Form 9-331 C
(May 1963)

SUBMIT IN TRIPLICATE
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1425.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

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

b. TYPE OF WELL: OIL WELL [ ] GAS WELL [X] OTHER SINGLE ZONE [ ] MULTIPLE ZONE [ ]

2. NAME OF OPERATOR: Marathon Oil Company

3. ADDRESS OF OPERATOR: P.O. Box 2659 - Casper, Wyoming 82602

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 1,313' FNL & 1,441' FEL NW NE
At proposed prod. zone:

5. LEASE DESIGNATION AND SERIAL NO.: U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: Otter Creek

9. WELL NO.: #1-21

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 21, T12N, R6E

12. COUNTY OR PARISH: Rich

13. STATE: Utah

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 5 miles southeast & 3½ miles southwest of Laketown, Utah.

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any): 1,441'

16. NO. OF ACRES IN LEASE: Pooled Area 960

17. NO. OF ACRES ASSIGNED TO THIS WELL: 360

18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.: None

19. PROPOSED DEPTH: 12,500'

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 7,122'

22. APPROX. DATE WORK WILL START*: 10-27-79

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
24"	20"	Open	50'	
17-1/2"	13-3/8"	54.5#	2,100'	1645 sacks
		61.0#	2,500'	
12-1/4"	10-3/4"	55.5#	3,750'	
		51.0#	6,000'	315 sacks
		55.5#	7,600'	
9-1/2"	5-1/2"	23#	1,000'	
		20#	3,300'	
		17#	12,500'	1200 sacks

Please see the following attachments:
1. Surveyor's Plat
2. Ten-Point Drilling Program
3. BOP Schematic
4. Thirteen Point NTL-6
5. Maps

RECEIVED JUN 28 1979 DIVISION OF OIL, GAS, & MINING

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

24.
SIGNED Harry Magnuson TITLE District Operations Manager DATE 25 June 1979

(This space for Federal or State office use)

PERMIT NO. APPROVAL DATE

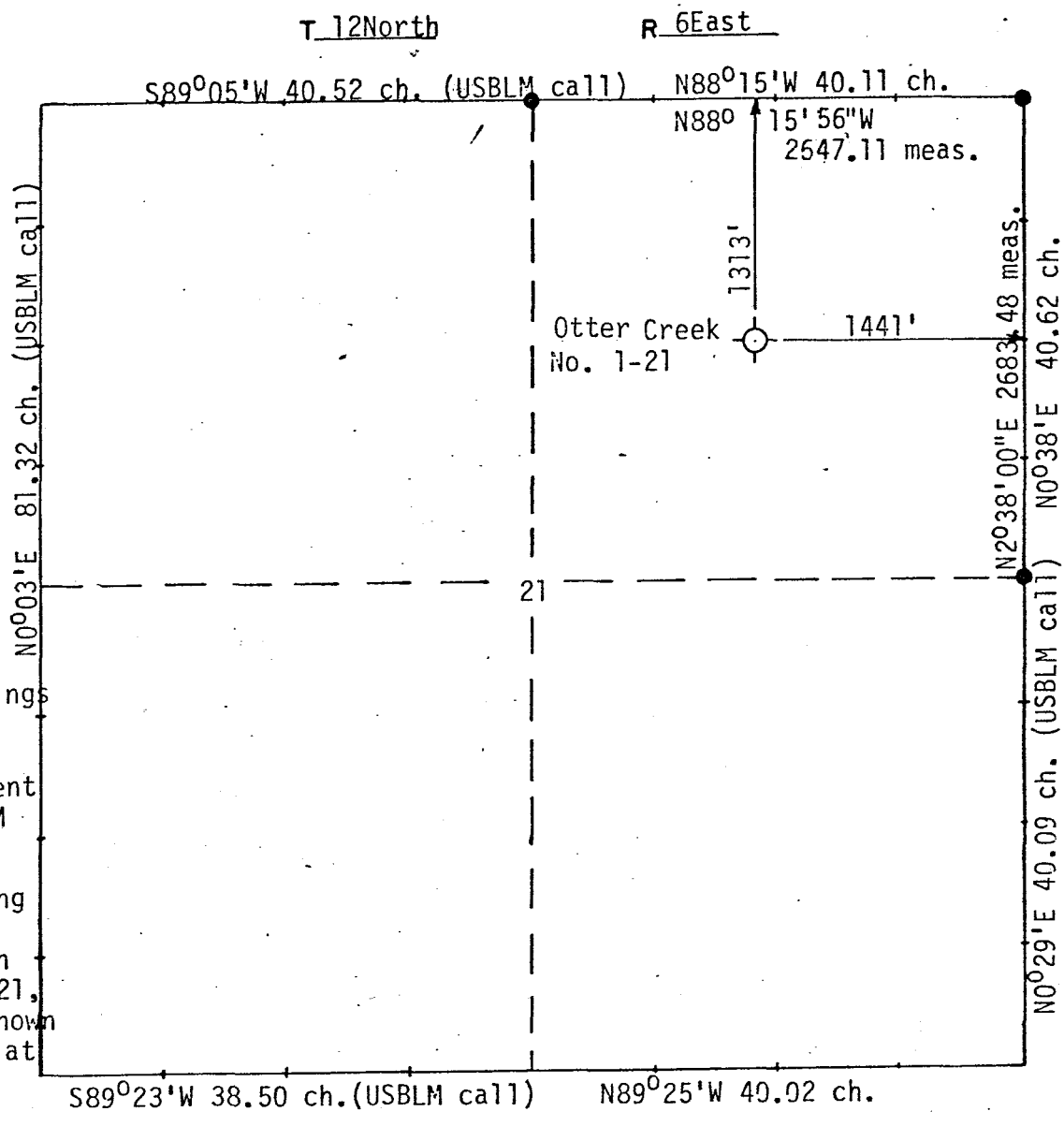
APPROVED BY TITLE DATE

CONDITIONS OF APPROVAL, IF ANY:

P.O. BOX 654
GREEN RIVER, WYOMING
82935
TELEPHONE: (307) 875-3638

WILLIAM H. SMITH & ASSOCIATES
SURVEYING CONSULTANTS

P.O. BOX 1300
MOAB, UTAH
84532
TELEPHONE: (801) 259-6861



SCALE: 1" = 1000'

● Found Brass Cap
■ Found Stone

Note:
(USBLM call) indicates bearings and distances shown on U.S. Plat of dependent resurvey by BLM 1966

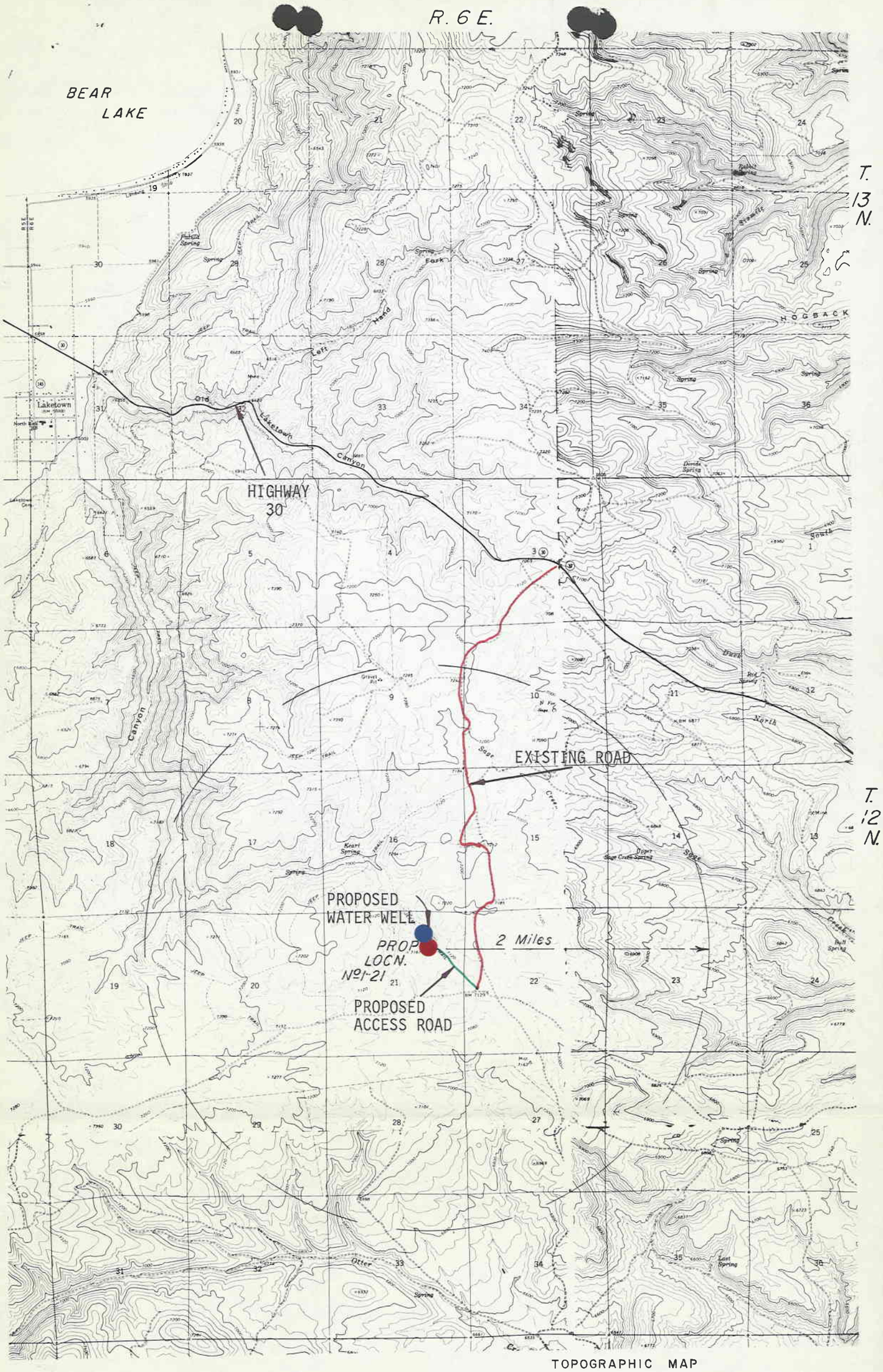
Basis of bearing taken from N/2 of east section line, Section 21, T12N, R6E, as shown on official plat of dependent resurvey 1966

I, William H. Smith of Green River, Wyoming hereby certify that in accordance with a request from Walt West of Casper, Wyoming for Marathon Oil Company Randy Rowley under my supervision and direction made a survey on the 7th day of June, 19 79 for location and elevation of the Otter Creek No. 1-21. As shown on the above map, the wellsite is in the NE/4 of Section 21, Township 12N, Range 6E of the Salt Lake Base Meridian, Rich County, State of Utah. Elevation is 7122 feet ungraded ground Datum established from USGS bench mark as stamped and shown on USGS 7 1/2' Topo "Laketown, Utah".

Reference Point	300' North	rebar & lath	elevation top of rebar = 7103.2
Reference Point	300' South	rebar & lath	elevation top of rebar = 7109.8
Reference Point	300' East	rebar & lath	elevation top of rebar = 7099.9
Reference Point	300' West	rebar & lath	elevation top of rebar = 7121.5

William H. Smith
Utah R.L.S. NO. 2764

ob #107-79



APPLICANT:
MARATHON OIL CO.
BOX 120
CASPER, WYO.

TOPOGRAPHIC MAP
TO ACCOMPANY
DRILLING PERMIT APPLICATION
FOR

OTTER CREEK AREA
WELL Nº 1-21

MARATHON OIL COMPANY
Otter Creek #1-21
Surface Use and Operations Plan
1,313' FNL & 1,441' FEL
Sec. 21, T12N, R6E
Rich County, Utah
7,122' GL

1. Existing Roads:

From Laketown, Utah, travel southeast on Utah Highway 16 for 6-1/2 miles. Turn right and travel south on improved road for 3-1/2 miles to the second fork in Section 22.

2. Access Road:

From the second fork in Section 22, travel northwest for 1/4 mile to center of NW/4 in Section 21. The access road will be 16' wide, ditched for drainage and crowned. Disturbed area will not exceed 30' wide. There will be no culverts, cattle guards, cuts, fills, gates, or turnouts. The road into the location will be center-line flagged.

3. Location of Existing Wells:

To our knowledge there are no known water, abandoned, temporarily abandoned, disposal, drilling, producing, shut-in, injection, monitoring or observation wells within a two mile radius.

4. Location of Production Facilities and Service Lines:

There are no existing facilities owned or controlled by the lessee within a two mile radius of this well. All production facilities will be on the proposed location (see the attached schematic). The dimensions of the facilities are shown on the attached schematic. Good engineering practices will be used in the construction of these facilities and materials will be obtained through local vendors and contractors.

Any sumps or hazardous equipment will be fenced to keep livestock and wildlife out.

Those portions of the location not needed for production facilities will be rehabilitated by contouring and reseeding.

5. Location and Type of Water Supply:

A water well will be drilled on the location. A temporary application permit has been obtained from Division of Water Rights, State of Utah. (Permit #53133 (23-3535)

6. Source of Construction Materials:

All construction materials for this location and the access road are to be materials accumulated during the construction of the location and access road.

In the event gravel is needed, it will be purchased from a jobber and hauled to well site by same.

7. Waste Disposal Handling:

All liquid drilling waste will be stored in Lined the reserve pit on the north side of the well site. All burnable trash will be burned in a suitable burn pit (10' x 10') on the east side of the well site and all non-burnable refuse will be buried to a depth of 5' upon the conclusion of the drilling and completion procedures. The burn pit will be fenced with a fine wire mesh fence. Drill cuttings will be covered after the reserve pit is dried up. All trash will be gathered during drilling and any loose trash on the location after the rig moves out will be deposited in the trash pit. A self-contained sanitation facility for drilling and completion crews will be on location.

8. Ancillary Facilities:

There will be no camps, airstrips or other ancillary facilities on this location. There will be two or three small house trailers on location during drilling and completion.

9. Well Site Layout:

Relative positions and dimensions for the various components of the drilling tools are shown on the attached sketch of a typical well site layout. The rig will face the East. The reserve pit will be fenced on three sides during drilling and on the fourth side during dry out periods to hold out domestic and wildlife. Preparation of the location will require a maximum fill of 11.5' as shown on the enclosed cross section. All pits will be unlined.

10. Plan for Restoration to Surface:

Topsoil will be stockpiled to the west side of this location. After the well is completed and the reserve pit dried out, that portion of the location not required for production equipment will be recontoured, covered with stockpiled topsoil and reseeded to BLM specifications. Any portion of the access road not needed for vehicular traffic will also be reseeded. The rehabilitation operations will commence immediately after the completion of the well. Immediately after release of the rig, the reserve pit will be fenced on the fourth side until cleanup. Any oil on the pit will be removed at the time that the rig is removed from the well.

11. Other Information:

The area has a desert environment of gently rolling land with sparse vegetation and very little surface moisture. Vegetation consists mainly of sage and native grasses. Soils are Quaternary Alluvium.

The drill site and access road are owned by the U. S. Government.

In the immediate vicinity there are no known water, occupied dwellings, archeological, historical, or cultural sites.

Archeological services were performed by Dr. Richard Holmer and his staff, University of Utah, on June 15, 1979.

12. Representatives:

Marathon Oil Company's representative who is responsible for compliance with the approved surface and operation plan is:

J. F. Wirth
Marathon Oil Company
P.O. Box 2659
Casper, WY 82602

(307) 235-2511 Ext. 524

13. Certification:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and, that the work associated with the operations proposed herein will be performed by Marathon Oil Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

6-25-79
DATE

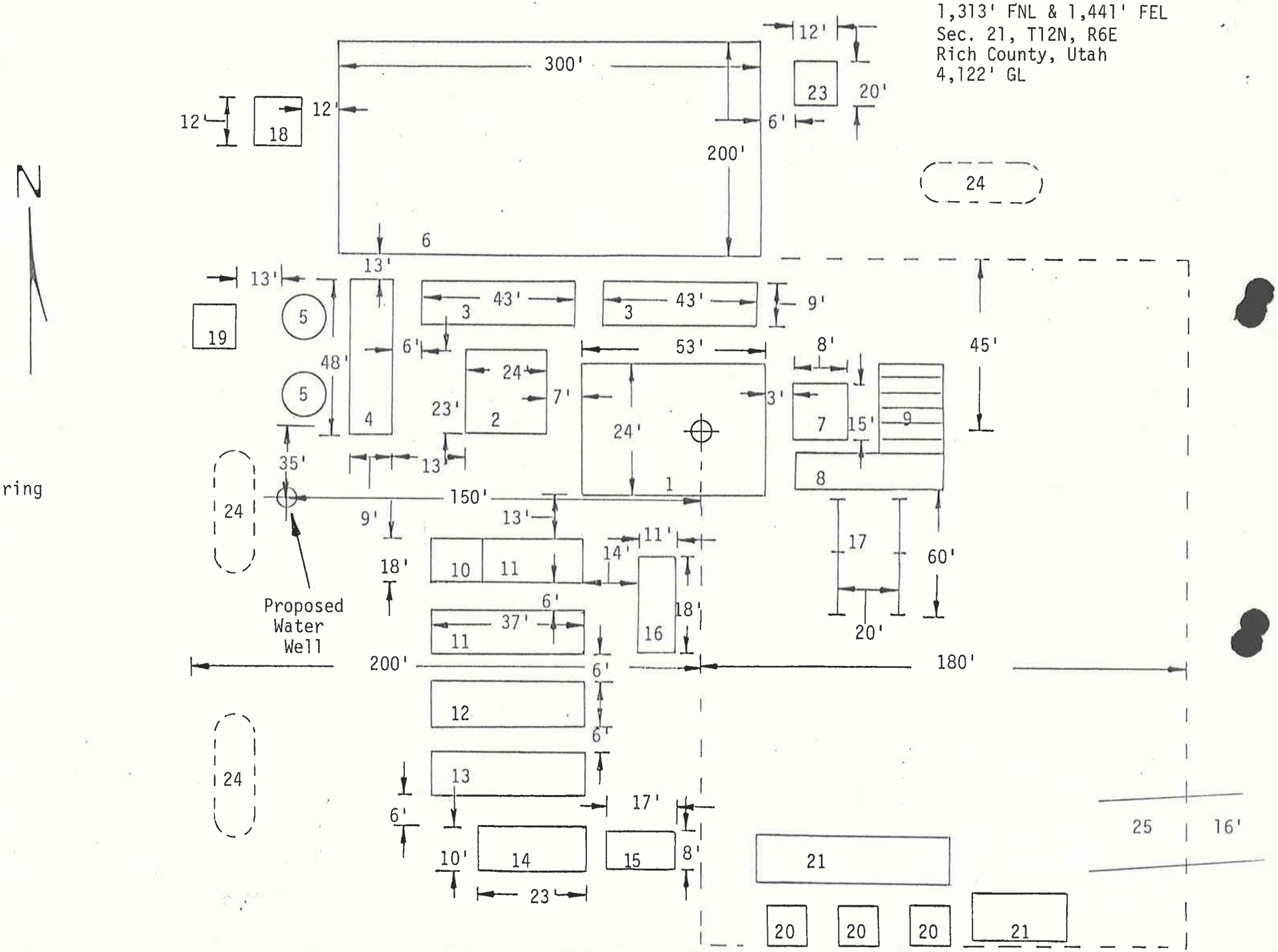
aaw
J. F. Wirth
NAME

Drilling Superintendent
TITLE

Proposed Schematic Drawing of Rig Layout

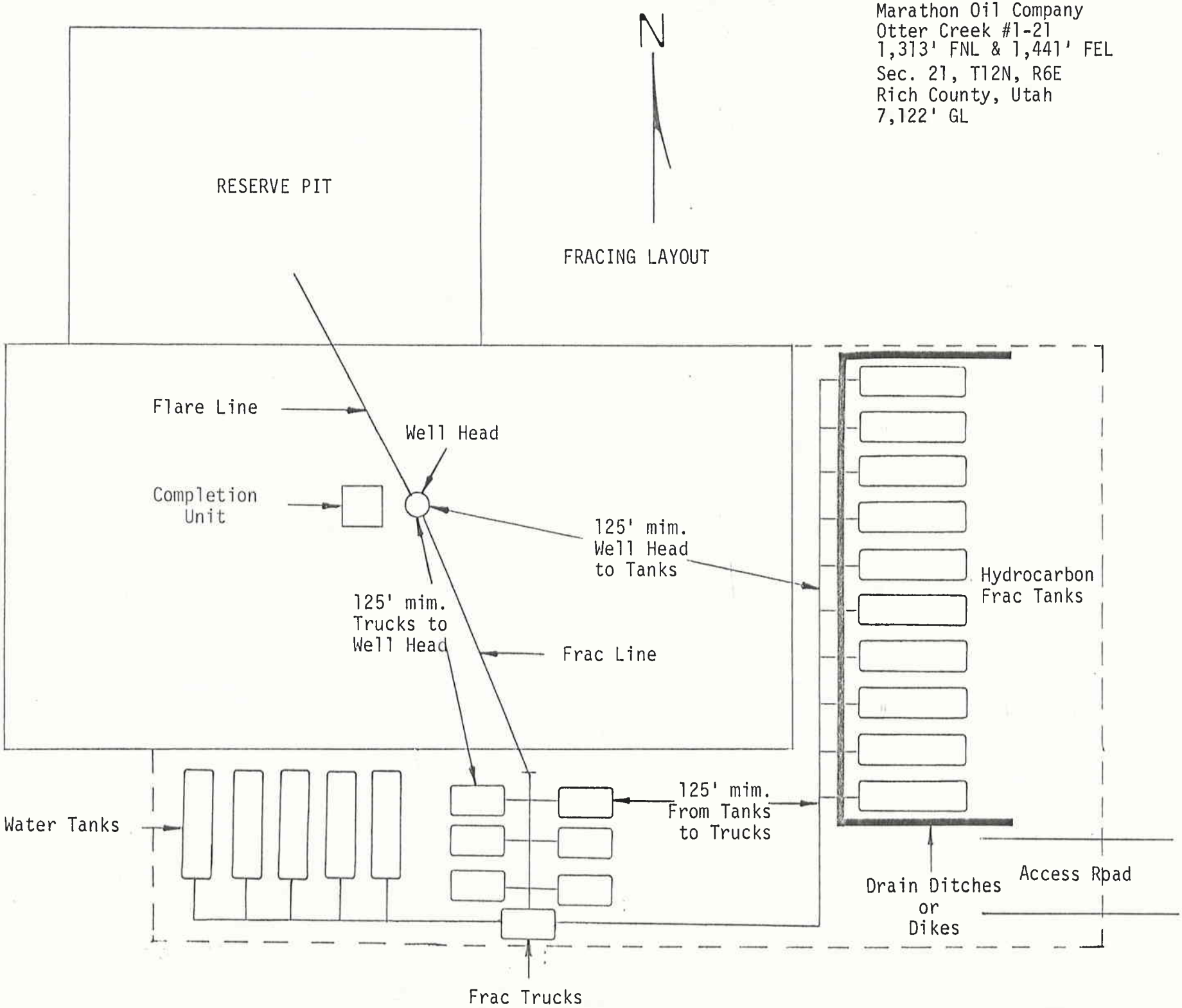
Marathon Oil Company
Otter Creek #1-21
1,313' FNL & 1,441' FEL
Sec. 21, T12N, R6E
Rich County, Utah
4,122' GL

1. Substructure
2. Mud Pumps
3. Mud Tank
4. Suction Tank
5. Mud Bins
6. Reserve Pit
7. Choke Manifold
8. Cat Walk
9. Pipe Bins
10. Water Tank
11. Fuel Tanks
12. Accumulator
13. Light Plant
14. Boiler
15. Heater
16. Oil Bank
17. Pipe Racks
18. Trash Pit
19. Toilets
20. Trailer Houses
21. Parking Area
22. Additional Area for Fracturing
23. Flare Pit
24. Soil Stock Pile
25. Access Road

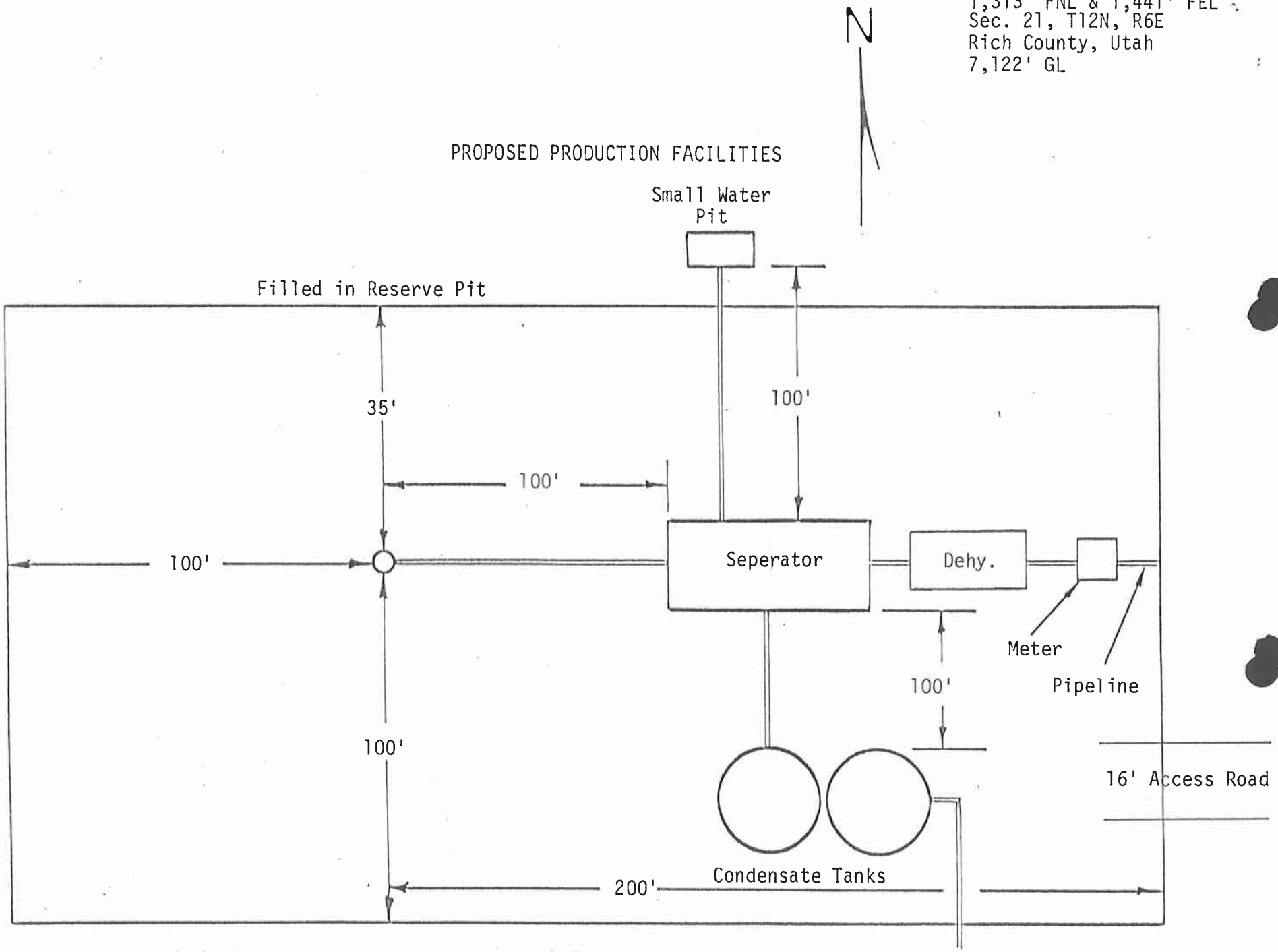


Bomac Rig 30

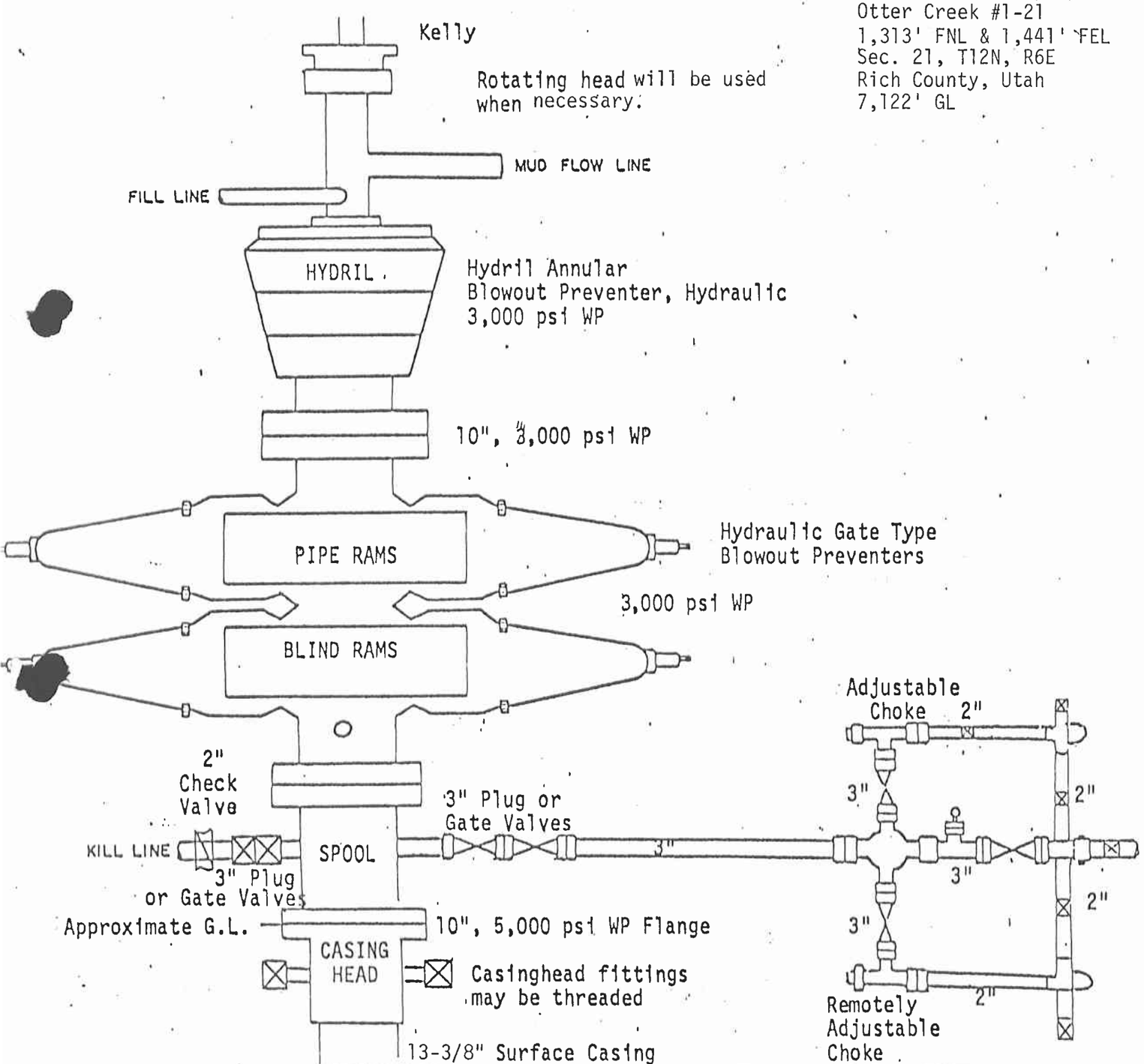
Marathon Oil Company
Otter Creek #1-21
1,313' FNL & 1,441' FEL
Sec. 21, T12N, R6E
Rich County, Utah
7,122' GL



Marathon Oil Company
Otter Creek #1-21
1,313' FNL & 1,441' FEL
Sec. 21, T12N, R6E
Rich County, Utah
7,122' GL



Marathon Oil Company
Otter Creek #1-21
1,313' FNL & 1,441' FEL
Sec. 21, T12N, R6E
Rich County, Utah
7,122' GL



1. Blowout preventers, master valve, plug valve and all fittings must be in good condition. Use new API Sealing Rings.

2. All fittings (gates, valves, etc.) to have pressure rating equivalent to preventers. Valves to be flanged and at least 2" unless otherwise specified. Valves next to BOP to be nominal 3".

3. Equipment through which bit must pass shall be as large as the inside diameter of the casing that is being drilled through.

4. Safety valve must be available on rig floor at all times and with proper connections. The I.D. of safety valve should be as great as I.D. of tool joints of drill pipe.

5. Kelly safety valve installed, to have same working pressure as BOP's.

6. All lines and controls to preventers must be connected and tested before drilling out of surface pipe.

7. BOP's must be fluid operated, complete with accumulator w/controls on the rig floor and one or more remote controls near steps or at accumulator.

8. Fillup line shall be tied to drilling nipple with connection below and approximately 90° to the flow line.

9. Gauge will be installed for testing but removed while drilling.

10. If spool is not used, the choke line can be connected to BOP side outlet, below bottom rams.

11. Casinghead and casinghead fittings to be furnished by Marathon Oil Company.

12. Chokes will be adjustable.

13. One side of casinghead may be bull plugged.

MARATHON OIL COMPANY

Otter Creek #1-21
Drilling Operations Plan
1,313' FNL, 1,441' FEL
Sec. 21, T12N, R6E
Rich County, Utah
Elevation 7,122' GL

1. Geologic name of surface:

   Wasatch - tertiary

2. Estimated tops of important geologic markers:

Formation	Depth	Datum	Formation	Depth	Datum
Wasatch	Surface		Woodside	9,300'	(-2,178)
Ordovician	200'	(+6,922)	Dinwoody	10,000'	(-2,878)
Pruess	1,350'	(+5,772)	Phosphoria	10,350'	(-3,228)
Twin Creek	2,000'	(+5,122)	Weber	10,950'	(-3,828)
Nugget	5,000'	(+2,122)	Ankerah	11,650'	(-4,528)
Ankerah	6,100'	(+1,022)	Thaynes	12,000'	(-4,878)
Thaynes	7,500'	(- 378)	TD	12,500'	

These tops are only "best guess" picks and may be very inaccurate. Thrust faults, poor seismic reflections, and over turned beds make picking tops very difficult.

3. Estimated depths of anticipated water, oil, gas or other mineral bearing formations:

Formation	Depth	Datum		
Thaynes	7,500'	(- 378)	gas	
Dinwoody	10,000'	(-2,878)	gas	(Primary Objective)
Phosphoria	10,350'	(-3,228)	gas	
Weber	10,950'	(-3,828)	gas	
Thaynes	12,000'	(-4,878)	gas	

4a. The casing program including the size, grade, weight, whether new or used, and a setting depth of each string:

Min. Hole Size	Casing O.D.	Grade	Weight	Setting Depth	New or Used
24"	20"	open	open	50'	new
17½"	13 3/8"	K-55	54.5#	2,100'	new
		K-55	61.0#	2,500'	new
12¼"	10 3/4"	N-80	55.5#	3,750'	new*
		N-80	51.0#	6,000'	new
		N-80	55.5#	7,600'	new
9½"	5½"	L-80	23#	1,000'	new
			20#	3,300'	new
			17#	12,500'	new

* Depth of intermediate casing will depend on hole conditions.

4b. The cementing program including type, amounts, and additives:

The 13 3/8" surface casing will be cemented with 2200 sacks of 50-50 poz mix containing 3% salt and ¼ pound per sack flocele followed by 250 sacks of class "G" cement containing 3% salt. Ten centralizers will be required. WOC time will be 12 hours. The casing will be pressure tested to 2500 psi. The casing will be drilled out and an additional 5' of hole will be drilled. The casing shoe will be tested to an equivalent 12 ppg mud.

The 7" production casing will be cemented with 350 sacks of 50-50 poz mix containing .75% CFR-2, .2% HR-4, and 3% KCL followed by 100 sacks of class "G" cement containing .75% CFR-2, 3% KCL, and .2% HR-4. Sixteen centralizers will be required. WOC time will be twenty four hours. The casing will be pressure tested to 5,000 psi.

5. B.O.P. specification and testing: (see the attached schematic diagram for size and pressure ratings):

One annular BOP (Hydril) and dual ram type BOP with pipe rams and blind rams. All equipment to have a 5,000# or better working pressure. The accumulator will be of sufficient size to close and open all components of the BOP stack without operating pump. Operation of all components to be checked daily. Blind rams and pipe rams will be pressure tested to 5,000 psi and the Hydril will be tested to 1,500 psi prior to drilling out of surface casing. The BOP will be tested before entering the Frontier Sands.

6. Mud program and anticipated pressures:

From	To	Type Mud	Weight	% Oil	Water Loss
surface	2,500'	Spud	8.5	0.0	uncontrolled
2,500'	6,800'	water	8.5	0.0	uncontrolled
6,800'	11,000'	low solids	8.8-9	0.0	less than 10 cc's

From surface to 2,500' the hole will be drilled with a Hydrogel-Lime slurry. Clear water is the proposed fluid from 2,500' to 6,800 ft. with Lime & Benex used to drop out solids. From approximately 6,800 ft. to TD (11,000 ft.) a low solids, low weight, non dispersed mud will be used. The mud weight will be no greater than necessary to prevent influx of formation fluids. The maximum anticipated pressure at 11,000 is 5148 psi which will require a 9.0 ppg mud. No lost circulation zones are anticipated.

7a. Type of drilling tools and auxiliary equipment:

A drilling rate recorder, calibrated to record drilling time for each one foot interval will be used.

The mud system will include a desander, desilter, gas separator, degasser, trip tank, pit level monitor and flowline sensor. Both a remote adjustable choke and a manual choke will be used.

A kelly cock will be used, a TIW safety valve and inside BOP will be available on the rig floor.

A casinghead bore protector will be installed after setting surface casing and will be in use during all drilling operations.

7b. Deviation Control:

From	To	Maximum Distance Between Surveys	Maximum Deviation From Vertical	Maximum Change Per 100' of Depth
0'	2,500'	100'	*	1°
2,500'	7,600'	100'	*	1°
7,600'	12,500'	100'	*	1°

* High angle dips will make deviation control difficult. The deviation will be controlled so that safe drilling operations can continue.

8. Sample, logging, testing, and coring program:

Drilling samples will be taken every 30' from surface to 2,500' and every 10' from 2,500' to TD. A two man mud logging unit will be assigned to the well from 2,500' to TD.

A BHC-sonic and GR will be run from 2,100' to surface. A GR-FDC-CNL, SP-DIL, SP-DLL, Dipmeter-Cal, and Fracture Identification log will be run from 7,600' to 2,500' prior to running the 10 3/4"intermediate casing, and from TD to 7,600' prior to running the 5½" production string.

A casing inspection log will be run in the 10 3/4" casing prior to drilling out.

9. Anticipated abnormal pressures or temperatures:

No abnormal pressures or temperatures are expected. A maximum temperature of 195° F and a maximum pressure of 5460 psi is anticipated at TD.

H_2S is anticipated in the Phosphoria formation. H_2S scavengers and corrosion agents will be used to control effluence at the surface. The proper breathing apparatus, warning signals, etc. will be used on the location, and the crews will be throughly trained in H_2S safety.

10. The anticipated starting date and duration of operation:

Starting Date: 27 October 1979

Duration: 180 days

DISTRICT APPROVALS

Approved	Date
Richard S Cardin	6/1/79
J Wirth	6-4-79
J. E. Lawrence	6-5-79
M. E. O'Keefe	6-6-79
J. E. Oneal	6-7-79
Harry Magun	6/7/79

DIVISION APPROVALS

Approved	Date

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

WELL INSPECTION RECORD

NAME OF COMPANY: Marathon Oil

WELL NAME: Otter Creek 1-21

SECTION: NE 21 TOWNSHIP: 12N RANGE: 6E COUNTY: Richfield

DATE: 5-7 1980 LOCATION INSPECTED

TOTAL DEPTH: 2037' AT TIME OF VISIT

NAME OF DRILLING CONTRACTOR: Parker Drilling

RIG NUMBER: #118

COMMENTS:

Drilling in the Twin Creek at 2037' with plans to set 13 3/8" casing to 2000-2500'. The site is muddy and quite cluttered with equipment, barrels, casing and junk scattered over the location. The reserve pond is structurally sound with about 5' of freeboard, it is fenced, and make up water is being taken from east side.

DATE: SIGNED: MTM M. T. M.

SEND TYPED COPY TO COMPANY: YES____ NO____

Form 9-331 C
(May 1963)

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1425.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DUPLICATE

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

5. LEASE DESIGNATION AND SERIAL NO.: U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: Otter Creek

9. WELL NO.: #1-21

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 21, T12N, R6E

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

b. TYPE OF WELL: OIL WELL [ ] GAS WELL [X] OTHER SINGLE ZONE [ ] MULTIPLE ZONE [ ]

2. NAME OF OPERATOR: Marathon Oil Company

3. ADDRESS OF OPERATOR: P.O. Box 2659 - Casper, Wyoming 82602

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 1,313' FNL & 1,441' FEL
At proposed prod. zone:

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 5 miles southeast & 3½ miles southwest of Laketown, Utah.

12. COUNTY OR PARISH: Rich

13. STATE: Utah

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any): 1,441'

16. NO. OF ACRES IN LEASE: Pooled Area 960

17. NO. OF ACRES ASSIGNED TO THIS WELL: 360

18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.: None

19. PROPOSED DEPTH: 12,500'

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 7,122'

22. APPROX. DATE WORK WILL START*: 10-27-79

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
24"	20"	Open	50'	
17-1/2"	13-3/8"	54.5#	2,100'	1645 sacks
12-1/4"	10-3/4"	61.0#	2,500'	
		55.5#	3,750'	
		51.0#	6,000'	315 sacks
		55.5#	7,600'	
9-1/2"	5-1/2"	23#	1,000'	
		20#	3,300'	
		17#	12,500'	1200 sacks

Please see the following attachments:
1. Surveyor's Plat
2. Ten-Point Drilling Program
3. BOP Schematic
4. Thirteen Point NTL-6
5. Maps

RECEIVED
FEB 26 1980
DIVISION OF
OIL, GAS & MINING

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

24.
SIGNED Harry Magnuson TITLE District Operations Manager DATE 25 June 1979

(This space for Federal or State office use)

PERMIT NO. APPROVAL DATE

APPROVED BY (ORIG. SGD.) E. W. GUYNN TITLE DISTRICT ENGINEER DATE FEB 21 1980

CONDITIONS OF APPROVAL, IF ANY:

NOTICE OF APPROVAL

CONDITIONS OF APPROVAL ATTACHED TO OPERATOR'S COPY

FLARING OR VENTING OF GAS IS SUBJECT TO NTL 4-A DATED 1/1/80

ut state O&G

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.: U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

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

7. UNIT AGREEMENT NAME:

2. NAME OF OPERATOR: Marathon Oil Company

8. FARM OR LEASE NAME: Otter Creek

3. ADDRESS OF OPERATOR: P.O. Box 2659, Casper, WY 82602

9. WELL NO.: 1-21

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 1313' FNL & 1441' FEL

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 21, T12N, R6E

14. PERMIT NO.:

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 7,122' GL

12. COUNTY OR PARISH: Rich

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	[X]	(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.)*

Sir:

We would like to pursue the completion for approval of our APD on the above captioned well. Our offsetting legal problems to the north of this location have been resolved sooner than anticipated.

Thank you for your time and consideration on this matter.

cc: F. M. Hamner
State of Utah
Dept. of Natural Resources
Div. of Oil, Gas & Mining
1588 West North Temple
Salt Lake City, Utah 84116

APPROVED BY THE DIVISION OF OIL, GAS, AND MINING
DATE: Jan. 17, 1980
Frank M. Hamner

RECEIVED
JAN 11 1980
DIVISION OF OIL, GAS & MINING

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

SIGNED Dale Cadby TITLE District Operations Manager DATE 1-8-80

(This space for Federal or State office use)

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

*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.: U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: Otter Creek

9. WELL NO.: 1-21

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 21, T12N, R6E

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

2. NAME OF OPERATOR: Marathon Oil Company

3. ADDRESS OF OPERATOR: P.O. Box 2659, Casper, Wyoming 82602

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 1,313' FNL & 1,441' FEL

14. PERMIT NO.:

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 7,122' GL

12. COUNTY OR PARISH: Rich

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	[X]	(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.)*

Sir:

We are unable to pursue the completion for approval of our APD on the above captioned well at this time, due to offsetting lease problems to the North.

We request an extension of time that will enable us to resolve our offsetting lease problems.

Thank you for your time and consideration on this matter.

cc: F. M. Hamner
State of Utah
Dept. of Natural Resources
Division of Oil, Gas & Mining
1588 West North Temple
Salt Lake City, Utah 84116

APPROVED BY THE DIVISION OF
OIL, GAS, AND MINING
DATE: Oct. 29, 1979
BY: Frank M. Hamner

RECEIVED
OCT 29 1979
DIVISION OF OIL, GAS & MINING

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

SIGNED: Jesse B. O'Neal TITLE: District Engineer DATE: 10-26-79

(This space for Federal or State office use)

APPROVED BY: TITLE: DATE:

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Casper Division
Production, U.S. & Canada

Marathon Oil Company

P.O. Box 120
Casper, Wyoming 82602
Telephone 307/235-2511

October 11, 1979

State of Utah
Department of Natural Resources
Division of Oil, Gas, and Mining
1588 West North Temple
Salt Lake City, Utah 84116

Gentlemen:

Re: Otter Creek Well No. 1-21
Sec. 21, T. 12 N., R. 6 E.
Rich County, Utah

This is in reply to your letter of September 20, 1979, and to advise that Federal Oil and Gas Lease U-25453 covers the N½, W½SW¼, SE¼SW¼, W½SE¼ of Section 21, Lots 1 thru 5, S½SW¼, SE¼, S½NE¼ and NW¼NE¼ of Section 22, T. 12 N., R. 6 E., amongst other lands, and that Federal Oil and Gas Lease U-29703 covers NE¼SW¼ and E½SW¼ of Section 21, T. 12 N., R. 6 E., amongst other lands. The first cited lease controls all the acreage within a 660' radius of the proposed site.

Marathon, as operator for itself and others, has staked location for the above referenced well 1313' from the north line and 1441' from the east line of Section 21. The pre-drill inspection with BLM and U.S.G.S. representatives dictated the above location due to terrain problems.

Very truly yours,

Sherman O. Nation

Sherman O. Nation,
Area Land Supervisor

SON/mm

cc: Art Guthrie

RECEIVED
OCT 15 1979
DIVISION OF OIL, GAS, & MINING

September 20, 1979

Marathon Oil Company
P.O. Box 2659
Capper, Wyoming 82602

Re: Well No. Otter Creek 1-21
Sec. 21, T. 12N, R. 6E.,
Rich County, Utah

Insofar as this office is concerned, approval to drill the above referred to gas well on said unorthodox location is hereby granted in accordance with Rule C-3(c), General Rules and Regulations and Rules of Practice and Procedure. However, this Division requires that written proof showing that Marathon own or controls acreage within a 660' radius of the proposed site be submitted to this office.

Should you determine that it will be necessary to plug and abandon this well, you are hereby requested to immediately notify the following:

MICHAEL T. MINDER Geological Engineer Office: 533-5771 Home: 876-3001	or	FRANK M. HAMNER Chief Petroleum Engineer Office: 533-5771 Home: 531-7827

Enclosed please find Form OGC-8-X, which is to be completed whether or not water sands (acquifers) are encountered during drilling. Your cooperation in completing this form will be appreciated.

Further, it is requested that this Division be notified within 24 hours after drilling operations commence, and that the drilling contractor and rig number be identified.

The API number assigned to this well is 43-033-30023.

Sincerely,

DIVISION OF OIL, GAS AND MINING

Michael T. Minder
Geological Engineer

/btm

cc: USGS

Casper Division
Production, U.S. & Canada

Marathon Oil Company

P.O. Box 2659
Casper, Wyoming 82602
Telephone 307/265-7693

12 September 1979

State of Utah
Department of Natural Resources
Division of Oil, Gas, and Mining
1588 West North Temple
Salt Lake City, Utah 84116

ATTN: Mr. Michael T. Minder

Dear Mr. Minder:

Our original proposed staking of the location of Otter Creek #1-21, was 1,320' FNL and 1,320' FEL, Section 21, T12N, R6E, Rich County, Utah. This proposal would have put the location on the edge of a bad side hill and in a natural drainage of the area. It was decided by Marathon's management and the contract surveyors to move the location 121' to the west and 7' to the north to circumvent restaking at the predrill. Our reason for this unorthodox location was based on Utah's Rule C-3, (C), (1), topographical and geological conditions, and to meet BLM and USGS requirements. No recommendations were made at the predrill meeting by BLM or USGS to move the location from its setting of 1,313' FNL and 1,441' FEL.

Attached are copies of pictures made at the location at predrill, and a copy of our report of this meeting.

Thank you for your time on this matter.

Very truly yours,

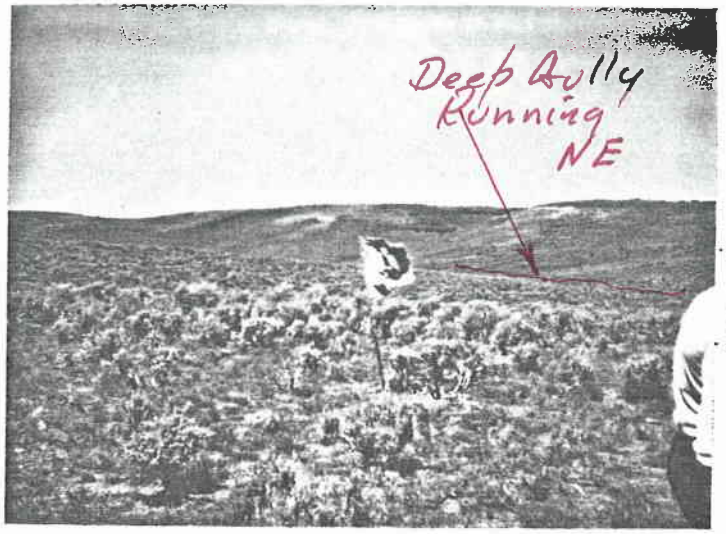
MARATHON OIL COMPANY

Harry Maguss

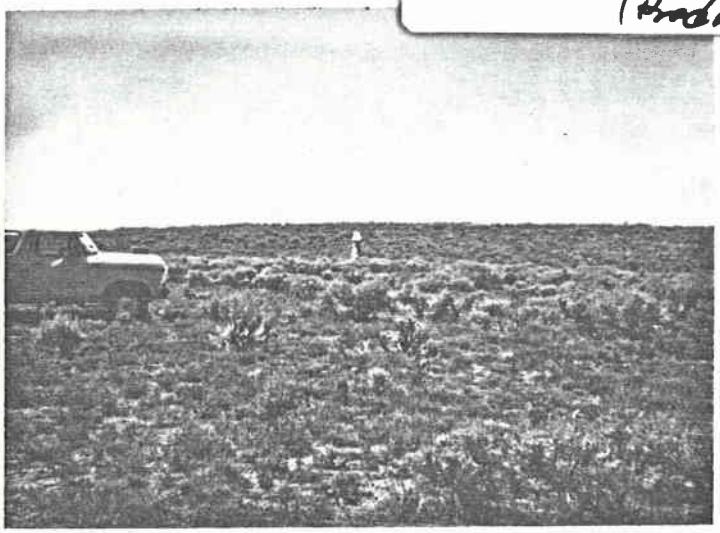
Harry Maguss
District Operations Manager

HM/WW:ss
Attachment

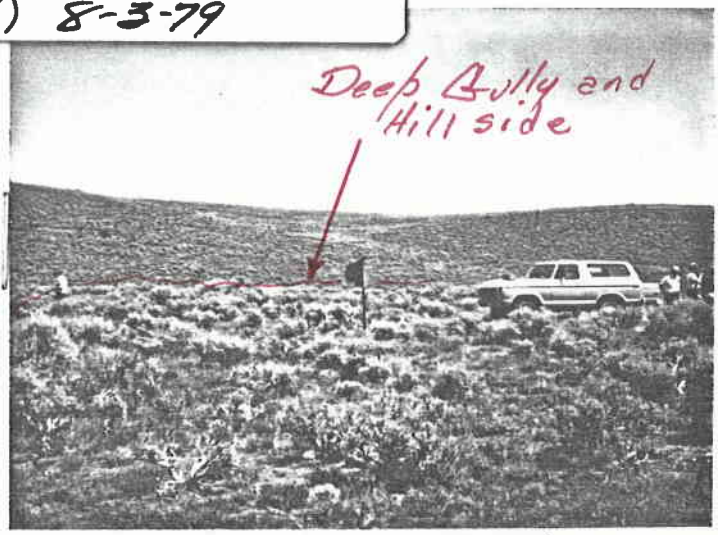
RECEIVED
SEP 14 1979
DIVISION OF OIL, GAS, & MINING



North
Otter Creek #1-21
(Predrill) 8-3-79



West
Otter Creek #1-21
(Predrill) 8-3-79



East
Otter Creek #1-21
(Predrill) 8-3-79

South

Casper Division
Production, U.S. & Canada

Marathon Oil Company

P.O. Box 2659
Casper, Wyoming 82602
Telephone 307/265-7693

31 August 1979

Mr. F. M. Hamner
Chief Petroleum Engineer
State of Utah
Division of Oil, Gas & Minerals
1588 West North Temple
Salt Lake City, Utah 84116

Re: Otter Creek
Well No. 1-21
Section 21, T12N, R6E
Rich County, Utah

Dear Mr. Hamner:

Submitted for your consideration is a list of equipment and procedures proposed for the monitoring and control of any H_2S gas encountered during the drilling of the above referenced well.

The following equipment will be on location prior to spudding:

1. Sufficient 40 cubic feet self-contained breathing apparatus will be available and placed at critical locations to protect operating personnel on location.

2. Dual monitor complete with visual and audible alarm system. (One monitor will be located at the bell nipple and the other at the shale shaker.)

3. Three wind socks with streamers.

4. Marked locations of designated safe areas and escape routes.

5. Warning signs will be located no closer than 1/2 mile from the drilling site.

6. Personnel will be trained in the use of all safety equipment. (Names and dates of training will be posted on location.)

7. An approved contingency plan will be available and posted on location prior to starting operations.

8. Only authorized personnel will be allowed on drill site.

9. Initial contact will be made with local Sheriff's office, District Highway Patrol office, and area medical personnel.

10. Two bug fans.

11. Safety trailer with 10-380 C.F. cylinder cascade air supply system.

12. 1,000' low pressure air line hose with quick connects.

13. Two low pressure manifolds.

14. Eight air line masks with emergency escape cylinders.

15. Six 30-minute self-contained breathing apparatus.

16. First aid kit (36 unit).

17. Oxygen powered resuscitator with cylinder.

18. Flare gun with shells.

19. Gas detector (pump type).

If you require any additional information, please do not hesitate to call me.

Very truly yours,

MARATHON OIL COMPANY

J. F. Wirth aaw
Drilling Superintendent

JFW/WEW:ss
Attach.

cc: Mr. Ed Guynn
District Engineer
U.S.G.S.
8426 Federal Building
125 South State Street
Salt Lake City, Utah 84138

Mr. George Diwachak
Environmental Scientist
U.S.G.S.
8426 Federal Building
125 South State Street
Salt Lake City, Utah 84138

Casper Division
Production, U.S. & Canada

Marathon Oil Company

P.O. Box 2659
Casper, Wyoming 82602
Telephone 307/265-7693

August 7, 1979

RECEIVED
AUG 10 1979
DIVISION OF OIL, GAS, & MINING

STATE OF UTAH
Department of Natural Resources
Division of Oil, Gas, and Mining
1588 West North Temple
Salt Lake City, Utah 84116

Attention: Mr. Michael T. Minder

Dear Sir:

A predrill meeting was held on the well site of Otter Creek #1-21, Section 21, T12N, R6E, on 8-3-79 at 1:30 p.m. BLM & USGS made no recommendations from the original staking, 1313' FNL & 1441' FEL. As per your reguest the following representatives were present at this meeting.

Dan Washington	BLM, Salt Lake City, Utah
Ken Frye	BLM, Salt Lake City, Utah
Pam Trexler	BLM, Salt Lake City, Utah
Victoria Schurer	BLM, Salt Lake City, Utah
George Diwachak	USGS, Salt Lake City, Utah
Jim F. Wirth	Marathon Oil Co., Drilling Superintendent
E. L. Spieles	Marathon Oil Co., Environmental Coordinator
Ray Rosenthal	Marathon Oil Co., Drilling Foreman
Rich Carden	Marathon Oil Co., Drilling Engineer
Bill Moomey	Marathon Oil Co., Landman
Walt West	Marathon Oil Co., Gov't Compliance
Bill Sears	Opal Construction, Dirt Contractors
Harvey Lundershavsen	Opal Construction, Dirt Contractors

If we may be of further assistance, please call us.

Very truly yours,

J. F. Wirth
Drilling Superintendent

WW:eh

RACOMPANY CORRESPONDENCE

TO Mr. Jim Wirth DATE August 7, 1979

OFFICE Casper District FROM Mr. Walt West

Predrill Meeting. Otter Creek #1-21 OFFICE Casper District

(USE THIS LINE FOR FILE REFERENCE OR SUBJECT)

A predrill meeting was held on the well site, August 3, 1979, at 1:30 p.m. The following representatives were present:

Dan Washington	BLM, Salt Lake City, Utah
Ken Frye	BLM, Salt Lake City, Utah
Pam Trexler	BLM, Salt Lake City, Utah
Victoria Schurer	BLM, Salt Lake City, Utah
George Diwachak	USGS, Salt Lake City, Utah
Jim F. Wirth	MOC, Drilling Superintendent
E. L. Spieles	MOC, Environmental Coordinator
Ray Rosenthal	MOC, Drilling Foreman
Rich Carden	MOC, Drilling Engineer
Bill Moomey	MOC, Landman
Walt West	MOC, Gov't. Compliance
Bill Sears	Opal Construction, Dirt Contractors
Harvey Lundershavsen	Opal Construction, Dirt Contractors

Marathon requested and received approval to move the access road to the west from the original proposal. The rig pad was rotated 45° from originally submitted on NTL-6, this was done to better necessitate the building of the reserve pit. The drill pad is 380'-225', the reserve pit is 300' x 200'. The H_2S contingency plan was discussed by USGS with Marathon's Drilling Superintendent. No other recommendations were made.

Note: On the way to the predrill meeting, the Mud Springs #1-8 location was inspected by MOC's Drilling Superintendent. Discussions were held by him with Vierson & Cochran personal, as Rig #9 was being readied for spudding.

WW:ss

cc: Harry Maguss

Form 9-331
(May 1963)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE*
(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.)

RECEIVED
AUG 6 1979
DIVISION OF OIL, GAS, & MINING

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

2. NAME OF OPERATOR: Marathon Oil Company

3. ADDRESS OF OPERATOR: P.O. Box 2659 - Casper, WY 82602

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.)
At surface
1,313' FNL & 1,441' FEL

5. LEASE DESIGNATION AND SERIAL NO.: U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: Otter Creek

9. WELL NO.: 1-21

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 21, T12N, R6E

12. COUNTY OR PARISH: Rich

13. STATE: Utah

14. PERMIT NO.:

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 7,122' GL

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	[X]	(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.)*

Sir,

We propose to change our casing program.
Please see attached copy of 10 Point Program.

APPROVED BY THE DIVISION OF
OIL, GAS, AND MINING
DATE: Aug. 9, 1979
BY: [signature]

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

SIGNED [signature] TITLE Drilling Superintendent DATE 8-2-79

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

United States Department of the Interior
Geological Survey
1745 West 1700 South
Salt Lake City, Utah 84104

Usual Environmental Analysis

Lease No. U-25453

Operator: Marathon Oil Company Well No: 1-21

Location: 1313' FNL & 1441' FEL(NW/NE) Sec: 21 T. 12N R.6E

County: Rich State: Utah Field: Wildcat

Status: Surface Ownership. Public Minerals: Federal

Joint Field Instpection Date: August 3, 1979

Participants and Organizations:

George Diwachak	U.S.G.S. - Salt Lake City
Dan Washington	BLM - Salt Lake City, Utah
Kenn Frye	BLM - Salt Lake City, Utah
Pam Trexler	BLM - Salt Lake City, Utah
Vicki Shurer	BLM - Salt Lake City, Utah
J.F. Wirth	Marathon Oil Company
W.E. West	Marathon Oil Company
Richard Carden	Marathon Oil Company
Bill Mooney	Marathon Oil Company
E.L. Spieles	Marathon Oil Company
Roger Rosenthal	Marathon Oil Company
Harvey Lundershausen	Opal Construction Company
Bill Sears	Opal Construction Company

Related Environmental Analyses and References:

(1) Unit Resource Analysis, Randolph Planning Unit, BLM, Salt Lake City, Utah.

Analysis Prepared by: George Diwachak
Environmantal Scientist
Salt Lake City, Utah

Date: August 13, 1979

Ref: Unusual EA # 1057

Wellsite rotated
Access road changed
Pad 225 x 380
Pit 200 x 300
1/2 mi new access
Flow line not incl
Stockpile topsoil
5 ac

H2S contingency plan required
mitigators pg 7
3 a-e

Proposed Action:

On June 27, 1979, Marathon Oil Company filed an Application for Permit to Drill the No. 1-21 exploratory well, a 12,500-foot gas test of the Dinwoody Formation; located at an elevation of 7122 feet in the NW/4 NE/4 Section 21 T12N, R6E on Federal mineral lands and public surface; Lease No. U-25453. Since an objection was raised to the wellsite it was rotated 45 degrees East of north.

As an objection was raised to the access road, it was changed. See attached map for new access road.

A rotary rig would be used for the drilling. An adequate casing and cementing program is proposed; however minor adjustments may be necessary. Fresh-water sands and other mineral-bearing formations would be protected. A Blowout Preventor would be used during the drilling of the well. The proposed pressure rating should be adequate. Details of the operator's NTL-6 10-Point Subsurface Plan are on file in the USGS District Office in Salt Lake City, Utah and the USGS Northern Rocky Mountain Area Office in Casper, Wyoming. The 13-Point Surface Protection Plan is on file in the District Office in Salt Lake City.

A working agreement has been reached with BLM, the controlling surface agency. Rehabilitation plans would be decided upon as the well neared completion; the Surface Management Agency would be consulted for technical expertise on those arrangements.

The operator proposes to construct a drill pad 225 feet wide x 380 feet long and a reserve pit 200 feet x 300 feet. A new access road would be constructed 16 feet wide, with 30 feet maximum disturbed width, x 0.5 miles long and an existing road may be upgraded where needed to permit access from a maintained road. The operator proposed to construct production facilities on disturbed area of the proposed drill pad. If production is extablished, plans for a gas flow line would be submitted to the appropriate agencies for approval. The anticipated starting date is October 27, 1979 and duration of drilling activities would be about 180 days.

A portion of the access route crosses private surface, and a rehabilitation agreement would be necessary prior to approval.

Location and Natural Setting:

The proposed drill site is approximately 5 miles southeast of Laketown, Utah, the nearest town. A fair road runs to within 0.5 miles of the location. This well is a wildcat.

Topography:

The topography of the area consists of low, sagebrush covered, rolling mountains, characteristic of Northern Utah. The proposed location is situated on a small ridge that slopes to the north at about 10%, and is surrounded by gulleys and washes.

Geology:

The surface geology is a tertiary conglomerate (Wasatch).

The soil is sandy clay.

No geologic hazards are known near the drillsite.

Seismic risk for the area is moderate. Anticipated geologic tops are filed with the 10-Point Subsurface Protection Plan.

Approval of the proposed action would be conditioned that adequate and sufficient electric/radioactive/density logging surveys would be made to locate and identify any potential mineral resources. Production casing and cementing would be adjusted to assure no influence of the hydrocarbon zones through the well bore on these minerals. In the event the well is abandoned, cement plugs would be placed with drilling fluid in the hole to assure protection of any mineral resources.

The potential for loss of circulation would exist. Loss of circulation may result in the lowering of the mud levels, which might permit exposed upper formations to blow out or to cause formation to slough and stick to drill pipe. A loss of circulation would result in contamination due to the introduction of drilling muds, mud chemicals, filler materials, and water deep in to the permeable zone, fissures, fractures, and caverns within the formation in which fluid loss is occurring. The use of special drilling techniques, drilling muds, and lost circulation materials may be effective in controlling lost circulation.

A geologic review of the proposed action has been furnished by the Area Geologist, U.S. Geological Survey, Salt Lake City, Utah.

The operator's drilling, cementing, casing and blowout prevention programs have been reviewed by the Geological Survey engineers and determined to be adequate.

Soils:

No detailed soil survey has been made of the project area. The top soils in the area range from a sandy clay to a clay type soil. The soil is subject to runoff from rainfall and has a high runoff potential and sediment production would be high. The soils are mildly to moderately alkaline and support the salt-desert shrub community.

Top soil would be removed from the surface and stockpiled. The soil would be spread over the surface of disturbed areas when abandoned to aid in rehabilitation of the surface. Rehabilitation is necessary to prevent erosion and encroachment of undesired species on the disturbed areas. The operator proposes to rehabilitate the location and access roads per the recommendations of the Bureau of Land Management.

Approximately 5 acres of land would be stripped of vegetation. This would increase the erosional potential. Proper construction practice, construction of water bars, reseeding of slope-cut area would minimize this impact.

Air:

No specific data on air quality is available at the proposed location. There would be a minor increase in air pollution due to emissions from rig and support traffic engines. Particulate matter would increase due to dust from travel over unpaved dirt roads. The potential for increased air pollution due to leaks, spills, and fire would be possible.

Relatively heavy traffic would be anticipated during the drilling-operations phase, increasing dust levels and exhaust pollutants in the area. If the well was to be completed for production, traffic would be reduced substantially to a maintenance schedule with a corresponding decrease of dust levels and exhaust pollutants to minor levels. If the project results in a dry hole, all operations and impact from vehicular traffic would cease after abandonment. Due to the limited number of service vehicles and limited time span of their operation, the air quality would not be substantially reduced.

Toxic or noxious gases would be anticipated. The operator anticipates encountering hydrogen sulfide in the Phosphoria formation. Past experience in the southern portion of the Overthrust Belt shows that the Thaynes formation is also a potential H_2S zones. An approved H_2S Contingency Plan would be required prior to the commencement of drilling activities.

H_2S Contingency Plan Required

Precipitation:

Annual rain fall should range from about 9 to 13" at the proposed location. The majority of the numerous drainages in the surrounding area are of a non-perennial nature flowing only during early spring runoff and during extremely heavy rain storms. This type of storm is rather uncommon as the normal annual precipitation is around 12".

Winds are medium and gusty, occuring predominately from southwest to northeast. Air mass inversions are rare. The climate is semi-arid with abundant sunshine, hot summers and cold winters with temperature variations on a daily and seasonal basis.

Surface Water Hydrology:

Any drainage from the location would be through intermittent washes to Laketown Canyon, a non-perrenial drainage which flows north through Laketown, Utah to Big Creek, which flows to Bear Lake. Bear Lake, an important recreation area is approximately 6 miles north, northwest of the location.

Some additional erosion would be expected in the area since surface vegetation would be removed. If erosion became serious, drainage systems such as water bars and dikes would be installed to minimize the problem. The proposed project should have minor impact on the surface water systems. The potentials for pollution would be present from leaks or spills. The operator is required to report and clean-up all spills or leaks.

Ground Water Hydrology:

Some minor pollution of ground water systems would occur with the introduction of drilling fluids (filtrate) into the aquifer. This is normal and unavoidable during rotary drilling operations. The potential for communication, contamination and comingling of formations via the well bore would be possible. The drilling program is designed to prevent this. There is need for more data on hydrologic systems in the area and the drilling of this well may provide some basic information as all shows of fresh water would be reported. Water production with the gas would require disposal of produced water per the requirements of NTL-2B. The depths of fresh water formations are listed in the 10-Point Subsurface Protection Plan. The pits would be unlined. If fresh water should be available from the well, the surface agency may request completion as a water well if given approval.

A report from Water Resources Division (attached) states that data collected from other parts of northern Utah indicate that Wasatch, Nugget and Weber Formations may contain fresh water in usable quantities, and recommends that these formations be protected against contamination during drilling. The casing and cementing program proposed by the operator is designed to adequately protect the Wasatch and Weber formations. Adjustments to the program would be necessary if fresh water is found in the Nuggett Formation. Additionally, WRD recommends that all geologic unit penetrated be monitored for the quantity and quality of water they contain.

Vegetation:

Plants on the proposed test site consist predominately of sagebrush, with some grass species present.

Plants in the area are of the salt-desert-shrub types.

Proposed action would remove about 5 acres of vegetation. Removal of vegetation would increase the erosional potential and there would be a minor decrease in the amount of vegetation available for grazing.

The Operator proposes to rehabilitate the surface upon completion of operations.

Wildlife:

The fauna of the area consists predominantly of mule deer, coyotes, rabbits, foxes, and varieties of small ground squirrels and other types of rodents and various types of reptiles. The area is used by man for the primary purpose of grazing domestic livestock and sheep. The birds of the area are raptors, finches, ground sparrows, magpies, crows, jays, and upland game birds (sage grouse and blue grouse).

An animal and plant inventory has been made by the BLM. No endangered plants or animals are known to inhabit the project area.

Social-Economic Effect:

An on the ground surface archaeological reconnaissance would be required prior to approval of the proposed action. Appropriate clearances would then be obtained from the surface managing agency. If a historic artifact, an archaeological feature or site is discovered during construction operations; activity would cease until the extent, the scientific importance, and the method of mitigating the adverse effects could be determined by a qualified cultural resource specialist.

The nearest occupied dwellings in the area are located at Laketown, approximately 5 miles north, northeast of the proposed test site. There are no occupied dwellings in the general area of the proposed location. No H_2S safety hazards toward Laketown residents would be expected by this action. Distractions from aesthetics would occur over the lifetime of the project and is judged to be minor. All permanent facilities placed on the location would be painted a color to blend in with the natural environment. Present use of the area is grazing, recreation, and oil and gas activities.

Noise from the drilling operation may temporarily disturb wildlife and people in the area. Noise levels would be moderately high during drilling and completion operations. Upon completion, noise levels would be infrequent and significantly less. If the area is abandoned, noise levels should return to pre-drilling levels.

The site is not visible from any major roads. After drilling operations, completion equipment would be visible to passersby of the immediate area but should not present a major intrusion.

The economic effect on one well would be difficult to determine. The overall effect of oil and gas drilling and production activity are significant in Rich County.

But should this well discover a significant new hydrocarbon source, local, state, and possible national economics might be improved. In this instance, other development wells would be anticipated, with substantially greater environmental and economic impacts.

Should the wellsite be abandoned, surface rehabilitation would be done according to the surface agency's requirements and to USGS's satisfaction. This would involve leveling, contouring, reseeding, etc., of the location and possibly the access road. If the well should produce hydrocarbons, measures would be undertaken to protect wildlife and domestic stock from the production equipment.

The proposed location is about 6 miles South, Southeast of Bear Lake, an important recreation area. No severe environmental or safety consequences to the lake would be expected by the drilling of this well. There are no other national state, or local parks, forests, wildlife refuges or ranges, grasslands, monuments, trails or other formally designated recreational facilities near the proposed location.

The proposed location is within the Randolph Planning Unit (02-01). This Environmental Assessment Record was compiled by the Bureau of Land Management, the surface managing agency of the Federal surface in the area. The study includes additional information on the environmental impact of oil and gas operations in this area and gives land use recommendations. The E.A.R. is on file in the agency's State offices and is incorporated herein by reference.

Waste Disposal:

The mud and reserves pits would contain all fluids used during the drilling operations. A trash pit would be utilized for any solid wastes generated at the site and would be burned and buried at the completion of the operations. Sewage would be handled according to State sanitary codes. For further information, see the 13-Point Surface Plan.

Alternative to the Proposed Action:

(1) Not approving the proposed permit-The oil and gas lease grants the lessee exclusive right to drill for, mine, extract, remove and dispose of all oil and gas deposits. Under leasing provisions, the Geological Survey has an obligation to allow mineral development if the environmental consequences are not too severe or irreversible. Upon rehabilitation of the site, the environmental effects of this action would be substantially mitigated, if not totally annulled. Permanent damage to the surface and subsurface would be prevented as much as possible under USGS and other controlling agencies supervision with rehabilitation planning reversing almost all effects. Additionally, the growing scarcity of oil and gas should be taken into consideration. Therefore, the alternative of not proceeding with the proposed action at this time is rejected.

(2) Minor relocation of the wellsite or any special, restrictive stipulations or modifications to the proposed program would not significantly reduce the environmental impact. There are no severe vegetative, animal or archaeological-historical-cultural conflicts at the site. Since only a minor impact on the environment would be expected, the alternative of moving the location is rejected. At abandonment, normal rehabilitation of the area such as contouring, reseeding,

etc., would be undertaken with an eventual return to the present status as outlined in the 13-Point Surface Plan.

(3) Drilling should be allowed provided the following mitigative measures are incorporated into the proposed APD and adhered to by the operator.

(a) The drill pad would be rotated 45 degrees East of North to keep the pits out of fill material and also to move the pits downwind of the location.

(b) A private rehabilitation agreement for the portion of access road crossing private land must be received.

(c) An H_2S Contingency Plan is submitted and approved prior to the commencement of drilling.

(d) H_2S safety equipment will be installed and operated to completely implement safety procedures when drilling has reached a depth of 1000 ft. above or within 7 days of penetrating (whichever is the lesser) the Phosphoria Formation (expected depth - 10,350 ft.).

(e) All geologic units pentrated would be monitored for the quantity and quality of water they may contain.

