxl POR,tr dull-bri yel FLOR,tr brn-blk STN,fr mod fast-slow stmg CUT,w/scat brn crpxl DOL & blk SH cvgs"

5600.00 5620.00 "LS pred PCKSTAA,decr ooc-oom GRNST stks,v rr CHT frag,sl DOL cmt,v rr ANHY xl-incl,rr ool-rr-tr intxl POR,rr-tr spty dull-bri yel FLOR,rr-tr spty brn-tr spty blk STN,tr slow-rr mod fast stmg CUT"

5620.00 5640.00 "LS crm-ltgybrn-wh,occ tan,crpxl-micxl,occ vfxl-sl mic suc,pred dns-chky plty PCKST/tr agal mat-mic fos,tr blk SH lam,rr ool GRNST,anhy/tr xln ANHY-POR fl,tt-tr intxl-rr ool POR,fr dull-mod bri yel/tr bri yel FLOR,n-rr brn STN,fr slow stmg mlky CUT"

5640.00 5650.00 "LS AA,dns-chky plty PCKST,anhy/tr POR fl-rr xl ANHY,cln-rr SH lam,v rr calc xl,v sl dol,tt-rr intxl-frac POR,g-fr scat mod bri-bri yel FLOR,n-tr blk pp dd o STN,tr slow stmg-fr dif/v fnt res ring CUT"

5650.00 5670.00 "LS AA,crpxl-micxl,rr vfxl,dns-chky plty PCKST/rr agal mat,tr blk SH lam,anhy/tr xln ANHY-POR fl,rr xl calc,tt-tr intxl-frac POR,fr scat dull-mod bri/tr scat bri yel FLOR,n-rr blk dd o-v rr brn STN,fr slow stmg mlky CUT/fnt res ring"

5670.00 5690.00 "LS AA,crpxl-micxl,tr vfxl,pred dns-chky plty PCKST/tr agal mat-mic fos,rr blk SH lam,anhy/tr xln ANHY-POR fl,v sl dol,POR,fr even dull-mod bri/tr scat bri yel FLOR-STN AA,fr slow stmg mlky CUT/fr fnt res ring"

5690.00 5710.00 "LS crm-ltgybrn-wh,rr tan,crpxl-micxl,occ vfxl,pred dns-chky plty PCKST/tr agal mat-mic fos,anhy/tr xln ANHY-POR fl,rr xl calc incl,tt-tr frac-intxl POR,FLOR AA,n-sl incr pp blk dd o STN,fr slow stmg mlky CUT/mod bri res ring"

5710.00 5730.00 "LS crm-ltgybrn-wh,crpxl-micxl,occ vfxl,dns-chky plty PCKST/rr agal mat-mic fos,anhy/tr xln ANHY-POR fl,rr xl calc incl,cln,tt-tr frac-intxl POR,g even dull/scat spty mod bri-bri yel FLOR,n-tr pp blk dd o STN,fr slow stmg mlky CUT/g bri res ring"

5730.00 5750.00 "LS AA,crpxl-micxl,tr vfxl,dns-chky plty PCKST/rr agal mat-vrr mic fos,anhy AA,tr xl calc,cln,tt-tr frac-intxl POR,fr even dull-mod bri/tr scat spty bri yel FLOR,rr orng mnrl FLOR,n-fr blk pp dd o STN,g-fr slow-mod fast stmg mlky CUT/g bri res ring"

5750.00 5770.00 "LS crm-ltgybrn-wh,rr tan,crpxl-micxl,rr vfxl,dns-chky plty PCKST/decr agal mat-mic fos,anhy/tr xln ANHY-POR fl,rr xl calc incl,cln,tt-tr frac-intxl-v rr vug POR,FLOR AA,n-fr pp blk dd o STN,fr slow stmg mlky CUT/g bri res ring"

5770.00 5790.00 "LS crm-ltgybrn-wh,tr tan,crpxl-micxl,tr vfxl,dns-chky plty PCKST/tr agal mat-mic fos,anhy/tr xln ANHY-POR fl,rr xl calc,cln,tt-tr intxl-frac-v rr vug POR,fr-g FLOR AA,n-tr pp blk dd o-rr ltbrn STN,fr-g slow stmg mlky CUT"

5790.00 5810.00 "LS AA,crpxl,occ micxl,tr vfxl,pred sl ool dns-chky plty PCKST,anhy/tr xl ANHY incl-POR fl,rr xl calc incl,tt-tr intxl-frac POR,fr scat mod bri-dull/tr spty bri yel FLOR,vrr dull orng mnrl FLOR,n-tr blk dd o STN,g mod fast stmg mlky CUT"

5810.00 5830.00 "LS crm-ltgybrn-wh,tr tan,crpxl-micxl,tr vfxl,dns sl ool-chky plty PCKST/rr agal mat-mic fos,anhy/tr xln ANHY-POR fl,rr xl calc,cln,tt-tr intxl-frac-v rr vug POR,fr-g FLOR AA,n-tr pp blk dd o-v rr ltbrn STN,g-fr slow stmg mlky CUT"

DEPTH	LITHOLOGY

5830.00 5850.00 "LS AA,dns v sl ool-chky plty PCKST/rr agal mat-mic fos incl,anhy/tr xln ANHY-POR fl,rr xl calc,tt-tr intxl-rr frac-v rr vug POR,g scat dull-spty mod bri/tr bri yel FLOR,v rr dull orng mnrl FLOR,n-tr pp blk dd o-rr ltbrn STN,g fast-mod fast stmg mlky CUT"

5850.00 5870.00 "LS ltbrn,ltgybrn-crm,occ tan,micxl-crpxl-sl gran,pred dns fos PCKST occ grdg to GRNST ip,tr Crin-ool-mic fos,sl chky/scat plty frag-POR fl,tr xl ANHY incl,bcmg dol/tr DOL rich cmt,rr xl calc,tt-tr inxl POR,g even dull-mod bri/scat bri yel FLOR,g ltbrn-rr blk dd o STN,g mod fast-slow stmg mlky CUT"

5870.00 5890.00 "LS tan,crm-ltgybrn,tr wh,crpxl-micxl,sl gran,tr vfxl,dns sl ool-chky plty PCKST occ grdg to GRNST,rr agal mat-mic fos,anhy/tr xln ANHY-POR fl,rr xl calc,POR AA,fr-g FLOR AA,n-tr pp blk dd o-v rr ltbrn STN,g-fr slow stmg mlky CUT"

5890.00 5910.00 "LS pred crm-tan-wh crpxl-micxl,dns,chky ip,sl anhy-v sl chty,occ ool PCKST,w/thn rthy brn micxl-vfxl gran alg sl ooc-oom GRNST,v sl DOL cmt,rr ANHY xl-incl,tt-fr intxl-tr ool-alg POR,mfr dull-bri yel FLOR,tr spty brn STN-blk dd o STN,fr slow-mod fast CUT"

5910.00 5930.00 "LS ltbrn-brn micxl-vfxl,gran-micsuc,alg-ool GRNST w/thn intbd crm-wh-bf crpxl-sl micxl v sl ool PCKST,scat ANHY xl-incl-rr POR fl,v sl DOL cmt,v rr mic fos,tt-g intxl-tr alg-rr ool POR,fr-g dull-rr bri yel FLOR,fr ltbrn-rr blk STN,fr-g mod fast stmg CUT"

5930.00 5940.00 "LS AA,pred sl alg-v sl ooc-oom GRNST AA,w/v thn sl ool PCKST,v sl decr ool POR,pred intxl-occ alg POR AA,FLOR-STN-CUT AA"

5940.00 5960.00 "LS ltbrn-brn micxl-vfxl,gran-micsuc,ooc-oom GRNST w/thn intbd crm-wh-bf crpxl-sl micxl sl ool PCKST,scat ANHY incl-rr POR fl,v sl DOL cmt,rr Crin fos,rr CHTfrag,fr-g intxl-tr ool-alg POR,fr-g dull-rr bri yel FLOR,fr ltbrn-rr blk STN,fr-g mod fast stmg CUT"

5960.00 6000.00 "LS ltbrn-brn micxl-vfxl,gran-micsuc,ooc-oom sl alg GRNST w/thn intbd crm-wh-bf crpxl sl ool PCKST,scat ANHY incl-rr POR fl,occ DOL cmt,rr Crin fos,rr CHT frag,fr-g intxl-fr ool-rralg POR,fr-g dull-rr bri yel FLOR,fr ltbrn-rr blk STN,fr-g mod fast stmg CUT"

6000.00 6020.00 "LS brn-ltbrn,micxl-vfxl,occ gran-micsuc,ooc-oom v sl alg GRNST v sl DOL cmt occ ANHY xl-incl-v rr POR fl,w/scat crpxl anhy sl ool PCKSTfrag,rr bf-clr CHT frag,fr-g intxl-fr ool-v rr alg POR,fr-g dull-bri yel FLOR,fr-g ltbrn-rr blk STN,fr-g mod fast CUT"

6020.00 6040.00 "LS AA,incr ooc-oom mat-decr alg mat,decr PCKSTfrag,n-v rr Crin fos,v rr trnsl-bf CHT frag,rr ANHY POR fl,fr-g intxl-fr ool-v rr alg POR,fr-g dull-tr bri yel FLOR,fr-g ltbrn-brn STN,v rr spty blk dd o STN,fr-g mod fast-tr fast stmg CUT"

6040.00 6060.00 "LS crm-tan-brn,crpxl-vfxl,gran-micsuc ip,pred intbd ooc-oom sl alg GRNST & dns sl ool occ Crin fos PCKST,scat ANHY xl-incl,v rr CHT frag,v sl DOL cmt,tt-g intxl-fr ool-v sl alg POR,mg dull-rr bri yel FLOR,fr-g ltbrn-rr spty blk STN,fr-g slow-mod fast CUT"

6060.00 6080.00 "LS AA,decr PCKST,incr ool POR,FLOR-STN-CUT AA"

6080.00 6100.00 "LS brn-ltbrn,micxl-vfxl,occ gran-micsuc,ooc-oom v sl alg GRNST v sl DOL cmt occ ANHY xl-incl-v rr POR fl,w/scat crpxl Crin sl ool PCKSTfrag,rr bf-clr CHT frag,fr-g intxl-fr ool-v rr alg POR,fr-g dull-bri yel FLOR,fr-g ltbrn-rr blk STN,fr-g mod fast CUT"

6100.00 6110.00 "LS AA,incr PCKST,sl decr ool POR,FLOR-STN-CUT AA"

DEPTH	LITHOLOGY

6110.00 6140.00 "LS brn-ltbrn,micxl-vfxl,occ gran-micsuc,ooc-oom v sl alg GRNST v sl DOL cmt occ ANHY xl-incl-v rr POR fl,rr crpxl Crin fos,rr sl ool PCKSTfrag,bf-clr CHT frag,fr-g intxl-fr ool-v rr alg POR,fr-g dull-bri yel FLOR,fr-g ltbrn-rr blk STN,fr-g mod fast CUT"

6140.00 6160.00 "LS brn-ltbrn,micxl-vfxl,occ gran-micsuc,ooc-oom GRNST v sl DOL cmt occ ANHY xl-incl-v rr POR fl-v rr alg mat,w/rr crpxl sl ool PCKSTfrag,v rr bf-clr CHT frag,fr-g intxl-ool-POR,fr-g dull-bri yel FLOR,fr-g ltbrn STN-rr blk dd o STN,fr-g mod fast CUT"

6160.00 6170.00 "LS AA,decr PCKST,POR-FLOR-STN-CUT AA"

6170.00 6190.00 "LS ltbrn-brn,occ crm,micxl-vfxl,gran-micsuc,sl suc,pred ooc-oom GRNST,w/v rr scat crm-wh PCKSTfrag,sl anhy-tr ANHY xl-incl-rr POR fl,v rr CHT frag,sl DOL cmt,fr-g intxl-ool POR,fr-g dull-tr bri yel FLOR,fr-g brn-v rr spty blk STN,fr-g slow-fast stmg CUT"

6190.00 6210.00 "LS AA,pred ooc-oom GRNST,w/v rr scat PCKST& CHT frag,POR-FLOR-STN-CUT AA"

6210.00 6240.00 "LS ltbrn-brn,occ crm,micxl-vfxl,gran-micsuc,sl suc,pred ooc-oom GRNST,w/v rr scat crm-wh PCKSTfrag,sl anhy-tr ANHY xl-incl-rr POR fl,v rr CHT frag,sl DOL cmt,fr-g intxl-ool POR,fr-g dull-tr bri yel FLOR,fr-g brn-v rr spty blk STN,fr-g slow-fast stmg CUT"

6240.00 6270.00 "LS tan-ltbrn,occ crm-brn,crpxl-vflx,gran-micsuc,pred ooc-oom GRNST w/scat dns sl ool PCKSTincl,sl DOL rich cmt,occ ANHY xl-incl,tt-g intxl-ool POR,fr-g dull-bri yel FLOR,fr-g brn-ltbrn STN-spty blk dd o STN,fr-g slow-fast stmg CUT"

6270.00 6280.00 "LS AA,sl incr dns PCKST,POR-FLOR-STN-CUT AA"

6280.00 6310.00 "LS tan-ltbrn,occ crm-brn,crpxl-vflx,gran-micsuc,pred ooc-oom GRNST w/scat dns sl ool PCKSTincl,sl DOL rich cmt,occ ANHY xl-incl,v rr Crin fos frag,tt-g intxl-ool POR,fr-g dull-bri yel FLOR,fr-g brn-ltbrn STN-spty blk dd o STN,fr-g slow-fast stmg CUT"

6310.00 6330.00 "LS tan-ltbrn,occ crm-brn,crpxl-vflx,gran-micsuc,pred ooc-oom GRNST w/rr scat dns sl ool PCKSTincl,sl DOL rich cmt,occ ANHY xl-incl,v rr Crin fos frag,fr-g intxl-ool POR,fr-g dull-bri yel FLOR,fr-g brn-ltbrn STN-rr spty blk STN,fr-g mod fast-fast stmg CUT"

6330.00 6340.00 "LS AA,fr-g ltbrn-brn STN-rr-tr spty blk dd o STN,POR-FLOR-CUT AA"

6340.00 6360.00 "LS tan-ltbrn/occ crm incl,tr mbrn,vfxl-gran-sl micsuc,crpxl,ooc-oom GRNST,rr scat-intbd dns PCKST,chky-sl anhy/tr POR fl,rr xl ANHY incl,sl dol/tr DOL cmt strk,g ooc-oom/tr intxl POR,g even mod bri-bri yel FLOR,g ltbrn-scat brn/tr blk dd o STN,CUT AA"

6360.00 6390.00 "LS ltbrn-brn/tr crm incl,occ ltgybrn strk,tan,vfxl-gran-sl micsuc,occ crpxl,suc ip,pred oom-ooc GRNST/tr intbd-scat dns ool PCKST,occ chky/tr POR fl,sl anhy/v rr xl ANHY incl,tr mic fos,POR AA,g even mod bri-bri yel FLOR,g ltbrn-brn/scat blk dd o STN,g fast stmg-blooming mlky CUT"

6390.00 6410.00 "LS ltbrn-ltgybrn-tan,occ brn,tr crm,vfxl-gran,sl mic suc,crpxl,ooc-oom GRNST,rr intbd dns PCKST,chky-sl anhy/sl incr POR fl-tr xl ANHY,tr mic fos,rr tan CHT frag,sl dol/tr DOL cmt strk,POR-FLOR-STN AA,g fast stmg mlky CUT"

DEPTH	LITHOLOGY
6410.00 6440.00	"LS ltbrn-tan-ltgybrn,occ brn,crm,vfxl-gran-sl mic suc,occ crpxl,GRNST AA,rr intbd dns sl ool PCKST,chky-anhy/fr POR fl-rr xl ANHY,tr mic fos,v rr CHT AA,sl dol/tr DOL cmt,g ooc-oom/tr intxl POR,FLOR-STN AA,g fast stmg mlky-sl blooming mlky CUT"
6440.00 6460.00	"LS ltbrn-ltgybrn-tan,occ crm,brn,vfxl-gran,sl mic suc,tr crpxl,ooc-oom GRNST,rr dns sl ool PCKST,chky-sl anhy/tr POR fl-rr xl ANHY,v sl dol,v rr crm-trnsl CHT incl,POR AA,g even mod bri-bri yel FLOR,g-fr ltbrn/tr brn & scat blk dd o STN,CUT AA"
6460.00 6480.00	"LS AA,bcmg incr brn,vfxl-gran,sl mic suc,oom-ooc GRNST,rr dns-v sl ool PCKST incl,chky-sl anhy/tr POR fl-rr xl ANHY,sl dol,tr mic fos,v rr CHT AA,g oom-ooc POR,FLOR-STN AA,g fast stmg-sl blooming CUT"
6480.00 6500.00	"LS ltbrn-tan-brn,occ ltgybrn,crm,vfxl-gran,sl mic suc,tr crpxl,GRNST AA,rr dns sl ool PCKST,chky-sl anhy/AA,v sl dol,v rr crm-trnsl CHT,g-fr ltbrn/tr brn & scat blk dd o STN,CUT AA"
6500.00 6530.00	"LS ltbrn-brn,occ tan,tr crm,ltgybrn,vfxl-gran,sl micsuc,rr crpxl,oom-ooc GRNST/rr PCKST AA,occ chky/tr POR fl,sl anhy/v rr xl ANHY,tr mic fos,v sl dol,POR AA,g even mod bri-bri yel FLOR,g ltbrn-fr brn/tr scat blk dd o STN,g fast stmg-blooming mlky CUT"
6530.00 6550.00	"LS ltbrn-tan-brn,occ ltgybrn,crm,vfxl-gran,sl mic suc,tr crpxl,GRNST AA,rr dns sl ool PCKST,chky-sl anhy/AA,v sl dol,v rr crm-trnsl CHT,POR-FLOR AA,g-fr ltbrn/tr brn & scat blk dd o STN,g fast stmg-blooming mlky CUT"
6550.00 6560.00	"LS AA,oom-ooc GRNST/tr PCKST AA,sl chky-anhy/tr POR fl,v rr xl ANHY,tr mic fos,g oom-ooc/tr intxl POR,FLOR AA,g ltbrn-brn/incr blk dd o STN,g fast stmg mlky CUT"
6560.00 6570.00	"LS AA,oom-ooc GRNST/sl incr dns sl ool PCKST,decr scat FLOR AA,STN-CUT AA"
6570.00 6590.00	"LS ltbrn-brn,occ mbrn-tan,rr crm,crpxl-vfxl,gran-micsuc ip,pred dns sl ool-chty-occ plty PCKST w/intbd ooc-oom GRNST,rr-tr trnsl CHT frag,scat ANHY xl-incl,sl DOL cmt,tt-fr intxl-ool POR,tr-fr dull-bri yel FLOR,tr-fr brn-mbrn-rr blk STN,tr mod fast CUT"
6590.00 6610.00	"LS AA,pred ooc-oom GRNST w/decr v sl ool dns occ plty PCKST,fr intxl-ool PCKST,fr dull-bri yel FLOR,fr brn-ltbrn STN-rr spty blk dd o STN,fr slow-mod fast stmg CUT"
6610.00 6620.00	"LS AA,incr ool-intxl POR,scat ANHY fl POR,fr FLOR-STN-CUT AA"
6620.00 6650.00	"LS ltbrn-brn,occ mbrn-tan,rr crm,crpxl-vfxl,gran-micsuc ip,pred sl ooc-oom GRNST w/scat intbd dns occ plty-sl ool PCKST,rr trnsl CHT frag,scat ANHY xl-incl,sl DOL cmt,tt-g intxl-ool POR,tr-fr dull-bri yel FLOR,tr-fr brn-mbrn-rr blk STN,tr mod fast CUT"
6650.00 6670.00	"LS ltbrn-brn-tan,occ mbrn-crm,micxl-vfxl,gran-micsuc,pred ooc-oom GRNST,tr dns-crpxl-v sl plty sl ool PCKST,rr ANHY xl-incl,sl DOL rich cmt,v rr trnsl CHT,fr-g intxl-ool POR,fr-g dull-bri yel FLOR,g-fr ltbrn-tr brn STN-rr blk dd o STN,g mod fast-fast CUT"
6670.00 6700.00	"LS AA,pred ooc-oom sl anhy v sl chty GRNST,w/rr thn v sl ooc dns PCKST incl,fr-g ool-intxl POR,fr-g dull-bri yel FLOR,fr-g lt-m brn STN-w/v rr scat blk dd o STN,fr-g mod fast-fast stmg mlky CUT"
6700.00 6720.00	"LS ltbrn-brn-tan,occ mbrn-crm,micxl-vfxl,gran-micsuc,pred ooc-oom GRNST,tr dns-crpxl-sl plty sl ool PCKST,rr ANHY xl-incl,sl DOL rich cmt,rr trnsl-bf CHT,fr-g intxl-ool POR,fr dull-bri yel FLOR,fr-g lt-dk brn STN-rr blk dd o STN,g mod fast-fast stmg CUT"

DEPTH	LITHOLOGY
6720.00 6750.00	"LS AA,pred ooc-oom GRNST w/tr thn intbd dns-sl ool-v sl chky-occ plty PCKST,POR-FLOR-STN-CUT AA"
6750.00 6760.00	"LS ltbrn-mbrn-tan,occ crm,crpxl-vfxl,gran-micsuc ip,pred dns sl ool occ chty-sl plty PCKST w/tr intbd ooc-oom GRNST,v rr trnsl CHT frag,scat ANHY xl-incl,sl DOL cmt,tt-fr intxl-ool POR,tr-fr dull-bri yel FLOR,tr-fr brn-mbrn-rr blk STN,tr-fr mod fast CUT"
6760.00 6780.00	"LS ltbrn-brn-tan,occ mbrn-crm,micxl-vfxl,gran-micsuc,incr ooc-oom GRNST w/scat crpxl-sl plty sl ool PCKST,rr ANHY xl-incl,sl DOL rich cmt,tr trnsl CHT,fr-g intxl-ool POR,fr dull-bri yel FLOR,tr-fr lt-dk brn STN-rr blk dd o STN,fr mod fast-fast stmg CUT"
6780.00 6800.00	"LS AA,pred ooc-oom GRNST w/tr thn intbd dns-sl ool-v sl chky-occ plty PCKST,POR-FLOR-STN-CUT AA"
6800.00 6810.00	"LS AA,bcmg pred sl ool dns crpxl occ chky-plty PCKST,w/decr-thn intd ooc-oom GRNST,scat trnsl-bf CHT frag,occ ANHY xl-incl,tt-tr intxl-ool POR,tr-fr dull-bri yel FLOR,tr lt-mbrn STN-v rr spty blk dd o STN,tr-fr slow-mod fast stmg CUT"
6810.00 6840.00	"LS ltbrn-mbrn-tan,occ crm,crpxl-vfxl,gran-micsuc ip,pred dns sl ool occ chty-sl plty PCKST w/tr intbd ooc-oom GRNST,v rr trnsl CHT frag,scat ANHY xl-incl,sl DOL cmt,tt-fr intxl-ool POR,tr-fr dull-bri yel FLOR,tr-fr brn-mbrn-rr blk STN,tr-fr mod fast CUT"
6840.00 6860.00	"LS tan-ltbrn,occ ltgybrn-ltgy,tr wh,rrcrm,vfxl-gran,sl micsuc-suc,tr crpxl,oom-ooc GRNST/tr intbd-scat dns sl ool PCKST,chky-sl anhy/tr POR fl-rr plty frag-xln ANHY,chty/tr crm-tan CHT incl,sl dol/occ DOL cmt strk,fr-g oom-ooc /intxl POR,FLOR-STN-CUT AA"
6860.00 6890.00	"LS tan-ltbrn-crm,occ ltgybrn-ltgy,rr wh,brn,vfxl-gran-micxl,crpxl,sl micsuc,incr dns sl ool PCKST/tr scat-intbd GRNST AA,chky-anhy/sl incr POR fl-xl ANHY,sl chty/tr CHT AA,fr-g intxl-ool POR,g-fr even mod bri-dull/scat bri yel FLOR,fr-g ltbrn/tr brn-rr blk dd o STN,g-fr mod fast-fast stmg mlky CUT"
6890.00 6910.00	"LS tan-ltbrn,tr brn,occ wh-crm,crpxl-vfxl,gran-sl micsuc,intbd oom-ooc GRNST & thn dns sl ool occ chky PCKST,sl anhy-occ ANHY xl-incl-rr POR fl,tr crm-tan CHT frag,v sl DOL cmt,fr ool-intxl POR,mfr dull-bri yel FLOR,tr ltbrn-brn-v rr blk STN,tr-fr CUT AA"
6910.00 6920.00	"LS AA,incr & bcmg pred ooc-oom GRNST,decr PCKST AA,incr intxl-ool POR,incr FLOR-STN-CUT"
6920.00 6940.00	"LS tan-ltbrn,rr brn,v rr wh-crm,crpxl-vfxl,gran-micsuc ip,pred oom-ooc GRNST w/thn dns sl ool PCKST incl,rr ANHY xl-incl-v rr POR fl,tr trnsl-bf CHT frag,sl DOL cmt,fr-g intxl-fr ool POR,mg dull-bri yel FLOR,fr ltbrn-rr blk STN,tr-fr slow-mod fast CUT"
6940.00 6970.00	"LS tan-ltbrn,rr brn-crm,crpxl-vfxl,gran-micsuc,pred oom-ooc GRNST w/scat thn sl ool dns PCKST,tr ANHY xl-v rr POR fl,v rr trnsl-bf CHT frag,v sl DOL cmt,fr-g ool-intxl POR,fr-g dull-tr bri yel FLOR,fr brn-v rr blk STN,fr-g mod fast-fast stmg mlky CUT"
6970.00 7000.00	"LS AA,pred ooc-oom GRNST w/rr thn intbd dns-sl ool-occ sl chky-sl plty PCKST,fr-g intxl-oolPOR,fr-g dull-bri yel FLOR,fr-g ltbrn-brn STN w/rr-tr blk dd o STN,fr-g mod fast-fast stmg mlky CUT"
7000.00 7010.00	"LS tan-ltbrn,rr brn-crm,crpxl-vfxl,gran-micsuc,pred oom-ooc GRNST w/rr scat dns sl ool PCKST frag,tr ANHY xl-incl-rr POR fl,rr trnsl-bf CHT frag,occ DOL cmt,fr-g ool-intxl POR,fr-g dull-bri yel FLOR,fr-g brn-rr blk STN,fr-g mod fast-fast stmg mlky CUT"

FORMATION TOPS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #17-12 NW 1-A HORIZONTAL LATERAL LEG #3

FORMATION NAME		SAMPLES MEASURED DEPTH	SAMPLES TRUE VERTICAL DEPTH	DATUM KB:4765'
LOWER ISMAY		5473'	5470'	-705'
GOTHIC SHALE		5501'	5492'	-727'
DESERT CREEK		5528'	5512'	-747'
DC 1-A ZONE		5543'	5521'	-756'

GEOLOGICAL SUMMARY

AND

ZONES OF INTEREST

The Mobil Exploration and Production U.S. Inc., Ratherford Unit #17-12 Horizontal Lateral Leg #3 was a re-entry of the Mobil Ratherford Unit #17-12 located in Section 17, T41S, R24E, and was directionally drilled in a northwesterly direction from a 5426' measured depth, 5426' true vertical depth, on February 3, 1998. The lateral reached a measured depth of 7010', true vertical depth of 5539' at total depth, with a horizontal displacement of 1500' and true vertical plane 307 degrees, on February 6, 1998, in the upper Desert Creek 1-A porosity zone, where the end of the lateral was reached. The only problem encounter while drilling the curve section was that the build rates were higher than in the previous curves and a series of kills were made to slow the build rates. But upon reaching the Gothic Shale the build rates dropped drastically causing the well bore to be landed below the target line, still within the 1-A zone. The lateral was drilled with only one minor problem, which was a trip made to replace the MWD probe that failed 41' in to the lateral section. This lateral used fresh water with polymer sweeps as the drilling fluid, with 10# brine water spotted on bottom prior to trips. Only very minor amount of oil was noted while drilling the lateral through the 1-A porosity zone. The background gases noted on the accompanying mud log showed only moderately increases while drilling the 1-A porosity, and gradually decreases when the top of the 1-A zone was penetrated. While drilling the lateral, the top of the 1-A was penetrated once and bumped once, with the base encountered after landing the curve section. Of note was the tight streak encountered approximately 2 to 3 feet below the top while drilling the lateral. The sample shows were fair to good while drilling the oolicastic to oomoldic limestone porosity in the lateral section in the 1-A zone, and decreased when in the tight limestones in the transition above the 1-A zone in the Upper Desert Creek.

The primary objective of the Ratherford Unit #18-32 Leg 2 horizontal lateral was the effective porosity 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, the transition zone in the top of the Desert Creek and most of the 1-A porosity zone were penetrated while drilling the curve section. The curve was landed 14 feet into the 1-A porosity horizon. Kick off point for this lateral was at a measured depth of 5426', 5426' true vertical depth, in 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 brown, cryptocrystalline to microcrystalline, chalky to clean and slightly argillaceous, slightly shaley, occasionally slightly dolomitic and with scattered marly streaks, and had scattered anhydrite crystals and a few scattered Crinoid and Coral fossils. Through out the Upper Ismay were thin interbedded brown, cryptocrystalline to microcrystalline, limy, argillaceous to clean dolomites. Dark brown to tan chert fragments and thin interbeds of dark gray to black shale were also noted in Upper Ismay. No visible sample shows and only minor gas increases were noted. The base of the Upper Ismay became predominately a medium to dark gray brown, limey, argillaceous, microcrystalline, shaley dolomite, with very thin interbedded brown, cryptocrystalline to microcrystalline, dolomitic, shaley and marly limestone. These dolomites and limestones graded in the very thin black, carbonaceous, limey to dolomitic shales of the Hovenweep. 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 5473' measured depth, 5470' true vertical depth, at the base of the very thin Hovenweep shale. The Lower Ismay was predominately a cream to white, light gray to medium brown, some light to medium gray brown limestone, microcrystalline to cryptocrystalline, clean, cherty with very rare scattered micro fossils, with slightly silty to slightly sandy streaks through out. Very little to no intercrystalline porosity, with no visible sample shows noted in the limestones. Scattered with in the limestones were very rare, very thin, brown dolomites which were cryptocrystalline to microcrystalline, earthy to clean, with no visible porosity or sample shows and very thin limy siltstones and calcareous sands were also noted. The limestones and dolomites in and near the base of the Lower Ismay became increasingly argillaceous to shaley. The basal limestones and dolomites also became very marly and graded into the dolomitic to limey shales of the Gothic Shale.

The top of the Gothic Shale was at 5501' measured depth, 5492' true vertical depth. The Gothic Shale was predominantly dark gray to black, silty, carbonaceous, brittle to firm, subblocky to blocky to platy, calcareous to slightly dolomitic and slightly micaceous. The top of the Gothic was gradational from the very thin interbedding of very argillaceous, carbonaceous limestone and very argillaceous, limy dolomite, with the dolomites and limestones grading into very dolomitic, carbonaceous shale. The top of the Gothic was picked predominantly by a significant increase in penetration rate and a distinct increase in the percentage of shale in the samples.

Between the Gothic Shale and upper porosity members of the Desert Creek is a transitional zone, which appears to be rather gradational. The top of the Desert Creek is commonly picked at the Gothic Shale to transition zone facies change, which in this leg occurred at a measured depth of 5528' with a true vertical depth of 5512'. In this well the zone was predominately slightly dolomitic, occasionally chalky to slightly platy limestone packstone, with thin brown, slightly limey, argillaceous, dolomites, very thin black carbonaceous shales and rare scattered brown to dark brown chert fragments. The limestones were light gray to brown, occasionally cream to dark brown, cryptocrystalline to microcrystalline, argillaceous, scattered anhydrite crystals and rare porosity filling, with very rare intercrystalline porosity, but only very rare, spotty, dull fluorescence, with no visible stain, and a very poor slow ring cut. The interbedded dolomites were cryptocrystalline to microcrystalline, very slightly silty and had no visible porosity. The shales were predominately very thin parting in the limestones. The limestones became increasingly oolitic and graded into the oolicastic to oolmoldic limestone grainstones of the 1-A porosity zone.

The top of the Desert Creek 1-A porosity zone was picked at 5543' measured depth, 5521' true vertical depth, with a horizontal displacement of 38'. The pick was based on sample identification as well as a significant change in the penetration rate. The top of the porosity bench was marked by a rather sharp facies change and drill rate increase. Of note is that the top of the porosity zone was almost flat with the top of the 1-A at the well bore. The top of the 1-A porosity zone, in the curve section, was picked at the lithology change from a dense limestone packstone to a very oolicastic, clean to very slightly dolomitic, slightly anhydritic limestone grainstone. Noted in the limestone were thinly interbedded dense, slightly silty and limy dolomite packstones, and very rare scattered chert fragments in the top of the 1-A porosity. The limestones were light brown to brown, occasionally cream to tan, some light to medium gray brown with fair to good intercrystalline to oolitic and some very rare algal porosity and had a fair sample show. It appears that the 1-A porosity bench was probably defined by the interval from 5521' true vertical depth to 5536' true vertical depth. The base of the porosity zone was not encountered until drilling the lateral section.

On February 4, 1998, the curve section was terminated near the base of the 1-A porosity bench, at a measured depth of 5594', 5535' true vertical depth, with a horizontal displacement of 87.3' and an angle of 88 degrees. At this time a trip was made to change the bottom hole assemblies and bits. Upon resumption of drilling in the lateral section, the well bore was turned upward to acquire the target line with in the porosity zone of the 1-A. The base of the 1-A porosity zone was encountered and scraped along, almost immediately upon beginning the lateral section at a measured

depth of 5620', 5535.5' true vertical depth, and a horizontal displacement of approximately 100'. The base was noted as a decrease in the penetration rate and an increase in cream to white to tan, cryptocrystalline, dense to very slightly oolitic, occasionally platy limestone packstones with very thin interbedded oolicastic to oomoldic limestone grainstones as well as a decrease in the sample shows.

After a trip to change out the MWD survey probe, at a measured depth of 5635', 5535.5' true vertical depth, the well path was continued upwards at a angle of 92 degrees, to a measured depth of 5820', 5528.5' true vertical depth. Through this interval the lithology was in the cream to white to light gray brown, very oolicastic to oomoldic, microcrystalline to very finely crystalline, very slightly algal limestone, with scattered anhydrite crystals to inclusions, poor dolomite cement, and scattered dense, very slightly fossiliferous limestone packstone. At the true vertical depth of 5528.5', with a horizontal displacement of 315', an apparent tight streak with in the porosity of the upper 1-A interval was encountered. This tight streak appeared to be continuous from a measured depth of 5820' to a measured depth of 6210', 5830' true vertical depth, from 315' to 700' in horizontal displacement. Through this interval the base of the 1-A porosity zone was bumped at a measured depth of 6004', 5831.5' true vertical depth, and a horizontal displacement of 496'. The tight streak with in the 1-A, as well as the base of the 1-A zone, was noted by slight increases in the amount of tight packstone in the samples. At a measured depth of 6310', 5832' true vertical depth, with a horizontal displacement of 801'. The base of the 1-A was again scraped, with increases in tight, cryptocrystalline, occasionally platy, slightly oolitic packstone noted in the samples.

The well path continued generally upward through the very good oolicastic to oolmoldic, limestone grainstones of the 1-A zone until reaching a measured depth of 6535', 5826.5', with a horizontal displacement of 1026'. At this time the well bore shallowly penetrated the tight limestones at top of the 1-A zone porosity zone for the first time. The well path was turned downward and then slowly turned toward 90 degrees. The top was again encountered at a measured depth of 6751', with a true vertical depth of 5828', and a horizontal displacement of 1240'. The top of the 1-A zone at this point had a dip of approximately 89.7 degrees. A decrease in the penetration rate as well as an increase in platy, dense, tight limestone packstone in the samples noted the top. These samples showed a decrease in oil shows, as well as a significant decrease in the associated background gas. After reacquiring the best porosity of the 1-A, at a measured depth of 6813', 5828' true vertical depth, with a horizontal displacement of 1304'. The lithology returned to the very good oolicastic to oolmoldic limestone grainstones.

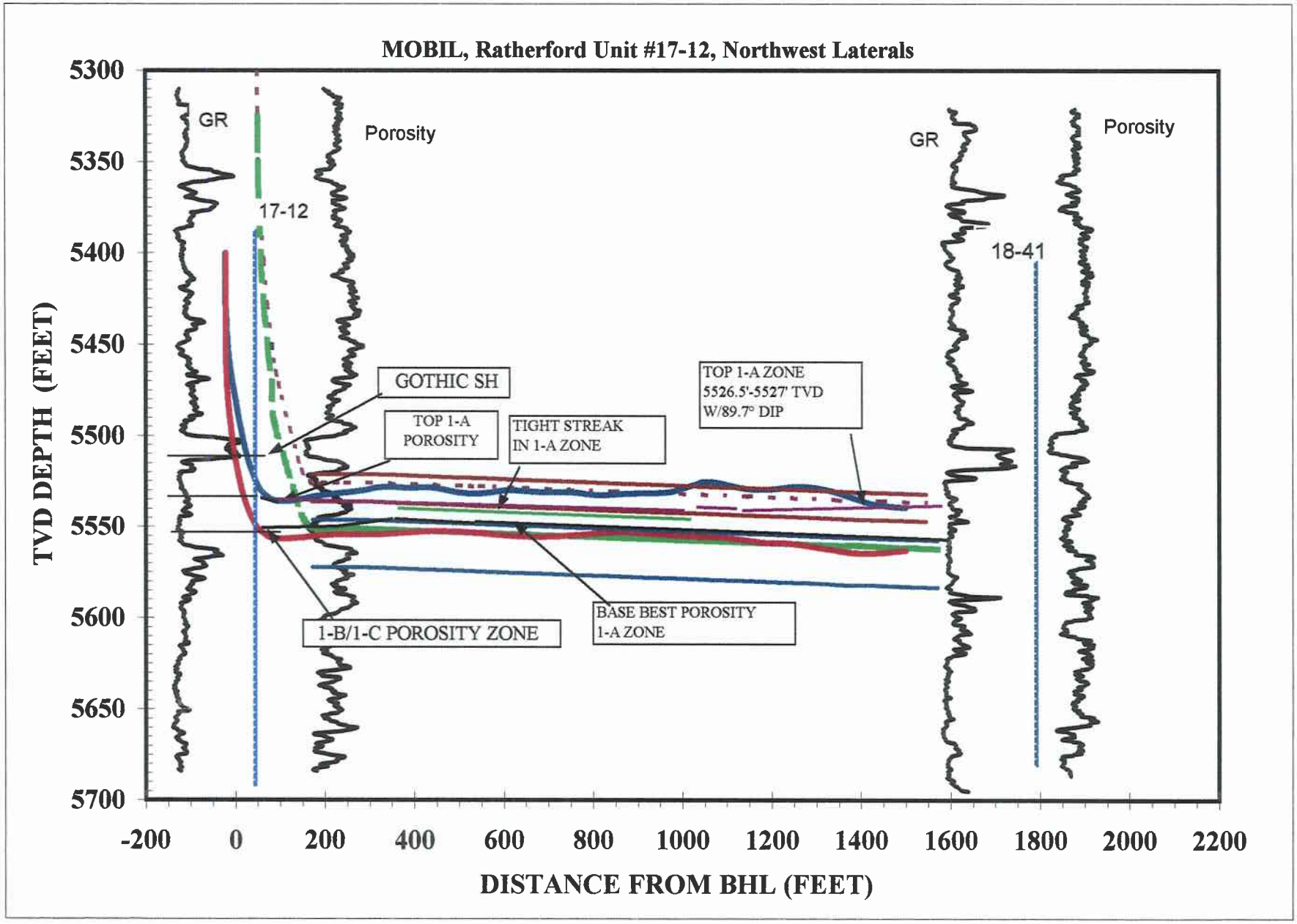
From 6813' the well bore was rotated and slide to its termination at 7010', 5539' true vertical depth, and a horizontal displacement of 1500'. Through out this interval the slide was for direction control and to control the rate of drop in angle. The samples remained the very good oolicastic to oolmoldic limestone grainstones with a very good sample show. The lithology through out the best porosity of the 1-A was predominately a light brown to tan, microcrystalline to very finely crystalline, with rare scattered cryptocrystalline to platy, limestone grainstone, with very thin interbedded cream to white, tight limestone packstone. The limestone was dolomitic to having dolomite rich cement, slightly anhydritic. There rare scattered translucent to clear chert fragments and translucent to light gray, anhydrite crystals and inclusions noted in the limestones, which increased as the well continued upward and encountered the top of the 1-A porosity. The limestone grainstones had fair to good intercrystalline to oolicastic porosity, with fair to good fluorescence, stain and cut. The platy limestone packstones as the well bumped the top of the porosity zone were very tight and had no visible fluorescence, stain or cut. The background gas showed increases, which were associated with the best drilling and very good porosity.

The northwest lateral leg #3 in the 1-A porosity bench, was terminated on February 6, 1998, in the oolicastic limestone grainstone porosity. In tracking the lateral through out it's length the 1-A zone, the 1-A top was 4' low to the original well bore and appeared to have an dip angle of 89.7 degrees as it trended slightly downward toward the R.U. #18-41 well.

Predominant facies changes were associated with the vertical changes with in the limestones, with no noticeable lateral changes, as the environment of deposition changed when encountering the top, base and a tight streak with in the 1-A zone. With the classification changes, the oolicastic to oolmoldic limestones encountered were of varying thickness, from approximately 13' to 1.5' in thickness and were continuous through the 1-A zone penetrated. The effective or the better porosity was associated with the oolicastic, to very slightly algal limestone grainstone facies which had fair to good, intercrystalline to oolicastic and occasionally algal porosities, and the absence of any major anhydrite plugging. The limestone packstone at the top and base of the 1-A zone as well as the tight streak encountered had no very poor visible porosity and no to very poor permeability.

The conclusion drawn from the northwesterly lateral in the 1-A zone, is that in this area the limestone porosities were consistent through the zone. Also having an effect on the porosity, was the minor amounts of anhydrite filled porosity and the very thin, platy limestone packstones near the top and base of the 1-A zone. Staining was good to fair and there were sections where staining was poor to none, with some black dead oil staining trapped in the intercrystalline porosity. The lateral used the proposed target line as a reference point through the 1-A bench, with the well bore planing to following the line of best porosity after entering the 1-A porosity bench.

While drilling the lateral, the background gas was due in part to the very minor amounts of oil encountered while drilling the lateral as well as the minor amounts of oil added to the mud system. Drops in the background gases was noted in the 1-A zone, when the base, the tight streak and most obviously when encountering the top of the 1-A zone. This lateral can be interpreted to having very good reservoir qualities through out. It appears that the porosities are well enough developed, in this northwesterly direction to enhance the overall performance of the zone.


MOBIL, Ratherford Unit #17-12, Northwest Laterals
GR
Porosity
17-12
GR
Porosity
18-41
GOTHIC SH
TOP 1-A POROSITY
TIGHT STREAK IN 1-A ZONE
TOP 1-A ZONE 5526.5'-5527' TVD W/89.7° DIP
1-B/1-C POROSITY ZONE
BASE BEST POROSITY 1-A ZONE
TVD DEPTH (FEET)
5300
5350
5400
5450
5500
5550
5600
5650
5700
-200
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
DISTANCE FROM BHL (FEET)

RECEIVED
MAR 06 1998
DIV. OF OIL, GAS & MINING

MOBIL

RATHERFORD UNIT #17-12
SE HORIZONTAL LATERAL LEG #2 & SIDETRACK
UPPER 1-B & 1-C POROSITY BENCHES
DESERT CREEK MEMBER
PARADOX FORMATION
SECTION 17, T41S, R24E
SAN JUAN, UTAH

GEOLOGY REPORT
by

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

TABLE OF CONTENTS

WELL SUMMARY 3

DAILY WELL CHRONOLOGY 4

DAILY ACTIVITY 6

BIT RECORD 7

SURVEY RECORD 8

MUD RECORD 12

SAMPLE DESCRIPTIONS 13

FORMATION TOPS 24

GEOLOGIC SUMMARY AND ZONES OF INTEREST 25

WELL PLOTS 31

WELL SUMMARY

OPERATOR:	MOBIL EXPLORATION & PRODUCTION U.S. INC.
NAME:	RATHERFORD UNIT #17-12 SE HORIZONTAL LATERAL LEG #2 & SIDETRACK IN 1-B/1-C UPPER POROSITY BENCH, DESERT CREEK
LOCATION:	SECTION 17, T41S, R24E
COUNTY/STATE:	SAN JUAN, UTAH
ELEVATION:	KB:4754' GL:4765'
SPUD DATE:	1/20/98
COMPLETION DATE:	2/1/98
DRILLING ENGINEER:	BENNY BRIGGS / SIMMON BERRARA
WELLSITE GEOLOGY:	DAVE MEADE / MARVIN ROANHORSE / LUKE TITUS
MUDLOGGING ENGINEERS:	DAVE MEADE / MARVIN ROANHORSE /LUKE TITUS
CONTRACTOR:	BIG "A" RIG 25
TOOLPUSHER:	J. DEES /M. SMITH
HOLE SIZE:	4 3/4"
CASING RECORD:	SIDETRACK IN WINDOW AT 5440' 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:	LATERAL LEG #2: 6885' MEASURED DEPTH; TVD- 1406.1' SIDETRACK OF LEG #2: 7060' MEASURED DEPTH; TVD- 1579.1'
STATUS:	TOH & LAY DOWN TOOLS - PREPARE WELL FOR SE LEG #3

DRILLING CHRONOLOGY
RATHERFORD UNIT #17-12
1-B/1-C SE HORIZONTAL LATERAL LEG #2 & SIDETRACK

DATE	DEPTH	DAILY	ACTIVITY
1/24/98	6398'	641'	DIR DRLG & SURVEYS TO TD OF 7039'-PUMP 10 BBL SWEEP & CIR SMPLS OUT-L.D. 1 JNT AOH D.P.,HANG SWIVEL & TOH-L.D. DIRECTIONAL TOOLS-P.U. & M.U. HOOK & TIH-P.U. 6 JNTS & LATCH INTO WHIPSTOCK-L.D. 2 JNTS & TOH-BREAK HOOK ON WHIPSTOCK-P.U. & M.U. WHIPSTOCK & STARTER MILL-ORIENT-TIH WITH WHIPSTOCK & STARTER MILL
1/25/98	5433'	7'	TIH WITH WHIPSTOCK & STARTER MILL-LATCH IN MULESHOE & SHEAR @ 15K (TOP OF WHIPSTOCK @ 5533')-CIRC BOTTOMS UP-MILL WITH STARTER MILL FROM 5433'-5435'-CIRC BOTTTOMS UP & PUMP 10# BRINE-TOH-L.D. STARTER MILL-M.U. WINDOW & WATERMELON MILLS-TIH WITH MILLS-P.U. SWIVEL & BREAK CIR-MILL 5433' TO 5440'-PUMP BRINE-TOH & L.D. MILLS-M.U. CURVE ASSEMBLY: MOTOR,BIT #1(RR) & ORIENT-TIH & TAG WHIPSTOCK-P.U. SWIVEL & CIRC WHILE W.O. GYRO DATA
1/26/98	5440'	190'	CIRC BOTTOMS UP-RIG UP WIRELINE & SET GYRO-TIME DRLG @ 2 MINS/FOOT FROM 5440'-5443'- DIR DRLG W/WIRELINE SURVEYS FROM 5443'-5464'-PULL WIRELINE & GYRO-DIR DRLG & SURVEYS-PUMP SWEEPS & CIR SMPLS UP @ 5630' TD OF CURVE-PUMP 12 BBLS BRINE-L.D. 7 JNTS AOH W/ SWIVEL
1/27/98	5630'	510'	CUT 50' DRLGLINE-L.D. 51 JTS AOH-TOH-L.D. CURVE ASSEMBLY-P.U. LATERAL BHA W/BIT #2 & TEST MWD AND MUD MOTOR-TIH W/ LATERAL ASSEMBLY-DIR DRLG & SURVEYS
1/28/98	6140'	644'	DIR DRLG & SURVEYS
1/29/98	6784'	116'	DIR DRLG & SURVEYS TO 6885' TD OF LEG #2-DECISION MADE TO PULLBACK & SIDETRACK @ MD-6360', TVD-5562.79'-L.D. 17 JNTS AOH-TROUGH HOLE FROM 6330'-6360'-TIME DRLG @ 5 MINS/INCH FROM 6360'-6362',@ 3 MIN/IN FROM 6362'-6365',@ 2 MIN/IN FROM 6365'-6369',@ 1MIN/IN FROM 6369'-6375'-BIT SLIPS OFF SIDETRACK @ 6373.5'-TROUGH HOLE FROM 6363'-6373'
1/30/98	6375'	238'	BEGIN TIME DRLG @ 5 MIN/INCH FROM 6375'-6380',@ 4 MIN/IN FROM 6380'-6387',@ 2 MIN/IN FROM 6387'-6404'- DIR DRLG & SURVEYS
1/31/98	6613'	335'	DIR DRLG & SURVEYS

DRILLING CHRONOLOGY
RATHERFORD UNIT #17-12
1-B/1-C SE HORIZONTAL LATERAL LEG #2 & SIDETRACK

DATE	DEPTH	DAILY	ACTIVITY
2/1/98	6948'	112'	DIR DRLG & SURVEYS TO 7057'-SWIVEL MOTOR ON RIG FAILS-WORK & EVALUATE REPAIRS NEEDED ON POWER SWIVEL-DECISION MADE TO TERMINATE LEG #2 SIDETRACK-DRLG DOWN TO 7060' IN ORDER TO MAKE CONNECTION USING MWD & MUD MOTOR;WHEN POWER SWIVEL MOTOR FAILS TO RE-START-PUMP SWEEP & CIRC SMPLS OUT @ 7060',TD OF LEG #2 SIDETRACK-TOH-L.D. TOOL-PREPARE FOR LEG #3

DAILY ACTIVITY

Operator: **MOBIL**
Well Name: **RATHERFORD UNIT #17-12 SE 1-B/1-C HORIZONTAL LATERAL LEG #2 & SIDETRACK**

DATE	DEPTH	DAILY	DATE	DEPTH	DAILY
1/24/98	7039'	641'			
1/25/98	5433'	7'			
1/26/98	5440'	190'			
1/27/98	5630'	510'			
1/28/98	6140'	644'			
1/29/98	6784'	101'			
TD	6885'				
BEGIN SIDETRACK	6360'	15'			
1/30/98	6375'	238'			
1/31/98	6613'	335'			
2/01/98	6948'	112'			
TD	7060'				

BIT RECORD

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #17-12 SE 1-B/1-C HORIZONTAL LATERAL LEG #2 & SIDETRACK

RUN	SIZE	MAKE	TYPE	IN/OUT	FTG	HRS	FT/HR
#1 (RR)	4 3/4"	STC	MF-3P	5440'/ 5630'	190'	18	10.5
#2	4 3/4"	STC	MF-3P	5630'/ 6885'	1,255'	49.5	25.4
BEGIN SIDETRACK							
#2 (RR)	4 3/4"	STC	MF-3P	6360'/ 7060'	700'	67	10.5

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/17-12 2A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
5400.00	0.29	329.37	5399.81	11.96 S	18.35 E	21.89	0.00
5433.00	0.32	357.42	5432.81	11.80 S	18.30 E	21.76	0.46
5440.00	4.10	125.00	5439.80	11.92 S	18.51 E	22.00	61.47
5450.00	9.00	123.40	5449.74	12.56 S	19.45 E	23.14	49.03
5460.00	14.90	121.80	5459.51	13.67 S	21.20 E	25.21	59.09
5470.00	20.10	120.20	5469.05	15.21 S	23.78 E	28.20	52.22
5480.00	25.00	118.00	5478.28	17.07 S	27.13 E	32.02	49.71
5490.00	30.30	115.40	5487.14	19.14 S	31.28 E	36.60	54.34
5500.00	35.80	113.80	5495.52	21.41 S	36.24 E	41.97	55.68
5510.00	40.20	112.00	5503.39	23.80 S	41.91 E	47.98	45.37
5520.00	44.10	113.40	5510.81	26.39 S	48.10 E	54.54	40.11
5530.00	48.80	116.00	5517.69	29.42 S	54.68 E	61.67	50.63
5540.00	54.10	116.20	5523.92	32.86 S	61.70 E	69.39	53.02
5550.00	59.60	115.40	5529.39	36.50 S	69.24 E	77.65	55.41
5560.00	65.10	114.70	5534.03	40.25 S	77.26 E	86.37	55.35
5570.00	70.20	115.60	5537.83	44.18 S	85.63 E	95.48	51.67
5580.00	73.60	119.30	5540.94	48.56 S	94.06 E	104.90	48.91
5590.00	77.50	122.80	5543.43	53.56 S	102.35 E	114.56	51.66
5600.00	81.00	127.10	5545.30	59.19 S	110.40 E	124.38	54.85
5631.00	91.40	133.20	5547.35	79.10 S	133.99 E	155.13	38.86
5662.00	91.30	131.30	5546.62	99.94 S	156.93 E	185.87	6.14
5694.00	87.40	130.30	5546.99	120.84 S	181.15 E	217.70	12.58
5726.00	86.00	127.70	5548.83	140.95 S	205.97 E	249.56	9.22
5758.00	87.40	126.90	5550.67	160.30 S	231.38 E	281.48	5.04
5790.00	89.00	127.50	5551.68	179.64 S	256.86 E	313.44	5.34
5821.00	87.60	128.00	5552.60	198.61 S	281.36 E	344.39	4.80
5853.00	86.30	129.10	5554.30	218.52 S	306.35 E	376.29	5.32
5885.00	86.70	129.60	5556.25	238.78 S	331.05 E	408.13	2.00
5917.00	88.00	129.10	5557.73	259.04 S	355.77 E	440.01	4.35
5949.00	88.80	128.40	5558.62	279.06 S	380.71 E	471.93	3.32
5980.00	89.10	128.70	5559.19	298.38 S	404.95 E	502.86	1.37
6012.00	89.50	128.40	5559.58	318.32 S	429.98 E	534.80	1.56
6043.00	88.90	126.50	5560.02	337.17 S	454.58 E	565.76	6.43
6075.00	89.30	126.80	5560.52	356.27 S	480.25 E	597.75	1.56
6107.00	88.90	126.50	5561.02	375.37 S	505.92 E	629.73	1.56
6138.00	91.90	128.90	5560.81	394.32 S	530.45 E	660.69	12.39
6170.00	90.40	127.90	5560.16	414.19 S	555.52 E	692.62	5.63
6201.00	91.20	127.70	5559.73	433.19 S	580.01 E	723.58	2.66

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/17-12 2A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
6233.00	88.70	125.20	5559.76	452.20 S	605.75 E	755.57	11.05
6265.00	88.00	124.40	5560.68	470.45 S	632.01 E	787.55	3.32
6297.00	88.40	124.40	5561.69	488.52 S	658.40 E	819.54	1.25
6329.00	88.90	123.70	5562.44	506.44 S	684.91 E	851.52	2.69
6360.00	89.80	122.90	5562.79	523.45 S	710.82 E	882.51	3.88
6391.00	91.80	121.90	5562.36	540.06 S	736.99 E	913.47	7.21
6423.00	92.40	120.50	5561.19	556.63 S	764.34 E	945.38	4.76
6455.00	94.40	120.80	5559.29	572.91 S	791.82 E	977.23	6.32
6487.00	93.70	120.30	5557.03	589.14 S	819.31 E	1009.05	2.69
6519.00	90.90	120.80	5555.74	605.39 S	846.84 E	1040.93	8.89
6550.00	90.60	121.50	5555.34	621.42 S	873.37 E	1071.85	2.46
6582.00	89.70	121.20	5555.25	638.07 S	900.70 E	1103.79	2.96
6614.00	89.20	121.20	5555.56	654.65 S	928.07 E	1135.72	1.56
6646.00	89.90	120.70	5555.81	671.10 S	955.51 E	1167.63	2.69
6678.00	91.50	121.20	5555.42	687.56 S	982.95 E	1199.55	5.24
6709.00	90.40	122.20	5554.91	703.84 S	1009.32 E	1230.49	4.80
6740.00	88.80	123.30	5555.12	720.61 S	1035.39 E	1261.47	6.26
6772.00	87.50	123.70	5556.16	738.27 S	1062.06 E	1293.44	4.25
6804.00	87.50	123.70	5557.55	756.00 S	1088.66 E	1325.40	0.00
6836.00	85.30	122.10	5559.56	773.35 S	1115.47 E	1357.31	8.49
6885.00	87.00	122.10	5562.85	799.33 S	1156.88 E	1406.14	3.47

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 125.00 (TRUE).
CALCULATION METHOD: MINIMUM CURVATURE.

SURVEYS: 5400 GYRO, 5433 INTERPOLATED GYRO,
5440 MWD INC/GYRO DIR, 5450-5460 MAG. INTERFERENCE
* 6885 PROJECTED TO BIT T.D.

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/17-12 2A1B1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
5400.00	0.29	329.37	5399.81	11.96 S	18.35 E	21.89	0.00
5433.00	0.32	357.42	5432.81	11.80 S	18.30 E	21.76	0.46
5440.00	4.10	125.00	5439.80	11.92 S	18.51 E	22.00	61.47
5450.00	9.00	123.40	5449.74	12.56 S	19.45 E	23.14	49.03
5460.00	14.90	121.80	5459.51	13.67 S	21.20 E	25.21	59.09
5470.00	20.10	120.20	5469.05	15.21 S	23.78 E	28.20	52.22
5480.00	25.00	118.00	5478.28	17.07 S	27.13 E	32.02	49.71
5490.00	30.30	115.40	5487.14	19.14 S	31.28 E	36.60	54.34
5500.00	35.80	113.80	5495.52	21.41 S	36.24 E	41.97	55.68
5510.00	40.20	112.00	5503.39	23.80 S	41.91 E	47.98	45.37
5520.00	44.10	113.40	5510.81	26.39 S	48.10 E	54.54	40.11
5530.00	48.80	116.00	5517.69	29.42 S	54.68 E	61.67	50.63
5540.00	54.10	116.20	5523.92	32.86 S	61.70 E	69.39	53.02
5550.00	59.60	115.40	5529.39	36.50 S	69.24 E	77.65	55.41
5560.00	65.10	114.70	5534.03	40.25 S	77.26 E	86.37	55.35
5570.00	70.20	115.60	5537.83	44.18 S	85.63 E	95.48	51.67
5580.00	73.60	119.30	5540.94	48.56 S	94.06 E	104.90	48.91
5590.00	77.50	122.80	5543.43	53.56 S	102.35 E	114.56	51.66
5600.00	81.00	127.10	5545.30	59.19 S	110.40 E	124.38	54.85
5631.00	91.40	133.20	5547.35	79.10 S	133.99 E	155.13	38.86
5662.00	91.30	131.30	5546.62	99.94 S	156.93 E	185.87	6.14
5694.00	87.40	130.30	5546.99	120.84 S	181.15 E	217.70	12.58
5726.00	86.00	127.70	5548.83	140.95 S	205.97 E	249.56	9.22
5758.00	87.40	126.90	5550.67	160.30 S	231.38 E	281.48	5.04
5790.00	89.00	127.50	5551.68	179.64 S	256.86 E	313.44	5.34
5821.00	87.60	128.00	5552.60	198.61 S	281.36 E	344.39	4.80
5853.00	86.30	129.10	5554.30	218.52 S	306.35 E	376.29	5.32
5885.00	86.70	129.60	5556.25	238.78 S	331.05 E	408.13	2.00
5917.00	88.00	129.10	5557.73	259.04 S	355.77 E	440.01	4.35
5949.00	88.80	128.40	5558.62	279.06 S	380.71 E	471.93	3.32
5980.00	89.10	128.70	5559.19	298.38 S	404.95 E	502.86	1.37
6012.00	89.50	128.40	5559.58	318.32 S	429.98 E	534.80	1.56
6043.00	88.90	126.50	5560.02	337.17 S	454.58 E	565.76	6.43
6075.00	89.30	126.80	5560.52	356.27 S	480.25 E	597.75	1.56
6107.00	88.90	126.50	5561.02	375.37 S	505.92 E	629.73	1.56
6138.00	91.90	128.90	5560.81	394.32 S	530.45 E	660.69	12.39
6170.00	90.40	127.90	5560.16	414.19 S	555.52 E	692.62	5.63
6201.00	91.20	127.70	5559.73	433.19 S	580.01 E	723.58	2.66

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : BA25/17-12 2A1B1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
6233.00	88.70	125.20	5559.76	452.20 S	605.75 E	755.57	11.05
6265.00	88.00	124.40	5560.68	470.45 S	632.01 E	787.55	3.32
6297.00	88.40	124.40	5561.68	488.52 S	658.40 E	819.54	1.25
6329.00	88.90	123.70	5562.44	506.44 S	684.91 E	851.52	2.69
6360.00	89.80	122.90	5562.79	523.45 S	710.82 E	882.51	3.88
6391.00	87.10	124.70	5563.63	540.69 S	736.56 E	913.48	10.47
6423.00	87.20	127.00	5565.22	559.41 S	762.47 E	945.44	7.19
6455.00	88.20	127.50	5566.50	578.76 S	787.92 E	977.39	3.49
6487.00	88.70	127.50	5567.37	598.23 S	813.30 E	1009.35	1.56
6519.00	92.00	129.30	5567.17	618.11 S	838.37 E	1041.28	11.75
6550.00	90.40	128.90	5566.52	637.65 S	862.42 E	1072.20	5.32
6582.00	88.60	127.50	5566.80	657.44 S	887.57 E	1104.14	7.13
6614.00	87.70	127.20	5567.84	676.84 S	912.99 E	1136.10	2.96
6646.00	86.70	126.10	5569.40	695.92 S	938.63 E	1168.05	4.64
6678.00	85.80	125.10	5571.49	714.51 S	964.60 E	1199.98	4.20
6709.00	87.20	122.40	5573.39	731.70 S	990.32 E	1230.91	9.80
6740.00	89.20	121.70	5574.36	748.14 S	1016.58 E	1261.85	6.83
6772.00	87.50	121.90	5575.28	764.99 S	1043.77 E	1293.78	5.35
6804.00	86.80	121.70	5576.87	781.84 S	1070.93 E	1325.70	2.27
6836.00	86.00	120.10	5578.88	798.24 S	1098.33 E	1357.55	5.58
6868.00	86.30	119.40	5581.03	814.08 S	1126.05 E	1389.34	2.38
6900.00	87.80	119.30	5582.68	829.74 S	1153.90 E	1421.14	4.70
6931.00	87.70	117.70	5583.89	844.52 S	1181.13 E	1451.92	5.17
6963.00	87.90	116.40	5585.12	859.06 S	1209.60 E	1483.59	4.11
6995.00	88.60	115.00	5586.10	872.93 S	1238.42 E	1515.15	4.89
7027.00	89.10	114.30	5586.74	886.28 S	1267.50 E	1546.62	2.69
7060.00	89.10	114.30	5587.26	899.86 S	1297.57 E	1579.05	0.00

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 125.00 (TRUE).
CALCULATION METHOD: MINIMUM CURVATURE.

SURVEY 7060′ IS A EXTRAPOLATION TO THE BIT AT TD.

MUD REPORT

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #17-12 SE 1-B/1-C HORIZONTAL LATERAL LEG #2 & SIDETRACK

DATE	DEPTH	WT	VIS	PLS	YLD	GEL	pH	WL	CK	CHL	CA	SD	OIL	WTR
1/24/98	6843'	8.9	26	1	1	0/0	11.0	NC	NC	60 K	4000	–	0%	100%
1/25/98	5433'	8.9	26	1	1	0/0	10.5	NC	NC	60 K	4000	–	2%	98%
1/26/98	5523'	8.9	26	1	1	0/0	11.5	NC	NC	55 K	4000	–	1%	99%
1/27/98	5652'	8.9	26	1	1	0/0	11.5	NC	NC	52K	4000	–	1%	99%
1/28/98	6412'	8.9	26	1	1	0/0	11.5	NC	NC	51K	4000	–	1%	99%
1/29/98	6885'	8.8	26	1	1	0/0	11.0	NC	NC	48K	4000	–	0%	100%
1/30/98	6394'	8.8	26	1	1	0/0	11.5	NC	NC	48K	4000	–	0%	100%
1/31/98	6700'	8.8	26	1	1	0/0	11.5	NC	NC	46K	4000	–	0%	100%
2/01/98	7057'	8.8	26	1	1	0/0	11.6	NC	NC	45K	4000	–	0%	100%

SAMPLE DESCRIPTIONS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #17-12 SE 1-B/1-C HORIZONTAL LATERAL LEG#2

DEPTH	LITHOLOGY

5440.00 5450.00 "LS m-lt-occ dkgybrn,ltgy,brn,occ tan-crm,wh,crpxl-micxl,rthy-cln,arg,occ chk,sl mrly,dol ip,tt,NFSOC,w/tr DOL brn-dkbrn,crpxl-micxl,rthy-arg,mrly,lmy,tt,NFSOC,scat dkbrn CHT frag,tr CMT & METAL frag"

5450.00 5460.00 "LS AA,chk-sl anhy/POR fl,tt-rr intxl POR,rr spty dull yel mnrl FLOR,n-rr brn STN,n CUT,w/tr scat-occ intbd DOL AA,NFSOC,tr ltgy-brn CHT & blk-dkbrn SH frag-lam"

5460.00 5470.00 "LS lt-mgy-gybrn,brn-tan,occ wh,crpxl-micxl,rthy-chk,mrly ip,sl slty,sl dol,tt,NFSOC,w/scat DOL,brn-occ dkbrn,crpxl,dns,sl lmy,arg,tt,NFSOC,tr scat tan-brn-rr ltgy CHT"

5470.00 5480.00 "LS ltgy-ltgybrn-wh,micxl-crpxl,rthy-slty/tr occ sdy strk,occ grdg to calc-lmy SLTST-vf gr SS ip,chky,dns-rr intxl POR,NFSOC,w/rr DOL AA"

5480.00 5490.00 "LS ltgy-ltgybrn,occ tan-ltbrn,micxl-crpxl,rthy-slty/tr occ sdy strk,occ grdg to calc-lmy SLTST-vf gr SS ip,chky,dns-rr intxl POR,NFSOC,w/rr DOL AA & tr scat tan-trnsl CHT"

5490.00 5500.00 "LS AA,crpxl-micxl,rthy,arg,chky,rr CHT,v rr CALC-ANHY xl,tt,NFSOC,w/tr thn DOL AA,dns,tt,NFSOC,rr SH AA"

5500.00 5510.00 "SH blk-dkgybrn-dkbrnblk,plty-sbplty-sbblky,frm-sft,occ brit,carb,sl slty,calc-lmy ip,rr pp mica,sooty"

5510.00 5520.00 "LS ltgy-ltgybrn,occ tan-ltbrn,micxl-crpxl,rthy-sl slty,occ grdg to calc-lmy SLTST,chky,dns-rr intxl POR,NFSOC,w/SH AA & rr DOL & CHT AA"

5520.00 5530.00 "LS AA,micxl-crpxl,rthy-slty AA,NFSOC/SH AA"

5530.00 5540.00 "LS tan-brn,ltgybrn-ltgy,occ brn,crpxl-micxl,gran,dns sl ool-chky plty PCKST,intbd ool GRNST,sl anhy-mrly,tr POR fl-xl ANHY incl,rr CHT,tt-scat ool-intxl POR,scat dull-mod bri yel FLOR,fr-g ltbrn-tr brn/rr blk STN,fr slow stmg-dif CUT"

5540.00 5550.00 "LS pred PCKST AA/rr GRNST frag,fr intxl-rr ool POR,decr FLOR,STN-CUT AA,w/ tr scat SH,blk-dkbrnblk,sbplty-sbblky,sl slty,sl calc-dol,carb,rr DOL,brn,crpxl,tt,NFSOC,v rr tan CHT"

5550.00 5560.00 "LS AA,pred PCKST/incr chky-sl anhy POR fl,tr ool GRNST AA,sl mot,sl dol,tt-rr ool POR,tr scat dull yel FLOR,tr ltbrn-rr brn STN,fr slow stmg mlky CUT"

5570.00 5580.00 "LS,ltbrn-tn-crm,pred mic xln,vf xln,mdns-dns-occ grn mtx,tt mtx,chlky/anhy,sl ool ip,rr foss frags,rr calc frac flngs;pred interxln to compact xln fab POR,poss sme frac POR,sptty blk-dkbrn OSTN,no FLOR/CUT"

5580.00 5600.00 "LS AA,pred PCKST,rr GRNST,mic-occ vf xln,dens-tt mtx,chlky/anhy;pred interxln to comp xln,p-blk-dkbrn OSTN,NFSOC"

DEPTH	LITHOLOGY

5600.00 5610.00 "LS,ltbrn-tn-offwht,sl mott,mic-vf xln,mdns-dns-tt mtx,chlky/anhy,sl rthy ip,rr foss frgs,rr ool,poss sme calc frac flngs;pred p-m interxln to compact xln fab POR,sptty blk OSTN res,occ dkbrn,NFSOC"

5610.00 5630.00 "LS,ltbrn-tn-off wh,sl mot,mic-vf xln,sl suc mtx ip,mdns-dns-tt mtx,chlky,anhy,occ rthy/arg,rr calc frac flgs,rr foss frags,tr ool;pred interlxn to compact xln fab POR,v-dul yelgld FLOR,no CUT,sptty blk OSTN res,dkbrn ip"

5630.00 5650.00 "LS m-ltgybrn,crm-tan-wh,occ ltbrn,crpxl-micxl,occ vfxl-sl gran,dns ool PCKST w/scat chky-sl anhy prtgs,occ grdg to ool GRNST,tr xln ANHY-POR fl,sl dol/tr DOL cmt,mot/blk-dkbrn sl arg-dol SH,occ cln,tt-fr intxl/vrr ool POR,tr scat mod bri- dull spty yel FLOR,fr-tr ltbrn-rr brn STN,fr-g slow stmg mlky CUT "

5650.00 5670.00 "LS AA,tr-sl decr crm-tan-ltbrn,rr wh,crpxl-micxl,occ vfxl-sl gran,PCKST AA w/decr chky-sl anhy prtgs,occ grdg to ool GRNST,tr xln ANHY-POR fl,dol/tr DOL cmt,mot AA,occ cln,sl fos,tt-fr-g intxl/rr ool POR,FLOR AA,g slow stmg mlky CUT"

5670.00 5680.00 "LS tan-crm-wh,ltgybrn,occ brn,crpxl-micxl,rr vfxl,dns sl ool-chky plty PCKST,sl anhy/tr POR fl-rr xln ANHY incl,v rr GRNST prtgs,sl mrly,sl mot AA,tt-tr intxl POR,v rr dull-sptl mod bri yel FLOR,STN AA,v fnt res ring CUT"

5680.00 5690.00 "LS AA,dns sl ool-chky plty PCKST,v rr GRNST prtgs,cln-v rr mot AA,anhy/tr POR fl-xl ANHY incl,POR-FLOR-STN-CUT AA"

5690.00 5700.00 "LS AA,PCKST AA-bcmg sl incr ool,v rr-n GRNST frag,chky-anhy/tr POR fl-xl ANHY incl,tt-tr intxl-v rr ool POR,tr-rr dull-mod bri yel FLOR,STN-CUT AA"

5700.00 5710.00 "LS AA,pred dns sl ool-chky plty PCKST,anhy/tr POR fl-xl ANHY frag-incl,v rr dol strk,tt-rr intxl POR,tr scat dull-mod bri yel FLOR,n-rr ltbrn STN,fr-p slow stmg mlky CUT"

5720.00 5740.00 "LS,ltbrn-tn-crm,sl mott,mic-vf xln,sl suc-occ grn mtx,mdns mtx,oolitic,anhy,chlky,intraclastic ip,sme offwht carb mat;pred m-f interxln to occ interool fab POR,sme scat vug POR,m-f strm/sl milky ring/CUT,dul-sptty mbri yelgld FLOR,m-blk OSTN"

5740.00 5760.00 "LS,ltbrn-tn-crm,sl mott,mic-vf xln,occ grn mtx,mdns mtx,sl dolo ip,chlky,anhy prtngs,scat calc fac flngs;pred interxln to red oomoldic fab POR,dul-mbri yelgld FLOR,m-slo strm/milky ring/CUT,m-blk-dkbrn OSTN"

5760.00 5780.00 "LS,ltbrn-brn ip-tn,mott ip,pred vf xln-occ mic xln,grn-suc mtx,mdns mtx ip,ool/pel rich,tr foss frgs,chlky,sl rthy,scat calc frac flngs;pred red-m oomoldic to f-interxln fab POR,scat interool POR,mbri-bri yelgld FLOR,m-slo strm/milky CUT,f-blk-dkbrn OSTN"

5780.00 5800.00 "LS,ltbrn-brn-tn,mott ip,pred vf xln,grn-suc mtx,pred GRNST,chlky ip,rthy,sl arg,anhy,oolitic,tr foss frags;pred red-m oomoldic fab POR w/sme scat interool POR,suc POR,mbri yelgld FLOR,f-slo strm/milky CUT,f-blk-dkbrn OSTN"

5800.00 5820.00 "LS,ltbrn-brn-tn,mott,pred vf xln,grn-suc mtx,pred GRNST,ool/pel rich,tr foss frags,sl anhy,rthy/arg,sme calc/anhy flngs,rr calc frac flngs;pred m-f oomoldic to interool fab POR,f-blk-dkbrn OSTN,mbri-bri yelgld FLOR,m-f slo strm/milky ring/CUT"

5820.00 5840.00 "LS,ltbrn-brn-tn,mott,pred vf xln,grn-suc mtx,mdns mtx ip,rthy/arg,sme anhy flngs,ool/pel,rr foss frgs;pred m-f oomoldic to interool fab POR,mbri-sptty bri yelgld FLOR,f-slo/milky ring/strm CUT,f-blk-dkbrn OSTN"

DEPTH	LITHOLOGY

5840.00 5860.00 "LS,ltbrn-brn,mott,pred vf xln,grn-suc mtx,mdns mtx ip,rthy/arg,sme anhy/calc flngs,ool/pel,rr foss frgs,scat chlky carb mat,;pred m-f oomoldic to interool fab POR,mbri-bri yelgld FLOR,f-slo/milky ring/strm CUT,f-blk-dkbrn OSTN"