(f) The potential for encountering fresh water in the Nugget Formation exist. The drilling program should be adjusted to adequately project any fresh water in the horizon. (See WRD Report, attached)

Adverse Environmental Effects Which Cannot Be Avoided:

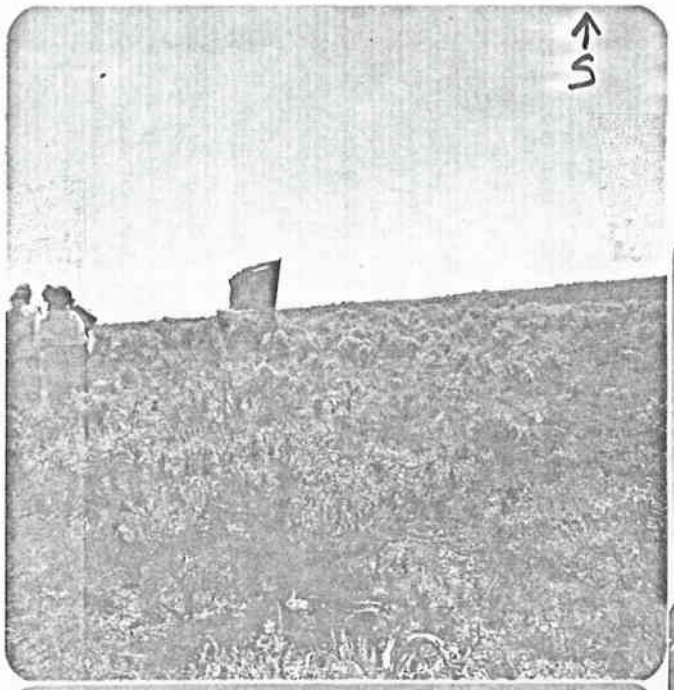
Surface disturbance and removal of vegetation from approximately 5 acres of land surface for the lifetime of the project which would result in increased and accelerated erosional potential. Grazing would be eliminated in the disturbed areas and there would be a minor and temporary disturbance of wildlife and livestock. Minor induced air pollution due to exhaust emissions from rig engines of support traffic engines would occur. Minor increase in dust pollution would occur due to vehicular traffic associated with the operation. If the well is a gas producer, additional surface disturbance would be required to install production pipelines. The potential for fires, gas leaks, and spills of oil and water would exist. During the construction and drilling phases of the project, noise levels would increase. Potential for sub-surface damage to fresh water aquifers and other geologic formations exists. Minor distractions from aesthetics during the lifetime of the project would exist. If the well is a producer, an irreplaceable and irretrievable committment of resources would be made. Erosion from the site would eventually be carried as sediment in the Bear Lake. The potential for pollution to the Big Creek would exist through leaks and spills.

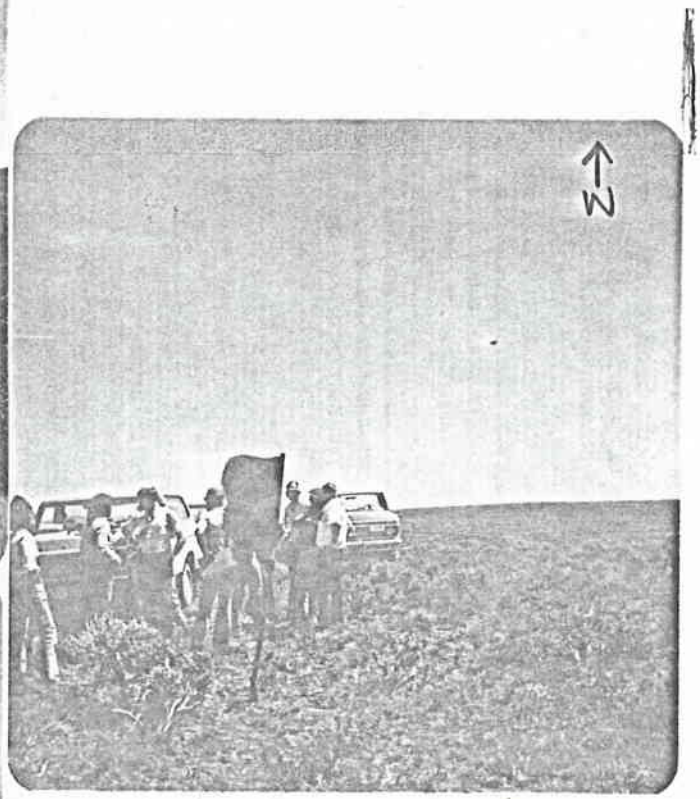
Determination:

This requested action ~~does~~/does not constitute a major Federal action significantly affecting the environment in the sense of NEPA, Sec. 102(2)(C).

Date 9/19/79

District Engineer
U.S. Geological Survey
Conservation Division
Oil and Gas Operations
Salt Lake City District





Date 7-24-79

Person and Division making request Allen Aig

AREA: County and State Rich Co Utah

Township 12 ~~S~~ N Range 6 ~~W~~ E Section 21 ¼ C ¼ NE ¼ SL BL&M

Altitude of surface at site 7,122 Formation at surface (if known) Tertiary conglomerate

PURPOSE:

Protection of useful ground water (casing program); check ✓

Other (describe):

For WRD use Date in: 7/25/79

Person assigned: Price Date out:

Evaluation: There are no ground-water data in our files for the proposed drilling site. Data collected for other parts of northern Utah indicate that the Wasatch Formation, Nugget Sandstone and Weber Quartzite may contain fresh water in usable quantities. Those formations should be protected against contamination during drilling and subsequent testing or development. Because of the lack of ground-water data for this area, it is recomended that all geologic units penetrated be monitored for the quanity and quality of water they may contain.

continue over

Signed by evaluator Don Price Time used 1½ hrs

Evaluator: Send copy to coordinator - original direct to originator of request

M: DISTRICT GEOLOGIST, [redacted] SALT LAKE CITY, UTAH

: DISTRICT ENGINEER, [redacted] SALT LAKE CITY, UTAH

JECT: APD MINERAL EVALUATION REPORT LEASE NO. U25453

ERATOR: Marathon WELL NO. 1-21

CATION: ___ ¼ C ¼ NE ¼ sec. 21, T. 12N, R. 6E, SLM

Rich County, Utah

Stratigraphy: Operator proposes a conglomerate (Tertiary) cover over Ordovician limestones, a thrust fault at 1350' overlying a a normal stratigraphic section from the Jurassic Preuss through the Pennsylvanian Weber SS, another thrust fault (Crawford?) at 11650', back into the Triassic Ankerah and Thaynes with a TD in the Thaynes. They are likely to first enter Mississippian rocks above the first fault, below the conglomerate, but details are not verifiable without drilling.

Fresh Water:

see attached

Leasable Minerals:

· gas possible in Thaynes, Dinwoody, Phosphoria + Weber - 2800-4800

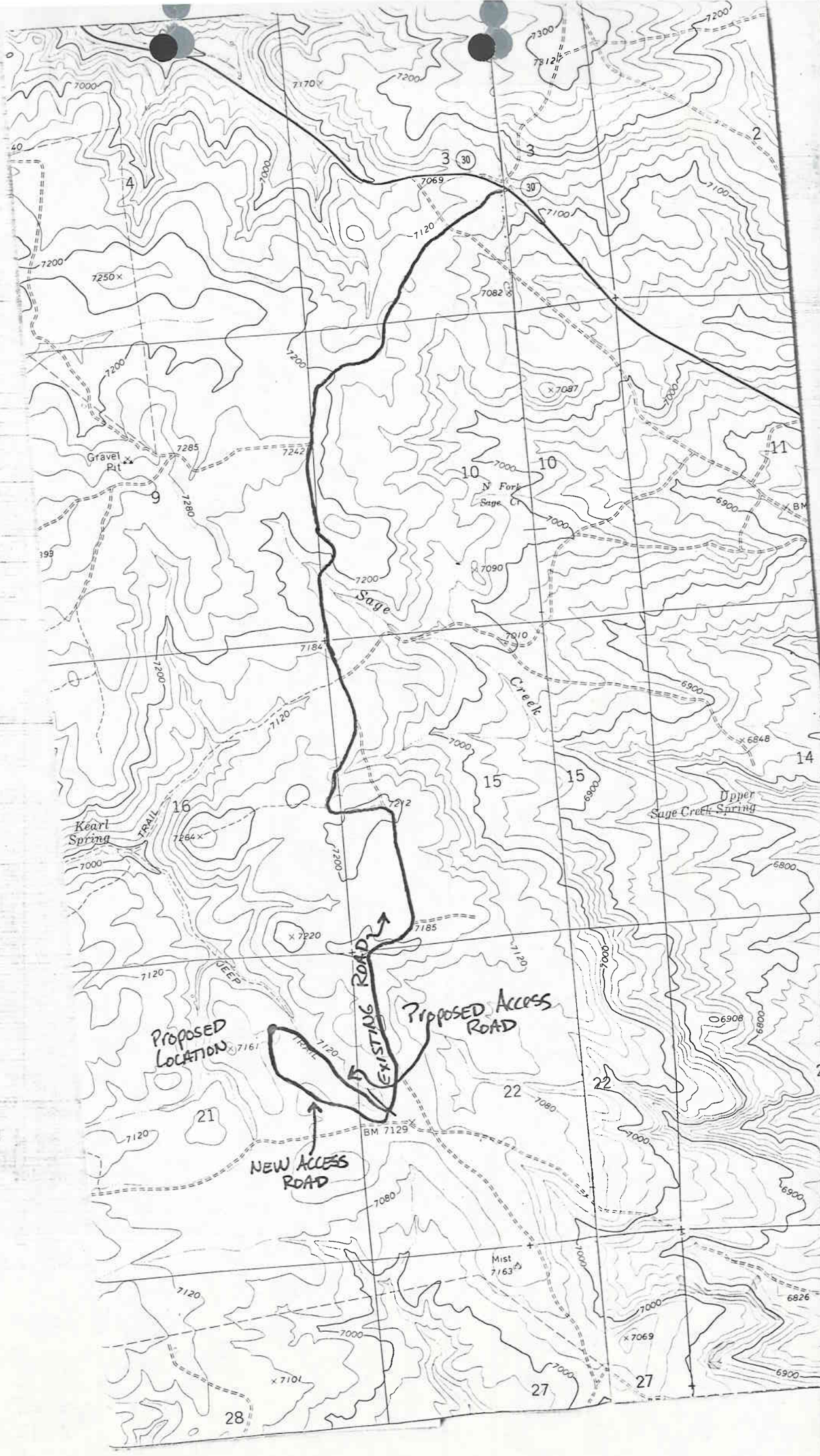
other minerals improbable

Additional Logs Needed: none

Potential Geologic Hazards: H_2S probable in the Phosphoria (expected depth approximately 10350')

References and Remarks:

Signature: [signature] Date: 7-24-79



Proposed Location
Proposed Access Road
Existing Road
New Access Road
Sage Creek
N Fork Sage Cr
Upper Sage Creek Spring
Kearl Spring
Gravel Pit
Mist
BM 7129

July 5, 1979

Marathon Oil Company
PO Box 2659
Casper, Wyoming 82602

Re: Well No. Otter Creek 1-21
Sec. 21, T. 12N, R. 6E
Rich County, Utah

Dear Mr. West:

The State of Utah, General Rules and Regulations, and Rules of Practice and Procedure, amended March 22, 1978, Rule C-3, "General Well Spacing Requirements" reads as follows:

(a) The spacing of wells in pools for which drilling units have been established shall be governed by special rules for that particular pool.

(b) All wells drilled for oil and/or gas which are not within asn area covered by a special area spacing rule or which are not within a pool for which drilling units have been established, shall be located not less that 500 feet from any property or lease line or from the boundary of any legal subdivision comprising a governmental quarter-quarter section or equivalent lot or loss of comparable size and location and not less than 1000 feet from any oil well, or 4960 feet from any gas well, unless otherwise specifically permitted by order of the Commission after notice and hearing, unless an exception is granted by the Commission pursuant to Rule C-3(c).

(c) The Commission may grant an exception to the requirements of (b) above as to the situs of a particular well location, without notice and hearing, where an application has been filed in due form and;

(1) The necessity for an unorthodox location is based on topographical, and/or geological conditions, and;

(2) The ownership of all oil and gas leases within a radius of 660 feet of the proposed location is common with the ownership of the oil and gas leases under the proposed location, or all owners of oil and gas leases within such radius consent in writing to the proposed location.

(d) Whenever an exception is granted, the Commission may take such action as will offset any advantage which the person securing the exception may obrain over other producers by reason of the unorthodox location.

(e) The spacing requirements of this rule shall not apply in cases where, in the opinion of the Commission, engineering practices have proven otherwise.

Your location appears to be an unorthodox well location and if it cannot be relocated to comply with Rule C-3(b) please submit an application for exception as outlined in Rule C-3(c).

You are also requested to furnish substantial information and data to support your application for an exception location. This may be in the form of a statement as to why this well cannot be located on general spacing and must be placed at the proposed location; it may include charts, maps, letters or other data which will provide this Division sufficient information on which to base a decision.

Very truly yours,

DIVISION OF OIL, GAS AND MINING

Michael T. Minder, Geological Engineer

MTM:btm

cc: USGS
Harry Maguss

Please include with file

Casper Division
Production, U.S. & Canada

Marathon Oil Company

P.O. Box 2659
Casper, Wyoming 82602
Telephone 307/265-7693

June 27, 1979

RECEIVED
JUN 29 1979
DIVISION OF OIL, GAS, & MINING

State of Utah
Department of Natural Resources
Division of Oil, Gas, and Mining
Atten: Cleon B. Feight
1588 West North Temple
Salt Lake City, UT 84116

Dear Sir:

Attached is the corrected copy of the 10 Point Program that replaces the original program that was submitted with the NTL-6, Otter Creek #1-21, Section 21, T12N, R6E, Rich County, Utah.

We regret the inconvenience of our error.

Sincerely,

MARATHON OIL COMPANY

Harry Maguss

Harry Maguss
District Operations Manager

HM:WEW:mbb
Attachment

MARATHON OIL COMPANY

Otter Creek #1-21
Drilling Operations Plan
1,313' FNL, 1,441' FEL
Sec. 21, T12N, R6E
Rich County, Utah
Elevation 7,122' GL

1. Geologic name of surface:

   Wasatch - tertiary

2. Estimated tops of important geologic markers:

Formation	Depth	Datum	Formation	Depth	Datum
Wasatch	Surface		Woodside	9,300'	(-2,178)
Ordovician	200'	(+6,922)	Dinwoody	10,000'	(-2,878)
Pruess	1,350'	(+5,772)	Phosphoria	10,350'	(-3,228)
Twin Creek	2,000'	(+5,122)	Weber	10,950'	(-3,828)
Nugget	5,000'	(+2,122)	Ankerah	11,650'	(-4,528)
Ankerah	6,100'	(+1,022)	Thaynes	12,000'	(-4,878)
Thaynes	7,500'	(- 378)	TD	12,500'	

These tops are only "best guess" picks and may be very inaccurate. Thrust faults, poor seismic reflections, and over turned beds make picking tops very difficult.

3. Estimated depths of anticipated water, oil, gas or other mineral bearing formations:

Formation	Depth	Datum		
Thaynes	7,500'	(- 378)	gas	
Dinwoody	10,000'	(-2,878)	gas	(Primary Objective)
Phosphoria	10,350'	(-3,228)	gas	
Weber	10,950'	(-3,828)	gas	
Thaynes	12,000'	(-4,878)	gas	

4a. The casing program including the size, grade, weight, whether new or used, and a setting depth of each string:

Min. Hole Size	Casing O.D.	Grade	Weight	Setting Depth	New or Used
24"	20"	open	open	50'	new
17½"	13 3/8"	K-55	54.5#	2,100'	new
		K-55	61.0#	2,500'	new
12¼"	10 3/4"	N-80	55.5#	3,750'	new*
		N-80	51.0#	6,000'	new
		N-80	55.5#	7,600'	new
9½"	5½"	L-80	23#	1,000'	new
			20#	3,300'	new
			17#	12,500'	new

* Depth of intermediate casing will depend on hole conditions.

4b. The cementing program including type, amounts, and additives:

The 13 3/8" surface casing will be cemented with 1100sacks of light cement containing 23.25 pounds salt per sack and ¼ pound flocele per sack followed by 785 sacks of Class "G" containing 15.54 pounds salt per sack and ¼ pound flocele per sack. Ten centralizers will be required. The casing will be pressure tested to 2000 psi. The casing will be drilled out, and an additional 5' of hole will be drilled. The casing shoe will be tested to an equivalent 12 ppg mud weight.

The 10 3/4" intermediate casing will be cemented with 315 sacks of Class "G" cement containing 10% salt, and ¼ pound flocele per sack. Ten centralizers will be required. The casing will be pressure tested to 4500 psi. The casing will be drilled out and an additional 5' of hole will be drilled. The casing shoe will be tested to an equivalent 12 ppg mud weight.

The 5½" production casing will be cemented with 1000 sacks of 50-50 pozmix containing 18% salt and 0.75% CFR-2 followed by 200 sacks of Class "G" cement containing 18% salt and 0.75% CFR-2. Ten centralizers will be required. The casing will be pressure tested to 6000 psi.

5. B.O.P. specification and testing: (see the attached schematic diagram for size and pressure ratings):

One annular BOP (Hydril) and dual ram type BOP with pipe rams and blind rams. All equipment to have a 5,000# or better working pressure. The accumulator will be of sufficient size to close and open all components of the BOP stack without operating pump. Operation of all components to be checked daily. Blind rams and pipe rams will be pressure tested to 5,000 psi and the Hydril will be tested to 1,500 psi prior to drilling out of surface and intermediate casing.

6. Mud program and anticipated pressures:

From	To	Type Mud	Weight	% Oil	Water Loss
Surface	2,500'	Brine	9.0 - 9.5	0	less than 12 cc's
2,500'	12,500'	gel	8.5 - 9.0	0	less than 12 cc's

From surface to 2,500', the hole will be drilled with a salt mud. A low solids, non-dispersed mud will be used from 2,500' to TD. The mud weight will be no higher than necessary to prevent influx of formation fluids. Barite will be used for weight if required. Lost circulation may be encountered in the Nugget and Ankerah formations. LCM will be available on location. H_2S is anticipated in the Phosphoria and an H_2S scavenger and corrosion agent will be used in this interval.

A maximum pressure of 5460 psi is anticipated at TD which will require an 8.4 ppg mud.

7a. Type of drilling tools and auxiliary equipment:

A drilling rate recorder, calibrated to record drilling time for each one foot interval will be used.

The mud system will include a desander, desilter, gas separator, degasser, trip tank, pit level moniter and flowline sensor. Both a remote adjustable choke and a manual choke will be used.

A kelly cock will be used, a TIW safety valve and inside BOP will be available on the rig floor.

A casinghead bore protector will be installed after setting surface casing and will be in use during all drilling operations.

7b. Deviation Control:

From	To	Maximum Distance Between Surveys	Maximum Deviation From Vertical	Maximum Change Per 100' of Depth
0'	2,500'	100'	*	1°
2,500'	7,600'	100'	*	1°
7,600'	12,500'	100'	*	1°

* High angle dips will make deviation control difficult. The deviation will be controlled so that safe drilling operations can continue.

8. Sample, logging, testing, and coring program:

Drilling samples will be taken every 30' from surface to 2,500' and every 10' from 2,500' to TD. A two man mud logging unit will be assigned to the well from 2,500' to TD.

A BHC-sonic and GR will be run from 2,100' to surface. A GR-FDC-CNL, SP-DIL, SP-DLL, Dipmeter-Cal, and Fracture Identification log will be run from 7,600' to 2,500' prior to running the 10 3/4"intermediate casing, and from TD to 7,600' prior to running the 5½" production string.

A casing inspection log will be run in the 10 3/4" casing prior to drilling out.

9. Anticipated abnormal pressures or temperatures:

No abnormal pressures or temperatures are expected. A maximum temperature of 195° F and a maximum pressure of 5460 psi is anticipated at TD.

H_2S is anticipated in the Phosphoria formation. H_2S scavengers and corrosion agents will be used to control effluence at the surface. The proper breathing apparatus, warning signals, etc. will be used on the location, and the crews will be throughly trained in H_2S safety.

10. The anticipated starting date and duration of operation:

Starting Date: 27 October 1979

Duration: 180 days

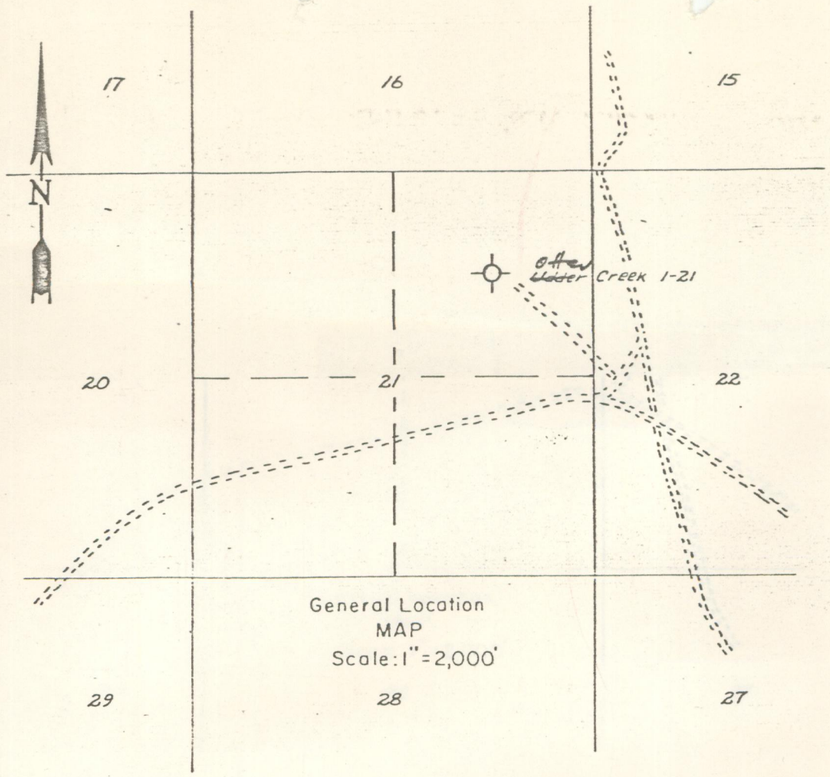
DISTRICT APPROVALS

Approved	Date
Richard S Cardin	6/1/79
[illegible]	6-4-79
[illegible]	6-5-79
M. E. O'Keefe	6-6-79
J. E. Oriel	6-7-79
Harry Mogus	6/7/79

DIVISION APPROVALS

Approved	Date

Located in the NE/4 of Section 21 T12 N, R 6 E of the S.L.B.M., Rich County, Utah

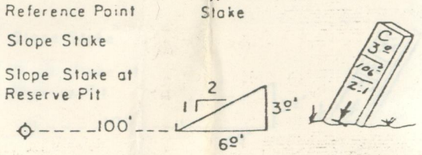


General Location
MAP
Scale: 1" = 2,000'

Legend

- Well Location
- Reference Point
- Slope Stake
- Slope Stake at Reserve Pit

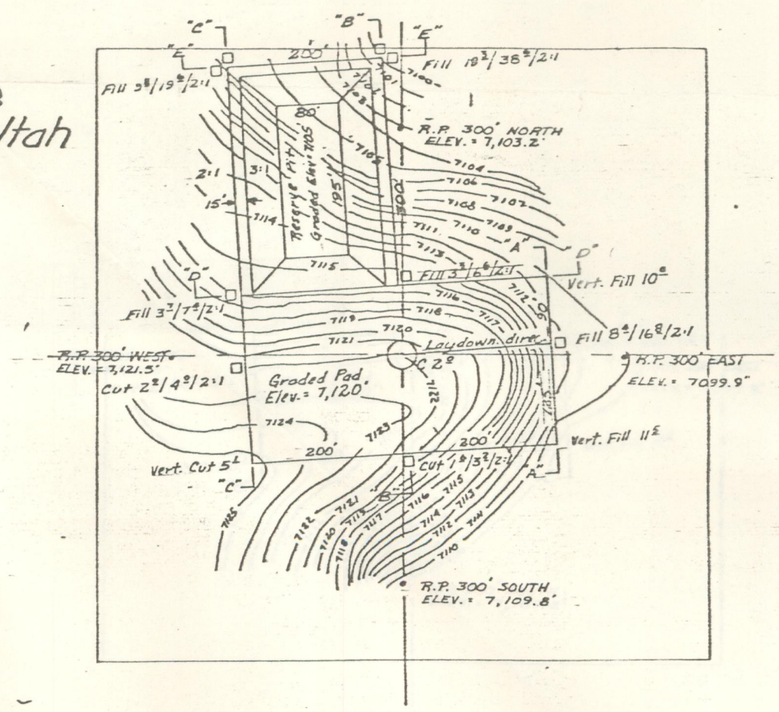
Typical Slope Stake



Total Yardage

Cut = 10,850 cu. yds.
Fill = 13,170 cu. yds.
Spoil pile = -0- cu. yds.
Top soil = 5,407 cu. yds.

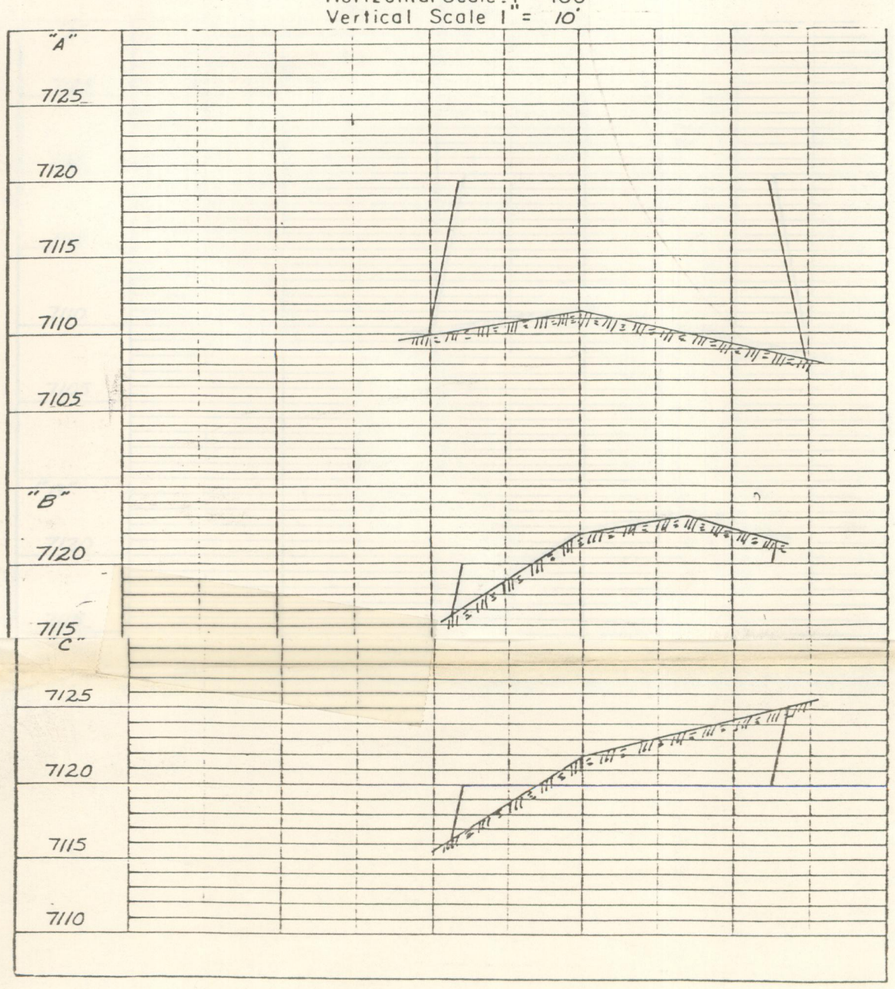
Reserve pit capacity =
77,283 Barrels at 12' depth



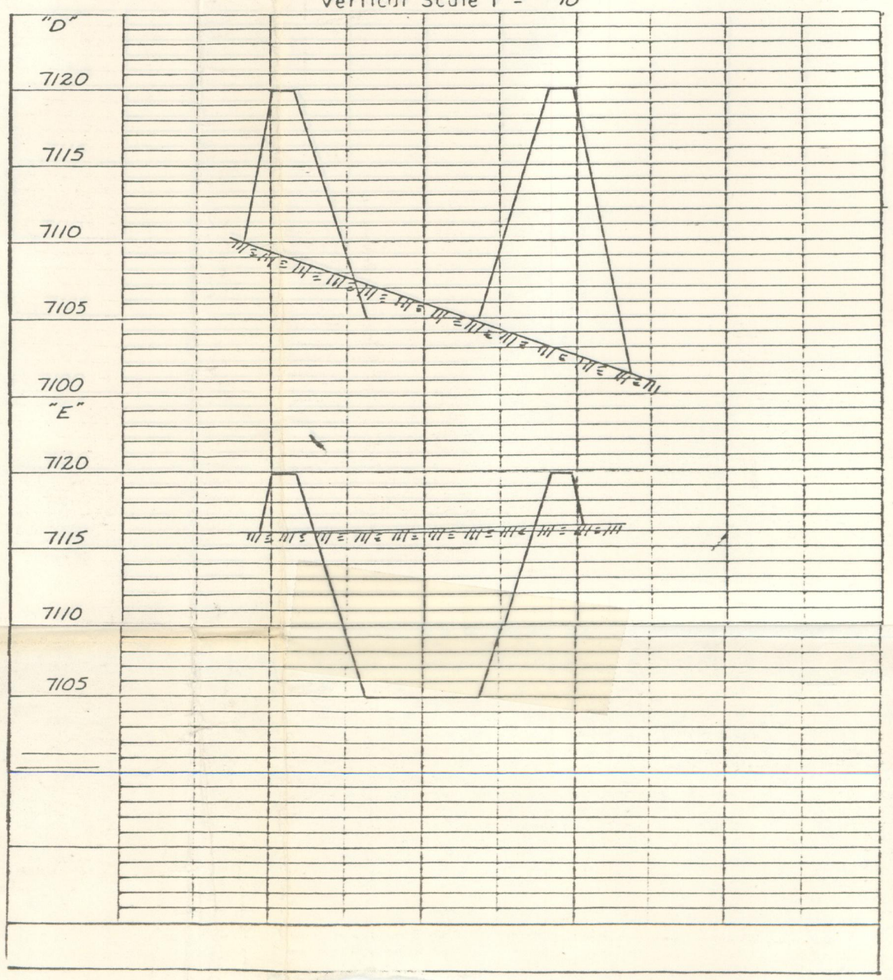
N

Scale: 1" = 20'

Cross Sections
of
Laydown Direction
Horizontal Scale 1" = 100'
Vertical Scale 1" = 10'



Cross Sections
of
Reserve Pit
Horizontal Scale 1" = 100'
Vertical Scale 1" = 10'



MAP

To
Accompany Application
for
PERMIT To DRILL
Applicant:
Marathon Oil Company
P.O. Box 2659
Casper, Wyoming

Prepared
By
William H. Smith
and Associates
Surveying, Consultants

By R.R.
Date: June 9, 1979 Job No. 107

Access Route Map
for
Marathon Oils
Udder Creek No. 1-21
Sec 21, T 12 N, R 6 E,
Salt Lake Base Meridian
Rich Co., Utah
by
William H. Smith & Assoc. PC
Surveying Consultants
Laketown
Laketown Canyon
Sage Creek
Udder Creek
Heart Spring
Gravel Pit
TRAIL
JEEP
SAGE CREEK JUNCTION (UTAH 16) 8 MI.
KEMMERER, WYO. (VIA U.S. 30N) 42 MI.
(SAGE CREEK)
T. 13 N.
T. 12 N.

Access Route
Northern Cedar Creek 1-21
General Location Map
Northern Oil
Cedar Creek 1-21
Sec 21 T 12 N R 6 E
SL Base Meridian, Rich
Utah
by
William H Smith & Assoc. P.C.
Surveying Consultants
Job 10719
Date Nov 6 1979
By: RR
Lakota
Garden City
Richmond
Smithfield
Hyde Park
Logan
Providence
Millville
Nibley
Paradise
Avon
Liberty
Eden
Huntsville
Randolph
Woodruff
Sage Creek Junction
Meadowville
Ranger station
CACHE NATIONAL FOREST
BEAR RIVER RANGE
WASATCH NATIONAL FOREST
RICH COUNTY
UTAH

Walter West

STATE OF UTAH
DIVISION OF OIL, GAS, AND MINING

3N MN

** FILE NOTATIONS **

Date: June 28, 1979

Operator: Marathon Oil Company

Well No: Otter Creek 1-21

Location: Sec. 21 T. 12N R. 6E County: Rich

File Prepared: [ ] Entered on N.I.D.: [✓]

Card Indexed: [✓] Completion Sheet: [✓]

✓API Number: 43-033-30023

CHECKED BY:

Administrative Assistant: sent letter on C-3 spacing on July 5, 1979 - Bonnie

Remarks:

Petroleum Engineer: M.J. Minder 9-19-79

Remarks: Include H2S info. Company furnishes written proof of ownership within 660' radius of proposed site, prior to spudding

Director: _____

Remarks:

INCLUDE WITHIN APPROVAL LETTER:

Bond Required: [ ] Survey Plat Required: [ ]

Order No. _____ Surface Casing Change to _____ [ ]

#2 Providing

Rule C-3(c), Topographic exception/company owns or controls acreage within a 660' radius of proposed site [✓]

O.K. Rule C-3 [ ] O.K. In _____ Unit

Other:

[✓] Letter Written/Approved

plotted

Ltm

Sed 15-5 Maguss

Form 9-331 C
(May 1963)

SUBMIT IN TRIPLICATE
(Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1425.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

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

b. TYPE OF WELL: OIL WELL [ ] GAS WELL [X] OTHER SINGLE ZONE [ ] MULTIPLE ZONE [ ]

2. NAME OF OPERATOR: Marathon Oil Company

3. ADDRESS OF OPERATOR: P.O. Box 2659 - Casper, Wyoming 82602

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*)
At surface: 1,313' FNL & 1,441' FEL NW NE
At proposed prod. zone:

5. LEASE DESIGNATION AND SERIAL NO.: U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: Otter Creek

9. WELL NO.: #1-21

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 21, T12N, R6E

12. COUNTY OR PARISH: Rich

13. STATE: Utah

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE*: 5 miles southeast & 3½ miles southwest of Laketown, Utah.

15. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any): 1,441'

16. NO. OF ACRES IN LEASE: Pooled Area 960

17. NO. OF ACRES ASSIGNED TO THIS WELL: 360

18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.: None

19. PROPOSED DEPTH: 12,500'

20. ROTARY OR CABLE TOOLS: Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.): 7,122'

22. APPROX. DATE WORK WILL START*: 10-27-79

23. PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
24"	20"	Open	50'	
17-1/2"	13-3/8"	54.5#	2,100'	1645 sacks
		61.0#	2,500'	
12-1/4"	10-3/4"	55.5#	3,750'	
		51.0#	6,000'	315 sacks
		55.5#	7,600'	
9-1/2"	5-1/2"	23#	1,000'	
		20#	3,300'	
		17#	12,500'	1200 sacks

Please see the following attachments:
1. Surveyor's Plat
2. Ten-Point Drilling Program
3. BOP Schematic
4. Thirteen Point NTL-6
5. Maps

RECEIVED JUN 28 1979 DIVISION OF OIL, GAS, & MINING

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

24.
SIGNED Harry Magnuson TITLE District Operations Manager DATE 25 June 1979

(This space for Federal or State office use)

PERMIT NO. APPROVAL DATE

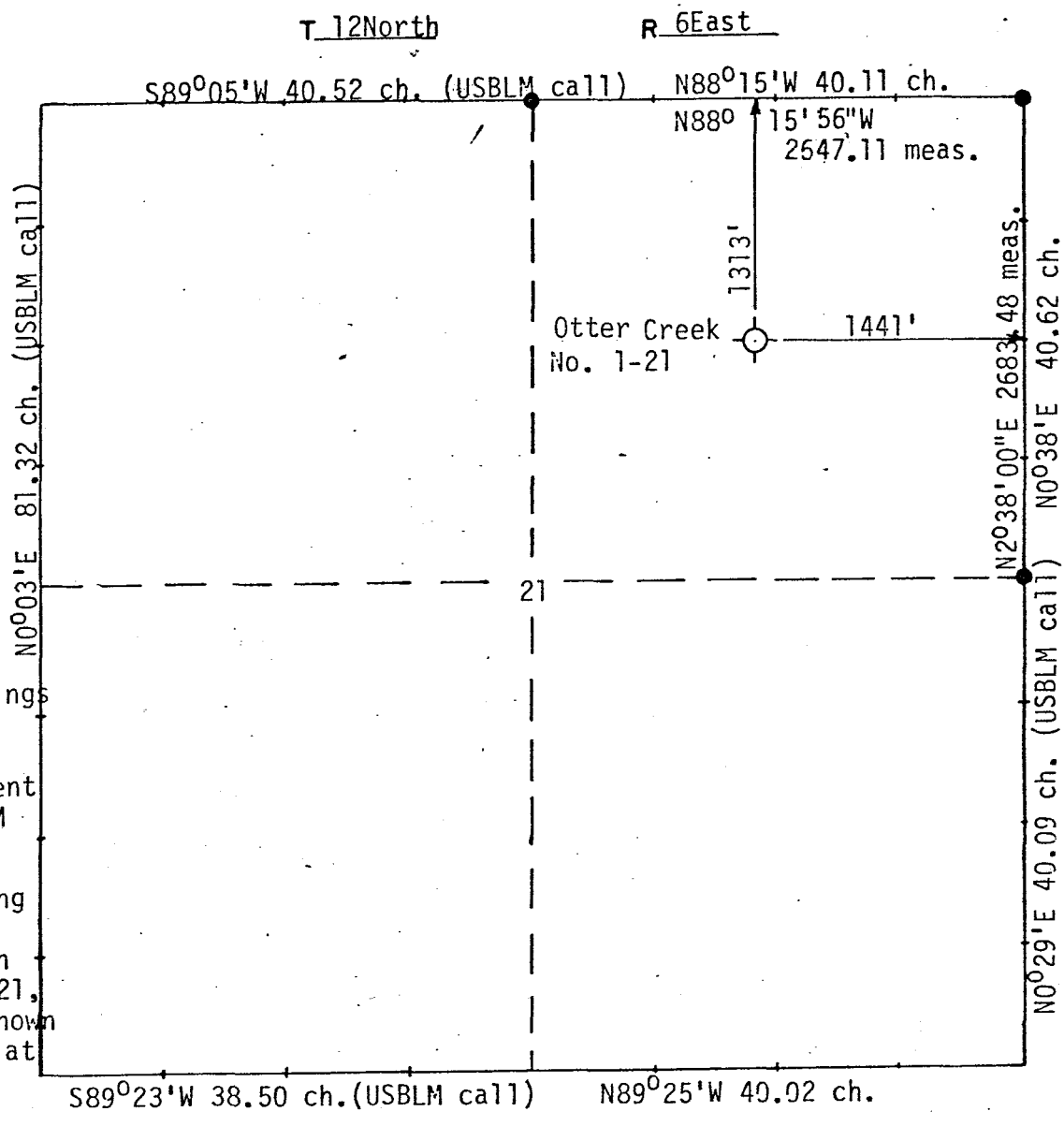
APPROVED BY TITLE DATE

CONDITIONS OF APPROVAL, IF ANY:

P.O. BOX 654
GREEN RIVER, WYOMING
82935
TELEPHONE: (307) 875-3638

WILLIAM H. SMITH & ASSOCIATES
SURVEYING CONSULTANTS

P.O. BOX 1300
MOAB, UTAH
84532
TELEPHONE: (801) 259-6861



SCALE: 1" = 1000'

● Found Brass Cap
■ Found Stone

Note:
(USBLM call) indicates bearings and distances shown on U.S. Plat of dependent resurvey by BLM 1966

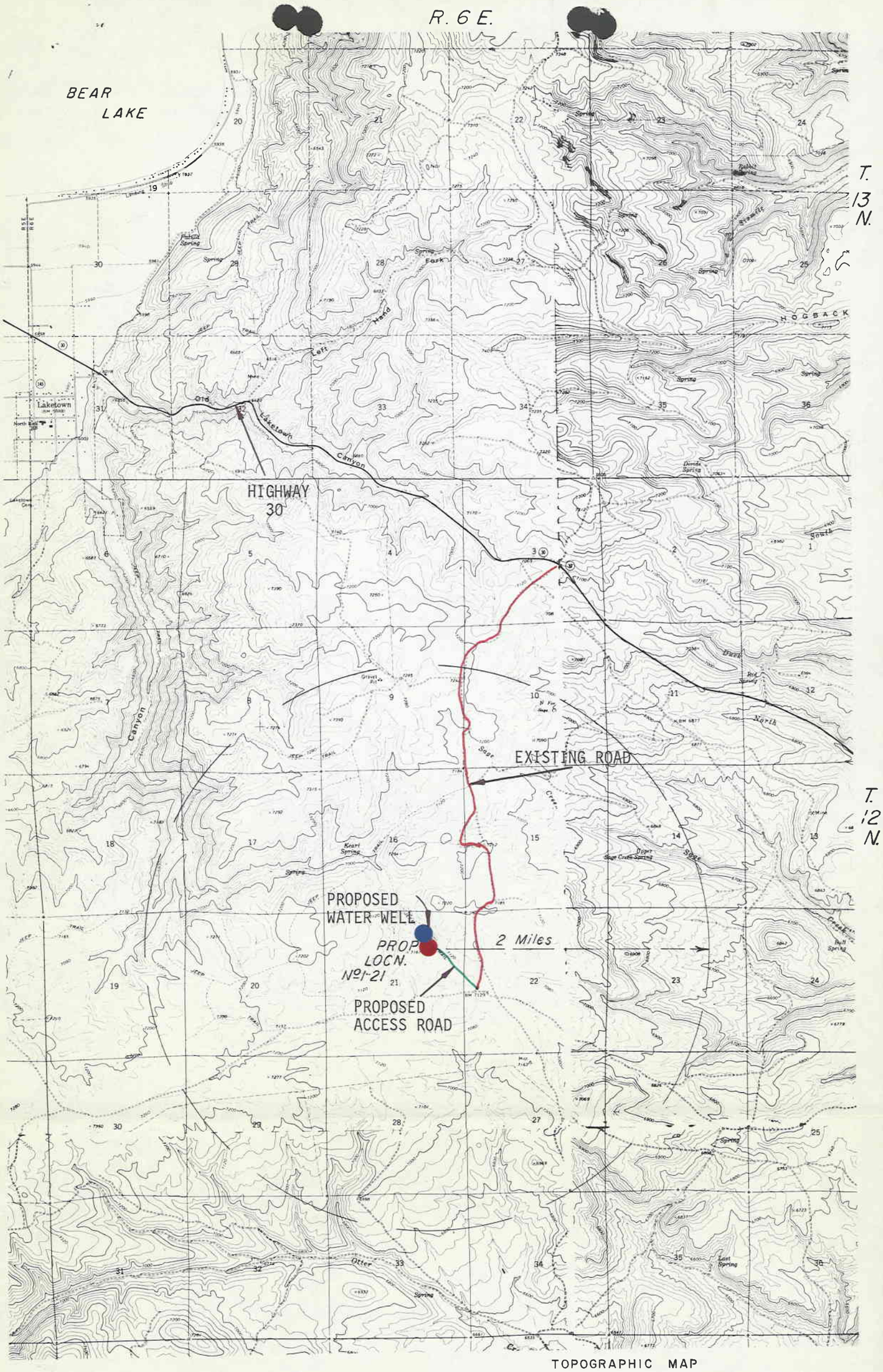
Basis of bearing taken from N/2 of east section line, Section 21, T12N, R6E, as shown on official plat of dependent resurvey 1966

I, William H. Smith of Green River, Wyoming hereby certify that in accordance with a request from Walt West of Casper, Wyoming for Marathon Oil Company Randy Rowley under my supervision and direction made a survey on the 7th day of June, 19 79 for location and elevation of the Otter Creek No. 1-21. As shown on the above map, the wellsite is in the NE/4 of Section 21, Township 12N, Range 6E of the Salt Lake Base Meridian, Rich County, State of Utah. Elevation is 7122 feet ungraded ground Datum established from USGS bench mark as stamped and shown on USGS 7 1/2' Topo "Laketown, Utah".

Reference Point	300' North	rebar & lath	elevation top of rebar = 7103.2
Reference Point	300' South	rebar & lath	elevation top of rebar = 7109.8
Reference Point	300' East	rebar & lath	elevation top of rebar = 7099.9
Reference Point	300' West	rebar & lath	elevation top of rebar = 7121.5

William H. Smith
Utah R.L.S. NO. 2764

ob #107-79



APPLICANT:
MARATHON OIL CO.
BOX 120
CASPER, WYO.

TOPOGRAPHIC MAP
TO ACCOMPANY
DRILLING PERMIT APPLICATION
FOR

OTTER CREEK AREA
WELL Nº 1-21

MARATHON OIL COMPANY
Otter Creek #1-21
Surface Use and Operations Plan
1,313' FNL & 1,441' FEL
Sec. 21, T12N, R6E
Rich County, Utah
7,122' GL

1. Existing Roads:

From Laketown, Utah, travel southeast on Utah Highway 16 for 6-1/2 miles. Turn right and travel south on improved road for 3-1/2 miles to the second fork in Section 22.

2. Access Road:

From the second fork in Section 22, travel northwest for 1/4 mile to center of NW/4 in Section 21. The access road will be 16' wide, ditched for drainage and crowned. Disturbed area will not exceed 30' wide. There will be no culverts, cattle guards, cuts, fills, gates, or turnouts. The road into the location will be center-line flagged.

3. Location of Existing Wells:

To our knowledge there are no known water, abandoned, temporarily abandoned, disposal, drilling, producing, shut-in, injection, monitoring or observation wells within a two mile radius.

4. Location of Production Facilities and Service Lines:

There are no existing facilities owned or controlled by the lessee within a two mile radius of this well. All production facilities will be on the proposed location (see the attached schematic). The dimensions of the facilities are shown on the attached schematic. Good engineering practices will be used in the construction of these facilities and materials will be obtained through local vendors and contractors.

Any sumps or hazardous equipment will be fenced to keep livestock and wildlife out.

Those portions of the location not needed for production facilities will be rehabilitated by contouring and reseeding.

5. Location and Type of Water Supply:

A water well will be drilled on the location. A temporary application permit has been obtained from Division of Water Rights, State of Utah. (Permit #53133 (23-3535)

6. Source of Construction Materials:

All construction materials for this location and the access road are to be materials accumulated during the construction of the location and access road.

In the event gravel is needed, it will be purchased from a jobber and hauled to well site by same.

7. Waste Disposal Handling:

All liquid drilling waste will be stored in Lined the reserve pit on the north side of the well site. All burnable trash will be burned in a suitable burn pit (10' x 10') on the east side of the well site and all non-burnable refuse will be buried to a depth of 5' upon the conclusion of the drilling and completion procedures. The burn pit will be fenced with a fine wire mesh fence. Drill cuttings will be covered after the reserve pit is dried up. All trash will be gathered during drilling and any loose trash on the location after the rig moves out will be deposited in the trash pit. A self-contained sanitation facility for drilling and completion crews will be on location.

8. Ancillary Facilities:

There will be no camps, airstrips or other ancillary facilities on this location. There will be two or three small house trailers on location during drilling and completion.

9. Well Site Layout:

Relative positions and dimensions for the various components of the drilling tools are shown on the attached sketch of a typical well site layout. The rig will face the East. The reserve pit will be fenced on three sides during drilling and on the fourth side during dry out periods to hold out domestic and wildlife. Preparation of the location will require a maximum fill of 11.5' as shown on the enclosed cross section. All pits will be unlined.

10. Plan for Restoration to Surface:

Topsoil will be stockpiled to the west side of this location. After the well is completed and the reserve pit dried out, that portion of the location not required for production equipment will be recontoured, covered with stockpiled topsoil and reseeded to BLM specifications. Any portion of the access road not needed for vehicular traffic will also be reseeded. The rehabilitation operations will commence immediately after the completion of the well. Immediately after release of the rig, the reserve pit will be fenced on the fourth side until cleanup. Any oil on the pit will be removed at the time that the rig is removed from the well.

11. Other Information:

The area has a desert environment of gently rolling land with sparse vegetation and very little surface moisture. Vegetation consists mainly of sage and native grasses. Soils are Quaternary Alluvium.

The drill site and access road are owned by the U. S. Government.

In the immediate vicinity there are no known water, occupied dwellings, archeological, historical, or cultural sites.

Archeological services were performed by Dr. Richard Holmer and his staff, University of Utah, on June 15, 1979.

12. Representatives:

Marathon Oil Company's representative who is responsible for compliance with the approved surface and operation plan is:

J. F. Wirth
Marathon Oil Company
P.O. Box 2659
Casper, WY 82602

(307) 235-2511 Ext. 524

13. Certification:

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and, that the work associated with the operations proposed herein will be performed by Marathon Oil Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

6-25-79
DATE

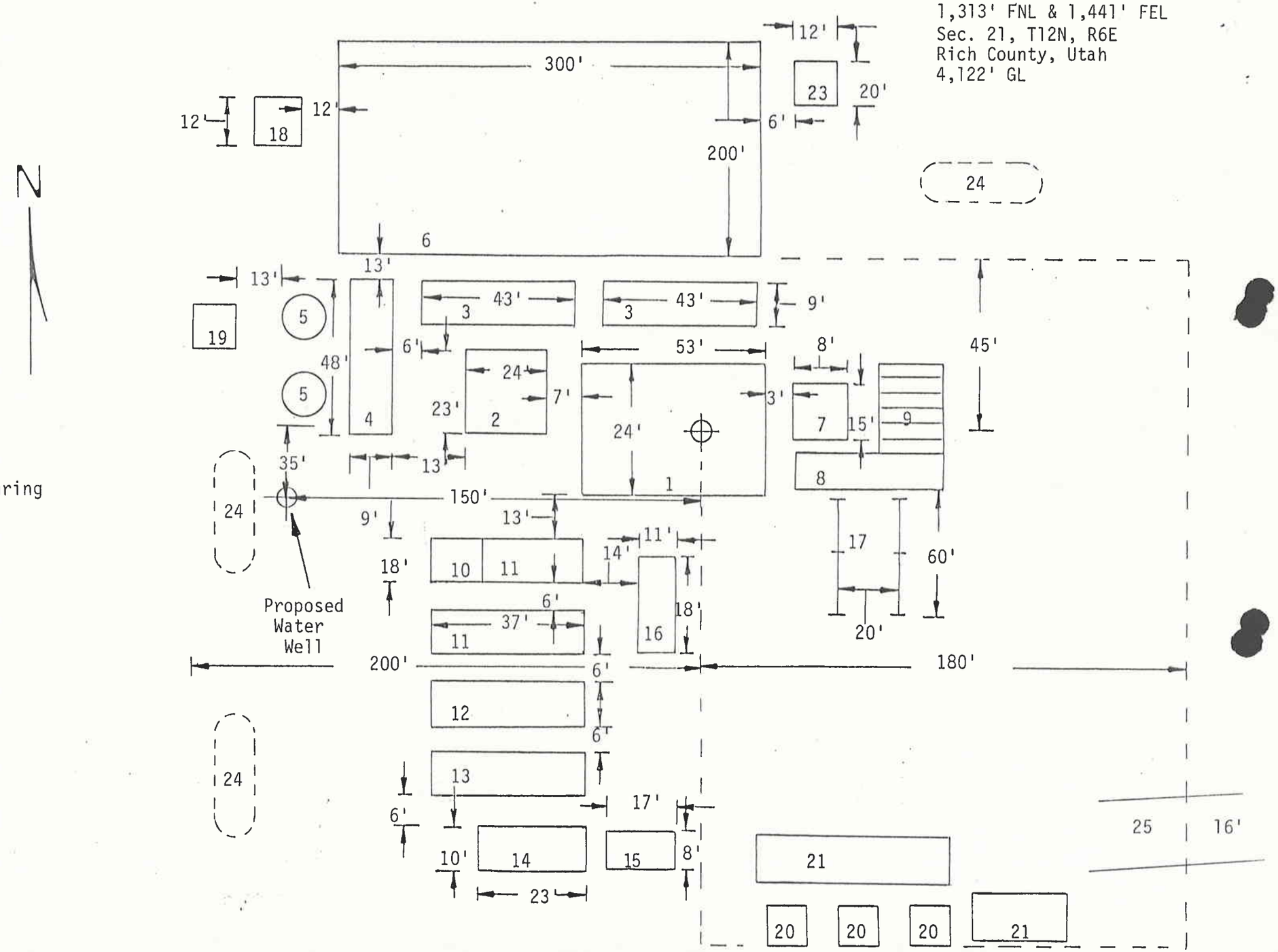
aaw
J. F. Wirth
NAME

Drilling Superintendent
TITLE

Proposed Schematic Drawing of Rig Layout

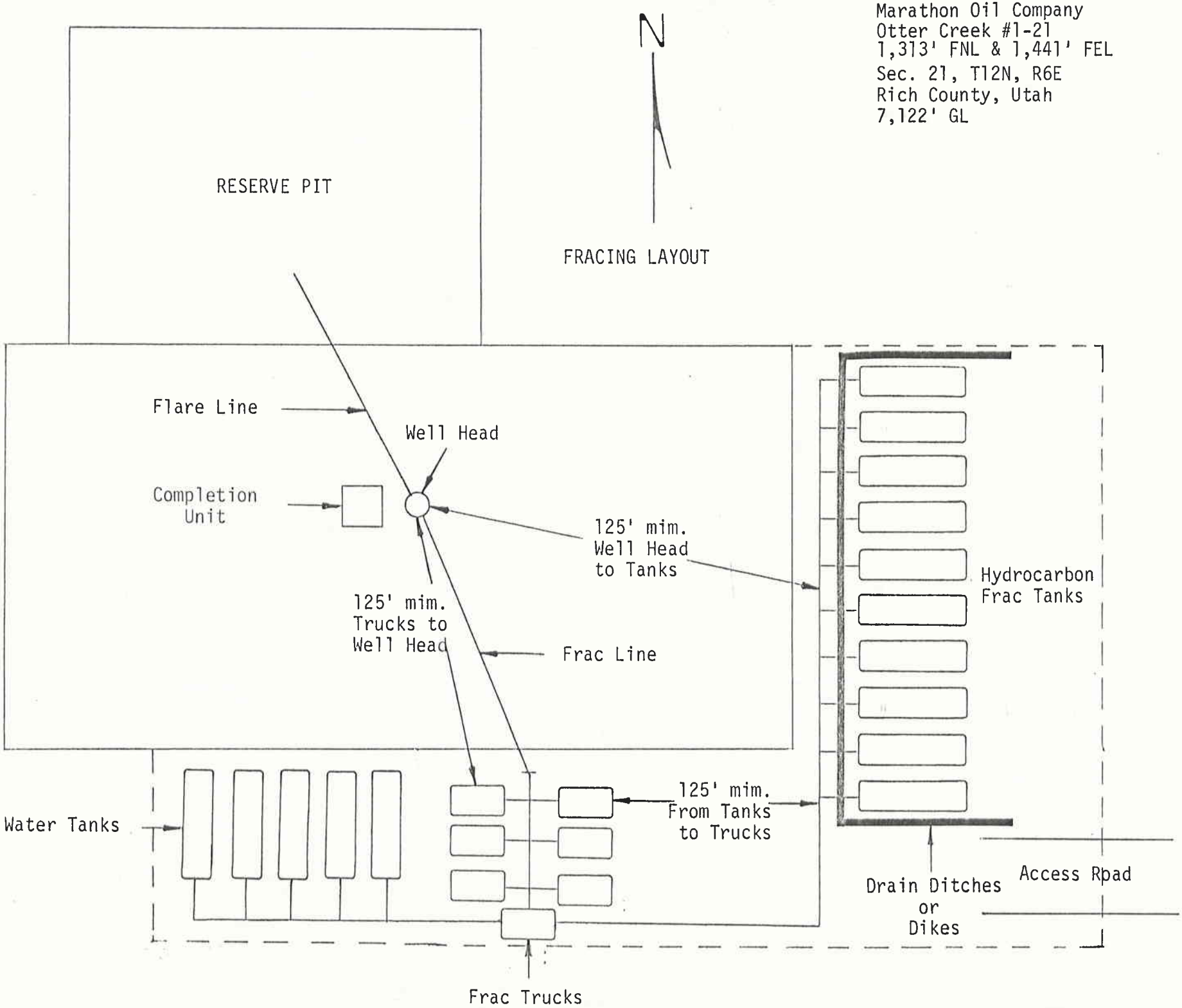
Marathon Oil Company
Otter Creek #1-21
1,313' FNL & 1,441' FEL
Sec. 21, T12N, R6E
Rich County, Utah
4,122' GL

1. Substructure
2. Mud Pumps
3. Mud Tank
4. Suction Tank
5. Mud Bins
6. Reserve Pit
7. Choke Manifold
8. Cat Walk
9. Pipe Bins
10. Water Tank
11. Fuel Tanks
12. Accumulator
13. Light Plant
14. Boiler
15. Heater
16. Oil Bank
17. Pipe Racks
18. Trash Pit
19. Toilets
20. Trailer Houses
21. Parking Area
22. Additional Area for Fracturing
23. Flare Pit
24. Soil Stock Pile
25. Access Road

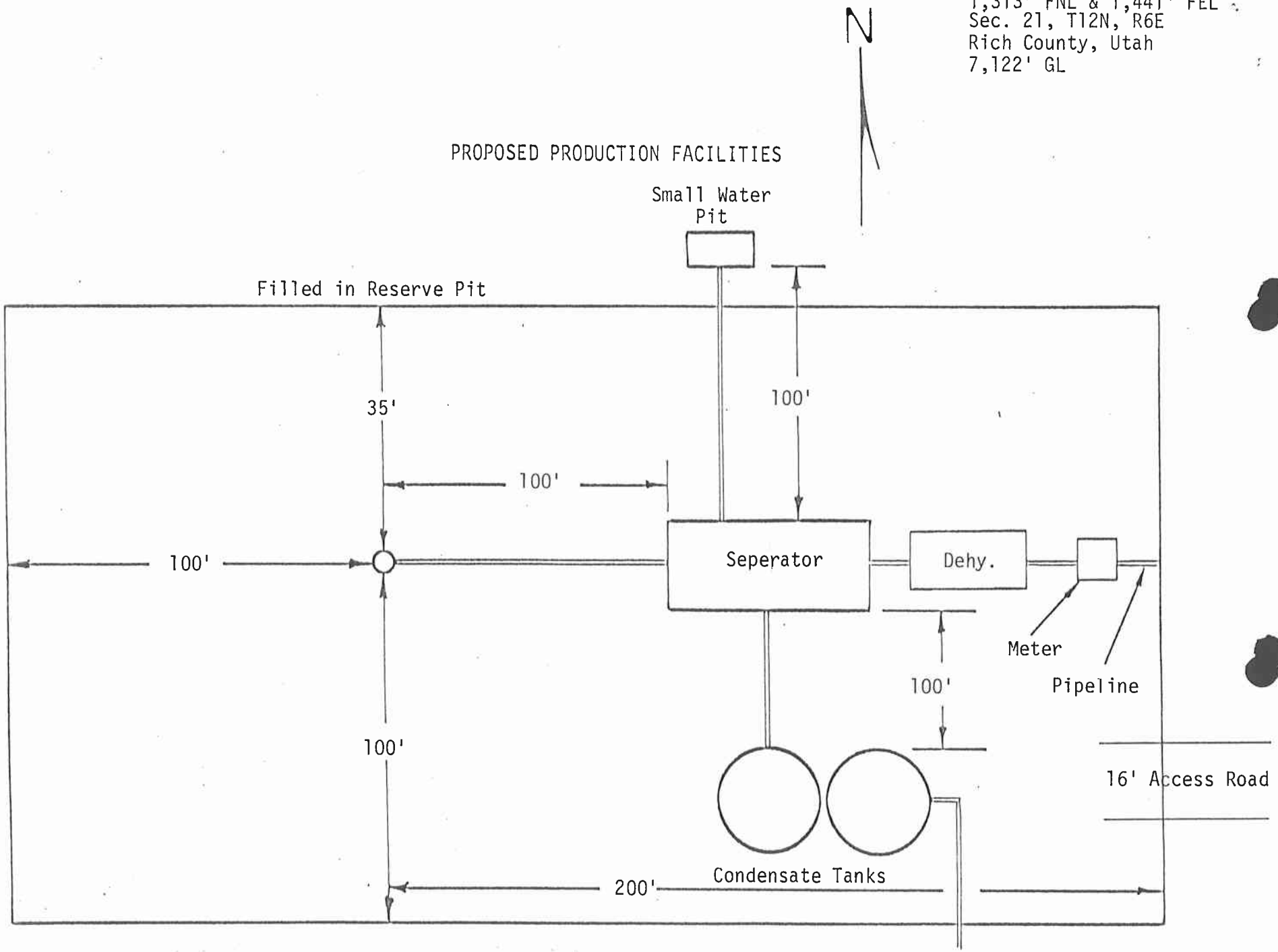


Bomac Rig 30

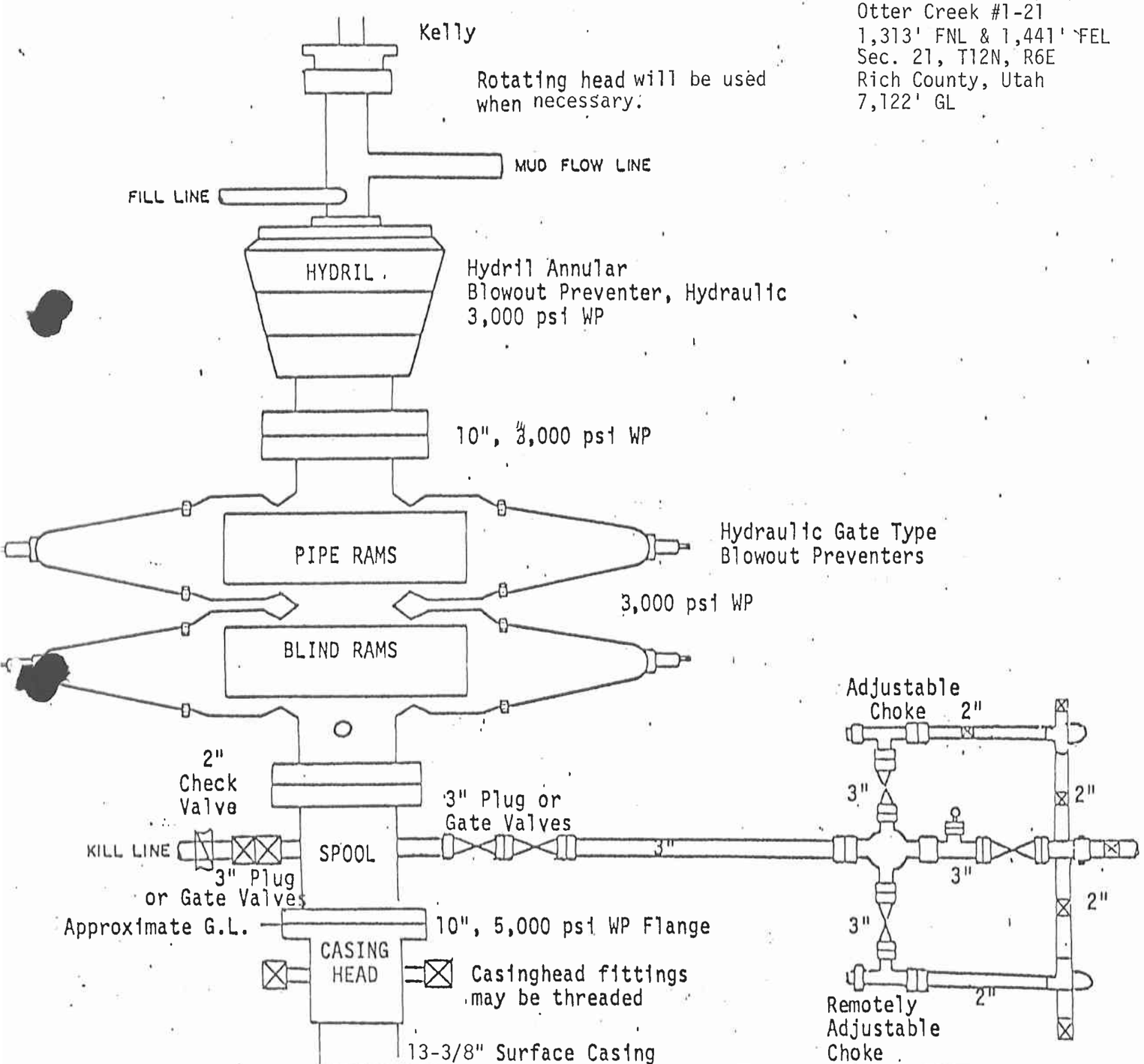
Marathon Oil Company
Otter Creek #1-21
1,313' FNL & 1,441' FEL
Sec. 21, T12N, R6E
Rich County, Utah
7,122' GL



Marathon Oil Company
Otter Creek #1-21
1,313' FNL & 1,441' FEL
Sec. 21, T12N, R6E
Rich County, Utah
7,122' GL



Marathon Oil Company
Otter Creek #1-21
1,313' FNL & 1,441' FEL
Sec. 21, T12N, R6E
Rich County, Utah
7,122' GL



1. Blowout preventers, master valve, plug valve and all fittings must be in good condition. Use new API Sealing Rings.

2. All fittings (gates, valves, etc.) to have pressure rating equivalent to preventers. Valves to be flanged and at least 2" unless otherwise specified. Valves next to BOP to be nominal 3".

3. Equipment through which bit must pass shall be as large as the inside diameter of the casing that is being drilled through.

4. Safety valve must be available on rig floor at all times and with proper connections. The I.D. of safety valve should be as great as I.D. of tool joints of drill pipe.

5. Kelly safety valve installed, to have same working pressure as BOP's.

6. All lines and controls to preventers must be connected and tested before drilling out of surface pipe.

7. BOP's must be fluid operated, complete with accumulator w/controls on the rig floor and one or more remote controls near steps or at accumulator.

8. Fillup line shall be tied to drilling nipple with connection below and approximately 90° to the flow line.

9. Gauge will be installed for testing but removed while drilling.

10. If spool is not used, the choke line can be connected to BOP side outlet, below bottom rams.

11. Casinghead and casinghead fittings to be furnished by Marathon Oil Company.

12. Chokes will be adjustable.

13. One side of casinghead may be bull plugged.

MARATHON OIL COMPANY

Otter Creek #1-21
Drilling Operations Plan
1,313' FNL, 1,441' FEL
Sec. 21, T12N, R6E
Rich County, Utah
Elevation 7,122' GL

1. Geologic name of surface:

   Wasatch - tertiary

2. Estimated tops of important geologic markers:

Formation	Depth	Datum	Formation	Depth	Datum
Wasatch	Surface		Woodside	9,300'	(-2,178)
Ordovician	200'	(+6,922)	Dinwoody	10,000'	(-2,878)
Pruess	1,350'	(+5,772)	Phosphoria	10,350'	(-3,228)
Twin Creek	2,000'	(+5,122)	Weber	10,950'	(-3,828)
Nugget	5,000'	(+2,122)	Ankerah	11,650'	(-4,528)
Ankerah	6,100'	(+1,022)	Thaynes	12,000'	(-4,878)
Thaynes	7,500'	(- 378)	TD	12,500'	

These tops are only "best guess" picks and may be very inaccurate. Thrust faults, poor seismic reflections, and over turned beds make picking tops very difficult.

3. Estimated depths of anticipated water, oil, gas or other mineral bearing formations:

Formation	Depth	Datum		
Thaynes	7,500'	(- 378)	gas	
Dinwoody	10,000'	(-2,878)	gas	(Primary Objective)
Phosphoria	10,350'	(-3,228)	gas	
Weber	10,950'	(-3,828)	gas	
Thaynes	12,000'	(-4,878)	gas	

4a. The casing program including the size, grade, weight, whether new or used, and a setting depth of each string:

Min. Hole Size	Casing O.D.	Grade	Weight	Setting Depth	New or Used
24"	20"	open	open	50'	new
17½"	13 3/8"	K-55	54.5#	2,100'	new
		K-55	61.0#	2,500'	new
12¼"	10 3/4"	N-80	55.5#	3,750'	new*
		N-80	51.0#	6,000'	new
		N-80	55.5#	7,600'	new
9½"	5½"	L-80	23#	1,000'	new
			20#	3,300'	new
			17#	12,500'	new

* Depth of intermediate casing will depend on hole conditions.

4b. The cementing program including type, amounts, and additives:

The 13 3/8" surface casing will be cemented with 2200 sacks of 50-50 poz mix containing 3% salt and ¼ pound per sack flocele followed by 250 sacks of class "G" cement containing 3% salt. Ten centralizers will be required. WOC time will be 12 hours. The casing will be pressure tested to 2500 psi. The casing will be drilled out and an additional 5' of hole will be drilled. The casing shoe will be tested to an equivalent 12 ppg mud.

The 7" production casing will be cemented with 350 sacks of 50-50 poz mix containing .75% CFR-2, .2% HR-4, and 3% KCL followed by 100 sacks of class "G" cement containing .75% CFR-2, 3% KCL, and .2% HR-4. Sixteen centralizers will be required. WOC time will be twenty four hours. The casing will be pressure tested to 5,000 psi.

5. B.O.P. specification and testing: (see the attached schematic diagram for size and pressure ratings):

One annular BOP (Hydril) and dual ram type BOP with pipe rams and blind rams. All equipment to have a 5,000# or better working pressure. The accumulator will be of sufficient size to close and open all components of the BOP stack without operating pump. Operation of all components to be checked daily. Blind rams and pipe rams will be pressure tested to 5,000 psi and the Hydril will be tested to 1,500 psi prior to drilling out of surface casing. The BOP will be tested before entering the Frontier Sands.

6. Mud program and anticipated pressures:

From	To	Type Mud	Weight	% Oil	Water Loss
surface	2,500'	Spud	8.5	0.0	uncontrolled
2,500'	6,800'	water	8.5	0.0	uncontrolled
6,800'	11,000'	low solids	8.8-9	0.0	less than 10 cc's

From surface to 2,500' the hole will be drilled with a Hydrogel-Lime slurry. Clear water is the proposed fluid from 2,500' to 6,800 ft. with Lime & Benex used to drop out solids. From approximately 6,800 ft. to TD (11,000 ft.) a low solids, low weight, non dispersed mud will be used. The mud weight will be no greater than necessary to prevent influx of formation fluids. The maximum anticipated pressure at 11,000 is 5148 psi which will require a 9.0 ppg mud. No lost circulation zones are anticipated.

7a. Type of drilling tools and auxiliary equipment:

A drilling rate recorder, calibrated to record drilling time for each one foot interval will be used.

The mud system will include a desander, desilter, gas separator, degasser, trip tank, pit level monitor and flowline sensor. Both a remote adjustable choke and a manual choke will be used.

A kelly cock will be used, a TIW safety valve and inside BOP will be available on the rig floor.

A casinghead bore protector will be installed after setting surface casing and will be in use during all drilling operations.

7b. Deviation Control:

From	To	Maximum Distance Between Surveys	Maximum Deviation From Vertical	Maximum Change Per 100' of Depth
0'	2,500'	100'	*	1°
2,500'	7,600'	100'	*	1°
7,600'	12,500'	100'	*	1°

* High angle dips will make deviation control difficult. The deviation will be controlled so that safe drilling operations can continue.

8. Sample, logging, testing, and coring program:

Drilling samples will be taken every 30' from surface to 2,500' and every 10' from 2,500' to TD. A two man mud logging unit will be assigned to the well from 2,500' to TD.

A BHC-sonic and GR will be run from 2,100' to surface. A GR-FDC-CNL, SP-DIL, SP-DLL, Dipmeter-Cal, and Fracture Identification log will be run from 7,600' to 2,500' prior to running the 10 3/4"intermediate casing, and from TD to 7,600' prior to running the 5½" production string.

A casing inspection log will be run in the 10 3/4" casing prior to drilling out.

9. Anticipated abnormal pressures or temperatures:

No abnormal pressures or temperatures are expected. A maximum temperature of 195° F and a maximum pressure of 5460 psi is anticipated at TD.

H_2S is anticipated in the Phosphoria formation. H_2S scavengers and corrosion agents will be used to control effluence at the surface. The proper breathing apparatus, warning signals, etc. will be used on the location, and the crews will be throughly trained in H_2S safety.

10. The anticipated starting date and duration of operation:

Starting Date: 27 October 1979

Duration: 180 days

DISTRICT APPROVALS

Approved	Date
Richard S Cardin	6/1/79
J Wirth	6-4-79
J. E. Lawrence	6-5-79
M. E. O'Keefe	6-6-79
J. E. Oneal	6-7-79
Harry Magun	6/7/79

DIVISION APPROVALS

Approved	Date

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

WELL INSPECTION RECORD

NAME OF COMPANY: Marathon Oil

WELL NAME: Otter Creek 1-21

SECTION: NE 21 TOWNSHIP: 12N RANGE: 6E COUNTY: Richfield

DATE: 5-7 1980 LOCATION INSPECTED

TOTAL DEPTH: 2037' AT TIME OF VISIT

NAME OF DRILLING CONTRACTOR: Parker Drilling

RIG NUMBER: #118

COMMENTS:

Drilling in the Twin Creek at 2037' with plans to set 13 3/8" casing to 2000-2500'. The site is muddy and quite cluttered with equipment, barrels, casing and junk scattered over the location. The reserve pond is structurally sound with about 5' of freeboard, it is fenced, and make up water is being taken from east side.

DATE: SIGNED: MTM M. T. M.

SEND TYPED COPY TO COMPANY: YES____ NO____

[redacted]

recordscenter Loper <recordscenter@utah.gov>

File Request from Web

1 message

501- 8-4-2

5279@itac001sp.dts.utah.gov <5279@itac001sp.dts.utah.gov> Thu, Oct 10, 2013 at 10:46 AM

DO NOT REMOVE REQUEST FROM FILE. This paper tells us what the file is and where to put it back.

REQUESTOR INFORMATION

Name: Vicky Dyson
Email: 5279
Agency: Division of Oil, Gas & Mining
Phone: 801 538

RECEIVED
OCT 15 2013
DIV. OF OIL, GAS & MINING

RECIPIENT INFORMATION

Name: Vicky Dyson
Agency: Division of Oil, Gas & Mining
Address: 1594 West North Temple Suite 1210, Salt Lake City, UT 84114 5801

RECORDS REQUESTED

Series: 25627
Box Number: ~~68~~ PA68
Records Center Box Number: 238382
File Name or Number: 43-033-30023 Otter Creek 1-21 12N 06E 21
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State Records Center
Box 1029

US Mail -- if Inter-Office Mail is unavailable

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STATE OF UTAH
DIVISION OF OIL, GAS & MINING
Department of Natural Resources

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N120
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21

OTTER CREEK
4303330023

PA

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

OIL, GAS & 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 Form 9-331-C for such proposals.)

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1313' FNL & 1441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30025

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7119' GL 7149' KB

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

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

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

APPROVED BY THE DIVISION
OF OIL, GAS, AND MINING
DATE: 12-16-80
BY: M. J. Minder

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.)*

New proposed T.D. 17,000'. 10 3/4" Csg set and cemented @ 10,306'. The well @ 10,306' is presently 146.4' N and 331.5' East of surface location. The last 80' drilled the direction of bottom hole turned from East to West. We plan to drill to an approx. kick off point of 10,450'. Then run Dyna-Drill and turn hole back to East. Our present bottom hole target is 1,500' East of surface location at 17,000' T.D.