5860.00 5880.00 "LS,ltbrn-brn-tn,mott,pred vf xln,grn-suc mtx,pred GRNST,ool/pel rich,rr foss frags,sl anhy,rthy/arg,sme anhy flngs,rr calc frac flngs;pred m-f oomoldic to interool fab POR,f-blk-dkbrn OSTN,mbri-bri yelgld FLOR,m-f slo strm/milky ring/CUT"

5880.00 5900.00 "LS,ltbrn-tn-brn,mott,pred vf xln-mic xln ip,suc-grn mtx,mdns mtx ip,sl dolo ip,rthy/arg,oolitic,intraclastic ip,pel,tr foss frags,scat offwht chlky carb mat,sl anhy;pred red-f oomoldic to scat interool fab POR,f-blk-dkbrn OSTN,mbri yelgld FLOR,m-strm CUT"

5900.00 5920.00 "LS,ltbrn-brn-tn-crm,mott,pred vf xln-mic xln ip,suc-grn-mdns mtx,ool/pel,tr foss frgs,rthy/arg,scat calc frac flngs;pred red-m oomoldic to interool fab POR,scat vug POR,mbri-sptty bri yelgld FLOR,m-slo strm/milky ring/CUT,f-blk-dkbrn OSTN"

5920.00 5940.00 "LS,ltbrn-brn-tn,mott,mic-pred vf xln,suc-grn mtx,mdns mtx ip,sme offwht chlky carb mat,ool/pel,rthy/arg,sl anhy;pred red-m oomoldic to interool fab POR,sucrosic POR ip,mbri yelgld FLOR,f-blk-dkbrn OSTN res,m-slo strm/milky ring/CUT"

5940.00 5960.00 "LS,ltbrn-brn-tn-crm,mott,pred vf xln-mic xln ip,suc-grn-mdns mtx,ool/pel,tr foss frgs,rthy/arg,scat calc frac flngs;pred red-m oomoldic to interool fab POR,scat vug POR,bri yelgld FLOR,m-slo strm/milky ring/CUT,f-blk-dkbrn OSTN"

5960.00 5980.00 "LS,ltbrn-tn-brn,mott,pred vf xln-mic xln ip,suc-grn mtx,mdns mtx ip,sl dolo ip,rthy/arg,oolitic,pel,tr foss frags,scat offwht chlky carb mat,sl anhy;pred red-f oomoldic to scat interool fab POR,f-blk-dkbrn OSTN,bri yelgld FLOR,m-strm/milky ring/ CUT"

5980.00 6000.00 "LS,ltbrn-brn,mott,pred vf xln,grn-suc mtx,mdns mtx ip,pred GRNST,rthy/arg,sme anhy/calc flngs,ool/pel,rr foss frgs,scat chlky carb mat;pred m-f oomoldic to interool fab POR,bri yelgld FLOR,f-slo/milky ring/strm CUT,f-blk-dkbrn OSTN"

6000.00 6020.00 "LS,ltbrn-brn-tn,mott,pred vf xln-mic xln,suc-grn mtx,ool rich,rr foss frags,tr chlky carb mat,rthy/arg,sl anhy,sme calc/anhy flngs;pred m-f oomoldic to scat interool fab POR,mbri-bri yelgld FLOR,f-blk-dkbrn OSTN,m-f slo strm/milky ring/CUT"

6020.00 6040.00 "LS,ltbrn-tn-brn,mott,pred vf xln-mix xln ip,suc-grn mtx,mdns mtx ip,ool rich,rthy/arg,sl chlky ip,anhy/calc flgs,tr foss frags;pred m-f oomoldic fab POR w/sme scat interool fab POR,f-blk-dkbrn OSTN,mbri-bri yelgld FLOR,f-slo strm/milky ring/CUT"

6040.00 6060.00 "LS,ltbrn-brn-tn,mott,vf xln,suc-grn mtx,mdns mtx ip,sme scat chlky carb mat,pred GRNST,ool/pel,tr foss frags,rthy,sl arg,sme calc frac flngs;pred m-f oomoldic fab POR w/sme scat interool fab POR,mbri-bri yelgld FLOR,f-slo strm/milky ring/CUT,f-blk OSTN"

6060.00 6080.00 "LS,ltbrn-brn-tn-crm,mott,pred vf xln-mic xln ip,suc-grn-mdns mtx,pred GRNST,ool/pel,tr foss frgs,rthy/arg,scat calc frac flngs;pred red-m oomoldic to interool fab POR,mbri-bri yelgld FLOR,m-slo strm/milky ring/CUT,f-blk-dkbrn OSTN"

6080.00 6100.00 "LS,ltbrn-brn-tn,mott,mic-pred vf xln,suc-grn mtx,mdns mtx ip,sme offwht chlky carb mat,ool/pel,rthy/arg,sl anhy;pred red-m oomoldic to interool fab POR,sucrosic POR ip,mbri-bri yelgld FLOR,f-blk-dkbrn OSTN res,m-slo strm/milky ring/CUT"

DEPTH	LITHOLOGY

6100.00 6120.00 "LS,ltbrn-crm,mott,pred mic-vf xln,mdens-sl suc mtx,chlky/anhy,sl rthy/arg,chlky,scat calc/anhy flngs,tr foss frags,ool rich;pred red-oomoldic fab POR to interxln fab POR ip,mbri yelgld FLOR,m-slo strm/sl milky ring/CUT,m-blk-dkbrn OSTN

6120.00 6140.00 "LS,ltbrn-crm,mott,pred mic-vf xln,mdens-sl suc mtx,scat PCKST,GRNST ip,sl rthy/arg,chlky,scat calc/anhy flngs,tr foss frags,ool rich;pred red-p oomoldic fab POR to interxln fab POR ip,mbri yelgld FLOR,m-slo strm/sl milky ring/CUT,m-blk-dkbrn OSTN"

6140.00 6160.00 "LS,ltbrn-tn-crm,mott,mic-vf xln,suc-grn mtx ip,mdns-dns mtx,GRNST ip,PCKST ip,chlky/anhy,scat offwht carb mat,ool/pel,tr foss frgs;pred red oomoldic to interxln w/sme scat interool fab POR,bri yelgld FLOR,m-blk-dkbrn OSTN,milky ring/CUT"

6160.00 6180.00 "LS,ltbrn-tn-crm,mott,mic-vf xln,mdns-dns mtx,sl suc mtx-occ grn mtx,sl chlky,anhy,scat calc frac flngs,sl rthy/arg,ool/pel,tr foss frgs;pred red oomoldic to interxln fab POR,sme scat interool POR,bri yelgld FLOR,m-slo strm/milky ring/CUT,m-blk-dkbrn OSTN"

6180.00 6200.00 "LS,ltbrn-brn-tn,mott,vf xln,suc-grn mtx,mdns mtx ip,sme scat chlky carb mat,pred GRNST,ool/pel,tr foss frags,rthy,sl arg,sme calc frac flngs;pred m-f oomoldic fab POR w/sme scat interool fab POR,mbri-bri yelgld FLOR,f-slo strm/milky ring/CUT,f-blk OSTN"

6200.00 6220.00 "LS,ltbrn-tn-brn,mott,pred vf xln-mic xln ip,suc-grn mtx,mdns mtx ip,sl dolo ip,rthy/arg,oolitic,pel,tr foss frags,scat offwht chlky carb mat,sl anhy;pred red-f oomoldic to scat interool fab POR,f-blk-dkbrn OSTN,bri yelgld FLOR,m-strm/milky ring/ CUT"

6220.00 6240.00 "LS,ltbrn-brn-tn,mott,pred vf xln-mic xln,suc-grn mtx,ool rich,rr foss frags,tr chlky carb mat,rthy/arg,sl anhy,sme calc/anhy flngs;pred m-f oomoldic to scat interool fab POR,mbri-bri yelgld FLOR,f-blk-dkbrn OSTN,m-f slo strm/milky ring/CUT"

6240.00 6260.00 "LS,ltbrn-brn-tn,mott,vf xln,suc-grn mtx,mdns mtx ip,sme scat chlky carb mat,pred GRNST,ool/pel,tr foss frags,rthy,sl arg,sme calc frac flngs;pred m-f oomoldic fab POR w/sme scat interool fab POR,mbri-bri yelgld FLOR,f-slo strm/milky ring/CUT,f-blk OSTN"

6260.00 6280.00 "LS,ltbrn-brn-tn,mott,vf xln,suc-grn mtx,mdns mtx ip,sme scat chlky carb mat,pred GRNST,ool/pel,tr foss frags,rthy,sl arg,sme calc frac flngs;pred m-f oomoldic fab POR w/sme scat interool fab POR,mbri-bri yelgld FLOR,m-slo strm/milky ring/CUT,f-blk OSTN"

6280.00 6300.00 "LS,ltbrn-brn-tn-crm ip,mott,vf xln-mic xln ip,suc-grn mtx,mdns mtx ip,ool/pel,tr foss frags,rthy,sl arg,sme calc/anhy frac flngs;pred m-f oomoldic fab POR w/sme scat interool fab POR,mbri-bri yelgld FLOR,slo strm/milky ring/CUT,m-f blk OSTN"

6300.00 6320.00 "LS,ltbrn-tn-brn ip,mott,pred vf xln-occ mic xln,suc mtx,grn mtx,mdns mtx ip,sl dolo,rthy,sl arg,chlky/anhy,oolitic,tr foss frags;pred red-m-f oomoldic to scat interool fab POR,even mbri yelgld FLOR-sptty bri FLOR,slo strm/milky ring/CUT,m-f blk-dkbrnOSTN"

6320.00 6340.00 "LS,ltbrn-brn-tn,mott,vf xln,suc-grn mtx,mdns mtx ip,pred GRNST,scat PCKST,ool/pel,tr foss frags,rthy,sl arg,sme calc frac flngs;pred m-f oomoldic fab POR w/sme scat interool fab POR,mbri-bri yelgld FLOR,m-slo strm/milky ring/CUT,m-blk OSTN"

DEPTH	LITHOLOGY

6340.00 6360.00 "LS,ltbrn-brn-tn,mott,vf xln-mic xln,suc-grn mtx,occ mdns mtx,pred GRNST,ool/pel,tr foss frags,rthy,sl arg,sme calc frac flngs;pred m-f oomoldic fab POR to scat interool fab POR,sme interxln POR,mbri-bri yelgld FLOR,f-slo strm/milky ring/CUT,f-blk OSTN"

6360.00 6380.00 "LS,ltbrn-brn-tn-crm,mott,mic-vf xln,suc-occ grn mtx,GRNST ip,PCKST ip,sl chlky,anhy,ool/pel,rthy/sl arg,rr foss frags,calc/anhy flngs;pred red oomoldic to m-interxln fab POR,mbri yelgld FLOR,p-m blk-dkbrn OSTN,slo strm/milky ring/CUT"

6380.00 6400.00 "LS AA,mot,vfxl-micxl-gran,crpxl,ooc-oom GRNST/incr scat-intbd dns-occ chky plty PCKST,sl anhy/tr POR fl-xl ANHY incl,ool/pel,rr fos,sl dol/tr DOL cmt,g ool-oom/tr intxl POR,g even mod bri/tr bri yel FLOR,fr-g ltbrn/scat dkbrn & blk dd o STN,g fast-sl blooming mlky CUT"

6400.00 6420.00 "LS ltbrn-tan-crm,ltgy-gybrn,occ brn,rr wh,vfxl-micxl,crpxl,gran ip,ool GRNST/incr scat thn chky plty-dns ool PCKST,anhy/tr POR fl-xl ANHY,sl dol/DOL cmt,sl mrly ip,bcmg tt,fr ool-intxl POR,FLOR-STN-CUT AA"

6420.00 6430.00 "LS AA,decr PCKST AA,incr tan-ltbrn ooc-oom GRNST frag,anhy AA,sl dol/decr DOL cmt,fr-g ool/tr intxl POR,g even mod bri-dull yel FLOR,fr-g ltbrn/scat brn-dkbrn & rr blk STN,CUT AA"

6430.00 6440.00 "LS tan-ltbrn,occ crm-wh,m brn,vfxl-gran-micsuc,occ crpxl,ooc-oom GRNST/tr scat dns-chky plty PCKST frag,sl anhy/tr xl ANHY-POR fl,rr tan-trnsl CHT frag,v sl dol,POR-FLOR AA,g-fr ltbrn/tr brn-rr blk dd o STN,g-fr mod fast stmg mlky CUT"

6440.00 6470.00 "LS AA,pred ooc-oom GRNST/sl incr scat thn chky plty-dns sl ool PCKST,sl anhy/tr POR fl-xl ANHY incl,v sl dol,g-fr ool/tr intxl POR,g even mod bri-dull/scat bri yel FLOR,fr-g ltbrn/tr dkbrn & rr blk STN,g fast stmg mlky CUT"

6470.00 6480.00 "LS AA,pred ooc-oom GRNST/sl incr thn chky-sl anhy plty frag & occ dns PCKST,tr xln ANHY-POR fl,FLOR AA,incr dkbrn-blk dd o STN,g fast-mod fast stmg mlky CUT"

6480.00 6500.00 "LS tan-crm-ltbrn,occ wh,lt-mbrn,vfxl-gran-sl micsuc,occ crpxl,ooc-oom GRNST/scat dns-chky plty PCKST frag,sl anhy/tr xl ANHY-POR fl,v rr tan-trnsl CHT frag,v sl dol ip,POR-FLOR AA,g-fr ltbrn/tr brn-blk STN,g fast stmg-blooming mlky CUT"

6500.00 6520.00 "LS tan-ltbrn,crm-wh,occ mbrn,tr dkbrn,vfxl-gran,micxl-crpxl,pred ooc-oom GRNST intbd/thn chky plty-dns PCKST,anhy/tr xl ANHY incl-POR fl,rr CHT AA,g ool-fr intxl POR,FLOR AA,g-fr ltbrn/scat brn-tr dkbrn & blk dd o STN,g fast stmg-blooming mlky CUT"

6520.00 6530.00 "LS AA,pred ooc-oom GRNST intbd/thn chky plty-dns PCKST,anhy AA,POR-FLOR AA,STN AA/sl incr dkbrn & blk dd o STN,CUT AA"

6530.00 6550.00 "LS tan-ltbrn,crm-wh,occ brn-dkbrn,vfxl-micxl-gran,crpxl,ooc-oom GRNST intbd/thn chky plty-occ dns sl ool PCKST,anhy/tr POR fl-xl ANHY incl,sl mot,v rr tan CHT incl,POR-FLOR-STN-CUT AA"

6550.00 6570.00 "LS tan-crm-ltgybrn,occ ltbrn-brn,wh,vfxl-gran-micsuc,crpxl,ooc-oom GRNST,scat PCKST AA,anhy/tr xln ANHY incl-POR fl,sl mot-rr arg incl,v sl dol,g-fr ool/tr intxl POR,g even mod bri-dull/tr scat bri yel FLOR,g-fr ltbrn/tr dkbrn-blk pp dd o STN,g dif-tr slow stmg mlky CUT"

6570.00 6600.00 "LS tan-crm-ltbrn,occ brn,wh,vfxl-gran-micsuc,sl incr crpxl,pred ooc-oom GRNST/incr scat-occ intbd dns sl ool-thn chky plty PCKST,anhy/tr xln ANHY-POR fl,v sl dol ip,g-fr ool/tr intxl POR,g even mod bri-dull/tr scat bri yel FLOR,g-fr ltbrn/ tr brn-dkbrn & rr blk pp dd o STN,g modfast-fast stmg mlky CUT"

DEPTH	LITHOLOGY
6600.00 6620.00	"LS AA,vfxl-micxl-gran,crpxl,pred GRNST AA,sl incr scat-occ intbd PCKST AA,anhy/tr POR fl-xl ANHY frag,sl mot/dk brn arg incl,v rr crm-tan CHT incl,v sl dol,g-fr ool/tr inxl POR,g even dull-mod bri/scat bri yel FLOR,STN AA,g mod fast-slow stmg mlky CUT"
6620.00 6640.00	"LS crm-tan-wh,tr ltbrn,rr brn,crpxl-micxl,occ gran-vfxl,cln thn chky plty-dns PCKST,sl mry ip,tr GRNST,anhy,tr chky-anhy POR fl-xln ANHY frag,rr crm-trnsl CHT incl,occ mot/dkbrn arg incl,tt-tr intxl-rr ool POR,fr scat dull-mod bri/rr scat bri yel FLOR,fr ltbrn/tr brn-dkbrn & v rr blk pp dd o STN,g dif/tr slow stmg mlky CUT"
6640.00 6660.00	"LS AA,pred cln dns v sl ool-thn chky plty PCKST,occ sl mrly,anhy/tr xln ANHY frag,rr scat ool GRNST,tt-rr intxl POR,FLOR AA,fr ltbrn/rr brn STN,CUT AA"
6660.00 6680.00	"LS,tn-crm-offwht,pred mic xln-occ vf xln,mdns-dns-tt mtx,chlky,rr ool,anhy ip,pred PCKST,rr GRNST ip;pred interxln to compact xln fab POR,dul yelg FLOR,p-blk OSTN res,wk CUT"
6680.00 6700.00	"LS,ltbrn-crm-tn-offwht ip,pred mic xln,occ vf xln,dns-mdns mtx,tt mtx ip,sl dolo ip,pred PCKST,scat ool GRNST;pred p-interxln to compact xln fab POR,p-blk OSTN,wk-slo strm CUT"
6700.00 6720.00	"LS,crm-tn-ltbrn ip-offwht,sl mott,pred mic-vf xln ip,mdns-dns mtx,rr ool,rr foss frgs,chlky/anhy,sl rthy ip,pred PCKST,occ GRNST;pred interxln to comp xln fab POR,dul sptty yelgld FLOR,wk slo strm CUT,pr-blk OSTN res"
6720.00 6740.00	"LS,ltbrn ip,crm-tn-offwht,sl mott,mic-occ vf xln,mdns-dns mtx,pred PCKST,rr ool GRNST,chlky,anhy,rr ool/foss frgs,sme offwht carb mat;pred p-interxln to comp xln fab POR,dul sptty yelgld FLOR,wk slo strm CUT,pr-sptty blk-occ dkbrn OSTN"
6740.00 6760.00	"LS,tn-crm-offwht,sl mott,pred mic-occ vf xln,mdns-dens mtx,sl dolo ip,rr ool/foss frgs,abunt anhy,chlky;pred pinterxln to scat comp xln fab POR,vpr-blk OSTN,p-sptty dul yelgld FLOR,n-wk slo strm CUT"
6760.00 6780.00	"LS,pred PCKST,crm-tn-offwht,sl mott,pred mic-occ vf xln,mdns-dns-scat tt mtx,rr ool,rr foss,occ grn mtx ip,abunt anhy,chlky;pred p-interxln to scat comp xln fab POR,p-sptty dul yelgld FLOR,p-sptty blk OSTN res,n-wk strm CUT"
6780.00 6800.00	"LS,tn-crm-offwht,pred mic xln-occ vf xln,mdns-dns mtx,pred PCKST,rr GRNST,chlky/abunt anhy,rr ool,rr calc frac flngs;pred p-interxln to occ comp xln fab POR,pr-sptty blk OSTN,dkbrn OSTN ip,sptty dul yelgld FLOR,wk slo strm CUT"
6800.00 6820.00	"LS tan-crm-ltbrn,occ wh,ltgybrn,tr m-dkbrn,vfxl-crpxl,occ gran-sl micsuc ip.pred dns sl ool-thn chky plty PCKST occ grdg to ool GRNST ip,anhy/tr xl ANHY frag-POR fl,cln-sl mrly,v sl dol,rr crm CHT incl,tr scat mod bri-rr bri yel FLOR,fr-g ltbrn- brn/tr dkbrn-v rr blk STN,fr dif/v fnt res ring CUT"
6820.00 6840.00	"LS AA,pred PCKST AA,sl incr scat-intbd ool GRNST,chky-anhy/tr xl ANHY-POR fl,sl dol ip,tr crm-tan CHT incl,tt-tr intxl-v sl ool POR,tr scat modbri-bri yel FLOR,fr-g ltbrn/sl incr scat brn-rr dkbrn STN,fr-mod g dif-v rr slow stmg mlky/fr fnt res ring CUT"
6840.00 6850.00	"LS AA/sl incr m-dkbrn,crpxl-micxl,tr vfxl-gran,pred dns-occ thn chky plty PCKST occ intbd/sl ool GRNST,chky-anhy/incr xl ANHY-tr POR fl,tr tan-crm intbd CHT,v sl dol,sl mot,tt-tr intxl/v rr ool POR,FLOR-STN AA,fr dif/v fnt res ring CUT"
6850.00 6870.00	"LS tan-crm,ltbrn-brn,occ wh,tr dkbrn,crpxl-micxl,occ vfxl,pred dns sl ool-occ thn chky plty PCKST/v rr GRNST,anhy/tr xl ANHY-POR fl,cln-sl mrly,v sl dol,tr CHT AA,FLOR-STN-CUT AA"

DEPTH	LITHOLOGY

6870.00 6879.00 "LS AA,dns sl ool-incr thn chky plty PCKST,anhy AA,rr free calc xl,tr CHT AA,v sl dol,tt,n vis-sl tr intxl POR,FLOR AA,fr ltbrn-tr brn STN,fr dif/v fnt res ring CUT"

6879.00 6885.00 "SAMPLES & GAS NOT CIRCULATED OUT PRIOR TO POOH TO MD-6360', WHERE SIDETRACK OF LEG #2 BEGAN"

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #17-12 SE 1-B/1-C HORIZONTAL LATERAL LEG#2-SIDETRACK

DEPTH	LITHOLOGY

NOTE: SIDETRACK OF LEG #2 LATERAL BEGAN AT A MEASURED DEPTH OF 6360 FEET WITH A TRUE VERTICAL DEPTH OF 5562.79 FEET AND A HORIZONTAL DISPLACEMENT OF 882.51 FEET

6360.00 6370.00 "LS tan-crm-ltgyrn,ltbrn,occ wh,crpxl-micxl,vfxl-sl gran,pred dns-thn chky plty PCKST,occ grdg to GRNST ip,anhy/tr xln ANHY-POR fl,tt-tr intxl POR,rr-tr scat mod bri yel FLOR,fr ltbrn-rr brn STN,v p dif /sl tr res ring CUT"

6370.00 6380.00 "LS AA,pred PCKST/decr plty frag & incr grdg to GRNST ip,chky-anhy AA,tr tan-crm CHT frag,tt-tr intxl-vrr ool POR,fr-g even mod bri yel FLOR,STN AA/tr blk pp dd o STN,g mod fast fast stmg mlky CUT"

6380.00 6390.00 "LS AA,pred PCKST AA/incr thn plty frag & grdg to GRNST,rr crm-trnsl CHTincl,tt-incr POR AA,decr FLOR,STN AA/v rr blk pp dd o STN,g fast strm mlky CUT"

6390.00 6410.00 "LS tan-ltbrn-crm,occ wh,crpxl-micxl,occ vflx-sl gran,pred dns-thn plty PCKST/scat GRNST frag,chky-anhy/tr xln ANHY-POR fl,cln-v sl mot ip,POR AA,fr dull-tr scat mod bri-bri yel FLOR,fr dif/tr slow stmg mlky CUT"

6410.00 6420.00 "LS AA,bcmg incr vfxl-sl gran,pred PCKST AA,sl incr intbd GRNST,chky-anhy/tr xl ANHY-POR fl,sl mot,sl mrly,v rr calc xl,tt-tr intxl POR,fr dull-scat mod bri yel FLOR,fr-g ltbrn-tr brn STN,CUT AA"

6420.00 6430.00 "LS AA,pred dns sl ool-decr plty PCKST,tr scat GRNST,chky-anhy AA,cln-rr mot/dkbrn arg incl,v rr crm-trnsl CHT,POR-FLOR AA,fr ltbrn-rr brn STN,g-fr slow stmg mlky CUT"

6430.00 6440.00 "LS AA,pred PCKST AA/decr plty frag,PCKST incr bcmg tt GRNST ip,chky-anhy/tr xl ANHY-POR fl,tt-tr intxl POR,fr scat mod bri-tr bri yel FLOR,fr-g ltbrn/tr brn STN,fr dif/fnt res ring CUT"

6440.00 6450.00 "LS AA,pred dns PCKST/incr thn plty frag,rr GRNST,chky-anhy AA,POR-FLOR-STN AA,g dif/tr slow stmg mlky CUT"

6450.00 6470.00 "LS tan-ltbrn-crm,occ wh,rr brn,crpxl-micxl,occ vflx-gran,pred dns sl ool-thn plty PCKST/scat dns GRNST,anhy AA,cln-v sl mot ip,fr-g intxl/rr ool POR,FLOR-CUT AA"

6470.00 6480.00 "LS AA/incr brn,crpxl-micxl,vfxl-sl gran,pred dns occ ool-plty PCKST/tr scat-intbd sl ool GRNST,chky-anhy/tr xl ANHY-POR fl,sl dol,rr CHT incl,tt-fr intxl/rr ool POR,fr-g mod bri/tr scat bri yel FLOR,g-fr ltbrn/tr brn-dkbrn & rr blk STN,g fast stmg CUT"

6480.00 6500.00 "LS crm-tan,occ ltbrn,crpxl-vfxl,gran-micsuc ip,pred ooc-oom GRNST,w/stks & incr sl ool,occ wh PKST w/v rr mic fos,v sl DOL cmt,rr ANHY xl-incl,fr-g-n intxl-ool POR,fr-mg dull-bri yel FLOR,tr-fr ltbrn-brn STN,rr blk dd o STN,fr-g mod fast-fast stmg CUT"

6500.00 6510.00 "LS AA,incr PKST-tr intxl-ool POR,tr-fr dull-rr bri yel FLOR,tr-fr STN AA,tr mg CUT,incr DOL cmt-tr ltbrn-mbrn crpxl-micxl rthy tt-v rr intxl POR,n vis STN,v p slow CUT"

6510.00 6550.00 "LS crm-tan,occ ltbrn,crpxl-vfxl,gran-micsuc ip,pred ooc-oom GRNST,w/v thn sl ool-occ wh v rr mic fos PKST frag,sl DOL cmt-v rr DOL frag,rr ANHY xl-POR fl,fr-g intxl-ool POR,fr-mg dull yel FLOR,fr ltbrn-brn-rr blk STN,fr-g mod fast-fast stmg CUT"

DEPTH	LITHOLOGY

6550.00 6570.00 "LS ltbrn-crm-tan,occ wh,pred crpxl-micxl,sl ool,anhy,dol PKST,w/thn intbd ooc-oom GRNST,occ ANHY fl POR,scat dns m-dkbrn crpxl-micxl tt sl ool DOL frag,v rr clr CHT frag,tt-fr intxl-ool POR,mg dull-bri yel FLOR,fr ltbrn-brn-v rr blk STN,fr mod fast CUT"

6570.00 6590.00 "LS crm-tan,occ ltbrn,crpxl-vfxl,gran-micsuc ip,pred ooc-oom GRNST,w/stks & incr sl ool,occ wh PKST w/v rr mic fos,v sl DOL cmt,rr ANHY xl-incl,fr-g-n intxl-ool POR,fr-mg dull-bri yel FLOR,fr-g ltbrn-brn STN,v rr blk dd o STN,fr-g mod fast-fast stmg CUT"

6590.00 6600.00 "LS AA,incr PKST-tr intxl-ool POR,tr-fr dull-rr bri yel FLOR,tr-fr STN AA,tr mg CUT,incr DOL cmt-tr ltbrn-mbrn crpxl-micxl rthy tt-v rr intxl POR,n vis STN-CUT"

6600.00 6620.00 "LS crm-tan,occ ltbrn,crpxl-vfxl,gran-micsuc ip,pred ooc-oom GRNST,w/thn intbd sl ool,occ wh PKST w/v rr mic fos,v sl DOL cmt,rr ANHY xl-incl,tt-fr intxl-tr ool POR,frdull-bri yel FLOR,tr-fr ltbrn-brn STN,v rr spty blk dd o STN,fr-g mod fast-fast stmg CUT"

6620.00 6630.00 "LS pred PKST AA,w/thn intbd ooc-oom GRNST,decr POR-FLOR-STN-CUT"

6630.00 6640.00 "LS crm-off wh,tan,occ ltbrn,rr brn,crpxl,micxl-vfxl,dns sl ool-thn plty PCKST,rr GRNST,chky-anhy/tr xl ANHY-POR fl,sl mot,fos,tt-tr intxl POR,rr mod bri yel FLOR,fr lt brn STN,tr v fnt res ring CUT,intbd/CHT trnsl-crm-mot,rr fos incl "

6640.00 6660.00 "LS tan-crm-off wh,occ ltbrn,vfxl-micxl-crpxl,occ gran-micsuc,pred dns-plty PCKST/incr intbd ool GRNST,chky-anhy/tr xl ANHY-POR fl,decr CHT AA,fr-g ool-intrxl POR,fr-g even dull-mod bri/tr bri yel FLOR,fr-g ltbrn/rr brn STN,fr-g dif/tr slow stmg mlky CUT"

6660.00 6680.00 "LS tan-crm-ltbrn,occ wh,mbrn,vfxl-micxl,crpxl,occ gran-micsuc,PCKST AA/incr scat-intbd ool GRNST,chky-anhy/tr xl ANHY-POR fl,tr crm-trnsl CHT,fr-g intxl/tr ool POR,FLOR AA/sl incr scat bri yel FLOR,fr-g ltbrn/rr brn STN,CUT AA"

6680.00 6700.00 "LS tan-ltbrn-crm,occ wh,brn,vfxl-crpxl,occ micsuc-gran,pred chky dns-plty PCKST intbd/ool GRNST,anhy/tr POR fl & xl ANHY,tr sl mot trnsl-crm CHT,bcmg dol/tr DOL cmt,fr-g ool-intxl POR,g even dull-mod bri yel FLOR,g ltbrn/tr brn STN,fr dif/tr mod fast CUT"

6700.00 6720.00 "LS ltbrn-tan,occ wh-crm,mbrn,vfxl-gran-sl micsuc,micxl-crpxl,pred ool GRNST/scat PCKST AA,chky-sl anhy/tr xl ANHY-POR fl,rr CHT AA,dol/tr DOL rich cmt,g-fr ool-intxl POR,FLOR AA,g-fr ltbrn/tr brn STN,fr dif/fnt res ring-rr slow stmg CUT"

6720.00 6740.00 "LS AA,pred ool GRNST/decr dns-chky plty PKST,anhy AA,vrr CHT frag,dol/tr DOL rich cmt-occ grdg to micsuc calc DOL,g-fr intxl-sl ool POR,g-fr even dull-mod bri yel FLOR,g-fr ltbrn/tr brn STN,g mod fast-slow stmg mlky CUT"

6740.00 6770.00 "LS ltbrn-tan,rr wh-crm,mbrn,crpxl-vfxl,gran-micsuc ip,pred ool GRNST/scat PCKST AA,chky-sl anhy/tr xl ANHY-POR fl,tr DOL rich cmt,v rr clr CHT frag,rr intxl-tr ool POR,FLOR AA,fr-g ltbrn STN,fr dif-rr slow stmg CUT,w/scat ltbrn-brn vfxl lmy DOL GRNST intbds & frags v rr mic fos sl detridal rr ANHY xl fr-g intxl POR,tr-fr dull yel FLOR,fr ltbrn STN,tr-fr slow-mod fast stmg CUT"

6770.00 6790.00 "LS tan-ltbrn,occ crm,crpxl-vfxl,some gran-micsuc,pred plty-v sl ool dns PKST w/thn ooc-oom GRNST lams-incl,tt-fr intxl-tr ool POR,fr dull-tr bri yel FLOR,tr-fr ltbrn-v rr blk dd o STN,fr slow-tr mod fast stmg CUT,w/rr-tr DOOL GRNST AA,rr-tr CHT frag AA

DEPTH	LITHOLOGY

6790.00 6810.00 "LS wh-crm-tan-ltbrn,crpxl-vfxl,gran-micsuc ip,pred plty-v sl ool dns chty chk PKST & intbd ooc-oom GRNST AA,tt-fr intxl-tr ool POR,fr dull-tr bri yel FLOR,tr-fr ltbrn-n vis blk STN,fr slow-tr mod fast stmg CUT,w/tr DOL GRNST lam AA,tr trnsl-bf CHT frag"

6810.00 6830.00 "LS crm-wh,occ tan-ltbrn,crpxl-micxl,rr scat vfxl-gran,v sl micsuc,pred v sl rthy-chk PKST,w/v rr scat ooc-oom GRNST & v thn intbd stks brn micxl-micsuc DOL GRNST,v rr trnsl-bf CHT frag,v rr ANHY xl-incl,rr intxl POR,v rr spty dull yel FLOR,tr brn-mbrn STN,rr p slow dif CUT,scat v rr v thn blk carb SH ptgs"

6830.00 6850.00 "LS pred wh-crm-tan PKST AA,rr-tr ooc-oom GRNST AA,w/v rr scat thn brn micxl-vfxl-micsuc DOL GRNST,v rr scat clr-trnsl CHT frag & scat ANHY xl-incl,v rr scat thn intxl-v rr ool POR,FLOR-STN-CUT AA"
6850.00 6870.00 "LS pred crm-wh-tan,crpxl-micxl,dns,chk-occ plty,v sl fos PKST,w/v rr thn brn micsuc DOL GRNST lam,n-v rr intxl POR,v spty dull yel FLOR,v rr ltbrn STN,v p slow dif CUT,bcmg pred ltbrn micxl-vfxl,gran-micsuc ip,ooc-oom LS GRNST w/depth,rr CHT frag,fr-g intxl-ool POR,tr-fr dull-bri yel FLOR,fr ltbrn STN,fr slow dif-mod fast stmg CUT"

6870.00 6880.00 "LS pred ooc-oom GRNST AA,POR-FLOR-STN-CUT AA,w/thn dns crpxl-micxl wh-crm-tan LS PKST frag-incl,NFSOC"

6880.00 6910.00 "LS crm-tan-ltbrn,rr wh-brn,crpxl-vfxl,gran-micsuc-occ ooc-oom ip,sl anhy GRNST,w/tr scat sl ool-occ plty PKST,occ DOL cmt,rr trnsl CHT frag-ANHY xl,tt-g intxl-tr ool POR,fr-g dull-bri yel FLOR,tr ltbrn STN,rr spty blk dd o STN,fr slow-tr mod fast CUT "

6910.00 6930.00 "LS pred GRNST AA,sl incr plty PKST AA,sl decr intxl POR,FLOR-STN AA,tr-fr mod fast-fr slow stmg CUT"

6930.00 6950.00 "LS crm-tan-ltbrn,rr wh-brn,crpxl-vfxl,gran-micsuc-occ ooc-oom ip,sl anhy GRNST,w/tr sl ool-occ plty-chk PKST,rr DOL cmt,v rr trnsl CHT frag-tr ANHY xl,fr intxl-tr ool POR,fr-mg dull-bri yel FLOR,tr ltbrn STN,rr spty blk dd o STN,fr slow-tr mod fast CUT "

6950.00 6960.00 "LS pred sl ooc-oom GRNST AA,scat PKST AA,sl decr POR-FLOR-STN-CUT "

6960.00 6970.00 "LS incr chky-plty sl chty-anhy PKST AA,w/decr ooc-oom GRNST,rr scat trnsl CHT frag,occ sl DOL cmt,mfr intxl-rr-tr ool POR,tr spty dulll-bri yel FLOR,tr spty ltbrn-brn-rr spty blk STN,fr slow stmg-dif-tr mod fast stmg CUT"

6970.00 6990.00 "LS crm-tan-ltbrn-wh,rr brn,crpxl-vfxl,gran-micsuc-occ ooc-oom ip,sl anhy GRNST,w/tr occ plty-chk rthy-dns PKST,rr DOL cmt,rr trnsl CHT frag-tr ANHY xl,tr intxl-rr ool POR,fr dull-bri yel FLOR,rr ltbrn STN,v rr spty blk dd o STN,tr slow-rr mod fast CUT"

6990.00 7010.00 "LS pred intbd sl ooc-oom GRNST AA & PKST AA,POR-FLOR-STN-CUT "

7010.00 7020.00 "LS crm-wh,tan,tr brn,crpxl-micxl,tr vfxl-gran ip,pred dns-plty PCKST/tr scat sl ool GRNST,chky-anhy/tr xl ANHY-POR fl,v sl dol,rr trnsl CHT,tt-tr intxl-rr ool POR,n-tr fr-g scat mod bri-bri yel FLOR,n-tr ltbrn-rr brn STN,vrr blk pp STN,fr dif/g mod bri res ring/tr v slow stmg mlky CUT"

7020.00 7040.00 "LS AA,crpxl-micxl,tr vfxl-gran,pred dns-thn plty PCKST/rr scat GRNST AA,chky-anhy/tr xl ANHY-POR fl,n-v sl dol,rr trnsl CHT,cln-sl mot/brn arg incl,POR-FLOR AA,n-tr ltbrn-vrr scat brn STN,n-vrr blk pp STN,fr dif/fr mod bri res ring-tr v slow stmg CUT"

DEPTH	LITHOLOGY
7040.00 7060.00	"LS crm-off wh-tan,wh,rr brn,crpxl-micxl,tr vfxl-gran ip,pred dns sl ool-thn plty PCKST/rr scat GRNST,chky-anhy/tr xl ANHY-POR fl,n-v rr sl dol,rr CHT AA,n vis-rr intxl-sl ool POR,tr sl incr scat mod bri-bri yel FLOR,n- tr ltbrn/rr brn-v rr blk pp dd o STN,fr slow dif/v fnt res ring & slow stmg mlky CUT"

FORMATION TOPS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #17-12 SE 1-B/1-C HORIZONTAL LATERAL LEG #2 & SIDETRACK

FORMATION NAME		SAMPLES MEASURED DEPTH	SAMPLES TRUE VERTICAL DEPTH	DATUM KB:4765'
LOWER ISMAY		5571'	5470'	-705'
GOTHIC SHALE		5495'	5491'	-726'
DESERT CREEK		5524'	5516'	-751'
DC 1-A ZONE		5534'	5520'	-755'
DC 1-A/1-B TRANSITION ZONE		5557'	5532'	-767'
DC 1-B ZONE		5569'	5546'	-781'
DC 1-B/1-C TRANSITION ZONE (IN LATERAL #2)		6709'	5555'	-790'
DC 1-C ZONE (IN SIDETRACK)		6462'	5567'	-802'

GEOLOGICAL SUMMARY

AND

ZONES OF INTEREST

The Mobil Exploration and Production U.S. Inc., Ratherford Unit #17-12 Horizontal Lateral Leg #2 was a re-entry of the Mobil Ratherford Unit #17-12 located in Section 17, T41S, R24E. The casing was exited in a northwesterly direction from a 5440' measured depth, 5438' true vertical depth, on January 26, 1998. The lateral was terminated at a measured depth of 6885', true vertical depth of 5563', with a horizontal displacement of 1406' and true vertical plane 122 degrees, on January 29, 1998, in the upper Desert Creek 1-B to 1-C transition zone, where the decision was made to pull back and sidetrack the lateral at a measured depth of 6360', 5563' true vertical depth, with a horizontal displacement of 883'. The sidetrack was begun on January 29, 1998, with no significant drilling problems. The lateral and sidetrack well bores used fresh water with polymer sweeps as the drilling fluid. A very minor water flow of 3 to 4 barrels per hour was noted while drilling the lateral through the 1-B and 1-C porosity zones. The background gases noted on the accompanying mud log showed only moderately increases while drilling the 1-B and 1-C zones, and gradually decreased near the end of the original lateral and the associated sidetrack. ****The samples showed a fair amount of oil shows through out the drilling of the lateral in the 1-A section.

The primary objectives of the Ratherford Unit #17-12 Leg #2 horizontal lateral were to identify and define the porosity benches, the effective porosity, staining and reservoir properties in both the 1-B and 1-C porosity zones in the Desert Creek Member of the Upper Paradox Formation. As the drilling of the lateral progressed it became apparent that the two porosity zones were similar based on lithology, drill rate and as noted on the original electric logs. Because of these similarities between the two porosity zones, it can be assumed that the 1-B and 1-C zones are a single massive homogeneous section. They are interbedded with occasionally dense tight streaks and developed a possible transition zone between the 1-B and 1-C at a measured depth of 6362', true vertical depth of 5563', at a vertical distance of approximately 890' in the original lateral. In an attempt to achieve these objectives, the original lateral was terminated at a measured depth of 6885', true vertical depth of 5563' with a vertical section of 1,406', and it was decided to sidetrack and reacquire the 1-B and 1-C porosity zones to total depth. The over all evaluation of the lateral and subsequent sidetrack proved to have good to fair properties.

The Upper Ismay, Lower Ismay, Gothic Shale, the transition zone at the top of the Desert Creek, the 1-A porosity zone, the 1-A to 1-B transition zone, and the 1-B and 1-C porosity zone were encountered while drilling the curve section of the lateral. Kick off point for this lateral was at 5440', measured depth, 5439.8' true vertical depth, in the basal carbonates of the Upper Ismay and landed at a true vertical depth of 5547', 5631' measured depth; slightly above the purposed target line by three and seven tenths feet. During the course of drilling the lower section of the curve an unpredictable increase in angle developed, an attempt was made to kill the angle but was unsuccessful and this resulted in the landing the curve high to the purposed target depth. Upon completion of the curve it was decided to level out the bore hole and than gradually turn downward to and mirror the purposed target line.

The basal Upper Ismay seen in the curve section was medium to light gray brown to occasionally dark gray brown, light gray, brown, and occasionally tan to cream, white, cryptocrystalline to microcrystalline, earthy to clean, occasionally chalky, slightly marly, dolomitic in part, occasionally cherty, very slightly fossiliferous limestone. There were very thin interbedded earthy to argillaceous, brown to dark brown, cryptocrystalline to microcrystalline, marly to limy dolomites present as well as minor amounts of very thin black, carbonaceous, slightly calcareous to dolomitic shale, and scattered rare dark brown to brown chert fragments noted in this basal portion of the Upper Ismay. There was no visible porosity, rare spotty dull mineral fluorescence, none to rare brown stain and no cut noted in the limestones of the Upper Ismay. While the interbedded dolomites contained no visible porosity or oil shows either. The Upper Ismay dolomites graded into the very thin, carbonaceous, dolomitic shale of the Hovenweep.

At the base of the very thin Hovenweep shale the top of the Lower Ismay was picked at 5471' measured depth, 5470' true vertical depth. The Lower Ismay was predominately a light gray to light gray brown to white slightly dolomitic limestone, microcrystalline to cryptocrystalline, earthy to chalky to slightly marly to anhydritic, slightly silty with traces of sandy streaks, and rare scattered micro fossils. The predominately dense limestone was tight with no to very little intercrystalline porosity, and no visible fluorescence, stain or cut present. Thinly interbedded in the limestones were scattered brown to occasionally dark brown, dolomites which were cryptocrystalline to slightly micro-crystalline, dense, slightly argillaceous, earthy to clean, with no to rare very poor intercrystalline porosity, no visible fluorescence, stain or cut. Also scattered through out the upper section of samples were tan to brown to light gray chert fragments. The limestones in the base of the Lower Ismay were light gray to light gray brown, occasionally tan to light brown and slightly mottled with black to dark gray inclusions, microcrystalline to cryptocrystalline, chalky to slightly anhydritic, earthy, becoming increasingly silty to sandy and occasionally grading to a limy to calcareous siltstone to very fine grain sandstone. Traces of dolomite and chert with rare crystalline calcite and anhydrite were also noted in the samples. The basal limestones and dolomites became very marly and graded into the Gothic Shale.

The top of the Gothic Shale was at 5495' measured depth, 5491' true vertical depth. The Gothic Shale was predominantly black to dark gray brown to dark brown black, platy to subplaty to subblocky, firm to soft to occasionally brittle, carbonaceous, slightly silty, calcareous to limy to dolomitic, with pin-point mica inclusions and sooty. The top of the Gothic was gradational from the very thin interbedding of very argillaceous, carbonaceous limestone to a very argillaceous, limy dolomite, with the dolomite grading into very dolomitic, carbonaceous shale. The top of the Gothic was picked predominantly by the decrease in penetration rate and a distinct increase in the percentage of shale in the samples.

A gradational transitional facies change between the Gothic Shale and Desert Creek Porosity Members is where the top of the Desert Creek is commonly picked and in this leg it occurred at a measured depth of 5524' and a true vertical depth of 5516'. The samples in this zone contained interbedded very silty, dolomitic limestone with brown, limy, argillaceous dolomites and very thin carbonaceous shales. The limestones were light gray to light gray brown, tan to light brown to cream, with traces of gray to white, rare brown, microcrystalline to cryptocrystalline, earthy to silty, argillaceous, dense, tight to very rare intercrystalline porosity, and no oil shows. The interbedded dolomites were microcrystalline to granular, slightly silty and had no to very rare intercrystalline porosity, with no sample show. The limestones graded into the oolicastic porosity of the 1-A zone.

The top of the Desert Creek 1-A porosity zone was picked at 5534' measured depth, 5520' true vertical depth and was based on sample identification as well as a significant increase in the penetration rate. The best porosity of the 1-A zone appeared at a measured depth of 5534', 5520' true vertical depth and ended at a measured depth of 5553', true vertical depth of 5529' making the total vertical thickness nine feet thick in the curved section of this lateral. Limestones in the top were tan to brown, light gray brown to light gray occasionally brown, cryptocrystalline to microcrystalline, with occasional granular streaks, predominately consisted of dense slightly oolicastic to chalky platy

packstone. It was interbeded with oolicastic, clean to very slightly dolomitic, slightly anhydritic limestone grainstone, that had thinly interbedded slightly silty dolomitic streaks that occasionally graded into limy dolomite grainstones. The top section of 1-A was tight with fair interbedded to scattered oolicastic to intercrystalline porosity that had traces of chalky to anhydritic porosity filling, scattered dull to moderately bright fluorescence, fair to good light brown stain, with a fair slow streaming to diffuse cut. Scattered traces of crystalline anhydrite and rare tan to light gray chert were also noted. In the measured depth interval of 5554' to 5604', 5529' to 5546' true vertical depth, a transition from the 1-A to 1-B appears to exist based on sample lithology and a decrease in penetration rate. This portion of the zone graded into an increasing dense chalky to slightly anhydritic to marly packstone with rarely thinly interbedded oolicastic grainstone. The packstones were predominately light brown to tan to cream, occasionally off white, cryptocrystalline to microcrystalline, chalky to anhydritic, tight with rare intercrystalline porosity that contained chalky to slightly anhydritic filling, some possible fracture porosity was also noted, with no sample show. While the grainstones had fair intercrystalline to rare oolicastic porosity with traces of porosity filling, decreasing fluorescence, with a fair oil show. A trace of scattered black to dark brown black shale and rare brown dolomite with no oil show was also noted.

At a measured depth of 5604', true vertical depth of 5546' the top the 1-B porosity zone was penetrated and signified by an increase in penetration rate as well sample lithology. The oolicastic limestone porosity of the upper 1-B interval was fairly continuous from a measured depth of 5604', 5546' true vertical depth, to a measured depth of 5622', 5547' true vertical depth. However just prior to landing the curve, the porosity became ratty and a decrease in penetration rate occurred. Overall the limestones were fairly consistent and well developed with only minor faceis changes occurring when the bore hole came close to the top of the 1-B porosity zone which contained the tight dense streak. The top of 1-C porosity zone was picked at a true vertical depth of 5554' by using electric logs and was not seen in the drilling of the curve, but once the curve was landed, there appeared to be no distinguishing changes in lithology or penetration drill rate between the 1-B and 1-C porosity benches. It is because of these indistinguishable characteristics that the 1-B and 1-C porosity zones will be discussed as one homogeneous zone.

Lithology of the upper 1-B and 1-C porosity zones consisted of light brown to tan to medium brown to occasionally dark brown, granular to microcrystalline to very fine crystalline, microsucrosic with traces of sucrosic streaks, oolicastic to oomoldic limestone grainstone, slightly dolomitic with trace of dolomitic rich cement streaks, slightly chalky to anhydritic with traces of crystal anhydrite inclusions and porosity filling. Interbedded throughout the grainstones, in minor amounts were tan to light brown, white to cream to rare light gray brown, cryptocrystalline to microcrystalline, dense occasionally oolithic to pelletoidal, thin chalky platy, anhydritic packstones. The limestone grainstones had good to fair oolicastic to oomoldic to intercrystalline porosity, with fair to good even dull to moderately bright with traces of spotty bright yellow fluorescence, fair to good light brown to brown stain with traces of dark brown to black dead oil stain* and good slow to moderately fast to fast streaming milky cut. The thin interbedded dense cryptocrystalline packstones were predominately tight and increased considerably when the well bumped the top of the porosity zone, and had no to very rare intercrystalline porosity, no to rare scattered dull to rare yellow fluorescence, trace of light brown stain with trace of slow streaming to residual ring cut. Rare scattered thin black, carbonaceous, calcareous to dolomitic shale partings, as well as brown, cryptocrystalline to microcrystalline, argillaceous to dense, dolomite fragments with no oil shows and rare tan to cream to translucent and very rare light gray to light gray brown chert fragments were also noted.

At a measured depth of 5631' and a true vertical depth of 5547' the curve was landed with a 91.4 degree inclination, in the 1-A to 1-B transition zone. With the curve landing four feet above the purposed target, it was decided to level out the bore hole and turn down in an attempt to acquire the 1-B and 1-C porosity zone. Within the first 22' of measured depth drilled, after landing the curve, a noticeable decrease in penetration occurred and extend over a 50' interval to a measured depth of 5703', 5548' true vertical depth. This can be assumed to be the first indication of as of yet

undeveloped dense tight lens that would later affect the drilling of this lateral leg. Once through this dense lens, the porosity increased but remained ratty until the well reached a measured depth of 5734', 5549' true vertical depth with a horizontal displacement of approximately 253'. At which point the best porosity of the 1-B and 1-C zone was encountered and placed the well bore two feet above the purposed target line. The lithology of this dense tight ratty interval remained constant and consisted of tan to cream to white, light brown, dense tight packstone limestone, with traces of thinly interbedded oolicastic to oomoldic grainstone limestones, with very traces of chalky platy packstones. Samples showed good to fair intercrystalline to traces of oolicastic to oomoldic porosity and chalky to anhydritic porosity filling, with fair to poor oil shows.

At a measured depth of 5734', 5549' true vertical depth, to 6362', 5562.5' true vertical depth and at horizontal displacements from 253' to 890', the best porosity of the 1-B and 1-C zone was drilled at a downward angle in good oolicastic to oomoldic limestone grainstone as previously described. The lithology was very consistent with little vertical facies change through out this interval and was light brown to brown to tan, very fine crystalline to microcrystalline to granular with occasional sucrosic to micro sucrosic streaks, oolicastic to oomoldic, slightly dolomitic to anhydritic grainstones, interbedded with a trace to rare dense to platy packstones and had good to fair porosity and sample shows. This interval was interpreted as being in the upper 1-B to 1-C porosity interval, mainly in the upper 1-B portion of the zone. At the measured depth of 5562.5' an increase in the angle of the well path was noted, which was interpreted as the transition between the 1-B and 1-C zones beginning to develop. An increase in the angle of the well path had been noticed earlier at a measured depth of 6120', 5561' true vertical depth, with a horizontal displacement of 642'. In both cases an increase in the well path was noticed as well as a slight increase in tight limestone packstones and a decrease in the associated sample shows.

From the measured depth of 6362', as noted above, the well path was forced upward after encountering the developing 1-B to 1-C transition zone. Very tight limestone packstones with very thin interbedded oolicastic to oolmoldic limestones were noted as the well path scraped along the top of the transition zone until reaching a measured depth of 6433', 5560' true vertical depth, with a horizontal displacement of 955', as the well path climbed 2.5 feet. At the measured depth of 6433' the well path moved away from the 1-B to 1-C transition zone and the interbedded packstones and grainstone near the base of the 1-B porosity zone. As the well path reached the measured depth of 6433' the lithology became predominately the good oolicastic to oolmoldic grainstones, with good sample shows. These limestone-grainstone were cream to tan to light brown, white to light gray brown, microcrystalline to very finely crystalline, granular to microsucrosic, oolicastic to oomoldic, with some anhydrite crystals to rare porosity filling, occasional dolomite rich cement, with rare to a trace of thin dense, chalky, occasionally platy, anhydritic packstones. The limestone grainstones had good to fair oolicastic to oomoldic to intercrystalline porosity, with fair to good even dull to moderately bright with traces of spotty bright yellow fluorescence, fair to good light brown to brown stain with traces of dark brown to black dead oil stain* and good slow to moderately fast to fast streaming milky cut. This lithology show increasing amounts of tight packstones as the well path reached a true vertical depth of 5555.5'. At this time the top of the 1-B zone was scraped along as the well path was drilled at fairly level horizontal path, until reaching a measured depth of 6707', with a true vertical depth of 5555', and a horizontal displacement of 1230'.

At the measured depth of 6707' the base of the 1-A to 1-B transition zone was penetrated as the 1-B porosity zone appeared to thin or turn sharply downward. The determination was made that the 1-B porosity had thinned and then possibly pinched out, was due to the fact that as the well path was oriented downward. From the measured depth of 6707', 5555' true vertical depth, to the termination of the lateral at a measured depth of 6885', 5562.5' true vertical depth, with a horizontal displacement of 1406', the penetration rate decreased significantly, and the lithology was predominately a very tight packestone. The well path dropped 7.5' in true vertical depth in 176', but was unable to reacquire the good oolicastic to oomoldic limestone grainstones previously seen in the 1-B porosity. The lithology through this interval was a very tight, tan to cream to white,

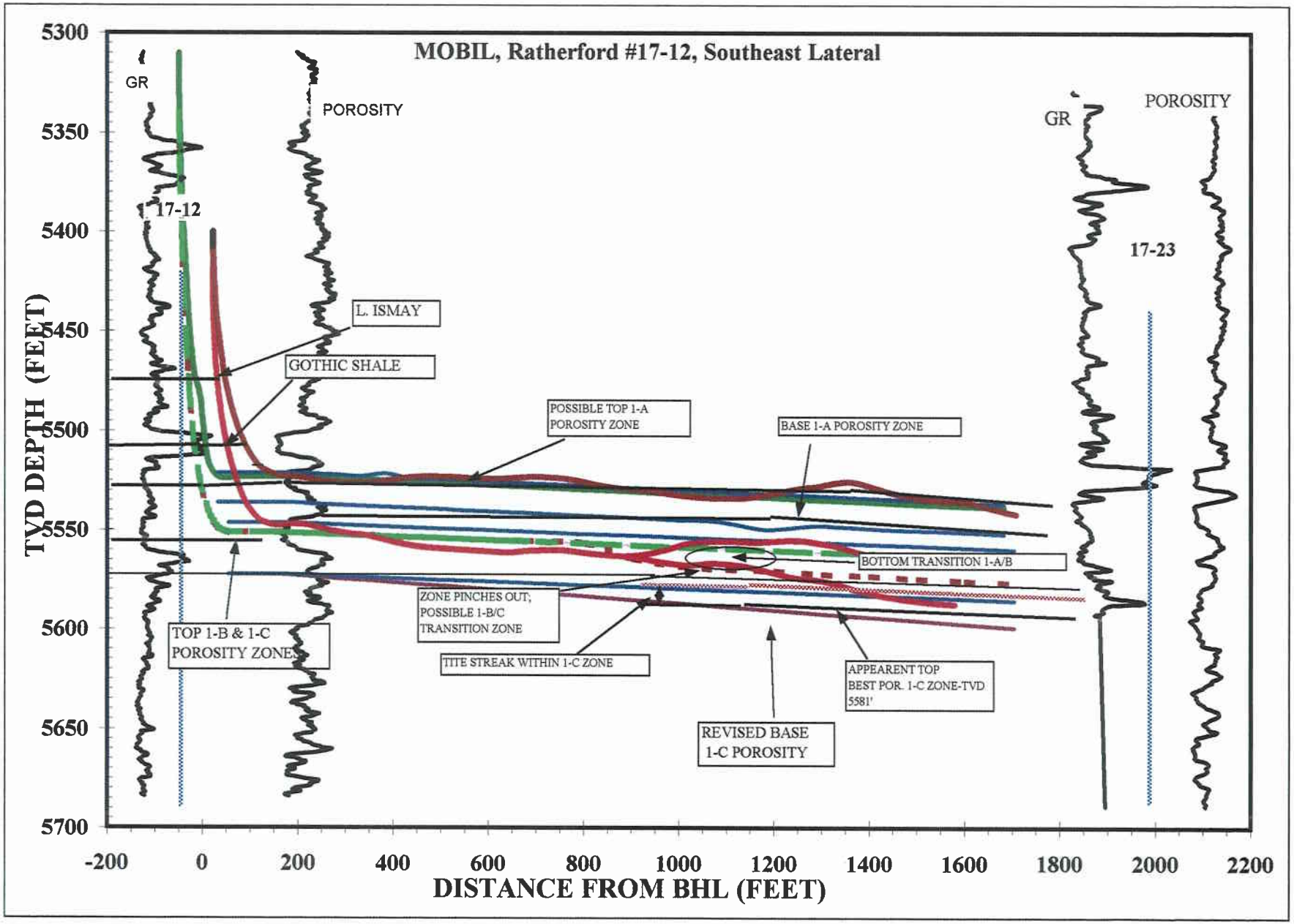
In tracking the well bore through the 1-B and 1-C benches, in lateral leg #2 and the sidetrack, the oolicastic limestone grainstone porosity was very good and was consistent until reaching a horizontal displacement of 890' when the apparent transition zone between the 1-Band 1-C zones appeared to develop. The porosity of the 1-B and 1-C zones appeared to thin from an apparent maximum thickness of almost 16' at the 17-12 well bore to a thickness of 6' in the 1-B prior to the lateral being sidetracked and the best porosity of the 1-C zone thinning to 1.5' near the top of the zone and to 4' in thickness near the base at just prior to the sidetrack's termination. In tracking the lateral through out its length the 1-B and 1-C zones, the zones appeared to slowly dip downward through out their lengths toward the R.U. #17-23 well.

Predominant facies changes were associated with the vertical changes as well as lateral changes with in the limestones, as the environment of deposition changed when encountering the top or base of the 1-B and 1-C zones, as well as a lateral change in the depositional environment. With the classification changes, the oolicastic to oolmoldic limestones encountered were of varying thickness, from approximately 16' the 1-B and 1-C zones combined at and near the 17-12 well bore, down to 6' and then pinching out all together in the 1-B and down to 1.5' in the top of the 1-C zone in the sidetrack and down to 4' thick near the base of the 1-C toward the end of the sidetrack of lateral leg #2. The effective or the better porosity was associated with the oolicastic, to very slightly algal limestone grainstone facies which had fair to good, intercrystalline to oolicastic porosities, and the absence of any major anhydrite plugging. The limestone packstone at the top and base of the 1-B and 1-C zones, as well as in the 1-B to 1-A and 1-B to 1-C transition zones, had no visible porosity and no to very poor permeability.

From the top of the 1-B and 1-C porosity bench to a measured depth of 6367', the limestone lithology was consistent, ranging from light brown to medium brown, cryptocrystalline to very finely crystalline, occasionally microsucrosic to granular, with thin platy limestone packstone and scattered chert fragments, with increases in chert and the limestone packstones as the well bore penetrated top of the 1-B, and approached the 1-B to 1-A as well as the 1-B to 1-C transition zones below the 1-B porosity. The limestones within the good porosities seen, had fair to good intercrystalline to oolicastic porosity, predominately fair to good dull to bright yellow fluorescence, with noticeable decreases when near the tops and bases of the zones, as well over the last 180' of the lateral and the 100' of the sidetrack. The staining in the limestones ranged from a trace to good light brown to dark brown, and scattered traces of black dead oil stain and the associated cuts being a predominately fair to good moderately fast to fast streaming cuts. The very thin platy limestones at the top and the base of the 1-B and 1-C porosities in this lateral and associated sidetrack had no visible porosity, fluorescence, staining, or cut.

The conclusion drawn from the southeasterly lateral and sidetrack in the 1-B and 1-C zones is that in this area the limestone porosities were not consistent through out the lengths of the zones. Also having an effect on the porosity, were the minor amounts of anhydrite filled porosity and the very thin, platy limestone packstones near the tops and bases of the zones. Staining was good to fair and there were sections where staining was poor to none, with some black dead oil staining trapped in the intercrystalline porosity. The lateral used the intended target line as a reference point through the 1-B/1-C bench, with the well bore planing to following the line of best porosity after entering the 1-B/1-C porosity bench and then attempting to turn downward into the 1-C porosity after the original lateral was sidetracked at a horizontal displacement of approximately 883', in the 1-A to 1-B transition zone.

While drilling the lateral, the background gas was due in part to the minor amounts of oil encountered while drilling the lateral and the sidetrack. A slow drop in the background gases was noted in the 1-A to 1-B transition zone and near the end of the sidetrack. This lateral and sidetrack can be interpreted to having very good reservoir qualities until reaching approximately 883' of lateral section. It appears that the porosities, although laterally not very consistent maybe well enough developed, in this southeasterly direction to enhance the overall performance of the zone.


MOBIL, Ratherford #17-12, Southeast Lateral
GR
POROSITY
17-12
GR
POROSITY
17-23
L. ISMAY
GOTHIC SHALE
POSSIBLE TOP 1-A POROSITY ZONE
BASE 1-A POROSITY ZONE
BOTTOM TRANSITION 1-A/B
ZONE PINCHES OUT, POSSIBLE 1-B/C TRANSITION ZONE
TOP 1-B & 1-C POROSITY ZONES
TITE STREAK WITHIN 1-C ZONE
APPEARENT TOP BEST POR. 1-C ZONE-TVD 5581'
REVISED BASE 1-C POROSITY
TVD DEPTH (FEET)
5300
5350
5400
5450
5500
5550
5600
5650
5700
-200
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
DISTANCE FROM BHL (FEET)

RECEIVED
MAR 06 1998
DIV. OF OIL, GAS & MINING

MOBIL

RATHERFORD UNIT #17-12
NW HORIZONTAL LATERAL LEG #1
UPPER 1-B & 1-C POROSITY BENCHES
DESERT CREEK MEMBER
PARADOX FORMATION
SECTION 17, T41S, R24E
SAN JUAN, UTAH

GEOLOGY REPORT
by

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

TABLE OF CONTENTS

WELL SUMMARY 3

DAILY WELL CHRONOLOGY 4

DAILY ACTIVITY 5

BIT RECORD 6

SURVEY RECORD 7

MUD RECORD 9

SAMPLE DESCRIPTIONS 10

FORMATION TOPS 17

GEOLOGIC SUMMARY AND ZONES OF INTEREST 18

WELL PLOTS 22

WELL SUMMARY

OPERATOR:	MOBIL EXPLORATION & PRODUCTION U.S. INC.
NAME:	RATHERFORD UNIT #17-12 NW HORIZONTAL LATERAL LEG #1 IN 1-B/1-C UPPER POROSITY BENCH, DESERT CREEK
LOCATION:	SECTION 17, T41S, R24E
COUNTY/STATE:	SAN JUAN, UTAH
ELEVATION:	KB:4754' GL:4765'
SPUD DATE:	1/20/98
COMPLETION DATE:	1/24/98
DRILLING ENGINEER:	BENNY BRIGGS
WELLSITE GEOLOGY:	DAVE MEADE / MARVIN ROANHORSE / LUKE TITUS
MUDLOGGING ENGINEERS:	DAVE MEADE / MARVIN ROANHORSE /LUKE TITUS
CONTRACTOR: **TOOLPUSHER:**	BIG "A" RIG 25 J. DEES /M. SMITH
HOLE SIZE:	4 3/4"
CASING RECORD:	SIDETRACK IN WINDOW AT 5458' MEASURED DEPTH
DRILLING MUD: **ENGINEER:** **MUD TYPE:**	M-I DANNE BEASON FRESH WATER & BRINE WATER W/ POLYMER SWEEPS
DIRECTIONAL DRILLING CO:	SPERRY-SUN
ELECTICAL LOGGING:	NA
TOTAL DEPTH:	7039' MEASURED DEPTH TVD-5562.89'
STATUS:	TOH & LAY DOWN TOOLS - PREPARE WELL FOR SE LEG #2

DRILLING CHRONOLOGY
RATHERFORD UNIT #17-12
1-B/1-C NW HORIZONTAL LATERAL LEG #1

DATE	DEPTH	DAILY	ACTIVITY
1/20/98	5449'	0'	RIG UP-RETRIEVE BRIDGE PLUG-L.D BRIDGE PLUG-RETRIEVE BRIDG PLUG-L.D. BRIDGE PLUG
1/21/98	5449'	6'	TIH -RIG UP & RUN WIRELINE-TOH-L.D. ANCHOR LATCH ASSEMBLY-PICK UP WHIPSTOCK & ORIENT-TIH W/WHIP-STOCK & SET-SHEAR OFF @ 45K(TOP OF WHIPSTOCK @ 5549')-P.U. SWIVEL & PUP JNT-BREAK CIR. & MILL W/STARTER MILL 5449'-5451'-CIR OUT & TOH-BREAK STARTER MILL & P.U. WINDOW & WATERMELON MILLS-TIH-P.U. SWIVEL & BREAK CIR-MILL 5451' TO 5455'
1/22/98	5455'	161'	MILL WINDOW-5449'-5456'-PUMP SWEEPS & CIR OUT-L.D. 14 JNTS AOH & TOH-L.D. MILLS-P.U. CURVE ASSEMBLY & TEST MTR-P.U. PH6 D.P. OFF RACKS & TIH-BREAK CIR.-RIG UP WIRELINE & SET GYRO-TIME DRLG @ 2 MINS/FOOT FROM 5455'-5459'- DIR DRLG W/WIRELINE SURVEYS FROM 5459'-5485'-PULL GYRO-DIR DRLG & SURVEYS-PUMP SWEEPS & CIR BTMS UP @ 5616' TD OF CURVE
1/23/98	5616'	782'	CIR OUT-L.D. 45 JTS AOH-TOOH-L.D. CURVE ASSEMBLY-P.U. LATERAL BHA W/BIT #2 & TEST MWD AND MUD MOTOR-TIH-P.U. 44 JNTS PH6 & TIH W/ LATERAL ASSEMBLY-DIR DRLG & SURVEYS
1/24/98	6398'	641'	DIR DRLG & SURVEYS TO TD OF 7039'-PUMP 10 BBL SWEEP & CIR SMPLS OUT-L.D. 1 JNT AOH D.P.,HANG SWIVEL & TOH-L.D. DIRECTIONAL TOOLS-P.U. & M.U. HOOK & TIH-P.U. 6 JNTS & LATCH INTO WHIPSTOCK-L.D. 2 JNTS & TOH-BREAK HOOK ON WHIPSTOCK-P.U. & M.U. WHIPSTOCK & STARTER MILL-ORIENT-TIH W/ WHIPSTOCK & STARTER MILL

DAILY ACTIVITY

Operator: MOBIL
Well Name: RATHERFORD UNIT #17-12 NW 1-B/1-C HORIZONTAL LATERAL LEG #1

DATE	DEPTH	DAILY	DATE	DEPTH	DAILY
1/20/98	5449'	0'			
1/21/98	5449'	6'			
1/22/98	5455'	161'			
1/23/98	5616'	782'			
1/24/98	6398'	641'			
TD	7039'				

BIT RECORD

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #17-12 NW 1-B/1-C HORIZONTAL LATERAL LEG #1

RUN	SIZE	MAKE	TYPE	IN/OUT	FTG	HRS	FT/HR
#1	4 3/4"	STC	MF-3P	5455'/ 5616'	161'	11.5	14
#2	4 3/4"	STC	MF-3P	5616'/ 7039'	1,423'	25	56.9

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : B25 /17-12 1A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
5400.00	0.29	329.37	5399.81	11.96 S	18.35 E	-20.72	0.00
5449.00	0.36	7.93	5448.81	11.70 S	18.31 E	-20.49	0.46
5456.00	4.10	322.00	5455.80	11.48 S	18.16 E	-20.23	55.12
5466.00	8.70	320.54	5465.74	10.62 S	17.46 E	-19.11	46.03
5476.00	14.60	318.05	5475.53	9.09 S	16.13 E	-17.10	59.20
5486.00	19.90	316.93	5485.07	6.91 S	14.13 E	-14.14	53.10
5496.00	25.60	314.40	5494.29	4.15 S	11.42 E	-10.30	57.82
5506.00	30.30	315.30	5503.12	0.85 S	8.10 E	-5.65	47.19
5516.00	35.10	313.90	5511.54	2.94 N	4.25 E	-0.30	48.59
5526.00	39.60	312.60	5519.48	7.09 N	0.17 W	5.69	45.68
5536.00	44.60	311.70	5526.90	11.59 N	5.14 W	12.30	50.36
5546.00	50.20	310.90	5533.67	16.44 N	10.67 W	19.53	56.31
5556.00	56.60	309.50	5539.63	21.62 N	16.80 W	27.38	64.98
5566.00	63.20	307.90	5544.64	27.02 N	23.55 W	35.79	67.43
5576.00	69.30	306.40	5548.67	32.55 N	30.84 W	44.64	62.52
5586.00	75.00	306.20	5551.73	38.18 N	38.51 W	53.80	57.03
5616.00	88.50	309.60	5556.03	56.38 N	61.87 W	82.52	46.37
5666.00	91.30	314.20	5556.11	89.76 N	99.08 W	131.73	10.77
5698.00	91.60	315.60	5555.30	112.34 N	121.73 W	163.47	4.47
5729.00	91.10	318.60	5554.57	135.04 N	142.83 W	194.35	9.81
5761.00	90.40	319.30	5554.15	159.17 N	163.84 W	226.30	3.09
5793.00	90.10	319.60	5554.01	183.49 N	184.64 W	258.27	1.33
5825.00	89.80	319.10	5554.04	207.76 N	205.49 W	290.23	1.82
5856.00	90.60	319.60	5553.93	231.28 N	225.68 W	321.20	3.04
5888.00	91.10	323.90	5553.46	256.41 N	245.49 W	353.19	13.53
5920.00	90.90	323.00	5552.90	282.11 N	264.54 W	385.17	2.88
5952.00	90.50	321.90	5552.51	307.48 N	284.04 W	417.17	3.66
5983.00	90.10	322.30	5552.35	331.94 N	303.09 W	448.17	1.82
6015.00	89.50	323.20	5552.46	357.41 N	322.45 W	480.16	3.38
6047.00	89.20	322.10	5552.82	382.85 N	341.87 W	512.16	3.56
6079.00	89.20	321.80	5553.27	408.04 N	361.59 W	544.16	0.94
6111.00	88.50	321.10	5553.91	433.06 N	381.53 W	576.15	3.09
6142.00	88.90	320.90	5554.61	457.15 N	401.03 W	607.14	1.44
6174.00	89.20	320.40	5555.14	481.89 N	421.32 W	639.12	1.82
6205.00	89.90	321.40	5555.39	505.95 N	440.87 W	670.12	3.94
6237.00	90.90	321.20	5555.16	530.92 N	460.87 W	702.11	3.19
6269.00	90.50	322.80	5554.77	556.13 N	480.57 W	734.11	5.15
6301.00	91.30	323.00	5554.27	581.65 N	499.87 W	766.10	2.58

SPERRY-SUN DRILLING SERVICES
SURVEY DATA

Customer ... : Mobil (Utah)
Platform ... : RATHERFORD UNIT
Slot/Well .. : B25 /17-12 1A1

MEASURED DEPTH	ANGLE DEG	DIRECTION DEG	TVD	NORTHINGS FEET	EASTINGS FEET	VERTICAL SECTION	DOG LEG
6332.00	90.90	325.80	5553.68	606.85 N	517.91 W	797.06	9.12
6364.00	91.10	325.80	5553.12	633.31 N	535.90 W	828.99	0.62
6396.00	90.00	326.60	5552.81	659.90 N	553.70 W	860.90	4.25
6428.00	88.90	327.00	5553.12	686.68 N	571.22 W	892.79	3.66
6460.00	89.60	326.30	5553.54	713.41 N	588.81 W	924.68	3.09
6491.00	88.60	326.30	5554.02	739.19 N	606.01 W	955.59	3.23
6522.00	89.30	326.50	5554.59	765.01 N	623.16 W	986.49	2.35
6554.00	89.10	327.60	5555.04	791.86 N	640.56 W	1018.36	3.49
6586.00	90.00	327.90	5555.29	818.92 N	657.64 W	1050.20	2.96
6618.00	89.40	329.50	5555.46	846.26 N	674.26 W	1081.98	5.34
6650.00	87.50	329.80	5556.32	873.86 N	690.42 W	1113.68	6.01
6682.00	88.40	330.20	5557.47	901.56 N	706.41 W	1145.35	3.08
6713.00	88.50	330.20	5558.30	928.45 N	721.81 W	1176.02	0.32
6745.00	90.30	330.90	5558.64	956.31 N	737.54 W	1207.66	6.04
6777.00	88.60	328.30	5558.95	983.91 N	753.74 W	1239.38	9.71
6809.00	87.90	328.40	5559.92	1011.14 N	770.52 W	1271.16	2.21
6841.00	87.60	329.30	5561.18	1038.50 N	787.06 W	1302.91	2.96
6873.00	88.00	329.30	5562.41	1066.00 N	803.38 W	1334.63	1.25
6904.00	87.90	326.50	5563.52	1092.24 N	819.85 W	1365.44	9.03
6936.00	89.30	326.70	5564.30	1118.94 N	837.45 W	1397.33	4.42
6968.00	90.70	326.20	5564.30	1145.61 N	855.14 W	1429.23	4.65
7006.00	91.30	325.80	5563.64	1177.11 N	876.39 W	1467.13	1.90
7039.00	91.30	325.80	5562.89	1204.40 N	894.93 W	1500.05	0.00

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 322.00 (TRUE).
CALCULATION METHOD: MINIMUM CURVATURE.