The above proposal was discussed by phone with Mr. Cleon B. Feight, Director, State of Utah, Division of Oil, Gas and Mining, and he gave his verbal sanction to the proposal to Walt West of MOC, 11-26-80.

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

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

SIGNED Dale T Caddy by J B Oneal TITLE District Operations Manager DATE November 26, 1980

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

DIVISION OF OIL, GAS AND MINING

SPUDDING INFORMATION

NAME OF COMPANY: Marathon Oil Company

WELL NAME: Otter Creek #1-21

SECTION 21 NW NE TOWNSHIP 12N RANGE 6E COUNTY Rich

DRILLING CONTRACTOR Parker Drilling

RIG # 118

SPUDDED: DATE 4/8/80

TIME 7:00 p.m.

HOW rotary

DRILLING WILL COMMENCE ASAP

REPORTED BY Walt West

TELEPHONE #

DATE April 9, 1980 SIGNED Original Signed By M. T. Minder

cc: USGS

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T21N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 3-30-80 To: 4-11-80

RECEIVED
APR 16 1980
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED [signature] TITLE Asst. Dlg Supt. DATE April 14, 1980

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

3-30-80	60'	MADE 60'. MIRT & R/U PARKER RIG #118. ALL MOTORS & LIGHT PLANTS RUNNING. RAISED DERRICK @ 4:30 PM, 3-29-80. EXPECT TO SPUD ON WED, APRIL 2. WATER WELL DRILLER @ 400', NO WATER YET. (COST TO DATE INCLUDES LOCATION & ACCESS ROAD, MOVING & R/U COSTS, WATER WELL, & 1 LOAD OF FUEL). PRESENT OPERATION MIRT & R/U.
3-31-80	60'	CONTINUED R/U. SET DOGHOUSE & R/U ELECT. LINES. R/U MUD TANKS.
4-1-80	60'	R/U PARKER #118. SHOULD COMPLETE R/U MUD TANKS & MODIFICATIONS TODAY. WATER WELL @ 564' - NO WATER YET.
4-2-80	60'	CONTINUED R/U. OPERATIONS SLOWED BY SNOW & WIND. WATER WELL DRILLER DIDN'T MAKE ANY HOLE YESTERDAY. WENT TO LOCATE MORE DRILL STEEL. RIGGING MUD TANKS, FLOWLINE & BELL NIPPLE. WILL NOT SPUD TODAY.
4-3-80	90'	(CORRECTED DEPTH AFTER SURVEY) BEGAN HAULING WATER USING DABLO TRUCKING. FILL 1,000 BBL WTR TANK. SURVEYED GL & KB ELEVATIONS - CHANGED GL FROM 7,122' TO 7,119'. WATER WELL @ 720' W/NO WTR. NEW BRANDT DOUBLE SCREEN/TANDEM SHAKER ARRIVED - R/U SAME. WELDERS FABRICATING FLOWLINE, BELL NIPPLE, & MUD LINE FROM PMPS TO STANDPIPE. EXPECT TO BREAK TOUR ON FRIDAY. (HAULING WATER FROM ROGER HATCH'S RANCH @ SAGE CREEK JUNCTION - 8 MILE HIWAY & 6 MILE ACCESS ROAD). PRESENT OPERATION R/U.
4-4-80	90'	CONTINUED R/U.
4-5-80	90'	CONTINUED R/U. HAVE WRIGHT DRLG ON WTR WELL TODAY. WORKING TIGHT HOLE 200' TO 215' ON WTR WELL.
4-6-80	90'	CONTINUED R/U. WRIGHT WTR WELL DRILLER GOT IN HOLE TO 495'. OILIND TRAIN 3 CREWS ON H2S. EXPECT TO SPUD MONDAY AM.
4-7-80	90'	HAUL 200 BBLS H20 TO MUD TANKS - TANKS LEAKED. WILL FILL TANKS TODAY W/WTR. WATER WELL APPEARS TO BE CROOKED. WILL SPUD THIS AFTERNOON.
4-8-80	90'	HAUL 900 BW TO MUD TANKS. FIN WELDING MUD LINES. SHOULD SPUD NO LATER THAN NOON 4-8-80. WILL MOVE WTR WELL EAST OF RESERVE PIT & DRILL 6" PILOT HOLE. PRESENT OPERATION R/U.
4-9-80	90'	MADE 0' IN WASATCH FORMATION. MW 8.3, VIS 40. PMP PRESS 800, GPM 425. BIT NO 1, 12-1/4, HTC, OSC3, JETS 14-14-14. DEPTH IN 90'. OPER CIRC. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
SHORT DC	8.98	9	4-7/8
DC	29.33	9-1/2	3
X - OVER SUB	2.57	8	2-7/8

TOTAL BHA 41.88. TAG BTM @ 86'. FILL HOLE TO SPUD. LOST CIRC APPROX 100 BBLS. SPOT 30 BBL LCM PILL. POH TO INSTALL TOTCO RING. MIX LCM PMP PILL #2 - 30 BBLS. NO RETURNS, CURRENTLY MIXING LCM & GEL. WTR WELL @ 120' & DRLG W/6" HAMMER DRILL. SPUD WELL 7:00 PM, 4-8-80. PRESENT OPERATION MIX MUD.

OTTER CREEK #1-21 WELL HISTORY

4-10-80 118' MADE 28' IN WASATCH FORMATION. MW 8.6, VIS 40. PMP PRESS 600, GPM 222, ANNULAR VELOCITY 30. BIT NO 1, 12-1/4, HTC, OSC3, JETS 14-14-14. DEPTH IN 90', OUT 118'; MADE 28' IN 1-1/2 HRS; 18.6 FT/HR; CONDITION 1-1-I. OPER PULLED. RPM 100, WT ON BIT 10,000. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
L DC	8.98	9	4-7/8
2 DC'S	59.28	9-1/2	3
X - OVER SUB	2.57	8	2-7/8

TOTAL BHA 71.83. REGAINED CIRC @ 90', DRILL TO 105'. LOST CIRC. MIX LCM, REGAIN CIRC. DRILL TO 115', LOST CIRC. DRY DRILL TO 118', HOWCO CMT LOST CIRC ZONE. PLUG #1 W/50 SKS 50% CAL-SEAL & 50% CLASS "G". LET SET 3/4 HRS. CMT PLUG #2 W/50 SKS 50% CAL-SEAL, 5% CLASS "G". LET CMT SET 2-3/4 HRS. CIRC RETURNS TO SURFACE. PRESENTLY TRIP IN W/BIT. WTR WELL @ 280', NO WTR. DRLG IN GRAVEL. PLUG & ABANDON WATER WELL #1 TODAY. PRESENT OPERATION R/D HOWCO.

4-11-80 378' MADE 260' IN ORDOVICIAN FORMATION. MW 8.5, VIS 60, PH 9, LCM 25%. PMP PRESS 450, GPM 262, ANNULAR VELOCITY 107/52. BIT NO 1RR, 12-1/4, HTC, OSC3, JETS 14-14-14. DEPTH IN 118'; MADE 260' IN 10 HRS; 26 FT/HR. OPER DRLG. RPM 100, WT ON BIT 10,000. DEV DEPTH 139' INC 1/2°. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
L DC	8.98	9	4-7/8
3 DC'S	89.65	9-1/2	3
RWP STAB	8.78	12-1/4	2-7/8
SHOCK SUB	11.91	9	2-7/8
2 DC'S	60.61	9-1/2	3
X - OVER SUB	2.57	8	2-7/8

TOTAL BHA 183.5. LOST CIRC @ 377'. LOST APPROX 200 BBLS. DRLG AHEAD W/GOOD RETURNS. LOSING APPROX 20-30 BBLS/HR. SURVEY MACHINE SHORTED OUT. WILL FIX THIS AM. WTR WELL @ 380' - NO WTR. PRESENT OPERATION DRLG.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T21N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 4-12-80 To: 4-16-80

RECEIVED
APR 23 1980
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED K. A. Thome / A. G. TITLE Drilling Superintendent DATE 4-21-80

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

4-12-80	383'	MADE 5' IN ORDOVICIAN FORMATION. MW 8.5, VIS 52, WL 18, PH 10.5, PV 14, YP 18, 3/5 GELS, 200% SOLIDS, 80 PPM CHLORIDE, 10% LCM. PMP PRESS 300, GPM 370, ANNULAR VELOCITY 152/73. BIT NO 1RR, 12-1/4, HTC, OSC3, JETS 14-14-14. DEPTH IN 118', OUT 378'; MADE 260' IN 16 HRS; 16 FT/HR; CONDITION 6-6-I. OPER PULLED. BIT NO 2, 12-1/4, STC, F-2, JETS 15-15-15. DEPTH IN 378'; MADE 5' IN 10 HRS; .5 FT/HR. OPER MIX MUD. RPM 100-120, WT ON BIT 5-10,000. DEV DEPTH 357' INC 1°. TOTAL BHA 183.50. LOST CIRC @ 383' - APPROX 80 BBLS. RAN 5-10,000 WT TO HOLD DEVIATION. REGAIN CIRC @ 7:15 THIS AM. WTR WELL @ 487' W/NO WTR. PRESENT OPERATION MIX MUD.
4-13-80	482'	MADE 99' IN ORDOVICIAN FORMATION. MW 8.7, VIS 45, WL 18.4, PH 11, PV 4, YP 7, 4/10 GELS, 2.8% SOLIDS, 400 PPM CHLORIDE, 100 CALCIUM, 10% LCM. PMP PRESS 250, GPM 370, ANNULAR VELOCITY 152/73. BIT NO 2, 12-1/4, STC, F-2, JETS 15-15-15. DEPTH IN 378'; MADE 104' IN 32 HRS; 3 FT/HR. OPER DRLG. RPM 100, WT ON BIT 10-15,000. DEV DEPTH 386' INC 1°, DEPTH 449' INC 1/2°. TOTAL BHA 183.50. DRLG AHEAD W/NO PROBLEMS. FULL RETURNS. FORMATION IS FRACTURED. WTR WELL #2 @ 680'. APPROX 100' OF WTR ON CONNECTIONS. WTR WELL #1 PLUGGED & ABANDONED W/FORMATION CUTTINGS. PRESENT OPERATION DRLG.
4-14-80	612'	MADE 130' IN ORDOVICIAN FORMATION. MW 8.8, VIS 43, WL 18.8, PH 9.5, PV 15, YP 6, 3/6 GELS, 3.8% SOLIDS, 380 PPM CHLORIDE, 100 CALCIUM, 10% LCM. PMP PRESS 250, GPM 370, ANNULAR VELOCITY 152/73. BIT NO 2, 12-1/4, STC, F-2, JETS 15-15-15. DEPTH IN 378'; MADE 225' IN 44-1/4 HRS; 5 FT/HR. OPER DRLG. RPM 100, WT ON BIT 10,000. DEV DEPTH 541' INC 0°, DEPTH 601' INC 1/2°. TOTAL BHA 183.50. RIG REPAIR - ELECTRICIAN TO FIX DRILL WORKS THROTTLE. WTR WELL 680'. WTR WELL DRILLER DIDN'T WORK ON SUNDAY. PRESENT OPERATION DRLG.
4-15-80	716'	MADE 104' IN ORDOVICIAN FORMATION. MW 8.7, VIS 50, WL 12.8, PH 10, PV 18, YP 14, 14/8 GELS, 2.8% SOLIDS, 500 PPM CHLORIDE, 100 CALCIUM, 16% LCM. PMP PRESS 400, GPM 370, ANNULAR VELOCITY 152/73. BIT NO 2, 12-1/4, STC, F-2, JETS 15-15-15. DEPTH IN 378'; MADE 329' IN 65-3/4 HRS; 5 FT/HR. OPER DRLG. RPM 100, WT ON BIT 8,000. DEV DEPTH 623' INC 3/4°, DEPTH 694' INC 1°. TOTAL BHA 183.50. LOST 700 BBLS MUD IN 24 HRS. WTR WELL 691' - HOLE CAVING IN. HAVE SHAKER, DE-SANDER, & DE-SILTER SHUT DOWN. RUNNING LCM IN MUD FOR LOST CIRC. WILL START REAMING WTR WELL OUT TO 8" HOLE TODAY. PRESENT OPERATION DRLG.
4-16-80	765'	MADE 49' IN ORDOVICIAN FORMATION. MW 8.6, VIS 39, WL 14.8, PH 11, PV 9, YP 5, 1/2 GELS, 2.5% SOLIDS, 450 PPM CHLORIDE, 90 CALCIUM, 3% LCM. PMP PRESS 400, GPM 370, ANNULAR VELOCITY 152/73. BIT NO 2, 12-1/4, STC, F-2, JETS 15-15-15. DEPTH IN 378', OUT 765'; MADE 378' IN 73-3/4 HRS; 5.1 FT/HR; CONDITION 6-E-1/8. OPER DULL. RPM 100, WT ON BIT 5,000. DEV DEPTH 754' INC 1-1/2°. TOTAL BHA 183.50. LOST CIRC @ 754' - APPROX 500 BBLS, NO RETURNS. POH, TIH OPEN ENDED. CMT W/50 SKS 50% CALSEAL & 50% CLASS "G". WOC 2-3/4 HRS, COULD NOT FILL HOLE. WAIT ON BJ. GOING TO CMT W/100 SKS 50% CALSEAL & 50% "G" CMT. PRESENT OPERATION WAIT ON BJ.

OTTER CREEK #1-21 WELL HISTORY

4-17-80	765'	MADE 0' IN ORDOVICIAN FORMATION. MW 8.5, VIS 38, WL 15.2, PH 10, PV 7, YP 6, 0/0 GELS, 1.7% SOLIDS, 400 PPM CHLORIDE, 80 CALCIUM, TR LCM. WAIT ON BJ, CMT W/100 SKS 50% CALSEAL & 50% CLASS "G". WOC, NO CIRC. WAIT ON BJ, CMT W/100 SKS BJ LIGHT W/3% CACL2, 100 SKS 50% CALSEAL, AND 50% CLASS "G". WOC, NO CIRC. WAIT ON BJ BULK TRUCK. CMT W/100 SKS CLASS "G", 4% GEL, 3% CACL2, & 25#/SK GILSONITE. WOC. WTR WELL @ 390', REAMING 8" HOLE. PRESENT OPERATION WOC.
4-18-80	783'	MADE 18' IN ORDOVICIAN FORMATION. MW 8.4, VIS 29. PMP PRESS 100, GPM 230, ANNULAR VELOCITY 98/47. BIT NO 3, 12-1/4, SEC, M44N, JETS 15-15-15. DEPTH IN 765', OUT 783'; MADE 18' IN 3-1/2 HRS; 5.1 FT/HR. OPER PULLED. RPM 120, WT ON BIT 5-7,000. DEV DEPTH 776' INC 1°. BUILD VOLUME. TIH, DRLG W/O CIRC. HAULING WTR W/2 WTR TRUCKS. DRLD 18', POH. TIH OPEN ENDED, WAIT ON BJ. PMP 60 BURLAP SKS DOWN DP FOLLOWED BY 100 SKS 50% CALSEAL & 50% CLASS "G". WOC. TRY TO FILL HOLE, NO SUCCESS. PRESENT OPERATION TRY TO FILL HOLE.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T21N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 4-19-80 To: 4-~~30~~ 25-80

RECEIVED
APR 30 1980
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED K.A. Thoma / H.L. TITLE Drilling Superintendent DATE 4-25-80

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

4-19-80 783' MADE 0' IN ORDOVICIAN ? FORMATION. MW 8.4, VIS 43, WL 26.4, PH 11, PV 7, YP 16, 6/10 GELS, .8% SOLIDS, 350 PPM CHLORIDE, 240 CALCIUM, 12% LCM. PMP PRESS 300, GPM 262, ANNULAR VELOCITY 107/51. BIT NO 3RR, 12-1/4, SEC, M44N, JETS 15-15-15. OPER DRILL CMT. RPM 120, WT ON BIT 8-10,000. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
SHORT DC	8.98	9	2-7/8
2 DC'S	60.61	9-1/2	3
IBS	4.77	12-1/4	3
SHOCK SUB	11.91	9	2-7/8
3 DC'S	89.65	9-1/2	3
X - OVER SUB	2.57	8	2-7/8

TOTAL BHA 179.49. WAIT ON BULK CMT, PMP 340 BURLAP BAGS DOWN DP, FOLLOWED BY 100 SKS OF 50% CALSEAL, 50% CLASS "G". WOC, GOT CIRC. TRIP OUT, P/U BHA & BIT. TRIP IN, DRLD CMT FROM 726'-746'. BIT DROPPED 8', LOST CIRC. TAGGED BTM AT 754'. TRIP OUT IN ORDER TO L/D BHA & PMP MORE BURLAP BAGS. PRESENT OPERATION TRIP OUT.

4-20-80 793' MADE 10' IN ORDOVICIAN ? FORMATION. MW 8.4, VIS 28 (WTR). PMP PRESS 100, GPM 230, ANNULAR VELOCITY 98/47. BIT NO 3RR, 12-1/4, SEC, M44N, JETS 15-15-15. DEPTH IN 983'; MADE 10' IN 2-1/2 HRS; 4.0 FT/HR. OPER DRLG. RPM 120, WT ON BIT 10,000. TOTAL BHA 179.49. FIN TRIPPING OUT, DROP BIT & BHA. TRIP IN W/OPEN-ENDED DP, PMP 200 BURLAP BAGS. HOLE FILLED UP TO 744', PMP 100 SKS OF 50% CALSEAL, 50% CLASS "G" CMT. WOC, REGAINED CIRC. POH, P/U BIT & BHA. TRIPPED IN, CIRC'D OK. DRLD TO 750', LOST CIRC. FIN DRLG CMT, NO RETURNS. CONTINUED DRLG AHEAD W/NO RETURNS. PRESENT OPERATION WAIT ON MORE WTR.

4-21-80 798' MADE 5' IN ORDOVICIAN ? FORMATION. PMP PRESS 100, GPM 230, ANNULAR VELOCITY 98/47. BIT NO 3RR, 12-1/4, SEC, M44N, JETS 15-15-15. DEPTH IN 783', OUT 798'; MADE 15' IN 3-1/2 HRS; 4.4 FT/HR; CONDITION GOOD. OPER ON BANK. RPM 120, WT ON BIT 10,000. TOTAL BHA 179.49. DRLG, WAIT ON WTR. R/U TO DRILL W/AIR. WAITING ON AIR BOOSTER. SHOULD ARRIVE ABOUT 8:00 AM. HAVE AIR ALL R/U EXCEPT AIR BOOSTER. PRESENT OPERATION RIG TO DRILL W/AIR.

4-22-80 846' MADE 48' IN ORDOVICIAN ? FORMATION. MW & VIS AIR. BIT NO 3RR, 12-1/4, SEC, M44N, JETS 15-15-15. DEPTH IN 783'; MADE 63' IN 12-1/2 HRS; 5 FT/HR. OPER DRLG. RPM 120, WT ON BIT 8-10,000. DEV DEPTH 840' INC 1°+. TOTAL BHA 179.49. AIR 100 PSI ON BOOSTER, FLUID 12 GALS/MIN. AIR VOLUME 3,600 CFM. RIG AIR, STARTED DRLG. MAKING SOME WTR. FORMATION IS LIMESTONE & HARD W/TRACES OF RED, ORANGE, & YELLOW SILTSTONE. WTR WELL @ 520', REAMING. PRESENT OPERATION DRLG.

RECEIVED
APR 30 1980
DIVISION OF
OIL, GAS & MINING

OTTER CREEK #1-21 WELL HISTORY

4-23-80 871' MADE 25' IN ORDOVICIAN ? FORMATION. MW 8.4, VIS 28 (WTR). PMP PRESS 0, GPM 111. BIT NO 3RR, 12-1/4, SEC, M44N, JETS 15-15-15. DEPTH IN 783', OUT 871'; MADE 88' IN 18 HRS; 4.9 FT/HR; CONDITION 7-E-I. BIT NO 1 H.O., 17-1/2, SEC, MED, JETS 14-15-15. DEPTH IN 60'; MADE 245' IN 8-1/2 HRS; 28.8 FT/HR. OPER REAMING. RPM 70, WT ON BIT 3-5,000. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
H.O.	4.68	17-1/2	
BIT SUB	3.35	9	2-7/8
5 9" DC'S	150.26	9	3
X - OVER SUB	2.57	8	2-7/8

TOTAL BHA 160.86. DRILL 12-1/4" HOLE TO 871' W/AIR. COULDN'T BREAK CIRC AFTER CONNECTION. TOH - BAD PLUGGED BIT. CHANGE OUT BHA, L/D DC'S, INSTALL H.O. NOW OPENING HOLE @ 305'. PRESENT OPERATION OPEN HOLE TO 17-1/2".

4-24-80 871' MADE 0' IN ORDOVICIAN ? FORMATION. MW 8.4, VIS 28 (WTR). PMP PRESS 0, GPM 111. H.O. #1, 17-1/2, SEC, MED, JETS 14-15-15. DEPTH IN 60'; MADE 303' IN 22 HRS; 13.8 FT/HR. OPER REAM. RPM 70, WT ON BIT 5-7,000. TOTAL BHA 160.86. OPENING HOLE TO 17-1/2". WAITING ON WTR. TD 363' @ 6:00 AM. R/U WTR WELL RIG & TRIP IN TO 450'. WILL START REAMING THIS AM. ROADS MUDDY DUE TO RAINS. TRUCKS HAD TROUBLE HAULING WTR. PRESENT OPERATION OPEN HOLE 17-1/2" TO 363'.

4-25-80 925' MADE 54' IN ORDOVICIAN ? FORMATION. MW & VIS AIR & MIST. H.O. #1, 17-1/2, SEC, MED, JETS 14-15-15. DEPTH IN 60', OUT 375'; MADE 315' IN 22-1/2 HRS; 14 FT/HR; CONDITION GOOD. OPER PULLED. BIT NO 4, 12-1/4, SEC, DMNJ, JETS OPEN. DEPTH IN 871'; MADE 51' IN 9-1/2 HRS; 5.7 FT/HR. OPER DRLG. RPM 50-60, WT ON BIT 15-20,000. DEV DEPTH 900' INC 3/4°. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
BIT SUB	3.35	9	2-7/8
2 DC'S	60.61	9-1/2	3
IBS	4.77	12-1/4	3
SHOCK SUB	11.91	9	2-7/8
3 DC'S	89.65	9-1/2	3
X - OVER SUB	2.57	8	2-7/8

TOTAL BHA 171.75. TOH W/H.O. CHANGE BHA, TIH. WASH & REAM FROM 550' TO BTM. DRLG IN LIMESTONE (WHITE TO LIGHT GRAY), HARD W/SOME BROWN & YELLOW SILTSTONE. WTR WELL @ 560' & REAMING 8" HOLE. PRESENT OPERATION DRLG 12-1/4".

RECEIVED
APR 30 1980
DIVISION OF
OIL, GAS & MINING

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T21N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 4-26-80 To: 5-2-80

RECEIVED
MAY 7 1980
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED H.L. Guthrie TITLE Drilling Superintendent DATE May 2, 1980

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

4-26-80 992' MADE 67' IN ORDOVICIAN ? FORMATION. MW & VIS AIR MIST. BIT NO 4, 12-1/4, SEC, DMNJ, JETS OPEN. DEPTH IN 871'; MADE 121' IN 28 HRS; 4.3 FT/HR. OPER WORK TIGHT HOLE. RPM 50-60, WT ON BIT 15,000. DEV DEPTH 931' INC 3/4°. TOTAL BHA 171.75. DRILL W/AIR MIST TO 992'. HOLE STARTED SLOUGHING FROM WASATCH FORMATION. GETTING 40% WASATCH CAVINGS IN SAMPLES. PRESENTLY WORKING TIGHT PIPE, 50,000 TO 60,000 OVER STRING WT. GEOLOGY OF FORMATION BEING DRLD: LIMESTONE, MED GRAY TO LIGHT BROWN (HARD), SLIGHT DOLOMITE BECOMING VERY DARK GRAY & BROWN AT 948'-960'. STARTED REAMING WTR WELL @ 490' THIS AM. WAS REAMED TO 560' YESTERDAY & HAD TO START REAMING HIGHER TODAY. PRESENT OPERATION WORK TIGHT HOLE.

4-27-80 1,003' MADE 11' IN ORDOVICIAN ? FORMATION. MW & VIS STIFF FOAM. PMP PRESS 0. BIT NO 4, 12-1/4, SEC, DMN, JETS OPEN. DEPTH IN 871', OUT 992'; MADE 121' IN 28 HRS; 4.3 FT/HR; CONDITION 4-F-I. OPER PULLED. BIT NO 5, 12-1/4, SEC, DMM, JETS OPEN. DEPTH IN 992'; MADE 11' IN 3-1/2 HRS; 3.1 FT/HR. OPER DRLG. RPM 50-60, WT ON BIT 15,000. TOTAL BHA 171.75. WORK TIGHT PIPE. TOH, BROKE & DOPED ALL PIPE, WAITING ON ORDERS. BUILD MUD VOLUME & HOOK UP STIFF FOAM. REAM 210' TO BTM. WTR WELL REAMING @ 515'. HAVE GOOD RETURNS W/STIFF FOAM. WILL HAVE TO CHANGE LINERS IN ONE PUMP TO BE ABLE TO PMP SLOW ENOUGH. 23 HRS DUE TO TIME CHANGE. PRESENT OPERATION DRLG.

4-28-80 1,078' MADE 75' IN ORDOVICIAN ? FORMATION. MW & VIS STIFF FOAM. BIT NO 5, 12-1/4, SEC, DMM, JETS OPEN. DEPTH IN 992'; MADE 86' IN 19 HRS; 4.5 FT/HR. OPER DRLG. RPM 50, WT ON BIT 20-25,000. DEV DEPTH 1,022' INC 3/4°. TOTAL BHA 171.75. WASH & REAM 50' TO BTM. 19' FILL ON SURVEY. DRLD AHEAD, NO PROBLEMS. WELL MAKING QUITE A LITTLE WTR. WTR WELL @ 630', REAMING 8" HOLE. SHOULD RUN PIPE THIS AFTERNOON. PRESENT OPERATION DRLG.

4-29-80 1,235' MADE 157' IN ORDOVICIAN ? FORMATION. MW & VIS STIFF FOAM. BIT NO 5, 12-1/4, SEC, DMM, JETS OPEN. DEPTH IN 992'; MADE 243' IN 41-1/2 HRS; 6 FT/HR. OPER DRLG. RPM 50, WT ON BIT 20-30,000. DEV DEPTH 1,113' INC 1/2°, DEPTH 1,205' INC 1°. TOTAL BHA 171.75. FORMATION IS LIMESTONE (WHITE TO LIGHT GRAY), HARD, AND DOLOMITIC AT TIMES. NO FILL ON CONNECTIONS & SURVEYS. WELL IS MAKING LOT OF WTR. RUNNING CSG ON WTR WELL THIS AM. PRESENT OPERATION DRLG AHEAD W/NO PROBLEMS.

4-30-80 1,298' MADE 63' IN ORDOVICIAN ? FORMATION. MW & VIS STIFF FOAM. BIT NO 5, 12-1/4, SEC, DMM, JETS OPEN. DEPTH IN 992', OUT 1,289'; MADE 297' IN 51 HRS; 5.8 FT/HR; CONDITION 3-F-I. OPER PULLED. BIT NO 6, 12-1/4, SEC, DMM, JETS OPEN. DEPTH IN 1,289'; MADE 9' IN 2 HRS; 4.5 FT/HR. OPER DRLG. RPM 50, WT ON BIT 20-25,000. DEV DEPTH 1,267' INC 1°. TOTAL BHA 171.75. 20' FILL ON TRIP. HOLE LOADED UP W/WTR. HAD SOME CAVINGS IN SAMPLES. USED BOOSTER ON AIR TO UNLOAD HOLE APPROX 350 PSI. USED APPROX 350 BBLS MUD IN 24 HRS. WTR WELL: CSG SET @ 670'. PMP SET @ 652'. HAD MOON ELEC WIRE PMP. PMP NOT WORKING. MOON ELEC WILL CHECK OUT TODAY. PRESENT OPERATION DRLG.

OTTER CREEK #1-21 WELL HISTORY

5-1-80 1,416' MADE 118' IN ORDOVICIAN ? FORMATION. MW & VIS STIFF FOAM. BIT NO 6, 12-1/4, SEC, DMM, JETS OPEN. DEPTH IN 1,289'; MADE 127' IN 24-1/2 HRS; 5.2 FT/HR. OPER DRLG. RPM 50-60, WT ON BIT 20-25,000. DEV DEPTH 1,360' INC 1/2°. TOTAL BHA 171.75. DRLG AHEAD, NO PROBLEMS. STILL MAKING WTR. EST MAKING 100-150 BBLS/DAY WTR. 2'-3' FILL ON CONNECTIONS. USING AIR BOOSTER TO BREAK CIRC ON CONNECTIONS. BREAK CIRC @ 400 PSI - DROP TO 100 PSI. HAD TIGHT CONNECTION ON LAST CONNECTION. USED APPROX 400 BBLS MUD IN 24 HRS. PRESENT OPERATION DRLG.

5-2-80 1,514' MADE 98' IN ORDOVICIAN ? FORMATION. MW & VIS STIFF FOAM. BIT NO 6, 12-1/4, SEC, DMM, JETS OPEN. DEPTH IN 1,289'; MADE 225' IN 47 HRS; 4.8 FT/HR. OPER DRLG. RPM 50, WT ON BIT 20-25,000. DEV DEPTH 1,452' INC 1°, DEPTH 1,485' INC 3/4°. TOTAL BHA 171.75. DRLG AHEAD, NO PROBLEMS. MAKING WTR @ APPROX 150 BBLS/DAY. 400 PSI TO BREAK CIRC, RETURNS TO 150 PSI WHEN CIRC. USED APPROX 500 BBLS MUD IN 24 HRS. FORMATION: DOLOMITE, GRAY & HARD. WTR WELL PMP SET @ 632', MAKING 60 GALS/MIN PMPG. PRESENT OPERATION DRLG.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T21N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 5-3-80 To: 5-9-80

RECEIVED
MAY 14 1980
DIVISION OF OIL, GAS & MINING

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

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

SIGNED K. Roma. TITLE Drilling Superintendent DATE May 12, 1980

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

5-3-80 1,577' MADE 63' IN ORDOVICIAN ? FORMATION. MW & VIS STIFF FOAM. GPM 37. BIT NO 6, 12-1/4, SEC, DMM, JETS OPEN. DEPTH IN 1,289', OUT 1,533'; MADE 244' IN 51-1/2 HRS; 4.7 FT/HR; CONDITION 2-E-I. BIT NO 7, 12-1/4, SEC, DSS, JETS OPEN. DEPTH IN 1,533'; MADE 44' IN 9-1/2 HRS; 4.6 FT/HR. OPER DRLG. RPM 50, WT ON BIT 25-35,000. DEV DEPTH 1,528' INC 1°, DEPTH 1,568' INC 3/4°. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
BIT SUB	3.35	9	2-7/8
2 DC'S	60.61	9-1/2	3
IBS	4.77	12-1/4	3
SHOCK SUB	8.96	9	2
3 DC'S	91.08	9-1/2	3
3 DC'S	88.38	8	3
X - OVER SUB	2.57	8	2-7/8

TOTAL BHA 260.72. TRIP FOR NEW BIT. P/U 3 DC'S. CHANGE OUT SHOCK SUB, HOLE LOADED UP W/WTR ON TRIP & ONCE WHILE DRLG. TAKES 500 PSI TO BREAK CIRC. HAVING TO WORK PIPE TO BREAK CIRC. GETTING RETURNS AT 280 PSI. 3-4' OF FILL ON TRIP. 400 BBLS OF MUD USED LAST 24 HRS. 1,516-40': DOLOMITE - HARD, SILTY, CARBONACEOUS. 1,540-70' - DOLOMITE, HARD, SILTY W/SOME LIMESTONE. PRESENT OPERATION DRLG.

5-4-80 1,721' MADE 144' IN JURASSIC ? FORMATION. MW & VIS STIFF FOAM. GPM 40. BIT NO 7, 12-1/4, SEC, DSS, JETS OPEN. DEPTH IN 1,533'; MADE 188' IN 31 HRS; 6.1 FT/HR. OPER DRLG. RPM 40-50, WT ON BIT 30-40,000. DEV DEPTH 1,630' INC 1°+, DEPTH 1,660' INC 3/4°, DEPTH 1,721' INC 1/2°. TOTAL BHA 260.72. DRLG AHEAD, HOLE LOADED UP W/WTR. CIRC & WORK PIPE TO GET HOLE UNLOADED. PRESENTLY DRLG AHEAD W/NO PROBLEMS @ 2-3 MIN/FT. MUD COSTS INCLUDE UPDATE ON SOAP AND CORROSION CONTROL EXPENSE. 1,570-1,670' - DOLOMITE, HARD, SILTY. 1,670-1,721' - (FORMATION CHANGE) LIMESTONE. PRESENT OPERATION DRLG.

5-5-80 1,874' MADE 153' IN TWIN CREEK ? FORMATION. MW & VIS STIFF FOAM. GPM 37. BIT NO 7, 12-1/4, SEC, DSS, JETS OPEN. DEPTH IN 1,533', OUT 1,874'; MADE 341' IN 40 HRS; 8.5 FT/HR; CONDITION 4-E-I. BIT NO 8, 12-1/4, REED, S21G, JETS OPEN. DEPTH IN 1,874'. OPER TRIP IN. RPM 50-60, WT ON BIT 40-45,000. DEV DEPTH 1,814' INC 3/4°, DEPTH 1,874' INC 1°. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
BIT SUB	3.35	9	2-7/8
2 DC'S	60.61	9-1/2	3
IBS	4.77	12-1/4	3
SHOCK SUB	8.96	9	2
3 DC'S	91.08	9	3
1 DC	29.46	8	3
JOHNSON JARS	35.42	8	3
2 DC'S	58.92	8	3
X - OVER SUB	2.57	8	2-7/8

TOTAL BHA 296.14. TRIP FOR BIT #8. P/U JARS, TRIP IN. BREAK CIRC 3 STANDS OFF BTM. (ON TRIP HAD 5,000# DRAG FIRST 10' OFF BTM). USED 400 BBLS MUD. HAVE RETRIEVER PMP ON LOCATION. PREPARING TO R/U TO PMP RESERVE PIT. DRLG IN LIMESTONE, GRAY SHALE. PRESENT OPERATION BREAK CIRC, TRIPPING IN.

OTTER CREEK #1-21 WELL HISTORY

5-6-80	1,942'	MADE 68' IN TWIN CREEK ? FORMATION. MW & VIS AERATED WTR. GPM 68. BIT NO 8, 12-1/4, REED, S21G, JETS OPEN. DEPTH IN 1,874'; MADE 68' IN 18-1/2 HRS; 3.7 FT/HR. OPER DRLG. RPM 120, WT ON BIT 8-10,000. DEV DEPTH 1,910' INC 1-3/4°, DEPTH 1,940' INC 1-1/2°. TOTAL BHA 296.14. BROKE CIRC @ 270' ON TRIP IN. WASHED 45' TO BTM. DRLG AHEAD, 10-15' OF FILL ON LAST CONNECTION. FLUID NOT CLEANING WELL. SWEEPING HOLE W/SOAP AND MUD PILLS. LOST 1 COMPRESSOR ON 5-5-80. WILL REPAIR OR REPLACE TODAY. FORMATION: LIMESTONE, GRAY TO WHITE, FIRM TO HARD. PRESENT OPERATION DRLG.
5-7-80	2,000'	MADE 56' IN TWIN CREEK ? FORMATION. MW & VIS AERATED WTR. GPM 68. BIT NO 8, 12-1/4, REED, S21G, JETS OPEN. DEPTH IN 1,874'; MADE 126' IN 42 HRS; 3.0 FT/HR. OPER DRLG. RPM 120, WT ON BIT 15-20,000. DEV DEPTH 1,971' INC 1/2°. TOTAL BHA 296.14. DRY DRLG. BLOWING DOWN W/AIR EVERY 15', NO FILL OR DRAG ON CONNECTIONS. COSTS TODAY INCLUDE A LOAD OF FUEL. 64 JTS 13-3/8" 61# K-55 FLUSH JT CSG ARRIVED ON LOCATION 5-6-80. FORMATION - LIMESTONE W/SOME GREEN SHALE. PRESENT OPERATION DRLG.
5-8-80	2,082'	MADE 82' IN TWIN CREEK ? FORMATION. MW & VIS AERATED WTR. GPM 182. BIT NO 8, 12-1/4, REED, S21G, JETS OPEN. DEPTH IN 1,874'; MADE 208' IN 64-1/2 HRS; 3.2 FT/HR. OPER DRLG. RPM 120, WT ON BIT 10-15,000. DEV DEPTH 2,030' INC 1-1/4°, DEPTH 2,065' INC 1°. TOTAL BHA 296.14. DRY DRLG, SLUGGING HOLE W/AIR EVERY 10-15'. 42 JTS 16", 65#, K-55 CSG ARRIVED ON LOCATION 5-7-80. FORMATION - MED, DARK GRAY, HARD, SLIGHTLY SILTY LIMESTONE. PRESENT OPERATION DRLG.
5-9-80	2,160'	MADE 78' IN TWIN CREEK ? FORMATION. MW & VIS AERATED WTR. GPM 182. BIT NO 8, 12-1/4, REED, S21G, JETS OPEN. DEPTH IN 1,874', OUT 2,084'; MADE 210' IN 65-1/2 HRS; 3.2 FT/HR; CONDITION 5-F-I. OPER PULLED. BIT NO 9, 12-1/4, SEC, DMM, JETS OPEN. DEPTH IN 2,084'; MADE 76' IN 12 HRS; 6.3 FT/HR. OPER DRLG. RPM 50, WT ON BIT 30,000. DEV DEPTH 2,127' INC 2-3/4° (NO GOOD), DEPTH 2,158' INC 2° (NO GOOD) - NOT GETTING TO BTM. TOTAL BHA 296.14. RESERVE PIT PMP (YELLOW DOG) DOWN - NEW PMP COMING. DRLG W/AIR MIST. CIRC WTR BEFORE CONNECTIONS. HAVE GAINED 2-3" IN RESERVE PIT SINCE 4:00 PM, 5-8-80 (15 HRS). TRIP @ 2,084' - OK. NO TIGHT SPOTS. 9-10' OF FILL AFTER TRIP. SAMPLES - LIMESTONE, GRAY/HARD. PRESENT OPERATION DRLG.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T21N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 5-10-80 To: 5-16-80

RECEIVED
MAY 21 1980
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED K. A. Thoma. TITLE Drilling Superintendent DATE May 19, 1980

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

5-10-80 2,243' MADE 83' IN TWIN CREEK ? FORMATION. MW & VIS AERATED WTR. GPM 68. BIT NO 9, 12-1/4, SEC, DMM, JETS OPEN. DEPTH IN 2,084', OUT 2,243'; MADE 159' IN 30-1/2 HRS; 5.2 FT/HR. OPER POH. RPM 50, WT ON BIT 30-35,000. DEV DEPTH 2,187' INC 1-3/4°, DEPTH 2,243' INC 2-1/4°. TOTAL BHA 296.14. DRLD W/AERATED WTR FROM 2,160'-2,222'. SHUT OFF AIR & DRY DRLD FROM 2,222'-2,243' - NO RETURNS. CIRC 1 HR - TOOK SURVEY. CIRC 2 HRS (NO RETURNS WHILE CIRC). POH TO P/U HOLE OPENER. (HAD 5-10' OF FILL ON CONNECTIONS WHILE DRLG). LITHOLOGY - HARD, GRAY LIMESTONE & 50% CAVINGS. PRESENT OPERATION POH/TRIP.

5-11-80 2,243' MADE 0' IN TWIN CREEK ? FORMATION. MW & VIS WTR. GPM 108. BIT NO 9, 12-1/4, SEC, DMM, JETS OPEN. DEPTH IN 2,084', OUT 2,243'; MADE 159' IN 30-1/2 HRS; 5.2 FT/HR; CONDITION 2-E-I. OPER PULLED. HO#2, 18-5/8" X 17-1/2", SEC, MED, JETS OPEN. DEPTH IN 90', OUT 375'; MADE 285' IN 6 HRS; 47.5 FT/HR; CONDITION 1-1-I. OPER PULLED. HO#3, 18-5/8" X 12-1/4", GRANT, HARD, JETS OPEN. DEPTH IN 375'; MADE 27' IN 9 HRS; 3 FT/HR. OPER REAMING. RPM 50-55, WT ON BIT 5-15,000. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
HO	4.84	18-5/8	
BIT SUB	3.35	9	2-7/8
2 DC'S	59.28	9-1/2	3
SHOCK SUB	8.96	9	2
3 DC'S	91.08	9-1/2	3
1 DC	31.18	8	3
JOHNSTON JARS	35.42	8	3
2 DC'S	57.20	8	3
X - OVER SUB	2.57	8	2-7/8

TOTAL BHA 293.88. RIH & OPENED 17-1/2" HOLE TO 18-5/8" FROM 90' TO 375'. POH. RIH W/18-5/8" X 12-1/4" HO#3 (PILOT BIT). OPENED 12-1/4" TO 18-5/8" HOLE FROM 375' TO 402'. ROP = 3-5 FPH. DRY DRLG W/NO RETURNS. PRESENT OPERATION OPENING HOLE.

5-12-80 2,243' MADE 0' IN TWIN CREEK ? FORMATION. MW & VIS WTR. GPM 62. HO#3, 18-5/8" X 12-1/4", GRANT, HARD, JETS OPEN. DEPTH IN 375'; MADE 202' IN 31.5 HRS; 6.4 FT/HR. OPER REAMING. RPM 60-70, WT ON BIT 15,000. TOTAL BHA 293.88. OPENED 12-1/4" HOLE TO 18-5/8" - REAMING @ 587' @ 0600 HRS. MADE 185' LAST 24 HRS. DRY DRLG W/NO RETURNS. NO TIGHT CONNECTIONS - HOLE OK. REPAIR - ROTARY CHAIN. PRESENT OPERATION OPENING HOLE.

5-13-80 2,243' MADE 0' IN TWIN CREEK ? FORMATION. MW & VIS WTR. GPM 62. HO#3, 18-5/8 X 12-1/4, GRANT, HARD, JETS OPEN. DEPTH IN 375'; MADE 381' IN 55 HRS; 6.9 FT/HR. OPER REAM. RPM 60, WT ON BIT 12-18,000. TOTAL BHA 293.88. OPENED 12-1/4" HOLE TO 18-5/8" @ 756' @ 0600 HRS (169' LAST 24 HRS). DRY DRLG W/NO RETURNS. HOLE OK - NO TIGHT CONNECTIONS. PRESENT OPERATION OPENING HOLE.

5-14-80 2,243' MADE 0' IN TWIN CREEK ? FORMATION. MW & VIS WTR. GPM 62. HO#3, 18-5/8" X 12-1/4", GRANT, HARD, JETS OPEN. DEPTH IN 375', OUT 776'; MADE 401' IN 56 HRS; 7.2 FT/HR; CONDITION 7-E-1/8. OPER PULLED. HO#4, 18-5/8" X 12-1/4", GRANT, BUTTON, JETS OPEN. DEPTH IN 776'; MADE 121' IN 18 HRS; 6.7 FT/HR. OPER REAMING. RPM 60, WT ON BIT 15,000. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
HO	4.84	18-5/8	
BS	3.35	9	2-7/8
1 DC	29.88	9-1/2	3
STAB	6.99	17-1/2	3
1 DC	29.40	9-1/2	3
SHOCK SUB	8.96	9	2
3 DC'S	91.08	9-1/2	3
1 DC	31.18	8	3
JARS	35.42	8	3
2 DC'S	57.20	8	3
X - OVER SUB	2.57	8	2-7/8

TOTAL BHA 300.87. OPENED 12-1/4" TO 18-5/8" FROM 756' TO 776'. POH W/HO#3. CHANGED TO INSERT-TYPE CUTTERS. RIH W/HO#4 - NO FILL. OPENED 12-1/4" TO 18-5/8" FROM 776' TO 897' @ 0600 HRS. MADE 141' LAST 24 HRS - HOLE OK, NO TIGHT CONNECTIONS. PRESENT OPERATION OPENING HOLE.

5-15-80 2,243' MADE 0' IN TWIN CREEK ? FORMATION. MW & VIS WTR. GPM 62. HO#4, 18-5/8" X 12-1/4", GRANT, BUTTON, JETS OPEN. DEPTH IN 776'; MADE 230' IN 41-1/2 HRS; 5.5 FT/HR. OPER REAMING. RPM 65, WT ON BIT 15-20,000. TOTAL BHA 300.87. OPENING 12-1/4" HOLE TO 18-5/8" @ 1,006' @ 0600 HRS. DRY DRLG W/NO RETURNS. NO TIGHT HOLE. (109' LAST 24 HRS). PRESENT OPERATION OPENING HOLE.

5-16-80 2,243' MADE 0' IN TWIN CREEK ? FORMATION. MW & VIS WTR. GPM 92. HO#4, 18-5/8" X 12-1/4", GRANT, BUTTON, JETS OPEN. DEPTH IN 776'; MADE 441' IN 62 HRS; 7.4 FT/HR. OPER REAMING. RPM 70, WT ON BIT 35,000. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
HO	4.84	18-5/8	
BS	3.35	9	2-7/8
SHOCK SUB	8.96	9	2
SHOCK SUB	9.24	9	2
STAB	6.99	17-1/2	3
5 DC'S	150.36	9-1/2	3
1 DC	31.18	8	3
JARS	35.82	8	3
2 DC'S	57.20	8	3
X - OVER SUB	2.57	8	2-7/8

TOTAL BHA 310.11. OPENING 12-1/4" HOLE TO 18-5/8" @ 1,217' @ 0600 HRS - MADE 211' LAST 24 HRS. DRY DRLG W/NO RETURNS. OPENING @ 4-10 MIN/FT. NO TIGHT HOLE. TRIP @ 1,025' TO PIGGY-BACK SHOCK SUBS. PRESENT OPERATION OPENING HOLE.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☐ other Wildcat
2. NAME OF OPERATOR
Marathon Oil Company
3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602
4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453
6. IF INDIAN, ALLOTTEE OR TRIBE NAME
7. UNIT AGREEMENT NAME
8. FARM OR LEASE NAME
Otter Creek
9. WELL NO.
1-21
10. FIELD OR WILDCAT NAME
Wildcat
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E
12. COUNTY OR PARISH
Rich
13. STATE
Utah
14. API NO.
43-033-30023
15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 5/17/80 To: 5/23/80

RECEIVED
JUN 4 1980
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED R. A. Thma. TITLE Drlg. Supt. DATE May 29, 1980

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

5-17-80 2,243' MADE 0' IN TWIN CREEK ? FORMATION. MW & VIS WTR. PMP PRESS 0, GPM 103. HO#4, 18-5/8" X 12-1/4", GRANT, BUTTON, JETS OPEN. DEPTH IN 776' OUT 1,378'; MADE 602' IN 75 HRS; 8 FT/HR; CONDITION 2-E-I. OPER PULLED. HO#5, 17-1/2" X 12-1/4", SEC, BUTTON, JETS OPEN. DEPTH IN 1,378'; MADE 6' IN 1-1/2 HRS; 4 FT/HR. OPER WORK STUCK PIPE. RPM 70, WT ON BIT 30,000. TOTAL BHA 310.11. OPENING 12-1/4" HOLE TO 18-5/8" FROM 1,217' TO 1,378'. HO#4 TORQUED UP WHILE DRLG. POH, CHANGE HO. P/U #5 HO, SEC, 17-1/2" W/12-1/4" PILOT BIT. TIH, HAD 5' FILL ON BTM. WASH & REAM 5' TO BTM. OPENED 6' TO 1,384'. HOLE SLOUGHED IN & STUCK PIPE @ 12:30 AM WHILE OPENING HOLE. MIXED & PMPD 2 - 60 BBL GEL SWEEPS. PMPD SWEEPS & WORKED PIPE W/NO PRESS. WORKING & JARRING STUCK PIPE SINCE 12:30 AM. JOHNSON JARS TRIPPING @ 120,000# (10,000# OVER STRING WT). PRESENT OPERATION WORK STUCK PIPE.

5-18-80 2,243' MADE 0' IN TWIN CREEK ? FORMATION. MW & VIS WTR. PMP PRESS 100, GPM 92. HO#5, 17-1/2" X 12-1/4", SEC, BUTTON, JETS OPEN. DEPTH IN 1,378', OUT 1,384'; MADE 6' IN 1-1/2 HRS; 4 FT/HR; CONDITION 2-E-I. OPER PULLED. RPM 70, WT ON BIT 30,000. TOTAL BHA 310.11. CONTINUE WORKING STUCK PIPE. JARS TRIPPING @ 120,000#. HOOK UP AIR, USE AIR TO AERATE WTR. PIPE CAME FREE. RED ORDOVICIAN & CMT SAMPLES AT SURFACE. CIRC & COND HOLE TO RUN 16" CSG. PULLED WTR WELL W/MOON ELECTRIC. CUT OFF 20" CONDUCTOR. CSG CREW BROUGHT 350 TON ELEVATORS. GOT 350 TON BALES WHILE SORTING OUT CSG TO RUN. HAVE 42 JTS H-40, 65#, 16" CSG FOR EFF LENGTH OF 1,336'. PRESENT OPERATION RIG TO RUN 16" CSG.

5-19-80 2,243' MADE 0' IN TWIN CREEK ? FORMATION. MW & VIS WTR. CSG RAN AS FOLLOWS:

NO. JTS	SIZE	OVERALL LENGTH	EFFECTIVE LENGTH	SETTING FROM	DEPTH TO
1	16" 8RD HOWCO GUIDE SHOE, C-1	1.23	1.23	1,333.79	1,332.56
1	16" 65# 8RD H-40 ST&C R-2 C-1	32.53	32.22	1,332.56	1,300.34
1	16" HOWCO FLOAT COLLAR, C-1	1.94	1.52	1,300.34	1,298.82
41	16" 65# 8RD H-40 ST&C R-2 C-1	1,316.97	1,303.82	1,298.82	+5.00 KB
42		1,349.50	1,336.04		

LANDED SHOE @ 1,333.79' KB. CMTD CSG W/370 SKS OF HOWCO LITE W/2% CACL2 & 1/4#/SK FLOCELE FOLLOWED BY 310 SKS OF "G" W/2% CACL2 & 1/4#/SK FLOCELE. DISPLACED CMT W/318 BBLS WTR W/HOWCO PMP. BUMPED PLUG W/1,000 PSI. PLUG DOWN AT 7:30 PM, 5-18-80. NO RETURNS WHILE CMTG. FLOAT EQUIPMENT DID NOT HOLD. WOC 16 HRS. EST CMT TOP IN ANNULUS 780'. TOP JOB - PMP 40 SKS CLASS "G" DOWN TBG W/NO RETURNS TO SURFACE. PMPD 20 SKS 50% CACL2 & 50% "G" W/RETURNS TO SURFACE. PRESENT OPERATION WOC.

OTTER CREEK #1-21 WELL HISTORY

5-20-80 2,243' MADE 0' IN TWIN CREEK ? FORMATION. MW & VIS WTR. PMP PRESS 100, GPM 220. BIT NO 10, 15", HTC, OWV, JETS OPEN. DEPTH IN 1,270'; MADE 100' IN 33 HRS. OPER DRILL CMT. RPM 80, WT ON BIT 10-15,000. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	15	
X - OVER SUB	2.05	8	2-7/8
BIT SUB	8.97	9	2-7/8
SS	9.24	9	2
5 DC'S	150.36	9-1/2	3
1 DC	31.18	8	3
JARS	38.84	7-3/4	2-3/4
2 DC'S	58.16	8	3
X - OVER SUB	2.57	8	2-7/8

TOTAL BHA 302.37. CUT 3" RING OUT OF 3/4" PLATE & WELDED ON 16" - IS SET ON 20" CONDUCTOR. HAS 4 GUSSETS WELDED ON TOP OF PLATE TO 16" CSG. TIH W/15" BIT. TAGGED CMT @ 1,270'. DRILL CMT TO 1,370'. PRESENT OPERATION DRLG CMT.

5-21-80 2,243' MADE 0' IN TWIN CREEK ? FORMATION. MW 8.8, VIS 43, WL 22.4, PH 8.5, PV 18, YP 16, 4/16 GELS, 4.8% SOLIDS, 400 PPM CHLORIDE, 120 CALCIUM. PMP PRESS 600, GPM 370, ANNULAR VELOCITY 152/73. BIT NO 10, 15, HTC, OWV, JETS OPEN. DEPTH IN 1,270', OUT 1,384'; MADE 114' IN 4-1/2 HRS; 25.3 FT/HR. OPER PULLED. BIT NO 9RR, 12-1/4, SEC, DMN, JETS 16-16-16. DEPTH IN 2,243'. OPER REAM. RPM 60, WT ON BIT 5-10,000. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
BIT SUB	3.35	9	2-7/8
SS	9.24	9	2
2 DC'S	59.28	9-1/2	3
IBS	4.75	12-1/4	3
3 DC'S	90.98	9-1/2	3
1 DC	28.22	8	3
JARS	38.84	7-3/4	2-1/4
2 DC'S	58.16	8	3
X - OVER SUB	2.57	8	2-7/8

TOTAL BHA 296.39. FIN DRLG W/15" BIT TO 1,384'. CIRC & CLEAN HOLE. POH, RIG FLOWLINE. P/U BIT (12-1/4") & BHA. TIH, CIRC & COND HOLE. MUD UP. WTR WOULDN'T CLEAN HOLE. WASH & REAM FILL FROM 1,384' TO 1,560'. PRESENT OPERATION REPAIR SWIVEL.

5-22-80 2,270' MADE 27' IN TWIN CREEK ? FORMATION. MW 8.5, VIS 42, WL 16, PH 9.0, PV 11, YP 13, 5/12 GELS, 1.3% SOLIDS, 300 PPM CHLORIDE, 80 CALCIUM, TR LCM. PMP PRESS 400, GPM 370, ANNULAR VELOCITY 72/130. BIT NO 9RR, 12-1/4, SEC, DMN, JETS 16-16-16. DEPTH IN 2,243'; MADE 27' IN 5 HRS; 5.4 FT/HR. OPER DRLG. RPM 55, WT ON BIT 35,000. TOTAL BHA 296.39. WASH & REAM TO 2,243' W/12-1/4" BIT. GOT LOT OF CUTTINGS IN RETURNS. CIRC HOLE CLEAN, HOLE CLEANED UP GOOD. DRLG AHEAD, NO PROBLEMS. FORMATION LIMESTONE: WHITE TO LIGHT GRAY, FIRM W/SOFT TRACES YELLOW & RED SILTSTONE & SHALE. PRESENT OPERATION DRLG.

OTTER CREEK #1-21 WELL HISTORY

5-23-80 2,268' MADE 98' IN TWIN CREEK ? FORMATION. MW 8.6, VIS 45, WL 14, PH 10, PV 13, YP 14, 6/13 GELS, 2% SOLIDS, 270 PPM CHLORIDE, 60 CALCIUM. PMP PRESS 2,150, GPM 348, ANNULAR VELOCITY 123/68. BIT NO 9RR, 12-1/4, SEC, DMN, JETS 16-16-16. DEPTH IN 2,243', OUT 2,354'; MADE 111'; IN 19 HRS, 5.8 FT/HR; CONDITION 5-F-I. OPER DULL. BIT NO 6RR, 12-1/4, SEC, DMN, JETS 14-14-16. DEPTH IN 2,354'; MADE 14' IN 2-1/2 HRS; 5.6 FT/HR. OPER DRLG. RPM 55, WT ON BIT 35,000. DEV DEPTH 2,286 INC 1-3/4°, DEPTH 2,349' INC 1°. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
BIT SUB	3.35	9	2-7/8
SS	8.99	9	2
2 DC'S	59.28	9-1/2	3
IBS	4.75	12-1/4	3
3 DC'S	90.98	9-1/2	3
3 DC'S	86.38	8	3
X - OVER SUB	2.57	8	2-7/8

TOTAL BHA 257.30. DRILL TO 2,354'. LOST 400# PMP PRESS. CHECK PMPS - OK. PMP SOFT LINE, POH LOOKING FOR HOLE IN PIPE. 1 JET OUT OF BIT, L/D JARS & SHOCK SUB. P/U NEW SHOCK SUB & CHANGE BIT. TIH, SMALL BRIDGE 4 STANDS OFF BTM. 4' FILL ON TRIP. LIMESTONE: LIGHT GRAY & HARD. PRESENT OPERATION DRLG AHEAD W/NO PROBLEMS.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T21N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 5-24-80 To: 5-30-80

RECEIVED
JUN 4 1980
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED K.A. Thoma/A.G. TITLE Drilling Superintendent DATE 6-2-80

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

5-24-80 2,516' MADE 148' IN TWIN CREEK FORMATION. MW 8.7, VIS 45, WL 10.8, PH 10.5, PV 13, YP 15, 4/7 GELS, 2.7% SOLIDS, 300 PPM CHLORIDE, 60 CALCIUM. PMP PRESS 2,100, GPM 340, ANNULAR VELOCITY 123/66. BIT NO 6RR, 12-1/4, SEC, DMN, JETS 14-14-16. DEPTH IN 2,354'; MADE 162' IN 25-1/2 HRS; 6.3 FT/HR. OPER DRLG. RPM 55, WT ON BIT 40,000. DEV DEPTH 2,435' INC 1-1/4°. TOTAL BHA 257.30. LIMESTONE: GRAY, FIRM TO HARD. PRESENT OPERATION DRLG AHEAD, NO PROBLEMS.

5-25-80 2,529' MADE 13' IN TWIN CREEK FORMATION. MW 8.7, VIS 45, WL 12, PH 10.5, PV 12, YP 13, 3/6 GELS, 1.8% SOLIDS, 310 PPM CHLORIDE, 60 CALCIUM. PMP PRESS 240, GPM 474, ANNULAR VELOCITY 56/81. BIT NO 6RR, 12-1/4, SEC, DMM, JETS 14-14-16. DEPTH IN 2,354', OUT 2,529'; MADE 175' IN 27-1/2 HRS; 6.4 FT/HR; CONDITION 6-F-I. OPER DULL. HO#5, 12-1/4 X 15, SEC, MED BUTTON, JETS 15-15-15 HO (14-14-16 BIT). DEPTH IN 1,384'; MADE 36' IN 1-1/2 HRS; 24 FT/HR. OPER REAMING. RPM 70, WT ON BIT 15-20,000. DEV DEPTH 2,529' INC 1-1/2°. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
15" HO	3.90	15	
BIT SUB	3.35	9	2-7/8
SHOCK SUB	8.99	9	2
5 DC'S	150.26	9-1/2	3
3 DC'S	86.38	8	3
X - OVER	2.59	8	2-7/8

TOTAL BHA 255.47. DRLD 2,516'-2,529'. CIRC 2 HRS, MADE 15 STAND WIPER TRIP & TAG LEDGE @ 1,830' WHEN RIH. ROTATE & ROLL OFF OK. CIRC 1-1/2 HRS, MADE 10 STAND WIPER TRIP & TAG LEDGE @ 1,830' AGAIN. ROTATE & ROLL OFF OK. CIRC 1 HR, POH TO LOG. SLM - NO CORRECTION. R/U SCHLUMBERGER. RAN BHC SONIC/MCD/GR, CNL/FDC/GR, HDT/GR. LOGGER'S TD @ 2,522'. LOGGERS DID NOT TAG @ 1,830'. RIH & OPEN 12-1/4" TO 15" FROM 1,384'-1,420'. HAVE FULL RETURNS. PRESENT OPERATION OPENING HOLE.

5-26-80 2,529' MADE 0' IN TWIN CREEK FORMATION. MW 8.6, VIS 47, WL 12.8, PH 10.5, PV 15, YP 13, 5/12 GELS, 1.8% SOLIDS, 300 PPM CHLORIDE, 60 CALCIUM. PMP PRESS 240, GPM 474, ANNULAR VELOCITY 56/81. HO#5, 12-1/4 X 15, SEC, MED BUTTON, JETS 15-15-15. DEPTH IN 1,384'; MADE 597' IN 25 HRS; 23.8 FT/HR. OPER REAMING. RPM 70, WT ON BIT 15-20,000. TOTAL BHA 255.47. OPENING 12-1/4" TO 15" @ 1,981'. OPENED 561' LAST 24 HRS. HAVE FULL RETURNS. PRESENT OPERATION OPENING HOLE W/NO PROBLEMS.

5-27-80 2,529' MADE 0' IN TWIN CREEK FORMATION. MW 8.7, VIS 49, WL 12.4, PH 10.5, PV 16, YP 12, 2/7 GELS, 3% SOLIDS, 290 PPM CHLORIDE, 60 CALCIUM. PMP PRESS 240, GPM 474, ANNULAR VELOCITY 56/81. HO#5, 12-1/4 X 15, SEC, MED BUTTON, JETS 15-15-15. DEPTH IN 1,384'; MADE 946' IN 48.5 HRS; 19.5 FT/HR. OPER REAMING. RPM 70, WT ON BIT 15-20,000. TOTAL BHA 255.47. OPEN 12-1/4" HOLE TO 15" @ 2,330'. MADE 349' LAST 24 HRS - HOLE OK. HAVE FULL RETURNS. PRESENT OPERATION OPENING HOLE.

OTTER CREEK #1-21 WELL HISTORY

5-28-80 2,529' MADE 0' IN TWIN CREEK FORMATION. MW 8.9, VIS 42, WL 12, PH 11, PV 11, YP 8, 3/5 GELS, 4.1% SOLIDS, 310 PPM CHLORIDE, 60 CALCIUM. PMP PRESS 450, GPM 584, ANNULAR VELOCITY 99/64. HO#5, 12-1/4 X 15, SEC, MED BUTTON, JETS 15-15-15. DEPTH IN 1,384', OUT 2,369'; MADE 985' IN 54 HRS; 18.2 FT/HR; CONDITION 6-F-I. OPER DULL. HO NO 6, 17-1/2, SERVCO UNDER REAMER, TOOTH W/BUTTON GAUGE, 1" OFIFICE. DEPTH IN 2,369'; MADE 24' IN 12-1/2 HRS; 1.9 FT/HR. OPER REAMING. RPM 70, WT ON BIT 12,000. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
UNDER REAMER	7.93	17-1/2	
BIT SUB	3.35	9	2-7/8
SHOCK SUB	8.99	9	2
5 DC'S	150.26	9-1/2	3
3 DC'S	86.38	8	3
X - OVER SUB	2.59	8	2-7/8

TOTAL BHA 259.50. REAM 12-1/4" TO 15" TO 2,369'. CIRC & COND HOLE 2-1/2 HRS. POH W/HO#5, P/U 17-1/2" SERVCO UNDER REAMER. RIH, UNDER REAM 12-1/4" TO 17-1/2" FROM 2,369'-2,393'. PRESENT OPERATION UNDER REAMING.

5-29-80 2,529' MADE 0' IN TWIN CREEK FORMATION. MW 9, VIS 44, WL 11.6, PH 11.5, PV 13, YP 9, 3/5 GELS, 4.9% SOLIDS, 300 PPM CHLORIDE, 60 CALCIUM. PMP PRESS 450, GPM 584, ANNULAR VELOCITY 99/64. HO NO 6, 17-1/2, SERVCO UNDER REAMER, TOOTH W/BUTTON GUAGE, 1" ORIFICE. DEPTH IN 2,369', OUT 2,434'; MADE 65' IN 23-1/2 HRS; 2.7 FT/HR; CONDITION 5-F-I. OPER DULL. HO NO 7, 17-1/2, SERVCO UNDER REAMER, TOOTH W/BUTTON GAUGE, 1" ORIFICE. DEPTH IN 2,434'; MADE 23' IN 9 HRS; 2.5 FT/HR. OPER REAM. RPM 70, WT ON BIT 12,000. TOTAL BHA 259.50. REAM 12-1/4" TO 17-1/2" TO 2,434'. POH, CHANGE OUT UNDER REAMER. RIH, REAM 12-1/4" TO 17-1/2" FROM 2,434'-2,457', NO PROBLEMS. PRESENT OPERATION UNDER REAM @ 2,457'.

5-30-80 2,529' MADE 0' IN TWIN CREEK FORMATION. MW 9.1, VIS 53, WL 10, PH 11, PV 22, YP 17, 5/8 GELS, 5.9% SOLIDS, 310 PPM CHLORIDE, 60 CALCIUM. PMP PRESS 450, GPM 584, ANNULAR VELOCITY 99/64. HO NO 7, 17-1/2, SERVCO UNDER REAMER, TOOTH BUTTON GAUGE, 1" ORIFICE. DEPTH IN 2,434', OUT 2,510'; MADE 76' IN 31 HRS; 2.5 FT/HR; CONDITION 6-F-I. OPER DULL. RPM 70, WT ON BIT 12-14,000. TOTAL BHA 259.50. UNDER REAM 12-1/4" TO 17-1/2" TO 2,510', SLM ON TRIP. UNDER REAM 53'. TIH W/15" BIT FOR GAUGE RUN. PRESENT OPERATION TRIP.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T21N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 5-31-80 To: 6-6-80

RECEIVED
JUN 11 1980
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED K.A. Thoma/A.G. TITLE Drilling Superintendent DATE 6-9-80

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

5-31-80 2,529' MADE 0' IN TWIN CREEK FORMATION. MW & VIS WTR. RIH W/15" HOLE OPENER TO 2,510' - NO FILL. CIRC & WAIT ON SCHLUMBERGER 7 HRS TO RUN OPEN HOLE CALIPER LOG. RIG CSG CREW, CSG RAN AS FOLLOWS:

NO. JTS	SIZE	OVERALL LENGTH	EFFECTIVE LENGTH	SETTING FROM	DEPTH TO
1	13-3/8" BOT FLOAT SHOE C-1	2.29	2.29	2,494.01	2,491.72
2	13-3/8" 61# SFJ-P K-55 HYDRIL R-3 C-1	76.68	75.88	2,491.72	2,415.84
1	13-3/8" BOT FLOAT COLLAR C-1	1.71	1.31	2,415.84	2,414.53
60	13-3/8" 61# SFJ-P K-55 HYDRIL R-3 C-1	2,440.53	2,416.53	2,414.53	+2.00' KB
62		2,517.21	2,492.41		

NO. CENTRALIZERS: 2; DEPTHS OR JTS: #60 & 63. LANDED SHOE @ 2,494.01' KB. 1ST STAGE: CMTD CSG W/400 SKS OF HOWCO LIGHT W/1/4#/SK FLOCELE, 2% CACL2 FOLLOWED BY 350 SKS OF "G" W/1/4#/SK FLOCELE, 2% CACL2. USED 50% EXCESS VOLUME. PMPD 1,000 GALS MUD FLUSH, THEN 10 BBLS WTR AHEAD, 10 BBLS BEHIND. MIXING TIME 40 MIN, PMPG TIME 70 MIN, TOTAL TIME 110 MIN. CIRC PRESS 200, DISPLACEMENT PRESS 600, MAX PRESS 1,600. DISPLACED CMT W/380 BBLS OF WTR W/HOWCO PMP. BUMPED PLUG W/1,600 PSI. PLUG DOWN @ 8:25 AM, 5-31-80. GOOD RETURNS WHILE CMTG. CIRC ? BBLS CMT TO SURFACE. FLOAT EQUIPMENT HELD OK. WOC 12 HRS. TACK WELD BTM 2 JTS OF CSG. RIG HOWCO - HAD TO FILL EVERY 5 JTS ON TRIP IN W/CSG. PRESENT OPERATION CMT SURFACE.

6-1-80 2,529' MADE 0' IN TWIN CREEK FORMATION. MW & VIS WTR. CMT CSG. TAG CMT TOP IN ANNULUS @ 13' BELOW GL. PACK W/SAND & GRAVEL. WELD ON CSG HEAD & TEST TO 1,500 PSI. PRESENT OPERATION N/U BOP'S.

6-2-80 2,529' MADE 0' IN TWIN CREEK FORMATION. MW & VIS WTR. CMT BASE PLATE IN CELLAR. CONTINUE N/U OPERATIONS. PRESENT OPERATION N/U.

RECEIVED
JUN 11 1980
DIVISION OF
OIL, GAS & MINING

OTTER CREEK #1-21 WELL HISTORY

6-3-80 2,535' MADE 6' IN TWIN CREEK FORMATION. MW 8.5, VIS 39, WL 16.8, PH 11, PV 10, YP 11, 4/7 GELS, 1.2% SOLIDS, 290 PPM CHLORIDE, 100 CALCIUM. PMP PRESS 1,300, GPM 348, ANNULAR VELOCITY 68/123. BIT NO 11, 12-1/4, SMITH, DGJ, JETS 13-13-15. DEPTH IN 2,529'; MADE 6' IN 1 HR; 6 FT/HR. OPER DRLG. RPM 100, WT ON BIT 15,000. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
BIT SUB	3.35	9	2-7/8
SHOCK SUB	8.99	9	2
5 DC'S	150.26	9-1/2	3
3 DC'S	86.38	8	3
X - OVER SUB	2.59	8	2-7/8

TOTAL BHA 252.57. FIN N/U BOP. TESTED BOP W/REBEL. TEST ALL RAMS & VALVES TO 3,000 PSI - HYDRIL TO 1,500 PSI - HELD ALL TEST PRESSURES 15 MIN - OK. RIH & INSPECT DC'S W/TUBOSCOPE - ALL DC'S OK. TEST CSG TO 1,500 PSI - OK. TAGGED CMT @ 2,409', DRLD CMT TO FLOAT COLLAR @ 2,413'. DRLD FLOAT COLLAR, CMT, & FLOAT SHOE @ 2,494'. CLEAN OUT RAT HOLE TO 2,529'. DRLG AHEAD @ 2,535' @ 0600 HRS WHILE COMPLETING M/U. PRESENT OPERATION DRLG.

6-4-80 2,641' MADE 106' IN TWIN CREEK FORMATION. MW 8.6, VIS 37, WL 15.6, PH 10.5, PV 8, YP 7, 2/4 GELS, 2% SOLIDS, 300 PPM CHLORIDE, 60 CALCIUM. PMP PRESS 700, GPM 382, ANNULAR VELOCITY 135/75. BIT NO 11, 12-1/4, SMITH, DGJ, JETS 13-13-15. DEPTH IN 2,529'; MADE 112' IN 18 HRS; 6.2 FT/HR. OPER DRLG. RPM 100, WT ON BIT 15-20,000. DEV DEPTH 2,648' INC 1-3/4°, DEPTH 2,587' INC 1-1/2°. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
BIT SUB	3.35	9	2-7/8
SS	8.99	9	2
5 DC'S	150.26	9-1/2	3
2 DC'S	58.38	8	3
X - OVER	2.59	8	2-7/8

TOTAL BHA 224.27. PRESS TEST CSG SHOE TO 14 PPG EQUIV - 700# - HELD OK, NO LEAK-OFF. POH FOR HOLE IN PIPE. T/O @ 2,536' - MADE 7' NEW HOLE. LOST PMP PRESS. HAD CRACKED BOX ON #2 DC FROM TOP 8" DC. ALL DC'S WERE CHECKED BY TUBOSCOPE BEFORE DRLG OUT FROM UNDER SURFACE. PRESENT OPERATION DRLG AHEAD W/NO PROBLEMS.

OTTER CREEK #1-21 WELL HISTORY

6-5-80 2,730' MADE 89' IN TWIN CREEK FORMATION. MW 8.8, VIS 40, WL 12.8, PH 10, PV 13, YP 9, 3/5 GELS, 3.4% SOLIDS, 290 PPM CHLORIDE, 60 CALCIUM. PMP PRESS 750, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 11, 12-1/4, SMITH, DGJ, JETS 13-13-15. DEPTH IN 2,529', OUT 2,724'; MADE 195' IN 33-1/2 HRS; 5.8 FT/HR; CONDITION 6-E-I. OPER PULLED. BIT NO 12, 12-1/4, SEC, DMM, JETS 12-12-14. DEPTH IN 2,724'; MADE 6' IN 2 HRS; 3 FT/HR. OPER DRLG. RPM 60, WT ON BIT 20,000. DEV DEPTH 2,648' INC 1-3/4°, DEPTH 2,711' INC 1-3/4°. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
6 PT REAMER	10.57	12-1/4	2-7/8
RWP	9.10	12-1/4	2-7/8
SHORT DC	9.78	8	3
RWP	8.80	12-1/4	2-7/8
SS	8.89	9	2
1 DC	29.33	9-1/2	3
RWP	8.62	12-1/4	2-7/8
4 DC'S	120.93	9-1/2	3
1 DC	28.22	8	3
JARS	39.10	7-3/4	2-3/4
2 DC'S	57.48	8	3
X - OVER SUB	2.57	8	2-7/8

TOTAL BHA 334.39. POH FOR BIT #12. P/U PACKED HOLE ASSY, DRILCO REAMER & STAB, SECURITY SHOCK SUB, & DAILEY DRLG JARS. RIH, NO FILL. HOLE IN GOOD SHAPE. GEOLOGY: SHALE & LIMESTONE. SHALE LIGHT GREEN & SILTY. LIMESTONE LIGHT GRAY, FIRM W/TRACES PYRITE. PRESENT OPERATION DRLG.

6-6-80 2,852' MADE 122' IN TWIN CREEK FORMATION. MW 8.8, VIS 36, WL 11.6, PH 9.5, PV 8, YP 7, 1/3 GELS, 3.8% SOLIDS, 300 PPM CHLORIDE, 40 CALCIUM. PMP PRESS 1,300, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 12, 12-1/4, SEC, DMM, JETS 12-12-14. DEPTH IN 2,724'; MADE 128' IN 24-1/2 HRS; 5.2 FT/HR. OPER DRLG. RPM 65, WT ON BIT 35-40,000. DEV DEPTH 2,790' INC 1-3/4°, DEPTH 2,852' INC 1-1/2°. TOTAL BHA 334.39. CHECK OUT LOW PMP PRESS. #1 & #2 PMPS HAD SAME PRESS. DROP CARBIDE LAG - 40 MIN LAG TIME, NO PRESS CHANGE. DROP BALL PLUG ONE JET TO INCREASE PRESS. GEOLOGY SAME - NO GAS. PRESENT OPERATION DRLG.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 6-7-80 To: 6-13-80

RECEIVED
JUN 20 1980
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED K.A. Thomas/F.H. TITLE Drilling Sup't. DATE 6-16-80

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

6-12-80 3,808' MADE 258' IN TWIN CREEK FORMATION. MW 9.0, VIS 38, WL 11.2, PH 10.5, PV 10, YP 10, 1/3 GELS, 4.4% SOLIDS, 250 PPM CHLORIDE, 40 CALCIUM. PMP PRESS 1,650, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 14, 12-1/4, REED, FP51, JETS 10-10-12. DEPTH IN 3,101'; MADE 707' IN 73 HRS; 9.7 FT/HR. OPER DRLG. RPM 80, WT ON BIT 25-30,000. DEV DEPTH 3,622' INC 2°, DEPTH 3,714' INC 1-1/2°, DEPTH 3,774' INC 1-1/2°. TOTAL BHA 334.65. DRLG AHEAD W/NO PROBLEMS. LITHOLOGY: DOLOMITE, LIGHT GREY & HARD. NO GAS. PRESENT OPERATION DRLG.