7039 PROJECTED TO THE BIT

MUD REPORT

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #17-12 NW 1-B/1-C HORIZONTAL LATERAL LEG #1

DATE	DEPTH	WT	VIS	PLS	YLD	GEL	pH	WL	CK	CHL	CA	SD	OIL	WTR
1/21/98	5464'	8.4	26	1	1	0/0	7.4	NC	NC	800	80	--	0%	100%
1/22/98	5454'	8.7	26	1	1	0/0	11.6	NC	NC	40 K	1200	--	0%	100%
1/23/98	5802'	8.9	26	1	1	0/0	11.6	NC	NC	60 K	4000	--	0%	100%
1/24/98	6843'	8.9	26	1	1	0/0	11.0	NC	NC	60 K	4000	--	0%	100%

SAMPLE DESCRIPTIONS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #17-12 NW 1-B/1-A HORIZONTAL LATERAL

DEPTH	LITHOLOGY

5455.00 5460.00 "LS m-dkgybrn-brn,occ tan-crm,crpxl,micxl ip,rthy-cln,arg,occ chk,sl mrly,dol ip,tt,NFSOC,w/tr DOL brn-dkbrn,crpxl-micxl,rthy-arg,mrly,lmy,tt,NFSOC,scat dkbrn CHT frag,tr CMT & abnt METAL frag"

5460.00 5470.00 "LS tan-brn,occ dkbrn,crpxl-micxl,rthy,arg,chk ip,v sl fos,scat CALC-ANHY xl,v rr CHT frag,tt,NFSOC,w/tr m-dkbrn crpxl DOL WKST frag-dns,tt,NFSOC,rr dkgy-blk carb-calc-sl dol mica-slty SH ptgs"

5470.00 5480.00 "LS AA/incr scat ltgybrn-ltgy-wh,crpxl-micxl,rthy,arg,incr chky,v sl fos,scat CALC-ANHY xl,v rr CHT,tt,NFSOC,w/tr thn DOL WKST AA,dns,tt,NFSOC,rr SH AA"

5480.00 5490.00 "LS ltgy-ltgybrn,micxl-crpxl,rthy-slty/tr occ sdy strk,occ grdg to calc-lmy SLTST-vf gr SS ip,chky,dns-rr intxl POR,NFSOC,w/rr DOL AA"

5490.00 5500.00 "LS AA,micxl-crpxl,rthy-slty,sl sdy ip,occ grdg to lmy SLTST,dns-rr thn chky plty prtgs,tt-rr intxl POR,NFSOC"

5500.00 5510.00 "SH blk-dkbrnblk-dkbrn,sbplty-sbblky-blky,frm-mhd,carb,occ sl slty,calc-v sl lmy,sooty,w/LS ltgy-gybrn,occ mbrngy,wh,rr brn,micxl-crpxl,sl chky-rr plty chky frag,slty-sl sdy,grdg to lmy SLTST ip,NFSOC"

5510.00 5520.00 "SH AA/scat LS tan-ltbrngy-crm,occ wh,crpxl-micxl,rthy,dns-tr thn chky plty frag,sl anhy,sl dol ip,rr slty frag,tt,NFSOC "

5520.00 5530.00 "SH AA/tr scat LS AA,tt-rr intxl/v rr ool POR,tr-rr scat mod bri yel FLOR,rr ltbrn STN,fr slow stmg mlky CUT"

5530.00 5540.00 "LS tan-crm-wh,ltbrn,occ ltgybrn,crpxl-micxl,gran-vfxl,sl micsuc,pred dns sl ool-chky plty PCKST,tr ooc-oom GRNST,sl anhy/tr xln ANHY,dol ip/tr DOL cmt,tt/tr fr-g ool-intxl POR,g scat mod bri-bri yel FLOR,fr ltbrn-tr brn STN,g mod fast stmg mlky CUT"

5550.00 5570.00 "LS crm-tan,occ ltgy,crpxl-micxl,occ micsuc,rr gran,slty ip,pred PKST,w/v rr thn ooc-oom GRNST,scat ANHY xl-incl-rr POR fl,tt-tr intxl-rr ool POR,rr spty dull yel FLOR,rr spty brn STN,rr slow stmg CUT,scat brn crpxl-micxl arg-dns DOL frag, tr dkgy-blk carb calc-dol sooty SH prtgs & rr scat gy-gybrn CHT frag

5570.00 5580.00 "LS tan-brn,occ mbrn,micxl-vfxl,gran-micsuc,pred ooc-oom GRNST,w/rr scat crpxl wh-crm dns sl ooc PKST incl,v rr thn blk SH ptgs,tr ANHY xl-incl-rr POR fl,fr g ool-intxl POR,mfr dull-bri yel FLOR,fr lt-mbrn STN,tr blk dd o STN,fr g mod fast-fast stmg CUT"

5580.00 5600.00 "LS AA,pred ooc-oom GRNST,decr dns sl ool PKST w/v rr Crin fos,v rr DOL & SH AA,fr-g ool-fr intxl POR,fr dull-bri yel FLOR,fr-g ltbrn-brn STN,fr g mod fast-fast stmgmlky CUT"

5600.00 5616.00 "LS tan-brn-gybrn,occ crm-tan,micxl-vfxl,occ crpxl,gran-micsuc ip,pred ooc-oom GRNST,w/scat dns sl fos PKST,v rr Crin fos,rr ANHY xl-incl-v rr POR fl,v rr scat mbrn crpxl-micxl arg DOL frag,fr-g ool-fr intxl POR,fr dull-bri yel FLOR,fr lt-dkbrn STN,fr mod fast-fast stmg mlky CUT"

DEPTH	LITHOLOGY

5616.00 5630.00 "LS ltbrn-brn-tan,micsuc-vfxl-micxl,rr crpxl,ooc-oom GRNST,v rr dns-plty PCKST frag,chky-sl anhy/rr POR fl-xln ANHY,sl dol/tr DOL cmt,g ooc-oom/tr intxl POR,fr scat dull yel FLOR,g ltbrn-brn/rr blk dd o STN,g fast stmg mlky CUT"

5630.00 5640.00 "LS AA,ooc-oom GRNST/vrr PCKST AA,sl incr chky-anhy/sl incr POR fl,POR AA,incr mod bri-dull yel FLOR,STN-CUT AA"

5640.00 5650.00 "LS AA,ooc-oom GRNST/vrr PCKST AA,chky-anhy/tr POR fl-rr xln ANHY,POR-FLOR-STN-CUT AA"

5650.00 5660.00 "LS brn-ltbrn,tr tan,rr wh,AA,ooc-oom GRNST,v rr dns-chky plty PCKST frag-incl,sl anhy/rr xln ANHY,sl dol/rr DOL cmt strk,PORAA,tr scat dull-mod bri yel FLOR,g brn-dkbrn/rr blk STN,fr-g slow stmg mlky CUT"

5660.00 5680.00 "LS AA,ooc-oom GRNST/vrr PCKST AA,sl incr chky-anhy/sl incr POR fl,POR AA,incr mod bri-dull yel FLOR,STN-CUT AA"

5680.00 5700.00 "LS brn-ltbrn,occ tan-crm,rr wh,micsuc-gran-vfxl,rr crpxl,ooc-oom GRNST,v rr scat-intbd dns-chky plty PCKST,sl anhy/tr POR fl-rr xln ANHY,sl dol/occ DOL rich cmt,v rr brn CHT frag,POR-FLOR-STN AA,g-fr slow stmg mlky CUT"

5700.00 5710.00 "LS AA,ooc-oom GRNST/v rr PCKST AA,chky-anhy/tr POR fl-rr xln ANHY,POR-FLOR-STN-CUT AA"

5710.00 5730.00 "LS AA,micsuc-gran-vfxl,rr crpxl,ooc-oom GRNST,v rr scat-intbd PCKST AA,sl anhy/tr POR fl-rr xln ANHY,sl dol/occ DOL rich cmt,POR-FLOR-STN AA,g-fr slow stmg mlky CUT"

5730.00 5750.00 "LS AA,ooc-oom GRNST/tr scat-occ intbd dns-chky plty PCKST,sl anhy/tr POR fl-rr xln ANHY,v rr tan CHT incl,sl dol ip/rr DOL cmt,g ooc-oom/tr intxl POR,g-fr scat mod bri-tr bri yel FLOR,g brn-occ dkbrn/rr blk STN,g slow-mod fast stmg mlky CUT"

5750.00 5760.00 "LS AA,ooc-oom GRNST/vrr PCKST AA,chky-anhy/tr POR fl-rr xln ANHY,POR-FLOR-STN-CUT AA"

5760.00 5790.00 "LS brn-ltbrn,occ tan,dkbrn,rr crm,wh,gran-micsuc-vfxl,tr crpxl,ooc-oom GRNST,rr scat-intbd dns-vrr chky plty PCKST,sl anhy/rr POR fl-xln ANHY,sl dol/occ DOL rich cmt,v rr tan-ltbrn CHT incl,g ooc-oom/tr intxl POR,g sl incr scat mod bri-bri yel FLOR,g brn-occ ltbrn/tr dkbrn & blk dd o STN,g mod fast-fast stmg mlky CUT"

5790.00 5810.00 "LS AA,ooc-oom GRNST/tr scat-occ intbd dns-rr chky plty PCKST,sl anhy/tr POR fl,POR AA,g even mod bri-dull/scat bri yel FLOR,g brn/sl incr dkbrn-tr blk dd o STN,g blooming-fast stmg mlky CUT"

5810.00 5830.00 "LS brn,occ dk brn,tan-crm,tr wh,vfxl-micsuc-gran,v sl incr crpxl,pred ooc-oom GRNST,sl incr scat dns crpxl PCKST/v rr chky plty frag,sl anhy/tr POR fl-rr xln ANHY,v rr tan CHT incl,POR-FLOR-STN AA,g fast stmg mlky-sl blooming CUT"

5830.00 5850.00 "LS AA,vfxl-micsuc-gran,tr crpxl,ooc-oom GRNST,tr-rr dns-v rr chky plty PCKST,sl anhy/tr POR fl-v rr xln ANHY,v rr CHT AA,sl dol/tr DOL cmt,POR AA,g scat mod bri-bri yel FLOR,g brn-dkbrn/tr blk dd o STN,g blooming-fast stmg mlky CUT"

DEPTH	LITHOLOGY

5850.00 5870.00 "LS AA,ooc-oom GRNST/tr scat-occ intbd dns-rr chky plty PCKST,sl anhy/tr POR fl,POR AA,g even mod bri-dull/scat bri yel FLOR,g brn/sl incr dkbrn-tr blk dd o STN,g blooming-fast stmg mlky CUT"

5870.00 5890.00 "LS brn,occ dk brn,tan-crm,tr wh,vfxl-micsuc-gran,v sl incr crpxl,pred ooc-oom GRNST,sl incr scat dns crpxl PCKST/v rr chky plty frag,sl anhy/tr POR fl-rr xln ANHY,v rr tan CHT incl,POR-FLOR-STN AA,g fast stmg mlky-sl blooming CUT"

5890.00 5910.00 "LS AA,ooc-oom GRNST/tr scat-occ intbd dns-rr chky plty PCKST,sl anhy/tr POR fl,POR AA,g even mod bri-dull/scat bri yel FLOR,g brn/sl incr dkbrn-tr blk dd o STN,g blooming-fast stmg mlky CUT"

5910.00 5930.00 "LS, brn,ltbrn,crm ip,mott ip,mic-vf xln,sl suc mtx-grn mtx,ool/pel rich,sl rthy,sme scat calc frac flngs;pred p-oomoldic fab POR w/sme interxln/micromoldic fab POR,dul-mbri yelgld FLOR,m-slo/milky ring/CUT,m-blk-dkbrn STN"

5930.00 5950.00 "LS,ltbrn-brn-tn,sl mott,mic-vf xln,sl suc-suc mtx,grn-mdens mtx,ool rich,sme chlky/calc flngs,tr calc frac flngs,chlky/rthy,rr foss frgs;pred p-occ m-oomoldic fab POR w/sme interxln/micromoldic fab POR,dul-sptty mbri yelgld FLOR,m-slo/milky ring CUT"

5950.00 5970.00 "LS,ltbrn-brn-tn,sl mott,mic-vf xln,sl suc mtx,occ grn mtx,mdns-dns mtx,sl ool ip,anhy/chlky/calc flgs,rthy,sl dolo ip;pred p-oomioldic to interxln fab POR,dul-sptty mbri yelgld FLOR,m-slo strm/milky ring/cCUT,p-m blk-dkbrn OSTN res"

5990.00 6010.00 "LS,ltbrn-brn-tn,mic-vf xln,grn ip-occ mdns mtx,sl suc mtx,sl anhy/chlky,ool/pel ip,rthy/sl arg,scat calc frac flngs,chlky/calc fngs;pred p-m oomoldic to micromoldic/interxln w/sme scat interool fab POR,dul-mbri yelgld FLOR,m-blk OSTN res,m-slo strm CUT"

6010.00 6030.00 "LS,ltbrn-brn-tn,sl mott,mic-vf xln,sl suc mtx,occ grn mtx,mdns-dns mtx,sl ool ip,anhy/chlky/calc flgs,rthy,sl dolo ip;pred p-oomioldic to interxln fab POR,dul-sptty mbri yelgld FLOR,m-slo strm/milky ring/cCUT,p-m blk-dkbrn OSTN res"

6030.00 6050.00 "LS,ltbrn-brn-tn,sl mott ip,mic-vf xln,grn-suc mtx,scat mdns mtx,dolo ip,sl rthy,sl arg,sme chlky/calc flngs,scat calc frac flngs;pred m-oomoldic to interool w/sme micromoldic/interxln fab POR,dul-mbri yelgld FLOR,m-slo strm/milky ring/CUT,blk-dkbrn OSTN "

6050.00 6070.00 "LS,brn-ltbrn,mott,vf xln,suc-grn mtx,mdns-dns mtx ip,dolo mtx ip,scat chlky carb mat,rthy,sme calc frac flngs,anhy ip;pred m-f oomoldic fab POR w/sme scat interool POR,mbri yelgld FLOR,m-slo/milky ring/CUT,m-f blk-dkbrn OSTN res"

6070.00 6090.00 "LS,brn-ltbrn,mott,vf xln,suc-grn mtx,mdns-dns mtx ip,sme chlky carb mat,rthy,sme calc frac flngs,anhy ip,rthy,chlky/calc fln;pred m-f oomoldic to interool POR w/sme interxln/micromoldic fab POR,mbri yelgld FLOR,m-slo/milky ring/CUT,m-f blk-dkbrn OSTN res"

6090.00 6110.00 "LS,ltbrn-brn,mott,mic-vf xln,grn-suc mtx,mdns-dns mtx ip,ool rich,rthy,tr foss frgs,sl anhy/chlky,scat calc frac flngs;predp-m oomoldic fab POR to scat interool/interxln/micromoldic POR,occ vug,dul-mbri yelgld FLOR,wk-m slo strm/milky/CUT,dkbrn-blk OSTN"

6110.00 6130.00 "LS,ltbrn-tn-brn,sl mott,mic-vf xln,mdns-grn-sl suc mtx,dolo ip,abunt ool,rthy/arg ip,sl chlky/anhy;pred p-oomoldic to interool fab POR ip,micromoldic/interxln fab POR,dul-sptty mbri yelgld FLOR,p-m blk OSTN res,slo strm/milky ring/CUT"

DEPTH	LITHOLOGY

6130.00 6150.00 "LS,ltbrn-tn,sl mott,mic-vf xln,grn-sl suc mtx,mdns-dns mtx ip,dolo ip,ool,rr foss frgs,rthy/arg ip,sl chlky/anhy;pred p-oomoldic to interool/micromoldic/interxln fab POR,dul-sptty mbri yelgld FLOR,p-m blk OSTN res,slo strm/milky ring/CUT"

6150.00 6170.00 "LS,ltbrn-tn,sl mott,mic-vf xln,grn-sl suc mtx,mdns-mtx ip,dolo ip,ool rich,rthy/arg ip,sl chlky/anhy;pred p-m oomoldic to micromoldic/ interxln fab POR,dul-yelgld FLOR,p-m blk OSTN res,p-slo strm/milky ring/CUT"

6170.00 6190.00 "LS,brn-ltbrn-tn,mott,mic-vf xln,occ grn-suc mtx,mdns mtx,rthy/arg,ool/pel rich,calc/anhy flngs,sl anhy ip;pred p-occ m oomoldic fab POR to interxln/micromoldic,dul yelgld FLOR,m-slo strm/milky ring/CUT,p-m blk dkbrn OSTN res"

6190.00 6210.00 "LS,brn-ltbrn-tn,mott,mic-vf xln,occ grn-suc mtx,mdns mtx,rthy/arg,ool/pel,rr foss frgs,calc/anhy flngs,sl anhy ip;pred p-occ m oomoldic fab POR to interxln/micromoldic,dul yelgld FLOR,m-slo strm/milky ring/CUT,p-m blk dkbrn OSTN res"

6210.00 6230.00 "LS,ltbrn-tn-brn,sl mott,pred vf xln,grn-suc mtx,mdns mtx ip,sl dolo,ool,rthy/arg,schlky/anhy flngs,rr chlky carb mat,rr SH prtgs;pred p-oomoldic to interxln/micromoldic fab POR,p-slo strm/milky ring/CUT,p-m blk-dkbrn OSTN res,dul-sptty mbri yelgld FLOR"

6230.00 6250.00 "LS,ltbrn-tn,sl mott,pred vf xln-mic xln,grn-suc mtx,mdns mtx ip,sl dolo ip,ool/pel ip,rthy,chlky/anhy flngs,rr chlky carb mat;pred p-oomoldic to interxln/micromoldic fab POR,p-slo strm/milky ring/CUT,p-m blk-dkbrn OSTN res,dul-sptty mbri yelgld FLOR"

6250.00 6270.00 "LS,ltbrn-tn-brn ip,mott,pred vf xln-mic xln,suc-grn-mdns mtx,oolitic,scat chlky carb mat,dolo ip,sl anhy,rthy,rr calc frac flngs;pred p-oomoldic to interxln/micomoldic fab POR,w/sme scat interool POR,dul-sptty mbri yelgld FLOR,slo strm/milky ring/CUT"

6270.00 6290.00 "LS,ltbrn-brn-tn,mott,mic-vf xln,suc-grn mtx,mdns mtx ip,GRNST red oomoldic fab POR,dolo ip,rthy/sl arg,oolitic,chlky ip;pred p-red oomoldic to scat m-f oomoldic fab POR w/sme interxln to micromoldic POR,blk-dkbrn OSTN res,slo strm/milky ring/CUT,dul FLOR"

6290.00 6310.00 "LS,ltbrn-tn-brn,sl mott,pred vf-mic xln,suc-grn mtx,mdns mtx ip,rthy,sl chlky,anhy,oolitic,rr chlky carb mat;pred p-m oomoldic to interxln w/sme micromoldic/ micropore fab POR,dul-mbri yelgld FLOR,slo strm/milky ring/CUT,blk-dkbrn OSTN res"

6310.00 6330.00 "LS,ltbrn-brn,pred vf xln,suc mtx,grn-mdns mtx ip,oolitic rich,rthy,sl arg,sme chlky/calc frac flngs,sl anhy,rr foss frgs;pred m-f oomoldic to interool fab POR,scat interxln,dul-sptty mbri yelgld FLOR,wk-m slo strm/milky ring/CUT,m-blk-dkbrn OSTN res"

6330.00 6350.00 "LS,brn-ltbrn-tn,mott,pred vf xln,GRNST,suc-grn mtx,dolo ip,rthy/arg,ool/pel,rr foss frgs,tr calc frac flngs,chlky/calc flngs;pred m-oomoldic to scat interool w/sme interxln/micromoldic fab POR,dul-sptty yelgld FLOR,slo strm CUT,p-m blk-dkbrn OSTN res"

6350.00 6370.00 "LS,ltbrn-tn-brn,pred vf xln,grn-suc-mdens mtx,GRNST-ool rich,rthy,arg,sl anhy,;pred m-oomoldic to interool ip,interxln/micomolic ip,occ red oomoldic POR,p slo strm/milky ring/CUT,dkbrn OSTN res"

6370.00 6390.00 "LS,ltbrn-brn,sl mott,pred vf xln,GRNST-red oomoldic por,grn-suc mtx,rthy/arg,sme calc/anhy flngs,sl chlky,rr foss frgs;pred red -m oomoldic fab POR to interool ip,interxln to micromoldic ip,dul yelgld FLOR,wk slo/milky ring/CUT,blk-dkbrn OSTN res"

DEPTH	LITHOLOGY
6390.00 6410.00	"LS,ltbrn-brn-tn,mic-pred vf xln,grn-suc mtx,occ mdns mtx,abunt ool,rr foss frgs,rthy/arg,sl chlky,anhy ip,sme scat offwht chlky carb mat;pred m-oomoldic fab POR to interool w/sme micromoldic fab POR,dul yelgld FLOR,slo strm/milky ring/CUT,m-blk-dkbrnOSTN"
6410.00 6430.00	"LS,ltbrn-brn-tn,sl mott,mic-pred vf xln,suc mtx,grn mtx,mdns-scat tt mtx,ool/pel,dolo ip,rthy,rr foss frgs;pred red -m oomoldic to interool ip w/sme interxln micromoldic fab POR,dul-sptty mbri yelgld FLOR,wk-slo strm/milky ring/CUT,p-m dkbrn-blk OSTN res"
6430.00 6450.00	"LS,ltbrn-tn-brn,mott,pred vf xln-mic xln ip,grn mtx ip-suc-mdns mtx,occ tt mtx,oolitic,rthy,rr chlky carb mat,sme calc flngs;pred red oomoldic to interxln/micromoldic fab POR,dul yelgld FLOR,slo strm/milky ring/CUT,blk-dkbrn OSTN res"
6450.00 6470.00	"LS,ltbrn-brn,pred vf xln,suc mtx,grn-mdns mtx ip,oolitic rich,rthy,sl arg,sme chlky/calc frac flngs,sl anhy,rr foss frgs;pred m-f oomoldic to interool fab POR,scat interxln,dul-sptty mbri yelgld FLOR,wk-m slo strm/milky ring/CUT,m-blk-dkbrn OSTN res"
6470.00 6490.00	"LS,ltbrn-brn-tn,pred vf xln-suc mtx,dolo ip,mdns mtx ip,ool,GRNST,rthy,sl arg/anhy;pred red-m oomoldic fab POR to interxln/micromoldic w/sme scat interool POR,dul yelgld FLOR,m-blk-dkbrn OSTN res,p-m slo strm/milky ring/CUT"
6490.00 6520.00	"LS brn-ltbrn,occ dkbrn,vfxl-gran,sl crpxl,ooc-oom GRNST,tr scat-occ intbd dns crpxl PCKST frag,sl anhy/rr POR fl,v rr tan-crm CHT incl,g ool/tr intxl POR,g even mod bri-dull yel FLOR,g brn-ltbrn/scat dkbrn-rr blk STN,g fast stmg mlky-sl blooming CUT"
6520.00 6540.00	"LS AA,vfxl-gran-sl micsuc,occ crpxl,ooc-oom GRNST/tr scat dns PCKST,v sl chky-anhy/rr POR fl,v rr CHT incl AA,v sl dol,g ool/tr intxl POR,g even mod bri-dull/scat bri yel FLOR,g ltbrn-brn/scat dkbrn-v rr blk dd o STN,g mod fast stmg mlky CUT"
6540.00 6570.00	"LS brn-ltbrn,occ dkbrn,vfxl-gran-sl micsuc,tr crpxl,ooc-oom GRNST,tr dns crpxl PCKST frag,v sl anhy/rr POR fl,v rr tan-crm CHT incl,sl dol,g ool/tr intxl POR,g even mod bri-dull yel FLOR,g brn-ltbrn/scat dkbrn-rr blk STN,g mod fast-fast stmg mlky CUT"
6570.00 6580.00	"LS AA,ooc-oom GRNST,tr scat PCKST AA,sl chky-v sl anhy/rr POR fl,rr CHT AA,sl dol,POR-FLOR-STN-CUT AA"
6580.00 6600.00	"LS brn-ltbrn,occ dkbrn,vfxl-gran-micsuc,tr crpxl,ooc-oom GRNST,tr scat-occ intbd dns sl ool PCKST,sl incr chky-rr anhy/tr POR fl,v rr tan-crm CHT incl,POR AA,g even mod bri-dull/tr scat bri yel FLOR,STN AA,g mod fast-fast stmg mlky CUT"
6600.00 6620.00	"LS AA,ooc-oom GRNST,tr scat dns PCKST,v rr chky plty PCKST frag,v sl anhy/rr POR fl,v rr tan CHT incl,v sl dol ip/rr DOL cmt,g ool/tr intxl POR,g even mod bri-dull/scat bri yel FLOR,g brn-ltbrn/tr dkbrn-rr blk dd o STN,g fast stmg-sl blooming mlky CUT"
6620.00 6640.00	"LS brn-ltbrn,occ dkbrn,vfxl-gran-micsuc,tr crpxl,ooc-oom GRNST,tr scat-occ intbd dns sl ool PCKST,sl chky-rr anhy/tr POR fl,v rr tan-crm CHT incl,POR-FLOR-STN-CUT AA"
6640.00 6650.00	"LS AA,ooc-oom GRNST,tr scat PCKST AA,sl incr chky-sl anhy/rr POR fl-xln ANHY incl,tr CHT AA,v sl dol ip,POR-FLOR-STN AA,g mod fast-fast stmg mlky CUT"
6650.00 6660.00	"LS AA,ooc-oom GRNST,tr scat PCKST AA/v rr chky plty frag,v sl anhy/rr POR fl-v rr xln ANHY,rr CHT AA,sl dol,POR-FLOR-STN-CUT AA"

DEPTH	LITHOLOGY

6660.00 6690.00 "LS AA,ooc-oom GRNST,tr scat dns PCKST,v rr chky plty PCKST frag,v sl anhy/rr POR fl,v rr tan CHT incl,v sl dol ip/rr DOL cmt,g ool/tr intxl POR,g even mod bri-dull/scat bri yel FLOR,g brn-ltbrn/tr dkbrn-rr blk dd o STN,g fast stmg-sl blooming mlky CUT"

6690.00 6720.00 "LS brn-ltbrn,occ dkbrn,vfxl-gran-micsuc,tr crpxl,ooc-oom GRNST,rr scat-occ intbd dns sl ool PCKST,sl incr chky/rr anhy-tr POR fl,v rr tan-crm CHT incl,v sl dol ip,POR AA,g even mod bri-dull/tr scat bri yel FLOR,STN AA/incr dkbrn-rr blk STN,CUT AA"

6720.00 6740.00 "LS brn-ltbrn,occ dkbrn,rr tan-crm,ltgy,vfxl-gran-micsuc,tr crpxl,ooc-oom GRNST,rr PCKST AA,sl chky-rr anhy/tr POR fl-xl ANHY incl,g ool/tr intxl POR,g even mod bri-dull/tr scat bri yel FLOR,g brn-ltbrn/scat dkbrn-rr blk dd o STN,g fast stmg mlky CUT"

6740.00 6760.00 "LS AA,vfxl-gran-micsuc,tr crpxl,ooc-oom GRNST/tr scat-occ intbd dns sl ool PCKST,sl incr chky-tr anhy/tr POR fl-xl ANHY incl,v rr tan-crm CHT incl,v sl dol,POR AA,g even mod bri-dull/incr scat bri yel FLOR,STN AA,g fast stmg-sl blooming mlky CUT"

6760.00 6780.00 "LS AA/sl decr dkbrn,vfxl-micsuc-gran,tr crpxl,ooc-oom GRNST/tr scat-occ intbd dns PCKST,sl chky-anhy/tr POR fl-v rr xl ANHY incl,v rr trnsl sil-CHT incl,v sl dol,g ool-tr intxl POR,FLOR AA,g ltbrn-brn/tr dkbrn & blk dd o STN,g fast-mod fast stmg mlky CUT"

6780.00 6800.00 "LS ltbrn-tan-brn,occ dkbrn,tr crm,rr ltgy,vfxl-gran-micsuc,tr crpxl,ooc-oom GRNST,tr PCKST AA,sl chky-anhy/tr POR fl-xl ANHY,g ool/tr intxl POR,v rr crm CHT,g even dull-mod bri/scat bri yel FLOR,g ltbrn-brn/scat dkbrn-rr blk dd o STN,g fast stmg mlky CUT"

6800.00 6820.00 "LS AA,ooc-oom GRNST,tr scat PCKST AA/v rr chky plty frag,v sl anhy/rr POR fl-v rr xln ANHY,v rr crm-tan CHT incl,g ool/tr intxl POR,FLOR-STN-CUT AA"

6820.00 6840.00 "LS ltbrn-brn-tan,occ dkbrn,rr crm-wh,vfxl-gran-micsuc,tr crpxl,pred GRNST AA,tr scat-occ intbd dns sl ool PCKST,sl chky-anhy/tr POR fl-xln ANHY,rr tan-crm CHT incl,POR AA,g even mod bri-dull/scat bri yel FLOR,STN AA,g fast stmg-sl blooming mlky CUT"

6840.00 6870.00 "LS AA,vfxl-micsuc-gran,tr crpxl,ooc-oom GRNST/tr scat-occ intbd dns ool PCKST,sl chky-anhy/rr POR fl-v rr xl ANHY,v rr CHT AA,v sl dol,g ool/tr intxl POR,FLOR-STN AA,g fast stmg-sl blooming mlky CUT"

6870.00 6890.00 "LS ltbrn-brn,occ tan,dkbrn,rr crm-wh,vfxl-gran-micsuc,tr crpxl,ooc-oom GRNST,tr scat-intbd PCKST AA,sl chky-anhy/tr POR fl-xln ANHY,rr tan-crm CHT incl,v sl dol,POR-FLOR AA,g brn-ltbrn/scat dkbrn-rr blk dd o STN,g fast stmg-sl blooming mlky CUT"

6890.00 6910.00 "LS AA,ooc-oom GRNST,tr scat PCKST AA/v rr chky plty frag,sl anhy/tr POR fl-v rr xln ANHY,v rr crm-tan CHT incl,v rr dol strk,g ool/tr intxl POR,FLOR-STN AA,g blooming-fast stmg mlky CUT"

6910.00 6930.00 "LS AA,vfxl-micsuc-gran,tr crpxl,ooc-oom GRNST/tr scat-occ intbd dns ool PCKST,bcmg sl incr chky-anhy/tr POR fl-rr xl ANHY incl,v rr CHT AA,g ool/tr intxl POR,FLOR AA,g brn-ltbrn/incr dkbrn-tr blk dd o STN,g fast stmg-sl blooming mlky CUT"

6930.00 6950.00 "LS ltbrn-brn-tan,occ dkbrn,tr crm,rr wh,vfxl-gran-micsuc,tr crpxl,ooc-oom GRNST,tr scat-intbd PCKST AA,incr chky-anhy/tr POR fl-xln ANHY,rr tan-crm CHT,v sl dol,POR-FLOR AA,g ltbrn-brn/scat dkbrn-rr blk dd o STN,g fast-mod fast stmg mlky CUT"

DEPTH	LITHOLOGY
6950.00 6970.00	"LS AA,ooc-oom GRNST,tr scat PCKST AA/v rr chky plty frag,sl anhy/tr POR fl-rr xln ANHY,rr crm-tan CHT incl,g ool/tr intxl POR,g even dull-scat mod bri/tr scat bri yel FLOR,STN AA,g blooming-fast stmg mlky CUT"
6970.00 6990.00	"LS ltbrn-brn-tan,ooc dkbrn,tr crm-wh,vfxl-gran-micsuc,tr crpxl,ooc-oom GRNST,tr thn scat-intbd PCKST AA,chky-sl anhy/tr POR fl-rr xln ANHY,rr tan-crm CHT incl,v sl dol,POR-FLOR AA,g brn-ltbrn/scat dkbrn-rr blk dd o STN,g fast stmg mlky CUT"
6990.00 7010.00	"LS AA,vfxl-micsuc-gran,tr crpxl,ooc-oom GRNST/tr scat-occ intbd dns ool PCKST,sl chky-anhy/tr POR fl-v rr xl ANHY,v rr CHT AA,sl dol,g ool/tr intxl POR,FLOR AA,g ltbrn-brn/sact dkbrn-rr blk dd o STN,g fast stmg mlky CUT"
7010.00 7039.00	"LS ltbrn-brn-tan,occ dkbrn,tr crm,rr wh,vfxl-gran-micsuc,tr crpxl,ooc-oom GRNST,tr scat-intbd dns sl ool-rr chky plty PCKST,sl anhy/tr POR fl-rr xln ANHY,v rr tan-crm CHT incl,v sl dol ip,g ool/tr intxl POR,g even dull- mod bri/scat bri yel FLOR,g ltbrn-brn/scat dkbrn-rr blk dd o STN,g blooming-fast stmg mlky CUT"

FORMATION TOPS

OPERATOR: MOBIL
WELL NAME: RATHERFORD UNIT #17-12 NW 1-B/1-C HORIZONTAL LATERAL LEG #1

FORMATION NAME		SAMPLES MEASURED DEPTH	SAMPLES TRUE VERTICAL DEPTH	DATUM KB:4765'
LOWER ISMAY		5571'	5470'	-705'
GOTHIC SHALE		5496'	5494'	-729'
DESERT CREEK		5516'	5514'	-749'
DC 1-A ZONE		5528'	5520'	-755'
DC 1-A / 1-B TRANSITION		5541'	5539'	-774'
DC 1-B ZONE		5569'	5546'	-781'
*? DC 1-C ZONE		5604'	5553'	-788'

GEOLOGICAL SUMMARY

AND

ZONES OF INTEREST

The Mobil Exploration and Production U.S., Inc., Ratherford Unit #17-12 Horizontal Lateral Leg #1 was a re-entry of the Mobil Ratherford Unit #17-12 located in Section 17, T41S, R24E, and was sidetracked in a northwesterly direction from a 5458' measured depth, 5458' true vertical depth, on January 20, 1998. The lateral reached a measured depth of 7039', true vertical depth of 5562.9' at total depth, with a horizontal displacement of 1500' and true vertical plane 325.8 degrees, on January 24, 1998, in the upper Desert Creek 1-B/1-C porosity zone, where the decision to terminate the lateral was made. The lateral was drilled with no significant problems and remained in the purposed 1-B/1-C porosity zone until termination of the lateral. The lateral leg was drilled with fresh water and brine water with polymer sweeps as the drilling fluid. None to a very minor amount of oil was noted while drilling the lateral through the 1-B/1-C porosity zone; probably due to the fact that the well is an injector and the 1-B/1-C zone may have been flushed. The background gases noted on the accompanying mud log show only a steady moderate increase as drilling of the 1-B/1-C porosity zone progressed with the highest readings at a measured depth of 6300' and remaining level until termination. The higher readings of gas nearing the end of the lateral might be attributed to the decreasing amount of flushing further away from the borehole. Although the well is an injector, the samples showed moderately good to good oil shows through out the drilling of the lateral in the 1-B and 1-C zones.

The two primary objectives of the Ratherford Unit #17-12 Leg 1 horizontal lateral were first, to identify and define the porosity zone of the 1-B and 1-C benches of the Desert Creek, and second, to evaluate the effective porosity, staining, and reservoir properties in both the 1-B and 1-C porosity benches of the Desert Creek Member of the Upper Paradox Formation. Both of these objectives were attained and it became apparent that the two zones, were practically indistinguishable based on lithology and drill rate or as noted on the original electric logs. Because of the similarity between the two zones it could be assumed that the 1-B and 1-C zones in this lateral direction can be considered as a single massive homogeneous section, and if separation of the zones exists, it was never encountered while drilling the lateral. Only a one-foot per minunte decrease in drill rate while drilling the curve, at a measured depth of 5584', true vertical depth of 5551.7', signaled a possible transition between the 1-B to the 1-C zone. After completing the curved section of the lateral, only 279' of intermittent sliding was needed for vertical plane direction; the remaining 1,221' of the lateral section was rotated out to total depth. The borehole remained within one to four feet of the proposed target line and in the 1-B and 1-C porosity zones.

The Upper Ismay, Lower Ismay, Gothic Shale, the transition zone at the top of the Desert Creek, the 1-A porosity zone, the 1-A to 1-B transition zone, the 1-B porosity zone, and the 1-C porosity zone (picked off the electric logs) were encountered while drilling the curve section of the lateral. Kick off point for this lateral was 5456' measured and true vertical depth, within the basal carbonates of the Upper Ismay.

The basal Upper Ismay seen in the curve section was predominantly medium to dark gray brown to brown, tan to cream, occasionally dark brown, microcrystalline to cryptocrystalline, chalky to marly, slightly dolomitic, occasionally cherty, very slightly fossiliferous limestone. There were very thin interbedded earthy to argillaceous to marly, brown to dark brown, cryptocrystalline to microcrystalline dolomites present as well as minor amounts of medium to dark brown, cryptocrystalline, dense dolomite wackestone, rare dark gray to black, carbonaceous, slightly calcareous to dolomitic, micaceous, silty, shale, and scattered dark brown to brown chert fragments noted in this basal portion of the Upper Ismay. There was no visible porosity noted in the Upper Ismay. The dolomites at the base of the Upper Ismay graded into the very thin, carbonaceous, dolomitic shale of the Hovenweep.

The top of the Lower Ismay was picked at 5471' measured depth, 5470' true vertical depth, at the base of the very thin Hovenweep Shale. The upper Lower Ismay limestones were tan to brown to occasionally dark brown, becoming increasingly light gray brown to light gray to white with depth, microcrystalline to cryptocrystalline, very rarely granular, clean to earthy, becoming silty with a trace of sandy streaks and occasionally grading to a calcareous siltstone, minor amounts of chert with a trace of scattered microfossils were also observed. Very little to no intercrystalline and very poor fractured porosity, with only very poor visible fluorescence, stain and cut were present in the limestone. Interbedded in the limestones were scattered light to dark brown, thin dolomites which were cryptocrystalline to microcrystalline, earthy to clean, with poor intercrystalline porosity, faint dull yellow fluorescence, rare spotty brown stain and a very poor diffuse to residual ring cut. The limestones in the base of the Lower Ismay were gray to gray brown slightly mottled, cryptocrystalline to microcrystalline, and clean to argillaceous, becoming increasingly silty to sandy and occasionally grading to calcareous to limy siltstone. The basal limestones and dolomites became very marly and graded into the Gothic Shale.

Penetration of the Gothic Shale occurred at 5496' measured depth, 5494' true vertical depth. The Gothic Shale was predominantly dark gray to black to dark brown, carbonaceous, silty, brittle to firm, subblocky to blocky to platy, calcareous to slightly dolomitic and slightly micaceous with pin-point inclusions. The top of the Gothic was gradational from the very thin interbedding of very argillaceous, carbonaceous limestone to a very argillaceous, limy dolomite, and then graded from the dolomite into a very dolomitic, carbonaceous shale. The top of the Gothic was picked predominantly by the decrease in penetration rate and a distinct increase in the percentage of shale in the samples.

A gradational transitional zone appears between the Gothic Shale and Desert Creek Porosity members of the Paradox Formation; it is within this zone where the top of the Desert Creek member is commonly picked due to a very noticeable facies change. In this leg the top of the Desert Creek occurred at a measured depth of 5516' and at a true vertical depth of 5514'. The zone was an interbedded very silty, dolomitic limestone, with brown, limy, argillaceous dolomites and very thin carbonaceous shales. The limestones were cream to tan, some gray to white to brown to dark brown, cryptocrystalline to microcrystalline, argillaceous, with very rare intercrystalline porosity, but only very rare, spotty, dull fluorescence, with no visible to rare light brown stain, and a very slow streaming to slow diffuse with a very faint residual ring cut. The interbedded dolomites were microcrystalline to granular, slightly silty and had no to very rare intercrystalline porosity, with a very poor sample show. The limestones graded into the oolicastic porosity of the 1-A zone.

The top of the Desert Creek 1-A porosity zone began at 5528' measured depth, 5520' true vertical depth and was substantiated by sample identification and a significant increase in the penetration rate. The 1-A porosity top in this lateral was in a very oolicastic, clean to very slightly dolomitic, slightly anhydritic limestone grainstone. Noted in the limestone were thinly interbedded slightly silty and limy dolomite grainstones near the top. The limestones were tan to cream to white, light brown to occasionally light gray brown, cryptocrystalline to microcrystalline, granular to very fine crystalline to slightly microsucrosic, with oolitic to intercrystalline and some very rare algal porosity. A good scattered moderately bright to bright fluorescence, fair light brown to a trace of

brown stain and a good moderately fast streaming milky cut indicated good oil shows within this zone. The 1-A porosity zone appears to be 20'(true vertical thickness) thick and with well-developed porosity and good oil shows present throughout most of the section. At a measured depth of 5541', 5539' true vertical depth the bottom of 1-A porosity bench was encountered and was indicated by a sudden subtle decrease in the drill rate. The transition zone between the 1-A to the 1-B and 1-C porosity bench appeared to be seven feet thick and was marked by a obvious facies change from oolicastic limestone grainstones to dense to chalky platy anhydritic limestone packstones, that were interbedded with oolicastic grainstone, with only minor oil shows.

The oolicastic limestone porosity of the upper 1-B interval was continuous from a measured depth of 5569', 5546' true vertical depth, to a measured depth of 5604', 5553' true vertical depth, where the possible top of 1-C porosity zone was picked by using electric logs. There appeared to be no distinguishing changes in lithology or penetration drill rate between the 1-B and 1-C porosity benches, and only a minor increase in background gas was noticed when the 1-B porosity zone was penetrated. The background gas remained level through the picked top of the 1-C porosity zone. Because of these indistinguishable characteristics, the 1-B and 1-C porosity zones will be discussed as one homogeneous zone.

Lithology of the upper 1-B and 1-C porosity zones consisted of light brown to tan to medium brown to occasionally dark brown, granular to microcrystalline to very fine crystalline, microsucrosic with traces of sucrosic streaks, oolicastic to oomoldic limestone grainstone, slightly dolomitic with trace of dolomitic rich cement streaks, slightly chalky to anhydritic with traces of crystal anhydrite inclusions and porosity filling. Interbedded throughout the grainstones, in minor amounts were tan to light brown, white to cream to rare light gray brown, cryptocrystalline to microcrystalline, dense occasionally oolitic to pelletoidal, thin chalky platy, anhydritic packstones. The limestone grainstones had good to fair, oolicastic to oomoldic to intercrystalline porosity, with fair to good, even, dull to moderately bright fluorescence with traces of spotty bright yellow fluorescence, fair to good, light brown to brown stain with traces of dark brown to black dead oil stain* and good, slow to moderately fast to fast streaming milky cut. The thin interbedded dense cryptocrystalline packstones were predominantly tight with no to very rare intercrystalline porosity, no to rare scattered dull to rare yellow fluorescence, trace of light brown stain with trace of slow streaming to residual ring cut. Rare scattered thin black, carbonaceous, calcareous to dolomitic shale partings, as well as brown, cryptocrystalline to microcrystalline, argillaceous to dense, dolomite fragments with no oil shows and rare gray to gray brown chert fragments were also noted.

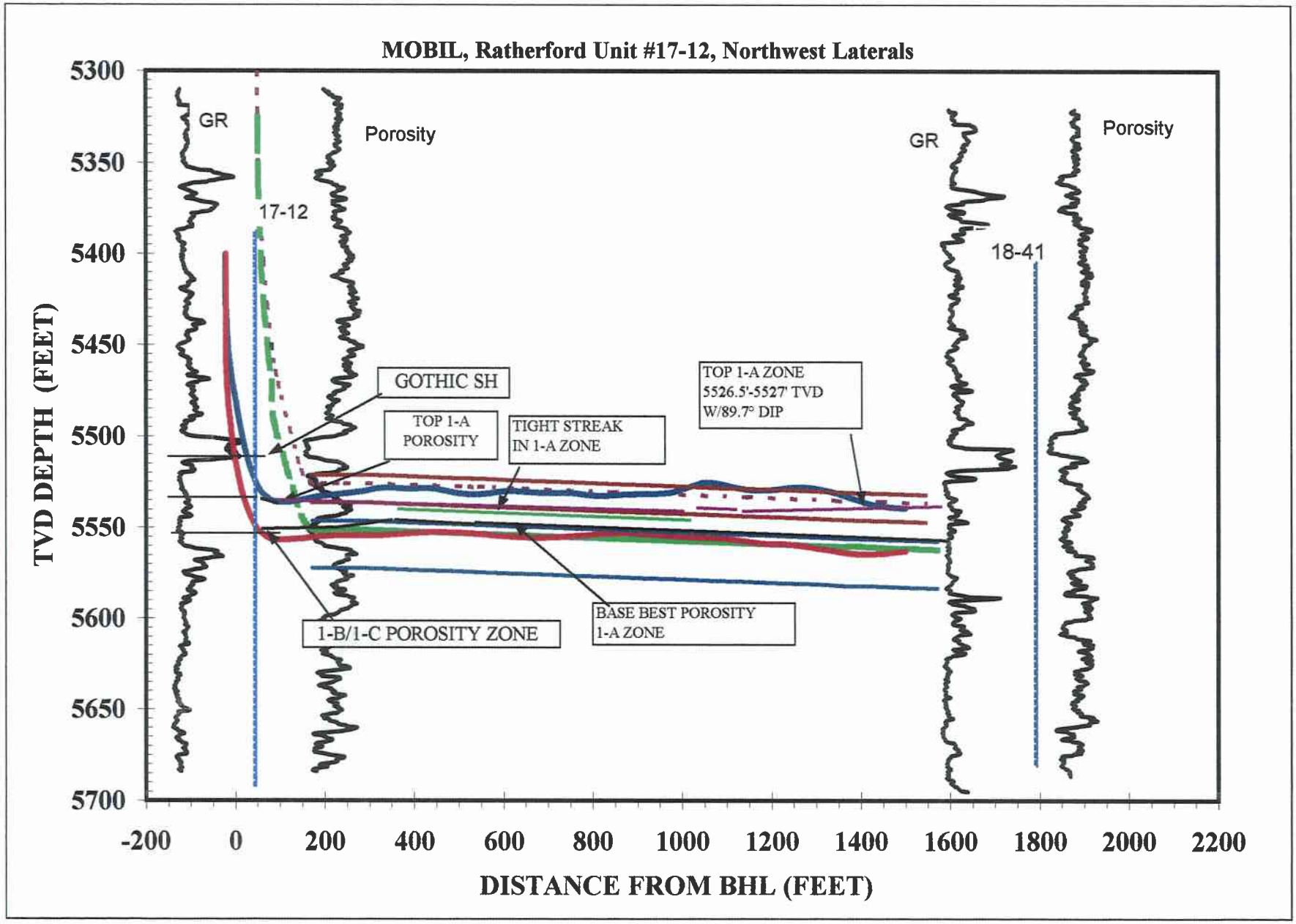
At a measured depth of 5616' and a true vertical depth of 5556' the curve was landed with an 88.5 degree inclination, in the 1-B and 1-C porosity zones. With the curve landing in the proposed porosity zone, drilling commenced in a northwesterly direction at a fairly level angle over the first 448' of the lateral. As the well bore was rotated it was seen to drift upward on its own accord and brought the true vertical depth up four feet, from 5556' to 5552' which placed the well bore practically on the purposed target line. The lithology of this interval remained constant and consisted of brown to light brown to tan, oolicastic to oomoldic grainstone limestones, with very rare to traces of dense to very rare chalky platy packstones. Samples showed good to fair oolicastic to oomoldic porosity with traces of intercrystalline and chalky to anhydritic porosity filling, fair to good fluorescence, good to fair stain, good to fair moderately fast to fast streaming milky cut that improved to a fast streaming to slightly blooming milky cut with depth. At a measured depth of 5983' to 6237', and at a vertical distance of 448' to 702', as the drill string was rotated ahead, a gradual descent in vertical depth of three feet, from a true vertical depth of 5552' to 5555', was noted and resulted in the well bore path becoming one foot below the proposed target line. The average angle of declination was 89.4 degrees as the bit found less resistance in a downward trend, any sets of sliding were for planar directional purposes.

One other minor drift in an upward direction was noted and was probably attributed to planar directional sets as well. This occurred in the measured depth interval of 6015' to 6237' at a vertical section of 702' to 924', where an increase of two feet was noted, going from a true vertical depth of 5555' to 5553' which resulted in the well bore being four feet above the target line. The lithology through this interval was light brown to brown to tan, very fine crystalline to microcrystalline to granular with occasional sucrosic to microsucrosic streaks, oolicastic to oomoldic, slightly dolomitic to anhydritic grainstones, interbedded with a trace to rare dense to platy packstones. The remaining length of the bore hole to a final total depth of 7039' measured depth, 5563' true vertical depth and a horizontal displacement of 1500' was in brown to light brown to tan, occasionally mottled with dark brown inclusions, granular to very fine crystalline to micro sucrosic, oolicastic to oomoldic grainstone limestone with good oolicastic to oomoldic to micro oomoldic porosity. There was good even dull to moderately bright with traces of scattered bright fluorescence, good brown to light brown with traces of dark brown and black dead oil stain* and a good fast streaming to blooming milky cut. With intermitted very rare to traces of dense to platy packstones with poor oil shows.

The conclusions drawn from the northwesterly lateral in the 1-B and 1-C zones are that in this area the limestone porosities are consistent throughout the zone. Also having an effect on the porosity were the minor amounts of anhydrite filled porosity and the very thin, dense to platy limestone packstones interbedded throughout the 1-B and 1-C zones. Staining was fair to good and there were sections where staining increased to good to fair, especially near total depth, with black dead oil staining trapped in the oolicastic to oomoldic porosity. The lateral used the proposed target line as a reference point through the 1-B and 1-C bench, and the well bore was allowed to follow the line of best porosity after entering the 1-B and 1-C porosity zones which resulted in only minor deviations from the target line.

While drilling the lateral, the increases in background gas were due in part to the minor amounts of oil encountered while drilling the lateral. A slow increase in the background gas was noted when the 1-B zone was penetrated at a measured depth of 5569'. While this lateral was drilled as a sidetrack of an injector, it can be interpreted as having very good reservoir qualities that have yet to be flushed. It appears that the porosities are well enough developed in this northwesterly direction to enhance the overall performance of the zone.

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


MOBIL, Ratherford Unit #17-12, Northwest Laterals
GR
Porosity
17-12
GR
Porosity
18-41
GOTHIC SH
TOP 1-A POROSITY
TIGHT STREAK IN 1-A ZONE
TOP 1-A ZONE 5526.5'-5527' TVD W/89.7° DIP
1-B/1-C POROSITY ZONE
BASE BEST POROSITY 1-A ZONE
TVD DEPTH (FEET)
5300
5350
5400
5450
5500
5550
5600
5650
5700
-200
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
DISTANCE FROM BHL (FEET)

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

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ DRY ☐ Other X INJECTOR

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

7. UNIT AGREEMENT NAME: RATHERFORD UNIT

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

8. FARM OR LEASE NAME, WELL NO.: RATHERFORD 17-W-12

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

9. API WELL NO.: 43-037-15726

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements*)*
At surface: 1980' FNL & 510' FWL
At top prod. interval reported below
At total depth: * #37

10. FIELD AND POOL, OR WILDCAT: GREATER ANETH

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

14. PERMIT NO.: | DATE ISSUED:

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

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
1-14-98	2-13-98	3-17-98	4764' GR	

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
** #37	** #37		→	X	

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

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"	27.1#	179'	17 1/4"	SURFACE	
8 5/8"	24#	1540'	11"	SURFACE	
5 1/2"	14#	5730'	7 7/8"	3500' CALC	

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"	5292"	5292'

31. PERFORATION RECORD (*Interval, size and number*)
** #37

RECEIVED
MAY 26 1998
DIV. OF OIL, GAS & MINING

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

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
5598-7157'	LAT #4A1 ACIDIZE W/15965 GALS
	15% HCL ACID
5620-7110'	LAT #3A1 ACIDIZE W/14260 GALS
***#37	15% HCL ACID.

33.* PRODUCTION

DATE FIRST PRODUCTION: | PRODUCTION METHOD (*Flowing, gas lift, pumping - size and type of pump*): | WELL STATUS (*Producing or shut-in*): SHUT-IN

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL - BBL.	GAS - MCF.	WATER - BBL.	GAS - OIL RATIO

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 Mosley for TITLE SHIRLEY HOUCHINS/ENV & REG TECH DATE 5-20-98

*(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	1204' FNL & 895' FWL/SURFACE SPOT
		LAT #2A1	900' FSL & 1298' FEL/SURFACE SPOT
		LAT#2BA(ST)	900' FSL & 1298' FEL/SURFACE SPOT
		LAT #3A1	1025' FNL & 1096' FWL/SURFACE SPOT
		LAT #4A1	1201' FSL & 1215' FEL/SURFACE SPOT
**#'S 20,21 & 24		LAT #1A1	(5616-7039' TMD)(5556-5562' TVD)
		LAT #2A1	(5630-6885' TMD)(5547-5563' TVD)
		LAT #2B1(ST)	(6360-7060' TMD)(5563-5587' TVD)
		LAT #3A1	(5594-7010' TMD)(5535-5539' TVD)
		LAT #4A1	(5598-7157' TMD)(5522-5542' TVD)
*** #32		5598-6885'	LAT #2A1 ACIDIZE W/17850 GALS 15% HCL ACID
		5622-7039'	LAT #1A1 ACIDIZE W/19656 GALS 15% HCL ACID

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 17-W-12
9. API Well No.: 43-037-15726
10. Field and Pool, or exploratory Area: GREATER ANETH
11. County or Parish, State: SAN JUAN UT

1. Type of Well: [ ] Oil Well [ ] Gas Well [X] 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)
1980'FNL & 510' FWL
SEC. 17, 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
[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 give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

BHL:
LATERAL #1 1204' NORTH & 895' WEST F/SURFACE SPOT. (ZONE 1b/1c).
LATERAL #2 900' SOUTH & 1298' EAST F/SURFACE SPOT. (ZONE 1b/1c).
LATERAL #2B1 (ST) 900' SOUTH & 1298' EAST F/ SURFACE SPOT
LATERAL #3 1025' NORTH & 1096' WEST F/SURFACE SPOT. (ZONE 1a).
LATERAL #4 1201' SOUTH & 1215' EAST F/SURFACE SPOT. (ZONE 1a).

SEE ATTACHED (1-14-98 / 3-17-98).

14. I hereby certify that the foregoing is true and correct
Signed Sue Moseley for Title SHIRLEY HOUCHINS/ENV & REG TECH Date 5-20-98

(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 statem or representations as to any matter within its jurisdiction.

* See Instruction on Reverse Side

06/11/98
RJK

DRILLED FOOTAGE CALCULATION FOR DIRECTIONAL AND HORIZONTAL WELLS

Unit, Well Name:	**Ratherford Unit, Well 17-W-12**
API Well #:	**43-037-15726**
Well Completion:	**Horizontal, 4 Legs**

First leg description:		Leg #1
Kick Off Point	MD	5449.00
Kick Off Point	TVD	5448.81
End of Leg	MD	7039.00
End of Leg	TVD	5564.30
	Footage drilled:	1590.00
Max. TVD Recorded		5564.30

Second leg description:		Leg #2
	KOP MD:	5440.00
	KOP TVD:	5439.81
	EOL MD:	6885.00
	EOL TVD:	5562.86
	Footage drilled:	1445.00
Max. TVD Recorded		5562.86

Third leg description:		Leg #2ST
	KOP MD:	6391.00
	KOP TVD:	5563.63
	EOL MD:	7060.00
	EOL TVD:	5587.26
	Footage drilled:	669.00
Max. TVD Recorded		5587.26

Fourth leg description:		Leg #3
	KOP MD:	5419.00
	KOP TVD:	5418.81
	EOL MD:	7010.00
	EOL TVD:	5539.10
	Footage drilled:	1591.00
Max. TVD Recorded		5539.10

Fifth leg description:		Leg #4
	KOP MD:	5408.00
	KOP TVD:	5407.31
	EOL MD:	7157.00
	EOL TVD:	5541.70
	Footage drilled:	1749.00
Max. TVD Recorded		5541.70

Total Footage Drilled (MD):	***7044.00***
Deepest point (TVD):	***5587.26***

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
			43-037-15726	RATHERFORD 17-W-12		17	41S	24E	SAN JUAN	1-14-98	3-17-98
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)

Sue Mosley for
Signature SHIRLEY HOUCHINS
ENV & REG TECH
Title

5-20-98
Date

Phone No. (915) 688-2585

ATTACHMENT - FORM 3160-5
RATHERFORD UNIT - WELL #17-W-12
14-20-603-353
NAVAJO TRIBAL
SAN JUAN, UTAH

01-14-98	CALLED B.L.M @ 10:04 ON 01-13-98. INFORMED OF INTENT TO PREP. WELL FOR DRLG. TOOLS. TALKED TO MARK KELLY ANSWER MACHINE. CALLED NAVAJO E. P. A. @ 10:07 ON 01-13-98. INFORMED OF INTENT TO MOVE IN AND PREP. WELL FOR DRLG. TOOLS, DIG AND LINE EARTH PIT. TALKED TO CHARMAINE TSO. MOVED IN RIG UP NAVAJO WEST RIG #15.
01-15-98	SHUT IN PRESSURE @ 7:30 WAS 1500 PSI. FLOW WELL TO PIT. RIG UP TO ANN. SIDE. TEST CSG. TO 1000 PSI. 30 MIN. OK. LAY DOWN 2.375" PRODUCTION TBG. AND PACKER. SIFN.
01-16-98	SHUT IN CSG. PRESSURE @ 7:30 WAS 750 PSI. MIRU BASIN WIRELINE UNIT. RIH WITH GAMMA RAY, CSG. COLLAR LOG TO 5520' RIH WITH 5.5" GUIBERSON RETV. BRIDGE PLUG TO 5200' SET BRIDGE PLUG.
01-17-98	SHUT IN CSG. PRESSURE @ 7:30 WAS 0 PSI. NIPPLE DOWN TBG. HEAD. PULL 5.5" CSG. SLIPS. DIG OUT AROUND WELL HEAD. CUT OFF CSG. HEAD. WELD ON NEW CSG. HEAD. NIPPLE UP . TBG. HEAD. TEST TO 2000 PSI. OK. RIG DOWN MOVE OFF NAVAJO WEST RIG #15. FINAL PREP. REPORT. TURN WELL OVER TO DRLG. TOOLS.
01-19-98	NOTIFIED JIM THOMPSON W/ STATE UTAH @ 5:45 AM 1/19/98 ABOUT STARTING DRILLING OPERATIONS. MIRU NAVAJO WEST 25.
01-20-98	FIN RU, NU BOP, PRESS TEST BOP, CUT DRILLING LINE, RIH W/ RET TOOL, REL BAKER RBP, POH, NU MUD GAS SEP, RIH W/ OS, FISH WL SETTING TOOL, POH.
01-21-98	RIH W/ TIW ANCHOR LATCH ASSEMBLY, WEATHERFORD WHIPSTOCK, STARTING MILL. LATCHED IN TIW PKR @ 5464' @ 122 DEG GTF, TOP OF WHIPSTOCK @ 5449 @ 322 DEG. CUT WINDOW FROM 5449-5451' W/ STARTING MILL. POH W/ STARTING MILL
01-21-98	POH W/ WL SETTING TOOL, RIH W/ RET TOOL, REL RBP @ 5400', POH, RIH W/ GAGE RING & SET TIW PKR @ 5464', RIH W/ TIW LATCH & UBHO SUB, ORIENT KEYWAY, RAN GYRO SURVEY F/ 5455-200' POH W/ LATCH. FINAL REPORT FOR REENTRY.
01-22-98	RIH W/ WINDOW & WATERMELLON MILLS. CUT WINDOW FROM 5449-5455' & FORMATION TO 5456', POH W/ MILLS
01-22-98	RU GYRO DATA & RIH W/ GYRO, ORIENT TOOL FACE. SLIDE DRILLED CURVE 1A1 W/ GYRO FROM 5456-5468'.
01-23-98	SLIDE DRILLED CURVE 1A1 W/ GYRO FROM 5468-5616'. SLIDE & ROTATE DRILLED LATERAL 1A1 FROM 5616-5850'.
01-24-98	SLIDE & ROTATE DRILLED LATERAL 1A1 FROM 5850-7039' TD 7039' MD, 91.3 ANGLE, 325 DIRECTION, 5562' TVD, 1500' VS PUMPED SWEEP & CIRC HOLE CLEAN POH W/ AOHDP
01-25-98	RIH W/ SUPERHOOK, SHEARED WHIPSTOCK @ 5450' POH W/ WHIPSTOCK.
01-25-98	RIH W/ WEATHERFORD WHIPSTOCK, STARTING MILL, 2.875" AOHDP. TOP OF WHIPSTOCK SET @ 5433' W/ WHIPSTOCK @ 125 DEG CIRC BOTTOMS UP, 15' FLARE. CUT WINDOW W/ STARTING MILL FROM 5433-5435', CIRC CLEAN POH W/ STARTING MILL. RIH W/ 4 3/4" WINDOW & WATERMELLON MILL ON SAME BHA CUT WINDOW FROM 5433-5438'.
01-26-98	CUT WINDOW FROM 5438-5439' & FORMATION TO 5440', CIRC CLEAN POH W/ MILLS

ATTACHMENT - FORM 3160-5
RATHERFORD UNIT - WELL #17-W-12
14-20-603-353
NAVAJO TRIBAL
SAN JUAN, UTAH
PAGE 2

01-26-98	DRILLING CURVE, LATERAL 2A1, RIH 2.875" AOHDP. RU GYRO DATA & RIH W/ GYRO, TIME DRILLED CURVE W/ GYRO FROM 5440-5443'. SLIDE DRILLED CURVE W/ GYRO FROM 5443-5514'.
01-27-98	DRILL CURVE SECTION FROM 5514-5630'. (TD CURVE SECTION) LAST SURVEY @ 5600' MD, 81 ANGLE , AZ. 127, TVD 5545', VS 124'. (PROJECTED AT BIT 5630' MD, 84.4 ANGLE, AZ.127, TVD 5549.11', VS 154.11.) POOH LAY DOWN, CURVE BUILDING ASSY. PU POWER SWIVEL, TAGGED @ 5630' SLIDE/ROTATE DRILL AND SURVEYS FROM 5630-5738' LAST SURVEY @ 5694' MD, 87.40, AZ. 130.30, TVD 5546.99, VERTICAL SECTION 217.70'
01-28-98	SLIDE / ROTATE DRILL AND SURVEYS FROM 5738-6648'
01-29-98	SLIDE / ROTATE DRILL AND SURVEYS FROM 6648-6885' TMD (LATERAL #2A1). LAST SURVEY @ 6836 MD, 85.30 ANGLE, 122.10 AZ., 5559.56' TVD, 1357.31' VS. (WILL PULL UPHOLE AND SIDETRACK LATERAL. FINAL REPORT FOR LATERAL 2A1.
01-29-98	POOH LAYING DOWN 17 JNTS. AOHDP TO SIDETRACK. TROUGH LATERAL 2A1 FROM 6330-6360' TIME DRILL FROM 6360-6362' FOR LATERAL **2A1.**
01-30-98	CONTINUE TO TIME DRILL FROM 6362', RE-TROUGH FROM 6360-6373'. TIME DRILL FROM 6373-6440'
01-31-98	SLIDE / ROTATE DRILL AND SURVEYS FROM 6440-6800'
02-01-98	SLIDE / ROTATE DRILL AND SURVEYS FROM 6800-7060'. TO TD LATERAL 2B1 IN ZONE 1-C @ 1579.05 VS. (121' SHORT OF PROPOSAL OF 1700' VS.) POOH LAYING DOWN. AOHDP AND LATERAL ASSY. TRIPPING IN HOLE TO RETRIEVE WHIPSTOCK.
02-02-98	POOH AND LAY DOWN WHIPSTOCK ASSY. CIRC. HOLE W/ 10# BRINE. WELL DEAD. POOH W/ DP. FINAL REPORT FOR LAT. 2B1
02-02-98	LATERAL 3. RIH W/ WHIPSTOCK, STARTER MILL AND AOHDP. LATCH INTO PKR. TOP OF WS @ 5418.57". MILL WINDOW W/ STARTER MILL FROM 5418-5420' CIRC. CLEAN. POOH W/ STARTING MILL. RIH W/ WINDOW AND WATERMELON MILL ON SAME BHA. MILL ON CSG. WINDOW FROM 5420-5423'
02-03-98	CONTINUE MILLING ON CSG. WINDOW FROM 5423-5425' PLUS 1' FORMATION TO 5426'.
02-03-98	RU GYRO DATA. TIME DRILL FROM 5426'-5435'. SLIDE / DRILL FROM 5435-5490'
02-04-98	CONTINUE TO SLIDE DRILL AND SURVEYS FROM 5490-5594' (T. D. CURVE 3A1). LAY DOWN CURVE BUILDING ASSY.
02-05-98	SLIDE / ROTATE DRILL AND SURVEYS FROM 5594-6230'.
02-06-98	SLIDE / ROTATE DRILL AND SURVEYS FROM 6230-7000'.
02-07-98	ROTATE DRILL FORM 7000-7010' T MD (TD). PROJECTED SURVEY @ 7010' T MD, 89 ANGLE, 306.80 AZ., 5339.10 ' TVD, 1499.67 VS. FINAL REPORT FOR LAT. 3A1
02-07-98	LATERAL 4, PU WHIPSTOCK ASSY. #4. START MILLING WINDOW IN 5.5" CSG. W/ STARTER MILL FROM 5400'-5401.5' AND CIRC. PREPARE TO MILL
02-08-98	MILL 5.5" CSG. FROM 5400-5407' PLUS 1' FORMATION TO 5408' W/CSG. AND WATERMELON MILL. LAY DOWN MILLING ASSY.

ATTACHMENT - FORM 3160-5
RATHERFORD UNIT - WELL #17-W-12
14-20-603-353
NAVAJO TRIBAL
SAN JUAN, UTAH
PAGE 3

02-08-98	RU GYRO DATA. ORIENT WHIPSTOCK. TIME DRILL FROM 5408-5435' W/GYRO. SLIDE / DRILL AND SURVEYS FROM 5435'-5478'
02-09-98	SLIDE / ROTATE DRILL AND SURVEYS FROM 5478-5598' (TD) CURVE SECTION.
02-10-98	POH W/ CURVE ASSEMBLY, RIH W/ LATERAL ASSEMBLY. SLIDE & ROTATE DRILLED LATERAL 4A1 FROM 5598-6285'.
02-11-98	SLIDE & ROTATE DRILLED LATERAL 4A1 FROM 6285-7157' TD, 7157' TMD, 86.7 DEG ANGLE, 132 DEG DIRECTION, 5541.70' TVD, 1708 VS POH & LD MWD & MUD MOTOR
02-12-98	W/ 5 1/2" GUIBERSON RBP ON PH6 TBG 2.875" AOHDP, SET RBP @ 5244'. CIRC. INSPT DC'S & PH6 TBG, ALL OK, RIG DOWN RIG.
02-13-98	FINISHED RIGGING DOWN RIG. FINAL REPORT FOR LATERAL 4A1

COMPLETION

02-27-98	MIRU NAVAJO WEST 36, SDFN
02-28-98	LATCH ON RBP, RELEASE WELL FLOWING, TOH W TBG & RBP L/D RBP. SET PKR @ 5226.72' - BOTTOM OF T/P @ 5598.47'. TEST CSG & PKR TO 500#-HELD. SDFN
03-02-98	RIG UP DOWELL CTU, TIH W C/T TO 7157'. ACIDIZE W 515 BBLS 15% HCL W ADDITIVES, R/D DOWELL.
03-03-98	UNSET PKR TOH LAY DOWN PKR. W/O RIG REPAIRS
03-04-98	WHP=50, BLED OFF, PUT 10BBLS 10#DOWN TBG, TIH TO LATCH W/S, WELL STARTED FLOWING, TIH W R/E GUIDE LATCH IN SHEAR, SDFN
03-05-98	TOH W TBG & RET HEAD TIH W, GUIB G-6 PKR, 2.875" PH-6 TBG, SET PKR, TEST TO 500#-HELD 15MINS. RIG UP FLOWBACK LINES & PREP FOR ACID JOB.
03-06-98	RIG UP DOWELL CTU TIH W CT TO 7110'. ACIDIZE 5620-7110' W 460 BBLS 15% HCL, SDFN.
03-07-98	SITP=940 KILL WELL W 30 BBLS 10.8#, UNSET PKR TOH, P/U RET HEAD FOR W/S TIH, LATCH ON W/S
03-09-98	CIRC HOLE W 10.3# TO BALANCE CIRC., TIH W, PH-6, GUIB G-6 PKR, SET PKR, TEST TO 500#, SDFN. ACIDIZE IN AM.
03-10-98	MOVE IN RIG UP DOWELL COILED TBG. UNIT. SHUT IN TBG. PRESSURE @ 7:30 WAS 0 PSI. RIH WITH COILED TBG. TO 6885'. POH TO 6373' COULD NOT WORK 1.75" COILED TBG. THROUGH SIDETRACK. FLOW WELL .5 HOURS. DOWELL ACIDIZE LATERAL 2A1 FROM 5598-6885'. DOWN 1.75" COILED TBG. WITH 17, 850 GAL. OF 15% HCL ACID. POH WITH 1.75" COILED TBG. WELL SHUT IN. SDFN.
03-11-98	FLOW WELL TO TEST TANK FOR 1 HOUR. RECV. 110 BBLS OF FLUID. RIG UP AND KILL WELL WITH 50 BBLS OF 11.6 PPG KILL FLUID. RELEASE PACKER. POH. RIH WITH RETV. TOOL RELEASE WHIPSTOCK. POH. ORIENT WHIPSTOCK FOR LATERAL 1A1. RIH TO 5449'. SET. SI. (LATERAL 1A1 FROM 5622-7039').
03-12-98	SHUT IN PRESSURE @ 7:30 WAS 0 PSI. RIH WITH. PH-6 TAIL PIPE, PACKER, AND TBG. TO 5260' SET PACKER TO 750 PSI. OK. SIFN

ATTACHMENT - FORM 3160-5
RATHERFORD UNIT - WELL #17-W-12
14-20-603-353
NAVAJO TRIBAL
SAN JUAN, UTAH
PAGE 4

03-13-98	MOVE IN RIG UP DOWELL ACID UNIT. SHUT IN TBG. PRESSURE @ 4:00 WAS 0 PSI. RIH WITH 1.75" COILED TBG. TO 7039'. DOWELL ACIDIZE LATERAL 1A1 FROM 5630-7039' W/19,656 GAL. OF 15% HCL ACID. POH WITH 1.75" COILED TBG. OPEN WELL TO TEST TANK. SIFN.
03-14-98	SHUT IN TBG. PRESSURE @ 7:00 WAS 800 PSI. OPEN TO TEST TANK ON. RIG UP AND KILL WELL. WELL DEAD. RELEASE PACKER. POH AND LAY DOWN PACKER. RIH WITH RETV. TOOLS FOR WHIPSTOCK TO 5452'. LATCH ONTO WHIPSTOCK. POH. LAY DOWN WHIPSTOCK AND RUNNING TOOLS. SIFN.
03-16-98	SHUT IN PRESSURE @ 7:30 WAS 60 PSI. RIH. GUIBERSON G-VI PC PACKER, +2.785" CMT. LINED TBG. TO 3718'. SIFN.
03-17-98	SHUT IN PRESSURE @ 7:30 WAS 0 PSI. FINISH IN HOLE WITH 2.875" CMT. LINED TBG. TO 5292.44'. SET PACKER @ 5292.44'. NIPPLE UP TREE. TEST. OK. RIG DOWN MOVE OFF.