6-13-80 4,021' MADE 213' IN TWIN CREEK FORMATION. MW 9.0, VIS 36, WL 11, PH 10.5, PV 10, YP 8, 1/3 GELS, 5.1% SOLIDS, 240 PPM CHLORIDE, 40 CALCIUM. PMP PRESS 1,650, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 14, 12-1/4, REED, FP51, JETS 10-10-12. DEPTH IN 3,101'; MADE 920' IN 95-1/2 HRS; 9.6 FT/HR. OPER DRLG. RPM 80, WT ON BIT 25-30,000. DEV DEPTH 3,866' INC 1-1/2°, DEPTH 3,959' INC 1-3/4°. TOTAL BHA 334.65. DRLG AHEAD, NO HOLE PROBLEMS. CHANGE SHAKER SCREENS - 60'S ON TOP, 80'S ON BTM. DE-SANDER UNDERFLOW 9.6# @ 18 PSI. DE-SILTER UNDERFLOW 10.6# @ 32 PSI. RETORT ON DE-SILTER UNDERFLOW 11% SOLIDS. LITHOLOGY: LIMESTONE, LIGHT-MED GRAY BROWN W/HARD DOLOMITE, NO GAS. PRESENT OPERATION DRLG.

OTTER CREEK #1-21 WELL HISTORY

6-7-80 2,945' MADE 93' IN TWIN CREEK FORMATION. MW 8.8, VIS 37, WL 12.0, PH 9.5, PV 11, YP 9, 3/5 GELS, 3.8% SOLIDS, 290 PPM CHLORIDE, 60 CALCIUM. PMP PRESS 950, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 12, 12-1/4, SEC, DMM, JETS 12-12-14. DEPTH IN 2,724', OUT 2,861'; MADE 137' IN 25-1/2 HRS; 5.3 FT/HR; CONDITION 6-E-I. BIT NO 13, 12-1/4, REED, S21G, JETS 13-13-13. DEPTH IN 2,861'; MADE 84' IN 11-1/2 HRS; 7.3 FT/HR. OPER DRLG. RPM 60, WT ON BIT 35-40,000. DEV DEPTH 2,914' INC 2°, DEPTH 2,940' INC 1-3/4°. TOTAL BHA 334.39. DRLD FROM 2,852'-2,861'. TRIP F/BIT #13. CHECKED FOR & FOUND HOLE IN DRILL PIPE @ 2,134' (1 STAND ABOVE COLLARS). CHANGED CORROSION RINGS, DRLD FROM 2,861'-2,945' W/NO PROBLEMS. PRESENT OPERATION DRLG.

6-8-80 3,087' MADE 142' IN TWIN CREEK FORMATION. MW 8.9, VIS 35, WL 11.6, PH 9.5, PV 12, YP 8, 3/5 GELS, 3.6% SOLIDS, 310 PPM CHLORIDE, 60 CALCIUM. PMP PRESS 950, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 13, 12-1/4, REED, S21G, JETS 13-13-13. DEPTH IN 2,861'; MADE 226' IN 32-1/2 HRS; 7.0 FT/HR. OPER DRLG. RPM 80, WT ON BIT 30-40,000. DEV DEPTH 3,005' INC 1-1/2°, DEPTH 3,066' INC 2°. TOTAL BHA 334.39. DRLD FROM 2,945'-3,087' W/NO PROBLEMS. TRACE OF GAS, 3,008'-3,070' - 2 UNITS METHANE. GEOLOGY: LIGHT TO MED GRAY LIMESTONE, CHANGING TO DARK GRAY W/MORE SHALE. PRESENT OPERATION DRLG.

6-9-80 3,213' MADE 126' IN TWIN CREEK FORMATION. MW 8.8, VIS 35, WL 12, PH 10, PV 5, YP 10, 1/2 GELS, 2.8% SOLIDS, 300 PPM CHLORIDE, 60 CALCIUM. PMP PRESS 1,100, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 13, 12-1/4, REED, S21G, JETS 13-13-13. DEPTH IN 2,861', OUT 3,101'; MADE 240' IN 36-1/2 HRS; 6.5 FT/HR; CONDITION 7-E-I. OPER PULLED. BIT NO 14, 12-1/4, REED, FP51, JETS 12-12-12. DEPTH IN 3,101'; MADE 112' IN 14-1/2 HRS; 7.7 FT/HR. OPER DRLG. RPM 80, WT ON BIT 35-40,000. DEV DEPTH 3,160' INC 1-1/2°. TOTAL BHA 334.39. POH F/BIT #14. FIXED CONTROLS ON BOP & TEST - OK, NO GAS. GEOLOGY: LIMESTONE, MED TO DARK GRAY, FIRM TO HARD. PRESENT OPERATION DRLG.

6-10-80 3,409' MADE 196' IN TWIN CREEK FORMATION. MW 9.0, VIS 39, WL 11.2, PH 10.5, PV 12, YP 8, 1/3 GELS, 4.4% SOLIDS, 300 PPM CHLORIDE, 60 CALCIUM. PMP PRESS 1,100, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 14, 12-1/4, REED, FP51, JETS 12-12-12. DEPTH IN 3,101'; MADE 308' IN 36 HRS; 8.5 FT/HR. OPER DRLG. RPM 80, WT ON BIT 25-30,000. DEV DEPTH 3,221' INC 2°, DEPTH 3,281' INC 2°, DEPTH 3,343' INC 1-1/2°, DEPTH 3,403' INC 1-3/4°. TOTAL BHA 334.39. LOST 100# PRESS WHILE DRLG ON BTM. P/U OFF BTM PRESS INCREASE 100#. PREPARING TO POH TO CHECK FOR LEAK IN SHOCK SUB. GEOLOGY: LIMESTONE, GRAY TO BROWN, FIRM TO HARD. PRESENT OPERATION DRLG.

6-11-80 3,550' MADE 141' IN TWIN CREEK FORMATION. MW 9.0, VIS 38, WL 12, PH 10, PV 10, YP 8, 1/3 GELS, 4.4% SOLIDS, 260 PPM CHLORIDE, 40 CALCIUM. PMP PRESS 1,650, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 14, 12-1/4, REED, FP51, JETS 10-10-12. DEPTH IN 3,101'; MADE 449' IN 52 HRS; 9 FT/HR. OPER DRLG. RPM 80, WT ON BIT 25-30,000. DEV DEPTH 3,466' INC 1-3/4°, DEPTH 3,550' INC 2°. TOTAL BHA 334.65. DRLD 3,409'-3,419'. 100 PSI PRESS LOSS WHEN DRLG - REGAIN 100 PSI WHEN P/U OFF BTM. POH, SECURITY SHOCK SUB LEAKING (241 ROTATING HOURS). P/U NEW SECURITY SHOCK SUB & RIH. RE-RAN BIT #14. PRESENTLY DRLG 4-8 MIN/FT. LITHOLOGY: LIMESTONE & DOLOMITE - NO GAS. PRESENT OPERATION DRLG.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 6-14-80 To: 7-11-80

RECEIVED
JUL 18 1980
DIVISION OF OIL & GAS

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

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

SIGNED K. Thoma. TITLE Drilling Supr. DATE July 15, 1980

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

6-14-80 4,229' MADE 208' IN TWIN CREEK FORMATION. MW 9.0, VIS 35, WL 12, PH 10.5, PV 9, YP 7, 1/2 GELS, 4.4% SOLIDS, 240 PPM CHLORIDE, 40 CALCIUM. PMP PRESS 1,650, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 14, 12-1/4, REED, FP51, JETS 10-10-12. DEPTH IN 3,101'; MADE 1,128' IN 115-1/2 HRS; 9.8 FT/HR. OPER DRLG. RPM 80, WT ON BIT 25-30,000. DEV DEPTH 4,051' INC 1-3/4°, DEPTH 4,144' INC 1-3/4°. TOTAL BHA 334.65. DRLG AHEAD W/NO HOLE PROBLEMS. LITHOLOGY: LIMESTONE & DOLOMITE - NO GAS. PRESENT OPERATION DRLG.

6-15-80 4,370' MADE 141' IN TWIN CREEK FORMATION. MW 9.1, VIS 36, WL 12, PH 10.5, PV 10, YP 6, 1/3 GELS, 5.6% SOLIDS, 280 PPM CHLORIDE, 40 CALCIUM. PMP PRESS 2,150, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 14, 12-1/4, REED, FP51, JETS 10-10-12. DEPTH IN 3,101', OUT 4,284'; MADE 1,183' IN 121-1/2 HRS; 9.7 FT/HR; CONDITION 4-E-I. OPER PULLED. BIT NO 15, 12-1/4, HTC, J-22, JETS 12-13-BLANK. DEPTH IN 4,284'; MADE 86' IN 10 HRS; 8.6 FT/HR. OPER DRLG. RPM 80, WT ON BIT 20-25,000. DEV DEPTH 4,236' INC 2°, DEPTH 4,284' INC 2-1/4°, DEPTH 4,325' INC 2° (TELEDRIFT). DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
6 PT REAMER	10.57	12-1/4	2-7/8
RWP	9.10	12-1/4	2-7/8
TELE SENDER SUB	8.56	9	4-3/4
RWP	8.80	12-1/4	2-7/8
SHOCK SUB	8.89	9	2
1 DC	29.33	9-1/2	3
RWP	8.62	12-1/4	2-7/8
4 DC'S	120.93	9-1/2	3
1 DC	28.22	8	3
JARS	39.10	7-3/4	2-3/4
2 DC'S	57.48	8	3
X - OVER SUB	2.57	8	2-7/8

TOTAL BHA 333.43. DRLD 4,229'-4,284'. POH W/BIT #14 - HOLE IN GOOD SHAPE. L/D SHORT DC & P/U DYNA DRILL TELEDRIFT SUB. DRILCO SERVICE MAN CHECKED RWP STABILIZERS. RIH W/BIT #15 - NO FILL. PRESENTLY DRLG AHEAD, NO PROBLEMS. LITHOLOGY: DOLOMITE & LIMESTONE - NO GAS. PRESENT OPERATION DRLG.

6-16-80 4,553' MADE 183' IN TWIN CREEK FORMATION. MW 9.1, VIS 35, WL 12, PH 10.5, PV 11, YP 7, 1/3 GELS, 5.9% SOLIDS, 250 PPM CHLORIDE, 40 CALCIUM. PMP PRESS 2,150 GPM 383, ANNULAR VELOCITY 157/75. BIT NO 15, 12-1/4, HTC, J-22, JETS 12-13-BLANK. DEPTH IN 4,284'; MADE 271' IN 32-1/2 HRS; 8.4 FT/HR. OPER DRLG. RPM 80, WT ON BIT 25,000. DEV DEPTH 4,449' INC 2°, DEPTH 4,509' INC 2°. TOTAL BHA 333.43. DRLG AHEAD W/NO PROBLEMS. LITHOLOGY - DOLOMITE W/GRADING TO LIMESTONE. PRESENT OPERATION DRLG.

OTTER CREEK #1-21 WELL HISTORY

6-17-80	4,648'	MADE 95' IN TWIN CREEK FORMATION. MW 9.1, VIS 40, WL 11, PH 9.5, PV 10, YP 10, 3/6 GELS, 5.6% SOLIDS, 260 PPM CHLORIDE, 40 CALCIUM. PMP PRESS 2,150, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 15, 12-1/4, HTC, J-22, JETS 12-13-BLANK. DEPTH IN 4,284', MADE 366' IN 55-1/2 HRS; 6.6 FT/HR. OPER DRLG. RPM 80, WT ON BIT 25-35,000. DEV DEPTH 4,602' INC 2°. TOTAL BHA 333.43. DRLG AHEAD W/NO PROBLEMS. LITHOLOGY - DOLOMITE, MED GRAY, FIRM TO HARD & MED TO DARK GRAY LIMESTONE - HARD. PRESENT OPERATION DRLG.
6-18-80	4,695	MADE 47' IN TWIN CREEK FORMATION. MW 9.1, VIS 37, WL 11.8, PH P.5, PV 10, YP 8, 2/5 GELS, 5.6% SOLIDS, 270 PPM CHLORIDE, 40 CALCIUM. PMP PRESS 2,150, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 15, 12-1/4, HTC, J-22, JETS 12-13-BLANK. DEPTH IN 4,284', OUT 4,695; MADE 413' IN 68 HRS; 6.1 FT/HR. OPER DULL. BIT NO 16, 12-1/4, HTC, J-44, JETS 12-13-BLANK. DEPTH IN 4,695'. RPM 80, WT ON BIT 25-35,000. DEV DEPTH 4,666' INC 1-1/2°. TOTAL BHA 333.43. DRILLED TO 4,695' POH FOR HOLE IN DP. HOLE IN 4TH JT DP ABOVE DC'S. CHANGE BIT, TIH, SCR UNIT DOWN, NO POWER TO PMPS. PULL BIT UP IN SURFACE CASING. WAIT ON ELECTRICIAN. 5-1/2 HRS RIG REPAIR ON SCR UNIT. LITHOLOGY - LIMESTONE & DOLOMITE. PRESENT OPERATION WORK ON SCR.
6-19-80	4,793	MADE 98' IN TWIN CREEK FORMATION. MW 9.1, VIS 36, WL 11.2, PH 9.5, PV 9, YP 9, 1/3 GELS, 6% SOLIDS, 280 PPM CHLORIDE, 40 CALCIUM. PMP PRESS 2,000, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 16, 12-1/4, HTC, J-44, JETS 12-13-BLANK. DEPTH IN 4,695', MADE 98', IN 18-1/2 HRS; 5.3 FT/HR. OPER DRLG. RPM 80, WT ON BIT 25-35,000. DEV DEPTH 4,697 INC 1-1/2°. DEPTH 4,759 INC 1-1/2°. DEPTH 4,790 INC 2°. TOTAL BHA 333.43. ELECTRICIAN FIXED SCR PANEL. TRIP BACK IN HOLE, HOLE IN GOOD SHAPE. DRLG AHEAD WITH NO PROBLEMS. LITHOLOGY - LIMESTONE & DOLOMITE. PRESENT OPER DRLG.
6-20-80	5,005	MADE 212' IN TWIN CREEK FORMATION. MW 9.0, VIS 33, WL 14, PH 10, PV 8, TP 4, 1 GELS, 5.2% SOLIDS, 250 PPM CHLORIDE, 60 CALCIUM. PMP PRES 2,000, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 16, 12-1/4, HTC, J-44, JETS 12-13-BLANK. DEPTH IN 4,695', MADE 310', IN 41.5 HRS; 7.5 FT/HR. OPER DRLG. RPM 80, WT ON BIT 30-40,000. DEV DEPTH 4,820 INC 1-1/2°, DEPTH 4,842 INC 1-1/2°, DEPTH 4,975 INC 1°. TOTAL BHA 333.43. DRLG AHEAD NO PROBLEMS. LITHOLOGY - LIMESTONE; LIGHT GREY TO LT BROWN, HARD TO FIRM W/INTERBEDDED GREEN SHALE. PRESENT OPERATION, DRLG.

OTTER CREEK #1-21 WELL HISTORY

6-21-80 5,133 MADE 128' IN TWIN CREEK FORMATION. MW 9.0, VIS 34, WL 14, PH 9, PV 8, YP 5, 1/3 GELS, 5.2% SOLIDS, 250 CHLORIDE PPM, 60 CALCIUM. PMP PRESS 2,000, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 16, 12-1/4, HTC, J-44, JETS 12-13-BLANK. DEPTH IN 4,695', MADE 438', IN 65 HRS; 6.7 FT/HR. OPER DRLG. RPM 80, WT ON BIT 30-40,000. DEV DEPTH 5,037 INC 2°, DEPTH 5,099 INC 1-1/2°, DEPTH 5,130 INC 1°. TOTAL BHA 333.43. DRLG AHEAD WITH NO PROBLEMS. FROM 5,066' TO 5,088' HARD & SLOW 20 TO 40 MINS/FT. LITHOLOGY - LIMESTONE, LIGHT GREY TO BROWN, FIRM TO HARD, SOME RED BROWN SILTSTONE & SOFT SHALE, SOME FIRM GREEN SHALE.PRESENT OPER DRLG.

6-22-80 5,155 MADE 22' IN TWIN CREEK FORMATION. MW 9.0, VIS 31, WL 14.8 PH 9, PV 4, YP 3, 1 GELS, 5.2% SOLIDS, 240 CHLORIDE PPM, 60 CALCIUM. PMP PRESS 2,000, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 16, 12-1/4", HTC, J-44, JETS 12-13-BLANK. DEPTH IN 4,695, DEPTH OUT 5,155, MADE 460' IN 69-1/2 HRS; 6.6 FT/HR. OPER DRILL. BIT NO 17, 12-1/4", STC F-4, 12-13-BLANK. DEPTH IN 5,155', OPER TRIP. RPM 80, WT ON BIT 30-40,000. TOTAL BHA 418.52. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
6 PT	10.57	12-1/4	2-7/8
RWP	9.10	12-1/4	2-7/8
TELEDRIFT	8.56	9	4-3/4
RWP	8.80	12-1/4	2-7/8
SHOCK SUB	9.15	9	2
1 DC	29.33	9-1/2	3
RWP	8.62	12-1/4	2-2/3
4 DC'S	120.93	9-1/2	3
3 DC'S	85.70	8	3
X-O SUB	2.57	8	2-7/8
4 DC'S	124.19	6-3/4	2-7/8

DRILL TO 5,155; LOST 1,500# PMP PRESS & 30,000°. POH. PIN TWISTED OFF OF X-O SUB IN TOP OF JARS. UP 4-63/4" DC'S & FISHING TOOLS. TIH TOP OF FISH @ 4,887'. GOT HOLD OF FISH. FIRST TWO JTS WERE TIGHT. USED PMP ON FIRST TWO JTS TILL CAME FREE. POH LAY DOWN FISH & FISHING TOOLS. LITHOLOGY - SAME. PRESENT OPERATION TRIP IN HOLE.

6-23-80 5,382 MADE 227' IN TWIN CREEK FORMATION. MW 9.0, VIS 33, WL 8.5, PV 7, YP 5, 1 GELS, 5.2% SOLIDS, 260 PPM CHLORIDE, 80 CALCIUM. PMP PRESS 2,000, GPM 383, ANNULAR VELOCITY 157/75. BIT NO 17, 12-1/4, STC, F-4, JETS 12-13-BLANK. DEPTH IN 5,155, MADE 227' IN 18 HRS; 12.6 FT/HR. OPER DRLG. RPM 80, WT ON BIT 35,000. DEV DEPTH 5,184 INC 1-1/2°, DEPTH 5,277 INC 1°, DEPTH 5,339 INC 1-1/2°. TOTAL 418.52. TIH, UNPLUG BIT, WASH & REAM 100' TO BOTTOM. DRLG AHEAD NO PROBLEMS. LITHOLOGY: SANDSTONE. PRESENT OPER DRLG.

OTTER CREEK #1-21 WELL HISTORY

6-24-80	5,653	MADE 271' IN TWIN CREEK FORMATION. MW 9.0, VIS 36, WL 13, PH 9, PV 8, YP 4, 2 GELS, 4.9% SOLIDS, 240 PPM CHLORIDE, 80 CALCIUM. PMP PRESS 2,400, GPM 402, ANNULAR VELOCITY 163/80. BIT NO 17, 12-1/4, STC, F-4, JETS 12-13-BLANK. DEPTH IN 5,155, MADE 498' IN 42 HRS; 11.9 FT/HR. OPER DRLG. RPM 80, WT ON BIT 30-35,000. DEV DEPTH 5,463 INC 1-1/2°, DEPTH 5,587 INC 1-1/2°, DEPTH 5,646 INC 1-1/2°. TOTAL BHA 418.52. 5,440' TO 5,570' HAD TIGHT HOLE. RAISE VIS & INCREASE PMP. NO FURTHER PROBLEMS. DRLG AHEAD NO PROBLEMS. LITHOLOGY - SANDSTONE: CLEAR & FRIABLE BECOMING FIRMER @ 5,610', TRACES OF INTERBEDDED RED, BROWN, & GREEN GRAY SHALE. PRESENT OPER DRLG.
6-25-80	5,684	MADE 31' IN NUGGET FORMATION. MW 9.0, VIS 44, WL 11.8, PH 10, PV 14, YP 10, 1/2 GELS, 4.9% SOLIDS, 200 PPM CHLORIDE, 60 CALCIUM. PMP PRESS 2,400, GPM 402, ANNULAR VELOCITY 163/80. BIT NO 17, 12-1/4, STC, F-4, JETS 12-13-BLANK. DEPTH IN 5,155, MADE 529' IN 45 HRS; 11.8 FT/HR. OPER STUCK. RPM 80, WT ON BIT 30-35,000. TOTAL BHA 418.52. DRILL TO 5,684' DRILL STRING STARTED TO TORQUE UP. PICK OFF BOTTOM STUCK PIPE 2' OFF BOTTOM. RIG MCCULLOUGH & FREEPOINT PIPE. BIT @ 5,682', STUCK @ 5,264' @ TOP OF DC'S. SPOT 50 BBLS DIESEL & PIPE LAX WORK PIPE. MOVE DIESEL 1 BBL EVERY 30 MIN & WORKING PIPE. NO MOVEMENT IN PIPE YET. TOP OF DC'S @ 5,264'. STUCK 100% @ 5,264'. PRESENT OPER STUCK.
6-26-80	5,684	MADE 0' IN NUGGET FORMATION. MW 9.0, VIS 45, WL 11.8, PH 10.0, PV 16, YP 10, 1/4 GELS, 4.9% SOLIDS, 200 PPM CHLORIDE, 60 CALCIUM. BIT NO 17, 12-1/4, STC, F-4, JETS 12-13-BLANK, DEPTH IN 5,155, MADE 529' IN 45 HRS; 11.8 FT/HR. OPER STUCK.TOTAL BHA 196.74. WORK PIPE W/DIESEL & PIPE LAX AROUND DC'S UNTIL 11:30 A.M. NO MOVEMENT. RIG & RUN MCCULLOUGH FREE PI. NO CHANGE IN FREE PT SINCE YESTERDAY. RUN BACKOFF TOOL & BACK OFF@ 5,245'. W.L. MEASUREMENTS. 1 JT DP ABOVE DC'S. POH. DRILL PIPE TIGHT. TOOK 16-20,000# TORQUE TO BREAK DP. PICK UP FISHING TOOLS & 5 DC'S. TIH, GET HOLD OF FISH. HIT JARS & GRAPPLE SLIP OFF. HAVE 6-1/4" GRAPPLE IN HOLE. POH FOR 6-1/8" GRAPPLE. TRIPPING IN DIFFERENT BREAK, TO BREAK & DOPE CONNECTIONS. PRESENT OPER FISHING.
6-27-80	5,684'	MADE 0' IN NUGGET FORMATION. MW 9.0, VIS 40, WL 12.6, PH 9.5, PV 13, YP 8, 1/3 GELS, 4.9% SOLIDS, 180 PPM CHLORIDE, 40 CALCIUM. BIT NO 17, 12-1/4, STC, F-4, JETS 12-13-BLANK, DEPTH IN 5,155', MADE 529' IN 45 HRS; 11.8 FT/HR. OPER STUCK. TOTAL BHA 331.29. TIH W/ 6-1/8" GRAPPLE WOULD NOT HOLD, COULD NOT CIRCULATE, POH. BROKE EACH JNT FOR HIGH TORQUE (16-20,000 FT-LB), HAULED OUT 9-5/8' WASHPIPE (NO 10-3/4" WASHPIPE AVAILABLE) - WILL TRIP IN & CONDITION MUD BEFORE WASHING OVER. (WASHOVER 158'). PRESENT OPERATION FISHING-TRIP.

OTTER CREEK #1-21 WELL HISTORY

6-28-80	5,684	MADE 0' IN NUGGET FORMATION. MW 8.9, VIS 44, WL 8.0, PH 9.5, PV 13, YP 9, GELS 1/3, 4.2% SOLIDS, 220 PPM CHLORIDE, 40 CALCIUM. PMP PRESS 350, GPM 237, ANNULAR VELOCITY 56/46. BIT NO 17, 12-12, STC, F-4, JETS 12-13-BLANK, DEPTH IN 5,155' MADE 529' IN 45 HR; 11.8 FT/HR. OPER STUCK. TOTAL BHA 196.79. TRIP IN W/WASH PIPE CIRC CONDITION MUD. WASH OVER 158' TO 5,393' WITH NO TROUBLE, POH, PICK UP JARS, SCREW-IN SUB, TIH, SCREW INTO FISH AT 5,245', RAN MCCULLOUGH FREE-POINT, FISH FREE DOWN TO 5,437; (1 JT BELOW TOP OF 8" DC'S), CHECKED ID OF FISH; (CLEAR DOWN TO TOP OF TELEDRIFT AT APPROXIMATELY 5,653'), RIH W/BACK OFF SHOT TO 5,437'. BELIEVE PIPE BACKED OFF 1 JT BELOW TOP OF FISH. WILL ATTEMPT TO SCREW BACK INTO FISH AND TRY BACKING OFF AT 5,437' AGAIN.
6-29-80	5,684	MADE 0' IN NUGGET FORMATION. MW 8.9, VIS 41, WL 8.4, PH 9.5, PV 10 YP 10, 1/3 GELS, 4.2% SOLIDS, 200 PPM CHLORIDE, 40 CALCIUM. BIT NO 17, 12-1/4, STC, F-4, JETS 12-13-BLANK, DEPTH IN 5,155', MADE 529' IN 45 HRS; 11.8 FT/HR. OPER STUCK. TOTAL BHA 196.74. COULD NOT SCREW BACK INTO FISH. POH NO RECOVERY, SCREW-IN SKIRT DAMAGED. LAY DOWN DAILEY JARS, PICK UP OVERSHOT, BOWEN JARS, BUMPER SUB, ACCELLURATOR, TIH, ENGAGE FISH WITH SOME DIFFICULTY, TRIP JARS, FISH WOULD NOT COME FREE, RIG UP MCCULLOUGH AND RUN FREE POINT. FISH FREE DOWN TO 5,437', RAN BACK OFF SHOT TO 5,365', BACK OFF, START TRIP OUT OF HOLE.
6-30-80	5,684	MADE 0' IN NUGGET FORMATION. MW 8.9, VIS 40, WL 9.0, PH 9.5, PV 10, YP 11, 1/3 GELS, 4.2% SOLIDS, 200 PPM CHLORIDE, 60 CALCIUM. BIT NO 17, 12-1/4, SMITH, F-4, JETS 12-13-BLANK, DEPTH IN 5,155, MADE 529' IN 45 HRS; 11.8 FT/HR. OPER FISHING. TOTAL BHA 318.63. POH W/RECOVERED FISH - INCLUDED 1 5" DP JNT & 3 6-3/4" DRILL COLLARS. L/D FISH & 9-5/8" WASH PIPE. P/U 10-3/4" WASH PIPE - WOULD NOT GO THRU TABLE, WAIT ON SPIDER - 4 HOURS. RIH W/10-3/4" WASH PIPE. WASHED OVER FROM 5,354' TO 5,482'. DID NOT TOUCH ANYTHING. CIRC, POH W/WASH PIPE. RIH W/SCREW-IN SUB, WILL ATTEMPT TO JAR FISH FREE.
7-1-80	5,684	MADE 0' IN NUGGET FORMATION. MW 8.9, VIS 39, WL 9.2, PH 9.0, PV 9, YP 7, 2/4 GELS, 4.1% SOLIDS, 220 PPM CHLORIDE, 60 CALCIUM. BIT NO 17, 12-1/4, SMITH, F-4, JETS 12-13-BLANK, DEPTH IN 5,155, MADE 529' IN 45 HRS; 11.8 FT/HR. OPER FISHING. TOTAL BHA 492.94'. RIH W/SCREW-IN SUB, ENGAGED FISH @ 5,354' (5,365' WLM) & ATTEMPT TO JAR FISH - NO MOVEMENT. RAN PETRO-LOG FREE POINT - FISH 100% STUCK @ 5,494'. FIRED BACK-OFF @ 5,474'. POH W/FISHING STRING. HAD BACKED OFF 5,406' PIPE MEAS (5,417' WLM) - RECOVERED 1 6-3/4" DC & 1 8" DC & 1 X-OVER SUB. L/D BHA & FISH. P/U & PIH W/6 JTS - 10-3/4" WASH PIPE. BEGAN WASHING OER FISH @ 6:00 AM - TOF @ 5,406' DPM. HOLE OK WHEN RIH W/WASH PIPE - NO TIGHT SPOTS.

OTTER CREEK #1-21 WELL HISTORY

7-02-80 5,684' MADE 0' IN NUGGET FORMATION. MW 8.8, VIS 43, WL 9.0, PH 9.5, PV 13, YP 11, 2/5 GELS, 3.4% SOLIDS, 220 PPM CHLORIDE, 60 CALCIUM. PUMP PRESS 400, GPM 328, ANNULAR VELOCITY 233/77/64. BIT NO 17, 12-1/4, SMITH, F-4, JETS 12-13-BLANK, DEPTH IN 5,155' MADE 529' IN 45 HRS; 11.8 FT/HR. OPER POH. TOTAL BHA 318.98'. FIN RIH W/6 JTS OF 10-3/4" WASH PIPE. WASHED OVER FISH FROM 5,417' TO 5,596' (179'). HAD 55' RELATIVEY FREE ON TOP, 23' VERY TIGHT. POH W/WASH PIPE. M/U FISHING ASSEMBLY & RIH. SCREWED INTO FISH @ 5,417'. JARRED & FISH CAME FREE. GAINED 55,000# STRING WEIGHT.

7-03-80 5,684' MADE 0' IN NUGGET FORMATION. MW 8.7, VIS 40, WL 9.4, PH 9.0, PV 10, YP 7, 2/3 GELS, 3.2% SOLIDS, 250 CHLORIDE, 50 CALCIUM. PUMP PRESS 750, GPM 347, ANNULAR VELOCITY 81/68. BIT NO 17, 12-1/4, SMITH, F-4 JETS 12-13-BLANK, DEPTH IN 5,155', DEPTH OUT 5,684', MADE 529' IN 45 HRS; 11.8 FT/HR. BIT NO 14RR, REED FP-5I-OPEN, DEPTH IN 5,684'- CIRC & COND MUD.

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
BIT SUB	3.35	9	2-7/8
X-OVER SUB	3.50	6-3/4	2-7/8
3 DC'S	93.30	6-3/4	2-3/8
X-OVER SUB	2.80	7-1/4	2-7/8
JARS	34.78	7-5/8	2-3/4
X-OVER SUB	3.72	7-3/4	2-7/8
3 DC'S	93.30	6-3/4	2-3/8

TOTAL BHA 235.75'. POH & RECOVERED ENTIRE FISH. RIH W/BIT & SLICK BHA. HOLE TIGHT @ 5,515'. WHEN ATTEMPTING TO WASH & REAM THRU BIT TORQUES UP - TAKES 20-50,000# OVER-PULL TO PICK-UP. PRESENTLY CIRC & COND MUD @ 5,515' & REAMING TIGHT SPOT.

OTTER CREEK #1-21 WELL HISTORY

7-04-80 5,684' MADE 0' IN NUGGET FORMATION. MW 8.7, VIS 46, WL 7, PH 10, PV 13, GELS 3/8, 2.8% SOLIDS, 240 PPM CHLORIDE, 40 CALCIUM. PMP PRESS 300, GPM 365, ANNULAR VELOCITY 85/71.BIT NO 14RR, 12-1/4, REED, FP-51, JETS OPEN, DEPTH IN 5,684', DEPTH OUT 5,684', MADE 0' IN 0 HRS; OPER CIRC. BIT NO 18, SEC, S4T, JETS OPEN, DEPTH IN 5,684', WASH & REAM. RPM 40, WT ON BIT 0. TOTAL BHA 235.75'. ATTEMPTED TO REAM BELOW 5,515' W/O SUCCESS. POH & CHANGED OUT BIT (FP51) FOR MILL TOOTH BIT (S4T). FP51 BIT HAD NO MARKS THAT WOULD INDICATE JUNK IN HOLE. RIH & REAMED 5,515' - 5,540' VERY TIGHT & LOTS OF TORQUE (25'). TREATED MUD W/SOLTEX. WASHED 5,540' - 5,678', NOT TIGHT. AT 5,678', BIT TORQUE UP. P/U W/50,000# OVERPULL TO COME FREE. PRESENTLY REAMING @ 5,680' & TREATING SYSTEM W/SOLTEX & GILSONITE. PRESENT OPER, WASH & REAM.

7-05-80 5,684' MADE 0' IN NUGGET FORMATION. MW 8.7, VIS 40, WL 6.8, PH 10, PV 9, YP 7, GELS 3/4, 2.8% SOLIDS, 200 PPM CHLORIDE, 40 CALCIUM. PUMP PRESS 300, GPM 365, ANNULAR VELOCITY 85/71. BIT NO 18, 12-1/4, SEC, S4T, JETS OPEN, DEPTH IN 5,684', DEPTH OUT 5,684', MADE 0' IN 21-1/2 HRS; OPER PULL. DEV DEPTH 5,684' INC 2-1/4°. TOTAL BHA 235.75'. WASHED & REAMED 5,680' - 5,684' TD. PUMPED PILL OF GILSONITE & SOLTEX. SHORT TRIP TO 5,018' - CIRC 30 MIN. RIH, BRIDGE 90' OFF BTM. CIRC THRU OK. RIH TO TD. NO FILL ON BTM. NO TORQUE. POH - SLM. PRESENTLY INSPECTING DC'S.

7-06-80 5,710' MADE 26' IN NUGGET FORMATION. MW 8.7, VIS 40, WL 7.0, PH 10, PV 10, YP 9, GELS 2/3, 2.8% SOLIDS, 250 PPM CHLORIDE, 60 CALCIUM. PUMP PRESS 2,000, GPM 365, ANNULAR VELOCITY 138/71. BIT NO 19, SIZE 12-1/4, REED, FP63, JETS 10-10-11, DEPTH IN 5,684', MADE 26' IN 4-1/2 HRS; 5.8 FT/HR. OPER POH. RPM 75, WT ON BIT 30-35,000#. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
6 FT REAMER	11.70	9-1/2	2-7/8
RWP	9.15	12-1/4	2-7/8
TELEDRIFT	8.96	9	4-3/4
RWP	8.79	12-1/4	2-7/8
SHOCK SUB	9.20	9	2
1 DC	29.48	9	3
IBS	4.79	10	3
4 DC'S	120.79	9	3
X-OVER	1.56	7-3/4	2-7/8
2 DC'S	61.82	8	2-7/8
JARS	34.95	7-5/8	2-7/8
X-OVER	3.97	7-7/8	2-7/8
3 DC'S	93.36	6-3/4	2-3/8

TOTAL BHA 399.52'. L/D BHA & INSPECTED DC'S. M/U NEW BHA. RIH WASH FROM 5,620' TO 5,684' W/3-5,000# WOB. HOLE OK.(SLM = 5,688' NO CORRECTION). DRLG 5,684' - 5,710'. TORQUE OK - NOT ERRATIC. LOST 500 PSI PUMP PRESSURE. PUMPED SOFT LINE & POH LOOKING FOR HOLE. LITHOLOGY: LIGHT SANDSTONE/FRAGILE TO FIRM. PRESENT OPER, POH.

OTTER CREEK #1-21 WELL HISTORY

7-07-80 5,724' MADE 14' IN NUGGET FORMATION. MW 8.8, VIS 42, WL 7.2, PV 12, YP 9, GELS 2/3, 3.4% SOLIDS, 300 PPM CHLORIDE, 60 CALCIUM. PUMP PRESS 2,000, GPM 365, ANNULAR VELOCITY 138/71. BIT NO 19, 12-1/4, REED, FP63, JETS 10-10-11, DEPTH IN 5,684', DEPTH OUT 5,710', MADE 26' IN 4-1/2 HRS; 5.8 FT/HR. OPER WASHED OUT. BIT NO 20, HUGHES, J55R, JETS 10-10-11, DEPTH IN 5,710, MADE 14' IN 1-1/2 HRS; 9.3 FT/HR. OPER DRLG. TOTAL BHA 399.52'. FIN POH LOOKING FOR HOLE IN DP OR BHA. COULD NOT LOCATE HOLE. RIH. CIRC PRESS DROPPED 1,500 TO 1,200 PSI. PUMPED SOFT ROPE. STROKE COUNT SHOWED HOLE IN BHA. PUMPED CARBIDE PILL - PRESS DROPPED TO 950 PSI. POH W/30 STD & P/U KELLY. POH TO BHA - P/U KELLY STILL 950#. FLUID TEST JARS & SHOCK SUB - FOUND BIT WASHED OUT AROUND NOZZLE. RIH & WASHED 30' TO BTM. NO FILL. DRLG AHEAD. LITHOLOGY - SANDSTONE, WHITE/FIRM. PRESENT OPER, DRLG

7-08-80 5,824' MADE 100' IN NUGGET FORMATION. MW 8.7, VIS 39, WL 7.6, PH 9.5, PV 7, YP 5, GELS 1/2, 3.2% SOLIDS, 250 PPM CHLORIDE, 60 CALCIUM. PUMP PRESS 2,100, GPM 383, ANNULAR VELOCITY 139/73. BIT NO 20, 12-1/4, HUGHES, J55R, JETS 10-10-11, DEPTH IN 5,710' MADE 114' IN 12 HRS; 9.5 FT/HR. OPER RIH. RPM 80, WT ON BIT 30,35-000#.

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
6 PT REAMER	11.70	9-1/2	2-7/8
RWP	9.15	12-1/4	2-7/8
TELEDRIFT	8.96	9	4-3/4
RWP	8.79	12-1/4	2-7/8
SHOCK SUB	9.20	9	2
1 DC	29.48	9	3
IBS	4.79	10	3
4 DC'S	120.79	9	3
X-OVER	2.58	7-3/4	2-7/8
1 DC	30.65	8	2-7/8
JARS	34.95	7-5/8	2-7/8
X-OVER	3.97	7-7/8	2-7/8
3 DC'S	93.36	6-3/4	2-3/8

TOTAL BHA 369.37'. DRLG 5,724' - 5,824'. PRESS 2,000# TO 1,000#. PUMPED CARBIDE PILL - INDICATOR HOLE IN BHA. PUMP SOFT LINE. POH. FOUND HOLE IN CROSS-OVER SUB BETWEEN 8" & 9" DC'S. HOLE 4" DOWN FROM BOX AND 4" LONG - CIRCUM. L/D X-OVER & 1 8" DC. PRESENTLY RIH. LITHOLOGY: SANDSTONE - WHITE/FIRM. PRESENT OPER, RIH.

OTTER CREEK #1-21 WELL HISTORY

7-09-80 6,012' MADE 188' IN NUGGET FORMATION. MW 8.7, VIS 40, WL 77, PH 9.5, PV 8, GELS 1/2, 3/2% SOLIDS, 250 PPM CHLORIDE, 60 CALCIUM. PUMP PRESS 2,100, GPM 383, ANNULAR VELOCITY 139/73. BIT NO 20, 12-1/4, HTC, J55R, JETS 10-10-11, DEPTH N 5,710', MADE 302' IN 29-1/2 HRS; 10.2 FT/HR. OPER DRLG. RPM 50, WT ON BIT 35,000#. TOTAL BHA 369.37'. FIN RIH & DRLD 5,824' TO 5,904' W/PRESSURE DROP FROM 2,100 PSI TO 1,000 PSI. (HAD LOST SOME PRESS ON CONNECTIONS). PUMPED SOFT LINE. POH LOOKING FOR HOLE. FOUND HOLE DOWN 5 STDS, IN SLIP AREA BELOW TOOL JOINT. SYSTEM PRESENTLY DRLG AHEAD W/NO PROBLEMS. PRESENT OPER, DRLG.

7-10-80 6,014' MADE 43' IN NUGGET FORMATION. MW 8.7, VIS 36, WL 8.0, PH 9.5, PV 7 YP 5, GELS 1, 2.8% SOLIDS, 300 PPM CHLORIDE, 60 CALCIUM. PMP PRESS 2,100, GPM 383, ANNULAR VELOCITY 139/73. BIT NO 20, 12-1/4, HTC, J55R, JETS 10-10-11. DEPTH IN 5,710', DEPTH OUT 6,014', MADE 304 IN 38.5 HRS; FT/HR 7.9. OPER PULLED BHA. BIT NO 21, 12-1/4, SEC, H100, JETS 12-12-12, DEPTH IN 6,016'. RPM 50, WT ON BIT 30-35 M. TOTAL BHA 369.37. BIT TORQUE UP. RATE OF PENETRATION DROPPED. HOLE BECAME TIGHT. POH FOR BIT #21. DRILCO WAS ON LOCATION TO GAUGE & CHECK BHA. 6 PT REAMER & LOWER RWP HAD THREADS WASHED. DYNA - DRILL WILL CHECK TELEDRIFT. WAIT ON NEW 6 PT & RWP. LITHOLOGY: LIGHT SANDSTONE FIRM TO HARD. PRESENT OPERATION WAIT ON BHA.

7-11-80 6,018' MADE 4' IN NUGGET FORMATION. MW 8.6, VIS 42, WL 8.0, PH 9.0, PV 10, YP 9, GELS 2/3, 2.6% SOLIDS, 300 PPM CHLORIDE, 40 CALCIUM. PUMP PRESS 1,000, GPM 383, ANNULAR VELOCITY 145/74. BIT NO 21, 12-1/4, SEC, H-100, JETS 12-12-12, DEPTH IN 6,014, MADE 4' IN 12-1/2 HRS; 0.32 FT HR. OPER DRLG. RPM 50, WT ON BIT 5-10,000. DEV DEPTH 6,015 INC 2-1/2°. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
6 PT	10.12	12-1/4	2-7/8
RWP	9.08	12-1/4	2-7/8
TELEDRIFT	8.96	9	2-7/8
RWP	8.79	12-1/4	3-1/8
SHOCKSUB	9.20	10	2
1-DC	29.48	9	2-7/8
IBS	4.79	12-1/4	3
4-DC'S	120.79	9	2-7/8
X-O	2.53	7-3/4	2-7/8
1 DC	30.65	8	2-7/8
JARS	34.95	7-5/8	2-3/4
X-O	3.97	7-7/8	2-7/8
3 DC'S	93.36	6-3/4	2-7/8

TOTAL BHA 367.69. WAIT ON 6 PT REAMER & RWP TOOLS ARRIVED 11:00 AM. TIH W/5 STNDS DP& BNA, FILL PIPE. TIH, WASH & REAM 60' TO BOTTOM. NO PROBLEM. HIGH TORQUE ON BOTTOM W/NO DRAG. INCREASE VISC ON MUD. RUN SURVEY @ 6,015, 2-1/2°. STILL HAVE HIGH TORQUE. LOST 250 PSI PUMP PRESS POSSIBLE HOLE IN PIPE. LITHOLOGY: SANDSTONE, WHITE, FIRM & HARD.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 7-12-80 To: 7-18-80

RECEIVED
JUL 28 1980
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED K.A. Thomas/H.E. TITLE Drilling Supr. DATE July 24, 1980

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

7-12-80 6,058' MADE 40' IN NUGGET FORMATION. MW 8.6, VIS 44, WL 7.2, PH 9.5, PV 11, 3/4 GELS, 2.6% SOLIDS, 310 PPM CHLORIDE, 40 CALCIUM. PUMP PRESS 2,100, GPM 225, ANNULAR VELOCITY 96/50. BIT NO 21, 12-1/4, SEC, H-100, JETS 12-12-12, DEPTH IN 6,014', DEPTH OUT 6,018', MADE 4' IN 12-1/2 HRS; 0.3 FT/HR. OPER WASHED OUT. BIT NO 22, 12-1/4, REED, S31G, JETS 10-10-11, DEPTH IN 6,018', MADE 40' IN 11 HRS; 3.6 FT/HR, OPER DRLG. RPM 50, WT ON BIT 30-35,000. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
JUNK SUB	2.26	9-1/2	3-1/2
SIX POINT	10.12	12-1/4	2-7/8
RWP	9.08	12-1/4	2-7/8
TELEDRIFT	8.96	9	2-7/8
RWP	8.79	12-1/4	3-1/8
SHOCK SUB	9.20	10	2
1 DC	29.48	9	2-7/8
IBS	4.79	12-1/4	3
4 DC'S	120.79	9	2-7/8
X-OVER SUB	2.53	7-7/8	2-7/8
SPINAL DC	30.65	8	2-7/8
JARS	34.95	7-7/8	2-3/4
X-OVER SUB	3.97	7-7/8	2-7/8
3 DC'S	93.36	6-3/4	2-7/8

TOTAL BHA 369.93. LOST 250 PSI, PUMP PRESSURE, PUMP SOFT LINE, POH. BIT WASHED OUT AROUND JET (JET INTACT), BUTTONS BROKEN OFF OUTER ROW ON BIT, TIH W/MILL TOOTH BIT AND JUNK SUB, TAGGED. FILL 10' OFF BOTTOM, WASH & REAM THROUGH, TAGGED BOTTOM, WORKED JUNK SUB. HAD HIGH TORQUE, RAN 3,000-5,000# WOB, TORQUE DROPPED OFF, TORQUE INCREASED AGAIN ON CONNECTION, WORKED JUNK SUB, TORQUE DROPPED OFF, DRILLING AHEAD. GEOLOGY: SANDSTONE, 10% RED, FIRM & HARD. PRESENT OPER DRILLING.

7-13-80 6,125' MADE 67' IN NUGGET FORMATION. MW 8.7, VIS 40, WL 7.2, PH 9.0, PV 10, YP 8, 2/3 GELS, 2.8% SOLIDS, 310 PPM CHLORIDE, 60 CALCIUM. PUMP PRESS 1,200, GPM 382, ANNULAR VELOCITY 74/145. BIT NO 22, 12-1/4, REED, S31G, JETS 10-10-11, DEPTH OUT 6,068', DEPTH IN 6,018'. MADE 50' IN 14-1/2 HRS; 3.4 FT/HR. PULLED. BIT NO 23, 12-1/4, REED, FP63J, JETS 12-13-13, DEPTH IN 6,068', MADE 57' IN 12 HRS; OPER DRLG. RPM 50-55, WT ON BIT 30-35,000. DEV DEPTH 6,096' INC 1-1/2° TELEDRIFT. TOTAL BHA 369.93. ROP DROPPED, TRIP FOR NEW BIT, CLEAN JUNK SUB, FOUND LARGE, 2-3" PIECE OF IRON, HIGHLY DAMAGED TIH W/NEW BIT, 7' OF FILL ON BOTTOM; DRILLING AHEAD, LOSING MUD IN FRACTURES OR POSSIBLE POROUS SAND @ 20 BBLS/HR (BIT TORQUES UP SLIGHTLY W/SOME MUD LOSS, THEN DRILLS NORMALLY ONCE HEALED. GEOLOGY: SANDSTONE - WHITE CHANGED TO RED AT 6080', FIRM TO HARD.

OTTER CREEK #1-21 WELL HISTORY

7-14-80	6,290'	MADE 165' IN NUGGET FORMATION. MW 8.6, VIS 40, WL 8, PH 9.5, PV 10, YP 9, 2/3 GELS, 2.4% SOLIDS, 300 PPM CHLORIDE, 40 CALCIUM. PUMP PRESS 2,100, GPM 382, ANNULAR VELOCITY 145/74. BIT NO 23, 12-1/4, REED, FP63, JETS 12-13-13. DEPTH IN 6,068', MADE 272' IN 35 HRS; 7.7 FT/HR. OPER DRLG. RPM 50, WT ON BIT 35,000. DEV DEPTH 6,189 INC 1-1/4° WL. TOTAL BHA 369.95. PLUG 1 JET ON BIT W/FRAC BALL. LOOSING MUD 5-10 BBLS HR. LITHOLOGY: SANDSTONE RED TO ORANGE FIRM TO HARD.
7-15-80	6,387	MADE 97' IN NUGGET FORMATION. MW 8.6, VIS 47, WL 8.2, PH 9, PV 15, YP 15, 4/7 GELS, 2.4% SOLIDS, 300 PPM CHLORIDE, 50 CALCIUM. PUMP PRESS 2,100, GPM 382, ANNULAR VELOCITY 145/74. BIT NO 23, 12-1/4, REED, FP-63, JETS 12-12-13, DEPTH IN 6,068, MADE 319' IN 58 HRS; 5.5 FT/HR. OPER DRLG. RPM 50-60, WT ON BIT 35-40,000 TOTAL BHA 369.95. LOOSING 5 BBLS MUD HR SLOWLY SEEPING. LITHOLOGY: SANDSTONE, RED TO ORANGE, FIRM TO HARD W/NO GAS.
7-16-80	6,547	MADE 160' IN NUGGET FORMATION. MW 8.6, VIS 45, WL 8.8, PH 9.0, PV 14, YP 13, 4/6 GELS, 2.4% SOLIDS, 280 PPM CHLORIDE, 50 CALCIUM. PUMP PRESS 2,050, GPM 382, ANNULAR VELOCITY 145/74. BIT NO 23, 12-1/4, REED, FP-63, JETS 12-12-13, DEPTH IN 6,068, MADE 479' IN 80-1/2 HRS; 5.9 FT/HR. OPER DRLG. RPM 54, WT ON BIT 30-35,000. DEV DEPTH 6,436 INC 1-1/2°. TOTAL BHA 369.95. DRLG AHEAD. NO PROBLEMS. LITHOLOGY: SANDSTONE ORANGE TO RED, FIRM W/SOME CLAY.
7-17-80	6,570	MADE 23' IN NUGGET FORMATION. MW 8.7, VIS 40, WL 8.8, PH 9, PV 10, YP 7, 4/6 GELS, 3% SOLIDS, 270 PPM CHLORIDE, 60 CALCIUM. PUMP PRESS 2,050, GPM 382, ANNULAR VELOCITY 145/74. BIT NO 23, 12-1/4, REED, FP-63, JETS 12-12-13, DEPTH IN 6,068, DEPTH OUT 6,570, MADE 502' IN 85-1/2 HRS; 5.8 FT/HR. OPER TRIP. RPM 50-55, WT ON BIT 30-35,000. TOTAL BHA 369.95. DRILL TO 6,568' WORK TIGHT HOLE. DRILL TO 6,570'. EXCITER MOTOR ON RIG WENT OUT, NO POWER TO DRAW WORKS. CIRC HOLE WHILE DOING RIG REPAIR. GOT POWER TO RIG, PIPE WAS STUCK, WORK STUCK PIPE. LOST 1,000 PSI PUMP PRESS. PUMP CARBIDE LAG CONTINUE TO WORK PIPE. JARS HIT ONLY TWICE. RIG NOWSCO, PUMP 70,000 CU FT NITROGEN. PRESS 1,900 PSI. WORK PIPE FREE. BLEED OF NITROGEN BUBBLES. CIRC HOLE. POH. HOLE IN DP 40 STANDS OUT OF HOLE. HOLE WAS IN SLIP AREA. PRESENT OPER POH.
7-18-80	6,570	MADE 0' IN NUGGET FORMATION. MW 8.6, VIS 38, WL 8.6, PH 9, PV 11, YP 8, 4/7 GELS, 3% SOLIDS, 300 PPM CHLORIDE, 40 CALCIUM. BIT NO 23, 12-1/4, REED, FP-63, JETS 12-12-13, DEPTH IN 6,068, DEPTH OUT 6,570, MADE 502' IN 85-1/2 HRS; 5.8 FT/HR. OPER PULLED. BIT NO 24, 12-1/4, HTC, J-44, JETS 12-13-13, DEPTH IN 6,570, OPER TRIP. TOTAL BHA 369.95. POH. TROUBLE GETTING WEAR BUSHING OUT OF STACK, TRY TO TEST STACK. TEST PLUG WOULDN'T HOLD. WAIT ON X-OVER SUB & HANG DC'S BELOW TEST PLUG. TEST STACK, VALVES, CHOKE MANIFOLD, BLIND RAMS & PIPE RAMS TO 3,000 PSI. HYDRILL TO 1,500 PSI, TEST OK. CHANGE OUT 50 JTS DP & TRIP IN HOLE.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
[redacted]

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

RECEIVED AUG 4 1980 DIVISION OF OIL, GAS & MINING

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

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

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

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

PROGRESS REPORT
See Attached

From: 7-19-80 To: 7-25-80

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

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

SIGNED R. A. Thomas TITLE Drilling Supr. DATE July 30, 1980

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

7-19-80 6,632 MADE 62' IN NUGGET FORMATION. MW 8.6, VIS 42, WL 8.8, PH 9.0, PV 1 2, YP 9, 3/5 GELS, 2.5% SOLIDS, 280 PPM CHLORIDE, 60 CALCIUM. PUMP PRESS 1,150, GPM 382, ANNULAR VELOCITY 145/74. BIT NO 24, 12-1/4, HTC, J-44, JETS 12-13-13, DEPTH IN 6,570, MADE 62' IN 8 HRS; 7.7 FT/HR. OPER DRLG. RPM 60, WT ON BIT 40-45,000. DEV DEPTH 6,619 INC 2° TELE. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
RIT	1.00	12-1/4	
6 PT	10.12	12-1/4	2-7/8
RWP	9.08	12-1/4	2-7/8
TELE	8.96	9	2-7/8
RWP	8.79	12-1/4	3-1/8
SHOCKS SUB	9.20	10	2
1 DC	29.48	9	2-2/8
IBS	4.79	12-1/4	3.0
4 DC'S	120.79	9	2-7/8
X-O	2.53	7-3/4	2-7/8
1 DC	30.67	8	2-7/8
JARS	35.62	7-7/8	2-3/4
X-O	3.97	7-7/8	2-7/8
3 DC'S	93.36	6-3/4	2-7/8

TIH 20 STNDS & BREAK CIRC. TRIP IN ADDITIONAL 20 STNDS. BREAK CIRC. NO PROBLEMS. CIRC IN/1,000 PSI. REPAIRED SWIVEL GOOSENECK & PACKING. TIH, WASH & REAM 12 JTS TO BOTTOM W/BOTTOMS 7' TORQUEING UP. WASH & REAM BOTTOM 7' UNTIL GOT RID OF TORQUE. DROP FRAC BALL @ 10:00 PM TO PLUG JET IN BIT. LITHOLOGY: SANDSTONE, LIGHT ORANGE AND FIRM. 18 UMITS OF TRIP GAS/NO GAS WHILE DRLG.

7-20-80 6,683' MADE 51' IN NUGGET FORMATION. MW 8.6, VIS 38, WL 9.2, PH 9.5, PV 10, YP 9, 2/3 GELS, 2% SOLIDS, 250 PPM CHLORIDE, 60 CALCIUM. PUMP PRESS 1,150, GPM 382, ANNULAR VELOCITY 145/74. BIT NO 24, 12-1/4, HTC J-44, JETS 12-13-13, DEPTH IN 6,570, DEPTH OUT 6,683, MADE 113 FT IN 23-3/4 HRS; 4.7 FT/HR. OPER PULLED. BIT NO 25, 12-1/4, REED, FP-63, JETS 12-13-13, DEPTH IN 6,683, OPER TRIN IN. RPM 60, WT ON BIT 40,000. TOTAL BHA 368,36. DRILL TO 6,683'. POH. NO TIGHT HOLE ON TRIP. CHANGE OUT SHOCK SUB & UP 3-8" DC'S. LITHOLOGY: SANDSTONE, LIGHT ORANGE, NO GAS. PRESENT OPERATION, TRIP.

OTTER CREEK #1-21 WELL HISTORY

7-21-80 6,773 MADE 90' IN ANKAREH FORMATION. MW 8.7, VIS 45, WL 7.8, PH 10, PV 13, YP 11, 1/4 GELS, 2.6% SOLIDS, 240 PPM CHLORIDE, 60 CALCIUM. PUMP PRESS 2,100, GPM 401, ANNULAR VELOCITY 152/78. BIT NO 25, 12-1/4, REED, FP-63, JETS 12-13-13, DEPTH IN 6,683', MADE 90' IN 15-1/2 HRS; 5.8 FT/HR. OPER DRLG. RPM 50-60, WT ON BIT 45-50,000. DEV DEPTH 6,772, INC 1-1/2°, TELE. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
6 PT REAMER	10.12	9	2-7/8
RWP	9.08	9	2-7/8
TELE	8.96	9	2-7/8
RWP	8.79	9	3-1/8
SHOCK SUB	8.98	9	3
1 DC	29.48	9	2-13/16
IBS	4.79	9	3
4 DC'S	120.79	9	2-7/8
X-OVER	2.53	7-3/4	2-7/8
1 DC	30.67	8	2-7/8
X-O SUB	3.11	7-3/4	2-1/2
3 DC'S	86.73	8	2-15/16
X-O	3.08	7-3/4	2-1/2
JARS	35.62	7-15/16	2-3/4
X-O SUB	3.97	7-7/8	2-7/8
3 DC'S	93.36	6-15/16	2-5/16

TOTAL BHA 461.06. FINISH PICK UP DC'S. RIH SURVEY @ 6,720. NO IMPULSE, RIG REPAIR. (BOLTS BACKED OFF). TOP OF ANKAREH @ 6,700'. LITHOLOGY: RED SHALE, NO GAS.

7-22-80 6,889' MADE 116' IN ANKAREH FORMATION. MW 8.8, VIS 44, WL 8.0, PH 10.5, PV 12, YP 10, 1/3 GELS, 3.4% SOLIDS, 200 PPM CHLORIDE, 60 CALCIUM. PUMP PRESS 1,200, GPM 383, ANNULAR VELOCITY 145/74. BIT 25, 12-1/4, REED, FP-63, JETS 12-13-13, DEPTH IN 6,683, MADE 206' IN 38-1/2 HRS; 5.3 FT/HR. OPER DRLG. RPM 50-60, WT ON BIT 45-50,000. DEV DEPTH 6,864 INC 2° TELE. TOTAL BHA 461.06. DRLG AHEAD W/NO PROBLEMS. VISUALOGGER WORKING. LITHOLOGY - SILTSTONE, LIGHT RED, ORANGE & BROWN. FIRM & HARD W/SOME SHALE RED TO BROWN & FIRM, OCCASIONALLY SOFT TO HARD. NO GAS.

OTTER CREEK #1-21 WELL HISTORY

7-23-80 6,906 MADE 17' IN ANKAREH FORMATION. MW 8.8, VIS 64, WL 7.2, PH 105, PV 20, YP 18, 2/6 GELS, 3.4% SOLIDS, 260 PPM CHLORIDE, 40 CALCIUM. PUMP PRESS 2,100. GPM 385, ANNULAR VELOCITY 138/76. BIT NO 25, 12-1/4, REED, FP-63, JETS 12-13-13, DEPTH IN 6,683, DEPTH OUT 6,892, MADE 209' IN 40-1/2 HRS; 5.1 FT/HR. OPER PULLED. BIT NO 26, 12-1/4, HTC, J-44, JETS 11-10-10, DEPTH IN 6,892, MADE 14' IN 3-1/2 HJRS; 4.0 FT/HR. OPER DRLG. RPM 50-60, WT ON BIT 8-45,000. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
6 PT RE	10.12	9	2-7/8
RWP	9.08	9	2-7/8
TELEDRIFT	8.96	9	2-7/8
RWP	8.79	9	3-1/8
SHOCK SUB	8.98	9	3
1 DC	29.48	9	2-15/16
IBS	4.79	9	3
4 DC'S	120.79	9	2-7/8
3 DC'S	86.73	8	2-15/16
X-OVER	3.08	7-3/4	2-1/2
JARS	35.62	7-11/16	2-3/4
X-OVER	3.97	7-7/8	2-7/8
3 DC'S	93.36	6-15/16	2-5/16

TOTAL BHA 424.75. WAIT ON CHAIN FOR DRAWORKS (4HRS). TONG PARTS & REPAIR TONGS 3 HRS. TOTCO IN TOP DC STUCK AT CORRISION RING. LAID DOWN 1 DC & 2 X-OVER SUBS. WAITING TIME ON DRAWORKS CHAIN INCLUDES REPAIR. LITHOLOGY: SHALE, SILTSTONE, RED, BROWN & FIRM. TRIP GAS 3 UNITS, NO BACKGROUND GAS.

7-24-80 7,002' MADE 96' IN ANKAREH FORMATION. MW 8.8, VIS 52, WL 7.2, PH 10.0, PV 27, YP 21, 2/6 GELS, 3.4% SOLIDS, 300 PPM CHLORIDE, 40 CALCIUM. PUMP PRESS 2,100, GPM 385, ANNULAR VELOCITY 138/76. BIT NO 26, 12-1/4, HTC, J-44, JETS 11-10-10. DEPTH IN 6,892, MADE 110' IN 26-1/2 HRS; 4.2 FT/HR. OPER DRLG. RPM 56-60, WT ON BIT 30-45,000. DEV DEPTH 6,921 INC 2-1/2° TELE, DEPTH 6,952 INC 2-1/2° TELE. TOTAL BHA 424.75. DRLG AHEAD NO PROBLEMS. LITHOLOGY: SHALE, RED TO BROWN HARD (NO GAS).

7-25-80 7,110' MADE 108' IN ANKAREH FORMATION. MW 8.8, VIS 46, WL 8.0, PH 9.5, PV 20, YP 16, 2/5 GELS, 3.4% SOLIDS, 280 PPM CHLORIDE, 40 CALCIUM. PUMP PRESS 2,250, GPM 402, ANNULAR VELOCITY 152/78. BIT NO 26, 12-1/4, HTC, J-44, JETS 11-10-10, DEPTH IN 6,892, MADE 218' IN 49 HRS; 4.4 FT/HR. OPER DRLG. RPM 50-60, WT ON BIT 35,000. DEV DEPTH 7,043 INC 3° TELE, DEPTH 7,106 INC 3° TELE. TOTAL BHA 424.75. DRLG AHEAD NO PROBLEM. REDUCE WT TO 35,000 TO CHECK DEVIATION. LITHOLOGY: SHALE RED, BROWN - HARD. BG GAS TRACE. PRESENT OPER DRLG.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 7-26-80 To: 8-8-80

RECEIVED
AUG 22 1980
DIVISION OF OIL, GAS, & MINING

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

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

SIGNED A. Toma. TITLE Drilling Supr. DATE Aug. 18, 1980

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

7-26-80 7,200' MADE 90' IN ANKAREH FORMATION. MW 8.7, VIS 45, WL 8.4, PH 9.5, PV 15, GELS 1/4, 2.7% SOLIDS, 280 PPM CHLORIDE, 40 CALCIUM. PUMP PRESS 2,100, GPM 383, ANNULAR VELOCITY 131/71. BIT NO 26, 12-1/4, HTC, J-44, JETS 11-10-10. DEPTH IN 6,892', MADE 308' IN 72 HRS; 4.3 FT/HR. OPER DRLG. RPM 50-60, WT ON BIT 35,000. DEV DEPTH 7,168' INC 3°. TOTAL BHA 424.75. DRILLING AHEAD-NO PROBLEMS. BIT TORQUED UP ONCE @ 7,169', PICKED UP, RAN SWEEP, HOLE OK. GEOLOGY: SHALE RED, BROWN, FIRM, TRACES OF SOFT PURPLE SHALE, GRADING TO HARD LIMESTONE.

7-27-80 7,312' MADE 112' IN ANKERAH FORMATION. MW 8.7, VIS 42, WL 8.2, PH 9.5, PV 12, YP 10, 1/3 GELS, 2.8% SOLIDS, 280 PPM CHLORIDE, 40 CALICUM. PUMP PRESS 2,100, GPM 383, ANNULAR VELOCITY 131/71. BIT NO 26, 12-1/4, HTC, J-44, JETS 11-10-10. DEPTH 6,892' MADE 420' IN 95 HRS; 4.4 FT/HR. OPER DRLG. RPM 50-60, WT ON BIT 30,000. DEV DEPTH 7,229' INC 3°, DEPTH 7,290' INC 3-1/2°. TOTAL BHA 424.75'. DRILLING AHEAD. NO PROBLEMS. BACKED-OFF WEIGHT ON BIT TO 30,000' TO CONTROL DEVIATION. GEOLOGY: RED BROWN SHALE SOME YELLOW: LIGHT GREEN SHALE, TRACE OF GYPSUM.

7-28-80 7,393' MADE 81' IN ANKERAH FORMATION. MW 8.7, VIS 40, WL 8.8, PH 9.5, PV 14, YP 10, 1/3 GELS, 2.8% SOLIDS, 280 PPM CHLORIDE, 40 CALCIUM. PUMP PRESS 2,100, GPM 383, ANNULAR VELOCITY 135/75. BIT NO 26, 12-1/4, HTC, J-44, JETS 11-10-10, DEPTH IN 6,892, MADE 501' IN 118 HRS; 4.3 FT/HR. OPER DRLG. RPM 50-60, WT ON BIT 30-35,000 TELEDRIFT. DEV DEPTH 7,290 INC 3-1/2°, DEPTH 7,360' INC 3-1/2°. TOTAL BHA 424.75. DRLG AHEAD NO PROBLEMS. LITHOLOGY: SHALE ALL COLORS - SOFT TO FIRM.

7-29-80 7,397' MADE 4' IN ANKAREH FORMATION. MW 8.8, VIS 44, WL 9.2, PH 9.5, PV 12, YP 10, 1/3 GELS, 2.8% SOLIDS, 300 PPM CHLORIDE, 60 CALCIUM. PUMP PRESS 650, GPM 383, ANNULAR VELOCITY 135/75. BIT NO 26, 12-1/4, HTC, J-44, JETS 11-10-10, DEPTH IN 6,892' DEPTH OUT 7,397, MADE 505' IN 120 HRS; 4.2 FT/HR. OPER PULLED. RPM 50-60, WT ON BIT 30-35,000. DEV DEPTH 7,397 INC 3-1/2° TOTCO. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
MAGNET	2.77	11-1/2	
6 PT RMR	10.12	12-1/4	2-7/8
RWP	8.78	12-1/4	2-7/8
TELEDRIFT	8.96	9	2-7/8
RWP	7.98	12-1/4	2-7/8
SHOCK SUB	8.98	9	3
1 DC	29.48	9	2-15/16
IBS	4.79	12-1/4	3
4 DC'S	120.79	9	2-7/8
3 DC'S	86.73	8	2-15/16
X-OVER	3.08	7-3/4	2-1/2
JARS	35.62	7-11/16	2-3/4
X-OVER	3.97	7-7/8	2-7/8
3 DC'S	93.36	6-15/16	2-5/16

TOTAL BHA 425.41. RATE OF PENATRATION DROPPED, POH. STABILIZERS MISSING TWO HEAL PADS OFF OF TOP RWP. CUT 120' DRLG LINE, WAIT ON MAGNET. RAN ACME MAGNET 11-1/2" MAGNET IN/LIP GUIDE. WASH 31' TO BOTTOM, NO TORQUE. CIRC BOTTOM CLEAN & FISH W/MAGNET. PRESENTLY POH W/MAGNET. LITHOLOGY: SAME.

OTTER CREEK #1-21 WELL HISTORY

7-30-80 7,400' MADE 43' IN ANKAREH FORMATION. MW 8.9, PH 40, PV 10, YP 13, GELS 1/4, 4.2% SOLIDS, 300 PPM CHLORIDE, 60 CALCIUM. PUMP PRESS 2,100, GPM 383, ANNULAR VELOCITY 135/75. BIT NO 27, 12-1/4, REED, SZIG, JETS 10-10-11, DEPTH IN 7,397, MADE 43' IN 11 HRS; 3.9 FT/HR. OPER DRLG. RPM 50-60, WT ON BIT 30-35,000. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
JUNK BASKET	2.27	11-1/2	2-7/8
6 PT RR	10.12	12-1/4	2-7/8
RWP	8.78	12-1/4	2-7/8
TELE	8.96	9	2-7/8
RWP	7.98	12-1/4	2-7/8
SHOCK	8.98	9	3
1 DC	29.48	9	2-13/16
IBS	4.79	12-1/4	3
4 DC'S	120.79	9	2-7/8
3 DC'S	86.73	8	2-15/16
X-OVER	3.08	7-3/4	2-1/2
JARS	35.62	7-11/16	2-3/4
X-OVER	3.97	7-7/8	2-7/8
3 DC'S	93.36	6-15/16	2-5/16

TOTAL BHA 425.91. POH W/MAGNET NO LOOSE PIECES METAL SMALL FILINGS. UP TOOTH BIT & JUNK BASKET. TIH WASH 60' TO BOTTOM. WORK JUNK BASKET & DRLG AHEAD. BIT TORQUED ONCE, WORK JUNK BASKET. PRESENTLY DRLG AHEAD, NO PROBLEMS. LITHOLOGY: SHALE: RED, BROWN, FIRM.

7-31-80 7,489 MADE 49' IN ANKAREH FORMATION. MW 8.8, VIS 46, WL 11, PH 9, PV 14, YP 17, 4/9 GELS, 3.9% SOLIDS, 280 PPM CHLORIDE, 80 CALCIUM. PUMP PRESS 2,100, GPM 383, ANNULAR VELOCITY 135/75. BIT NO 27, 12-1/4, REED, S21G, JETS 10-10-11, DEPTH IN 9,397, DEPTH OUT 7,484, MADE 87' IN 23-1/2 HRS; 3.7 FT/HR. OPER PULLED. BIT NO 28, 12-1/4, STC, F-3, JETS 10-10-11, DEPTH IN 7,484, MADE 5 IN 1-1/2; 3.3 FT/HR. OPER DRLG. RPM 50-60, WT ON BIT 30-35,000. DEV DEPTH 7,445 INC MISRUN, DEPTH 7,484 INC 3-1/2°. TOTAL BHA 425.91. RATE PENETRATION DROPPED, BIT TORQUED UP. POH FOR NEW BIT. GOT STRIPS OF METAL & SOME TEETH OFF OF REED S 21G BIT IN JUNK BASKET. RIH W/SMITH F-3. WASH & REAM 60' TO BOTTOM. DRLG NO PROBLEMS. LITHOLOGY: SHALE, RED, BROWN, FIRM TO HARD.

8-1-80 7,646 MADE 157' IN ANKAREH FORMATION. MW 8.8, VIS 52, WL 10, PH 9, PV 16, YP 24, 8/17 GELS, 3.5% SOLIDS, 280 PPM CHLORIDE, 80 CALCIUM. PUMP PRESS 2,100, GPM 383, ANNULAR VELOCITY 135/75. BIT NO 28, 12-1/4, STC, F-3, JETS 10-10-11, DEPTH IN 7,484, MADE 162' IN 23-1/2 HRS; 6.9 FT/HR. OPER DRLG. RPM 50-60, WT ON BIT 35-40,000. DEV DEPTH 7,508 INC 4°, DEPTH 7,569 INC 3-1/2°, DEPTH 7,600 INC 3-1/2°. TOTAL BHA 425.91. DRLG AHEAD, NO PROBLEMS. LITHOLOGY: UP TO 7,620: RED SHALE, HARD. 7,620-7,646 WHITE SANDSTONE, HARD. NO GAS SHOWS.

OTTER CREEK #1-21 WELL HISTORY

8-2-80	7,741'	MADE 95' IN ANKAREH FORMATION. MW 8.7, VIS 46, WL 11, PH 9, PV 12, YP 19, GELS 8/17, 3.1% SOLIDS, 250 PPM CHLORIDE, 80 CALCIUM. PUMP PRESS 2,100, GPM 383, ANNULAR VELOCITY 135/75. BIT NO 28, 12-1/4, STC, F-3, JETS 10-10-11, DEPTH IN 7,484', MADE 257' IN 45-1/2 HRS; 5.6 FT/HR, OPER DRLG. RPM 50-60, WT ON BIT 30-35,000. TOTAL BHA 425.91'. DRLG AHEAD W/NO PROBLEMS. LOST 1,000 PSI ON MP#1-3 BROKEN VALVE SPRINGS - 1/2 HR DOWNTIME. MP#2 DOWN W/A WASHED POD, WILL REPLACE TODAY. LITHOLOGY: SHALE - BROWN & HARD W/LIGHT GREEN TO GRAY SHALE - SOFT TO HARD.
8-3-80	7,814'	MADE 73' IN ANKAREH FORMATION. MW 8.6, VIS 43, WL 10, PH 9, PV 10, YP 10, GELS 9/18, 2.6% SOLIDS, 280 PPM CHLORIDE, 80 CALCIUM. PUMP PRESS 2,100, GPM 383, ANNULAR VELOCITY 135/75. BIT NO 28, 12-1/4, STC, F-3, JETS 10-10-11, DEPTH IN 7,484, MADE 330' IN 68-1/2 HRS; 4.8 FT/HR. OPER DRLG. RPM 50-60, WT ON BIT 30-35,000. DEV DEPTH 7,723' INC 3-1/2° WIRELINE, DEPTH 7,784' INC 3-1/2° WIRELINE. TOTAL BHA 425.91. HIGH TORQUE FOLLOWING CONNECTIONS & OCCASIONALLY WHILE DRILLING. POSSIBLY SWELLING SHALE - LOWERING WATER LOSS TO COMBAT SWELLING. LITHOLOGY: LIMESTONE, LIGHT TO MED BROWN - HARD/SHALE - GREEN & BROWN - FIRM TO HARD.
8-4-80	7,885'	MADE 71' IN ANKAREH FORMATION. MW 8.7, VIS 40, WL 10.4, PH 8.5, PV 9, YP 9, GELS 2/5, 2.6% SOLIDS, 300 PPM CHLORIDE, 120 CALCIUM. PUMP PRESS 2,100, GPM 383, ANNULAR VELOCITY 135/75. BIT NO 28, 12-1/4, STC, F-3, JETS 10-10-11, DEPTH IN 7,484', MADE 401' IN 91 HRS; 4.4 FT/HR. OPER DRLG. RPM 50-60, WT ON BIT 35-40,000. DEV DEPTH 7,784 INC 3-1/2° WL. TOTAL BHA 425.91. DRLG AHEAD 3 TO 5' PER HR. ADDED SOLTEX FOR WL. TORQUE DROPPED OFF. LITHOLOGY: SHALE & SILTSTONE BROWN, HARD & FIRM.
8-5-80	7,926'	MADE 41' IN ANKAREH FORMATION. MW 8.7, VIS 37, WL 9.6, PH 9.0, PV 8, YP 6, 2/5 GELS, 2.6% SOLIDS, 300 PPM CHLORIDE, 130 CALCIUM. PUMP PRESS 2,100, GPM 383, ANNULAR VELOCITY 135/75. BIT NO 28, 12-1/4, STC, F-3, JETS 10-10-11, DEPTH IN 7,484', DEPTH OUT 7,926, MADE 442' IN 104 HRS; 4.3 FT/HR. RPM 50-60, WT ON BIT 35-40,000. DEV DEPTH 7,880 INC 2-1/2°. TOTAL BHA 425.91. DRILL 12-1/4" HOLE TO 7,926'. TRIP OUT, LAY DOWN 5-9" & 3-8" DC'S AND BHA. LITHOLOGY: SHALE & SILTSTONE, DARK BROWN, FIRM TO HARD.

OTTER CREEK #1-21 WELL HISTORY

8-6-80 7,956' MADE 43' IN ANKAREH FORMATION. MW 8.6, VIS 43, WL 9.6, PH 9.0, PV 14, YP 10, GELS 3/7, 2.0% SOLIDS, 280 PPM CHLORIDE, 100 CALICUM. PUMP PRESS 1,900, GPM 365, ANNULAR VELOCITY 138/71. BIT NO 28, 12-1/4, STC, F-3, JETS 10-10-11, DEPTH IN 7,484', DEPTH OUT 7,926', MADE 442' IN 104 HRS; 4.3 FT/HR. OPER PULLED. BIT NO 29, 12-1/4, SEC, S-84F, JETS 10-10-11, DEPTH IN 7,926', MADE 30' IN 6-1/2 HRS; 4.6 FT/HR. OPER DRLG. RPM 50-60, WT ON BIT 35,000. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
6 PT RMR	10.12	12-1/4	2-7/8
RWP	8.78	12-1/4	2-7/8
TELEDRIFT	8.96	9	2-7/8
RWP	7.98	12-1/4	2-7/8
SS	9.04	9	3
1 DC	31.10	9	2-4/16
IBS	4.79	12-1/4	3
SPIRAL 8 DC'S	247.94	9	2-7/8
X-OVER	2.53	7-3/4	2-7/8
JARS	35.62	7-5/8	2-3/4
X-OVER	3.97	7-7/8	2-7/8
3 DC'S	93.36	6-15/16	2-5/16

TOTAL BHA 465.19. INSPECT BHA W/DRILCO ALL IN GOOD CONDITION. CHANGE WEAR BUSHING. WEARING ON ONE SIDE. CHANGE TELEDRIFT SETTING TO 4-1/2". CHANGE OUT SHOCK SUB. PICK UP 9-9" SPIRAL DC'S. RIH TAG FILL @ 7,911' (15' FILL). WASH & REAM TO BOTTOM. DRLG AHEAD W/ NO PROBLEMS. LITHOLOGY: SHALE, BROWN.

8-7-80 7,984' MADE 28' IN ANKAREH FORMATION. MW 8.7, VIS 40, WL 8.8, PH 9.5, PV 10, YP 8, GELS 2/5, 300 PPM CHLORIDE, 60 CALCIUM. PUMP PRESS 2,100, GPM 383, ANNULAR VELOCITY 135/75. BIT NO 29, 12-1/4, SEC, S-84F, JETS 10-10-11, DEPTH IN 7,926', DEPTH OUT 7,984', MADE 58' IN 21-1/2 HRS; 2.7 FT/HR. OPER TRIP. RPM 50-60. WT ON BIT 35-40,000. DEV DEPTH 7,984 INC 5° WL. TOTAL BHA 465.19'. DRILL 7,956' TO 7,971' @ 4' PER HR. DRILL 7,971' TO 7,984' @ 1-1/2 HR. DROP SURVEY. POH FOR BIT CHECK. MAGNA FLEX 3 6-15/16 DC'S W/VALLEY PIPE SERVICE (457 ROT HRS ON COLLARS). DC'S OK. CHANGE OUT DAILEY DRLG JARS AND BOTH CROSS OVERS (307-1/2 ROT/HRS). PRESENTLY PULLING AND CHECKING BHA. LITHOLOGY: 7,957' TO 7,972', SHALE, BROWN, FIRM. 7,972' TO 7,984', SHALE W/SILTSTONE. LIGHT GREY AND HARD.

OTTER CREEK #1-21 WELL HISTORY

8-8-80 7,984' MADE 0' IN ANKAREH FORMATION. MW 8.6, VIS 38, WL 8.8, PH 8.6, PV 9, YP 7, 2/4 GELS, 2.5% SOLIDS, 300 PPM CHLORIDE, 80 CALCIUM. PUMP PRESS 600, GPM 365, ANNULAR VELOCITY 71/128. BIT NO 29, 12-1/4, SEC, S-84F, JETS 10-10-11, DEPTH IN 7,926', DEPTH OUT 7,984', MADE 58' IN 21-1/2 HRS; 2.7 FT/HR. OPER PULLED. BIT NO 30, 12-1/4, HTC, JD-8, JETS 10-10-11, DEPTH IN 7,984. OPER TRIP IN. DEV DEPTH 7,984 INC 5-1/4° WL. DRILLING ASSEMBLY AS FOLLOWS:

COMPONENT	LENGTH	O.D.	I.D.
BIT	1.00	12-1/4	
JUNK BASKET	2.43	11-1/2	2-7/8
6 PT RMR	11.55	12-1/4	2-7/8
RWP	8.78	12-1/4	2-7/8
TELEDRIFT	8.96	9	2-7/8
RWP	7.98	12-1/4	2-7/8
SHOCK	9.04	9	3
1 DC	31.10	9	2-13/16
IBS	4.85	12-1/4	2-7/8
8 DC'S	247.94	9	2-7/8
X-OVER	1.60	7-3/4	2-7/8
JARS	34.85	7-5/8	2-7/8
X-OVER	1.35	7-3/4	2-7/8
3 DC'S	93.36	6-15/16	2-5/16

TOTAL BHA 464.79. POH, CHECK STABILIZERS. FOUND WEAR GROOVES ON PAD OF IBS FROM JUNK IN HOLE. TIH W/11-1/2" MAGNET W/LIP GUIDE AND JUNK BASKET. WASH 70' TO BOTTOM. NO TORQUE WHILE WASHING TO BOTTOM. WORK MAGNET AND BASKET. POH W/MAGNET, RECOVERED APPROX 1-1/2 LBS METAL FILINGS AND BROKEN BUTTONS. NO LARGE PIECES. TIH W/TOOTH BIT AND JUNK BASKET. STABILIZERS CHECKED BY DRILCO. CHANGE OUT 6 PT AND IBS. MAGNAFLEX AND REFACE 5-9" AND 3-8" DC'S ON RACK. 1 DC BAD THREADS, WILL SEND TO SHOP. LITHOLOGY: SAME.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH: Rich
13. STATE: Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 8-9-80 To: 9-5-80

RECEIVED NOV 21 1980

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

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

SIGNED M E Kugh TITLE Drilling Supr. DATE November 18, 1980

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

8-9-80	8,002'	MADE 18' IN ANKAREH FORMATION. OPER DRLG. DRLG AHEAD W/NO TORQUE. DRLG RATE SLOW.
8-10-80	8,011'	MADE 9' IN ANKAREH FORMATION. DEV DEPTH 8,002 6-1/4° WL. DROP SURVEY, POH. RIH W/BUTTON BIT & JUNK BASKET. LOST 120 BBLS MUD ON TRIP. RAN LCM SWEEP. DRLG AHEAD NO TORQUE PROBLEMS.
8-11-80	8,037'	MADE 26' IN ANKAREH FORMATION. DRLG AHEAD NO TORQUE. RUNNING 25,000# IN BIT, TRYING TO CORRECT DEVIATION.
8-12-80	8,072	MADE 35' IN ANKAREH FORMATION. DEV DEPTH 8,039 WL INC 5-1/2°, DEV DEPTH 8,039 INC 6°, DEV DEPTH 8,065 INC 6°. DRLG AHEAD, START TO CORRECT DEVIATION PROBLEMS. NO TORQUE PROBLEMS. PRESENTLY DRLG AHEAD.
8-13-80	8,128'	MADE 56' IN ANKAREH FORMATION. DEV DEPTH 8,098' INC 5-3/4°WL, DEPTH 8,128' INC 6°. DRLG AHEAD NO TORQUE PROBLEMS. NOT LOSING ANY MUD.
8-14-80	8,151'	MADE 23' IN ANKAREH FORMATION. DRLG AHEAD. HOLE SEEMS IN GOOD SHAPE.
8-15-80	8,155	MADE 4' IN ANKAREH FORMATION. DEV DEPTH 8,152 INC 6-1/2°. POH FOR NEW BIT. PULLED & REPLACED WEAR BUSHING WAS ALMOST WORN THROUGH. RIH. WASH & REAM 60' TO BOTTOM. PRESENTLY DRLG AHEAD, NO PROBLEMS.

OTTER CREEK #1-21 WELL HISTORY

8-16-80	8,209'	MADE 54' IN ANKAREH FORMATION. DEV DEPTH 8,165' INC 6° TELEDRIFT, DEPTH 8,165' INC 6° WIRELINE. DRILLING AHEAD, NO PROBLEMS.
8-17-80	8,274'	MADE 55' IN ANKAREH FORMATION. DEV DEPTH 8,225' INC 6° TELEDRIFT, DEV DEPTH 8,255 INC 6° WIRELINE. DRILLING AHEAD WITH NO PROBLEMS.
8-18-80	8,331'	MADE 57' IN ANKAREH FORMATION. DEV DEPTH 8,286' INC 6° TELE. DRLG AHEAD, NO PROBLEMS.
8-19-80	8,379'	MADE 48' IN ANKAREH FORMATION. DEV DEPTH 8,344 INC 6°, DEV DEPTH 8,375' INC 6°. DRLG AHEAD, NO PROBLEMS.
8-20-80	8,429'	MADE 50' IN ANKAREH FORMATION. DEV DEPTH 8,406' INC 5-1/2°. DRLG AHEAD.
8-21-80	8,480	MADE 51' IN ANKAREH FORMATION. DEV DEPTH 8,437 INC 5-1/2° TELE, DEPTH 8,437 INC 5-3/4° WL. DRLG AHEAD SHORT TRIP 10 STNDS.
8-22-80	8,526	MADE 48' IN ANKAREH FORMATION. DEV DEPTH 8,497 INC 5° TELE, DEPTH 8,526 INC 5-1/2° WL. TRIP FOR BIT #33. HOLE APPEARS TO BE IN GOOD SHAPE.

OTTER CREEK #1-21 WELL HISTORY

8-23-80	8,583	MADE 57' IN ANKAREH FORMATION. DEV DEPTH 8,526' INC 5° TELE, DEPTH 8,559' INC 4-1/2° TELE. TIH, WASH & REAM 90' TO BOTTOM. DRLG AHEAD W/NO PROBLEMS.
8-24-80	8,605'	MADE 22' IN ANKAREH FORMATION. DEPTH 8,605' INC 5-1/4° WIRELINE. DRLD FROM 8,583' TO 8,605'.
8-25-80	8,656'	MADE 51' IN ANKAREH FORMATION. DEV DEPTH 8,620 INC 3-1/2%, TELE, DEPTH 8,656' INC 4-3/4%, WIRELINE. RIH W/BIT #34 - HOLE OK. PRESENTLY DRLG AHEAD.
8-26-80	8,738'	MADE 82' IN THAYNES FORMATION. DRLD TO 8,738'.
8-27-80	8,746'	MADE 8' IN THAYNES FORMATION. DEV DEPTH 8,742', INC 5-3/4, ON WIRELINE, DEPTH 8,746', INC 6-1/4, CIRC. BTMS UP. MADE 15 STD. SHORT TRIP W/5-8,000# OVERPULL. RIH W/NO FILL. CIRC. BTMS. UP. POH FOR LOGS. RON DIL LOG W/NO LOGGER'S TD @ 8,742'. PRESENTLY RUNNING SONIC LOG.
8-28-80	8,746'	MADE 0' IN THAYNES FORMATION. RAN - SONIC/GR, CNL, FDC, FRACTURE LOG, & DIPMETER. RIH. WASH & REAM 45' TO BOTTOM. LOST 40 BBLS MUD TOTAL WHILE RUNNING LOGS PRESENTLY CIRC & COND HOLE FOR DST.
8-29-80	8,746'	MADE 0' IN THAYNES FORMATION. CIRC & COND MUD FOR DST. MADE 15 STD SHORT TRIP, HOLE OK, POH. MADE UP DST TOOLS & RIH W/SAME.

OTTER CREEK #1-21 WELL HISTORY

8-30-80	8,746'	MADE 0' IN THAYNES FORMATION. FIN RIH W/DST #1. ATTEMPTED TO SET PACKERS BUT COULD NOT GET PACKER SEAT. POH W/TOOLS. RIH W/BIT, CIRC & COND MUD. POH, F/DST #2.
8-31-80	8,746'	MADE 0' IN THAYNES FORMATION. ATTEMPTED TO SET PACKERS-COULD NOT GET PACKER SEAT. POH & L/D DST TOOLS.
9-1-80	8,746'	MADE 0' IN THAYNES FORMATION. FINISH L/D DST #2 TOOLS. RIH W/BIT TO COND MUD. MADE 10 STD, SHORT TRIP.
9-2-80	8,746'	MADE 0' IN THAYNES FORMATION. FINISHED POH AFTER COND MUD. RAN 22 STDS OF DP STINGER, MADE UP RTTS PKR & RAN ON 5 STDS SET PKR @ 2,462', COULD NOT PRESS TEST ANNULUS, CIRC TO CELLAR. PULL & RESET PKR, EVERY STD, COMING OUT OF HOLE, COULD NOT TEST @ 60' BELOW WELLHEAD-WOULD CIRC TO CELLAR. RIH W/11STDS & SET PKR @ 1,057'. PRESS BELOW PKR TO 100 PSI & HELD OK. BACKED OFF DP @ 40' KB. SEPARATE BOP @ WELLHEAD & P/U BOP. INSPECT HEAD-HAD BAD GROOVE IN HEAD & GROOVE IN 1ST JOINT OF CASING. N/U BOP. PULLED RTTS. RIH W/OEDP & WAITING ON HOWCO TO SPOT PLUG.
9-3-80	8,746'	MADE 0' IN THAYNES FORMATION. SPOT 150' CEMENT PLUG @ 2,300', 115 SACKS CLASS "G" W/2% CACL2, 15.8 PPG, POH RAN MCCULLLOUCH CASING INSPECTION LOG AND CBL, FOUND 2 SPLITS IN CASING - ONE @ SURFACE(APPROX. 14' LONG), SECOND @ 270' (APPROX. 27' LONG), GOOD BOND ON CBL, NIPPLE DOWN BOP, JACK HANNER CELLAR, CUT OFF 13-1/8" WELLHEAD, PULL WELLHEAD AND LANDING BASE, CURRENTLY W/O ORDERS.
9-4-80	8,746'	MADE 0' IN THAYNES FORMATION. RUN GYROSCOPIC DIRECTIONAL SURVEY FROM 50' TO 2,210'.
9-5-80	8,746'	MADE 0' IN THAYNES FORMATION. FINISHED WELDING 13-3/8" LANDING JOINT ONTO CASING STUB, USED TONGS TO BACK OFF 13-3/8" CASING, PULLED AND RECOVERED 6 JOINTS & CUT OFF JOINT (265' OF 13-3/8", 61.0#, K-55, HYDRIL SFJP CASING), TOP OF 13-3/8" FISH NOW @ 297' WELDED ON EXTENSION TO 16" CASING TO SPACE OUT FOR NEW WELLHEAD, PICK UP 2 DRILL COLLARS & 1 JT OF DRILL PIPE AND WAIT ON MAGNET TO FISH CENTRALIZER BLADES.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 9-6-80 To: 9-19-80

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

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

SIGNED Mike E Krugh by JGO TITLE Drilling Supr. DATE December 4, 1980

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

9-13-80	8,746'	MADE 0'. RIH W/12-1/4" BIT. TAG TOP OF CMT PLUG @ 2,104'. DRLD TO 2,316' - CIRC OUT SOFT CMT. PRESENTLY DRLG CMT LOOKING FOR HARD SPOT. CMT WILL NOT WASH AWAY W/5,000# WOB.
9-14-80	8,746'	MADE 0'. DRLD HARD CMT 2,140'-2,155'. W/PIPE RAMS CLOSED TESTED 16"-13-3/8" CSG TO 1,000 PSI-OK-M LEAD N/D BOP. RIH W/14-3/4" IMPRESSION BLOCK & SHOWED BOX-END OF 13-3/8" CSG LOOKING UP HAS A 5" PIECE MISSING WHICH MATCHES THE PIECE MISSING ON PIN-END RECOVERED 9/5/80/. MCCULLOUGH RAN FREE-POINT (MAGNATECTOR). 12% FREE @ 340' W/100,000#, 10% FREE @ 355' W/80,000# PULL, 8% FREE @ 400' W/100,000# PRESENTLY WAITING ON FISHING TOOLS.
9-15-80	8,746'	MADE 0'.TIH W/13-3/8" CASING SPEAR, PULLED (329') OF 13-3/8" CASING. TOP OF 13-3/8" FISH NOW @ 626'.
9-16-80	8,746'	MADE 0'. TOTAL CSG RECOVERED 9/15/80 = 194' (TOTAL 13-3/8", 61#, K-55, HYDRIL SFJP RECOVERED TO DATE = 788'). TOP OF FISH @ 818'. PIN-END OF LAST JOINT SLIGHTLY WORN IN BODY, BUT THREADS IN TACT OK. RIH W/14-3/4" BIT FOR CLEANOUT TOF.
9-17-80	8,746'	MADE 0'. RIH W/14-3/4" IMPRESSION BLOCK, POH. BOX-END OF CSG LOOK GOOD. R/U CASING CREW & RAN 20 JTS OF 13-3/8", 61#, HYDRIL SFJP. SCREWED INTO 13-3/8" FISH @ 818' LAND CSG IN SLIPS INSTALL PACKOFF.
9-18-80	8,746'	MADE 0'. FIN N/U BOP. TEST CHOKE LINE 1,500 PSI-OK. TEST BLIND RAMS & 13-3/8" CASING TO 1,500 PSI-OK RIH TO 2,100'. TEST PIPE RAMS & HYDRA TO 1,500 PSI-OK. DRLD CMT PLUG 2,155'-2,445' (290'). PRESENTLY MIXING MUD TO DISPLACE WTR.
9-19-80	8,746'	MADE 0'. STAGE IN HOLE, 20 STNDS AT AT TIME. CIRC & CONDITION, TIGHT HOLE @ 7,050'.

OTTER CREEK #1-21 WELL HISTORY

9-6-80	8,746'	MADE 0'. TIH W/14" OD. MAGNET W/COT-LIP GUIDE, RECOVERED A FEW METAL SHAVINGS, POH, BOTH RUNS INDICATE HOLE CLEAN TO TOP OF FISH, WELD ON GULFCO 16"X3000" CASING HEAD W/BASEPLATE, TEST HEAD-OK.
9-7-80	8,746'	MADE 0'. FINISH N/U BOPS. TEST UPPER & LOWER PIPE RAMS AND ANNULAR PREVENTER TO 1,300 PSI, TEST OK. TIH W/11" OD MAGNET, POH. RECOVERED IRON PLATE PIN FROM CENTRALIZER PRESENTLY WASHING CEMENT.
9-8-80	8,746'	MADE 0'. DRLD HARD CMT 2,319'-2,370' & CMT STRINGERS PRESENTLY WASHING TO BOTTOM. CONDITIONING MUD. NOW @ 6,400'.
9-9-80	8,746'	MADE 0'. FIN WASHING & REAMING TO BOTTOM. PRESENTLY POH.
9-10-80	8,746'	MADE 0'. RIH W/OEDP TO 2,320'. R/U BJ. PUMP 115 SKS CLASS "G" W/2% CACL2. CIP @ 12:00 NOON. POH. WOC 9 HRS. RIH W/12-1/4" BIT & TAG SOFT CEMENT 2,270'. WASH STRINGERS TO 2,320'. CIRC OUT GREEN CEMENT. CIRC HOLE CLEAN FROM 2,512'. PRESENTLY POH TO SET 2ND CEMENT PLUG.
9-11-80	8,746'	MADE 0'. R/U HOWCO & PUMPED 150 SKS CLASS "G" W/2% CACL2 @ 10:30 AM & TAG CMT @ 2,139'. WASHED TO 2,147' WOC 6 HRS. WASHED 2,147'-2,158'. CIRC OUT GREEN CMT. PRESENTLY WOC & CIRC.
9-12-80	8,746'	MADE 0'. CIRC OUT GREEN CMT. SPOT 150' CMT PLUG W/115 SKS OF CLASS "G" W/2% CACL2 & DISPL W/FRESH WTR. TOC @ 2,100'.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 9-20-80 To: 11-28-80

RECEIVED
DEC 10 1980
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED Mike E Krugh by [illegible] TITLE Drilling Supr. DATE Dec 5/1980

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

9-20-80	8,751'	MADE 5' IN THAYNES FORMATION. WASHED & REAMED TO BOTTOM, DRLD 5' NEW HOLE, CIRC & CONDITION MUD, POH FOR NEW BIT, START TIH.
9-21-80	8,815'	MADE 64' IN THAYNES FORMATION. DEV DEPTH 8,774', INC 6°, DIRECTION TELEDRIFT, DEV DEPTH 8,805', INC 5-1/2°, DIRECTION TELEDRIFT. DRLG AHEAD W/NO PROBLEMS.
9-22-80	9,055'	MADE 240' IN THAYNES FORMATION. DEV DEPTH 8,868', INC 6°, DIRECTION TELEDRIFT, DEV DEPTH 8,961', INC 5-1/2°, DIRECTION TELEDRIFT. DRDL 8,815'-9,055'.
9-23-80	9,113'	MADE 63' IN NUGGET FORMATION. DEV DEPTH 9,113;, INC 7-1/4°, DIRECTION WIRELINE. DRLD FROM 9,055'-9,113', POH. PRESENTLY RIH.
9-24-80	9,119'	MADE 6' IN NUGGET FORMATION. LOST 700 PSI PUMP PRESS. CHECK PUMPS-OK. POH LOOKING FOR HOLE. JET WASHED OUT ON 12-1/4", PRESENTLY DRLG AHEAD @ 9,119'.
9-25-80	9,299'	MADE 180' IN NUGGET FORMATION. DEV DEPTH 9,145', INC 7°, DIRECTION TELEDRIFT, DEV DEPTH 9,206', INC 7°, DIRECTION TELEDRIFT, DEV DEPTH 9,260', INC 6°, DIRECTION TELEDRIFT. DRLD 9,119'-9,299'.
9-26-80	9,491'	MADE 47' IN NUGGET FORMATION. DEV DEPTH 9,328', INC 5-1/2°, DIRECTION TELEDRIFT, DEV DEPTH 9,424', INC 5-1/2°, DIRECTION TELEDRIFT, DEV DEPTH 9,484', INC 5-1/2°, DIRCTION TELEDRIFT. DRLD 9,299'-9,491'.

OTTER CREEK #1-21 WELL HISTORY

9-27-80	9,642'	MADE 151' IN NUGGET FORMATION. DEV DEPTH 9,547' INC 5-1/2°, TELEDRIFT, DEV DEPTH 9,610' INC MISRUN. DRLD 9,491'-9,642'.
9-28-80	9,667'	MADE 25' IN NUGGET FORMATION. DRLD 9,642'-9,667' W/ROP DECREASING TO 1-1/2 FPH DROP SURVEY & POH-HOLE OK. RIH @ 6:00 AM.
9-29-80	9,700'	MADE 33' NUGGET FORMATION. FIN RIH W/BIT # 41 LOST 1,300 PSI & 15-20,000# STRING WT. POH.
9-30-80	9,700'	MADE 0' IN NUGGET FORMATION. FINISH POH. TWISTED OFF RIH W/OVERSHOT, ENGAGED TOP @ 9,587'. CIRC & PUMPED 3 JTS OUT OF HOLE.
10-1-80	9,700'	MADE 0' IN NUGGET FORMATION. RECOVERED ENTIRE FISH. RIH W/BIT.
10-2-80	9,704'	MADE 4' IN NUGGET FORMATION. DRLD 9,700'-9,704. TRIP IN, TRIP IN W/BIT #42.
10-3-80	9,793'	MADE 89' IN NUGGET FORMATION. DEV DEPTH 9,769' INC MISRUN, TELEDRIFT. DRLG AHEAD.

OTTER CREEK #1-21 WELL HISTORY

10-4-80	9,889'	MADE 96' IN NUGGET FORMATION. DEV DEPTH 9,801' INC 5° TELEDRIFT, DEV DEPTH 9,831' INC 5° TELEDRIFT.
10-5-80	9,889'	MADE 0' IN NUGGET FORMATION. FINISHED TRIP OUT, FOUND WASH OUT @ JET IN BODY OF BIT, TIH, REAM 8 JT TO BTM.
10-6-80	9,937'	MADE 48' IN NUGGET FORMATION. DEV DEPTH 9,924' INC 5° TELEDRIFT. GRADUALLY LOST 200 PSI. PUMP SOFT LINE. POH. HOLE IN 7" DC ABOVE JARS. PRESENTLY RIH.
10-7-80	10,036'	MADE 99' IN NUGGET FORMATION. DEV DEPTH 9,966' INC 5-1/2° TELEDRIFT, DEV DEPTH 10,027' INC 5-1/2° TELEDRIFT. RIH. REAMED 3 JTS TO BMT.
10-8-80	10,156'	MADE 120' IN NUGGET FORMATION. DEV DEPTH 10,090' INC 5-1/2° TELEDRIFT, DEV DEPTH 10,152' INC 6° TELEDRIFT. DRLD 10,036'-10,156' LOST 1,400 PSI PUMP PRESS @ 4:00 AM, P/U-STRING WT ONLY 235,000#, LOST 55,000#.
10-9-80	10,156'	MADE 0' IN NUGGET FORMATION. POH, TWIST OFF IN JARS, TOP OF FISH @ 9,802', TIH W/OVERSHOT, CIRC & LATCH ONTO FISH, FISH SLIPPED OFF, POH FOR SMALLER GRAPPLES (7-1/4" TO 7-11/16").
10-10-80	10,156'	MADE 0' IN NUGGET FORMATION. TIH W/7-5/8" GRAPPLES, ATTEMPT TO GRAB FISH, COULD NOT LATCH ONTO FISH, CIRC 1 HR. ON TOP OF FISH, POH, PICK UP 6 FT OVERSHOT EXTENSION, TIH, GRAB FISH, PICKED UP 50,000# EXTRA WEIGHT, START POH.

OTTER CREEK #1-21 WELL HISTORY

10-11-80 10,156' MADE 0' IN NUGGET FORMATION. MW 8.9, VIS 40. OPER TRIP. POH W/FISH, LAY DOWN ALL SPIRAL DRILL COLLARS, P/U SLICK COLLARS, CHANGE OUT SHOCK SUB. START TIH. GEOLOGY: SAME.

10-12-80 10,160' MADE 4' IN NUGGET FORMATION. MW 8.9, VIS 50. OPER TRIP IN. DRLD 4'. CIRC & COND MUD. TRIP FOR BIT #4. GEOLOGY: LITE ORANGE SS.

10-13-80 10,200' MADE 40' IN NUGGET FORMATION. MW 8.9, VIS 45. OPER DRLG. DEV DEPTH 10,161' INC 5-1/2°. DRLG AHEAD OK. GEOLOGY-SS LITE ORANGE.

10-14-80 10,226' MADE 26' IN NUGGET FORMATION. MW 8.9, VIS 43. OPER STUCK. DEV DEPTH 10,224' INC 5-1/2°. POH FOR NEW BIT, STUCK DRILL STRING WHILE POH W/BIT @ 3,210', JARS @ 2,867'. CAN NOT WORK UP OR DOWN. CAN NOT ROTATE. CAN CIRC OK. CAN NOT SET JARS OFF STRETCH TABLES INDICATE STUCK @ 3,000'. GEOLOGY SS LITE ORANGE.

10-15-80 10,266' MADE 0' IN NUGGET FORMATION. MW 8.9, VIS 46. CIRC & WORK PIPE, RUN FREE PT, STUCK @ TOP OF COLLARS @ 2,716', SPOT 33 BBLS DIESEL & NO STICK, 45-OUTSIDE, 10-INSIDE, MOVING 1 BBL/HR & WORK PIPE.

10-16-80 10,228' MADE 2' IN NUGGET FORMATION. MW 8.8, VIS 54. OPER DRLG. WORKED PIPE FREE, POH, TIH W/BIT. CHANGE OUT 6 PT, BOTTOM HOLE STABILIZER, LAYED DOWN SHORT DRILL COLLAR (THREADS GAULDED ON ALL 3) REPLACED #1 MOTOR, REAMED 6 JTS TO BTM, HAD TORQUE ON BTM 60', WORKED JUNK SUB, DRLG AHEAD. LITHOLOGY: LT ORANGE SANDSTONE.

10-17-80 10,269' MADE 41' IN NUGGET FORMATION. MW 8.7, VIS 39. OPER DRLG. DRLG AHEAD. NO TORQUE PROBLEMS, RECIEVED FUEL LOAD. LITHOLOGY: SS-LT ORANGE W/LT PURPLE-FRIABLE, SOME RED ORANGE SHALE.

OTTER CREEK #1-21 WELL HISTORY

10-18-80 10,301' MADE 32' IN ANKERAH FORMATION. MW 8.7, VIS 48. OPER DRLG. DEV DEPTH 10,284' 5° TELEDRIFT. TOP OF ANKERAH PICKED @ 10,225, DRLG AHEAD, ROP DROPPED TO 40-45 MPF, OCCASSIONAL TORQUE PROBLEMS, RUN SWEEPS, BAD TORQUE PROBLEMS @ 10,298', REAM TIGHT HOLE 10,298'-10,290', CONT RUNNING SWEEPS, DRLG AHEAD W/OCCASIONAL TORQUE, HAVE TO REAM BACK THROUGH EACH 10'. LITHOLOGY:LT ORANGE-RED BROWN SHALE, SOFT TO FIRM.

10-19-80 10,314' MADE 13' IN ANKERAH FORMATION. MW 8.7, VIS 47. OPER TRIP. TREAT MUD SYSTEM FOR TORQUE W/1-1/4# SOLTEX, RELIEVED TORQUE, ROP AVG=88 MPF, DROPPED SURVEY, START POH FOR BIT #6. LITHOLOGY:SAME.

10-20-80 10,314' MADE 0' IN ANKERAH FORMATION. MW 8.8, VIS 60. OPER REAM. POH, CHANGE BHA, TIH, 49 STD, BREAK CIRC, TIH 44 MORE STDS, ATTEMPT TO BREAK CIRC, PLUGGED 2 JARS, CONT TIH, TIGHT HOLE @ 10,220, WASH & REAM, UNABLE TO GET TO BTM, SHALE SLOUGHING IN HOLE, CIRC & REAM TO CLEAN HOLE. LITHOLOGY: RED TO BROWN SHALE.

10-21-80 10,314' MADE 0' IN ANKERAH FORMATION. MW 8.8, VIS 120. OPER REAM & CIRC. CIRC HOLE & CONDITION MUD, REAMING AHEAD @ 10,290', GETTING ALOT OF CUTTINGS 10,225'-10,260'; 10,260'-10,290' AMOUNT OF CUTTINGS REDUCED TORQUE DECREASING PROBLEM AREA APEARS TO BE 10,225'-10,260'. WILL CONT REAMING & CONDITIONING UNTIL HOLE CLEANS UP BEFORE RUNNING VELOCITY SURVEY.

10-22-80 10,314' MADE 0' IN ANKERAH FORMATION. MW 8.8, VIS 91. OPER REAM & CIRC. REAM TO 10,310', UNABLE TO GET TO BTM, CIRC HOLE, SUFFICIENT CUTTINGS NOT COMING OVER SHAKER-POH, STUCK W/27-1/2" STDS, LEFT IN HOLE, BIT @ 2,956', JARS @ 2,638', (JARS WONT FUNCTION), UNABLE TO FREE PIPE, RUN FREE POINT, 62% FREE @ 1,500' W/45,000# OVER STRING WT, 65% FREE @ 6,000', 0% FREE @ 2,520',(1ST JT OF DP ABOVE TOP DRILL COLLAR), TOP OF 1ST DRILL COLLAR @ 2,543', PICK UP CHIKSAN LINE, CIRC HOLE.

10-23-80 10,314' MADE 0' IN ANKERAH FORMATION. MW 8.7, VIS 120. OPER STUCK. SPOT DIESEL & "SLURRY (125 BBLS), RUN FREE POINT, BACK OFF-DRILLPIPE @ 2,484', POH, P/U FISHING TOOLS, TIH W/CUT LIP GUIDE & SCREW IN SUB, BUMPER SUB, & JARS. (BACKED OFF 1 JT OF DP ABOVE BHA).

10-24-80 10,314' MADE 0' IN ANKERAH FORMATION. MW 8.7, VIS 90. OPER STUCK. FINISH TIH, TAG FILL @ 2,480', CIRC OVER FISH, SCREWED IN, JAR ON FISH, NO MOVEMENT, SPOT 140 BBLS "NO STICK", DIESEL, ACROSS FISH (120 OUTSIDE, 20 INSIDE), WAIT 12-1/2 HRS.

OTTER CREEK #1-21 WELL HISTORY

10-25-80 10,314' MADE 0' IN ANKERAH FORMATION. WORK STUCK PIPE, RUN FREE POINT, 100% FREE @ 2,487', 50% FREE @ 2,550', 35% FREE @ 2,575', STUCK @ 2,602'.

10-26-80 10,314' MADE 0' IN ANDERAH FORMATION. BACK OFF @ 2,531', POH, RUN CSG CALIPER LOG, INSPECTION LOG, & COLLAR LOCATOR CSG SPLIT 2,462'-2,494', TIH, SET DOWN @ 2,735', UNABLE TO SCREW INTO FISH, POH, P/U CUT LIP GUIDE, TIH.

10-27-80 10,314' MADE 0' IN ANKERAH FORMATION. UNABLE TO SCREW INTO FISH POH, PICK UP 1 JT BENT DRILL PIPE, TIH, UNABLE TO SCREW INTO FISH POH, PICK UP 8" CUT LIP GUIDE W/BENT DRILL PIPE, STILL UNABLE TO SCREW INTO FISH, POH, TIH, W/11-1/2" CUT LIP GUIDE ON JT OF BENT DRILL PIPE-UNABLE TO SCREW INTO FISH, POH.

10-28-80 10,314' MADE 0' IN ANKAREH FORMATION. WO FISHING TOOLS. TIH, TAG FISH @ 2,537'.

10-29-80 10,314' MADE 0' IN ANKAREH FORMATION. UNABLE TO SCREW INTO FISH, POH, RUN DIL, TOP OF FISH @ 2,534', TIH UNABLE TO SCREW INTO FISH, POH, TIH W/3 JTS DP (BTM ONE BENT KICK SUB),UNABLE TO SCREW INTO FISH, POH.

10-30-80 10,314' MADE 0' IN ANKERAH FORMATION. TIH W/WALL HOOK, SCREWED INTO FISH, FISH WOULD NOT MOVE, (JAR UP & DOWN), FREE POINT-NO CHANGE, ALSO RAN FREEPOINT DOWN THRU FISH TO TELEDRIFT BACKED OFF @ 2,445', WILL PICK UP WASH PIPE & MILL CONNECTION, FISHING.

10-31-80 10,314' MADE 0' IN ANKERAH FORMATION.
WASH OVER TOP CONNECTION BUSHING, TRIP OUT OF HOLE, P/U DC SPEAR & 4 MORE JTS WASH PIPE. WASH OVER FISH TOP OF FISH @ 2,453' MEASURED DEPTH.

OTTER CREEK #1-21 WELL HISTORY

11-1-80 10,314' MADE 0' IN ANKERAH FORMATION. WASHOVER FISH 2,548'-2,584', BEGAN TORQUING UP @ 2,584', POH, SHOE #2 WORE ON ID & ON BTM P/U SHOE #3 W/CLUSTERITE ID, TIH, WASHOVER 2,584'-2,594'.

11-2-80 10,314' MADE 0' IN ANKERAH FORMATION. WAHSOVER TO 2,597', POH FOR NEW SHOE, ID WORE ON OLD SHOE, WASHOVER 2,597'-2,600', FISH DROPPED FREE, (GAINED 56,000# ON WT INDICATOR), UNABLE TO PULL FISH OUT, ATTEMPT TO DRILL UP W/O SUCCESS, JAR FISH UP, WASHOVER TO 2,505', GAINED 20,000#, POH W/PART OF FISH.

11-3-80 10,314' MADE 0' IN ANKERAH FORMATION. POH W/FISH, DAILY JARS PARTED @ BTM, FISH FELL TO BTM, TIH W/BIT TO TAG FISH & CONDITION HOLE, SHORT TRIP W/KEY SEAT WIPER 3,800'-2,550', TAG BRIDGE @ 5,104', WASH & REAM TOWARD BTM, PRESENTLY @ 5,752'.

11-4-80 10,314' MADE 0' IN ANKAREH. TIH TO REAM & WASH. WASH & REAM TO 8,446', TIGHT SPOT @ 6,862', PIPE STUCK @ 7,509', JAR FOR 10 MIN PIPE FREED UP, BIT PLUGGED @ 8,476', POH, TIH W/NEW BIT.

11-5-80 10,314' MADE 0' IN ANKAREH FORMATION. FINISHED TIH, WASHING & REAMING, PIPE STUCK @ 9,070', WORKED PIPE, FREED UP, WASHING & REAMING @ 9,140'.

11-6-80 10,314' MADE 0' IN ANKAREH FORMATION. WASH & REAM, TAG TOP OF FISH @ APPROS 10,024', MAKE 20 STD WIPER TRIP, WILL CIRC ON BTM AFTER TRIP FOR 2-3 HRS TO COND HOLE.

11-7-80 10,314' MADE 0' IN ANKAREH FORMATION. CIRC HOLE CLEAN, POH, SLM-TOP OF FISH @ 10,022', P/U FISHING TOOLS, TIH, LATCH ONTO FISH, POH W/FISH (50,000 INCREASE IN WT).

OTTER CREEK #1-21 WELL HISTORY

11-8-80 10,314' MADE 0' ION ANKAREH FORMATION. MW 8.7, VIS 93. TRIP OUT W/FISH REC ALL OF FISH. TRIP IN HOLE W/BHA.

11-9-80 10,314' MADE 0' IN ANKAREH FORMATION. MW 8.7, VIS 57. TRIP IN HOLE.

11-10-80 10,314' MADE 0' IN ANKAREH FORMATION. MW 8.7, VIS 44. CNT'D TRIP IN. TRIP GAS=22 UNITS.

11-11-80 10,314' MADE 0' IN ANKAREH FORMATION. MW 8.7, VIS 50. CTN'D TRIP IN HOLE. STRING TORQUEING & DRAGGING. POH, TRIP GAS-8 UNITS CI, 1-2 UNITS TOTAL.

11-12-80 10,314' MADE 0' IN ANKAREH FORMATION. MW 8.7, VIS 80. CTN'G WASH & REAM 6,087'-10,276'. BGG 2-4 UNITS METHANE.

11-13-80 10,314' MADE 0' IN ANKAREH FORMATION. MW 8.7, VIS 55. WASH & REAM TO BTM. CIRC & COND MUD. POH. BGG-TRACE.

11-14-80 10,314' MADE 0' IN ANKAREH FORMATION. MW 8.8, VIS 55. FINISHED POH, CHGD JUNK MILLS & JUNK SUBS. RIH TO BTM, WORKED JUNK MILL HOLE TIGHT ON BTM, POH OK. PU BIT & RIH. TRIP GAS 5 UNITS C, 1/2 UNIT C2, 1 UNIT TOTAL.

OTTER CREEK #1-21 WELL HISTORY

11-15-80 10,314' MADE 0' IN ANKAREH FORMATION. MW 8.8, VIS 85. OPER WASH & REAM.

11-16-80 10,314' MADE 0' IN ANKAREH FORMATION. MW 8.9, VIS 75. POH TO SURFACE PIPE F/WIPER TRIP. GAS-1/2 UNITS.

11-17-80 10,314' MADE 0' IN ANKAREH FORMATION. MW 8.9, VIS 70. REAMING 10,303'-10,314'. BGG 9 UNITS C1, 1 UNIT C2, 1-2 UNITS TOTAL GAS.

11-18-80 10,314' MADE 0' IN ANKAREH FORMATION. MW 8.9, VIS 75. RU SCHL LOGGERS. RAN SONIC, DENSITY, CALIPER LOGS F/LOGGERS TD @ 10,305' TO 13-3/8" CSG @ 2,494'. PRESENTLY RUNNING LATEROLOG.

11-19-80 10,314' MADE 0' IN ANKAREH FORMATION. MW 8.9, VIS 62. FINISH RUNNING D/L, RAN DIP METER & DIRECTIONALY LOG & CYPER LOG. RIH PRESENTLY CIR & COND HOLE @ 10,506'. TRIP GAS:8 UNITS OF C1, 1/2 UNITS OF C2 W/1 UNIT TOTAL GAS.

11-20-80 10,314' MADE 0' IN ANKAREH FORMATION. MW 8.9, VIS 59. PRESENTLY RUNNING 10-3/4" CSG.

11-21-80 10,314' MADE 0' IN ANKERAH FORMATION. MW 8.8, VIS 85. RUNNING 10-3/4" CSG.

OTTER CREEK #1-21 WELL HISTORY

11-22-80 10,314' MADE 0' IN ANKAREH FORMATION. CSG RAN AS FOLLOWS.

1	10-3/4" DAVIS DIFF FLOAT SHOE
2	10-3/4" 55.5# SEAL-LOK AR-95 SCC
1	10-3/4" DAVIS DIFF FLOAT COLLAR
111	10-3/4" 55.5# SEAL-LOK AR-95 SCC
40	10-3/4" 55.5# SEAL-LOK N-80 SCC
28	10-3/4" 5.10# SEAL-LOK N-80 SCC
1	10-3/4" 55.5# X/O N-80
75	10-3/4" 55.5# SFJP N-80

LANDED SHOE AT 10,306' KB. 1ST STAGE: CMTD CSG W/1,500 SKS "LIGHT" W/0.2% R-5, 1/4#/SK CELLOFLAKE, FOLLOWED BY 500 SKS OF CLASS "G" W/3% KCL, 1.5% D-10, 0.75% D-31, 1/4#/SK CE. USED 30% EXCESS VOLUME.

11-23-80 10,314' MADE 0' IN ANKAREH FORMATION. WOC, SET CSG SLIPS W/490,000# CUT OFF CSG, N/D BOP'S, BEGIN N/U ON INTERMEDIATE SPOOL.

11-24-80 10,314' MADE 0' IN ANKAREH FORMATION. FINISH N/U ROT HEAD. TEST BOP'S TO 3,000 PSI, HYDRIL TO 1,500 PSI, PRESENTLY TRIPING IN HOLE TO DRILL CMT.

11-25-80 10,314' MADE 0' IN ANKAREH FORMATION. TAG CMT @ 10,205' DRILL 83' CMT. RIG TO RUN CSG INSP. LOG AND GIRO.

11-26-80 10,314' MADE 0' IN ANKAREH FORMATION. RAN CSG INSP LOG AND GIRO. PRESENTLY TRIP IN HOLE TO DRILL OUT SHOE.

11-27-80 10,314' MADE 0' IN ANKAREH FORMATION. RIH, PRESS TEST CSG TO 2,000 PSI. CIRC, LOST 350 PSI, POH LOOK FOR HOLE CHGD BITS, RIH.

11-28-80 10,314' MADE 0' IN ANKAREH FORMATION. FINISH RIH. DRLD CMT & SHOE. DRLD 3' FORMATION BELOW SHOE TO 10,309'.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 11-29-80 To: 12-5-80

RECEIVED
DEC 11 1980
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED Mike E. Krugh by J. O'Neal TITLE Drilling Supr. DATE _____

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

11-29-80 10,314' MADE 0' IN ANKAREH FORMATION. DRILL SHOE RAN LEAK OFF TEST W/BJ TRUCK 14# EQUIV MUD WT, TRIP FOR NEW BIT.

11-30-80 10,324' MADE 7' IN ANKAREH FORMATION. PRESENTLY DRLG AHEAD.

12-1-80 10,389' MADE 65' IN ANKAREH FORMATION. DRLG AHEAD.

12-2-80 10,426' MADE 37' IN ANKAREH FORMATION. DRLG AHEAD. HOLE OK H2S TRAINING FOR DRLG CREWS.

12-3-80 10,462' MADE 36' IN ANKAREH FORMATION. DRLG AHEAD.

12-4-80 10,468' MADE 6' IN ANKAREH FORMATION. DRLD 10,462'-10,468'. SHORT TRIP RIH TO BTM. PRESENTLY CIRC & COND HOLE.

12-5-80 10,468' MADE 0' IN ANKAREH FORMATION. DEV DEPTH 10,468' INC 4-1/2° WIRELINE. RIH W/DYNA-DRILL.

RECEIVED
DEC 11 1980
DIVISION OF
OIL, GAS & MINING

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 12-6-80 To: 12-19-80

RECEIVED
DEC 29 1980
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED Mike E. Krugh by J. Konell TITLE Drilling Supr. DATE 12-24-80

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

12-6-80 10,474' MADE 6' IN ANKAREH FORMATION. MW 9.8, VIS 51. WASH & REAM 36' TO BTM, DRLD 10,468'-10,474 UNABLE TO DRILL, START POH. LITHOLOGY: RED, BROWN, FIRM SHALE, NO GAS.

12-7-80 10,474' MADE 0' IN ANKAREH FORMATION. MW 9.8, VIS 53. TIH W/BIT #52, WASH & REAM 10,325' TO 10,418', LOST 500 PSI PUMP PRESS, LITHOLOGY: SHALE-RED, BROWN, FIRM, NO GAS.

12-8-80 10,490' MADE 16' IN ANKAREH FORMATION. MW 9.9, VIS 60. POH 26-2/3 STNDS. FOUND HOLE IN DP 6" FROM UPSET ON PIN END. RIH. WASH & REAM 10,418'-10,474'. DRILL TO 10,490', ROP PRESENTLY DRLG AHEAD. LITHOLOGY: SHALE, RED BROWN, FIRM. BGG TR.

12-9-80 10,528' MADE 38' IN ANKAREH FORMATION. MW 9.9, VIS 65. DRLG AHEAD, ROP DROPPED FROM 45 TO 50 MIN/FT TO 23 TO 2.5 MIN/FT 10,525'. LITHOLOGY: SHALE, RED BROWN, FIRM, SOME SANDSTONE LT GRAY & FRIABLE. NO GAS.

12-10-80 10,552' MADE 24' IN ANKAREH FORMATION. MW 9.9, VIS 62. DEV DEPTH 10,527' INC 4° N-55W. DRLD AHEAD TO 10,552'. POH FOR DYNADRILL. LITHOLOGY: RED TO BROWN SHALE, FIRM W/SOME SANDY SILTSTONE. BGG-TRACE.

12-11-80 10,552' MADE 0' IN ANKAREH FORMATION. MW 9.8, VIS 55.. RIH W/DYNADRILL, PRESENTLY WASHING TO BTM.

12-12-80 10,577' MADE 25' IN ANKAREH FORMATION. MW 9.8, VIS 63. DRLG AHEAD W/AVG ROP 48 MW/FT. LITHOLOGY: SHALE RED-BROWN, FIRM TO HARD W/NO GAS.

OTTER CREEK #1-21 WELL HISTORY

12-13-80 10,611' MADE 34' IN ANKAREH FORMATION. MW 9.8, VIS 55. DRLG AHEAD, LITH: SHALE, RED TO BROWN & PAKE MAROON, FIRM TO SOFT OCCASIONALLY SITLY NO GAS.

12-14-80 10,651' MADE 40' IN ANKAREH FORMATION. MW 9.8, VIS 68. DRLG AHEAD. LITH: SHALE RED TO BROWN W/GRAY & FIRM SANDSTONE GRAY TO BROWN SILTTY. BGG-TR.

12-15-80 10,664' MADE 13' IN ANKAREH FORMATION. MW 9.8, VIS 50. UNABLE TO MAKE HOLE, POH N-27°-W @ 1-1/2° @ 10,624'. LITH: SHALE RED BROWN & RED BROWN SITLSTONE, FIRM NO GAS.

12-16-80 10,664' MADE 0' IN ANKAREH FORMATION. MW 9.7, VIS 55. PACKING WORN ON DYNA-DRILL, RIH W/RR BIT #52 WASH & REAM FROM 10,520' PRESENTLY WASH & REAM @ 10,562'. NO BGG, NO TRIP GAS.

12-17-80 10,674' MADE 10' IN ANKAREH FORMATION. MW 9.7, VIS 56. DEV DEPTH 10,662' INC 1-1/2° N-62-E. PRESENTLY PICKING UP DYNA-DRILL & BHA. LITH: SHALE, RED-BROWN, FIRM TO HARD, NO GAS.

12-18-80 10,674' MADE 0' IN ANKAREH FORMATION. MW 9.8, VIS 73. RIH W/DYNA DRILL, PRESETNLY ORIENT DYAN-DRILL. LITH: SHALE RED BROWN W/NO GAS.

12-19-80 10,680' MADE 6' IN ANKAREH FORMATION. MW 9.8, VIS 53. POH, PICK UP BAKER MOTOR & BUTTON BIT, RIH. LITH: SHALE RED-BROWN, SOME SILTSTONE, WHITE. NO GAS.

RECEIVED
DEC 29 1980
DIVISION OF
OIL, GAS & MINING

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 12-20-80 To: 12-26-80

RECEIVED
JAN 8 1981
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED Mike E. Krugh by JCarroll TITLE Drilling Supr. DATE January 5, 1981

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

12-20-80 10,680' MADE 0' IN ANKAREH FORMATION. MW 9.8, VIS 61. RIH, TRIED TO DRILL AHEAD, NOT GETTING WEIGHT TO BIT, WILL LAY DOWN SINGLE JT & REAM DOWN. LITH: SAME

12-21-80 10,680' MADE 0' IN ANKAREH FORMATION, MW 9.8, VIS 60. PULLED STEERING TOOL. PU NEW BHA. RIH, WASH & REAM 10,380'-10,560'.

12-22-80 10,707' MADE 27' IN ANKAREH FORMATION. MW 9.8, VIS 69. 10,290' INC 1-3/4° N 70E. DRLD TO 10,707'. LITHOLOGY: SHALE, RED-BROWN & FIRM, SOME SILTSTONE RED-BROWN & WHITE, HARD. BGG-TRACE.

12-23-80 10,829' MADE 122' IN ANKAREH FORMATION. MW 9.7, VIS 55. 10,718' INC 2-1/4° N75E, 10,748' INC 2-1/2° N85E. DRLG AHEAD LITHOLOGY: SANDSTONE, LITE RED BROWN & SOME WHITE. BGG. TRACE W/HIGH OF 4 UNITS METHANE # 10,730'-10,740'.

12-24-80 10,829' MADE 0' IN ANKAREH FORMATION. MW 9.7, VIS 47. 10,808' INC 5-1/2° S73°E, 10,818' INC 6° S68°E. POH FOR STABILIZATION & NEW BIT, R/U & RAN DIALOG CSG PROFILE CALIPER LOG, GEOLOGY: RED BROWN, SOME WHITE SANDSTONE. BGG-TRACE.

12-25-80 10,835' MADE 0' IN NUGGET FORMATION. MW 9.7, VIS 47. FINISH TIH, WASH & REAM 90' TO BTM, DRILL 6', RECIEVED ORDERS TO RUN DST #2, 10,700'-10,835', CIRC & SHORT TRIP FOR TEST, POH & DST TOOLS, DID NOT ARRIVE ON LOCATION UNTIL 5:30 AM 12-25-80. TOO LATE TO RUN TEST IN DAYLIGHT HOURS. TIH. LITH: SAME. BGG TRACE, TRIP GAS 8 UNITS. TOP OF NUGGET @ 10,700'.

12-26-80 10,835' MADE 0' IN NUGGET FORMATION. MW 9.7, VIS 55. POH FOR TEST, P/U DST TOOL, TIH. BGG TRACE, NO TRIP GAS.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ - other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 12-27-80 To: 1-2-81

RECEIVED
JAN 14 1981
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED Mike E. Krugh by J Edwards TITLE Drilling Supr. DATE 1-9-80

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

12-27-80	10,835'	MADE 0' IN NUGGET FORMATION. FINISH TIH FOR DST #2, SET PKRS @ 10,700' & 10,705', OPEN TOOL @ 10:00 AM 12/26/80, INITIAL FLOW 1/2 HR, INITIAL SHUT IN 1 HR, FINAL FLOW 2 HRS, FINAL SHUT-IN 4 HRS, NO HYDROCARBONS TO SURFACE DURING TEST, SHUT-IN TOOL, W/O DAYLIGHT TO BEGIN REVERSING OUT DP.
12-28-80	10,835'	MADE 0' IN NUGGET FORMATION. W/O DAYLIGHT, REVERSED OUT DST #2, RECOVERED 1,000' WTR CUSHION, 200' OF "CLABBERED" MUD, 3 SAMPLES TAKEN DURING REVERSAL SHOWED WTR, WTR CUTR MUD, & MUD - NO GAS DETECTED IN ANY SAMPLES, DST #2 10,705'-10,835', IF 1/2 HR, 50B 646 PSI, ISI 1 HR 4,191, FF 2 HRS 646-948, FSI 4 HRS 4,216', IHP 5,498, FHP 5,372, NO RECOVERY ON SAMPLE CHAMBER, TIH, WASH & REAM TO BTM.
12-29-80	10,835'	MADE 0' IN NUGGET FORMATION. DEV DEPTH 10,871' INC 6-3/4" S-60-E. DRLG AHEAD.
12-30-80	11,034'	MADE 110' IN NUGGET FORMATION. DEV DEPTH 10,935' INC 7-1/4° S-60E. DRLG AHEAD ANGLE BUILDING APPROX 3/4°/100'.
12-31-80	11,094'	MADE 60' IN NUGGET FORMATION. DEV DEPTH 11,029' INC 9° S57E, DEV DEPTH 11,059' INC 9-1/2° S57E. DRLG, POH FOR NEW BHA, CONT POH.
1-1-81	11,094'	MADE 0' IN NUGGET FQRMATION. FIN POH, RIH W/NEW BHA, BREAKING IN BIT TO DRL AHEAD.
1-2-81	11,185'	MADE 91' IN NUGGET FORMATION. DEV DEPTH 11,17' INC 10-1/4° S55E. DRILL 11,094'-11,143', RAN WL, SURVEY DRLG AHEAD.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 1-3-81 To: 1-9-81

RECEIVED
JAN 15 1981
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED Mike E. Krugh TITLE Drilling Supr. DATE 1-13-81
by [illegible]

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

1-3-81	11,271'	MADE 86' IN NUGGET FORMATION. MW 9.6. DEV DEPTH 11,180 INC 11-1/2° S56E, DEV DEPTH 11,242, INC 14° S57E. HOLE TAKING 5 BBLS PER HR MUD. PRESETNLY DRLG AHEAD.
1-4-81	11,320	MADE 49' IN NUGGET FORMATION. MW 9.5. HOLE TAKING 5 BBLS MUD PER HR.
1-5-81	11,325'	MADE 5' IN NUGGET FORMATION. MW 9.5. BIT NO 56, DEPTH OUT 11,325'. DEV DEPTH 11,300' INC 15° S60E. DRLD AHEAD.
1-6-81	11,325'	MADE 0' IN NUGGET FORMATION. MW 9.6. FIN RIH, LOST 500 PSI PMP. POH LOOKING FOR HOLE IN PIPE.
1-7-81	11,333'	MADE 8' IN NUGGET FORMATION. MW 9.5. TEST BOP'S, DRLG AHEAD.
1-8-81	11,380'	MADE 47' IN NUGGET FORMATION. MW 9.5. DRLG AHEAD, LOST APPROX 20 BBLS MUD IN 24 HRS.
1-9-81	11,439'	MADE 59' IN NUGGET FORMATION. MW 9.4. DEV DEPTH 11,395' INC MISRUN, DEV DEPTH 11,401' INC 16-3/4° S55E. REAM 90' TO BTM.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 1-10-81 To: 1-16-81

RECEIVED
JAN 22 1981
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED Mike E. Krugh by Jeanne TITLE Drilling Supr. DATE 1-20-81

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

1-10-81 11,497' MADE 58' IN NUGGET FORMATION. MW 9.4, VIS 55. DEV DEPTH 11,454' INC 17° S53E. DRLG AHEAD W/LITE WT FOR DEVIATION. ANGLE STILL BUILDING 1/4° PER 60'.

1-11-81 11,516' MADE 19' IN NUGGET FORMATION. MW 9.5, VIS 52. DEV DEPTH 11,506' INC 17° S50E. DRILL W/LITE WT, CIRC, SHORT TRIP 15 STNDS, REAM 120' TO BTM. NO PROBLEMS. CIRC BTMS UP. DROP SURVEY. POH, UP BAKER MUD MOTOR & RIH.

1-12-81 11,548' MADE 32' IN NUGGET FORMATION. MW 9.5, VIS 55. FIN RIH, BREAK CIRC, FIND WIRELINE PACK OFF. MAKE UP KELLEY & RUN WL. DRILL AHEAD W/BAKER MUD MOTOR TO 11,538' ROP DROPPED BENT SUB IN KICK OFF CORNER. REAM KICK OFF POINT. DRILL AHEAD TO 11,548', MADE CONNECTION TRIP 3 STNDS, TO CHANGE PROBE. RIH MAKE CONNECTION AND WAS STUCK.

1-13-81 11,548' MADE 0' IN NUGGET FORMATION. MW 9.5, VIS 53. WORK STUCK PIPE, SPOT 30 BBLS DEISEL & NO STICK. DIA-LOG FREE POINT TOOL ON LOCATION.

1-14-81 11,548' MADE 0' IN NUGGET FORMATION. MW 9.3, VIS 55. WORK STUCK PIPE, RIG DIA-LOG & RUN FREE PT, PIPE STUCK 11,035' UNDER BTM OF JARS, WORK PIPE. MIX & SPOT 50 BBLS DEISEL & NO STICK, 4 TO 1 CONCENTRATION, 25 BBLS OUTSIDE PIPE, WORK PIPE. PIPE PULLED FREE. POH. RIH TO CLENA & COND HOLE.

1-15-81 11,548' MADE 0' IN NUGGET FORMATION. MW 9.4, VIS 57. FIN RIH, WASH & REAM 90', WORK TIGHT HOLE 11,530'-11,548', CIRC & COND MUD, BUILDING MUD WT TO 9.5# TO STOP SLOUGHING SHALE. CIRC & COND HOLE, PLACE VISC PILL ON BTM, POH.

1-16-81 11,548' MADE 0' IN NUGGET FORMATION. MW 9.4, VIS 60. POH, LAYING DOWN 6-3/4" SLICK COLLARS, PU 6-3/4" SPIRAL DC'S & RIH W/BIT #58. BREAK CIRC @ 7,000' & 10,000'. RIH TO 11,495', STANDPIPE VALVE BAD.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 1-17-81 To: 1-23-81

RECEIVED
FEB 2 1981
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED Mike E. Krugh by [illegible] TITLE Drilling Supr. DATE Jan. 27, 1981

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

1-17-81 11,561 MADE 13' IN NUGGET FORMATION. DRLG AHEAD 3-4 FPH, 11,548'-11,555', ROP FELL TO 1/2 FPH, PMP MICA SWEEP, POH, TIGHT SPOT @ 10,800', FINISHING POH.

1-18-81 11,587' MADE 26' IN NUGGET FORMATION. DEV DEPTH 11,552' INC 21-1/2° S50E. FIN POH, P/U CHRISTENSEN NAVI-DRILL, TIH W/BHA, REPLACE BRAKE PADS, BREAK CIRC @ 7,000', & 11,540', ORIENT TOOL, DRLG AHEAD, ROP 2-7 MPF, HOLE IS BUILDING ANGLE.

1-19-81 11,617' MADE 30' IN NUGGET FORMATION. DEV DEPTH 11,582' INC 22.9° 115' ASTH. SHORT TRIP, DRLG W/LT WT TO DROP ANGLE.

1-20-81 11,627' MADE 10' IN NUGGET FORMATION. DEV DEPTH 11,592' INC 21-3/4", S46E. DRILL TO 11,627', RIH, BREAK CIRC @ 7,000'. PRESENTLY RIH.

1-21-81 11,627' MADE 0' IN NUGGET FORMATION. DEV DEPTH 11,619' INC 26° S52E. PULLING OUT OF HOLE W/SURV WL STUCK 400' OFF BTM. WORK WL, WL BROKE, PULL 15 STNDS, WORK WL FREE. POH. PRESENTLY RIH W/OE DP.

1-22-81 11,627' MADE 0' IN NUGGET FORMATION. RIH W/OE DP. CIRC & COND HOLE. CMT PLUG FOR PLUG BACK F/11,627'-11,460' W/75 SK CLASS "G" W/10% SILICA FLOUR, .1#/SK R-5 & .2#/SK D-31, 15.8 PPG SLURRY. POH TO 10-3/4" CSG SHOE. CIRC FOR CLEANUP. SHORT IN ELECTRICAL WIRING IN CONTROL HOUSE. LOST POWER FOR 9 HRS. REPAIRED WIRING & POH.

1-23-81 11,627' MADE 0' IN NUGGET FORMATION. FIN POH, CHECK BOP'S OK. RIH TAG CMT @ 11,446' PICK UP 5' & CIRC .

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, Wy. 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT

See Attached

From: 1-31-81 To: 2-6-81

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

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

SIGNED Mike E. Krugh by J. E. Oneal TITLE Drilling Supr. DATE 2-11-81

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

1-31-81	11,450	MADE 1' IN NUGGET FORMATION. ROP DROPPED. POH W/NAVA-DRILL. L/D NAVE-DRILL & DIAMOND BIT CHECK. PRESENTLY WASH & REAMING. NO TRIP GAS.
2-1-81	11,463'	MADE 13' IN NUGGET FORMATION. STUCK PIPE, JARS NOT WORKING. SPOT 65 BBLS DEISEL AND NO STICK. LET SOAK 3 HRS, JARS HIT 1ST TIME WORKED PIPE & FREE. DRLD TO 11,463'.
2-2-81	11,488'	MADE 25' IN NUGGET FORMATION. DRLG AHEAD.
2-3-81	11,506'	MADE 18' IN NUGGET FORMATION. DRILL AHEAD TO 11,500', LOST ALL THREE CONES OFF OF BIT.
2-4-81	11,528'	MADE 0' IN NUGGET FORMATION. RIH W/BOWEN FINGER TYPE JUNK BASKET, S.L.M. AND 20.61 CORRECTED DEPTH FROM 11,506 TO 11,528'. POH RECOVERED 1 BEARING RACE AND 1 PIECE OF METAL.
2-5-81	11,528'	MADE 0' IN NUGGET FORMATION. RIH W/BIT #63. TAG FISH AND WORK BOOT BASKET. POH. DUMP JUNK BASKET 2 HANDFULLS BEARINGS, BEARING RACES, BRASS FINGER OFF OF GLOBE BASKET. PICK UP MAGNET AND RIH.
2-6-81	11,528'	MADE 0' IN NUGGET FORMATION. RIH W/MAGNET, WORK MAGNET, RECOVERED 2 BEARING RACES & ASSORTED SHAVINGS. P/U NEW BHA & RIH.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, Wy. 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
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13. STATE
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14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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FRACTURE TREAT	☐	☐
SHOOT OR ACIDIZE	☐	☐
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PULL OR ALTER CASING	☐	☐
MULTIPLE COMPLETE	☐	☐
CHANGE ZONES	☐	☐
ABANDON*	☐	☐
(other) See below		

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

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

PROGRESS REPORT

See Attached

From: 1-24-81 To: 1-30-81

RECEIVED
FEB 13 1981
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED Mike E. Krugh by JEO. TITLE Drilling Supr. DATE 2-9-81

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

1-24-81 11,627' MADE 0' IN NUGGET FORMATION. MW 9.4, VIS 48. DRLD CMT. POH. LITH: SAME.

1-25-81 11,627' MADE 0' IN NUGGET FORMATION. MW 9.4, VIS 62. LAID CMT PLUG 11,627'-11,350' PU BHA & RIH.

1-26-81 11,627' MADE 0' IN NUGGET FORMATION. MW 9.5, VIS 51. DRILL CMT TO 11,369'. POH FOR NAVA-DRILL.

1-27-81 11,373' MADE 4' IN NUGGET FORMATION. MW 9.4, VIS 48. DYNA-DRLG. LITH: SAND RED-BROWN, FIRM, NO GAS.

1-28-81 11,393' MADE 20' IN NUGGET FORMATION. MW 9.5, VIS 53. DRILL AHEAD W/NAVA-DRILL, LITH: SAND RED-ORANGE & FIRM. CMT DECREASING TO 25% FROM 95% @ 11,390', NO GAS.

1-29-81 11,415' MADE 21' IN NUGGET FORMATION. MW 9.5, VIS 48. 11,402' INC 15.5° S60E, 11,415' INC 14.4° S62E. LITH: SS LT RED-BROWN, FIRM.

1-30-81 11,449' MADE 34' IN NUGGET FORMATION. MW 9.5, VIS 51. DRLG. 11,425' INC 14° S62E, 11,437' INC 13.4° S65E, 11,449' INC 12.7° S69E. LITH: LITE RED-BROWN W/SOME WHITE & FIRM. BGG: TRACE.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL ~~& 1,441'~~ FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 2-7-81 To: 2-13-81

RECEIVED
FEB 27 1981
DIVISION OF
OIL, GAS & MINING

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

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

SIGNED M E Kunz TITLE Drilling Supr DATE 2-20-81

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

2-7-81 11,538' MADE 10' IN NUGGET FORMATION. MW 9.5, VIS 50. PMP PRESS 1,300. TOTAL BHA 462.04'. WORK JUNK BASKET, DRILL AHEAD. PICK UP & REAM DOWN EVERY 2' DRLD. POH, PICK UP NAVA-DRILL & DIAMOND BIT & BHA. RIH. RECIEVED LOAD DIDN'T RECOVER ANY METAL IN JUNK SUB. LITH: SAME.

2-8-81 11,553' MADE 15' IN NUGGET FORMATION. MW 9.5, VIS 58. PMP PRESS 1,300, GPM 336, ANNULAR VELOCITY 184/126. DEV DEPTH 11,519' INC 13-1/2° S72E. TOTAL BHA 462.04'. RIH, MAKE UP JT FOR KELLY, RIG & RUN WL, ORIENT TOOLS & NAVA-DRILL AHEAD. SOME HOLE STICKING. BGG: TRACE.

2-9-81 11,573' MADE 20' IN NUGGET FORMATION. MW 9.5, VIS 54. PMP PRESS 1,350, GPM 325, ANNULAR VELOCITY 178/122. DEV DEPTH 11,538' 12.9° S72E. TOTAL BHA 462.04'. NAVA-DRILL AHEAD. DRLG BREAK 11,558'-11,566'. 30-50 MPF. LOST APPROX 40 BBLS MUD. PRESENTLY NO MUD LOSS. BGG: TRACE.

2-10-81 11,574' MADE 1' IN NUGGET FORMATION. MW 9.5, VIS 57. PMP PRESS 1,400, GPM 329, ANNULAR VELOCITY 180/124. TOTAL BHA 465.99'. NAVA-DRILL AHEAD. ROP DROPPED, ;TIGHT COMING OFF BTM. PULL WL & POH. CUT OFF DIAMOND BIT, L/D NAVA-DRILL, UP BHA. RIH (SLOW DUE TO WIND). WASH & REAM 90' TO WITHIN 60' OF BTM. WASH & REAM W/NO PROBLEMS.

2-11-81 11,580' MADE 6' IN NUGGET FORMATION. MW 9.5, VIS 51. PMP PRESS 1,400, GPM 329, ANNULAR VELOCITY 180/124. DEV DEPTH 11,560' INC 12° S72E. TOTAL BHA 464.21'. WASH & REAM 60' TO BTM. DRILL 6', CIRC, SHORT TRIP, CIRC, POH FOR DIAMOND BIT. L/D RWP & IBS & 6 PT RMR. UP BHA. STRAP ON BIT. RIH.

2-12-81 11,593' MADE 13' IN NUGGET FORMATION. MW 9.5, VIS 51. PMP PRESS 1,485, GPM 296, ANNULAR VELOCITY 162/111. DEV DEPTH 11,559' INC 12.6° S72E. TOTAL BHA 461.21'. RIH, BREAK CIRC, 18 STNDS OFF BTM. RIH, NO HOLE PROBLEMS. RUN WL, PACK OFF BAC, CHANGE PACK OFF. ORIENT TOOL, DRILL 11,580'-11,583' @ 1/2/FT PH, POSSIBLE UNDERGAGE HOLE. ROP INCREASED TO 2' PH AND DRLG AHEAD. BGG: TRACE, NO SHOWS.

2-13-81 11,630' MADE 37' IN NUGGET FORMATION. MW 9.5, VIS 58. PMP PRESS 1,650, GPM 310, ANNULAR VELOCITY 170/116. DEV DEPTH 11,596' INC 11.1° S73E. TOTAL BHA 464.21'. DRLG AHEAD, NO PROBLEMS. CHANGE OUT PROBE IN CONN @ 11,615', PROBE WAS BAD. CHANGE PACK OFF GLAND & DRLG AHEAD.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT
See Attached

From: 2-14-81 To: 2-20-81

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

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

SIGNED H. D. Guthrie TITLE Drilling Supr. DATE 3-10-81

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

2-14-81 11,649' MW 9.4, VIS 52. PMP PRESS 1,650, GPM 310. DEV DEPTH 11,615' INC 10.9° S70E. DRLD AHEAD 11,630'-11,649'. ROP DROPPED. PMPD HEAVY VIS MICA SOLTEX SWEEP UNABLE TO MAKE HOLE. PULL STEERING TOOL. POH W/DD.

2-15-81 11,652' MW 9.5, VIS 50. PMP PRESS 1,600, GPM 310. TOTAL BHA 464.19'. RIH TO BTM. WORK DD. MADE 3'. UNABLE TO DRILL AHEAD. POH TO CHANGE MUD MOTORS.

2-16-81 11,652' MW 9.5, VIS 55. PMP PRESS 1,100, GPM 330. TOTAL BHA 461.11'. FIN POH. RIH. WORK PIPE. RIH W/STEERING TOOL & ORIENT BIT. PULL STEERING TOOL. POH W/NAVI DRILL.

2-17-81 11,652' MW 9.7, VIS 52. PMP PRESS 1,250, GPM 340. TOTAL BHA 461.05'. FIN POH. LD DIAMOND BIT & MUD MOTOR. RIH W/BIT & BHA, UNABLE TO MAKE HOLE.

2-18-81 11,652' MW 9.8, VIS 50. PMP PRESS 1,500, GPM 347. TOTAL BHA 454.15'. FIN POH. CHGD BITS. RIH. POH TO 10-3/4" CSG SHOE FOR 2 HRS RIG REPARI. PRESENTLY RIH.

2-19-81 11,654' MW 9.7, VIS 56. PMP PRESS 1,500, GPM 328. DEV DEPTH 11,652' INC 10-1/4° S72E. TOTAL BHA 454.15'. FIN RIH DRILL 2', SHORT TRIP 15 STNDS. TRIP TO BTM W/NO PROBLEMS. CIRC BTMS UP, DROP SURV & POH.

2-20-81 11,654' MW 9.8, VIS 50. TOTAL BHA 470.89'. POH. TEST BOPE. EVERYTHING HELD OK, RIH W/32 STNDS, DOWN F/RIG REPAIR.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, Wy. 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT

See Attached

From: 2-21-81 To: 3-20-81

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

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

SIGNED Mike Krugh/HL TITLE Drilling Supr. DATE 3-27-81

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

2-21-81 11,654' MADE 0' IN NUGGET FORMATION. WASH & REAM, NO PROBLEMS. START POH FOR DIAMOND BIT & MUD MOTOR.

2-22-81 11,679' MADE 25' IN NUGGET FORMATION. FIN POH, LAY DOWN JARS & STABILIZATION, P/U NEW JARS, NAVI-DRILL, 1-1/2° BEND STUB, UBHO SUB, DIAMOND BIT, TIH, DRLG AHEAD NO PROBLEMS.

2-23-81 11,743' MADE 64' IN NUGGET FORMATION. NAVI-DRLG AHEAD, NO PROBLEMS.

2-24-81 11,750' MADE 7' IN NUGGET FORMATION. NAVI-DRLD TO 11,750'. WORKED TITE HOLE ON BTM. POH TO CSG SHOE, POH, L/D DIRECTIONAL BHA. MU PACKED BHA. RIH.

2-25-81 11,755' MADE 5' IN NUGGET FORMATION. BTM. SOME TITE HOLE @ 11,730'. DRLD 5' NEW HOLE TO 11,755'. POH 20 STDS FOR WIPER TRIP OK. POH.

2-26-81 11,755' MADE 0' IN NUGGET FORMATION. FIN POH. CHGD BIT & RIH. W/R 90' TO BTM OK. LOST 500 PSI PMP PRESS. PMPD SOFT LINE & POH. FOUND BTM RWP WASHED ON PIN. CHGD, RIH.

2-27-81 11,819' MADE 64' IN NUGGET FORMATION. CTN'D RIH, REAM 90' TO BTM. OK. DRLD 11,755'-11,780', 28 MIN/FT. 11,780'-11,819', 12 MIN/FT. PRESENTLY DRILLING AHEAD, NO PROBLEMS.

OTTER CREEK #1-21 WELL HISTORY

2-28-81 11,920' MADE 101' IN NUGGET FORMATION. DRLD AHEAD 11,909', SURV, DRLG AHEAD @ 15,000# WT ON BIT & RPM @ 68 BECAUSE BUILDING ANGLE.

3-1-81 11,993' MADE 73' IN NUGGET FORMATION. DRLD AHEAD W/12,000# ON BIT & 75 RPM.

3-2-81 12,047' MADE 54' IN NUGGET FORMATION. REMARKS: DRLG AHEAD. LITH: SS, MED RED TO

3-3-81 12,072' MADE 25' IN NUGGET FORMATION. REMARKS: PULL. DRLG AHEAD, ROTARY TABLE BROKE DOWN. POH, PREPARING TO CHANGE OUT.