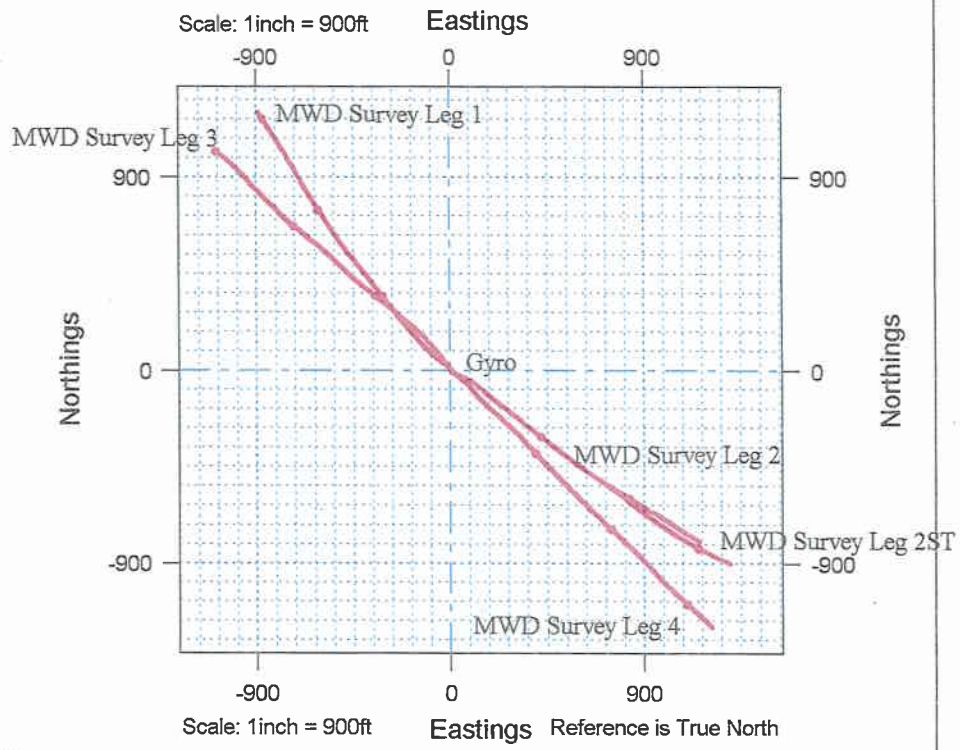
sperry-sun DRILLING SERVICES

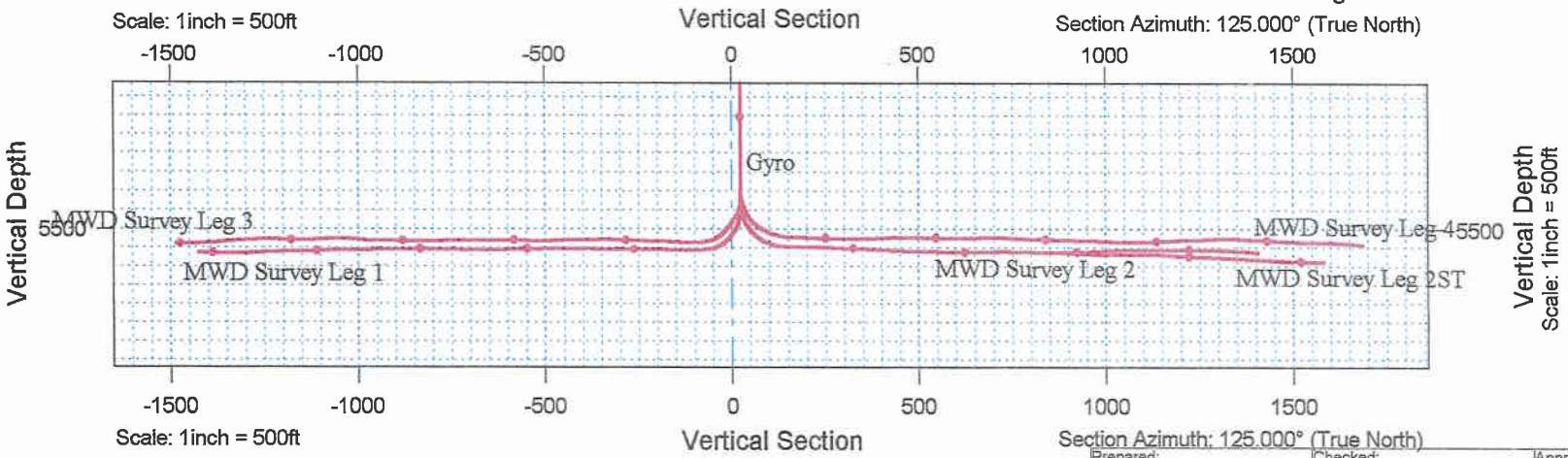
Mobil

DrillQuest™

San Juan County
Utah
Ratherford Unit
RU 17-12 Leg #1, #2, #2ST, #3, #4

Mobil





Prepared:	Checked:	Approved:

Mobil

San Juan County
Utah
Ratherford Unit
RU 17-12 - MWD Survey Leg 1

SURVEY REPORT

15 May, 1998

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

Survey Ref: svy2467

Sperry-Sun Drilling Services

Survey Report for RU 17-12

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	
200.00	0.430	88.030	200.00	0.03 N	0.75 E	-0.44	0.215
400.00	0.480	92.240	399.99	0.02 N	2.34 E	-1.42	0.030
600.00	0.600	93.570	599.98	0.08 S	4.22 E	-2.66	0.060
800.00	0.430	62.300	799.98	0.20 N	5.93 E	-3.49	0.161
1000.00	0.180	355.280	999.97	0.87 N	6.57 E	-3.36	0.198
1200.00	0.180	332.110	1199.97	1.46 N	6.39 E	-2.79	0.036
1400.00	0.370	251.000	1399.97	1.52 N	5.64 E	-2.27	0.193
1600.00	0.480	245.390	1599.96	0.97 N	4.27 E	-1.86	0.059
1800.00	0.510	236.210	1799.96	0.12 N	2.76 E	-1.61	0.042
2000.00	0.590	204.470	1999.95	1.31 S	1.60 E	-2.02	0.155
2200.00	0.670	181.350	2199.94	3.42 S	1.14 E	-3.40	0.132
2400.00	0.760	154.800	2399.92	5.79 S	1.68 E	-5.59	0.170
2600.00	0.900	151.560	2599.90	8.37 S	2.99 E	-8.44	0.074
2800.00	0.750	121.050	2799.88	10.42 S	4.86 E	-11.21	0.229
3000.00	0.590	120.410	2999.87	11.62 S	6.87 E	-13.39	0.080
3200.00	0.470	90.860	3199.86	12.15 S	8.58 E	-14.86	0.147
3400.00	0.520	67.480	3399.85	11.82 S	10.24 E	-15.62	0.103
3600.00	0.580	77.990	3599.84	11.26 S	12.07 E	-16.30	0.059
3800.00	0.580	93.390	3799.83	11.11 S	14.07 E	-17.42	0.078
4000.00	0.480	118.730	3999.82	11.57 S	15.81 E	-18.85	0.126
4200.00	0.250	122.950	4199.82	12.21 S	16.91 E	-20.04	0.116
4400.00	0.140	146.160	4399.82	12.65 S	17.42 E	-20.69	0.067
4600.00	0.130	137.820	4599.82	13.02 S	17.70 E	-21.16	0.011
4800.00	0.140	102.090	4799.82	13.24 S	18.10 E	-21.58	0.042
5000.00	0.110	80.420	4999.82	13.26 S	18.52 E	-21.86	0.028
5200.00	0.240	352.850	5199.82	12.81 S	18.66 E	-21.59	0.130
5400.00	0.290	329.370	5399.81	11.96 S	18.35 E	-20.73	0.059
MWD Survey Leg 1							
5449.00	0.360	7.930	5448.81	11.70 S	18.31 E	-20.50	0.458
5456.00	4.100	322.000	5455.81	11.48 S	18.16 E	-20.23	55.118
5466.00	8.700	320.540	5465.74	10.62 S	17.46 E	-19.12	46.025
5476.00	14.600	318.050	5475.53	9.10 S	16.13 E	-17.10	59.200
5486.00	19.900	316.930	5485.08	6.91 S	14.13 E	-14.15	53.102
5496.00	25.600	314.400	5494.30	4.16 S	11.42 E	-10.31	57.821
5506.00	30.300	315.300	5503.13	0.85 S	8.10 E	-5.66	47.188
5516.00	35.100	313.900	5511.54	2.94 N	4.25 E	-0.30	48.589
5526.00	39.600	312.600	5519.49	7.09 N	0.17 W	5.69	45.684
5536.00	44.600	311.700	5526.91	11.59 N	5.14 W	12.30	50.362

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 17-12

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)
5546.00	50.200	310.900	5533.67	16.44 N	10.67 W	19.53	56.308
5556.00	56.600	309.500	5539.63	21.62 N	16.80 W	27.38	64.977
5566.00	63.200	307.900	5544.64	27.02 N	23.55 W	35.79	67.433
5576.00	69.300	306.400	5548.67	32.54 N	30.84 W	44.63	62.524
5586.00	75.000	306.200	5551.73	38.18 N	38.51 W	53.79	57.032
5616.00	88.500	309.600	5556.03	56.38 N	61.87 W	82.52	46.370
5666.00	91.300	314.200	5556.12	89.76 N	99.07 W	131.73	10.770
5698.00	91.600	315.600	5555.31	112.34 N	121.73 W	163.47	4.473
5729.00	91.100	318.600	5554.58	135.04 N	142.83 W	194.35	9.808
5761.00	90.400	319.300	5554.16	159.17 N	163.84 W	226.30	3.093
5793.00	90.100	319.600	5554.02	183.48 N	184.64 W	258.27	1.326
5825.00	89.800	319.100	5554.05	207.76 N	205.49 W	290.23	1.822
5856.00	90.600	319.600	5553.94	231.28 N	225.68 W	321.20	3.043
5888.00	91.100	323.900	5553.46	256.40 N	245.49 W	353.19	13.527
5920.00	90.900	323.000	5552.90	282.11 N	264.54 W	385.17	2.881
5952.00	90.500	321.900	5552.51	307.47 N	284.04 W	417.17	3.657
5983.00	90.100	322.300	5552.35	331.94 N	303.09 W	448.17	1.825
6015.00	89.500	323.200	5552.46	357.41 N	322.45 W	480.16	3.380
6047.00	89.200	322.100	5552.83	382.84 N	341.87 W	512.16	3.563
6079.00	89.200	321.800	5553.27	408.04 N	361.59 W	544.16	0.937
6111.00	88.500	321.100	5553.91	433.06 N	381.53 W	576.15	3.093
6142.00	88.900	320.900	5554.62	457.15 N	401.03 W	607.13	1.443
6174.00	89.200	320.400	5555.15	481.89 N	421.32 W	639.12	1.822
6205.00	89.900	321.400	5555.39	505.94 N	440.87 W	670.11	3.938
6237.00	90.900	321.200	5555.17	530.92 N	460.87 W	702.11	3.187
6269.00	90.500	322.800	5554.78	556.13 N	480.57 W	734.11	5.154
6301.00	91.300	323.000	5554.28	581.65 N	499.87 W	766.10	2.577
6332.00	90.900	325.800	5553.68	606.85 N	517.91 W	797.06	9.122
6364.00	91.100	325.800	5553.12	633.31 N	535.90 W	828.99	0.625
6396.00	90.000	326.600	5552.81	659.90 N	553.70 W	860.90	4.250
6428.00	88.900	327.000	5553.12	686.68 N	571.22 W	892.78	3.658
6460.00	89.600	326.300	5553.54	713.40 N	588.81 W	924.68	3.093
6491.00	88.600	326.300	5554.03	739.19 N	606.01 W	955.58	3.226
6522.00	89.300	326.500	5554.60	765.01 N	623.16 W	986.49	2.348
6554.00	89.100	327.600	5555.04	791.86 N	640.56 W	1018.36	3.494
6586.00	90.000	327.900	5555.29	818.92 N	657.64 W	1050.20	2.965
6618.00	89.400	329.500	5555.46	846.26 N	674.26 W	1081.98	5.340
6650.00	87.500	329.800	5556.33	873.86 N	690.42 W	1113.68	6.011
6682.00	88.400	330.200	5557.47	901.56 N	706.41 W	1145.35	3.077
6713.00	88.500	330.200	5558.31	928.45 N	721.81 W	1176.02	0.323
6745.00	90.300	330.900	5558.64	956.31 N	737.54 W	1207.66	6.035
6777.00	88.600	328.300	5558.95	983.91 N	753.73 W	1239.37	9.707
6809.00	87.900	328.400	5559.93	1011.13 N	770.52 W	1271.16	2.210
6841.00	87.600	329.300	5561.19	1038.50 N	787.06 W	1302.91	2.963
6873.00	88.000	329.300	5562.41	1065.99 N	803.38 W	1334.63	1.250

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 17-12

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)
6904.00	87.900	326.500	5563.52	1092.23 N	819.84 W	1365.44	9.032
6936.00	89.300	326.700	5564.30	1118.94 N	837.45 W	1397.33	4.419
6968.00	90.700	326.200	5564.30	1145.61 N	855.14 W	1429.23	4.646
7006.00	91.300	325.800	5563.64	1177.11 N	876.38 W	1467.13	1.898
7039.00	91.300	325.800	5562.89	1204.39 N	894.93 W	1500.05	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 322.000° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 7039.00ft.,
The Bottom Hole Displacement is 1500.49ft., in the Direction of 323.386° (True).

RATHERFORD 17-W-12
14-20-603-353
43-037-15726

RECEIVED
MAY 29 1998
DIV. OF OIL, GAS & MINING

PLEASE ATTACH TO COMPLETION FORM 3160-4 DATED 5-20-98.

43-037-15726

SUE MOSELEY
FOR SHIRLEY HOUCHINS
MOBIL PRODUCING TX & NM, INC.
P.O. BOX 633
MIDLAND, TX 79702
(915) 688-1536

RECEIVED
MAY 29 1998
DIV. OF OIL, GAS & MINING

Mobil

San Juan County
Utah
Ratherford Unit
RU 17-12 - MWD Survey Leg 2

SURVEY REPORT

15 May, 1998

sperry-sun
DRILLING SERVICES
A DIVISION OF HALLIBURTON ENERGY SERVICES, INC.

Survey Ref: svy2469

Sperry-Sun Drilling Services

Survey Report for RU 17-12

Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
Gyro							
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
200.00	0.430	88.030	200.00	0.03 N	0.75 E	0.60	0.215
400.00	0.480	92.240	399.99	0.02 N	2.34 E	1.90	0.030
600.00	0.600	93.570	599.98	0.08 S	4.22 E	3.50	0.060
800.00	0.430	62.300	799.98	0.20 N	5.93 E	4.74	0.161
1000.00	0.180	355.280	999.97	0.87 N	6.57 E	4.88	0.198
1200.00	0.180	332.110	1199.97	1.46 N	6.39 E	4.40	0.036
1400.00	0.370	251.000	1399.97	1.52 N	5.64 E	3.74	0.193
1600.00	0.480	245.390	1599.96	0.97 N	4.27 E	2.94	0.059
1800.00	0.510	236.210	1799.96	0.12 N	2.76 E	2.19	0.042
2000.00	0.590	204.470	1999.95	1.31 S	1.60 E	2.06	0.155
2200.00	0.670	181.350	2199.94	3.42 S	1.14 E	2.90	0.132
2400.00	0.760	154.800	2399.92	5.79 S	1.68 E	4.70	0.170
2600.00	0.900	151.560	2599.90	8.37 S	2.99 E	7.25	0.074
2800.00	0.750	121.050	2799.88	10.42 S	4.86 E	9.96	0.229
3000.00	0.590	120.410	2999.87	11.62 S	6.87 E	12.29	0.080
3200.00	0.470	90.860	3199.86	12.15 S	8.58 E	14.00	0.147
3400.00	0.520	67.480	3399.85	11.82 S	10.24 E	15.17	0.103
3600.00	0.580	77.990	3599.84	11.26 S	12.07 E	16.34	0.059
3800.00	0.580	93.390	3799.83	11.11 S	14.07 E	17.90	0.078
4000.00	0.480	118.730	3999.82	11.57 S	15.81 E	19.59	0.126
4200.00	0.250	122.950	4199.82	12.21 S	16.91 E	20.86	0.116
4400.00	0.140	146.160	4399.82	12.65 S	17.42 E	21.52	0.067
4600.00	0.130	137.820	4599.82	13.02 S	17.70 E	21.97	0.011
4800.00	0.140	102.090	4799.82	13.24 S	18.10 E	22.42	0.042
5000.00	0.110	80.420	4999.82	13.26 S	18.52 E	22.78	0.028
5200.00	0.240	352.850	5199.82	12.81 S	18.66 E	22.64	0.130
5400.00	0.290	329.370	5399.81	11.96 S	18.35 E	21.89	0.059
5433.00	0.324	357.425	5432.81	11.80 S	18.30 E	21.76	0.462
MWD Survey Leg 2							
5440.00	4.100	125.000	5439.81	11.92 S	18.51 E	22.00	61.501
5450.00	9.000	123.400	5449.74	12.56 S	19.46 E	23.14	49.029
5460.00	14.900	121.800	5459.52	13.67 S	21.20 E	25.21	59.087
5470.00	20.100	120.200	5469.05	15.21 S	23.78 E	28.21	52.217
5480.00	25.000	118.000	5478.29	17.07 S	27.13 E	32.02	49.713
5490.00	30.300	115.400	5487.14	19.14 S	31.28 E	36.61	54.345
5500.00	35.800	113.800	5495.52	21.41 S	36.24 E	41.97	55.684
5510.00	40.200	112.000	5503.40	23.80 S	41.91 E	47.98	45.370
5520.00	44.100	113.400	5510.81	26.39 S	48.10 E	54.54	40.114
5530.00	48.800	116.000	5517.70	29.42 S	54.68 E	61.67	50.629

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 17-12

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)
5540.00	54.100	116.200	5523.93	32.86 S	61.70 E	69.39	53.023
5550.00	59.600	115.400	5529.39	36.50 S	69.24 E	77.65	55.406
5560.00	65.100	114.700	5534.03	40.25 S	77.26 E	86.37	55.348
5570.00	70.200	115.600	5537.84	44.18 S	85.63 E	95.48	51.674
5580.00	73.600	119.300	5540.94	48.56 S	94.06 E	104.90	48.912
5590.00	77.500	122.800	5543.44	53.56 S	102.35 E	114.56	51.664
5600.00	81.000	127.100	5545.30	59.19 S	110.40 E	124.38	54.855
5631.00	91.400	133.200	5547.36	79.10 S	133.99 E	155.13	38.858
5662.00	91.300	131.300	5546.63	99.94 S	156.93 E	185.87	6.136
5694.00	87.400	130.300	5546.99	120.84 S	181.15 E	217.70	12.582
5726.00	86.000	127.700	5548.83	140.95 S	205.97 E	249.56	9.216
5758.00	87.400	126.900	5550.67	160.30 S	231.38 E	281.49	5.037
5790.00	89.000	127.500	5551.68	179.64 S	256.86 E	313.44	5.340
5821.00	87.600	128.000	5552.60	198.61 S	281.36 E	344.39	4.795
5853.00	86.300	129.100	5554.30	218.52 S	306.35 E	376.29	5.318
5885.00	86.700	129.600	5556.26	238.78 S	331.05 E	408.13	1.999
5917.00	88.000	129.100	5557.73	259.04 S	355.77 E	440.01	4.352
5949.00	88.800	128.400	5558.63	279.07 S	380.71 E	471.93	3.321
5980.00	89.100	128.700	5559.20	298.38 S	404.95 E	502.86	1.368
6012.00	89.500	128.400	5559.59	318.32 S	429.98 E	534.80	1.562
6043.00	88.900	126.500	5560.02	337.17 S	454.58 E	565.76	6.427
6075.00	89.300	126.800	5560.52	356.27 S	480.25 E	597.75	1.562
6107.00	88.900	126.500	5561.03	375.37 S	505.92 E	629.73	1.562
6138.00	91.900	128.900	5560.81	394.32 S	530.45 E	660.69	12.392
6170.00	90.400	127.900	5560.17	414.19 S	555.52 E	692.62	5.633
6201.00	91.200	127.700	5559.73	433.19 S	580.01 E	723.58	2.660
6233.00	88.700	125.200	5559.76	452.20 S	605.75 E	755.57	11.048
6265.00	88.000	124.400	5560.68	470.45 S	632.01 E	787.56	3.321
6297.00	88.400	124.400	5561.69	488.52 S	658.40 E	819.54	1.250
6329.00	88.900	123.700	5562.44	506.44 S	684.91 E	851.52	2.688
6360.00	89.800	122.900	5562.79	523.46 S	710.82 E	882.51	3.884
6391.00	91.800	121.900	5562.36	540.06 S	736.99 E	913.47	7.213
6423.00	92.400	120.500	5561.19	556.63 S	764.34 E	945.38	4.757
6455.00	94.400	120.800	5559.29	572.91 S	791.82 E	977.23	6.320
6487.00	93.700	120.300	5557.03	589.14 S	819.31 E	1009.05	2.686
6519.00	90.900	120.800	5555.75	605.39 S	846.84 E	1040.93	8.888
6550.00	90.600	121.500	5555.34	621.42 S	873.37 E	1071.85	2.457
6582.00	89.700	121.200	5555.26	638.07 S	900.70 E	1103.79	2.965
6614.00	89.200	121.200	5555.56	654.65 S	928.07 E	1135.72	1.562
6646.00	89.900	120.700	5555.82	671.10 S	955.51 E	1167.64	2.688
6678.00	91.500	121.200	5555.42	687.56 S	982.95 E	1199.55	5.238
6709.00	90.400	122.200	5554.91	703.84 S	1009.32 E	1230.50	4.795
6740.00	88.800	123.300	5555.13	720.61 S	1035.39 E	1261.47	6.263
6772.00	87.500	123.700	5556.16	738.27 S	1062.06 E	1293.44	4.250
6804.00	87.500	123.700	5557.56	756.00 S	1088.66 E	1325.40	0.000

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 17-12

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)
6836.00	85.300	122.100	5559.57	773.35 S	1115.47 E	1357.31	8.495
6885.00	87.000	122.100	5562.86	799.33 S	1156.88 E	1406.14	3.469

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 125.000° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 6885.00ft.,
The Bottom Hole Displacement is 1406.17ft., in the Direction of 124.642° (True).

Mobil

San Juan County
Utah
Ratherford Unit
R.U. 17-12 Leg #2

SURVEY REPORT

6 March, 1998

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

Survey Ref: svy2471

Sperry-Sun Drilling Services

Survey Report for R.U. 17-12

Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Closure Distance (ft)	Closure Direct'n	Vertical Section (ft)	Dogleg Rate (°/100ft)
Gyro									
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	0.000	0.00	
200.00	0.430	88.030	200.00	0.03 N	0.75 E	0.75	88.030	0.60	0.215
400.00	0.480	92.240	399.99	0.02 N	2.34 E	2.34	89.538	1.90	0.030
600.00	0.600	93.570	599.98	0.08 S	4.22 E	4.22	91.074	3.50	0.060
800.00	0.430	62.300	799.98	0.20 N	5.93 E	5.93	88.024	4.74	0.161
1000.00	0.180	355.280	999.97	0.87 N	6.57 E	6.62	82.484	4.88	0.198
1200.00	0.180	332.110	1199.97	1.46 N	6.39 E	6.56	77.163	4.40	0.036
1400.00	0.370	251.000	1399.97	1.52 N	5.64 E	5.84	74.866	3.74	0.193
1600.00	0.480	245.390	1599.96	0.97 N	4.27 E	4.37	77.244	2.94	0.059
1800.00	0.510	236.210	1799.96	0.12 N	2.76 E	2.77	87.479	2.19	0.042
2000.00	0.590	204.470	1999.95	1.31 S	1.60 E	2.07	129.367	2.06	0.155
2200.00	0.670	181.350	2199.94	3.42 S	1.14 E	3.60	161.499	2.90	0.132
2400.00	0.760	154.800	2399.92	5.79 S	1.68 E	6.03	163.804	4.70	0.170
2600.00	0.900	151.560	2599.90	8.37 S	2.99 E	8.89	160.316	7.25	0.074
2800.00	0.750	121.050	2799.88	10.42 S	4.86 E	11.50	154.990	9.96	0.229
3000.00	0.590	120.410	2999.87	11.62 S	6.87 E	13.50	149.399	12.29	0.080
3200.00	0.470	90.860	3199.86	12.15 S	8.58 E	14.88	144.778	14.00	0.147
3400.00	0.520	67.480	3399.85	11.82 S	10.24 E	15.64	139.095	15.17	0.103
3600.00	0.580	77.990	3599.84	11.26 S	12.07 E	16.51	133.018	16.34	0.059
3800.00	0.580	93.390	3799.83	11.11 S	14.07 E	17.93	128.297	17.90	0.078
4000.00	0.480	118.730	3999.82	11.57 S	15.81 E	19.60	126.196	19.59	0.126
4200.00	0.250	122.950	4199.82	12.21 S	16.91 E	20.86	125.829	20.86	0.116
4400.00	0.140	146.160	4399.82	12.65 S	17.42 E	21.53	125.997	21.52	0.067
4600.00	0.130	137.820	4599.82	13.02 S	17.70 E	21.98	126.337	21.97	0.011
4800.00	0.140	102.090	4799.82	13.24 S	18.10 E	22.42	126.196	22.42	0.042
5000.00	0.110	80.420	4999.82	13.26 S	18.52 E	22.78	125.599	22.78	0.028
5200.00	0.240	352.850	5199.82	12.81 S	18.66 E	22.64	124.476	22.64	0.130
5400.00	0.290	329.370	5399.81	11.96 S	18.35 E	21.91	123.100	21.89	0.059
5433.00	0.324	357.425	5432.81	11.80 S	18.30 E	21.78	122.803	21.76	0.462
MWD Survey Leg 2									
5440.00	4.100	125.000	5439.81	11.92 S	18.51 E	22.02	122.786	22.00	61.501
5450.00	9.000	123.400	5449.74	12.56 S	19.46 E	23.16	122.841	23.14	49.029
5460.00	14.900	121.800	5459.52	13.67 S	21.20 E	25.23	122.806	25.21	59.087
5470.00	20.100	120.200	5469.05	15.21 S	23.78 E	28.23	122.601	28.21	52.217
5480.00	25.000	118.000	5478.29	17.07 S	27.13 E	32.06	122.169	32.02	49.713
5490.00	30.300	115.400	5487.14	19.14 S	31.28 E	36.68	121.464	36.61	54.345
5500.00	35.800	113.800	5495.52	21.41 S	36.24 E	42.09	120.570	41.97	55.684
5510.00	40.200	112.000	5503.40	23.80 S	41.91 E	48.20	119.588	47.98	45.370
5520.00	44.100	113.400	5510.81	26.39 S	48.10 E	54.86	118.750	54.54	40.114
5530.00	48.800	116.000	5517.70	29.42 S	54.68 E	62.09	118.284	61.67	50.629

Continued...

Sperry-Sun Drilling Services

Survey Report for R.U. 17-12

Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Closure Distance (ft)	Closure Direct'n	Vertical Section (ft)	Dogleg Rate (°/100ft)
5540.00	54.100	116.200	5523.93	32.86 S	61.70 E	69.91	118.040	69.39	53.023
5550.00	59.600	115.400	5529.39	36.50 S	69.24 E	78.27	117.800	77.65	55.406
5560.00	65.100	114.700	5534.03	40.25 S	77.26 E	87.11	117.519	86.37	55.348
5570.00	70.200	115.600	5537.84	44.18 S	85.63 E	96.35	117.293	95.48	51.674
5580.00	73.600	119.300	5540.94	48.56 S	94.06 E	105.86	117.309	104.90	48.912
5590.00	77.500	122.800	5543.44	53.56 S	102.35 E	115.52	117.623	114.56	51.664
5600.00	81.000	127.100	5545.30	59.19 S	110.40 E	125.26	118.197	124.38	54.855
5631.00	91.400	133.200	5547.36	79.10 S	133.99 E	155.60	120.556	155.13	38.858
5662.00	91.300	131.300	5546.63	99.94 S	156.93 E	186.05	122.491	185.87	6.136
5694.00	87.400	130.300	5546.99	120.84 S	181.15 E	217.75	123.707	217.70	12.582
5726.00	86.000	127.700	5548.83	140.95 S	205.97 E	249.58	124.384	249.56	9.216
5758.00	87.400	126.900	5550.67	160.30 S	231.38 E	281.49	124.715	281.49	5.037
5790.00	89.000	127.500	5551.68	179.64 S	256.86 E	313.44	124.968	313.44	5.340
5821.00	87.600	128.000	5552.60	198.61 S	281.36 E	344.40	125.218	344.39	4.795
5853.00	86.300	129.100	5554.30	218.52 S	306.35 E	376.30	125.501	376.29	5.318
5885.00	86.700	129.600	5556.26	238.78 S	331.05 E	408.17	125.802	408.13	1.999
5917.00	88.000	129.100	5557.73	259.04 S	355.77 E	440.08	126.060	440.01	4.352
5949.00	88.800	128.400	5558.63	279.07 S	380.71 E	472.04	126.242	471.93	3.321
5980.00	89.100	128.700	5559.20	298.38 S	404.95 E	503.01	126.384	502.86	1.368
6012.00	89.500	128.400	5559.59	318.32 S	429.98 E	534.98	126.513	534.80	1.562
6043.00	88.900	126.500	5560.02	337.17 S	454.58 E	565.98	126.565	565.76	6.427
6075.00	89.300	126.800	5560.52	356.27 S	480.25 E	597.97	126.569	597.75	1.562
6107.00	88.900	126.500	5561.03	375.37 S	505.92 E	629.97	126.573	629.73	1.562
6138.00	91.900	128.900	5560.81	394.32 S	530.45 E	660.96	126.626	660.69	12.392
6170.00	90.400	127.900	5560.17	414.19 S	555.52 E	692.93	126.708	692.62	5.633
6201.00	91.200	127.700	5559.73	433.19 S	580.01 E	723.92	126.755	723.58	2.660
6233.00	88.700	125.200	5559.76	452.20 S	605.75 E	755.92	126.742	755.57	11.048
6265.00	88.000	124.400	5560.68	470.45 S	632.01 E	787.89	126.663	787.56	3.321
6297.00	88.400	124.400	5561.69	488.52 S	658.40 E	819.85	126.575	819.54	1.250
6329.00	88.900	123.700	5562.44	506.44 S	684.91 E	851.81	126.480	851.52	2.688
6360.00	89.800	122.900	5562.79	523.46 S	710.82 E	882.76	126.368	882.51	3.884
MWD Survey Leg 2ST									
6391.00	87.100	124.700	5563.63	540.69 S	736.56 E	913.71	126.281	913.49	10.466
6423.00	87.200	127.000	5565.22	559.41 S	762.47 E	945.67	126.267	945.44	7.185
6455.00	88.200	127.500	5566.51	578.76 S	787.92 E	977.64	126.299	977.39	3.493
6487.00	88.700	127.500	5567.37	598.24 S	813.30 E	1009.62	126.337	1009.35	1.562
6519.00	92.000	129.300	5567.18	618.11 S	838.37 E	1041.60	126.400	1041.28	11.746
6550.00	90.400	128.900	5566.53	637.65 S	862.42 E	1072.55	126.478	1072.20	5.320
6582.00	88.600	127.500	5566.81	657.44 S	887.57 E	1104.54	126.528	1104.14	7.126
6614.00	87.700	127.200	5567.84	676.84 S	912.99 E	1136.52	126.551	1136.10	2.964
6646.00	86.700	126.100	5569.40	695.92 S	938.63 E	1168.48	126.554	1168.05	4.643
6678.00	85.800	125.100	5571.50	714.51 S	964.60 E	1200.40	126.529	1199.98	4.199

Continued...

Sperry-Sun Drilling Services

Survey Report for R.U. 17-12

Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Closure Distance (ft)	Closure Direct'n	Vertical Section (ft)	Dogleg Rate (°/100ft)
6709.00	87.200	122.400	5573.39	731.70 S	990.32 E	1231.31	126.459	1230.91	9.796
6740.00	89.200	121.700	5574.36	748.14 S	1016.58 E	1262.20	126.351	1261.85	6.835
6772.00	87.500	121.900	5575.29	764.99 S	1043.77 E	1294.09	126.238	1293.79	5.349
6804.00	86.800	121.700	5576.88	781.84 S	1070.93 E	1325.95	126.131	1325.70	2.275
6836.00	86.000	120.100	5578.89	798.24 S	1098.33 E	1357.76	126.009	1357.55	5.581
6868.00	86.300	119.400	5581.03	814.08 S	1126.05 E	1389.50	125.865	1389.34	2.375
6900.00	87.800	119.300	5582.68	829.74 S	1153.91 E	1421.26	125.719	1421.14	4.698
6931.00	87.700	117.700	5583.90	844.52 S	1181.13 E	1451.99	125.565	1451.92	5.167
6963.00	87.900	116.400	5585.13	859.06 S	1209.60 E	1483.62	125.382	1483.59	4.107
6995.00	88.600	115.000	5586.10	872.93 S	1238.42 E	1515.16	125.179	1515.15	4.890
7027.00	89.100	114.300	5586.75	886.28 S	1267.50 E	1546.63	124.962	1546.63	2.688
7060.00	89.100	114.300	5587.26	899.86 S	1297.58 E	1579.06	124.741	1579.05	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.

Based upon Minimum Curvature type calculations, at a Measured Depth of 7060.00ft.,
The Bottom Hole Displacement is 1579.06ft., in the Direction of 124.741° (True).

Mobil

San Juan County
Utah
Ratherford Unit
RU 17-12 - MWD Survey Leg 3

SURVEY REPORT

15 May, 1998

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

Survey Ref: svy2475

Sperry-Sun Drilling Services

Survey Report for RU 17-12

Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
Gyro							
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
200.00	0.430	88.030	200.00	0.03 N	0.75 E	-0.54	0.215
400.00	0.480	92.240	399.99	0.02 N	2.34 E	-1.72	0.030
600.00	0.600	93.570	599.98	0.08 S	4.22 E	-3.19	0.060
800.00	0.430	62.300	799.98	0.20 N	5.93 E	-4.27	0.161
1000.00	0.180	355.280	999.97	0.87 N	6.57 E	-4.30	0.198
1200.00	0.180	332.110	1199.97	1.46 N	6.39 E	-3.78	0.036
1400.00	0.370	251.000	1399.97	1.52 N	5.64 E	-3.17	0.193
1600.00	0.480	245.390	1599.96	0.97 N	4.27 E	-2.52	0.059
1800.00	0.510	236.210	1799.96	0.12 N	2.76 E	-1.97	0.042
2000.00	0.590	204.470	1999.95	1.31 S	1.60 E	-2.06	0.155
2200.00	0.670	181.350	2199.94	3.42 S	1.14 E	-3.14	0.132
2400.00	0.760	154.800	2399.92	5.79 S	1.68 E	-5.12	0.170
2600.00	0.900	151.560	2599.90	8.37 S	2.99 E	-7.82	0.074
2800.00	0.750	121.050	2799.88	10.42 S	4.86 E	-10.59	0.229
3000.00	0.590	120.410	2999.87	11.62 S	6.87 E	-12.88	0.080
3200.00	0.470	90.860	3199.86	12.15 S	8.58 E	-14.51	0.147
3400.00	0.520	67.480	3399.85	11.82 S	10.24 E	-15.52	0.103
3600.00	0.580	77.990	3599.84	11.26 S	12.07 E	-16.50	0.059
3800.00	0.580	93.390	3799.83	11.11 S	14.07 E	-17.89	0.078
4000.00	0.480	118.730	3999.82	11.57 S	15.81 E	-19.49	0.126
4200.00	0.250	122.950	4199.82	12.21 S	16.91 E	-20.74	0.116
4400.00	0.140	146.160	4399.82	12.65 S	17.42 E	-21.41	0.067
4600.00	0.130	137.820	4599.82	13.02 S	17.70 E	-21.87	0.011
4800.00	0.140	102.090	4799.82	13.24 S	18.10 E	-22.31	0.042
5000.00	0.110	80.420	4999.82	13.26 S	18.52 E	-22.64	0.028
5200.00	0.240	352.850	5199.82	12.81 S	18.66 E	-22.44	0.130
5400.00	0.290	329.370	5399.81	11.96 S	18.35 E	-21.64	0.059
MWD Survey Leg 3							
5419.00	0.300	346.320	5418.81	11.87 S	18.32 E	-21.56	0.461
5426.00	4.600	312.000	5425.81	11.67 S	18.10 E	-21.26	62.222
5436.00	10.000	313.000	5435.72	10.81 S	17.17 E	-19.99	54.013
5446.00	16.300	314.000	5445.45	9.24 S	15.52 E	-17.72	63.039
5456.00	22.900	315.000	5454.87	6.88 S	13.13 E	-14.37	66.083
5466.00	29.500	316.000	5463.84	3.73 S	10.04 E	-9.96	66.145
5476.00	33.700	317.000	5472.35	0.07 N	6.44 E	-4.74	42.324
5486.00	35.800	318.000	5480.57	4.27 N	2.59 E	0.93	21.759
5496.00	38.000	319.000	5488.56	8.77 N	1.39 W	6.90	22.804
5506.00	39.700	320.000	5496.35	13.54 N	5.46 W	13.12	18.120

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 17-12

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)
5516.00	42.400	321.000	5503.89	18.61 N	9.63 W	19.61	27.786
5526.00	47.400	322.000	5510.97	24.13 N	14.02 W	26.57	50.495
5536.00	53.500	322.400	5517.34	30.22 N	18.75 W	34.15	61.078
5546.00	60.000	323.200	5522.82	36.88 N	23.80 W	42.36	65.343
5556.00	66.200	323.300	5527.34	44.02 N	29.13 W	51.11	62.006
5566.00	73.100	323.400	5530.82	51.54 N	34.73 W	60.29	69.006
5594.00	88.000	323.000	5535.40	73.59 N	51.23 W	87.31	53.233
5606.00	88.500	321.900	5535.77	83.10 N	58.54 W	99.11	10.065
5637.00	92.500	319.800	5535.50	107.13 N	78.10 W	129.73	14.573
5669.00	92.900	317.500	5533.99	131.13 N	99.22 W	161.47	7.288
5700.00	92.100	314.900	5532.64	153.48 N	120.65 W	192.36	8.767
5732.00	91.500	313.000	5531.63	175.68 N	143.68 W	224.32	6.224
5764.00	91.100	311.400	5530.91	197.16 N	167.38 W	256.31	5.153
5796.00	92.700	311.600	5529.84	218.36 N	191.33 W	288.29	5.039
5827.00	93.200	311.200	5528.25	238.83 N	214.55 W	319.25	2.064
5859.00	87.800	310.200	5527.97	259.69 N	238.80 W	351.23	17.162
5891.00	89.900	309.300	5528.61	280.14 N	263.40 W	383.20	7.140
5923.00	91.600	309.500	5528.19	300.45 N	288.12 W	415.16	5.349
5954.00	87.500	308.200	5528.44	319.89 N	312.26 W	446.10	13.874
5986.00	86.500	308.400	5530.11	339.70 N	337.34 W	477.99	3.187
6018.00	88.700	308.600	5531.45	359.60 N	362.36 W	509.90	6.903
6050.00	90.500	308.400	5531.68	379.52 N	387.40 W	541.84	5.660
6082.00	92.500	310.200	5530.84	399.78 N	412.15 W	573.79	8.407
6113.00	90.900	311.400	5529.92	420.03 N	435.61 W	604.77	6.451
6145.00	88.500	311.000	5530.09	441.10 N	459.68 W	636.76	7.603
6177.00	89.400	312.600	5530.67	462.43 N	483.53 W	668.76	5.736
6209.00	90.500	313.800	5530.70	484.33 N	506.86 W	700.75	5.087
6240.00	89.500	314.200	5530.70	505.87 N	529.16 W	731.73	3.474
6272.00	88.800	314.000	5531.17	528.13 N	552.13 W	763.70	2.275
6303.00	88.200	310.900	5531.99	549.05 N	575.00 W	794.69	10.182
6335.00	90.400	311.000	5532.38	570.02 N	599.16 W	826.68	6.882
6367.00	91.100	308.700	5531.96	590.52 N	623.73 W	858.65	7.512
6399.00	90.500	308.400	5531.51	610.46 N	648.75 W	890.59	2.096
6430.00	90.100	309.600	5531.35	629.97 N	672.84 W	921.55	4.080
6462.00	90.500	309.600	5531.18	650.36 N	697.50 W	953.52	1.250
6494.00	93.400	307.900	5530.09	670.38 N	722.43 W	985.44	10.503
6526.00	96.200	310.200	5527.41	690.46 N	747.19 W	1017.28	11.307
6558.00	91.700	313.500	5525.21	711.76 N	770.96 W	1049.20	17.422
6589.00	87.000	314.900	5525.56	733.36 N	793.18 W	1080.16	15.819
6620.00	86.400	315.400	5527.35	755.30 N	815.01 W	1111.06	2.518
6653.00	88.200	313.700	5528.90	778.42 N	838.50 W	1143.99	7.499
6685.00	90.100	314.700	5529.38	800.73 N	861.43 W	1175.96	6.709
6717.00	91.300	316.000	5528.98	823.49 N	883.92 W	1207.90	5.528
6748.00	92.000	316.500	5528.09	845.88 N	905.35 W	1238.80	2.775
6779.00	89.400	316.700	5527.71	868.40 N	926.64 W	1269.70	8.412

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 17-12

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)
6811.00	88.200	317.500	5528.38	891.83 N	948.42 W	1301.57	4.507
6842.00	85.600	317.500	5530.06	914.65 N	969.33 W	1332.38	8.387
6873.00	85.500	316.500	5532.47	937.25 N	990.41 W	1363.16	3.232
6905.00	85.600	311.900	5534.95	959.49 N	1013.28 W	1395.04	14.335
6937.00	86.500	309.300	5537.15	980.26 N	1037.51 W	1426.95	8.580
6968.00	89.000	306.800	5538.37	999.35 N	1061.90 W	1457.84	11.400
7010.00	89.000	306.800	5539.10	1024.51 N	1095.53 W	1499.66	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 312.000° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 7010.00ft.,
The Bottom Hole Displacement is 1499.93ft., in the Direction of 313.081° (True).