3-4-81 12,072' MADE 0' IN NUGGET FORMATION. FIN INSPECT BHS, LD 2 SPIRAL DC'S, 1 RWP & 1 IBS FOR CRACKED PINES. REPLACED ROTARY TABLE. RIH W/BHA.

3-5-81 12,118' MADE 46' IN NUGGET FORMATION. CTN'D RIH, REAM 4 SINGLES TO BTM. HARD REAMING W/HIGH TORQUE. DRLD AHEAD.

3-6-81 12,192' MADE 74' IN NUGGET FORMATION. DRLG AHEAD.

OTTER CREEK #1-21 WELL HISTORY

3-7-81	12,249'	MADE 57' IN NUGGET FORMATION. MW 9.7, VIS 59. 12,235', 11-1/4° S41E. DRLG AHEAD. LITH: SS, LT RED TO BROWN, FIRM. BGG: 2 TO 3 UNITS C1.
3-8-71	12,299'	MADE 50' IN NUGGET FORMATION. MW 9.8, VIS 50. 12,299' INC 12-1/2° S37E. DRLG AHEAD, LITH: SS, LT RED TO BROWN, FIRM. BGG: 2 TO 3 UNITS C1, TOTAL GAS 1 UNIT C1.
3-9-81	12,299'	MADE 0' IN NUGGET FORMATION. MW 9.7, VIS 42. POH. STUCK PIPE 11 STNDS & 1 SINGLE OFF BTM. UNABLE TO MOVE PIPE.
3-10-81	12,299'	MADE 0' IN NUGGET FORMATION. MW 9.5, VIS 43. WORK STUCK PIPE.
3-11-81	12,299'	MADE 0' IN NUGGET FORMATION. MW 9.6, VIS 47. WORK STUCK PIPE.
3-12-81	12,299'	MADE 0' IN NUGGET FORMATION. MW 9.6, VIS 60. WORK STUCK PIPE.
3-13-81	12,299'	MADE 0' IN NUGGET FORMATION. MW 9.6, VIS 46. WORK STUCK PIPE. CAME PARTIALLY FREE.

OTTER CREEK #1-21 WELL HISTORY

3-14-81 12,299' MADE 0' IN NUGGET FORMATION. WORK STUCK PIPE, RAN DIALOG FREEPOINT. PARTIALLY FREE AT TOP OF IBS @ 10,685'. SOME STRETCH BUT NO TORQUE BELOW IBS. BACKED OFF KP 1 JT ABOVE DC'S. CHAIN OUT REC 14 JTS DP, TRIP IN & SCREW INTO FISH & JARRING. (TOP OF BACKOFF @ 10,246 DPM). LD 14 JTS DP FISH: 12 BENT JTS, 2 JTS W/PULLED THREADS.

3-15-81 12,299' MADE 0' IN NUGGET FORMATION. WORK STUCK PIPE. SPOT 60 BBSL, 50 BBLS DIESEL W/NO STICK & 10 BBLS MUD, CONE, 3 GAL/BBL, NO STICK. SPOTTED 30 BBLS AROUND BHA & LEFT 30 BBLS IN STRING. LET SET 3 HRS, MOVED 1 BBL/HR & JAR ON FISH. REC'D LOAD OF FUEL.

3-16-81 12,299' MADE 0' IN NUGGET FORMATION. JARRED ON FISH, NO MOVEMENT, RIG UP & RUN DIALOG FREEPOINT. STUCK AT IBS @ 10,685', BACKED OFF W/4 SHOTS, 1ST IN DP, 1 JT ABOVE FISH STRING, 2ND SHOT AT SCREW IN SUB, 3RD NO BACKOFF, 4TH AT TOP OF JARS. PRESENTLY ATTEMPTING TO SCREW IN AT JARS.

3-17-81 12,299' MADE 0' IN NUGGET FORMATION. TRY BACK OFF W/SHOT #5, BACK OFF 1 DC ABOVE JOHNSTON JARS, RAN FREEPOINT, STUCK @ TOP OF #6 DC, ABOVE TOP IBS @ 10,499', RIG UP & CIRC, HARD TO BREAK CIRC, 40 STKS @ 1,800 PSI, CIRC PRESS DROP OFF. WT UP MUD TO 9.7# & CIRC COND HOLE. SHALE COMING OVER SHAKER. HOLE CLEANED UP. PRESENTLY PULLING GOOSENECK TO RUN FREEPOINT.

3-18-81 12,299' MADE 0' IN NUGGET FORMATION. REMARKS: STUCK. RUN DIALOG FREEPOINT & BACKOFF @ 10,468'. PULL WL. DIALOG TOOL HUNG UP IN BLOCKS & PULLED OUT OF ROPE SOCKET. DIALOG TOOLS FELL INTO DP. POH DIALOG TOOLS FOUND HUNG UP IN JARS. RECOVERED 5 DC'S, EARTHQUAKER JARS & 1 JT OF DP. LD FISH. MAKE UP BHA & RIH TO SCREW INTO FISH @ 10,468'.

3-19-81 12,299' MADE 0' IN NUGGET FORMATION. REMARKS: STUCK. TRIP IN. CIRC 3 JTS TO TOP OF FISH. ATTEMPT TO SCREW INTO FISH UNSUCCESSFUL. COULD GO 20' BESIDE FISH, POH. PU SCREW IN SUB W/CUT LIP GUIDE. RIH. TAG TO OF FISH @ 10,468'. WOULD FALL OFF FISH WHEN TRYING TO SCREW IN. PRESENTLY POH.

3-20-81 12,299' MADE 0' IN NUGGET FORMATION. REMARKS: STUCK. FIN POH, P/U KICK SUB, TIH W/SAME SCREW-IN SUB, TAG FISH @ 10,468', ATTEMPT TO SCREW INTO FISH-UNSUCCESSFUL, RIG UP DIALOG, PRESENTLY ATTEMPTING TO PULL RESTRICTION PLUG.

State of Utah
Copy

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, Wy. 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

RECEIVED
APR 3 1981
DIVISION OF OIL, GAS & MINING

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.)*

PROGRESS REPORT

See Attached

From: 3-21-81 To: 3-27-81

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

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

SIGNED L.L. Guthrie TITLE Drilling Supr. DATE 4-1-81

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

3-21-81 12,299' MADE 0' IN NUGGET FORMATION. MW 9.8, VIS 50. STUCK. UNABLE TO SCREW INTO FISH. CIRC & COND HOLE, PREPARING TO POH.

3-22-81 12,299' MADE 0' IN NUGGET FORMATION. MW 9.8, VIS 51. STUCK. UNABLE SCREW INTO FISH.

3-23-81 12,299' MADE 0' IN NUGGET FORMATION. MW 9.7, VIS 52. FIN POH. WOO. CIRC & COND HOLE.

3-24-81 12,299' MADE 0' IN NUGGET FORMATION. MW 9.8, VIS 56. CIRC & COND HOLE. WORKED BUT UNABLE TO SCREW IN FISH.

3-25-81 12,299' MADE 0' IN NUGGET FORMATION. MW 9.8, VIS 52. POH. RU DIALOG & RIH W/CSG CALIPER TOOL & LOGGED F/10,250' - SURFACE RD DIALOG.

3-26-81 12,299' MADE 0' IN NUGGET FORMATION. MW 9.8, VIS 50. POH, PRESS TEST BOPE, CHOKE, MAN VALVES, PIPE & BLIND RAMS & KELLYCOCKS, ALL OK. RIH W/CMT PLUG CATCHER W/STINGER ON 5" DP.

3-27-81 12,299' MADE 0' IN NUGGET FORMATION. MW 9.6, VIS 65. CIRC & COND HOLE, WORKING PIPE.

Form 9-331
Dec. 1973

Form Approved.
Budget Bureau No. 42-R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P.O. Box 2659, Casper, Wy. 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.) 1,313' FWL & 1,441' FEL
AT SURFACE:
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30023

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

PROGRESS REPORT

See Attached

From: 3-28-81 To: 4-10-81

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

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

SIGNED [signature] TITLE Drilling Supr. DATE 4-16-81

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

OTTER CREEK #1-21 WELL HISTORY

3-28-81 12,299' MADE 0' IN NUGGET FORMATION. MW 9.6, VIS 42. BIT NO 71, 9-1/2", HTC, J3, JETS OPEN. REMARKS: TIH TO TAG CMT PLUG. TOTAL BHA 405.35'. CIRC & COND HOLE, R/U HOWCO, CMT FROM 10,468'-10,206' W/10 BBLS SAM-5 MUD FLUSH, FOLLOWED BY 5 BW & 170 SKS CLASS "G" W/.75% CFR-2 AND 0.10% HR-5, (15.8 PPG), FOLLOWED BY 5 BW, DISPLACED W/MUD, PLUG DID NOT BUMP, PULLED UP TO 10.050', REVERSED CIRC, HAD CLABBERED MUD RETURNS, POH, PRESENTLY TIH W/BIT TO TAG PLUG.

3-29-81 12,299' MADE 0' IN NUGGET FORMATION. MW 9.2, VIS 48. TOTAL BHA 31.90'. FIN TIH W/BIT, TAG CMT STRINGERS, 10,340'-10,350', SET DOWN W/15,000# & CIRC @ 10,350' (EST. TOC), POH, TIH W/CUT OFF JT OF OPEN-ENDED DP & PLUG CATCHER, SET DOWN @ 10,459', NO EVIDENCE OF CMT, CIRC BTMS UP & GOT GREEN CMT & CLABBERED MUD OVER SHAKER, RIG UP HOWCO, PMPD 15 BBLS "SAM-5" MUD FLUSH, 5 BW, 350 SKS OF CLASS "G" W/0.75% CFR-2, 0.1% HR-5, (16.0 PPG SLURRY-MIXING WTR 74°F), 5 BW, DISPLACED W/MUD, BMPD PLUG W/500 PSI, PULLED 13 STDS, SHEARED TOOL W/2,750 PSI, PRESENTLY CIRC $ WOC. (CMT IN PLACE @ 2:45 AM 3-29-81).

3-30-81 12,299' MADE 0' IN NUGGET FORMATION. MW 9.4, VIS 43. BIT NO 71 RR, 9-1/2", HTC, J3, JETS OPEN. TOTAL BHA 405.35'. CIRC & COND MUD & WOC, POH, RIH W/BIT, TAG CMT @ 10,334', DRLD W/5,000# TO 10,339', SET 30,000# ON BIT. PRESENTLY CIRC OUT HARD CMT TOP @ 10,339'.

3-31-81 12,299' MADE 0' IN NUGGET FORMATION. MW 9.1, VIS 46. BIT NO 71 RR, 9-1/2", HTC, J-3, JETS OPEN. TOTAL BHA 31.90'. CIRC OUT DRLD CMT. POH. PU PLUG CATCHER & RIH, RU HOWCO. PMPD 10 BBLS SAM 5 SPACER FOLLOWED BY 5 BW. PMPD 200 SKS CLASS "G" CMT W/.75% CFR-2 W/1.4# FLOCELLE. FOLLOWED BY 5 BW, DISPLACED WMUD, BMPD PLUG W/800 PSI. CIP @ 8:18 PM, PULLED 6 STDS, SHEARED TOOL W/2,700 PSI. CIRC & WOC. POH.

4-1-81 10,020' PBTD. MADE 0' IN NUGGET FORMATION. MW 8.6, VIS 36. BIT NO 71 RR, 9-1/2", HTC, J-3, JETS OPEN, DRILLED 20' CMT. POH, RIH W/BIT, TAG CMT @ 10,000', DRLD 20' CMT W/5,000# LIT WT, FIRM CMT, SET 15,000# ON BIT. TOP OF CMT PLUG 10,020'. CIRC & COND MUD, BRINGING MUD WT BACK TO 8.6 PPG. PRESENTLY POH.

4-2-81 10,020' PBTD. MADE 0' IN NUGGET FORMATION. MW 8.5, VIS 32. BIT NO RR 71, 9-1/2", HTC, J-3, JETS OPEN, 20 FT, COND 2-E-I. REMARKS: DRILL CMT. POH, CHECK BOP;S, RIG & RUN SCHLUMBERGER CMT BOND LOG, CMT TOP 7,050'. PRESENTLY RUNNING VELOCITY SURVEYS, SLM NO CORRECTION.

4-3-81 10,020' PBTD. MADE 0' IN NUGGET FORMATION. MW 8.6, VIS 34. TOTAL BHA 448.05'. RUN BIRDWELL VEL SURV. PERF W/SOS F/8,690'-8,712' 2 SHOT/FT. PU DST TOOLS. PKR SEAT @ 8,650'. PRESENTLY RUNNING DST #3.

OTTER CREEK #1-21 WELL HISTORY

4-4-81 12,299' MADE 0' IN NUGGET FORMATION. MW 8.6, PMP PRESS 350. RUN DST #3, 1/2 HR IF, 1 ISI, 1-1/2 FSI, NO FLUIDS OR GAS TO SURFACE. RECOVERY 3,380' OF 8.6 MUD, BTM SAMPLE SALT WATERCUT. SAMPLE CHAMBER 1,500 CC SALT WTR 25,000 PPM. IF 570 TO 2,889 PSI, ISI 3,393 PSI, FF 3,020 TO 3,415 PSI FSI 3,415 PSI. HYDROSTATIC 3,919 PSI. REV OUT & POH. PU CMT RTNR. RIH ON DP & SET RTNR @ 8,600'. RU BJ TO CMT 100' PLUG W/CLASS G.

4-5-81 12,299' MADE 0' IN NUGGET FORMATION. MW 8.5, PMP PRESS 100. CIRC & SET RTNR 8,600'. BH LAID 100 SK PLUG W/.1% R5, .75% D-31 ON TOP RTNR. REV CIRC & POH. TOP OF CMT PLUG @ 8,450'. PERF 4,700'-4,705' 2 SHOT/FT W/SCHL WL. CUT DRL LINE, PU HOWCO EASY RTNR & RIH ON DP. SET RTNR @ 4,648' & CIRC AROUND 10-3/4" CSG. RU BJ TO CMT.

4-6-81 12,299' MADE 0' IN NUGGET FORMATION. MW 8.5, CMTED 10-3/4" CSG THRU HOWCO RTNR @ 4,648' W/1,700 SK CLASS "G" W/.2% R-5, GOOD CMT RETURNS TO SURFACE AT END OF JOB. FULL RETURNS THROUGHOUT JOB. PULL OUT OF RTNR. REV OUT & POH. CIP @ 10:30 AM 4-5-81. PRESENTLY WOC.

4-7-81 12,299' MADE 0' IN NUGGET FORMATION. TOTAL BHA 448.05'. WOC, PERF W/SCHL 4,468'-4,484' 2 SHOTS/FT. PU HOWCO DST EQUIP & RIH. SET PKR @ 4,424'.

4-8-81 12,299' MADE 0' IN NUGGET FORMATION. MW 8.5, DST #4, IF 1/2, ISI 1, FF 2, FSI 4 HRS. NO FLUID OR GAS TO SURF, REV OUT, RECOVERY 1,126' FRESH WATER CUT MUD. POH, SAMPLE CHAMBER HAD 1,500 CC FRESH WTR. TRIP IN & SET EZ DRILL RTNR ON DP @ 4,303'. POH, RU SCHL, PERF 3,665'-3,702', 3,525'-3,560', 2 SHOTS/FT IN TOTAL OF 6 RUNS. SCHL LATE ON ARRIVAL & 2 MISRUNS ON GUNS.

4-9-81 12,299' MADE 0' IN NUGGET FORMATION. TOTAL BHA 448.05'. RIH W/DST EQUIP. UNABLE TO SET PKR. POH, WO NEW PKR. RIH W/DST EQUIP. WO DAYLITE, RUNNING DST #5, DET PKR @ 3,475', OPEN TOOL, PRESETNLY RUNNING INITIAL FLOW. NO FLUIDS TO SURF. SOME BLOW IN BUBBLE BUCKET. 7 PSI BUILDUP AFTER 30 MINS.

4-10-81 12,299' MADE 0' IN NUGGET FORMATION. CTN'D RUN DST #5, IF 1/2, ISI 1, FF-2, FSI 4 HRS. REV OUT REC'D 2,600' WTR CUT MUD 8.5 PPG. POH, SAMPLE CHAMBER 2,100 CC OF WTR CUT MUD 2,100 PPM, PRESS: IF 173-208 PSI, ISI 1,082-1,095, FF 862-1,095 PSI, FSI 1,100-1,114 PSI, HYD 1,548 PSI. RIH W/EZ DRILL RTNR, SET @ 3,300', RU HOWCO, PLACED 50' CMT PLUG 3,300-3,250 W/26 SKS "G" CMT W/.1% HR-5 &3/4% CFR-2. REV OUT, LD 200' PLUG 2,594'-2,394' W/104 SK SAME CMT, REV OUT RD HOWCO, RU LD AMCHINE, POH LD DP.

JS—165

RECEIVED
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OIL, GAS & MINING

JOHNSTON

Schlumberger

computerized data analysis

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OIL, GAS & MINING

FIELD REPORT # 31531 D

COMPANY MARATHON OIL COMPANY WELL OTTER CREEK #1-21 TEST NO. 2 COUNTY RICH STATE UTAH

JS-166

JOHNSTON
Schlumberger

COMPUTERIZED DATA ANALYSIS

JANUARY 7, 1981

GENTLEMEN:

THE ENCLOSED TEST APPEARS TO BE A GOOD MECHANICAL DRILL STEM TEST DURING WHICH THE TOOLS DID FUNCTION PROPERLY. THE FORMATION DID PRODUCE ENOUGH RESERVOIR FLUID FOR PROPER IDENTIFICATION. RESERVOIR PRESSURE DRAWDOWN WAS SUFFICIENT AND ADEQUATE SHUT-IN BUILD-UPS DID OCCUR FOR RELIABLE QUANTITATIVE ANALYSIS. RESERVOIR PARAMETERS WERE CALCULATED BY THE HORNER METHOD.

1. FLOW RATE: A FLOW RATE OF 122 BBLS/DAY OF SALT WATER AND A SMALL AMOUNT OF GAS WAS NOTED DURING THIS TEST.

2. RESERVOIR PRESSURE: EXTRAPOLATION OF THE INITIAL SHUT-IN PRESSURE BUILD-UP INDICATES A MAXIMUM RESERVOIR PRESSURE OF 4488 P.S.I.G. AT RECORDER DEPTH. EXTRAPOLATION OF THE FINAL SHUT-IN PRESSURE BUILD-UP INDICATES A MAXIMUM RESERVOIR PRESSURE OF 4486 P.S.I.G. AT RECORDER DEPTH. THE DIFFERENCE BETWEEN THE INITIAL AND FINAL SHUT-IN PRESSURE OF 2 P.S.I.G. IS INSIGNIFICANT.

3. PERMEABILITY: THE CALCULATED TRANSMISSIBILITY FACTOR OF 17.31 MD.-FT./CP. INDICATES AN AVERAGE EFFECTIVE PERMEABILITY TO WATER OF 1.04 MD. FOR THE REPORTED 10 FOOT NET INTERVAL. THE CALCULATIONS WERE BASED ON A SLOPE OF 1161 P.S.I./LOG CYCLE OBTAINED FROM THE FINAL SHUT-IN BUILD-UP PLOT. IT WAS ASSUMED FOR THESE CALCULATIONS: (A) VISCOSITY 0.6 CP., (B) FORMATION VOLUME FACTOR 1.013 BBL/BBL. THESE FIGURES WERE OBTAINED FROM THE AVAILABLE TECHNICAL LITERATURE.

4. WELLBORE DAMAGE: THE CALCULATED DAMAGE RATIO OF 0.723 INDICATES THAT NO WELLBORE DAMAGE IS PRESENT AT THE TIME AND CONDITIONS OF THIS TEST.

5. RADIUS OF INVESTIGATION: THE CALCULATED RADIUS OF INVESTIGATION OF THIS TEST IS 68 FEET BASED ON AN ASSUMED POROSITY OF 30%, COMPRESSIBILITY OF 3.25×10^{-6}, AND OTHER ASSUMPTIONS MADE IN NUMBER 3 ABOVE.

6. GENERAL COMMENTS: THE FORMATION EXHIBITS THE CHARACTERISTICS OF RELATIVELY LOW PERMEABILITY EFFECTIVE TO THE RESERVOIR FLUID AND INDICATES THE ABSENCE OF WELLBORE DAMAGE. AN ANOMALY WAS NOTED DURING THE FINAL SHUT-IN WHICH MAY BE DUE TO DECREASE IN TRANSMISSIBILITY AWAY FROM THE WELLBORE.

P.K. Suresh
P.K. SURESH
RESERVOIR EVALUATION
DEPARTMENT

MARATHON OIL COMPANY
OTTER CREEK #1-21; RICH COUNTY,
UTAH; TEST #2; 10705; TO 10835'
LOCATION: SEC. 21 - T12N - R6E

FIELD REPORT # 31531 D

In making any interpretation, our employees will give Customer the benefit of their best judgment as to the correct interpretation. Nevertheless, since all interpretations are opinions based on inferences from electrical, mechanical or other measurements, we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not be liable or responsible, except in the case of gross or wilful negligence on our part, for any loss, costs, damages or expenses incurred or sustained by Customer resulting from any interpretation made by any of our agents or employees.

Reservoir Engineering Data

JOHNSTON

Recorder No. J-1196

Field Report No. 31531 D

Damage Ratio	DR	0.723		Effective Transmissibility WATER	$\frac{Kh}{\mu B}$	17.31	$\frac{Md\text{-}ft.}{Cp.}$
Maximum Reservoir Pressure INITIAL SHUT-IN	P_o	4488	P.S.I.G.	Effective Transmissability	$\frac{Kh}{\mu B}$	–	$\frac{Md\text{-}ft.}{Cp.}$
Slope of Shut-in Curve FINAL SHUT-IN	M	1161	PSI/log cycle	Flow Rate (WATER)	Q	122	Bbl./day
Potentiometric Surface (Datum Plane, Sea Level)	PS	–	ft.	Pressure Gradient		0.419	PSI/ft.
Productivity Index	PI	–	Bbl./day/PSI	Gas Oil Ratio	GOR	–	CF/Bbl.
Radius of Investigation		68	ft.	K (Effective to WATER)		1.04	Md.

Assumptions made for Calculations for Liquid Recoveries

1. Q is averaged at a constant rate.
2. P_f is formation flowing pressure at a constant rate.
3. Formation flow is taken as single phase flow.
   If gas is produced at surface, phase separation is assumed to have occurred in drill pipe.
4. Radial flow is assumed.
5. For the purpose of calculating EDR where specific reservoir parameters are not available it is assumed that:

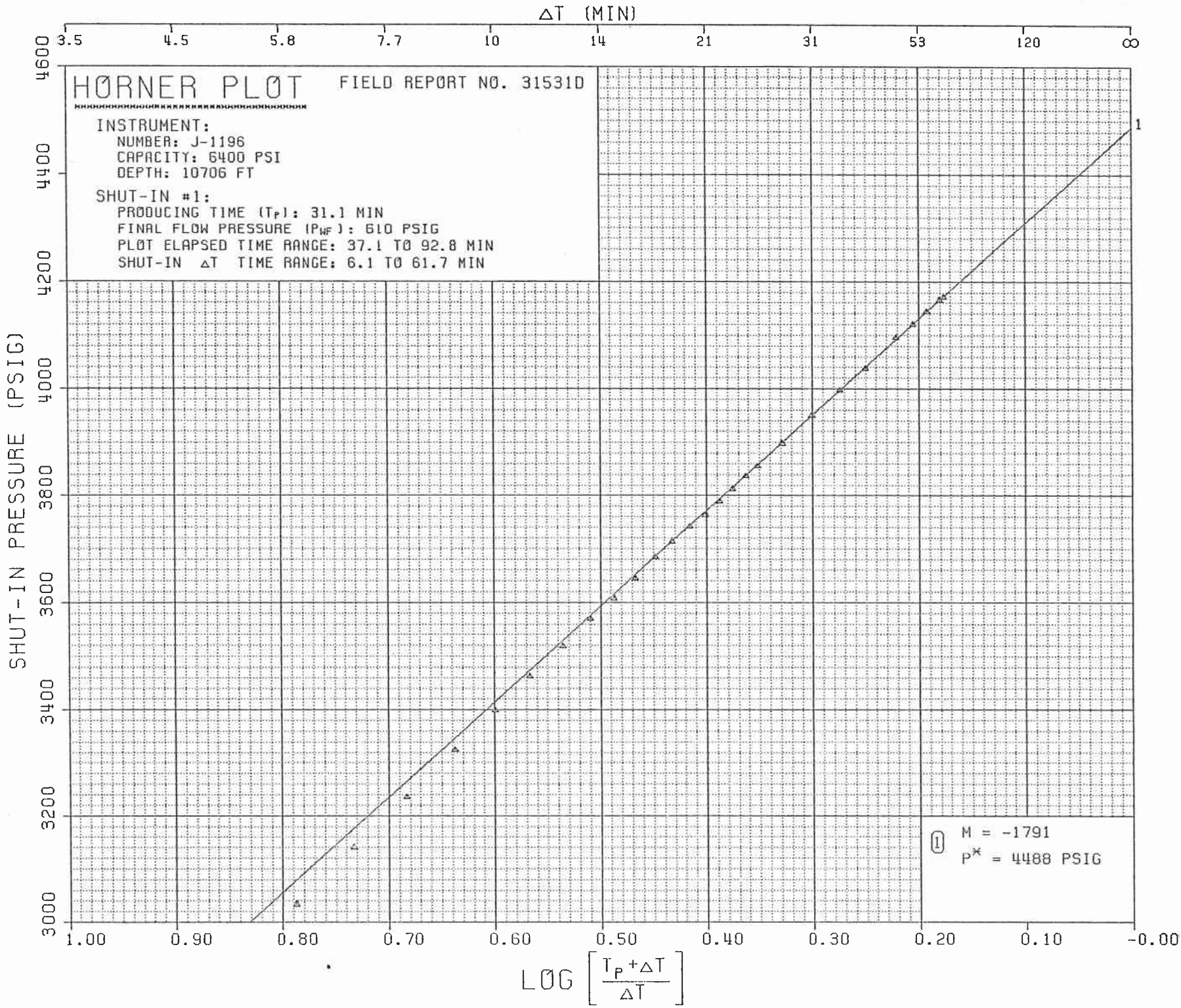
Effective permeability, K, will fall between	1 to 200 md
Formation porosity, ϕ, will fall between	0.1 to 0.3
Fluid compressibility, c, will fall between	10^{-6} to 10^{-4}
Fluid viscosity, μ, will fall between	0.05 to 50 cp.
Well bore radius, r_w, will fall between	$3\frac{7}{8}$" to $4\frac{3}{4}$"
Which gives an average value for the function $\log \frac{K}{\phi \mu c r_w^2}$ of	5.5

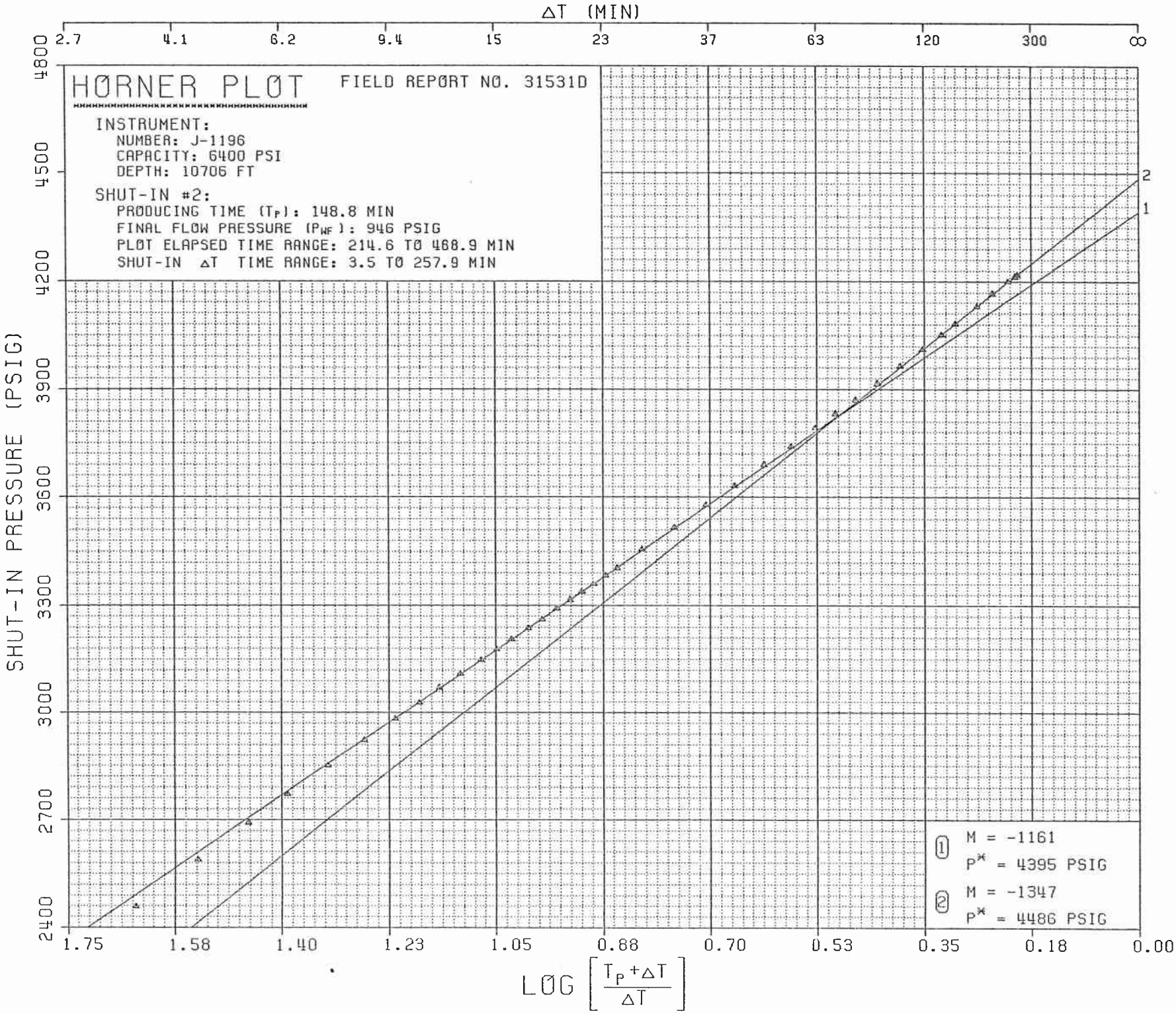
6. Other standard radial flow, equilibrium assumptions.

Empirical Equations:

1. $EDR = \frac{P_o - P_f}{M(\log T + 2.65)}$ where $M = \frac{P_1 - P_{10}}{\text{Log Cycle}}$
2. Transmissibility $\frac{Kh}{\mu\beta} = \frac{162.6\ Q}{M}$
3. DST $J = \frac{Q}{P_o - P_f}$ Theoretical $J = \frac{7.08 \times 10^{-3}\ Kh}{\mu\beta \ln (r_e/r_w)}$ Assumed $\ln (r_e/r_w) = 7.60$
4. P.S. = [$P_o \times 2.309$ ft./PSI] – [Recorder depth to sea level.]
5. Radius of investigation, $r_i \approx \sqrt{\frac{Kt}{40\phi\mu c}}$ where t = time in days

In making any interpretation, our employees will give Customer the benefit of their best judgment as to the correct interpretation. Nevertheless, since all interpretations are opinions based on inferences from electrical, mechanical or other measurements, we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not be liable or responsible, except in the case of gross or wilful negligence on our part, for any loss, costs, damages or expenses incurred or sustained by Customer resulting from any interpretation made by any of our agents or employees.


ΔT (MIN)
3.5
4.5
5.8
7.7
10
14
21
31
53
120
∞
HØRNER PLØT
FIELD REPØRT NØ. 31531D
INSTRUMENT:
NUMBER: J-1196
CAPACITY: 6400 PSI
DEPTH: 10706 FT
SHUT-IN #1:
PRODUCING TIME (Tp): 31.1 MIN
FINAL FLOW PRESSURE (PWF): 610 PSIG
PLØT ELAPSED TIME RANGE: 37.1 TØ 92.8 MIN
SHUT-IN ΔT TIME RANGE: 6.1 TØ 61.7 MIN
1
M = -1791
P* = 4488 PSIG
SHUT-IN PRESSURE (PSIG)
4600
4400
4200
4000
3800
3600
3400
3200
3000
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
-0.00
LØG [Tp+ΔT / ΔT]


HØRNER PLØT
FIELD REPØRT NØ. 31531D
INSTRUMENT:
NUMBER: J-1196
CAPACITY: 6400 PSI
DEPTH: 10706 FT
SHUT-IN #2:
PRODUCING TIME (T_P): 148.8 MIN
FINAL FLOW PRESSURE (P_{WF}): 946 PSIG
PLØT ELAPSED TIME RANGE: 214.6 TØ 468.9 MIN
SHUT-IN ΔT TIME RANGE: 3.5 TØ 257.9 MIN
ΔT (MIN)
2.7
4.1
6.2
9.4
15
23
37
63
120
300
∞
SHUT-IN PRESSURE (PSIG)
4800
4500
4200
3900
3600
3300
3000
2700
2400
1.75
1.58
1.40
1.23
1.05
0.88
0.70
0.53
0.35
0.18
0.00
LØG $\left[\frac{T_P+\Delta T}{\Delta T}\right]$
1
2
1 M = -1161
P* = 4395 PSIG
2 M = -1347
P* = 4486 PSIG

FIELD REPORT NO. 31531D

INSTRUMENT:

NUMBER: J-1196

CAPACITY: 6400 PSI

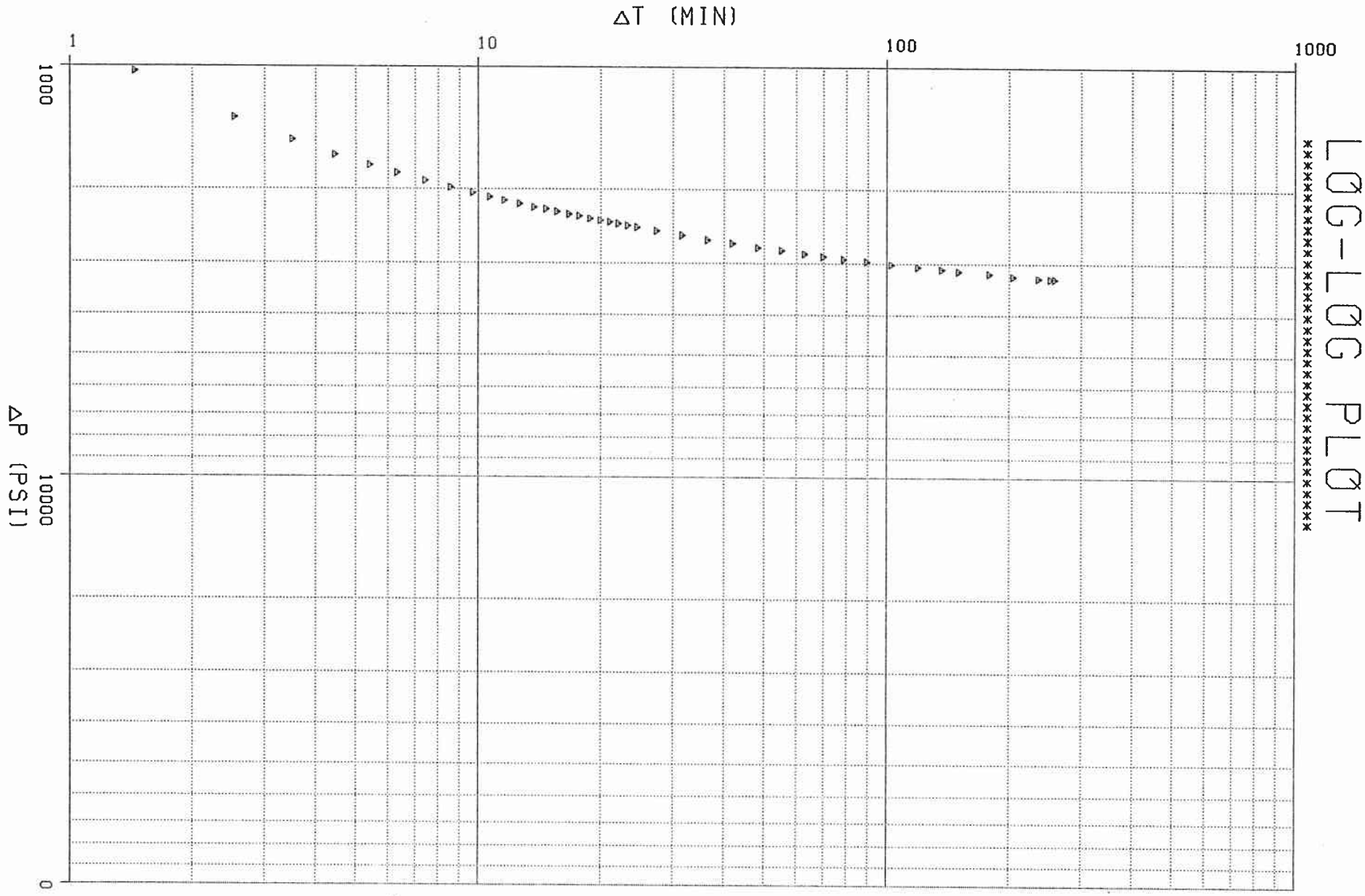
DEPTH: 10706 FT

SHUT-IN #2:

FINAL FLOW PRESSURE (P_{WF}): 946 PSIG

PLOT ELAPSED TIME RANGE: 212.5 TO 468.9 MIN

SHUT-IN ΔT TIME RANGE: 1.4 TO 257.9 MIN



WELL IDENTIFICATION

COMPANY:	MARATHON OIL COMPANY P.O. BOX 428 CASPER, WYOMING 826Ø2	CUSTOMER:	SAME
WELL:	OTTER CREEK #1-21	LOCATION:	SEC. 21 - T12N - R6E
TEST INTERVAL:	1Ø7Ø5' TO 1Ø835'	FIELD:	WILD CAT
TEST NO:	2	TEST DATE:	12-26-8Ø
COUNTY:	RICH	STATE:	UTAH
TECHNICIAN:	WOLDOW (CASPER)	TEST APPROVED BY:	-

EQUIPMENT AND HOLE DATA

TEST TYPE:	M.F.E. OPEN HOLE		DRILL PIPE LENGTH:	1Ø326	FT.
			DRILL PIPE I.D.:	4.276	IN.
ELEVATION:	-	FT.	DRILL COLLAR LENGTH:	342	FT.
TOTAL DEPTH:	1Ø835	FT.	DRILL COLLAR I.D.:	2.25	IN.
MAIN HOLE/CASING SIZE:	9 1/2	IN.	PACKER DEPTHS:	1Ø7Ø1 & 1Ø7Ø5	FT.
RAT HOLE/LINER SIZE:	-	IN.		&	FT.
FORMATION TESTED:	NUGGET			&	FT.
NET PROD. INTERVAL:	1Ø	FT.	DEPTHS REF. TO:	KELLY BUSHING	
POROSITY:	3Ø	%			

TEST TOOL CHAMBER DATA

SAMPLER PRESSURE:		PSIG
RECOVERED OIL GRAVITY:	API @	DEG. F.
RECOVERY GOR:		FT3/BBL.

SAMPLE CHAMBER CONTENTS

FLUID		VOLUME	RESIST. (OHM-M)	MEAS. TEMP. (DEG F.)	CHLOR. (PPM)
GAS:		FT.3			
OIL:		CC			
WATER: (SALT WATER)	-	CC	.10	62	
MUD:		CC			
FILTRATE:					
TOTAL LIQUID:	-	CC			

MUD DATA

TYPE:	LIGHTLY TREATED	
WEIGHT:	9.7	LB/GAL.
VISCOSITY:	55	SEC.
WATER LOSS:	7.2	CC

FLUID	RESIST (OHM-M)	TEMP (DEG F)	CHLOR (PPM)
MUD:	-	-	
FILTRATE:	-	-	525

REMARKS

NO. OF REPORTS REQUESTED: 18 (11X)

FIELD REPORT NO. 31531D

SURFACE INFORMATION

DESCRIPTION(RATE OF FLOW)	TIME	PRESSURE PSIG	SURFACE CHOKE
SET PACKER (12-26-80)	0952	-	1/8"
OPENED TOOL	0953	-	"
BLOW, 2 1/2" IN WATER	1003	-	"
BLOW, 6" IN WATER	1013	-	"
CLOSED FOR INITIAL SHUT-IN	1023	-	"
BLOW, 8" IN WATER			
FINISHED SHUT-IN	1125	-	"
RE-OPENED TOOL	1126	-	"
BLOW, 8" IN WATER			
BLOW 10" IN WATER	1131	-	"
BLOW, 12" IN WATER	1136	-	"
BLOW, 12" IN WATER	1146	-	"
BLOW, 12" IN WATER	1156	-	"
BLOW, 12 1/2" IN WATER	1206	-	"
BLOW, 13" IN WATER	1216	-	"
BLOW, 15" IN WATER	1226	-	"
BLOW, 16" IN WATER	1236	-	"
BLOW, 17" IN WATER	1246	-	"
BLOW, 18" IN WATER	1256	-	"
BLOW, 19" IN WATER	1306	-	"
BLOW, 20" IN WATER	1316	-	"
CLOSED FOR FINAL SHUT-IN	1325	-	"
BLOW, 21" IN WATER			
FINISHED SHUT-IN	1742	-	"
PULLED PACKER LOOSE	1744	-	"
STARTED REVERSING (12-27-80)	0800	-	"
FINISHED REVERSING	0900	-	"

CUSHION TYPE: WATER 1000 FT - PSIG | 15/16 IN. BOTTOM CHOKE

RECOVERY INFORMATION

RECOVERY	FEET	BARRELS	%OIL	%WATER	%OTHERS	API GRAV.	DEG.	RESIST	DEG.	CHL PPM
WATER CUSHION	1000	17.8								
SALT WATER	955	12.6								

	RESIST	DEG.
TOP SAMPLE	1.16	60
MIDDLE SAMPLE	.36	62
BOTTOM SAMPLE (THICK MUD-TOO THICK TO MEASURE)		

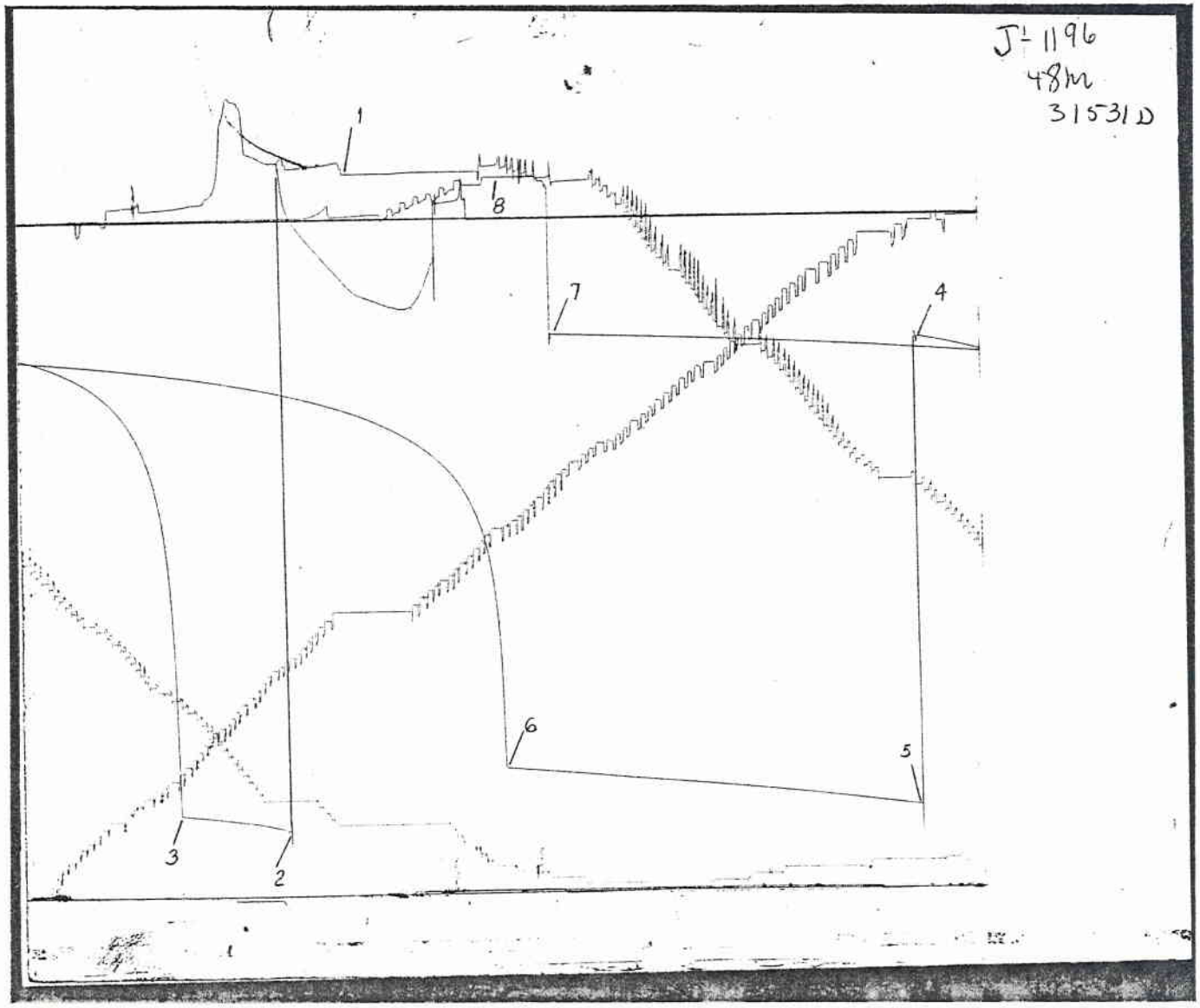
FIELD REPORT NO.: 31531 D

CAPACITY: 6400#

INSTRUMENT NO.: J-1196

NUMBER OF REPORTS: 18+

JOHNSTON
Schlumberger



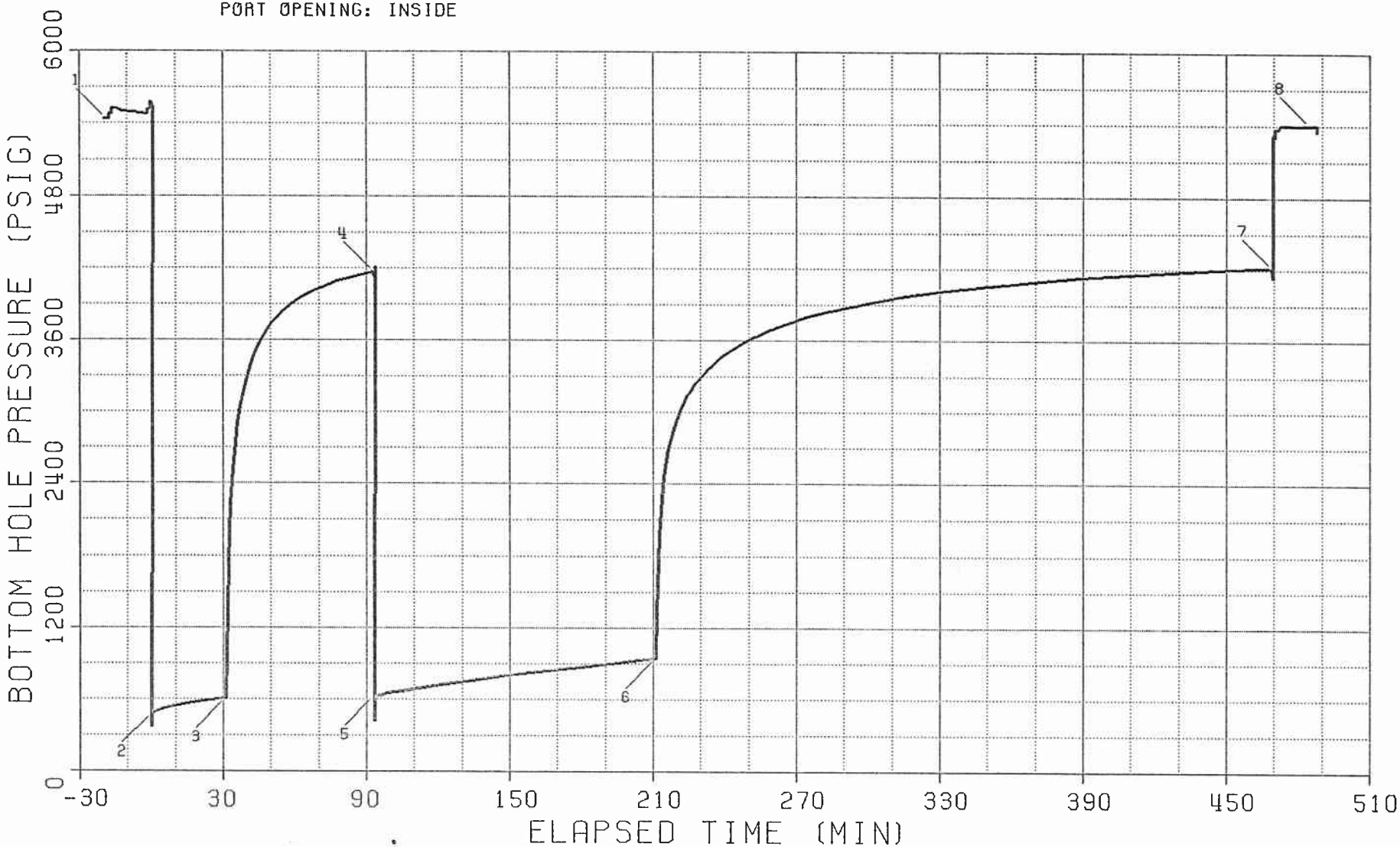
JS—167

PRESSURE LOG

FIELD REPORT NO. 31531D

INSTRUMENT:

NUMBER: J-1196
CAPACITY: 6400 PSI
DEPTH: 10706 FT
PORT OPENING: INSIDE



BOTTOM HOLE PRESSURE AND TIME DATA

INSTRUMENT NO.: J-1196 CAPACITY (PSI): 6400 DEPTH (FT): 10706
PORT OPENING: INSIDE BOTTOM HOLE TEMP (F): 150 (READ AT)

EXPLANATION	LABELED POINT	PRESSURE (PSIG)	ELAPSED TIME (MIN)
HYDROSTATIC MUD	1	5435	-18.8
START FLOW	2	486	0.0
END FLOW & START SHUT-IN	3	610	31.1
END SHUT-IN	4	4170	92.8
START FLOW	5	631	93.3
END FLOW & START SHUT-IN	6	946	211.1
END SHUT-IN	7	4219	468.9
HYDROSTATIC MUD	8	5401	484.7

* SUMMARY OF FLOW PERIODS *

FLOW PERIOD	ELAPSED TIME AT START (MIN)	ELAPSED TIME AT END (MIN)	DURATION OF FLOW (MIN)	PRESSURE AT START (PSIG)	PRESSURE AT END (PSIG)
1	0.0	31.1	31.1	486	610
2	93.3	211.1	117.7	631	946

* SUMMARY OF SHUT-IN PERIODS *

SHUT-IN PERIOD	ELAPSED TIME AT START (MIN)	ELAPSED TIME AT END (MIN)	DURATION OF SHUT-IN (MIN)	PRESSURE AT START (PSIG)	PRESSURE AT END (PSIG)	FINAL FLOW PRESSURE (PSIG)	PRODUCING TIME (MIN)
1	31.1	92.8	61.7	610	4170	610	31.1
2	211.1	468.9	257.9	946	4219	946	148.8

FIELD REPORT NO. 31531D
INSTRUMENT NO. J-1196

TEST PHASE : FLOW PERIOD # 1
****

ELAPSED TIME (MIN)	DELTA TIME (MIN)	FLOWING PRESSURE (PSIG)
0.0	0.0	486
5.0	5.0	519
10.0	10.0	545
15.0	15.0	563
20.0	20.0	579
25.0	25.0	593
30.0	30.0	607
31.1	31.1	610

TEST PHASE : SHUT-IN PERIOD # 1
****

1. FINAL FLOW PRESSURE ["P_{WF}"] = 610 PSIG
2. PRODUCING TIME ["T_P"] = 31.1 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
31.1	0.0	610		0
32.1	1.0	1523	1.506	913
33.1	2.0	2161	1.218	1551
34.1	3.0	2522	1.055	1913
35.1	4.0	2726	0.943	2116
36.1	5.0	2905	0.858	2295
37.1	6.0	3027	0.791	2417
38.1	7.0	3134	0.735	2525
39.1	8.0	3224	0.689	2614
40.1	9.0	3302	0.648	2692
41.1	10.0	3370	0.613	2761
43.1	12.0	3483	0.555	2873
45.1	14.0	3573	0.508	2963
47.1	16.0	3642	0.469	3032
49.1	18.0	3707	0.435	3098
51.1	20.0	3755	0.407	3145
53.1	22.0	3800	0.382	3190
55.1	24.0	3841	0.361	3232
57.1	26.0	3875	0.341	3265
59.1	28.0	3906	0.324	3297
61.1	30.0	3934	0.309	3325
66.1	35.0	3994	0.276	3384
71.1	40.0	4040	0.250	3430
76.1	45.0	4082	0.228	3472
81.1	50.0	4113	0.210	3504
86.1	55.0	4140	0.194	3530

FIELD REPORT NO. 31531D
INSTRUMENT NO. J-1196

TEST PHASE : SHUT-IN PERIOD # 1
****

1. FINAL FLOW PRESSURE ["P_{WF}"] = 610 PSIG
2. PRODUCING TIME ["T_P"] = 31.1 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
91.1	60.0	4164	0.181	3554
92.8	61.7	4170	0.177	3561

TEST PHASE : FLOW PERIOD # 2
****

ELAPSED TIME (MIN)	DELTA TIME (MIN)	FLOWING PRESSURE (PSIG)
93.3	0.0	631
98.3	5.0	648
103.3	10.0	665
108.3	15.0	682
113.3	20.0	698
118.3	25.0	713
123.3	30.0	729
128.3	35.0	743
133.3	40.0	758
138.3	45.0	771
143.3	50.0	784
148.3	55.0	797
153.3	60.0	810
158.3	65.0	822
163.3	70.0	833
168.3	75.0	844
173.3	80.0	856
178.3	85.0	868
183.3	90.0	881
188.3	95.0	893
193.3	100.0	905
198.3	105.0	917
203.3	110.0	929
208.3	115.0	939
211.1	117.7	946

FIELD REPORT NO. 31531D
INSTRUMENT NO. J-1196

TEST PHASE : SHUT-IN PERIOD # 2
****

1. FINAL FLOW PRESSURE ["P_{WF}"] = 946 PSIG
2. PRODUCING TIME ["T_P"] = 148.8 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
211.1	Ø.Ø	946		Ø
212.1	1.Ø	168Ø	2.175	734
213.1	2.Ø	2132	1.877	1187
214.1	3.Ø	2369	1.7Ø4	1423
215.1	4.Ø	2529	1.582	1583
216.1	5.Ø	2648	1.488	17Ø3
217.1	6.Ø	2744	1.412	1798
218.1	7.Ø	2822	1.347	1877
219.1	8.Ø	2889	1.292	1944
22Ø.1	9.Ø	2948	1.244	2ØØ2
221.1	1Ø.Ø	3ØØØ	1.2Ø1	2Ø54
223.1	12.Ø	3Ø88	1.127	2142
225.1	14.Ø	3158	1.Ø65	2213
227.1	16.Ø	3219	1.Ø13	2274
229.1	18.Ø	3271	Ø.967	2325
231.1	2Ø.Ø	3319	Ø.926	2374
233.1	22.Ø	3361	Ø.89Ø	2415
235.1	24.Ø	3399	Ø.857	2453
237.1	26.Ø	3434	Ø.828	2488
239.1	28.Ø	3467	Ø.8ØØ	2521
241.1	3Ø.Ø	3495	Ø.775	255Ø
246.1	35.Ø	3561	Ø.72Ø	2615
251.1	4Ø.Ø	3615	Ø.674	2669
256.1	45.Ø	3662	Ø.634	2717
261.1	5Ø.Ø	37Ø5	Ø.599	2759
266.1	55.Ø	3741	Ø.569	2796
271.1	6Ø.Ø	3774	Ø.542	2828
276.1	65.Ø	38Ø4	Ø.517	2859
281.1	7Ø.Ø	3832	Ø.495	2887
286.1	75.Ø	3856	Ø.475	291Ø
291.1	8Ø.Ø	3878	Ø.456	2932
296.1	85.Ø	3899	Ø.439	2953
3Ø1.1	9Ø.Ø	392Ø	Ø.424	2974
3Ø6.1	95.Ø	3938	Ø.4Ø9	2992
311.1	1ØØ.Ø	3956	Ø.396	3Ø1Ø
316.1	1Ø5.Ø	3972	Ø.383	3Ø27
321.1	11Ø.Ø	3986	Ø.372	3Ø41
326.1	115.Ø	4ØØØ	Ø.361	3Ø55
331.1	12Ø.Ø	4Ø14	Ø.35Ø	3Ø68
336.1	125.Ø	4Ø26	Ø.34Ø	3Ø81
341.1	13Ø.Ø	4Ø39	Ø.331	3Ø93
346.1	135.Ø	4Ø51	Ø.323	31Ø5

FIELD REPORT NO. 31531D
INSTRUMENT NO. J-1196

TEST PHASE : SHUT-IN PERIOD # 2
****

1. FINAL FLOW PRESSURE ["P_{WF}"] = 946 PSIG
2. PRODUCING TIME ["T_P"] = 148.8 MIN

ELAPSED TIME (MIN)	DELTA TIME ["DT"] (MIN)	SHUT-IN PRESSURE ["P_{WS}"] (PSIG)	LOG [(T_P+DT)/DT]	DELTA PRESSURE [P_{WS} - P_{WF}]
351.1	140.0	4062	0.314	3116
356.1	145.0	4072	0.307	3127
361.1	150.0	4083	0.299	3137
366.1	155.0	4091	0.292	3146
371.1	160.0	4100	0.286	3154
376.1	165.0	4108	0.279	3163
381.1	170.0	4117	0.273	3171
386.1	175.0	4125	0.267	3180
391.1	180.0	4133	0.262	3187
396.1	185.0	4140	0.256	3194
401.1	190.0	4147	0.251	3201
406.1	195.0	4154	0.246	3208
411.1	200.0	4161	0.242	3215
416.1	205.0	4167	0.237	3221
421.1	210.0	4172	0.233	3227
426.1	215.0	4178	0.228	3232
431.1	220.0	4183	0.224	3238
436.1	225.0	4189	0.220	3243
441.1	230.0	4194	0.217	3249
446.1	235.0	4200	0.213	3254
451.1	240.0	4204	0.209	3258
456.1	245.0	4208	0.206	3263
461.1	250.0	4213	0.203	3267
466.1	255.0	4216	0.200	3271
468.9	257.9	4219	0.198	3273

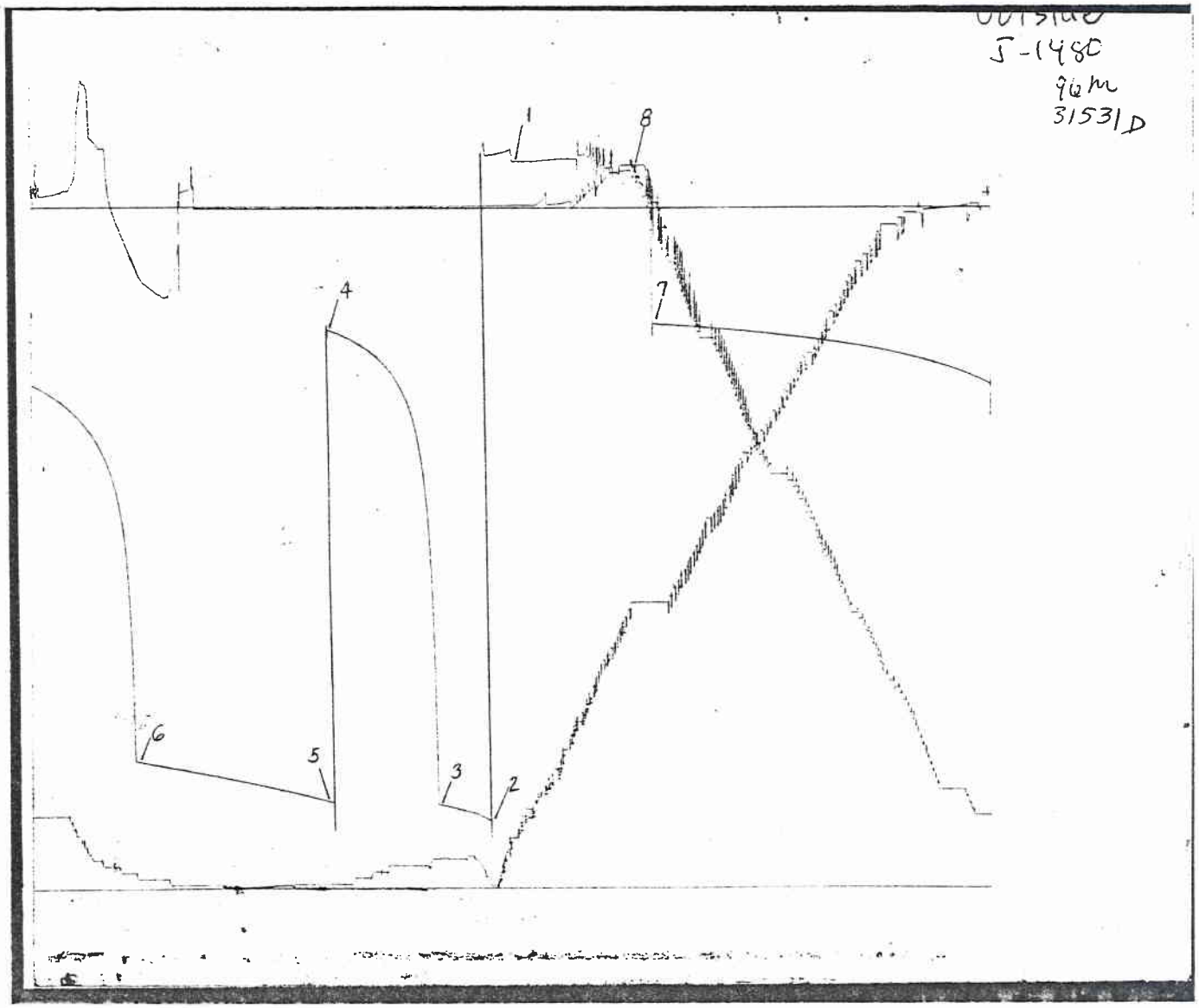
FIELD REPORT NO.: 31531 D

CAPACITY: 6400#

INSTRUMENT NO.: J-1480

NUMBER OF REPORTS: 18+

JOHNSTON Schlumberger



JS—167

BOTTOM HOLE PRESSURE AND TIME DATA

INSTRUMENT NO.: J-148Ø
PORT OPENING: OUTSIDE

CAPACITY (PSI): 64ØØ
BOTTOM HOLE TEMP (F): 15Ø
(READ AT)

DEPTH (FT): 1Ø722

EXPLANATION	LABELED POINT	PRESSURE (PSIG)	ELAPSED TIME (MIN)
HYDROSTATIC MUD	1	5443	-16.8
START FLOW	2	5Ø6	Ø.Ø
END FLOW & START SHUT-IN	3	626	3Ø.9
END SHUT-IN	4	4187	95.Ø
START FLOW	5	647	92.9
END FLOW & START SHUT-IN	6	957	2Ø9.8
END SHUT-IN	7	4229	469.5
HYDROSTATIC MUD	8	5417	478.Ø

* SUMMARY OF FLOW PERIODS *

FLOW PERIOD	ELAPSED TIME AT START (MIN)	ELAPSED TIME AT END (MIN)	DURATION OF FLOW (MIN)	PRESSURE AT START (PSIG)	PRESSURE AT END (PSIG)
1	Ø.Ø	3Ø.9	3Ø.9	5Ø6	626
2	92.9	2Ø9.8	116.9	647	957

* SUMMARY OF SHUT-IN PERIODS *

SHUT-IN PERIOD	ELAPSED TIME AT START (MIN)	ELAPSED TIME AT END (MIN)	DURATION OF SHUT-IN (MIN)	PRESSURE AT START (PSIG)	PRESSURE AT END (PSIG)	FINAL FLOW PRESSURE (PSIG)	PRODUCING TIME (MIN)
1	3Ø.9	95.Ø	64.1	626	4187	626	3Ø.9
2	2Ø9.8	469.5	259.7	957	4229	957	147.8

FIELD REPORT NO. 31531D
INSTRUMENT NO. J-148Ø

FLUID SAMPLE DATA			
Sampler Pressure ____ P.S.I.G. at Surface	Date	4-9-81	Ticket Number 845033
Recovery: Cu. Ft. Gas ____	Kind of D.S.T.	CASED HOLE	Halliburton Location ROCK SPRINGS
cc. Oil ____			
cc. Water 2100	Tester	MR. RIDER	Witness MR. PATTERSON
cc. Mud ____			
Tot. Liquid cc. ____	Drilling Contractor	PARKER BROTHERS DRILLING COMPANY #118	
Gravity ____ ° API @ ____ °F.	EQUIPMENT & HOLE DATA		
Gas/Oil Ratio ____ cu. ft./bbl.	Formation Tested	Twin Creek	
	Elevation	7119' GL 7149' KB	Ft.
	Net Productive Interval	3525-3660'; 3665-3702' (72')	Ft.
	All Depths Measured From	Kelly Bushing	
	Total Depth	4300' Plug back	Ft.
	Main Hole/Casing Size	10 3/4"	
	Drill Collar Length	405' I.D. 2.50"	
	Drill Pipe Length	3043' I.D. 4.276"	
	Packer Depth(s)	3475'	Ft.
	Depth Tester Valve	3460.5'	Ft.

	RESISTIVITY	CHLORIDE CONTENT
Recovery Water	2.6 @ 68 °F.	2100 ppm
Recovery Mud	1.35 @ 68 °F.	4200 ppm
Recovery Mud Filtrate	@ °F.	ppm
Mud Pit Sample	2.18 @ 68 °F.	3100 ppm
Mud Pit Sample Filtrate	@ °F.	ppm
Mud Weight	vis	sec.

Cushion TYPE AMOUNT Ft. Depth Back Pres. Valve Surface Choke Bubble Hose Bottom Choke .75"

Recovered 2600 Feet of Mud cut water.....No gas at all.....

Recovered Feet of

Recovered Feet of

Recovered Feet of

Recovered Feet of

Mea. From Tester Valve

TOP	1.35	@	68°	4200 ppm
MIDDLE	1.7	@	68°	3200 ppm
BOTTOM	2.6	@	68°	2100 ppm
MUD	2.18	@	68°	3100 ppm
SAMPLER	2.2	@	68°	2500 ppm

Remarks SEE PRODUCTION TEST DATA SHEET.

TEMPERATURE	Gauge No. 573 Depth: 3462.5' Ft.		Gauge No. 437 Depth: 3491' Ft.		Gauge No. Depth: Ft.		TIME (00:00-24:00 hrs.)	
	24 Hour Clock		24 Hour Clock		Hour Clock		Tool Opened 0547	
Est. °F.	Blanked Off No		Blanked Off Yes		Blanked Off			
Actual 85 °F.	Pressures		Pressures		Pressures		Opened Bypass 1324	
	Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic	1551	1555.6	1567	1566.2				
First Period Flow Initial	173	181.3	208	209.8			—	—
First Period Flow Final	862	868.0	869	868.8			37	36
First Period Closed in	1082	1092.7	1095	1103.7			60	60
Second Period Flow Initial	862	874.7	888	894.3			—	—
Second Period Flow Final	1082	1092.7	1095	1103.7			120	120
Second Period Closed in	1101	1104.2	1114	1116.9			240	240
Third Period Flow Initial							—	—
Third Period Flow Final								
Third Period Closed in								
Final Hydrostatic	1532	1541.2	1548	1553.0			—	—

Legal Location Sec. - Twp. - Rng. 21 - 12N - 6E

Lease Name OTTER CREEK

Well No. 1-21

Test No. 6

Field Area WILDCAT

Tested Interval 3475' - 4300'

County RICH

State UTAH

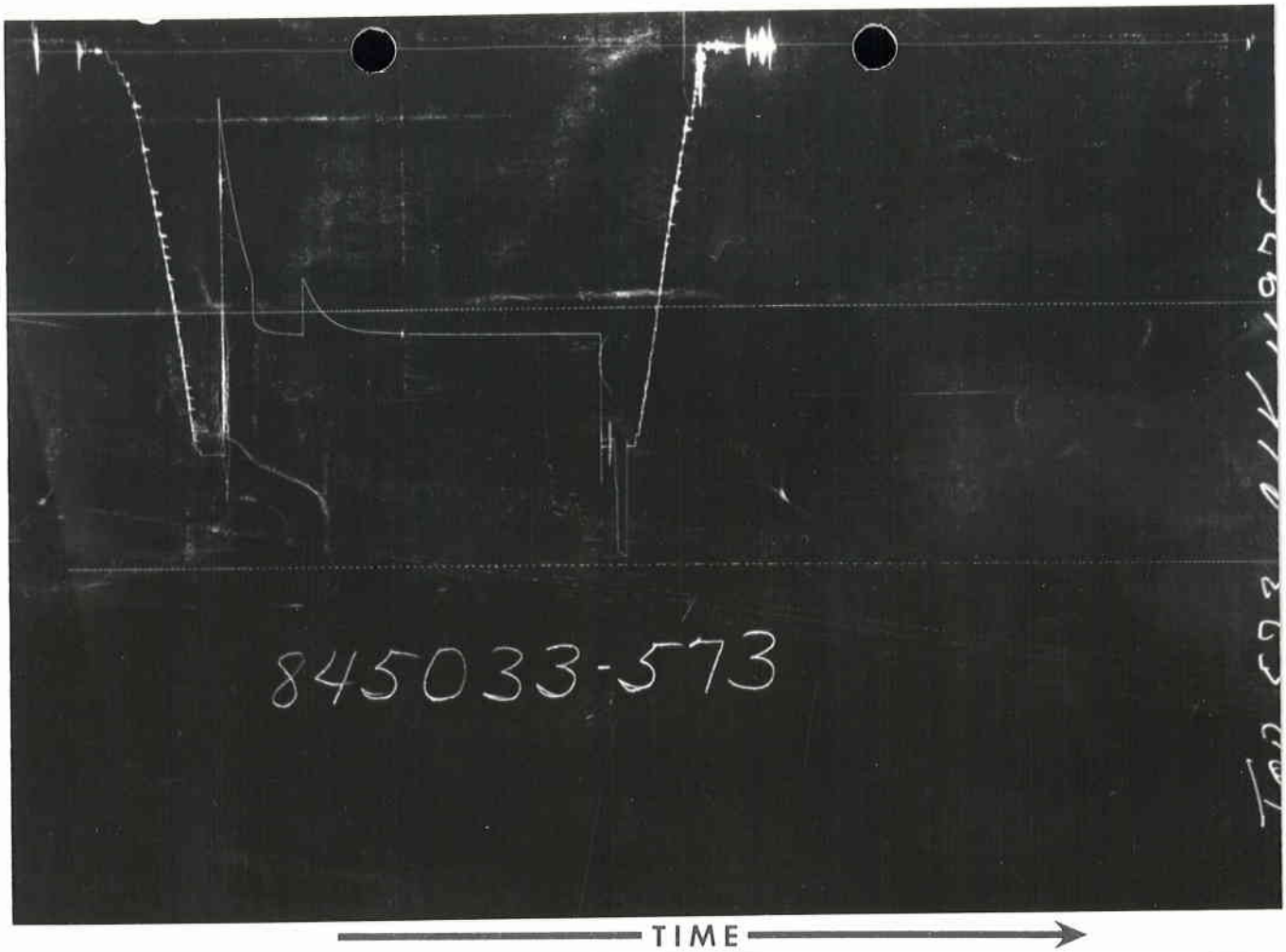
Lease Owner/Company Name MARATHON OIL COMPANY

FORM 181-R2 – PRINTED IN U.S.A.

FORMATION TEST DATA

LITTLE'S

23



PRESSURE

TIME

Each Horizontal Line Equal to 1000 p.s.i.

Formation Testing Service Report

APR 20 1981
DIVISION OF
OIL, GAS & MINING

HALLIBURTON SERVICES
DUNCAN, OKLAHOMA

845033

Casing perfs.____ Bottom choke____ Surf. temp____ °F Ticket No.____
Gas gravity____ Oil gravity____ GOR____
Spec. gravity____ Chlorides____ ppm Res.____ @____ °F
INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED____

Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
0230					Picked up tools
0330					Trip in hole
0530					Rigged up surface equipment
0540					Set packer
0547					Tool opened with a strong blow, bubble
					to bottom of bucket
0600		2#			
0610		5			
0620		6			
0624		7			Closed tool
0724					Opened tool with a moderate blow
0725					Bubble to bottom of bucket
0730		1			
0740		1½			
0750		1½			
0800		1			
0815		0			Blow decreasing
0830		0			"
0845		0			"
0900		0			"
0924					Closed tool, blow decreasing
1324					Opened by-pass, reversed out
1400					Pulled tools
1600					Broke out tools and loaded truck
1800					Picked up EZSV, trip in hole

PRODUCTION TEST DATA

FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface
Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water _____
cc. Mud _____
Tot. Liquid cc. _____
Gravity _____ ° API @ _____ °F.
Gas/Oil Ratio _____ cu. ft./bbl.

	RESISTIVITY		CHLORIDE CONTENT
Recovery Water	@ °F.		ppm
Recovery Mud	@ °F.		ppm
Recovery Mud Filtrate	@ °F.		ppm
Mud Pit Sample	@ °F.		ppm
Mud Pit Sample Filtrate	@ °F.		ppm

Mud Weight _____ vis _____ sec.

Date 4-8-81 | Ticket Number 845032
Kind of D.S.T. CASED HOLE | Halliburton Location ROCK SPRINGS
Tester C.D. RIDER | Witness PATTERSON
Drilling Contractor PARKER BROTHERS # 118 NM

EQUIPMENT & HOLE DATA

Formation Tested: Twin Creek
Elevation: 7119' GL - 7149' K.B. Ft.
Net Productive Interval: 72'-(3525'-3660'-3665'-3702') Ft.
All Depths Measured From: Kelly Bushing
Total Depth: 4300' PBD Ft.
Main Hole/~~Casing Size~~: 10 3/4"
Drill Collar Length: 405' I.D. 2.50"
Drill Pipe Length: 3043' I.D. 4.276"
Packer Depth(s): 3475' Ft.
Depth Tester Valve: 3460.5 Ft.

Cushion TYPE NONE AMOUNT Ft. | Depth Back Pres. Valve NONE | Surface Choke - | Bottom Choke .75"

Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of

Meas. From Tester Valve

Remarks MISRUN... MISRUN.....

TEMPERATURE	Gauge No. 573 Depth: 3462.5 Ft.		Gauge No. 437 Depth: 3491' Ft.		Gauge No. Depth: Ft.		TIME (00:00-24:00 hrs.)	
Est. °F.	24 Hour Clock Blanked Off NO		48 Hour Clock Blanked Off YES		Hour Clock Blanked Off		Tool Opened	
Actual 85 °F.	Pressures		Pressures		Pressures		Opened Bypass	
	Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic	-	1507.6	-	1527.4				
First Period Flow Initial	-	-	-	-			—	—
First Period Flow Final	-	-	-	-				
First Period Closed in	-	-	-	-				
Second Period Flow Initial	-	-	-	-			—	—
Second Period Flow Final	-	-	-	-				
Second Period Closed in	-	-	-	-				
Third Period Flow Initial							—	—
Third Period Flow Final								
Third Period Closed in								
Final Hydrostatic	-	1507.6	-	1527.4			—	—

Legal Location Sec. - Twp. - Rng. 21 - 12N - 6E
Lease Name OTTER CREEK
Well No. 1-21
Test No. 5
Field Area WILDCAT
Tested Interval 3475' - 4300'
County RICH
State UTAH
Lease Owner/Company Name MARATHON OIL COMPANY

FORM 181-R2 — PRINTED IN U.S.A.

FORMATION TEST DATA

LITTLE'S

Casing perfs. _____ Bottom choke _____ Surf. temp. _____ °F Ticket No. 845032
Gas gravity _____ Oil gravity _____ GOR _____
Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F
INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED _____

Date 4-8-81 Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
06:30					Picked up the tools.
07:00					Trip in the hole.
09:30					Rigged surface equipment.
09:59					Set packer.
10:10					Tool opened - lost packer seat...
11:40					Set packer.
11:48					Tool opened - lost packer seat.
11:50					Pulled tools - trip out of the hole.
14:00					Tools on the bank - packer O.K.
					Waiting on a new packer.
					32# to 55.5# range...)

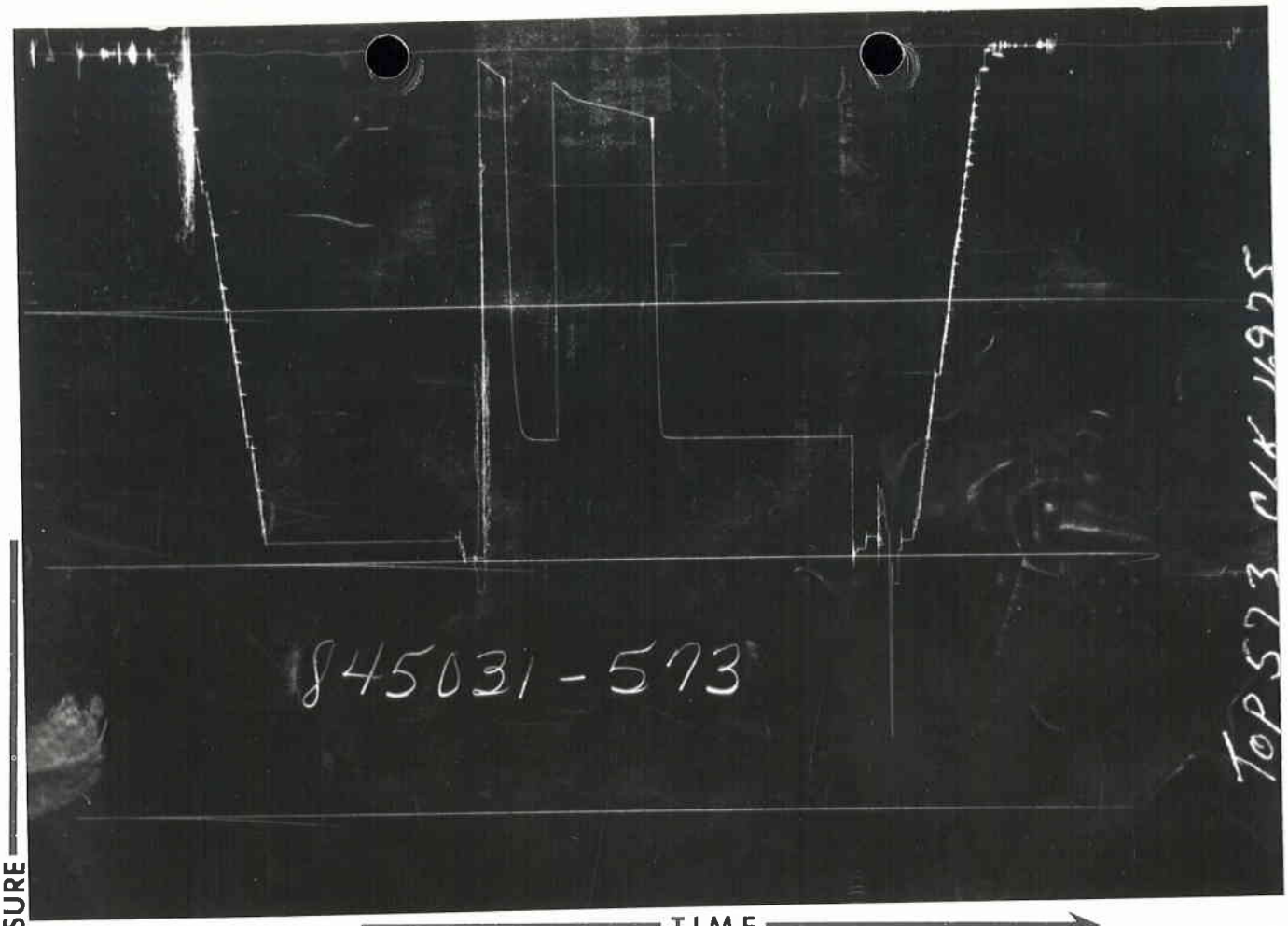
FORM 182-R1—PRINTED IN U.S.A.

PRODUCTION TEST DATA

LITTLE'S 96672 5M 8/74

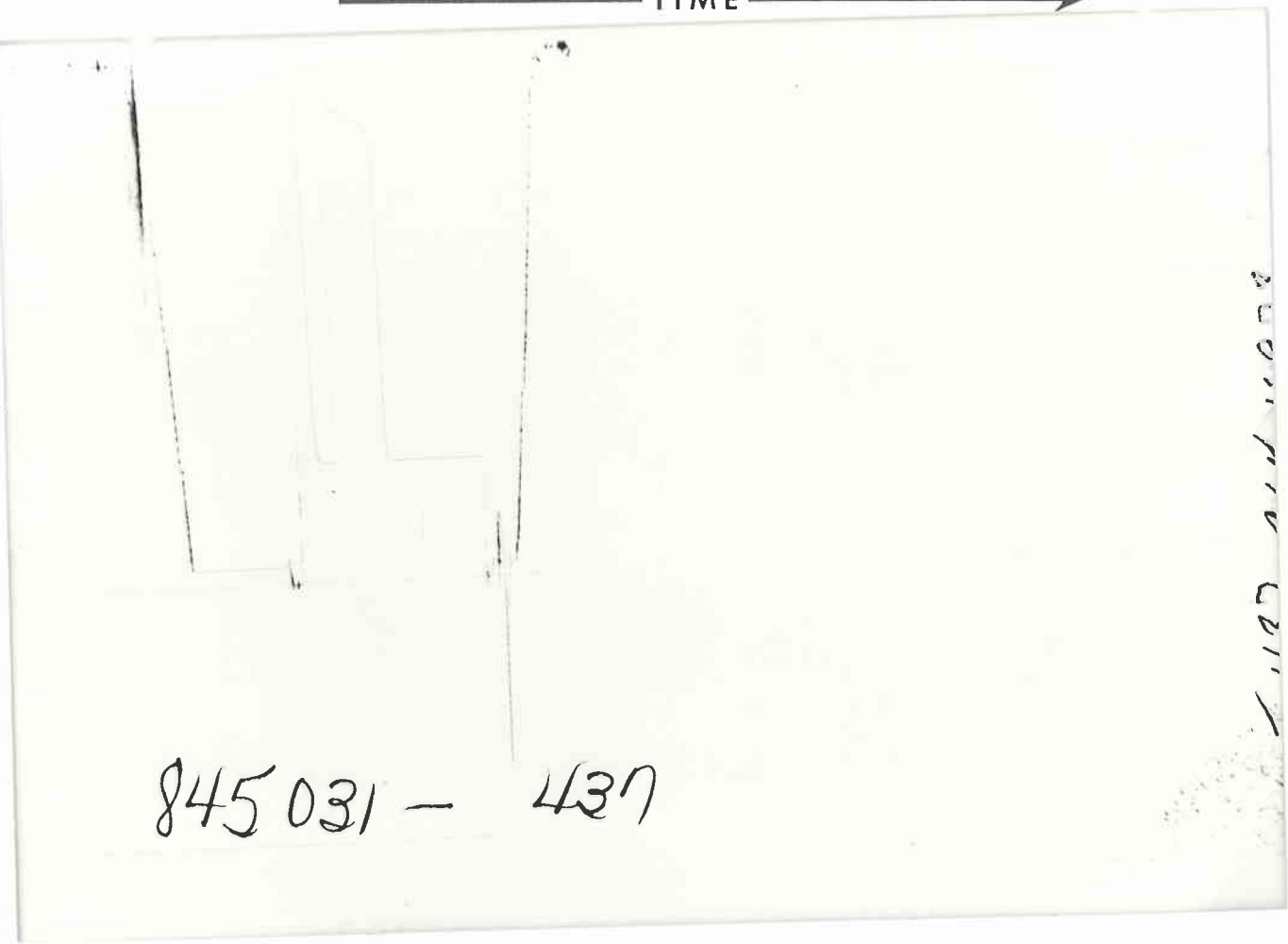
TICKET NO. 845032

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Drill Collars	6½"	3.00"	1.00'	3355'
Reversing Sub				
Water Cushion Valve	5"	4.276"	3043'	
Drill Pipe	7"	2.50"	405'	
Drill Collars	6 1/16"	3.00"	1.15'	
Handling Sub & ~~*Choke Assembly**~~				
Dual CIP Valve	5.00"	.87"	6.65'	3455.5
Dual CIP Sampler	5.00"	.75"	5.00'	3460.5'
Hydro-Spring Tester				
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	3.06"	4.00'	3462.5
Hydraulic Jar	5.00"	1.50"	5.00'	
VR Safety Joint	5.00"	1.00"	2.50'	
Pressure Equalizing Crossover				
Packer Assembly RTTS	10 3/4"	2.44"	5.00'	3475'
Distributor XO SUB	6 1/16"	2.81"	1.15'	
Packer Assembly XO SUB	5 3/4"	2.37"	1.20'	
Flush Joint Anchor	5"	2.37"	10.00'	
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case	5"	3.06"	4.00'	3491'
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor				
Blanked-Off B.T. Running Case				
Total Depth				PBD 4300'



PRESSURE

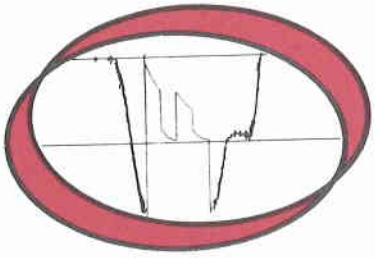
TIME



Each Horizontal Line Equal to 1000 p.s.i.

Formation Testing Service Report

RECEIVED
APR 20 1981
DIVISION OF
OIL, GAS & MINING



HALLIBURTON SERVICES

DUNCAN, OKLAHOMA

FLUID SAMPLE DATA

Date	4-7-81
Ticket Number	845031
Kind of D.S.T.	CASED HOLE
Halliburton Location	ROCK SPRINGS
Tester	MR. RIDER
Witness	MR. HANSEN
Drilling Contractor	PARKER BROTHERS DRILLING COMPANY #118

Sampler Pressure _____ P.S.I.G. at Surface

Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water 2100
cc. Mud _____
Tot. Liquid cc. _____

Gravity _____ ° API @ _____ °F.

Gas/Oil Ratio _____ cu. ft./bbl.

		RESISTIVITY		CHLORIDE CONTENT
Recovery Water	____ @	____ °F.	____ ppm
Recovery Mud	1.9 @	68 °F.	2900 ppm
Recovery Mud Filtrate	____ @	____ °F.	____ ppm
Mud Pit Sample	1.8 @	68 °F.	3100 ppm
Mud Pit Sample Filtrate	____ @	____ °F.	____ ppm

Mud Weight 8.6 vis 31 sec.

EQUIPMENT & HOLE DATA

bj

Formation Tested	Twin Creek	
Elevation	7119' GL	7149' KB Ft.
Net Productive Interval	4468'	4484' (16') Ft.
All Depths Measured From	Kelly Bushing	
Total Depth	4650' Plug Back	Ft.
Main Hole/Casing Size	10 3/4"	
Drill Collar Length	405'	I.D. 2.50"
Drill Pipe Length	3992'	I.D. 4.276"
Packer Depth(s)	4424'	Ft.
Depth Tester Valve	4409.5'	Ft.

Cushion TYPE AMOUNT Ft. Depth Back Pres. Valve Surface Choke Bubble Hose Bottom Choke .75"

Mea. From Tester Valve

Recovered 1400	Feet of water cut mud	TOP	1.9 @ 68 degrees 2900 PPM
Recovered	Feet of	MIDDLE	1.8 @ 68 degrees 3000 PPM
Recovered	Feet of	BOTTOM	1.45 @ 68 degrees 3800 PPM
Recovered	Feet of	MUD PIT	1.8 @ 68 degrees 3100 PPM
Recovered	Feet of	SAMPLER	1.25 @ 68 degrees 4500 PPM

Remarks SEE PRODUCTION TEST DATA SHEET....

TEMPERATURE	Gauge No. 573	Gauge No. 437	Gauge No.	TIME (00:00-24:00 hrs.)
	Depth: 4411.5' Ft.	Depth: 4440' Ft.	Depth: Ft.	
Est. 95 °F.	24 Hour Clock	48 Hour Clock	Hour Clock	Tool Opened 0629
	Blanked Off NO	Blanked Off YES	Blanked Off	Opened Bypass 1359
Actual °F.	Pressures	Pressures	Pressures	

		Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic		1973	1988.4	1984	2000.0				
First Period	Flow Initial	19	32.6	47	50.0			—	—
	Flow Final	96	109.4	113	112.4			30	30
	Closed in	1512	1527.8	1529	1536.9			60	61
Second Period	Flow Initial	115	128.5	132	146.5			—	—
	Flow Final	269	276.3	283	281.6			120	119
	Closed in	1512	1529.7	1529	1539.7			240	241
Third Period	Flow Initial							—	—
	Flow Final								
	Closed in								
Final Hydrostatic		1973	1988.4	1984	2000.0			—	—

Legal Location Sec.-Twp.-Rng. 21 12N 6E

Lease Name OTTER CREEK

Well No. 1-21

Test No. 4

Field Area WILDCAT

Tested Interval 4424' to 4650' PB

County RICH

State UTAH

Lease Owner/Company Name MARATHON OIL COMPANY

FORM 181-R2 — PRINTED IN U.S.A.

FORMATION TEST DATA

LITTLE'S

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845031

Casing perfs. _____ Bottom choke _____ Surf. temp _____ °F Ticket No. _____

Gas gravity _____ Oil gravity _____ GOR _____

Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F

INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED _____

Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
4-6-81					
2100					On location.
2200					Picked up tool.
2330					Tripped in hole.
4-7-81 0530					Rigged surface equipment.
0620					Set packer.
0629					Opened tool with a weak blow.
0644					Bubble 3" deep in bucket.
0659					Closed tool-bubble 3" deep.
0759					Opened tool with a weak blow.
0829					Bubble 3" deep in bucket.
0859					" 5" deep in bucket.
0929					" 5.5" deep in bucket.
0959					Closed tool, bubble 7.5" deep. No
					gas, no pressure.
1359					Opened bypass and reversed out.
1500					Pulled tool loose.
1800					Laid down tools.

FORM 182-R1—PRINTED IN U.S.A.

PRODUCTION TEST DATA

LITTLE'S 96672 5M 8/74

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Gauge No.	573	Depth	4412'	Clock No.	16975	24 hour	Ticket No.	845031

	First Flow Period		First Closed In Pressure			Second Flow Period		Second Closed In Pressure			Third Flow Period		Third Closed In Pressure		
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log}\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log}\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log}\frac{t+\theta}{\theta}$	PSIG Temp. Corr.
0	.0000	32.6	.0000		109.4	.0000	128.5	.0000		276.3					
1	.0168	45.1	.0134		744.7	.0635**	179.4	.0201		1365.1					
2	.0337	58.5	.0267		1141.4	.1304	204.4	.0402		1522.0					
3	.0505	71.0	.0401		1358.5	.1973	220.7	.0603		1525.9					
4	.0673	84.4	.0535		1456.0	.2642	235.1	.0804		1526.8					
5	.0842	97.8	.0669		1499.0	.3311	253.3	.1006		1527.8					
6	.1010	109.4	.0802		1515.3	.3980	276.3	.1207		1527.8					
7			.0936		1522.0			.1408		1527.8					
8			.1070		1524.9			.1609		1527.8					
9			.1203		1524.9			.1810		1527.8					
10			.1337		1525.9			.2011		1528.7					
11			.1504		1525.9			.3217		1528.7					
12			.1671		1526.8			.4423		1529.7					
13			.1839		1526.8			.5629		1529.7					
14			.2040		1527.8			.6835		1529.7					
15								.8080		1529.7					

Gauge No.	437	Depth	4440'	Clock No.	16973	48 hour

0	.0000	50.0	.0000		112.4	.0000	146.5	.0000		281.6					
1	.0085	51.9	.0065		628.3	.0315**	186.2	.0099		1259.4					
2	.0170	61.4	.0130		1061.3	.0646	209.8	.0199		1522.7					
3	.0255	72.7	.0195		1316.9	.0977	227.7	.0298		1530.3					
4	.0340	85.0	.0260		1441.5	.1308	241.9	.0397		1534.0					
5	.0425	99.2	.0325		1497.1	.1639	259.9	.0497		1535.0					
6	.0510	112.4	.0389		1518.9	.1970	281.6	.0596		1535.9					
7			.0454		1526.5			.0695		1536.9					
8			.0519		1530.3			.0794		1536.9					
9			.0584		1533.1			.0894		1536.9					
10			.0649		1534.0			.0993		1536.9					
11			.0730		1535.0			.1589		1536.9					
12			.0811		1535.9			.2185		1536.9					
13			.0892		1535.9			.2781		1537.8					
14			.0990		1536.9			.3377		1538.8					
15								.3990		1539.7					
Reading Interval		5		*			20		***						Minutes

REMARKS: * FIRST TEN INTERVALS = 4 MINUTES EACH; NEXT THREE INTERVALS = 5 MINUTES EACH; LAST INTERVAL = 6 MINUTES
** INTERVAL = 19 MINUTES *** FIRST TEN INTERVALS = 6 MINUTES EACH; NEXT FOUR INTERVALS = 36 MINUTES EACH; LAST INTERVAL = 37 MINUTES

SPECIAL PRESSURE DATA

TICKET NO. 845031

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Drill Collars				
Reversing Sub	6.50"	3.00"	1.00'	4304'
Water Cushion Valve				
Drill Pipe	5.00"	4.276"	3992'	
Drill Collars	7.00"	2.50"	405'	
Handling Sub & Choke Assembly	6 1/16"	3.00"	1.15'	
Dual CIP Valve				
Dual CIP Sampler	5.00"	.87"	6.65'	4404.5'
Hydro-Spring Tester	5.00"	.75"	5.00'	4409.5'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5.00"	3.06"	4.00'	4411.5'
Hydraulic Jar	5.00"	1.50"	5.00'	
VR Safety Joint	5.00"	1.00"	2.50'	
Pressure Equalizing Crossover				
Packer Assembly RTTS	10 3/4"	2.44"	5.00'	4424'
~~Distributor,~~ X OVER SUB	6 1/16"	2.81"	1.15'	
~~Packer Assembly~~ X OVER SUB	5.75"	2.37"	1.20'	
Flush Joint Anchor	5.00"	2.37"	10.00'	
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case	5.00"	3.06"	4.00'	4440'
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor				
Blanked-Off B.T. Running Case				
Total Depth PLUG BACK				4650'

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EQUIPMENT DATA

LITTLE'S

Gauge No. 573	Depth 3462.5'	Clock No. 16975	24 hour	Ticket No. 845033

	First Flow Period		First Closed In Pressure			Second Flow Period		Second Closed In Pressure			Third Flow Period		Third Closed In Pressure		
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log}\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log}\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log}\frac{t+\theta}{\theta}$	PSIG Temp. Corr.
0	.0000	181.3	.0000		868.0	.0000	874.7	.0000		1092.7					
1	.0200	394.4	.0135		1049.7	.0668	989.4	.8010		1104.2					
2	.0400	530.5	.0269		1063.0	.1337	1049.7								
3	.0600	641.4	.0404		1070.7	.2005	1074.5								
4	.0800	731.3	.0539		1075.5	.2673	1086.0								
5	.1000	806.8	.0673		1079.3	.3342	1089.8								
6	.1200	868.0	.0808		1082.2	.4010	1092.7								
7			.0943		1084.1										
8			.1077		1086.0										
9			.1212		1086.9										
10			.1347		1088.9										
11			.1481		1089.8										
12			.1616		1090.8										
13			.1751		1091.7										
14			.1885		1091.7										
15			.2020		1092.7										

Gauge No. 437	Depth 3491'	Clock No. 16973	24 hour

0	.0000	209.8	.0000		868.0	.0000	894.3	.0000		1103.7					
1	.0203	390.3	.0133		1059.4	.0668	997.1	.8110		1116.9					
2	.0407	524.5	.0265		1071.6	.1337	1056.6								
3	.0610	636.7	.0398		1080.1	.2005	1084.9								
4	.0813	733.9	.0531		1084.9	.2673	1096.2								
5	.1017	808.4	.0663		1087.7	.3342	1101.8								
6	.1220	868.8	.0796		1091.5	.4010	1103.7								
7			.0929		1093.3										
8			.1061		1096.2										
9			.1194		1097.1										
10			.1327		1099.0										
11			.1459		1100.0										
12			.1592		1100.9										
13			.1725		1101.8										
14			.1857		1102.8										
15			.1990		1103.7										
Reading Interval		6		4			20								Minutes

REMARKS:

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SPECIAL PRESSURE DATA

LITTLE'S 96673 75C 8/74

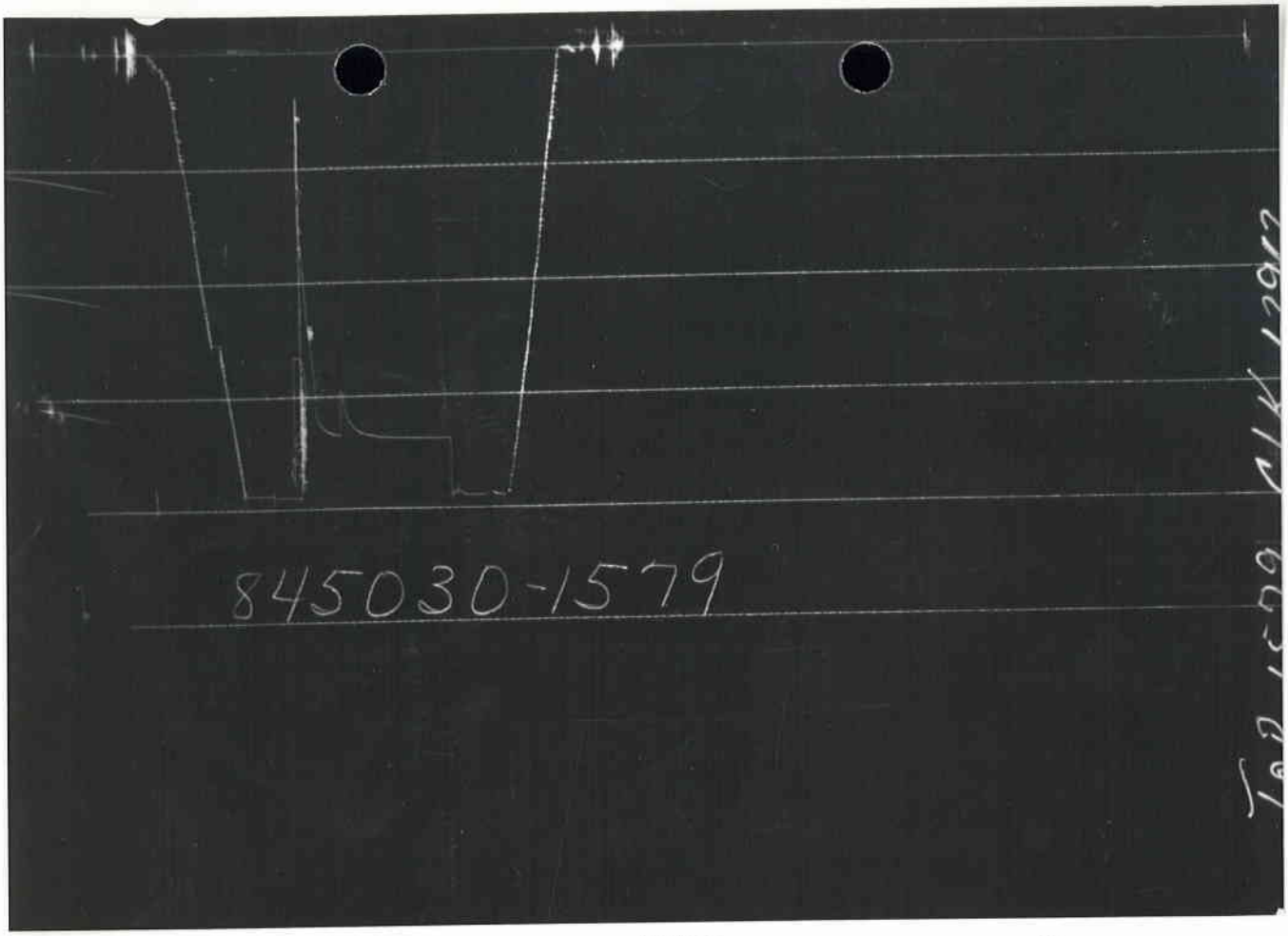
TICKET NO. 845033

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Drill Collars				
Reversing Sub	6½"	3"	1'	3355'
Water Cushion Valve				
Drill Pipe	5"	4.276"	3043'	
Drill Collars	7"	2.50"	405'	
Handling Sub & Choke Assembly	6 1/16"	3"	1.15'	
Dual CIP Valve				
Dual CIP Sampler	5"	.87"	6.65'	3455.5'
Hydro-Spring Tester	5"	.75"	5'	3460.5'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	3.06"	4'	3462.5'
Hydraulic Jar	5"	1.50"	5'	
VR Safety Joint	5"	1"	2.50'	
Pressure Equalizing Crossover				
Packer Assembly	10 3/4"	2.44"	5'	3475'
Distributor X over Sub	6 1/16"	2.81"	1.15'	
Packer Assembly X over Sub	5 3/4"	2.37"	1.20'	
Flush Joint Anchor	5"	2.37"	10'	
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case	5"	3.06"	4'	3491'
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor				
Blanked-Off B.T. Running Case				
Total Depth		Plug back		4300'

FORM 187—R2 — PRINTED IN U.S.A.

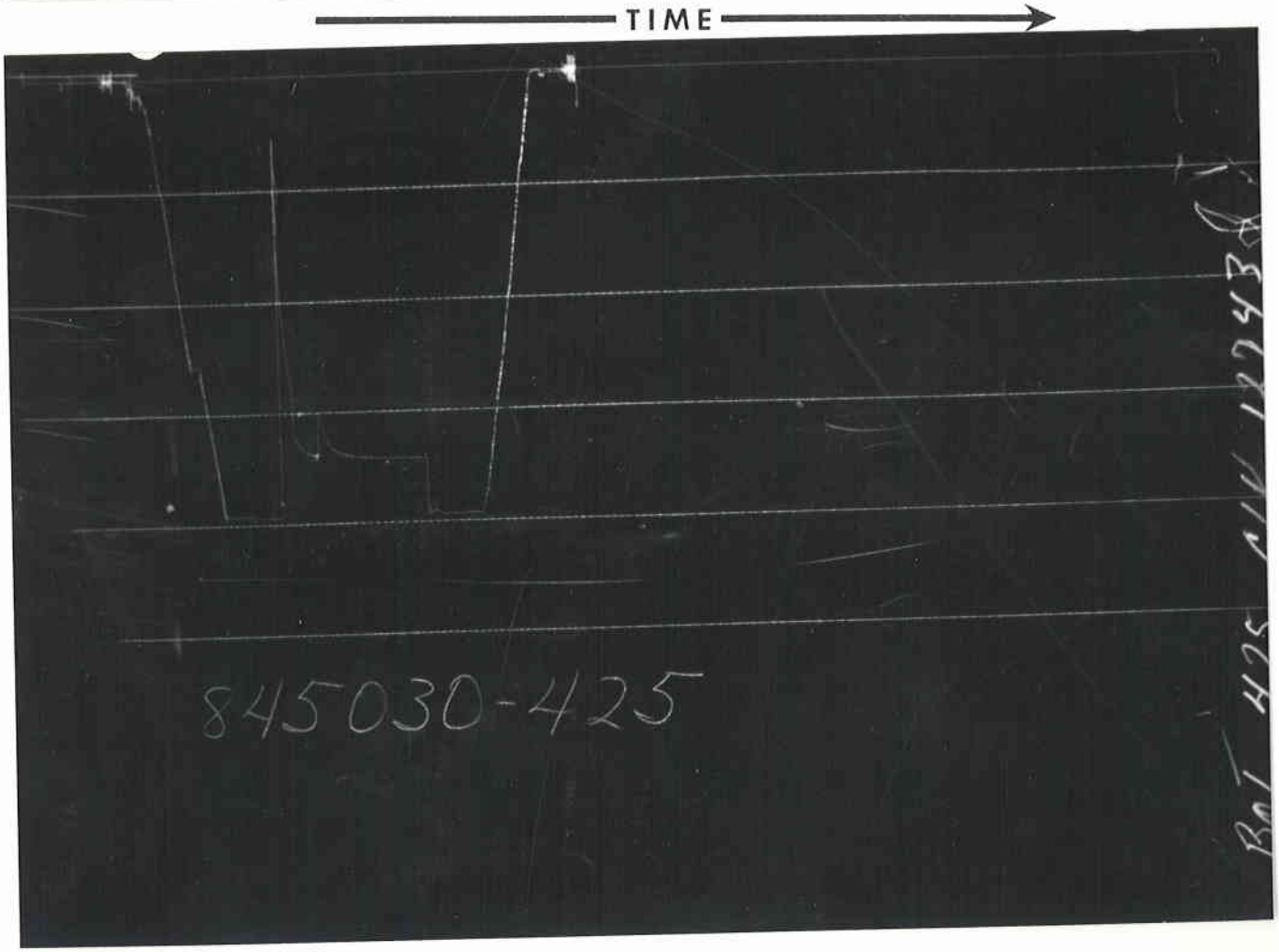
EQUIPMENT DATA

LITTLE'S 111036 75C 2/80



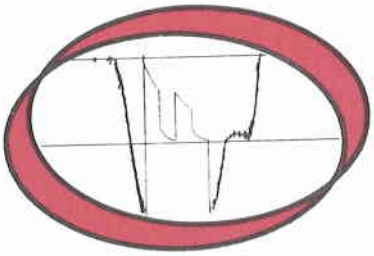
PRESSURE

TIME



Each Horizontal Line Equal to 1000 p.s.i.

Formation Testing Service Report



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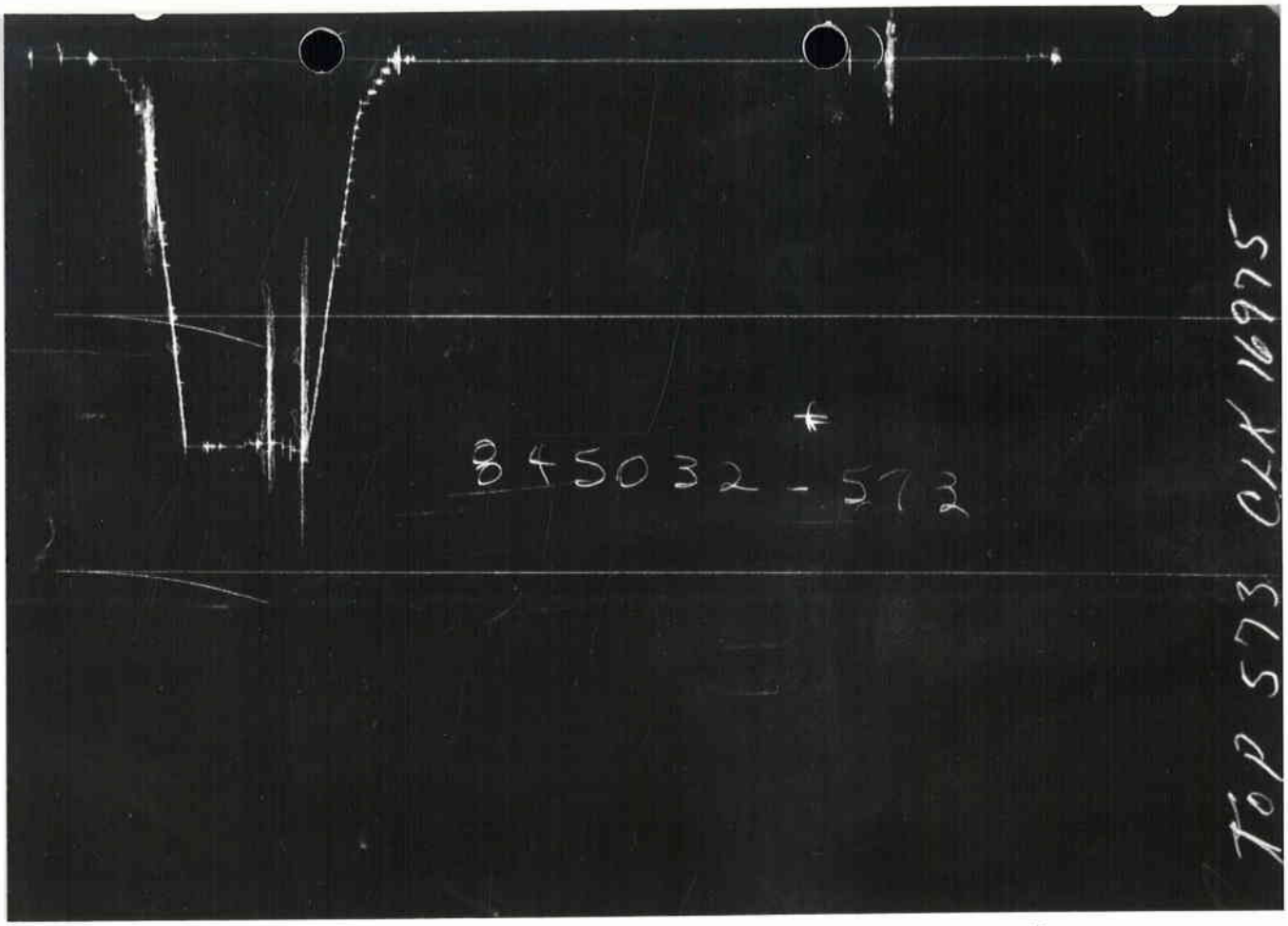
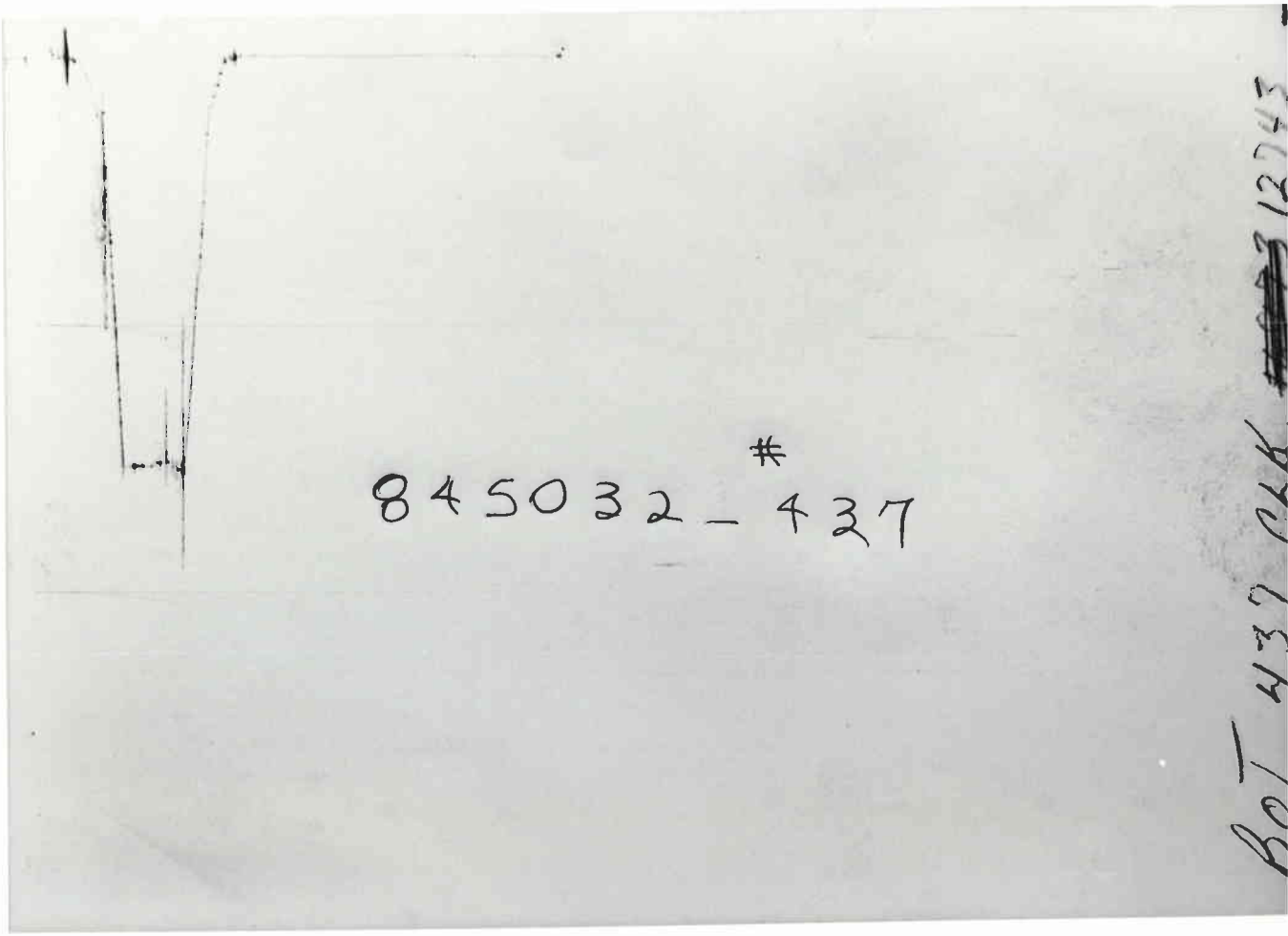
HALLIBURTON SERVICES
DUNCAN, OKLAHOMA



PRESSURE

TIME



Each Horizontal Line Equal to 1000 p.s.i.

Formation Testing Service Report

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HALLIBURTON SERVICES
DUNCAN, OKLAHOMA

FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface
Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water 1500 0.36 @ 54°=25,000 ppm
cc. Mud _____
Tot. Liquid cc. 1500
Gravity _____ ° API @ _____ °F.
Gas/Oil Ratio _____ cu. ft./bbl.

	RESISTIVITY			CHLORIDE CONTENT
Recovery Water		@	°F.	ppm
Recovery Mud BOTTOM	0.43	@ 54	°F.	17,500 ppm
Recovery Mud Filtrate		@	°F.	ppm
Mud Pit Sample	1.62	@ 40	°F.	6,000 ppm
Mud Pit Sample Filtrate		@	°F.	ppm

Mud Weight 8.6 vis 32 sec.

Date 4-2-81 Ticket Number 845030
Kind of D.S.T. CASED HOLE Halliburton Location ROCK SPRINGS
Tester MR. LEGER Witness
Drilling Contractor PARKER DRILLING COMPANY #118 bc

EQUIPMENT & HOLE DATA

Formation Tested Thaynes
Elevation 7119' GL 7149' KB Ft.
Net Productive Interval 8690' - 8712' Ft.
All Depths Measured From Kelly Bushing
Total Depth 10020' PBTD Ft.
Main Hole/Casing Size 10 3/4"
Drill Collar Length 405' I.D. 2.50"
Drill Pipe Length 8218' I.D. 3.826"
Packer Depth(s) 8650' Ft.
Depth Tester Valve 8635.5' Ft.

Cushion TYPE AMOUNT Ft. Depth Back Pres. Valve Surface Choke 1/8" Bubble Hose Bottom Choke .75"

Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of

Meas. From Tester Valve

Remarks Reversed out recovery. Bottom stand below reversing valve was mud. Sampler was salt water. SEE PRODUCTION TEST DATA SHEET.

TEMPERATURE	Gauge No. 1579 Depth: 8637.5' Ft.		Gauge No. 425 Depth: 8666' Ft.		Gauge No. Depth: Ft.		TIME (00:00-24:00 hrs.)	
Est. °F.	48 Hour Clock Blanked Off No		48 Hour Clock Blanked Off Yes		Hour Clock Blanked Off		Tool Opened 0701	
Actual °F.	Pressures		Pressures		Pressures		Opened Bypass 1304	
	Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic	3880	3910.4	3919	3947.3				
First Period Flow Initial	371	388.6	570	576.7			—	—
First Period Flow Final	2811	2849.6	2889	2875.5			33	31
First Period Closed in	3378	3364.6	3393	3396.9			60	61
Second Period Flow Initial	2941	2965.1	3020	3032.8			—	—
Second Period Flow Final	3356	3373.3	3415	3403.5			90	89
Second Period Closed in	3378	3401.7	3415	3429.8			180	182
Third Period Flow Initial							—	—
Third Period Flow Final								
Third Period Closed in								
Final Hydrostatic	3880	3890.8	3919	3934.2			—	—

Legal Location Sec. - Twp. - Rng. 21 - 12N - 6E
Lease Name OTTER CREEK
Well No. 1-21
Test No. 3
Tested Interval 8650' - 10020'
Field Area WILDCAT
County RICH
State UTAH
Lease Owner/Company Name MARATHON OIL COMPANY

FORM 181—R2 — PRINTED IN U.S.A.

FORMATION TEST DATA

LITTLE'S

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Casing perfs. 8690' - 8712' Bottom choke .75" Surf. temp 40 °F Ticket No. 845030
Gas gravity _____ Oil gravity _____ GOR _____
Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F
INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED _____

Date 4-2-81 Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
1530					On location
2300					Picked up tool
4-3-81 0100					Trip in hole
0530					Rigged up surface equipment
0654					Set packer
0701					Opened tool with a weak blow
0702					Bubble to bottom of bucket
0705		3#			
0715		10			
0725		20			
0734		27			Closed tool
0834					Opened tool with a moderate blow to middle of 5 gallon bucket
0850					Strong blow to bottom of 5 gallon bucket
0900					Strong blow, no gas to surface
0920					Blow dying, moderate blow to bottom of bucket
0940					Blow steadily weakening
1000					Weak blow, surface bubbles
1004					Closed tool
1304					Pulled loose
1315					Dropped bar, reversed out
1430					Reversed out complete, entire drill string capacity. Recovery was drilling mud!
					No other fluid was recovered, no gas at all.
1515					Started out of hole
1830					Tool on floor, job completed

FORM 182-R1—PRINTED IN U.S.A.

PRODUCTION TEST DATA

LITTLE'S 96672 5M 8/74

Gauge No. 1579	Depth 8637'	Clock No. 12912	48 hour	Ticket No. 845030

	First Flow Period		First Closed In Pressure			Second Flow Period		Second Closed In Pressure			Third Flow Period		Third Closed In Pressure		
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.
0	.0000	388.6	.0000		2849.6	.0000	2965.1	.0000		3373.3					
1	.0105	1778.2*	.0099		3218.3*	.0228	3150.6**	.3000		3401.7					
2	.0192	2089.3	.0182		3262.0	.0472	3275.1								
3	.0279	2315.8	.0265		3286.0	.0717	3327.5								
4	.0366	2490.1	.0348		3303.4	.0961	3351.5								
5	.0453	2699.3	.0430		3318.7	.1206	3366.8								
6	.0540	2849.6	.0513		3329.6	.1450	3373.3								
7			.0596		3338.4										
8			.0679		3347.1										
9			.0762		3353.7										
10			.0844		3358.0										
11			.0927		3362.4										
12			.1010		3364.6										
13															
14															
15															

Gauge No. 425	Depth 8666'	Clock No. 12343	48 hour

0	.0000	576.7	.0000		2875.5	.0000	3032.8	.0000		3403.5					
1	.0099	2024.0*	.0098		3239.0*	.0231	3177.6**	.2990		3429.8					
2	.0181	2227.0	.0180		3280.7	.0479	3300.4								
3	.0263	2419.2	.0262		3311.4	.0727	3353.0								
4	.0345	2591.7	.0344		3331.1	.0975	3379.3								
5	.0428	2744.5	.0426		3344.3	.1222	3394.7								
6	.0510	2875.5	.0508		3357.4	.1470	3403.5								
7			.0590		3368.4										
8			.0672		3377.1										
9			.0754		3381.5										
10			.0836		3385.9										
11			.0918		3392.5										
12			.1000		3396.9										
13															
14															
15															
Reading Interval		5		5			15								Minutes

REMARKS: *Interval = 6 minutes **Interval = 14 minutes

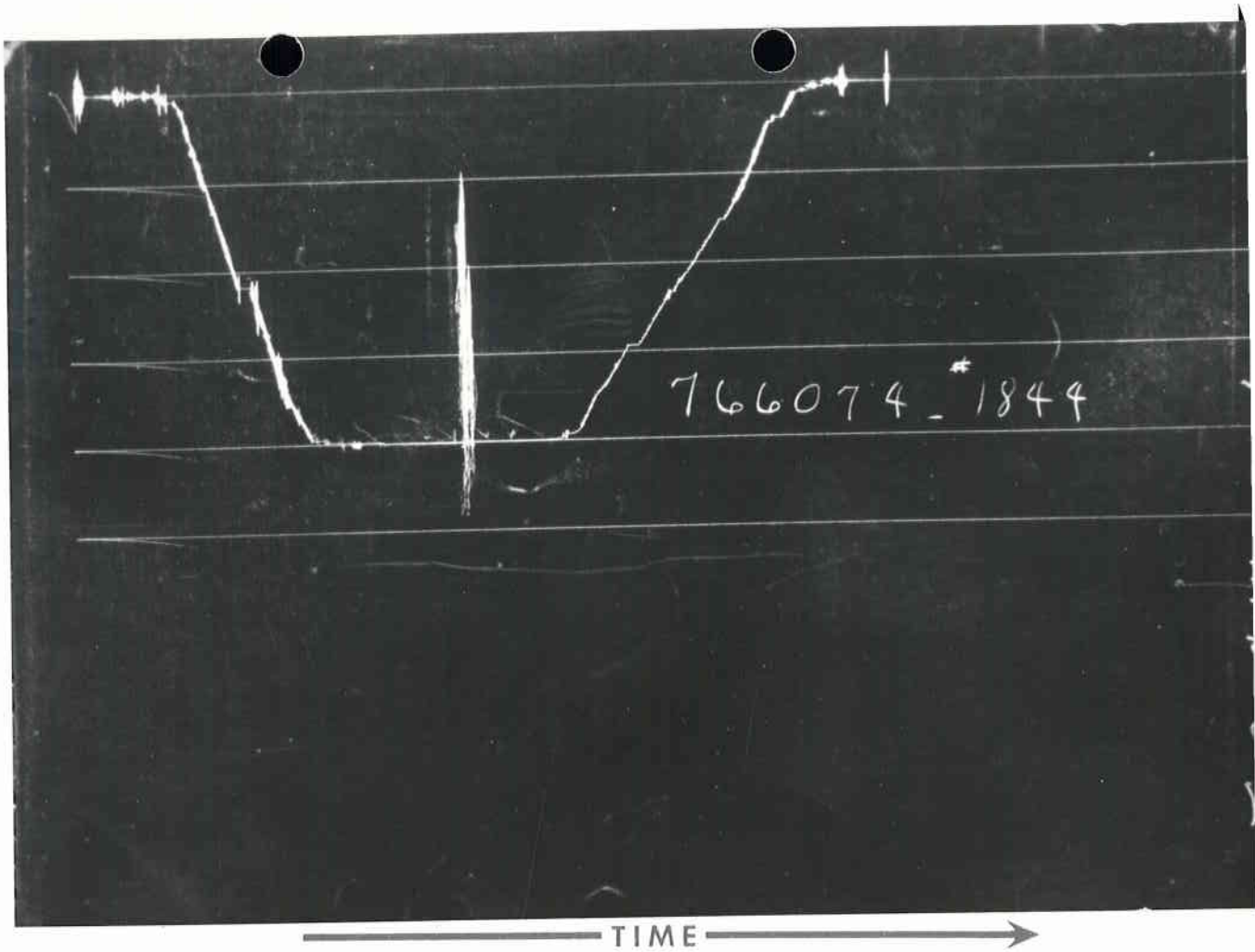
21

SPECIAL PRESSURE DATA

TICKET NO. 845030

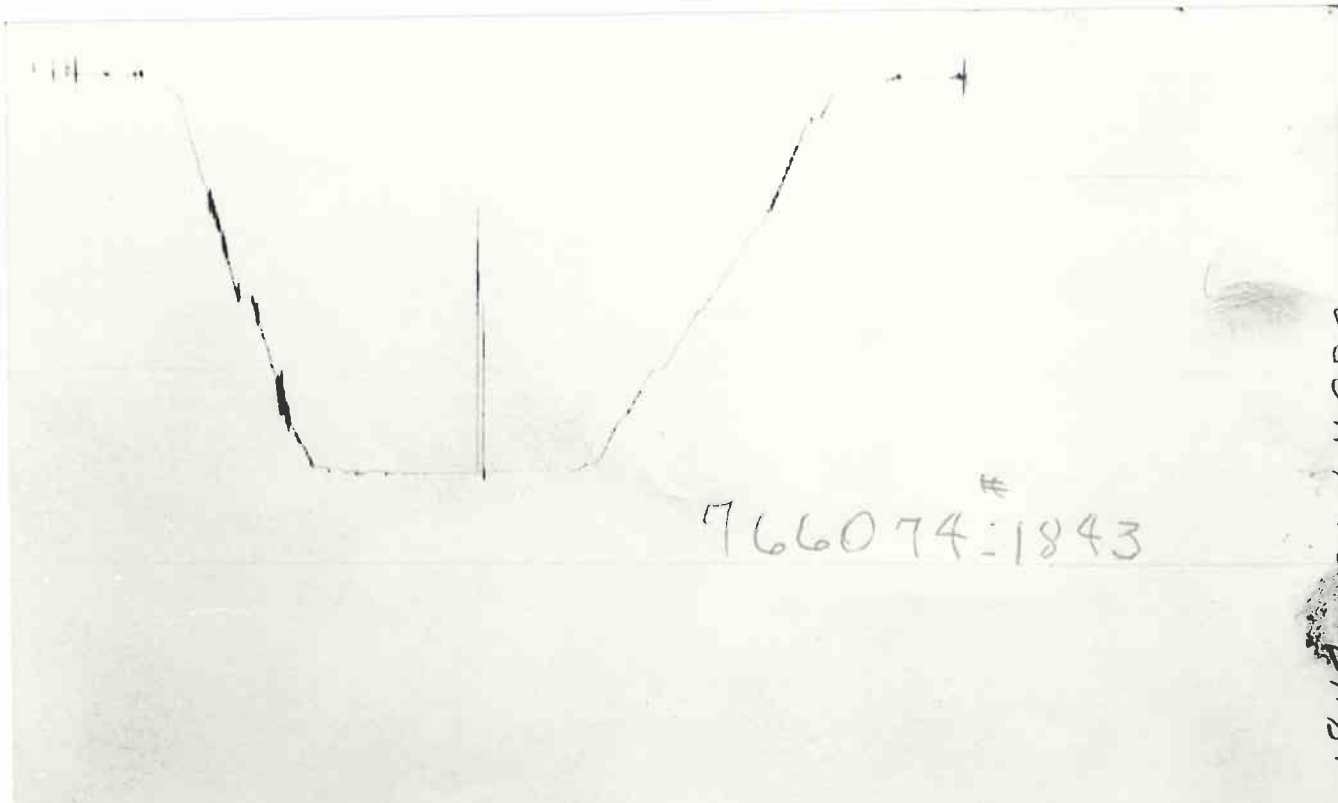
	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing	7"	2.50"	312'	
Drill Collars	6 1/8"	3"	1'	8530'
Reversing Sub				
Water Cushion Valve	4½"	3.826"	8218'	
Drill Pipe	7"	2.5"	93'	
Drill Collars	6 1/16"	3"	1.15'	
Handling Sub & Choke Assembly				
Dual CIP Valve	5"	.87"	6.65'	8630.5'
Dual CIP Sampler	5"	.75"	5'	8635.5'
Hydro-Spring Tester				
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	3.06"	4'	8637.5'
Hydraulic Jar	5"	1.50"	5'	
VR Safety Joint	5"	1"	2.50'	
Pressure Equalizing Crossover				
Packer Assembly	10 3/4"	2.44"	5'	8650'
4½" IF X 4½" FH	6 1/16"	2.81"	1.15'	
4½" FH X 3½" FH	5 3/4"	2.37"	1.20'	
Distributor				
Packer Assembly				
Flush Joint Anchor	5"	2.37"	10'	
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case	5"	3.06"	4'	8666'
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor				
Blanked-Off B.T. Running Case				
Total Depth				10020'

EQUIPMENT DATA



PRESSURE

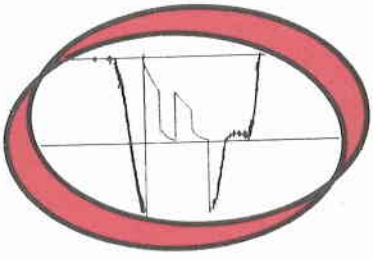
TIME



Each Horizontal Line Equal to 1000 p.s.i.

Formation Testing Service Report

RECEIVED
SEP 15 1980



HALLIBURTON SERVICES
DUNCAN, OKLAHOMA

FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface

Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water _____
cc. Mud _____
Tot. Liquid cc. _____

Gravity _____ ° API @ _____ °F.

Gas/Oil Ratio _____ cu. ft./bbl.

	RESISTIVITY		CHLORIDE CONTENT
Recovery Water	@ °F.		ppm
Recovery Mud	@ °F.		ppm
Recovery Mud Filtrate	@ °F.		ppm
Mud Pit Sample	@ °F.		ppm
Mud Pit Sample Filtrate	@ °F.		ppm

Mud Weight _____ vis _____ sec.

Date 8-30-80 | Ticket Number 766075

Kind of D.S.T. OPEN HOLE | Halliburton Location ROCK SPRINGS

Tester MR. RIDER | Witness ???

Drilling Contractor PARKER #118 | IC

EQUIPMENT & HOLE DATA

Formation Tested Thaynes
Elevation - Ft.
Net Productive Interval 8' Ft.
All Depths Measured From Kelly Bushing
Total Depth 8746' Ft.
Main Hole/Casing Size 12 1/4"
Drill Collar Length 340' I.D. 2.875"
Drill Pipe Length 8264' I.D. 3.826"
Packer Depth(s) 8633' - 8641' Ft.
Depth Tester Valve 8617' Ft.

Cushion TYPE 700# AMOUNT NITROGEN Ft. Depth Back Pres. Valve | Surface Choke - | Bottom Choke .75"

Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of

Mea. From Tester Valve

Remarks MISRUN...NO PACKER SEATS...NO SAMPLES TAKEN.
SEE PRODUCTION TEST DATA SHEET.

TEMPERATURE	Gauge No. 1844 Depth: 8619' Ft.	Gauge No. 1843 Depth: 8743' Ft.	Gauge No. Depth: Ft.	TIME (00:00-24:00 hrs.)
	24 Hour Clock	24 Hour Clock	Hour Clock	Tool Opened
Est. 170 °F.	Blanked Off NO	Blanked Off YES	Blanked Off	Opened Bypass
Actual °F.	Pressures	Pressures	Pressures	Reported Minutes / Computed Minutes

		Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic		4003	4002.7	4051	4064.8			—	—
First Period	Flow Initial								
	Flow Final								
	Closed in							—	—
Second Period	Flow Initial								
	Flow Final								
	Closed in							—	—
Third Period	Flow Initial								
	Flow Final								
	Closed in							—	—
Final Hydrostatic		4003	4002.7	4051	4064.8				

Legal Location Sec. - Twp. - Rng. 21 - 12N - 6E
Lease Name OTTER CREEK
Well No. 1-21
Test No. 2
Tested Interval 8641' - 8746'
Field Area WILDCAT
County RICH
State UTAH
Lease Owner/Company Name MARATHON OIL COMPANY

FORM 181-R2 - PRINTED IN U.S.A.

FORMATION TEST DATA

LITTLE'S 111033 75C 2/80

Casing perfs. _____ Bottom choke _____ Surf. temp _____ °F Ticket No. 766075

Gas gravity _____ Oil gravity _____ GOR _____

Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F

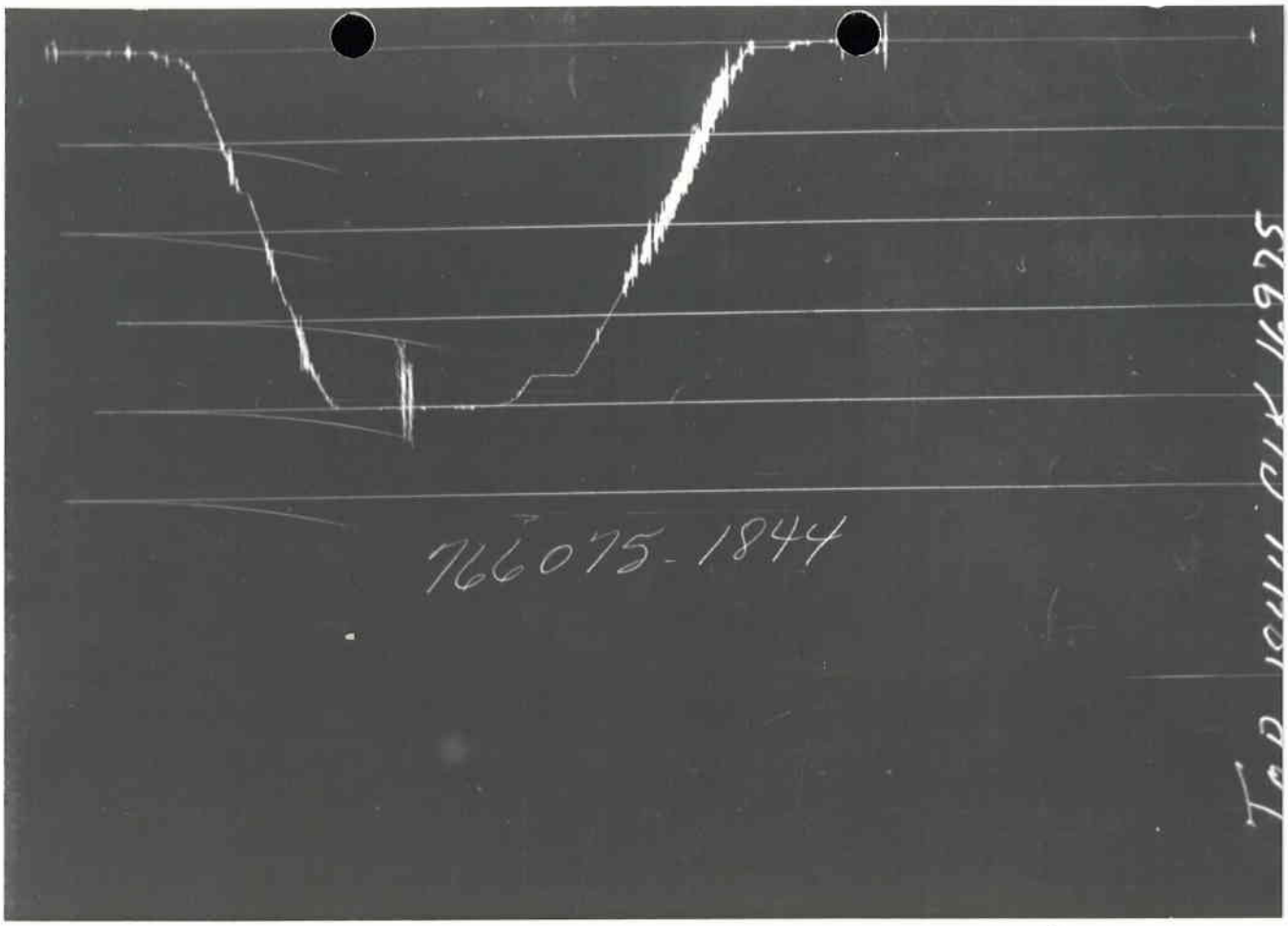
INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED _____

Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
1800					Waited on location
1200 8-30-80					Picked up tools
1700					Rigged up surface equipment
1740					Pumped nitrogen cushion
1836					On bottom
1840					Tool opened, lost packer seat
					Pulled up and tried again
1846					On bottom
1849					Opened tool - lost packer seat
					Pulled off bottom
1855					Bled off nitrogen cushion

FORM 182-R1—PRINTED IN U.S.A.

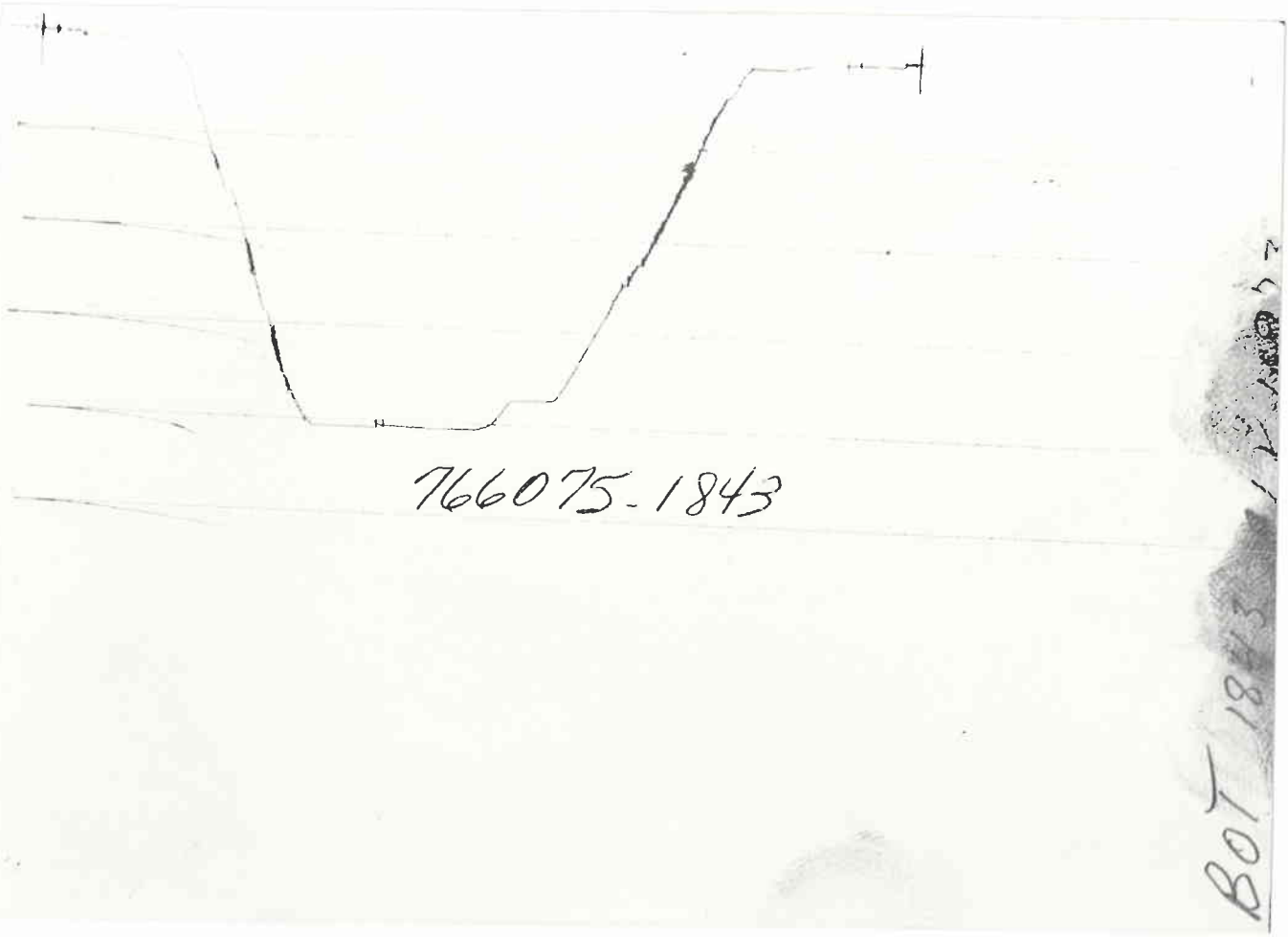
PRODUCTION TEST DATA

LITTLE'S 96672 5M 8/74



PRESSURE

TIME



Each Horizontal Line Equal to 1000 p.s.i.

Formation Testing Service Report

RECEIVED
SEP 15 1980

HALLIBURTON SERVICES
DUNCAN, OKLAHOMA

TICKET NO. 766075

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Drill Collars				
Reversing Sub	7½"	2.826"	1'	8511'
Water Cushion Valve				
Drill Pipe	4½"	3.826"	8264'	
Drill Collars	9"	2.875"	340'	
Handling Sub & ~~Choke Assembly~~ Bit sub	9"	2.826"	3.50'	
Dual CIP Valve X over sub	7½"	2.826"	1'	
Dual CIP Sampler	5"	.87"	6.65'	8611.5
Hydro-Spring Tester	5"	.75"	5'	8616.5
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	3.06"	4'	8618.5
Hydraulic Jar	5"	1.50"	5'	
VR Safety Joint	5"	1"	2.50'	
Pressure Equalizing Crossover				
Packer Assembly	11 1/4"	1.53"	6'	8633'
Distributor	5"	1.68"	2'	
Packer Assembly	11 1/4"	1.53"	6'	8641'
~~Flush Joint Anchor~~ safety jt. anchor	5 3/4"	1.50"	4'	
Pressure Equalizing Tube				
~~Blanked-Off B.T. Running Case~~ Sub	6"	2.826"	1'	
Drill Collars	6 3/4"	2.25"	60'	
~~Anchor Pipe Safety Joint~~ Sub	6½"	2.826"	1'	
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5 3/4"	2.826"	33'	
Blanked-Off B.T. Running Case	5 3/4"	3.06"	4'	8743'
Total Depth				8746'

FORM 187—R2 — PRINTED IN U.S.A.

EQUIPMENT DATA

LITTLE'S 111036 75C 2/80

FLUID SAMPLE DATA			
Sampler Pressure ____ P.S.I.G. at Surface	Date	8-28-80	Ticket Number 766074
Recovery: Cu. Ft. Gas ____	Kind of D.S.T.	OPEN HOLE	Halliburton Location ROCK SPRINGS
cc. Oil ____			
cc. Water ____	Tester	RIDER	Witness -
cc. Mud ____	Drilling Contractor	PARKER # 118	NM
Tot. Liquid cc. ____			
Gravity ____ ° API @ ____ °F.	EQUIPMENT & HOLE DATA		
Gas/Oil Ratio ____ cu. ft./bbl.	Formation Tested	Thaynes	
	Elevation	-	Ft.
	Net Productive Interval	8'	Ft.
	All Depths Measured From	Kelly Bushing	
	Total Depth	8746'	Ft.
	Main Hole/Casing Size	12¼"	
	Drill Collar Length	370' I.D. 2.875"	
	Drill Pipe Length	8264' I.D. 3.826"	
	Packer Depth(s)	8663' - 8671'	Ft.
	Depth Tester Valve	8646.5'	Ft.

	RESISTIVITY		CHLORIDE CONTENT
Recovery Water	____ @ ____ °F.		____ ppm
Recovery Mud	____ @ ____ °F.		____ ppm
Recovery Mud Filtrate	____ @ ____ °F.		____ ppm
Mud Pit Sample	____ @ ____ °F.		____ ppm
Mud Pit Sample Filtrate	____ @ ____ °F.		____ ppm
Mud Weight	____ vis		____ sec.

Cushion TYPE NITROGEN AMOUNT 700 PSI Ft. Depth Back Pres. Valve NONE Surface Choke NONE Bottom Choke .75"

Recovered ____ Feet of ____

Recovered ____ Feet of ____

Recovered ____ Feet of ____

Recovered ____ Feet of ____

Recovered ____ Feet of ____

Mea. From Tester Valve

Remarks MISRUN... NO PACKER SEATS.. NO SAMPLES TAKEN...

TEMPERATURE	Gauge No. 1844 Depth: 8649' Ft.	Gauge No. 1843 Depth: 8743' Ft.	Gauge No. Depth: Ft.	TIME (00:00-24:00 hrs.)
	24 Hour Clock	24 Hour Clock	Hour Clock	Tool Opened
Est. C-150 °F.	Blanked Off NO	Blanked Off YES	Blanked Off	Opened Bypass
Actual °F.	Pressures	Pressures	Pressures	Reported Minutes / Computed Minutes
	Field / Office	Field / Office	Field / Office	
Initial Hydrostatic	4003 / 4019.3	4051 / 4072.9		
First Period Flow Initial	- / -	- / -		— / —
First Period Flow Final	- / -	- / -		
First Period Closed in	- / -	- / -		
Second Period Flow Initial	- / -	- / -		— / —
Second Period Flow Final	- / -	- / -		
Second Period Closed in	- / -	- / -		
Third Period Flow Initial				— / —
Third Period Flow Final				
Third Period Closed in				
Final Hydrostatic	4003 / 4019.3	4051 / 4072.9		— / —

Lease Name: OTTER CREEK
Legal Location Sec. - Twp. - Rng.: 21 - 12N - 6E
Well No.: 1-21
Test No.: 1
Tested Interval: 8671' - 8746'
Field Area: WILDCAT
County: RICH
State: UTAH
Lease Owner/Company Name: MARATHON OIL COMPANY

FORM 181-R2 — PRINTED IN U.S.A.

FORMATION TEST DATA

LITTLE'S 111033 75C 2/80

21

Casing perfs.____ Bottom choke____ Surf. temp.____ °F Ticket No. 766074
Gas gravity____ Oil gravity____ GOR____
Spec. gravity____ Chlorides____ ppm Res.____ @ ____ °F
INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED____

Date 8-28-80 Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
21:30					On location.
8-29-80 02:00					Picked up the tools.
04:00					Trip in the hole.
08:00					Rigged surface equipment.
09:00					Pumped nitrogen cushion.
10:12					On bottom.
10:15					Tool opened - lost packer seat - picked
					up on the tool.
10:20					On bottom.
10:23					Tool opened - lost packer seat.
10:30					Bled off nitrogen cushion.
12:00					Broke out surface equipment - trip
					out of the hole.
17:30					Tools on the bank - laid tools on cat
					walk. Trip in the hole to circulate.

PRODUCTION TEST DATA

TICKET NO. 766074

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Drill Collars	7"	2.625"	1.00'	8544'
Reversing Sub				
Water Cushion Valve				
Drill Pipe	4½"	3.826"	8264'	
Drill Collars	9"	2.875"	370'	
Handling Sub ~~& Choke Assembly~~	7½"	2.826"	1.00'	
Dual CIP Valve				
Dual CIP Sampler	5"	.87"	6.65'	8641.5'
Hydro-Spring Tester	5"	.75"	5.00'	8646.5'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	3.06"	4.00'	8648.5
Hydraulic Jar	5"	1.50"	5.00'	
VR Safety Joint	5"	1.00"	2.50'	
Pressure Equalizing Crossover				
Packer Assembly	11¼"	1.53"	6.00'	8663'
Distributor	5"	1.68"	2.00'	
Packer Assembly	11¼"	1.53"	6.00'	8671'
~~Flush Joint~~ Anchor SAFETY JOINT	5 3/4"	1.50"	4.00'	
Pressure Equalizing Tube				
~~Blanked-Off B.T. Running Case~~ SUB	7½"	2.826"	1.00'	
Drill Collars	9"	2.826"	30.00'	
~~Anchor Pipe Safety Joint~~ SUB	7½"	2.826"	1.00'	
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5 3/4"	2.826"	33.00'	
Blanked-Off B.T. Running Case	5 3/4"	3.06"	4.00'	8743'
Total Depth				8746'

FORM 187—R2 — PRINTED IN U.S.A.

EQUIPMENT DATA

LITTLE'S 11036 75C 2/80

21

March 31, 1980

Mr. K.A. Thoma
Marathon Oil Company
P.O. Box 2659
Casper, Wyoming 82602

Re: Well No. Otter Creek #1-21
Sec. 21, T. 12N, R. 6E.,
Rich County, Utah

Dear Mr. Thoma:

In reviewing your list of equipment and procedures for controlling hydrogen sulfide gas (H_2S) in the drilling of the Otter Creek #1-21, I would recommend that you consider the installation of flare lines as follows:

1. That flare lines be as long as practical (150' minimum);

2. That flare lines should be installed from the degasser, choke manifold, and mud/gas separator to the burn pits; and,

3. That one flare line be installed perpendicular to the prevailing wind direction and another flare line be installed parallel to the prevailing wind direction.

The rest of your program appears to be in order; however, since the responsibility for safety procedures now lies with the Utah State Industrial Commission, I am forwarding a copy of your letter to their office for review and comment.

Sincerely,

DIVISION OF OIL, GAS AND MINING

Michael T. Minder
Petroleum Engineer

MTM:btm

cc: Utah State Industrial Commission

Enc.