Mobil

San Juan County
Utah
Ratherford Unit
RU 17-12 - MWD Survey Leg 4

SURVEY REPORT

15 May, 1998

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

Survey Ref: svy2477

Sperry-Sun Drilling Services

Survey Report for RU 17-12

Mobil
San Juan County

Utah
Ratherford Unit

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
Gyro							
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
200.00	0.430	88.030	200.00	0.03 N	0.75 E	0.51	0.215
400.00	0.480	92.240	399.99	0.02 N	2.34 E	1.64	0.030
600.00	0.600	93.570	599.98	0.08 S	4.22 E	3.04	0.060
800.00	0.430	62.300	799.98	0.20 N	5.93 E	4.05	0.161
1000.00	0.180	355.280	999.97	0.87 N	6.57 E	4.03	0.198
1200.00	0.180	332.110	1199.97	1.46 N	6.39 E	3.49	0.036
1400.00	0.370	251.000	1399.97	1.52 N	5.64 E	2.91	0.193
1600.00	0.480	245.390	1599.96	0.97 N	4.27 E	2.33	0.059
1800.00	0.510	236.210	1799.96	0.12 N	2.76 E	1.87	0.042
2000.00	0.590	204.470	1999.95	1.31 S	1.60 E	2.06	0.155
2200.00	0.670	181.350	2199.94	3.42 S	1.14 E	3.22	0.132
2400.00	0.760	154.800	2399.92	5.79 S	1.68 E	5.28	0.170
2600.00	0.900	151.560	2599.90	8.37 S	2.99 E	8.03	0.074
2800.00	0.750	121.050	2799.88	10.42 S	4.86 E	10.81	0.229
3000.00	0.590	120.410	2999.87	11.62 S	6.87 E	13.08	0.080
3200.00	0.470	90.860	3199.86	12.15 S	8.58 E	14.66	0.147
3400.00	0.520	67.480	3399.85	11.82 S	10.24 E	15.60	0.103
3600.00	0.580	77.990	3599.84	11.26 S	12.07 E	16.50	0.059
3800.00	0.580	93.390	3799.83	11.11 S	14.07 E	17.80	0.078
4000.00	0.480	118.730	3999.82	11.57 S	15.81 E	19.36	0.126
4200.00	0.250	122.950	4199.82	12.21 S	16.91 E	20.60	0.116
4400.00	0.140	146.160	4399.82	12.65 S	17.42 E	21.26	0.067
4600.00	0.130	137.820	4599.82	13.02 S	17.70 E	21.73	0.011
4800.00	0.140	102.090	4799.82	13.24 S	18.10 E	22.16	0.042
5000.00	0.110	80.420	4999.82	13.26 S	18.52 E	22.48	0.028
5200.00	0.240	352.850	5199.82	12.81 S	18.66 E	22.26	0.130
5400.00	0.290	329.370	5399.81	11.96 S	18.35 E	21.44	0.059
MWD Survey Leg 4							
5408.00	4.300	135.000	5407.81	12.16 S	18.55 E	21.72	57.269
5418.00	9.000	128.100	5417.74	12.91 S	19.43 E	22.87	47.590
5428.00	14.300	126.000	5427.53	14.12 S	21.05 E	24.87	53.161
5438.00	19.300	124.900	5437.10	15.79 S	23.41 E	27.71	50.099
5448.00	23.900	124.300	5446.39	17.88 S	26.44 E	31.33	46.052
5458.00	27.100	133.500	5455.42	20.59 S	29.76 E	35.60	50.835
5468.00	32.400	132.600	5464.10	23.97 S	33.39 E	40.56	53.186
5478.00	37.700	131.300	5472.28	27.81 S	37.66 E	46.29	53.521
5488.00	42.600	129.300	5479.93	31.97 S	42.58 E	52.72	50.663
5498.00	47.600	129.900	5486.98	36.48 S	48.04 E	59.77	50.180

Continued...

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)
5508.00	53.200	128.600	5493.35	41.35 S	54.00 E	67.43	56.887
5518.00	58.500	128.500	5498.97	46.51 S	60.47 E	75.65	53.006
5528.00	61.800	131.400	5503.94	52.08 S	67.12 E	84.29	41.488
5538.00	65.100	135.600	5508.41	58.24 S	73.60 E	93.23	49.998
5548.00	68.800	139.500	5512.33	65.03 S	79.81 E	102.41	51.537
5558.00	73.500	139.500	5515.56	72.22 S	85.95 E	111.85	47.000
5568.00	77.100	143.800	5518.10	79.81 S	91.95 E	121.45	55.002
5598.00	88.600	139.900	5521.83	103.16 S	110.31 E	150.95	40.438
5631.00	88.300	135.800	5522.72	127.62 S	132.44 E	183.89	12.453
5663.00	88.200	136.300	5523.70	150.64 S	154.64 E	215.87	1.593
5695.00	87.900	134.000	5524.79	173.31 S	177.20 E	247.85	7.244
5726.00	88.700	133.100	5525.71	194.66 S	199.65 E	278.82	3.883
5758.00	90.000	132.400	5526.07	216.38 S	223.15 E	310.80	4.614
5790.00	90.400	131.700	5525.96	237.82 S	246.91 E	342.75	2.519
5822.00	91.900	132.800	5525.31	259.33 S	270.59 E	374.71	5.812
5853.00	92.600	133.300	5524.10	280.47 S	293.23 E	405.67	2.774
5885.00	91.100	136.500	5523.06	303.04 S	315.88 E	437.64	11.039
5917.00	90.100	135.800	5522.73	326.12 S	338.05 E	469.64	3.814
5948.00	89.400	136.100	5522.86	348.40 S	359.60 E	500.63	2.457
5980.00	89.200	136.700	5523.26	371.57 S	381.67 E	532.62	1.976
6012.00	89.600	137.000	5523.59	394.92 S	403.55 E	564.60	1.562
6043.00	89.600	137.400	5523.81	417.66 S	424.61 E	595.58	1.290
6075.00	90.500	136.500	5523.78	441.04 S	446.46 E	627.56	3.977
6107.00	91.100	135.300	5523.33	464.02 S	468.72 E	659.55	4.192
6139.00	90.300	136.700	5522.94	487.04 S	490.95 E	691.54	5.039
6171.00	89.200	136.300	5523.08	510.25 S	512.98 E	723.53	3.658
6202.00	88.400	136.300	5523.73	532.66 S	534.39 E	754.51	2.581
6234.00	87.400	136.100	5524.90	555.74 S	556.52 E	786.49	3.187
6266.00	87.000	136.000	5526.47	578.75 S	578.70 E	818.44	1.288
6298.00	87.600	134.500	5527.97	601.45 S	601.21 E	850.41	5.044
6330.00	89.000	134.000	5528.92	623.77 S	624.12 E	882.39	4.645
6361.00	89.000	134.200	5529.46	645.34 S	646.38 E	913.38	0.645
6393.00	88.200	134.400	5530.25	667.68 S	669.27 E	945.37	2.577
6425.00	87.900	134.000	5531.33	689.98 S	692.20 E	977.34	1.562
6457.00	88.200	133.700	5532.42	712.13 S	715.26 E	1009.32	1.325
6488.00	88.900	133.100	5533.21	733.42 S	737.78 E	1040.30	2.974
6520.00	90.100	133.100	5533.49	755.29 S	761.14 E	1072.28	3.750
6551.00	89.500	133.300	5533.60	776.51 S	783.74 E	1103.26	2.040
6583.00	90.800	133.700	5533.51	798.53 S	806.95 E	1135.25	4.250
6615.00	92.200	134.000	5532.67	820.70 S	830.02 E	1167.23	4.474
6646.00	92.500	134.200	5531.40	842.25 S	852.26 E	1198.20	1.163
6678.00	93.500	136.000	5529.73	864.89 S	874.82 E	1230.16	6.428
6710.00	91.000	137.000	5528.47	888.08 S	896.83 E	1262.12	8.413
6742.00	92.000	138.400	5527.63	911.74 S	918.36 E	1294.07	5.375
6774.00	93.700	138.200	5526.04	935.60 S	939.62 E	1325.98	5.349

Continued...

Sperry-Sun Drilling Services

Survey Report for RU 17-12

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)
6806.00	88.900	137.900	5525.32	959.38 S	961.00 E	1357.91	15.029
6837.00	85.600	136.800	5526.80	982.16 S	981.97 E	1388.85	11.220
6869.00	86.000	134.900	5529.15	1005.05 S	1004.20 E	1420.76	6.052
6901.00	86.400	133.000	5531.27	1027.21 S	1027.19 E	1452.68	6.055
6933.00	87.800	133.100	5532.89	1049.03 S	1050.54 E	1484.62	4.386
6964.00	87.900	132.600	5534.05	1070.10 S	1073.25 E	1515.58	1.644
6996.00	89.100	132.600	5534.89	1091.75 S	1096.80 E	1547.54	3.750
7028.00	89.800	132.400	5535.20	1113.37 S	1120.39 E	1579.50	2.275
7060.00	87.300	132.800	5536.01	1135.02 S	1143.93 E	1611.46	7.912
7092.00	86.200	133.100	5537.82	1156.79 S	1167.32 E	1643.39	3.563
7123.00	86.700	132.400	5539.74	1177.79 S	1190.04 E	1674.31	2.771
7157.00	86.700	132.400	5541.70	1200.68 S	1215.11 E	1708.21	0.000

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

The Dogleg Severity is in Degrees per 100ft.
Vertical Section is from Well and calculated along an Azimuth of 135.000° (True).

Based upon Minimum Curvature type calculations, at a Measured Depth of 7157.00ft.,
The Bottom Hole Displacement is 1708.25ft., in the Direction of 134.658° (True).

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 17-W-12
9. API Well No.: 43-037-15726
10. Field and Pool, or exploratory Area: GREATER ANETH
11. County or Parish, State: SAN JUAN UT

1. Type of Well: [ ] Oil Well [ ] Gas Well [X] 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)
1980'FNL & 510' FWL
SEC. 17, 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
[X] Subsequent Report	[ ] Recompletion	[ ] New Construction
[ ] Final Abandonment Notice	[ ] Plugging Back	[ ] Non-Routine Fracturing
	[ ] Casing Repair	[ ] Water Shut-Off
	[ ] Altering Casing	[ ] Conversion to Injection
	[X] Other SIDETRACK	[ ] Dispose Water

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

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

BHL:
LATERAL #1 1204' NORTH & 895' WEST F/SURFACE SPOT. (ZONE 1b/1c).
LATERAL #2 900' SOUTH & 1298' EAST F/SURFACE SPOT. (ZONE 1b/1c).
LATERAL #2B1 (ST) 900' SOUTH & 1298' EAST F/ SURFACE SPOT
LATERAL #3 1025' NORTH & 1096' WEST F/SURFACE SPOT. (ZONE 1a).
LATERAL #4 1201' SOUTH & 1215' EAST F/SURFACE SPOT. (ZONE 1a).

1-14-98 / 3-17-98 HORIZONTAL RECOMPLETION.

ATTACHED FORM 15.

14. I hereby certify that the foregoing is true and correct
Signed Lee Moseley 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 RSM

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

June 27, 2001

ExxonMobil
Production

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

Change of Name – Mobil Oil Corporation to
ExxonMobil Oil Corporation

Dear Mr. Thompson

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

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

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

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

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

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

Very truly yours,

Charlotte H. Harper

Charlotte H. Harper
Permitting Supervisor

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

RECEIVED
JUN 29 2001
DIVISION OF
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
NATV AM MIN COORD
SOLID MIN TEAM
PETRO MGMT TEAM
O & G INSPECT TEAM
ALL TEAM LEADERS
LAND RESOURCES
ENVIRONMENT
FILES

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

BB 7/12/2001

543

File

June 27, 2001

ExxonMobil
Production

Certified Mail
Return Receipt Requested

RECEIVED
JUL 9 - 2001
#477
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 Jossie

Bureau of Indian Affairs
Navajo Region Office
Attn: RRES - Mineral and Mining Section
P.O. Box 1060
Gallup, New Mexico 87305-1060

Gentlemen:

The current listing of officers and director of ExxonMobil Oil Corporation (Name of Corporation), of New York (State) is as follows:

OFFICERS

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

DIRECTORS

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

Sincerely,

Alex Correa

This is to certify that the above information pertaining to ExxonMobil Oil Corporation (Corporation) is trust and correct as evidenced by the records and accounts covering business for the State of Utah and in the custody of Corporation Service Company (Agent), Phone: 1 (800)927-9800, whose business address is One Utah Center, 201 South Main Street, Salt Lake City, Utah 84111-2218

(CORPORATE SEAL)

Signature

AGENT AND ATTORNEY IN FACT
Title

SAL

CERTIFICATION

I, the undersigned Assistant Secretary of ExxonMobil Oil Corporation. (formerly Mobil Oil Corporation), a corporation organized and existing under the laws of the State of New York, United States of America, DO HEREBY CERTIFY, That, the following is a true and exact copy of the resolutions adopted by the Board of Directors on May 22, 2001:

CHANGE OF COMPANY NAME

WHEREAS, the undersigned Directors of the Corporation deem it to be in the best interest of the Corporation to amend the Certificate of Incorporation of the Corporation to change the name and principal office of the Corporation:

NOW THEREFORE BE IT RESOLVED, That Article 1st relating to the corporate name is hereby amended to read as follows:

"1st The corporate name of said Company shall be,

ExxonMobil Oil Corporation",

FURTHER RESOLVED, That the amendment of the Corporation's Certificate of Incorporation referred to in the preceding resolutions be submitted to the sole shareholder of the Corporation entitled to vote thereon for its approval and, if such shareholder gives its written consent, pursuant to Section 803 of the Business Corporation Law of the State of New York, approving such amendment, the proper officers of the Corporation be, and they hereby are, authorized to execute in the name of the Corporation the Certificate of Amendment of Certificate of Incorporation, in the form attached hereto;

FURTHER RESOLVED, That the proper officers of the Corporation be and they hereby are authorized and directed to deliver, file and record in its behalf, the Certificate of Amendment of Certificate of Incorporation, and to take such action as may be deemed necessary or advisable to confirm and make effective in all respects the change of this Company's name to EXXONMOBIL OIL CORPORATION.

WITNESS, my hand and the seal of the Corporation at Irving, Texas, this 8th day of June, 2001.

S. A. Millican
Assistant Secretary

COUNTY OF DALLAS)
STATE OF TEXAS)
UNITED STATES OF AMERICA)
Sworn to and subscribed before me at Irving, Texas, U. S. A. on this the 8th day of June, 2001.

Janice M. Phillips
Notary Public

LISTING OF LEASES OF MOBIL OIL CORPORATION

	Lease Number
1)	14-20-0603-6504
2)	14-20-0603-6505
3)	14-20-0603-6506
4)	14-20-0603-6508
5)	14-20-0603-6509
6)	14-20-0603-6510
7)	14-20-0603-7171
8)	14-20-0603-7172A
9)	14-20-600-3530
10)	14-20-603-359
11)	14-20-603-368
12)	14-20-603-370
13)	14-20-603-370A
14)	14-20-603-372
15)	14-20-603-372A
16)	14-20-603-4495
17)	14-20-603-5447
18)	14-20-603-5448
19)	14-20-603-5449
20)	14-20-603-5450
21)	14-20-603-5451

6/1/01

CHUBB GROUP OF INSURANCE COMPANIES

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

NW Bond

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

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

FEDERAL INSURANCE COMPANY AS SURETY,

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

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

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

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

TO : **ExxonMobil Oil Corporation**

All other terms and conditions of this Bond are unchanged.

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

ExxonMobil Oil Corporation
By :

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

Chubb Surety

POWER OF ATTORNEY

Federal Insurance Company
Vigilant Insurance Company
Pacific Indemnity Company

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

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

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

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

Kenneth C. Wendel, Assistant Secretary

Frank E. Robertson, Vice President

STATE OF NEW JERSEY
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 Kenneth C. Wendel 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

Karen A. Price
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. 16, 1906 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 5184334741 06/01 '01 09:01 NO.411 02/02
CSC 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 REAL ESTATE SERVICES

010601000195

State of New York }
Department of State } *ss:*

I hereby certify that the annexed copy has been compared with the original document in the custody of the Secretary of State and that the same is a true copy of said original.

Witness my hand and seal of the Department of State on JUN 01 2001

STATE OF NEW YORK
EXCELSIOR
DEPARTMENT OF STATE

Special Deputy Secretary of State

DOS-1266 (7/00)

Division of Oil, Gas and Mining

OPERATOR CHANGE WORKSHEET

ROUTING
1. GLH
2. CDW
3. FILE

Change of Operator (Well Sold) — Designation of Agent

X Operator Name Change — Merger

The operator of the well(s) listed below has changed, effective: **06-01-2001**

FROM: (Old Operator):	**TO:** (New Operator):
MOBIL EXPLORATION & PRODUCTION	EXXONMOBIL OIL CORPORATION
Address: P O BOX DRAWER "G"	Address: U S WEST P O BOX 4358
CORTEZ, CO 81321	HOUSTON, TX 77210-4358
Phone: 1-(970)-564-5212	Phone: 1-(713)-431-1010
Account No. N7370	Account No. N1855

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

WELL(S)

NAME	SEC TWN RNG	API NO	ENTITY NO	LEASE TYPE	WELL TYPE	WELL STATUS
NAVAJO A-9 (RATHERFORD 16W23)	16-41S-24E	43-037-15722	99990	INDIAN	WI	A
NAVAJO A-12 (RATHERFORD 16W21)	16-41S-24E	43-037-16414	99990	INDIAN	WI	A
RATHERFORD 16W43	16-41S-24E	43-037-16415	99990	INDIAN	WI	A
RATHERFORD 17-W-12	17-41S-24E	43-037-15726	6280	INDIAN	WI	A
17-14	17-41S-24E	43-037-15727	6280	INDIAN	WI	A
RATHERFORD 17-W-23	17-41S-24E	43-037-15728	6280	INDIAN	WI	A
17-32	17-41S-24E	43-037-15729	6280	INDIAN	WI	A
17-34	17-41S-24E	43-037-15730	6280	INDIAN	WI	A
17-41	17-41S-24E	43-037-15731	6280	INDIAN	WI	I
RATHERFORD 17-W-21	17-41S-24E	43-037-16416	99990	INDIAN	WI	A
RATHERFORD 17W43	17-41S-24E	43-037-16417	99990	INDIAN	WI	A
RATHERFORD 18-W-14	18-41S-24E	43-037-15735	6280	INDIAN	WI	A
18-W-32	18-41S-24E	43-037-15736	6280	INDIAN	WI	A
RATHERFORD 18-W-34	18-41S-24E	43-037-15737	6280	INDIAN	WI	A
DESERT A-4 (RATHERFORD 18W41)	18-41S-24E	43-037-15738	99990	INDIAN	WI	A
DESERT A-3 (RATHERFORD 18-W-21)	18-41S-24E	43-037-16418	99990	INDIAN	WI	A
18-23	18-41S-24E	43-037-30244	6280	INDIAN	WI	A
RATHERFORD U 18-W-12 (SDTRK)	18-41S-24E	43-037-31153	6280	INDIAN	WI	A
RATHERFORD UNIT 18-W-43B	18-41S-24E	43-037-31718	6280	INDIAN	WI	A
RATHERFORD U 19-W-12	19-41S-24E	43-037-15739	6280	INDIAN	WI	A

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
NOTE: EPA ISSUES UIC PERMIT

DATA ENTRY:

1. Changes entered in the **Oil and Gas Database on:** 04/11/2002
2. Changes have been entered on the **Monthly Operator Change Spread Sheet on:** 04/11/2002
3. Bond information entered in RBDMS on: N/A
4. Fee wells attached to bond in RBDMS on: N/A

STATE WELL(S) BOND VERIFICATION:

1. State well(s) covered by Bond Number: N/A

FEDERAL WELL(S) BOND VERIFICATION:

1. Federal well(s) covered by Bond Number: N/A

INDIAN WELL(S) BOND VERIFICATION:

1. Indian well(s) covered by Bond Number: 80273197

FEE WELL(S) BOND VERIFICATION:

1. (R649-3-1) The **NEW** operator of any fee well(s) listed covered by Bond Number N/A
2. The **FORMER** operator has requested a release of liability from their bond on: N/A
The Division sent response by letter on: N/A

LEASE INTEREST OWNER NOTIFICATION:

3. (R649-2-10) The **FORMER** operator of the fee wells has been contacted and informed by a letter from the Division of their responsibility to notify all interest owners of this change on: N/A

COMMENTS:

Division of Oil, Gas and Mining

OPERATOR CHANGE WORKSHEET

ROUTING
1. DJJ
2. CDW

X Change of Operator (Well Sold) Operator Name Change/Merger

The operator of the well(s) listed below has changed, effective: **6/1/2006**

FROM: (Old Operator):	**TO:** (New Operator):
N1855-ExxonMobil Oil Corporation	N2700-Resolute Natural Resources Company
PO Box 4358	1675 Broadway, Suite 1950
Houston, TX 77210-4358	Denver, CO 80202
Phone: 1 (281) 654-1936	Phone: 1 (303) 534-4600

CA No. **Unit:** **RATHERFORD (UIC)**

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:

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

UIC FORM 5

TRANSFER OF AUTHORITY TO INJECT

Well Name and Number See attached list	API Number Attached
Location of Well Footage : See attached list County : San Juan QQ, Section, Township, Range: State : UTAH	Field or Unit Name Ratherford Unit Lease Designation and Number See attached list

EFFECTIVE DATE OF TRANSFER: 6/1/2006

CURRENT OPERATOR

Company: Exxon Mobil Oil Corporation
Address: PO Box 4358
city Houston state TX zip 77210-4358
Phone: (281) 654-1936
Comments: Exxon Mobil has submitted a separate, signed copy of UIC Form 5

Name:
Signature:
Title:
Date:

NEW OPERATOR

Company: Resolute Natural Resources Company
Address: 1675 Broadway, Suite 1950
city Denver state CO zip 80202
Phone: (303) 534-4600
Comments: A list of affected UIC wells is attached.
New bond numbers for these wells are:
BIA Bond # PA002769 and US EPA Bond # B001252

Name: Dwight E Mallory
Signature:
Title: Regulatory Coordinator
Date: 4/20/2006

(This space for State use only)

Transfer approved by:
Title: Field Operations Manager
Approval Date: 6/12/06

Comments:

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

(5/2000)

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

FORM 9

SUNDRY NOTICES AND REPORTS ON WELLS

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

5. LEASE DESIGNATION AND SERIAL NUMBER: 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 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)

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

FORM 9

SUNDRY NOTICES AND REPORTS ON WELLS

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

5. LEASE DESIGNATION AND SERIAL NUMBER:

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

7. UNIT or CA AGREEMENT NAME: UTU68931A

8. WELL NAME and NUMBER: Ratherford

9. API NUMBER: attached

10. FIELD AND POOL, OR WILDCAT: Aneth

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

2. NAME OF OPERATOR: ExxonMobil Oil Corporation N1855

3. ADDRESS OF OPERATOR: P.O. Box 4358 CITY Houston STATE TX ZIP 77210-4358 PHONE NUMBER: (281) 654-1936

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:	☐ ALTER CASING	☐ FRACTURE TREAT	☐ SIDETRACK TO REPAIR WELL
6/1/2006	☐ 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 injection wells included in the transfer.

NAME (PLEASE PRINT) Laurie Kilbride TITLE Permitting Supervisor

SIGNATURE Laurie O. Kilbride DATE 4/19/2006

(This space for State use only) APPROVED 6/27/06
Earlene Russell
Division of Oil, Gas and Mining
Earlene Russell, Engineering Technician

(See Instructions on Reverse Side)

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

(5/2000)

GREATER ANETH FIELD UIC WELL LIST
Ratherford lease, San Juan County, Utah

Reg Lease Name	Well ID	API Num	Status	Reg Lease #	Surface Location						
					Qtr 1	Qtr 2	Sec	TN	RNG	NS Foot	EW Foot
RATHERFORD UNIT	1W24	430371583900S1	Shut-in	14-20-603-246A	NE	SE	1	41S	23E	0651FSL	3300FEL
RATHERFORD UNIT	2W44	430371638600S1	Active	14-20-603-246A	SE	SE	2	41S	23E	0810FSL	**0510FEL**
RATHERFORD UNIT	11W42	430371584100S1	Active	14-20-603-246A	SE	NE	11	41S	23E	3290FSL	4617FWL
RATHERFORD UNIT	11W44	430371584200S1	Shut-in	14-20-603-246A	SE	SE	11	41S	23E	0660FSL	0558FEL
RATHERFORD UNIT	12W11	430371584300S1	Active	14-20-603-246A	NW	NW	12	41S	23E	0678FNL	4620FEL
RATHERFORD UNIT	12W13	430371640400S1	Active	14-20-603-246A	NW	SW	12	41S	23E	1980FSL	4620FEL
RATHERFORD UNIT	12W22	430371584501S1	Active	14-20-603-246A	SE	NW	12	41S	23E	1920FNL	2080FWL
RATHERFORD UNIT	12W24	430373115101S1	Active	14-20-603-246A	SE	SW	12	41S	23E	0775FSL	1980FWL
RATHERFORD UNIT	12W31	430371584700S1	Active	14-20-603-246A	NW	NE	12	41S	23E	0661FNL	1981FEL
RATHERFORD UNIT	12W33	430371584800S1	Active	14-20-603-246A	NW	SE	12	41S	23E	1958FSL	3300FEL
RATHERFORD UNIT	12W42	430371585000S1	Active	14-20-603-246A	SE	NE	12	41S	23E	3275FSL	0662FEL
RATHERFORD UNIT	12W44A	430373154300S1	Shut-in	14-20-603-246A	SE	SE	12	41S	23E	0772FSL	0807FEL
RATHERFORD UNIT	13W11	430373115201S1	Active	14-20-603-247A	NW	NW	13	41S	23E	0500FNL	0660FWL
RATHERFORD UNIT	13W13	430371585100S1	Active	14-20-603-247A	NW	SW	13	41S	23E	1980FSL	4620FEL
RATHERFORD UNIT	13W22	430371585200S1	Active	14-20-603-247A	SE	NW	13	41S	23E	1988FNL	3300FEL
RATHERFORD UNIT	13W24	430371585300S1	Active	14-20-603-247A	SE	SW	13	41S	23E	0660FSL	3300FEL
RATHERFORD UNIT	13W33	430371585501S1	Active	14-20-603-247A	NW	SE	13	41S	23E	1970FSL	1979FEL
RATHERFORD UNIT	13W42	430371585700S1	Shut-in	14-20-603-247A	SE	NE	13	41S	23E	2139FNL	0585FEL
RATHERFORD UNIT	13W44	430371640700S1	Active	14-20-603-247A	SE	SE	13	41S	23E	0653FSL	0659FEL
RATHERFORD UNIT	14-31	430373171700S1	Active	14-20-603-247A	NW	NE	14	41S	23E	0754FNL	1604FEL
RATHERFORD UNIT	14W42	430371586001S1	Active	14-20-603-247A	SE	NE	14	41S	23E	1976FNL	653FEL
RATHERFORD UNIT	24W31	430371586200S1	Shut-in	14-20-603-247A	NW	NE	24	41S	24E	0560FNL	1830FEL
RATHERFORD UNIT	24W42	430371586300S1	Shut-in	14-20-603-247A	SE	NE	24	41S	24E	1980FNL	0660FEL
RATHERFORD UNIT	17W12	430371572601S1	Active	14-20-603-353	SW	NW	17	41S	24E	1980FNL	510FWL
RATHERFORD UNIT	17W14	430371572700S1	Active	14-20-603-353	SW	SW	17	41S	24E	0610FSL	0510FWL
RATHERFORD UNIT	17W21	430371641601S1	Active	14-20-603-353	NE	**NW**	17	41S	24E	0510FNL	1830FWL
RATHERFORD UNIT	17W23	430371572801S1	Active	14-20-603-353	NE	SW	17	41S	24E	1880FSL	1980FWL
RATHERFORD UNIT	17W32	430371572900S1	TA'd	14-20-603-353	SW	NE	17	41S	24E	1830FNL	2030FEL
RATHERFORD UNIT	17W34	430371573000S1	Active	14-20-603-353	SW	SE	17	41S	24E	0560FSL	1880FEL
RATHERFORD UNIT	17W41	430371573100S1	Shut-in	14-20-603-353	NE	NE	17	41S	24E	0610FNL	0510FEL
RATHERFORD UNIT	17W43	430371641701S1	Active	14-20-603-353	NE	SE	17	41S	24E	1980FSL	0660FEL
RATHERFORD UNIT	18-43B	430373171801S1	Active	14-20-603-353	NE	SE	18	41S	24E	2023FSL	0651FEL
RATHERFORD UNIT	18W12	430373115301S1	Active	14-20-603-353	SW	NW	18	41S	24E	1980FNL	560FWL
RATHERFORD UNIT	18W14	430371573501S1	Active	14-20-603-353	SW	SW	18	41S	24E	0810FSL	0600FWL
RATHERFORD UNIT	18W21	430371641801S1	Active	14-20-603-353	NE	NW	18	41S	24E	660FNL	1882FWL
RATHERFORD UNIT	18W23	430373024400S1	Shut-in	14-20-603-353	NE	SW	18	41S	24E	2385FSL	2040FWL
RATHERFORD UNIT	18W32	430371573601S1	Active	14-20-603-353	SW	NE	18	41S	24E	2140FNL	1830FEL
RATHERFORD UNIT	18W34	430371573701S1	Active	14-20-603-353	SW	SE	18	41S	24E	780FSL	1860FEL
RATHERFORD UNIT	18W41	430371573800S1	TA'd	14-20-603-353	NE	NE	18	41S	24E	0660FNL	0660FEL
RATHERFORD UNIT	19-12	430371573901S1	Active	14-20-603-353	SW	NW	19	41S	24E	1980FNL	0600FWL
RATHERFORD UNIT	19-32	430371574301S1	Active	14-20-603-353	SW	NE	19	41S	24E	2717FNL	2802FEL
RATHERFORD UNIT	19-34	430371574401S1	Active	14-20-603-353	SW	SE	19	41S	24E	0660FSL	1980FEL
RATHERFORD UNIT	19W21	430371574100S1	Shut-in	14-20-603-353	NE	NW	19	41S	24E	0660FNL	1860FWL
RATHERFORD UNIT	19W23	430371574200S1	Shut-in	14-20-603-353	NE	SW	19	41S	24E	2080FSL	1860FWL
RATHERFORD UNIT	19W43	430371642000S1	Shut-in	14-20-603-353	NE	SE	19	41S	24E	1980FSL	0760FEL
RATHERFORD UNIT	20-12	430371574601S1	Active	14-20-603-353	SW	NW	20	41S	24E	0709FNL	0748FEL
RATHERFORD UNIT	20-14	430371574701S1	Active	14-20-603-353	SW	SW	20	41S	24E	0660FSL	0660FWL
RATHERFORD UNIT	20-32	430371574901S1	Active	14-20-603-353	SW	NE	20	41S	24E	0037FNL	0035FWL
RATHERFORD UNIT	20-34	430371575001S1	Active	14-20-603-353	SW	SE	20	41S	24E	0774FNL	0617FWL
RATHERFORD UNIT	20-67	430373159000S1	Active	14-20-603-353	NE	SW	20	41S	24E	2629FSL	1412FWL
RATHERFORD UNIT	20W21	430371642300S1	Active	14-20-603-353	NE	NW	20	41S	24E	0660FNL	1880FWL
RATHERFORD UNIT	20W23	430371574800S1	Active	14-20-603-353	NW	SW	20	41S	24E	2080FSL	2120FWL
RATHERFORD UNIT	20W41	430371575100S1	Active	14-20-603-353	NE	NE	20	41S	24E	0660FNL	0660FEL
RATHERFORD UNIT	20W43	430371642400S1	TA'd	14-20-603-353	NE	SE	20	41S	24E	2070FSL	0810FEL
RATHERFORD UNIT	16W12	430371572000S1	Active	14-20-603-355	SW	NW	16	41S	24E	1880FNL	0660FWL

GREATER ANETH FIELD UIC WELL LIST
Ratherford lease, San Juan County, Utah

Reg Lease Name	Well ID	API Num	Status	Reg Lease #	Surface Location						
					Qtr 1	Qtr 2	Sec	TN	RNG	NS Foot	EW Foot
RATHERFORD UNIT	16W14	430371572100S1	Shut-in	14-20-603-355	SW	SW	16	41S	24E	0660FSL	0660FWL
RATHERFORD UNIT	16W21	430371641400S1	Active	14-20-603-355	NE	NW	16	41S	24E	0660FNL	1880FWL
RATHERFORD UNIT	16W23	430371572201S1	Active	14-20-603-355	NE	SW	16	41S	24E	1980FSL	1980FWL
RATHERFORD UNIT	16W43	430371641501S1	Active	14-20-603-355	NE	SE	16	41S	24E	2140FSL	0820FEL
RATHERFORD UNIT	21-14	430371575301S1	Active	14-20-603-355	SW	SW	21	41S	24E	0660FSL	0460FWL
RATHERFORD UNIT	21-67	430373175301S1	Active	14-20-603-355	NE	SW	21	41S	24E	2560FSL	1325FWL
RATHERFORD UNIT	21W21	430371642501S1	Active	14-20-603-355	NE	NW	21	41S	24E	0660FNL	2030FWL
RATHERFORD UNIT	**6W14**	430371598400S1	Active	14-20-603-368	NE	SE	6	41S	24E	0660FSL	0660FWL
RATHERFORD UNIT	7W12	430371598500S1	Active	14-20-603-368	NE	SE	7	41S	24E	2140FNL	0585FWL
RATHERFORD UNIT	7W14	430371598600S1	Active	14-20-603-368	NE	SE	7	41S	24E	1065FSL	0660FWL
RATHERFORD UNIT	7W21	430371639400S1	Active	14-20-603-368	**NE**	NW	7	41S	24E	0710FNL	1820FWL
RATHERFORD UNIT	7W34	430371598900S1	Active	14-20-603-368	SW	SE	7	41S	24E	0710FSL	2003FEL
RATHERFORD UNIT	7W43	430371639500S1	Active	14-20-603-368	NE	SE	7	41S	24E	2110FSL	0660FEL
RATHERFORD UNIT	**8W14**	430371599200S1	Active	14-20-603-368	SW	NE	8	41S	24E	0745FSL	0575FWL
RATHERFORD UNIT	10W43	430371640300S1	TA'd	14-20-603-4037	NE	SE	10	41S	24E	1980FSL	0550FEL
RATHERFORD UNIT	29-12	430371533701S1	Active	14-20-603-407	SW	**NW**	29	41S	24E	2870FNL	1422FWL
RATHERFORD UNIT	29-32	430371533901S1	Active	14-20-603-407	SW	NE	29	41S	24E	0694FNL	0685FWL
RATHERFORD UNIT	29W21	430371643200S1	Active	14-20-603-407	NE	NW	29	41S	24E	0667FNL	2122FWL
RATHERFORD UNIT	29W41	430371643300S1	Active	14-20-603-407	NE	NE	29	41S	24E	0557FNL	0591FEL
RATHERFORD UNIT	29W43	430371643400S1	Shut-in	14-20-603-407	NE	SE	29	41S	24E	1980FSL	0660FEL
RATHERFORD UNIT	30W41	430371534300S1	Shut-in	14-20-603-407	NE	NE	30	41S	24E	0660FNL	0660FEL
RATHERFORD UNIT	28-12	430371533601S1	Active	14-20-603-409	SW	SE	28	41S	24E	2121FNL	0623FWL
RATHERFORD UNIT	28W21	430371643100S1	Shut-in	14-20-603-409	NE	NW	28	41S	24E	0660FNL	2022FWL
RATHERFORD UNIT	9W23	430371639800S1	Active	14-20-603-5046	NW	SE	9	41S	24E	1980FSL	1980FWL