Casper Division
Production, U.S. & Canada

Marathon Oil Company

P.O. Box 2659
Casper, Wyoming 82602
Telephone 307/235-2511

RECEIVED
MAR 27 1980
DIVISION OF
OIL, GAS & MINING

March 24, 1980

Mr. Mike Minder
Chief Petroleum Engineer
State Of Utah
Division of Oil, Gas & Minerals
1588 West North Temple
Salt Lake City, Utah 84116

Re: Otter Creek #1-21
1,313' FNL & 1,441' FEL
Sec. 21, T12N, R6E
Rich County, Utah

Dear Mr. Minder:

Submitted for your consideration is a list of equipment and procedures proposed for the monitoring and control of any H_2S gas encountered during the drilling of the above referenced well.

The drilling rig will be spotted so as the prevailing wind is blowing towards the pits. The mud loggers and other trailers on location will be placed at safe distances from the B.O.P. stack, (a minimum of 125 feet). Radio or telephone communications will be available at the rig.

The following equipment will be on location prior to spudding:

1. Siren (Explosion Proof).
2. 3 fixed gas monitors.
3. Flashing warning light (Explosion Proof).
4. 12 - 40 cubic feet, self contained breathing apparatus.

The following contingency plan will be put into effect at approximately 9,250', or 1,000' above anticipated entry of the Phosphoria:

1. Sufficient 40 cubic feet self-contained breathing apparatus will be available and placed at critical locations to protect operating personnel on location.

2. Dual monitor complete with visual and audible alarm system. (One Monitor will be located at the bell nipple and the other at the shale shaker.)

3. Three wind socks with streamers.

4. Marked locations of designated safe areas and escape routes.

5. Warning signs will be located no closer than 1/2 mile from the drilling site.

6. Personnel will be trained in the use of all safety equipment. (Names and dates of training will be posted on location).

7. An approved contingency plan will be available and posted on location prior to starting operations.

8. Only authorized personnel will be allowed on drill site.

9. Initial contact will be made with local Sheriff's office, District Highway Patrol office, and area medical personnel.

10. Two bug fans, flowing opposite designated safe areas.

11. Safety trailer with 15-300 C.F. cylinder cascade air supply system.

12. 1,000' low pressure air line hose with quick connects.

13. Two low pressure manifolds.

14. Eight air line masks with emergency escape cylinders.

15. Six 30-minute self-contained breathing apparatus.

16. First aid kit (36 unit).

17. Oxygen powered resuscitator with cylinder.

18. Flare gun with shells.

19. Gas detector (pump type).

If you require any information, please do not hesitate to call me.

Very truly yours,

MARATHON OIL COMPANY

K. A. Thoma

K. A. Thoma
Drilling Superintendent

KAT:WEW:ljj

cc: Mr. Ed Guynn
District Engineer
U.S.G.S.
8426 Federal Building
125 South State Street
Salt Lake City, Utah 84138

Mr, George Diwachak
Environmental Scientist
U.S.G.S.
8426 Federal Building
125 South State Street
Salt Lake City, Utah 84138

Mr. R. F. Bolender
Marathon Oil Company
P.O. Box 120
Casper, Wyoming 82602

THIS LETTER OF EQUIPMENT AND PROCEDURES SUPERSEDES OUR ORIGINAL LETTER DATED AUGUST 31, 1979.

Form 9–331
Dec. 1973

Form Approved.
Budget Bureau No. 42–R1424

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

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

1. oil well ☐ gas well ☒ other

2. NAME OF OPERATOR
Marathon Oil Company

3. ADDRESS OF OPERATOR
P. O. Box 2659; Casper, WY 82602

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)
AT SURFACE: 1,313' FNL & 1,441' FEL
AT TOP PROD. INTERVAL:
AT TOTAL DEPTH:

5. LEASE
U-25453

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME
Otter Creek

9. WELL NO.
1-21

10. FIELD OR WILDCAT NAME
Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA
Sec. 21, T12N, R6E

12. COUNTY OR PARISH
Rich

13. STATE
Utah

14. API NO.
43-033-30025

15. ELEVATIONS (SHOW DF, KDB, AND WD)
7,119' GL, 7,149' KB

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

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

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

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

Otter Creek #1-21 was plugged on April 10th & 11th, 1981. The first plug was set from 3,300' to 3,250' using 26 sacks of Class "G" cement with .1% H-R5 and .75% CFR-2. The second plug was placed from 2,594' to 2,394' using 104 sacks of the same cement as above. The surface plug was set to 60' using 30 sacks of the same cement as above.

The proper Dry hole marker was scribed-welded and placed.

CONFIDENTIAL

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

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

SIGNED Dale Caddy TITLE District Operations Manager DATE 5-20-81

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

INSTRUCTIONS

General: This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.
If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see item 35.
Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.
Item 18: Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.
Items 22 and 24: If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.
Item 29: *"Sacks Cement":* Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool.
Item 33: Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.)

Otter Creek #1-21 (cont)

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.
Twin Creek	3,475'	4,300'	DST #5 - Misrun DST #6 - IHP 1556 IF 868 37 min. ISI 1093 60 min. FF 1093 120 min. FSI 1104 240 min. FHP 1541 Recovered: 2600' mud cut water sc: 2100 cc water

38. GEOLOGIC MARKERS

NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH

CONFIDENTIAL

DTC - 5-18-81

★ U.S. GOVERNMENT PRINTING OFFICE: 1974-780-680/VIII-238

Form 9-330
(Rev. 5-63)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE
(See other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R355.5.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ DRY ☐ Other Wildcat

b. TYPE OF COMPLETION: NEW WELL ☐ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other Abandoned

2. NAME OF OPERATOR: Marathon Oil Company

3. ADDRESS OF OPERATOR: P. O. Box 2659; Casper, WY 82602

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements*)*
At surface: 1,313' FNL & 1,441' FEL
At top prod. interval reported below
At total depth

5. LEASE DESIGNATION AND SERIAL NO.: U-25453
6. IF INDIAN, ALLOTTEE OR TRIBE NAME:
7. UNIT AGREEMENT NAME:
8. FARM OR LEASE NAME: Otter Creek
9. WELL NO.: 1-21
10. FIELD AND POOL, OR WILDCAT: Wildcat
11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec. 21, T12N, R6E

RECEIVED MAY 22 1981 DIVISION OF OIL, GAS & MINING

14. PERMIT NO.	DATE ISSUED	12. COUNTY OR PARISH	13. STATE
43-033-30025	Sept. 20, 1979	Rich	Utah

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
4-8-80	3-26-81	4-11-81 PA - Amended 5-20-81	7,119' GL, 7,149' KB	-

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
12,299'	-	-	→	0'-12,299'	-

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*: NONE ABANDONED

25. WAS DIRECTIONAL SURVEY MADE: NO

26. TYPE ELECTRIC AND OTHER LOGS RUN: BHC, SGR, CAL, FDC, DLL, DIP METER, CYBER DIP

27. WAS WELL CORED: NO

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

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
16"	65#	1,333.79'	17-1/2"	680 sacks	NONE
13-3/8"	61#	2,494.01'	17-1/2"	750 sacks	NONE
10-3/4"	55.5#	10,306.00'	12-1/4"	2,000 sacks	NONE
		ABANDONED IN PLACE			

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
		NONE		

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
	NONE	

31. PERFORATION RECORD (*Interval, size and number*): NONE

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

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
	NONE

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (*Flowing, gas lift, pumping—size and type of pump*)	WELL STATUS (*Producing or 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

CONFIDENTIAL

35. LIST OF ATTACHMENTS

ALL INFORMATION ABOUT THIS WELL IS TO BE HELD CONFIDENTIAL UNTIL [redacted]

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

SIGNED Dale Cadoly TITLE District Operations Manager DATE 5-14-81

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

INSTRUCTIONS

General: This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency, or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.
If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments should be listed on this form, see item 35.
Item 4: If there are no applicable State requirements, locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local State or Federal office for specific instructions.
Item 18: Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.
Items 22 and 24: If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, for each additional interval to be separately produced, showing the additional data pertinent to such interval.
Item 29: *"Sacks Cement":* Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool.
Item 33: Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.)

Otter Creek #1-21

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.
Thaynes	8,671'	8,746'	DST #1 - Misrun
"	8,641'	8,746'	DST #2 - Misrun
Nugget	10,705'	10,835'	DST #3 - IHP 5435
			IF 610 30 min.
			ISI 4170 60 min.
			FF 946 120 min.
			FSI 4219 260 min.
			FHP 5401
			Recovered: 1000' water cushion, 955' salt water.
Twin Creek	4,424'	4,650'	DST #4 IHP 1988
			IF 109 30 min.
			ISI 1528 60 min.
			FF 276 120 min.
			FSI 1530 240 min.
			FHP 1988
			Recovered: 1400' water cut mud
			sc: 2100 cc water

Continued on second page.

38. GEOLOGIC MARKERS

NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
Twin Creek	1,662'	
Nugget	5,197'	
Ankareh	6,694'	
Thaynes	8,645'	
Thrust	8,830'	
Nugget	8,830'	
Ankareh	10,220'	
Thrust	10,700'	
Nugget	10,700'	
TD:	12,299'	

★ U.S. GOVERNMENT PRINTING OFFICE: 1974-780-680/VIII-238

43-033-30023

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*------SCHLUMBERGER-----*
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SCHLUMBERGER DIRECTIONAL SURVEY

MARATHON OIL COMPANY

OTTER CREEK #1-21

WILDCAT

RICH COUNTY,UTAH

RUN NO.	1	1348 -	2514	24-MAY-80	7121
RUN NO.	2	2506 -	8730	26-AUG-80	7430

START OF SURVEY IS AT 1348 FT.

RADIUS OF CURVATURE METHOD

REFERENCE JOB 7430.

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* SCHLUMBERGER *
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HIGH RESOLUTION

DIPMETER

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CLUSTER LISTING
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MARATHON OIL COMPANY

WILDCAT

RICH, UTAH

OTTER CREEK #1-21

RUN NO. TWO JOB NO. 7430

CLUSTER RESULTS ONLY

4FT. CORR. - 2 FT. STEP

40 DEG. X2 SEARCH ANGLE

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
2508	29.3	269	1.6	148	18.0	18.0	A
2510	29.3	265	1.6	147	18.0	18.0	A
2512	28.7	269	1.6	148	18.0	18.0	A
2514	27.6	275	1.6	149	18.0	18.0	A
2516	28.5	274	1.6	149	17.9	18.0	A
2518	29.9	264	1.6	148	17.6	18.0	A
2520	28.3	260	1.6	147	17.3	18.0	A
2522	7.4	266	1.6	146	16.9	18.0	D
2524	6.3	263	1.6	145	16.6	18.0	D
2526	32.0	273	1.6	144	16.3	18.0	D
2528	26.6	265	1.6	141	15.9	18.0	A
2530	32.4	269	1.6	140	15.6	18.0	A
2532	32.7	269	1.6	140	15.3	18.0	A
2534	28.2	264	1.6	142	15.0	18.0	A
2536	29.5	267	1.6	143	14.7	18.0	A
2538	30.7	269	1.6	144	14.5	18.0	A
2540	31.0	268	1.6	147	14.3	18.0	C
2542	34.1	270	1.6	148	14.3	18.0	A
2544	32.1	265	1.5	150	14.3	18.0	A
2546	33.9	268	1.4	149	14.4	18.0	B
2548	31.6	274	1.4	148	14.5	18.0	D
2550	28.5	268	1.4	149	14.5	18.0	B
2552			1.5	150	14.4	18.0	
2554			1.6	148	14.5	18.0	
2556			1.6	145	14.7	18.0	
2558			1.6	144	14.9	18.0	
2560	29.2	275	1.6	144	15.1	18.0	D
2562	22.5	281	1.6	143	15.3	18.0	D
2564	29.4	277	1.6	142	15.5	18.0	D
2566	30.4	269	1.6	140	15.6	18.0	B
2568	27.8	269	1.6	140	15.5	18.0	B
2570	28.6	261	1.6	139	15.4	18.0	B
2572	31.2	255	1.6	138	15.4	18.0	D
2574	32.7	264	1.6	139	15.3	18.0	D
2576	33.3	269	1.6	145	15.3	18.0	B
2578	42.0	273	1.6	164	15.3	18.0	D
2580	33.0	271	1.6	160	15.4	18.0	D
2582			1.6	156	15.4	18.0	
2584			1.6	164	15.8	18.0	
2586			1.6	147	15.8	18.0	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
2588			1.7	134	15.1	18.0	
2590			1.7	136	14.6	18.0	
2592			1.8	137	14.3	18.0	
2594	19.7	270	1.8	136	14.2	18.0	B
2596	20.0	272	1.8	136	14.0	18.0	B
2598			1.8	135	13.8	17.9	
2600			1.8	135	13.7	17.8	
2602	22.5	271	1.8	135	13.8	17.8	D
2604	22.5	269	1.8	135	14.0	17.8	D
2606	26.1	262	1.8	135	14.1	17.8	A
2608	23.4	262	1.8	135	14.3	17.8	A
2610	22.9	266	1.8	134	14.4	17.8	A
2612	23.3	265	1.8	134	14.7	17.9	A
2614	23.1	261	1.8	134	15.0	18.0	A
2616	22.1	264	1.8	135	15.4	18.0	A
2618	24.0	264	1.8	135	15.5	18.0	A
2620	31.6	254	1.8	134	15.7	18.0	C
2622	38.7	250	1.8	134	15.9	18.0	D
2624	39.0	258	1.8	135	16.3	18.0	D
2626	34.0	248	1.8	135	16.4	18.0	C
2628			1.8	134	16.2	18.0	
2630			1.8	132	16.3	18.0	
2632			1.8	130	16.8	18.0	
2634	31.2	253	1.9	131	16.5	18.0	C
2636	34.3	246	2.0	132	15.6	18.0	A
2638	30.8	249	2.0	131	15.6	18.0	A
2640	28.0	253	2.0	130	15.4	18.0	A
2642	26.4	257	2.0	128	14.9	18.0	A
2644	24.9	261	2.0	126	14.4	18.0	A
2646	21.9	262	2.0	126	14.0	18.0	A
2648	22.5	266	2.0	125	13.7	18.0	A
2650	22.6	264	2.0	125	13.6	18.0	A
2652	21.7	262	2.0	124	13.5	18.0	A
2654	24.1	263	2.0	123	13.5	18.0	A
2656	22.8	243	2.0	123	13.4	18.0	B
2658	23.0	242	2.0	123	13.6	18.0	D
2660	22.1	248	2.0	124	14.8	18.0	B
2662	19.3	245	2.0	124	15.1	18.0	D
2664	19.5	249	1.9	124	14.8	18.0	D
2666			2.0	124	15.2	18.0	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
2668	21.1	249	2.0	124	15.9	18.0	D
2670	32.3	237	2.0	125	15.3	18.0	D
2672	22.2	218	2.0	125	14.1	18.0	D
2674	17.2	233	2.0	124	14.0	18.0	D
2676	22.4	245	2.0	125	13.9	18.0	D
2678	29.0	243	2.0	124	13.9	18.0	D
2680	15.4	222	2.0	123	13.8	18.0	D
2682	16.3	234	2.0	123	13.9	18.0	D
2684	19.0	218	2.0	123	14.3	18.0	D
2686			2.0	123	14.3	18.0	
2688	4.9	209	2.0	123	14.0	18.0	D
2690	12.8	211	1.9	123	13.9	18.0	B
2692	11.7	209	1.8	121	14.5	18.0	B
2694	11.9	192	1.8	119	15.2	18.0	D
2696			1.8	119	15.8	18.0	
2698			1.9	121	16.1	18.0	
2700	46.2	242	1.9	122	14.9	18.0	A
2702	43.3	241	2.0	121	13.8	18.0	A
2704	44.3	240	2.0	120	14.0	18.0	A
2706	48.8	241	2.0	118	14.3	18.0	C
2708			2.0	117	14.1	18.0	
2710			2.0	116	14.0	18.0	
2712	41.6	301	2.0	114	14.3	18.0	D
2714	42.5	300	2.0	113	14.6	18.0	D
2716			1.9	114	14.9	18.0	
2718			1.8	115	15.2	18.0	
2720			1.8	116	15.4	18.0	
2722			1.8	116	15.3	18.0	
2724			1.8	116	15.5	18.0	
2726			1.8	115	16.0	18.0	
2728			1.9	114	17.1	18.0	
2730			2.0	114	17.8	18.0	
2732			2.0	114	17.4	18.0	
2734			2.0	113	17.0	17.9	
2736			2.0	111	17.6	18.0	
2738			2.0	111	17.5	18.0	
2740			2.0	110	16.6	18.0	
2742			2.0	111	16.2	18.0	
2744			2.1	116	16.1	18.0	
2746			2.2	115	16.1	18.0	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
2748			2.2	118	16.1	18.0	
2750			2.2	128	16.3	18.0	
2752			2.2	123	16.3	17.7	
2754			2.2	118	15.7	17.3	
2756			2.2	125	15.5	17.2	
2758			2.2	119	15.3	17.1	
2760	12.4	239	2.1	118	14.9	16.8	B
2762	10.7	232	2.0	129	15.2	16.9	B
2764			2.0	131	15.4	17.0	
2766	22.5	277	2.0	131	15.2	16.9	A
2768	22.7	277	2.0	127	15.1	16.8	A
2770	22.3	274	2.0	114	15.0	16.7	A
2772	20.8	273	2.0	106	15.1	16.7	A
2774	24.8	262	2.0	105	15.0	16.7	C
2776	22.3	263	2.0	106	15.1	16.7	A
2778	23.9	259	2.0	106	15.1	16.6	A
2780	22.3	264	2.0	107	15.0	16.4	A
2782	20.1	260	2.0	106	15.1	16.4	A
2784	23.8	272	2.0	106	15.2	16.3	C
2786	24.5	272	2.0	107	15.3	16.2	A
2788			2.0	108	15.3	16.2	
2790	26.1	273	2.0	108	15.3	16.2	B
2792			1.9	108	15.5	16.1	
2794	27.4	271	2.0	108	15.4	16.1	D
2796	28.0	265	2.0	108	15.2	16.1	D
2798	28.5	265	2.0	108	14.9	16.1	B
2800	37.2	256	2.0	108	14.6	16.1	C
2802	23.8	266	2.0	108	14.6	16.1	A
2804	23.9	266	2.0	108	14.5	16.1	C
2806	23.8	264	2.0	107	14.4	16.0	A
2808	31.3	256	2.0	105	14.5	16.1	C
2810	21.7	267	2.0	105	14.6	16.0	C
2812	22.4	266	2.0	105	14.6	15.9	A
2814	27.8	273	2.0	107	14.7	15.9	A
2816	25.9	270	2.0	107	14.7	15.8	A
2818	22.7	265	2.0	106	14.6	15.7	A
2820	22.9	264	2.0	108	14.5	15.7	A
2822	23.3	264	2.0	109	14.3	15.6	A
2824	24.2	259	2.0	108	14.2	15.5	A
2826	25.1	259	2.0	107	14.2	15.5	A

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
2828	25.7	261	2.0	106	14.2	15.6	A
2830	25.3	261	2.0	106	14.1	15.7	A
2832	22.5	260	2.0	105	14.1	15.7	A
2834	22.2	261	2.0	104	14.0	15.7	A
2836			1.9	104	14.2	15.8	
2838	24.4	272	1.9	105	14.5	16.0	A
2840	15.3	269	1.8	106	14.4	15.8	A
2842	20.9	258	1.8	107	14.1	15.6	A
2844	18.3	266	1.8	107	14.5	15.7	A
2846	16.0	280	1.9	108	14.5	15.7	A
2848	22.2	267	2.0	108	13.9	15.4	A
2850	22.3	269	2.0	109	13.5	15.2	C
2852	26.9	263	2.0	109	13.5	15.1	A
2854			2.0	109	13.4	15.1	
2856	22.0	267	2.0	109	13.4	15.1	C
2858	22.9	266	2.0	109	13.5	15.2	A
2860	23.1	265	2.0	108	13.6	15.3	A
2862	23.8	261	1.9	108	13.7	15.4	A
2864	17.1	204	1.8	108	13.7	15.5	D
2866	20.5	263	1.9	108	13.7	15.5	B
2868	19.8	185	2.0	108	13.7	15.6	B
2870	15.7	195	2.0	107	13.6	15.5	B
2872	16.7	194	2.0	106	13.4	15.4	D
2874	22.3	253	2.0	105	13.4	15.4	D
2876	20.1	271	1.9	106	13.3	15.3	A
2878	21.4	273	1.9	106	13.2	15.1	A
2880	21.3	274	2.0	107	13.1	15.0	A
2882	21.4	271	2.0	108	13.1	14.9	C
2884	19.7	271	2.0	108	13.0	14.9	C
2886	19.8	272	2.0	109	13.0	14.9	A
2888			2.0	109	13.0	14.9	
2890	20.1	268	2.0	108	13.0	14.9	C
2892	19.2	263	2.0	108	13.0	14.9	A
2894	18.8	263	1.9	108	13.0	15.0	A
2896	21.2	272	1.9	108	13.1	15.2	A
2898	21.1	272	1.9	108	13.2	15.2	A
2900	22.5	269	2.0	109	13.2	15.3	A
2902	22.5	270	2.0	109	13.3	15.3	A
2904	21.2	269	2.0	109	13.3	15.3	A
2906	23.1	265	2.0	109	13.4	15.3	C

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
2908	20.0	274	2.0	109	13.5	15.3	A
2910	20.3	269	2.0	108	13.6	15.3	A
2912	22.1	267	2.0	108	13.7	15.4	A
2914	21.3	265	2.0	109	13.7	15.3	A
2916	20.9	267	2.0	110	13.5	15.2	A
2918	21.1	268	2.0	110	13.5	15.1	A
2920	22.1	264	2.0	109	13.5	15.1	C
2922			2.0	109	13.5	15.1	
2924	16.9	265	2.0	108	13.5	15.3	A
2926	17.8	261	2.0	107	13.5	15.4	A
2928	20.7	255	2.0	106	13.5	15.5	A
2930	20.3	255	2.0	106	13.6	15.6	A
2932			2.0	106	13.6	15.7	
2934	21.3	262	2.0	106	13.7	15.7	A
2936	21.1	262	2.0	105	13.6	15.7	A
2938	18.2	273	2.0	106	13.5	15.6	A
2940	20.4	272	2.0	106	13.5	15.6	A
2942	20.5	273	2.0	107	13.4	15.5	A
2944			2.0	108	13.4	15.4	
2946			2.0	108	13.3	15.4	
2948	16.0	300	2.0	109	13.2	15.4	B
2950	16.0	299	2.0	108	13.2	15.3	B
2952	18.0	304	2.0	109	13.2	15.4	D
2954			2.0	109	13.2	15.4	
2956			1.9	108	13.2	15.4	
2958			1.8	108	13.1	15.5	
2960			1.8	106	13.1	15.6	
2962			1.8	106	13.1	15.7	
2964			1.8	105	13.1	15.7	
2966			1.9	105	13.1	15.7	
2968	31.4	18	2.0	105	13.1	15.7	D
2970	30.8	18	2.0	106	13.1	15.7	D
2972	19.0	277	2.0	107	13.1	15.7	D
2974	18.8	276	2.0	107	13.1	15.7	D
2976			2.0	108	13.1	15.7	
2978	28.3	269	2.0	108	13.1	15.7	D
2980	20.7	266	2.0	108	13.1	15.7	B
2982	20.8	267	2.0	108	13.1	15.7	B
2984	24.4	263	2.0	108	13.1	15.8	B
2986	20.0	269	2.0	108	13.1	15.8	A

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
2988	21.9	268	2.0	107	13.2	15.9	A
2990	21.6	271	2.0	107	13.2	15.9	C
2992	22.1	271	2.0	106	13.2	15.9	C
2994	22.8	275	2.0	106	13.2	15.9	D
2996	21.5	268	2.0	106	13.3	15.9	B
2998	24.8	264	2.0	107	13.3	16.0	B
3000			2.0	107	13.5	15.9	
3002	22.9	275	2.0	107	13.5	15.9	D
3004	18.5	254	2.0	107	13.6	15.9	B
3006	17.8	254	2.0	107	13.7	16.0	B
3008			2.0	107	13.7	15.9	
3010			2.0	107	13.6	15.9	
3012	26.5	273	2.0	107	13.9	16.1	B
3014			2.0	107	14.0	16.2	
3016			2.0	107	14.0	16.2	
3018	28.0	278	2.0	106	14.0	16.1	D
3020			2.0	106	14.1	16.3	
3022	24.4	270	2.0	104	14.1	16.4	D
3024			2.0	103	13.8	16.3	
3026			2.0	102	13.6	16.2	
3028			2.0	102	13.6	16.2	
3030			2.0	102	13.6	16.2	
3032	35.9	48	2.0	102	13.6	16.2	D
3034	36.1	49	2.0	102	13.5	16.1	D
3036	37.7	306	2.0	102	13.4	16.0	D
3038	33.8	306	2.0	102	13.4	16.0	D
3040	35.4	295	2.0	103	13.2	15.9	D
3042	32.9	310	2.0	103	13.1	15.9	B
3044	32.5	311	2.0	103	13.1	15.8	B
3046			2.0	103	13.1	15.9	
3048			2.0	102	13.2	16.0	
3050			2.0	101	13.2	16.1	
3052	28.4	266	2.0	100	13.3	16.1	A
3054	28.5	266	2.0	100	13.2	16.1	A
3056	28.6	266	2.0	100	13.0	15.9	A
3058	28.6	266	2.0	100	12.9	15.8	A
3060	22.5	272	2.0	100	12.8	15.7	A
3062	22.6	271	2.0	101	12.7	15.6	A
3064	20.1	265	2.0	102	12.7	15.5	A
3066	20.1	265	2.0	102	12.7	15.4	A

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
3068	19.5	268	2.0	101	12.6	15.4	A
3070	20.9	265	2.0	102	12.6	15.4	A
3072	21.6	257	2.0	102	12.6	15.4	A
3074			2.0	102	12.6	15.4	
3076	23.7	275	2.0	101	12.7	15.4	C
3078	24.3	278	2.0	101	12.7	15.4	A
3080			2.0	101	12.8	15.4	
3082			2.0	100	12.8	15.4	
3084	21.5	280	2.0	99	12.8	15.4	A
3086	22.0	280	2.0	99	12.8	15.3	C
3088			2.0	98	12.7	15.3	
3090	26.3	256	2.0	97	12.8	15.2	B
3092	32.5	263	2.0	98	13.0	15.3	D
3094	29.0	255	2.0	99	13.0	15.3	D
3096	20.2	270	2.0	99	13.0	15.1	B
3098	19.5	270	2.0	99	13.0	14.9	D
3100	26.7	243	2.0	99	13.1	14.9	B
3102	26.7	243	2.0	99	13.1	14.9	B
3104			2.0	98	13.2	15.0	
3106			2.0	98	13.2	15.0	
3108			2.0	97	13.3	14.9	
3110			2.0	97	13.5	15.0	
3112	53.3	238	2.0	96	13.6	15.1	B
3114	54.7	237	2.0	95	13.7	15.3	B
3116			2.0	95	13.9	15.3	
3118			2.0	95	14.0	15.3	
3120	59.3	223	2.1	95	13.9	15.2	B
3122			2.0	95	13.8	15.1	
3124	77.2	29	2.0	94	14.0	15.3	B
3126	55.6	229	2.0	95	14.1	15.2	D
3128			2.1	96	13.9	14.8	
3130			2.1	97	13.9	14.6	
3132			2.1	96	13.9	14.6	
3134			2.1	96	13.9	14.6	
3136			2.2	95	13.9	14.6	
3138	17.9	23	2.2	96	14.0	14.6	D
3140	17.9	22	2.2	95	14.0	14.6	D
3142			2.2	95	13.9	14.6	
3144			2.2	94	13.9	14.6	
3146			2.2	91	14.2	14.8	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
3148			2.2	89	15.0	14.9	
3150			2.2	89	15.2	14.8	
3152			2.2	89	15.2	14.8	
3154			2.1	90	15.1	15.1	
3156			2.0	92	14.8	15.8	
3158			2.0	94	15.0	15.6	
3160			2.0	94	14.9	14.5	
3162			2.0	93	14.3	14.1	
3164	20.2	283	2.0	94	13.9	14.1	D
3166	17.9	283	2.0	94	14.1	14.3	D
3168			2.1	94	14.4	14.4	
3170	45.9	218	2.2	95	14.1	14.1	D
3172			2.2	95	13.5	13.8	
3174	48.8	219	2.2	94	13.5	13.8	D
3176			2.2	92	13.5	13.8	
3178			2.1	92	13.4	13.8	
3180			2.1	91	13.4	13.7	
3182			2.2	91	13.4	13.7	
3184			2.2	90	13.4	13.8	
3186			2.2	90	13.4	13.8	
3188			2.2	90	13.4	13.8	
3190	12.3	45	2.2	92	13.5	13.8	A
3192	10.2	48	2.2	94	13.5	13.8	C
3194			2.2	94	13.4	13.8	
3196	8.9	14	2.2	94	13.4	13.8	C
3198	12.1	59	2.2	95	13.4	13.8	C
3200			2.2	95	13.4	13.7	
3202	8.7	49	2.2	95	13.5	13.7	A
3204	10.1	34	2.2	95	13.5	13.8	A
3206	9.3	30	2.2	95	13.6	13.9	A
3208	8.8	51	2.2	94	13.7	14.0	A
3210	7.4	51	2.2	94	13.6	13.9	A
3212	7.1	50	2.2	94	13.6	13.8	A
3214	9.3	40	2.2	94	13.6	13.9	A
3216	11.6	45	2.2	94	13.7	13.9	C
3218	12.1	43	2.2	95	13.8	13.9	C
3220	13.7	45	2.2	96	14.0	14.1	A
3222	11.3	48	2.2	97	14.0	14.2	A
3224	11.8	36	2.2	96	13.6	14.1	A
3226	13.0	60	2.2	96	13.5	14.1	A

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
3228	12.0	60	2.2	96	13.4	14.0	A
3230	17.7	22	2.2	94	13.4	13.9	C
3232	14.4	48	2.2	95	13.3	13.9	C
3234			2.2	96	13.3	13.9	
3236	9.3	75	2.2	96	13.3	13.9	A
3238	9.3	75	2.2	95	13.3	13.9	A
3240			2.2	95	13.3	13.9	
3242	9.1	9	2.1	95	13.3	13.9	A
3244	8.9	8	2.1	95	13.2	13.8	C
3246	14.6	35	2.1	95	13.2	13.8	A
3248	14.4	33	2.2	96	13.2	13.8	A
3250	14.0	24	2.2	97	13.3	13.8	A
3252	14.0	22	2.2	98	13.3	13.9	A
3254			2.2	98	13.3	13.9	
3256			2.2	98	13.4	13.9	
3258	11.1	275	2.2	99	13.4	14.0	D
3260	29.6	76	2.2	99	13.4	14.0	B
3262	30.5	77	2.2	98	13.3	13.8	B
3264	12.1	312	2.2	98	13.3	13.8	B
3266	12.7	312	2.2	98	13.4	13.8	B
3268	14.2	303	2.2	98	13.5	13.9	B
3270	12.9	306	2.2	99	13.7	14.1	B
3272	12.6	305	2.2	99	13.8	14.3	B
3274			2.2	99	13.4	14.1	
3276			2.2	98	13.1	13.8	
3278			2.2	98	13.1	13.9	
3280			2.2	98	13.1	14.0	
3282	11.5	327	2.2	97	13.3	14.1	D
3284	5.2	326	2.2	95	13.4	14.1	D
3286			2.2	95	13.3	14.2	
3288			2.2	96	13.2	14.1	
3290			2.2	96	13.1	13.9	
3292			2.2	98	13.2	13.9	
3294			2.2	99	13.2	14.0	
3296			2.2	98	13.2	14.0	
3298			2.2	97	13.3	14.0	
3300			2.2	97	13.5	14.2	
3302			2.2	98	13.6	14.2	
3304			2.2	98	13.7	14.3	
3306			2.2	98	13.6	14.3	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
3308	14.8	301	2.2	98	13.5	14.2	A
3310	15.2	300	2.2	98	13.4	14.2	C
3312	15.7	300	2.2	99	13.4	14.2	A
3314	15.5	299	2.2	99	13.5	14.3	A
3316	14.7	285	2.2	97	13.6	14.3	A
3318	15.1	287	2.2	97	13.6	14.3	A
3320	14.8	300	2.2	97	13.6	14.3	A
3322	15.4	305	2.2	97	13.6	14.3	A
3324	36.2	58	2.2	98	13.7	14.3	B
3326	12.8	297	2.2	99	13.8	14.4	C
3328			2.2	98	13.9	14.5	
3330			2.2	98	14.0	14.5	
3332			2.2	99	14.1	14.6	
3334			2.2	99	14.0	14.6	
3336			2.2	99	13.6	14.4	
3338			2.2	99	13.5	14.5	
3340			2.2	99	13.9	14.8	
3342			2.2	100	14.0	14.9	
3344			2.2	100	13.8	14.9	
3346			2.2	101	13.6	14.9	
3348			2.2	100	13.5	14.9	
3350			2.2	100	13.7	14.9	
3352			2.2	100	14.0	15.0	
3354	49.6	55	2.2	100	14.0	15.0	D
3356			2.2	98	14.0	15.0	
3358			2.2	96	13.8	14.8	
3360			2.2	94	13.8	14.8	
3362	39.6	253	2.2	95	14.1	15.0	D
3364	39.3	253	2.2	95	14.3	15.0	D
3366			2.2	95	14.2	15.0	
3368	36.5	320	2.2	95	14.2	14.9	D
3370	39.4	285	2.2	95	14.2	14.9	D
3372			2.2	96	14.0	14.8	
3374			2.2	97	14.0	14.9	
3376			2.2	97	14.1	15.1	
3378			2.2	96	14.1	15.1	
3380	37.7	318	2.2	97	13.9	14.9	D
3382	37.4	318	2.2	98	13.9	15.0	B
3384			2.2	99	14.0	15.0	
3386			2.2	98	14.0	15.0	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
3388			2.2	96	14.1	15.1	
3390			2.2	96	14.1	15.2	
3392			2.2	98	14.0	15.2	
3394			2.2	98	14.2	15.1	
3396			2.2	98	14.5	15.2	
3398			2.2	98	14.5	15.3	
3400			2.2	98	14.5	15.3	
3402			2.2	99	14.5	15.3	
3404	26.7	287	2.2	99	14.3	15.2	B
3406	26.9	285	2.2	97	14.2	15.0	B
3408			2.2	97	14.0	14.8	
3410	33.6	290	2.2	97	14.1	14.8	D
3412	33.1	293	2.2	96	14.4	14.9	B
3414			2.2	95	14.5	14.9	
3416	27.3	290	2.2	94	14.3	14.8	D
3418	35.6	288	2.2	94	14.2	14.8	D
3420	38.4	291	2.2	95	14.1	14.7	D
3422			2.2	95	14.1	14.7	
3424			2.2	97	14.2	14.7	
3426	40.5	39	2.2	98	14.3	14.9	D
3428			2.2	96	14.4	15.0	
3430			2.2	95	14.4	15.0	
3432			2.2	96	14.6	15.0	
3434	29.6	279	2.2	96	14.6	14.9	D
3436	31.9	277	2.2	97	14.5	14.8	D
3438			2.2	97	14.4	14.6	
3440	24.9	289	2.2	97	14.4	14.6	B
3442	26.3	287	2.2	96	14.4	14.6	D
3444			2.2	96	14.3	14.6	
3446	20.6	281	2.2	96	14.4	14.6	B
3448	26.6	272	2.2	96	14.4	14.6	D
3450	28.5	292	2.2	96	14.3	14.6	D
3452	26.4	286	2.2	95	14.2	14.6	B
3454	26.4	286	2.2	95	14.2	14.6	B
3456			2.2	94	14.3	14.6	
3458			2.2	94	14.3	14.7	
3460			2.2	94	14.4	14.8	
3462			2.2	95	14.5	14.9	
3464			2.2	95	14.5	14.8	
3466			2.2	93	14.3	14.7	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
3468	30.6	348	2.2	94	14.2	14.7	D
3470			2.2	94	14.1	14.7	
3472			2.2	94	13.8	14.6	
3474			2.2	94	13.9	14.6	
3476			2.2	93	14.2	14.7	
3478	21.3	346	2.2	95	14.2	14.7	D
3480	23.0	346	2.2	96	14.0	14.6	D
3482			2.2	95	13.8	14.6	
3484			2.2	95	13.8	14.6	
3486			2.2	93	13.8	14.7	
3488			2.2	93	13.8	14.7	
3490			2.2	95	13.8	14.6	
3492			2.2	95	13.7	14.6	
3494			2.2	94	13.7	14.5	
3496			2.2	93	13.6	14.5	
3498			2.2	96	13.4	14.4	
3500			2.2	97	13.3	14.4	
3502	59.2	250	2.2	98	13.2	14.4	B
3504			2.2	101	13.2	14.5	
3506			2.2	101	13.2	14.4	
3508			2.2	101	13.2	14.4	
3510			2.2	101	13.2	14.4	
3512			2.2	100	13.3	14.6	
3514			2.2	100	13.5	14.7	
3516			2.2	100	13.5	14.8	
3518			2.2	100	13.6	14.9	
3520			2.2	99	13.6	14.9	
3522			2.2	99	13.5	14.9	
3524			2.2	100	13.4	14.8	
3526			2.2	101	13.3	14.7	
3528	36.1	33	2.2	101	13.2	14.7	B
3530			2.2	100	13.2	14.7	
3532			2.2	100	13.2	14.7	
3534			2.2	100	13.1	14.7	
3536			2.2	100	13.1	14.7	
3538			2.2	100	13.0	14.7	
3540			2.2	99	12.9	14.6	
3542	22.3	2	2.2	99	12.8	14.6	D
3544	22.7	11	2.2	99	12.7	14.6	B
3546			2.2	99	12.7	14.6	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
3548			2.2	99	12.6	14.7	
3550			2.2	98	12.6	14.8	
3552			2.2	98	12.5	14.7	
3554			2.2	99	12.4	14.4	
3556			2.2	99	12.3	14.2	
3558			2.2	99	12.4	14.3	
3560			2.2	98	12.7	14.8	
3562			2.2	98	12.9	14.9	
3564			2.2	98	12.8	14.9	
3566			2.2	99	12.7	14.8	
3568			2.2	99	12.7	14.8	
3570			2.2	99	12.8	14.9	
3572			2.2	100	12.7	15.0	
3574	37.2	229	2.2	100	12.6	15.0	B
3576	39.5	228	2.2	100	12.6	15.1	B
3578			2.2	99	12.6	15.1	
3580			2.2	100	12.6	15.0	
3582	27.2	75	2.2	100	12.5	15.0	D
3584	27.5	75	2.2	100	12.3	14.8	B
3586	25.9	77	2.2	100	12.3	14.8	D
3588	10.2	283	2.2	101	12.4	14.9	D
3590			2.2	100	12.5	15.1	
3592			2.2	99	12.6	15.1	
3594			2.2	98	12.6	15.2	
3596	11.9	253	2.2	99	12.4	15.1	D
3598	12.0	252	2.2	99	12.2	15.0	B
3600	12.1	261	2.2	99	12.3	15.2	D
3602			2.2	99	12.5	15.3	
3604			2.2	98	12.6	15.5	
3606			2.2	98	12.7	15.7	
3608			2.2	98	12.8	15.7	
3610			2.2	98	12.8	15.7	
3612			2.2	98	12.7	15.6	
3614	30.0	64	2.2	97	12.6	15.4	D
3616	28.5	65	2.2	97	12.5	15.4	D
3618			2.2	97	12.5	15.3	
3620			2.2	98	12.4	15.3	
3622			2.2	100	12.3	15.2	
3624			2.2	100	12.2	15.2	
3626			2.2	101	12.1	15.1	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
3628			2.2	101	12.1	15.2	
3630			2.2	101	12.1	15.3	
3632	39.1	179	2.2	101	12.2	15.4	D
3634	36.4	185	2.2	101	12.3	15.5	D
3636			2.2	99	12.5	15.8	
3638	42.1	174	2.2	98	12.6	15.9	D
3640	42.3	174	2.2	98	12.6	16.0	D
3642			2.2	99	12.7	16.0	
3644			2.2	100	12.6	15.9	
3646			2.2	99	12.6	15.9	
3648			2.2	99	12.7	15.9	
3650			2.2	99	12.5	15.7	
3652	36.5	12	2.2	99	12.3	15.4	D
3654	35.8	10	2.2	99	12.1	15.4	D
3656	38.6	12	2.2	100	11.9	15.4	D
3658			2.2	100	11.8	15.3	
3660			2.2	99	11.8	15.3	
3662			2.2	100	11.7	15.2	
3664			2.2	100	11.8	15.3	
3666			2.2	99	11.8	15.3	
3668			2.2	99	11.9	15.4	
3670			2.2	99	12.1	15.5	
3672			2.2	98	12.0	15.4	
3674			2.2	99	11.9	15.4	
3676	25.9	360	2.2	99	12.1	15.5	D
3678			2.2	100	12.2	15.6	
3680			2.2	99	12.2	15.6	
3682			2.2	98	12.2	15.7	
3684	26.1	10	2.2	98	12.1	15.5	B
3686	27.5	8	2.2	97	11.9	15.4	B
3688	38.0	253	2.2	97	11.9	15.4	D
3690			2.2	97	11.8	15.4	
3692			2.2	98	11.7	15.3	
3694			2.2	99	11.7	15.2	
3696	40.1	250	2.2	99	11.7	15.3	D
3698	40.1	257	2.2	98	11.8	15.3	D
3700			2.1	98	12.0	15.5	
3702			2.0	97	12.2	15.7	
3704			2.0	96	12.2	15.7	
3706			2.0	95	12.0	15.5	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
3708			2.0	94	11.8	15.3	
3710			2.0	95	12.0	15.4	
3712			2.0	95	12.2	15.4	
3714			2.0	94	12.2	15.4	
3716			2.0	95	12.1	15.3	
3718			2.0	96	12.0	15.3	
3720			2.0	97	12.1	15.3	
3722			2.0	96	12.2	15.3	
3724			2.0	95	12.3	15.4	
3726			2.0	95	12.3	15.4	
3728			2.0	95	12.3	15.3	
3730			2.0	94	12.4	15.4	
3732			2.0	93	12.7	15.6	
3734			1.9	93	12.8	15.7	
3736			1.8	93	12.8	15.6	
3738			1.8	94	12.8	15.6	
3740			1.8	96	12.6	15.5	
3742			1.8	96	12.5	15.4	
3744			1.8	94	12.5	15.4	
3746			1.8	94	12.6	15.4	
3748	9.6	81	1.8	93	12.6	15.4	D
3750			1.8	93	12.4	15.4	
3752			1.8	93	12.4	15.4	
3754			1.8	94	12.5	15.4	
3756			1.8	94	12.6	15.5	
3758			1.8	94	12.9	15.8	
3760			1.8	95	13.1	16.0	
3762			1.8	96	13.2	16.1	
3764			1.8	96	13.2	16.1	
3766			1.8	95	13.3	16.2	
3768			1.8	95	13.4	16.2	
3770			1.8	96	13.6	16.3	
3772			1.8	96	13.7	16.5	
3774	78.9	259	1.8	95	13.6	16.6	B
3776			1.8	95	13.4	16.6	
3778			1.8	95	13.6	16.7	
3780			1.8	95	13.8	16.9	
3782			1.8	95	14.0	17.0	
3784			1.8	95	14.0	17.1	
3786			1.8	94	14.0	16.9	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
3788			1.8	94	14.0	16.8	
3790			1.8	95	14.2	16.8	
3792			1.8	94	14.2	16.9	
3794			1.8	93	14.2	17.0	
3796	40.3	181	1.8	94	14.2	17.0	D
3798			1.8	94	14.2	16.9	
3800			1.8	95	14.1	16.8	
3802	41.8	171	1.8	95	13.9	16.6	B
3804	34.1	172	1.8	95	13.8	16.3	D
3806			1.8	95	13.8	16.3	
3808			1.8	96	13.7	16.2	
3810			1.7	97	13.7	16.0	
3812			1.6	97	13.6	15.9	
3814	15.3	39	1.6	97	13.6	15.9	D
3816	15.3	37	1.6	98	13.7	15.8	D
3818			1.6	100	13.7	15.7	
3820			1.6	101	13.7	15.7	
3822			1.6	101	13.8	15.7	
3824			1.6	101	13.9	15.7	
3826	20.0	34	1.6	101	14.0	15.7	D
3828			1.6	101	14.2	15.8	
3830			1.6	102	14.3	15.9	
3832			1.6	103	14.5	16.0	
3834	24.5	329	1.6	104	14.7	16.1	D
3836	26.1	329	1.6	105	14.6	16.1	D
3838			1.6	106	14.5	16.1	
3840			1.6	106	14.6	16.1	
3842			1.6	104	14.6	16.1	
3844			1.6	103	14.7	16.0	
3846			1.6	103	14.7	16.0	
3848			1.6	103	14.8	16.0	
3850			1.6	102	14.8	16.0	
3852			1.6	102	14.8	16.1	
3854			1.6	103	14.9	16.1	
3856	69.3	213	1.6	103	15.0	16.2	B
3858	69.3	209	1.6	103	14.9	16.2	B
3860	77.4	172	1.6	103	14.8	16.2	B
3862			1.6	104	14.9	16.2	
3864			1.6	105	15.1	16.4	
3866			1.6	105	15.2	16.5	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
3868	34.3	358	1.6	106	14.8	16.2	D
3870			1.6	107	14.7	16.1	
3872			1.6	107	14.7	16.1	
3874			1.6	107	14.6	16.1	
3876	27.2	144	1.6	106	14.6	16.1	D
3878	26.4	145	1.6	107	14.6	16.1	D
3880	55.8	5	1.6	108	14.5	15.9	D
3882			1.6	108	14.5	15.9	
3884			1.6	108	14.4	15.8	
3886			1.6	107	14.3	15.7	
3888			1.6	108	14.2	15.6	
3890			1.6	109	14.1	15.6	
3892			1.6	109	14.0	15.4	
3894			1.6	110	13.9	15.3	
3896			1.6	111	13.9	15.3	
3898			1.6	111	13.9	15.3	
3900			1.6	110	13.8	15.3	
3902			1.6	110	13.8	15.2	
3904	75.1	69	1.6	110	14.0	15.2	D
3906			1.6	111	14.0	15.2	
3908	36.7	265	1.6	111	14.1	15.2	D
3910			1.6	110	14.1	15.3	
3912	30.6	264	1.7	110	14.2	15.3	D
3914	31.2	263	1.8	110	14.2	15.4	B
3916	31.7	262	1.8	109	14.2	15.4	D
3918			1.8	109	14.2	15.3	
3920			1.8	109	14.2	15.3	
3922	32.7	273	1.8	110	14.1	15.3	B
3924	31.5	275	1.8	111	14.0	15.3	D
3926			1.8	111	14.0	15.3	
3928	16.5	279	1.8	111	13.8	15.2	C
3930	18.0	282	1.8	111	13.8	15.1	A
3932	17.0	281	1.8	110	13.7	15.1	A
3934	16.7	282	1.8	110	13.6	15.0	A
3936	21.7	280	1.8	109	13.6	14.9	D
3938	21.0	300	1.8	109	13.5	14.9	D
3940	20.9	298	1.8	109	13.5	14.9	D
3942			1.8	110	13.5	14.9	
3944	34.5	268	1.8	109	13.4	14.9	D
3946			1.8	110	13.3	14.8	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
3948	37.1	268	1.8	111	13.2	14.7	B
3950			1.8	111	13.1	14.6	
3952			1.8	110	13.1	14.6	
3954			1.8	110	13.1	14.6	
3956	32.3	264	1.8	110	13.2	14.7	B
3958	31.7	264	1.8	110	13.2	14.8	B
3960			1.8	110	13.1	14.7	
3962	38.4	273	1.8	109	13.1	14.6	D
3964			1.8	108	13.4	14.5	
3966			1.8	107	13.5	14.6	
3968	29.3	259	1.8	107	13.6	14.6	D
3970			1.8	108	13.7	14.7	
3972	29.9	262	1.8	109	13.9	14.8	D
3974			1.8	109	13.9	14.9	
3976			1.8	108	13.9	15.0	
3978			1.8	108	13.7	15.0	
3980			1.8	110	13.5	14.8	
3982			1.8	111	13.5	14.8	
3984			1.8	112	13.5	14.8	
3986			1.8	112	13.9	15.0	
3988			1.8	111	14.1	15.0	
3990			1.8	110	13.6	14.9	
3992			1.8	110	13.0	14.7	
3994			1.8	110	12.9	14.7	
3996			1.8	110	12.7	14.7	
3998			1.8	109	12.4	14.6	
4000	18.2	226	1.8	108	12.3	14.4	D
4002	14.5	261	1.8	108	12.5	14.3	D
4004	12.1	258	1.8	108	13.1	14.4	B
4006	19.1	334	1.8	109	13.5	14.6	D
4008	19.1	333	1.8	110	13.6	14.6	B
4010	19.3	339	1.8	109	13.8	14.6	D
4012	22.0	329	1.8	110	13.9	14.6	B
4014	21.6	332	1.8	111	14.0	14.7	B
4016			1.8	111	14.1	14.7	
4018			1.8	110	14.1	14.7	
4020			1.8	109	14.2	14.7	
4022			1.8	101	14.8	14.3	
4024	10.8	7	1.8	101	14.8	14.4	B
4026	10.7	7	1.8	102	14.9	14.5	B

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
4028			1.8	102	14.9	14.6	
4030			1.8	102	15.0	14.6	
4032	18.2	357	1.8	102	15.0	14.6	D
4034			1.8	102	14.9	14.6	
4036			1.8	101	14.9	14.6	
4038	18.0	321	1.8	101	15.0	14.6	B
4040			1.8	100	15.0	14.6	
4042	22.0	319	1.8	97	15.0	14.6	D
4044	22.9	313	1.8	109	14.8	14.5	B
4046	21.6	311	1.8	121	14.8	14.5	B
4048	17.2	274	1.8	107	14.8	14.5	B
4050	17.3	271	1.8	96	14.8	14.4	B
4052			1.9	98	14.7	14.3	
4054	21.3	311	2.0	99	14.7	14.3	B
4056	21.3	309	2.0	99	14.7	14.3	B
4058			2.0	100	14.6	14.3	
4060			2.0	100	14.6	14.2	
4062			2.0	101	14.5	14.1	
4064			2.0	102	14.4	14.1	
4066			2.0	101	14.4	14.1	
4068	14.5	46	2.0	101	14.3	14.0	D
4070	21.3	358	2.0	101	14.3	13.9	B
4072	19.7	79	2.0	99	14.2	13.7	B
4074	20.1	78	2.0	99	14.1	13.6	B
4076			2.0	98	14.0	13.6	
4078	26.8	360	2.0	97	14.0	13.5	D
4080	26.3	3	2.0	98	13.9	13.3	D
4082			2.0	98	14.1	13.5	
4084	20.0	1	2.0	97	14.3	13.8	D
4086			2.0	97	14.2	13.8	
4088			2.0	98	14.2	13.9	
4090			2.0	98	14.2	13.9	
4092			2.0	100	14.1	13.9	
4094			2.0	101	14.2	14.0	
4096			2.0	102	14.3	14.1	
4098			2.0	101	14.4	14.1	
4100	14.3	308	2.0	99	14.4	14.0	D
4102	15.1	310	2.0	99	14.4	13.8	D
4104	17.4	290	2.0	100	14.4	13.7	B
4106			2.0	100	14.4	13.7	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
4108			2.0	100	14.4	14.0	
4110			2.0	99	14.4	14.1	
4112			2.0	98	14.4	14.2	
4114			2.0	98	14.5	14.3	
4116			2.0	98	14.5	14.3	
4118			2.0	99	14.4	14.2	
4120			2.0	100	14.3	14.1	
4122			2.0	101	14.3	14.1	
4124	57.1	65	2.0	101	14.3	14.0	B
4126			2.0	101	14.3	13.9	
4128			2.0	101	14.3	13.9	
4130			2.0	101	14.3	13.8	
4132	82.6	234	2.0	101	14.2	13.7	D
4134			2.0	101	14.1	13.6	
4136	57.6	67	2.0	100	14.1	13.6	D
4138			2.0	100	14.0	13.5	
4140			2.0	100	14.0	13.5	
4142	30.9	284	2.0	100	14.0	13.4	D
4144	28.2	277	2.0	100	14.0	13.0	D
4146	29.5	278	2.0	100	14.0	12.9	D
4148			2.0	101	13.9	12.9	
4150			2.0	102	13.8	13.0	
4152			2.0	102	13.9	13.3	
4154			2.0	101	13.9	13.3	
4156	28.1	280	2.0	101	14.1	13.2	D
4158			2.1	101	14.2	13.5	
4160			2.2	101	14.2	13.9	
4162			2.1	101	14.2	14.1	
4164			2.0	101	14.3	14.1	
4166			2.0	101	14.4	14.2	
4168			2.0	101	14.3	14.2	
4170			2.0	100	14.2	14.2	
4172			2.1	101	14.0	14.1	
4174			2.1	103	13.8	13.8	
4176			2.2	104	13.7	13.7	
4178			2.2	103	13.8	13.8	
4180			2.2	101	13.8	13.8	
4182			2.2	101	13.8	13.7	
4184	48.7	330	2.2	101	13.7	13.6	D
4186	48.4	330	2.2	100	13.6	13.5	D

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
4188			2.2	100	13.5	13.4	
4190			2.2	101	13.4	13.3	
4192			2.2	101	13.4	13.4	
4194			2.2	101	13.7	13.6	
4196			2.2	102	13.9	13.8	
4198			2.2	102	14.0	13.9	
4200			2.2	101	13.9	13.8	
4202			2.2	105	13.9	13.9	
4204			2.2	105	13.9	13.9	
4206			2.2	103	13.7	13.7	
4208			2.2	105	13.6	13.6	
4210			2.1	105	13.8	13.7	
4212			2.0	105	14.0	13.8	
4214			2.0	107	14.0	13.9	
4216			2.0	106	14.0	14.0	
4218			2.1	106	13.9	14.1	
4220			2.1	106	13.8	14.0	
4222			2.0	108	13.9	14.0	
4224			2.0	109	14.0	14.2	
4226			2.0	109	14.0	14.2	
4228			2.0	109	13.9	13.9	
4230			2.0	109	13.9	13.5	
4232			2.0	110	13.9	13.4	
4234			2.1	109	13.8	13.6	
4236	15.6	199	2.1	109	13.9	13.7	B
4238			2.1	109	14.1	13.5	
4240			2.2	109	14.4	13.5	
4242			2.2	109	14.4	13.5	
4244	26.5	146	2.2	110	14.3	13.5	D
4246	24.4	147	2.2	111	14.0	13.3	B
4248	26.0	144	2.1	109	13.7	13.0	D
4250			2.0	108	13.8	12.9	
4252			2.0	108	13.8	12.7	
4254			2.0	108	13.9	12.7	
4256			2.1	108	14.0	12.9	
4258			2.2	108	14.0	13.0	
4260	26.4	60	2.2	108	14.1	13.0	D
4262	29.6	59	2.2	107	14.1	13.0	D
4264	19.0	313	2.2	107	14.2	13.1	B
4266	19.7	312	2.2	107	14.4	13.1	D

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
4268			2.2	108	14.8	13.5	
4270	14.8	217	2.2	108	15.0	13.8	B
4272	14.6	215	2.2	108	14.8	13.9	B
4274	14.1	216	2.2	110	14.9	14.0	D
4276	27.8	56	2.2	111	15.3	14.3	D
4278	31.4	270	2.2	111	15.6	14.6	D
4280	65.8	337	2.2	110	15.4	14.5	D
4282	60.3	335	2.2	109	15.0	14.5	D
4284	61.3	335	2.2	108	14.7	14.5	D
4286	29.7	207	2.1	107	14.6	14.4	D
4288	30.4	262	2.0	108	14.6	14.1	B
4290	30.2	262	2.1	108	14.7	14.1	B
4292	39.5	258	2.2	107	15.1	14.6	D
4294			2.2	106	15.3	14.7	
4296			2.2	105	15.3	14.7	
4298			2.2	105	15.4	14.9	
4300	40.6	52	2.2	106	15.6	15.0	B
4302			2.2	107	15.8	15.1	
4304			2.2	107	15.8	15.2	
4306			2.2	107	15.5	15.3	
4308			2.2	108	15.1	15.1	
4310			2.2	108	15.1	15.0	
4312			2.2	109	15.4	15.1	
4314			2.2	109	15.5	15.0	
4316	38.3	58	2.2	108	15.3	15.0	D
4318	6.9	308	2.2	109	15.4	15.2	D
4320			2.2	107	15.4	15.2	
4322	9.4	144	2.2	105	15.3	15.0	D
4324	80.4	211	2.2	107	15.4	14.9	D
4326			2.2	108	15.7	14.9	
4328	8.8	87	2.2	108	16.0	14.9	D
4330			2.2	107	16.0	15.0	
4332	5.4	106	2.2	108	15.7	14.8	B
4334	5.8	105	2.2	106	15.6	14.9	B
4336			2.2	104	15.7	15.1	
4338			2.2	104	15.5	15.1	
4340			2.2	106	15.5	15.1	
4342			2.2	107	15.7	15.2	
4344			2.2	108	15.7	15.0	
4346			2.2	108	15.8	15.1	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
4348			2.2	106	16.1	15.3	
4350			2.2	107	16.1	15.3	
4352	31.3	16	2.2	107	16.0	15.2	D
4354	28.6	3	2.2	107	16.0	15.1	B
4356	26.3	359	2.2	106	16.2	15.2	B
4358			2.2	105	16.2	15.2	
4360			2.2	104	16.1	15.1	
4362			2.2	104	15.8	15.0	
4364			2.2	103	15.4	14.7	
4366			2.2	104	15.4	14.5	
4368			2.2	104	15.5	14.5	
4370			2.2	105	15.8	14.7	
4372			2.2	106	15.9	14.8	
4374			2.2	105	16.0	14.7	
4376			2.2	105	16.1	14.5	
4378			2.2	105	16.1	14.4	
4380	20.9	237	2.2	105	16.1	14.3	B
4382			2.2	104	16.1	14.2	
4384			2.2	103	15.8	13.9	
4386			2.2	103	15.5	13.6	
4388			2.2	103	15.5	13.4	
4390			2.2	104	15.5	13.1	
4392			2.2	105	15.1	12.8	
4394	24.9	236	2.2	106	14.7	12.6	D
4396	23.5	233	2.2	106	14.6	12.6	D
4398			2.2	107	14.8	12.7	
4400	52.1	339	2.2	108	15.0	12.9	B
4402	57.3	337	2.2	108	15.1	13.0	D
4404			2.2	107	15.1	13.2	
4406			2.2	107	15.1	13.3	
4408			2.2	107	15.4	13.4	
4410			2.2	106	15.4	13.5	
4412			2.2	106	15.4	13.6	
4414	39.4	338	2.2	106	15.7	13.8	D
4416	37.2	337	2.2	106	16.0	14.3	B
4418			2.2	105	16.0	14.3	
4420			2.2	104	16.1	14.4	
4422			2.2	104	16.1	14.5	
4424			2.2	103	15.7	14.4	
4426			2.2	103	15.3	14.3	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
4428	17.3	284	2.2	103	15.2	14.1	B
4430	17.1	284	2.2	104	15.5	14.4	B
4432	25.2	278	2.2	104	15.9	14.8	D
4434			2.2	104	16.1	14.9	
4436			2.2	104	16.2	15.0	
4438			2.2	104	16.3	15.1	
4440			2.2	104	16.4	15.2	
4442			2.2	103	16.5	15.3	
4444			2.2	104	16.5	15.3	
4446			2.2	105	16.4	15.3	
4448			2.2	104	16.5	15.3	
4450			2.2	102	16.5	15.4	
4452			2.2	102	16.6	15.4	
4454			2.2	101	16.4	15.2	
4456			2.2	101	16.1	14.8	
4458			2.2	101	15.8	14.6	
4460			2.2	101	15.5	14.6	
4462			2.2	101	15.4	14.5	
4464			2.2	100	15.4	14.6	
4466			2.2	100	15.5	14.7	
4468			2.2	101	15.7	14.7	
4470	25.3	117	2.2	101	15.7	14.7	D
4472	25.2	116	2.2	101	15.8	14.7	D
4474			2.2	101	15.8	14.8	
4476			2.2	101	15.8	14.9	
4478			2.2	101	15.8	14.9	
4480			2.2	101	15.8	14.9	
4482			2.2	101	15.9	15.0	
4484			2.2	102	15.9	15.0	
4486			2.2	102	15.8	15.0	
4488			2.2	102	15.8	15.1	
4490	76.5	121	2.2	102	15.7	15.1	B
4492			2.2	102	15.7	15.1	
4494			2.2	102	15.8	15.1	
4496			2.2	102	15.8	15.1	
4498			2.2	101	15.9	15.1	
4500			2.2	101	15.9	15.1	
4502	37.9	341	2.2	101	15.9	15.1	D
4504			2.2	100	15.9	15.0	
4506			2.2	100	15.8	15.0	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
4508	28.9	335	2.2	99	15.7	15.0	D
4510			2.2	99	15.7	15.0	
4512			2.2	98	15.7	15.0	
4514			2.2	98	15.7	15.0	
4516			2.2	98	15.7	15.0	
4518			2.2	98	15.6	14.9	
4520			2.2	98	15.5	14.9	
4522	80.7	215	2.2	99	15.5	14.9	D
4524			2.2	101	15.6	14.9	
4526			2.2	102	15.7	14.9	
4528	32.4	146	2.2	101	15.8	14.8	B
4530			2.2	101	15.8	14.7	
4532			2.2	101	15.8	14.6	
4534			2.2	101	15.9	14.6	
4536			2.2	101	15.9	14.6	
4538			2.2	99	15.9	14.6	
4540			2.2	99	15.8	14.6	
4542			2.2	99	15.8	14.6	
4544			2.2	98	15.8	14.6	
4546			2.2	98	15.7	14.6	
4548			2.2	98	15.6	14.6	
4550			2.2	98	15.5	14.6	
4552			2.2	98	15.4	14.6	
4554			2.2	98	15.5	14.7	
4556			2.2	98	15.5	14.8	
4558			2.2	99	15.6	14.8	
4560	52.1	100	2.2	99	15.7	14.8	D
4562	50.5	100	2.1	98	15.8	14.8	D
4564	31.8	156	2.1	98	15.8	14.9	D
4566	80.4	213	2.2	98	15.9	14.9	D
4568			2.2	98	16.0	14.9	
4570	83.5	266	2.2	97	16.1	14.9	D
4572	58.2	282	2.2	97	16.1	14.9	D
4574	58.2	281	2.2	97	16.2	15.0	D
4576	83.6	268	2.2	97	16.3	15.1	D
4578	63.9	225	2.2	98	16.3	15.1	D
4580			2.2	99	16.2	15.2	
4582			2.2	100	16.2	15.4	
4584			2.2	101	16.2	15.6	
4586	71.9	227	2.2	101	16.2	15.8	D

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
4588			2.2	101	16.3	16.0	
4590			2.2	101	16.4	16.1	
4592			2.2	101	16.5	16.2	
4594			2.2	101	16.7	16.3	
4596			2.2	100	16.8	16.4	
4598			2.2	100	16.8	16.4	
4600			2.2	100	16.9	16.5	
4602			2.2	101	16.9	16.5	
4604			2.2	100	16.9	16.5	
4606			2.2	99	17.0	16.5	
4608			2.2	100	16.9	16.4	
4610			2.2	101	16.8	16.3	
4612			2.2	102	16.7	16.2	
4614			2.2	102	16.7	16.1	
4616			2.2	103	16.7	16.1	
4618			2.2	103	16.7	16.0	
4620	78.4	159	2.2	103	16.8	15.9	B
4622	74.7	161	2.2	102	16.9	15.9	D
4624			2.2	102	17.0	15.9	
4626			2.2	101	17.1	15.9	
4628	48.6	350	2.2	101	17.2	15.9	D
4630	49.7	350	2.2	100	17.2	16.0	D
4632			2.2	100	17.2	16.2	
4634			2.2	100	17.1	16.2	
4636			2.2	101	17.1	16.1	
4638			2.2	100	16.9	16.0	
4640			2.2	100	16.7	16.2	
4642			2.2	101	16.8	16.4	
4644			2.2	101	17.0	16.4	
4646			2.2	101	17.2	16.5	
4648			2.2	102	17.2	16.5	
4650			2.2	102	17.3	16.6	
4652			2.2	102	17.6	16.7	
4654			2.2	101	17.7	16.7	
4656			2.2	101	17.8	16.7	
4658			2.2	101	17.9	16.6	
4660			2.2	99	17.8	16.5	
4662			2.2	99	17.6	16.4	
4664			2.2	100	17.5	16.3	
4666			2.2	100	17.4	16.2	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
4668			2.2	101	17.3	16.1	
4670			2.2	101	17.3	15.9	
4672			2.2	101	17.1	15.7	
4674			2.2	101	17.0	15.5	
4676			2.2	102	16.9	15.3	
4678			2.2	102	16.8	15.1	
4680			2.2	101	16.8	14.9	
4682			2.2	101	16.8	14.8	
4684			2.2	100	16.8	14.5	
4686			2.2	100	16.8	14.3	
4688			2.2	99	16.7	14.2	
4690			2.2	99	16.7	14.0	
4692			2.2	98	16.5	13.9	
4694			2.2	98	16.4	13.8	
4696	54.2	251	2.2	99	16.3	13.9	B
4698			2.2	99	16.3	14.0	
4700			2.2	99	16.3	14.0	
4702			2.2	99	16.3	13.9	
4704			2.2	99	16.3	14.0	
4706			2.2	99	16.3	14.1	
4708			2.2	99	16.4	14.1	
4710			2.2	99	16.6	14.1	
4712			2.2	99	16.8	14.3	
4714	79.2	74	2.2	99	17.0	14.4	D
4716			2.2	100	17.3	14.7	
4718			2.2	101	17.5	15.0	
4720			2.2	100	17.5	15.2	
4722	79.9	62	2.3	100	17.7	15.4	D
4724	73.9	193	2.4	100	17.8	15.7	D
4726	11.6	65	2.4	99	17.6	15.8	B
4728	9.5	69	2.4	99	17.6	16.0	D
4730			2.4	97	17.6	16.1	
4732	77.3	186	2.4	95	17.5	16.2	B
4734			2.4	96	17.6	16.2	
4736			2.4	97	17.7	16.3	
4738			2.4	95	17.9	16.5	
4740			2.4	95	18.0	16.5	
4742			2.4	95	18.0	16.6	
4744			2.4	95	18.0	16.7	
4746			2.4	96	18.0	16.8	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
4748			2.4	97	18.0	16.7	
4750			2.4	98	18.0	17.0	
4752			2.4	96	18.0	16.2	
4754			2.4	94	17.7	14.7	
4756			2.4	94	17.3	14.4	
4758			2.4	94	17.3	14.4	
4760			2.4	95	17.4	14.7	
4762			2.4	95	17.5	15.0	
4764			2.4	96	17.8	15.4	
4766			2.4	97	18.0	15.7	
4768			2.3	96	18.0	15.7	
4770			2.2	96	18.0	15.5	
4772			2.3	97	18.0	16.1	
4774			2.4	100	18.0	16.6	
4776			2.4	100	18.0	16.9	
4778			2.4	98	18.0	16.9	
4780			2.4	99	18.0	17.3	
4782			2.4	100	18.0	17.9	
4784			2.4	99	18.0	17.8	
4786			2.5	101	18.0	17.7	
4788			2.5	102	18.0	17.4	
4790			2.4	99	18.0	16.9	
4792			2.4	98	18.0	16.5	
4794			2.4	100	18.0	16.3	
4796			2.4	101	18.0	16.0	
4798			2.4	98	17.9	15.6	
4800			2.4	95	18.0	14.7	
4802			2.3	95	18.0	14.7	
4804			2.2	93	18.0	14.9	
4806			2.2	94	17.8	14.2	
4808			2.2	95	17.6	13.8	
4810			2.2	95	17.8	14.0	
4812			2.2	95	17.8	14.2	
4814			2.2	97	17.7	14.2	
4816			2.2	99	17.6	14.1	
4818	23.4	322	2.2	100	17.4	14.1	D
4820	25.6	321	2.2	100	17.3	14.1	D
4822	24.2	328	2.2	101	17.1	14.1	D
4824	21.5	322	2.2	102	17.0	14.2	D
4826			2.2	101	17.1	14.1	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM. 2-4	QUAL. INDEX BEST =A
4828			2.2	100	16.9	13.8	
4830			2.2	100	17.0	13.9	
4832			2.2	99	17.6	14.3	
4834			2.2	99	17.7	14.3	
4836			2.2	98	17.8	14.4	
4838			2.2	98	17.8	14.4	
4840	29.6	132	2.2	99	17.8	14.5	D
4842	30.3	127	2.2	99	17.8	14.5	B
4844			2.2	99	17.7	14.6	
4846			2.2	99	17.6	14.6	
4848			2.2	99	17.5	14.5	
4850			2.2	99	17.4	14.5	
4852			2.2	99	17.3	14.4	
4854			2.2	99	17.1	14.4	
4856			2.2	99	17.0	14.4	
4858			2.1	99	17.1	14.3	
4860	28.9	247	2.0	99	17.3	14.3	D
4862			2.0	97	17.2	14.2	
4864			2.0	96	17.3	14.2	
4866			2.0	96	17.5	14.3	
4868			2.0	96	17.7	14.3	
4870	34.8	254	2.0	96	17.7	14.3	B
4872	35.1	256	2.0	96	17.7	14.3	B
4874			2.0	96	17.7	14.4	
4876			2.0	97	17.6	14.5	
4878	52.8	202	2.0	97	17.5	14.6	D
4880			2.0	98	17.4	14.6	
4882	82.9	310	2.0	98	17.5	14.7	D
4884	83.0	313	2.0	98	17.5	14.9	D
4886			2.0	97	17.4	15.0	
4888			2.0	97	17.5	15.1	
4890			1.9	96	17.4	15.4	
4892			1.8	97	17.0	15.9	
4894			1.8	98	16.8	16.3	
4896	79.4	315	1.8	98	17.1	16.9	D
4898			1.8	98	17.6	17.4	
4900			1.8	98	17.9	17.8	
4902			1.8	98	18.0	18.0	
4904			1.8	99	18.0	18.0	
4906			1.8	99	18.0	17.9	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
4908			1.8	96	18.0	17.7	
4910			1.8	94	18.0	17.7	
4912			1.8	94	18.0	18.0	
4914			1.9	94	18.0	18.0	
4916			2.0	95	18.0	18.0	
4918			2.0	95	18.0	18.0	
4920			2.0	94	18.0	18.0	
4922			2.0	95	18.0	18.0	
4924			2.0	96	18.0	17.9	
4926			2.0	99	18.0	17.9	
4928			2.0	104	18.0	18.0	
4930			2.0	104	18.0	17.8	
4932			1.9	101	18.0	17.4	
4934			1.9	99	18.0	17.5	
4936			1.8	99	18.0	17.8	
4938			1.8	101	18.0	18.0	
4940			1.8	102	18.0	18.0	
4942			1.8	101	18.0	18.0	
4944			1.9	101	18.0	18.0	
4946			2.0	102	18.0	18.0	
4948			2.1	101	18.0	18.0	
4950			2.2	99	18.0	18.0	
4952			2.3	97	18.0	18.0	
4954			2.4	96	18.0	18.0	
4956			2.4	94	18.0	18.0	
4958			2.4	93	18.0	18.0	
4960			2.4	93	18.0	18.0	
4962			2.4	93	18.0	18.0	
4964			2.4	95	18.0	18.0	
4966			2.4	95	18.0	18.0	
4968			2.5	93	18.0	18.0	
4970			2.6	91	18.0	18.0	
4972			2.6	91	18.0	18.0	
4974			2.6	92	18.0	18.0	
4976			2.6	90	18.0	18.0	
4978			2.6	89	18.0	18.0	
4980			2.6	88	18.0	18.0	
4982			2.6	88	17.8	18.0	
4984			2.6	87	17.3	18.0	
4986			2.5	87	17.0	18.0	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
4988			2.4	86	16.6	18.0	
4990			2.4	84	16.2	18.0	
4992			2.4	84	15.6	18.0	
4994			2.4	84	15.5	18.0	
4996			2.3	83	14.9	17.6	
4998			2.2	83	14.1	16.9	
5000			2.2	84	13.7	16.5	
5002			2.2	85	13.6	16.4	
5004			2.2	86	13.7	16.4	
5006			2.2	86	13.8	16.4	
5008			2.2	85	13.9	16.4	
5010			2.2	84	14.1	16.5	
5012	42.7	359	2.2	85	14.7	17.1	D
5014	42.1	360	2.2	88	15.0	17.6	D
5016			2.2	89	15.4	17.9	
5018			2.2	88	15.5	17.9	
5020			2.2	88	15.8	17.9	
5022			2.2	89	16.2	18.0	
5024			2.2	91	17.1	18.0	
5026			2.2	92	17.7	18.0	
5028			2.2	94	17.5	18.0	
5030			2.2	94	17.4	18.0	
5032			2.1	92	17.8	18.0	
5034			2.0	90	18.0	18.0	
5036			2.1	90	18.0	18.0	
5038			2.2	91	18.0	18.0	
5040			2.2	91	18.0	18.0	
5042			2.3	90	18.0	18.0	
5044			2.4	88	18.0	18.0	
5046			2.4	89	18.0	18.0	
5048			2.4	89	18.0	18.0	
5050			2.5	90	18.0	18.0	
5052			2.6	90	18.0	18.0	
5054			2.6	87	18.0	18.0	
5056			2.6	86	18.0	18.0	
5058			2.5	88	18.0	18.0	
5060			2.4	89	18.0	18.0	
5062			2.3	89	18.0	18.0	
5064			2.3	90	18.0	18.0	
5066			2.3	91	18.0	18.0	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
5068			2.4	90	18.0	18.0	
5070			2.4	91	18.0	17.9	
5072			2.4	91	18.0	17.9	
5074			2.4	90	18.0	17.9	
5076			2.4	88	18.0	17.9	
5078			2.4	86	18.0	18.0	
5080			2.4	84	17.4	17.7	
5082			2.3	84	16.8	17.7	
5084			2.3	84	16.7	18.0	
5086			2.4	84	16.9	18.0	
5088			2.3	84	17.3	18.0	
5090			2.2	83	17.5	18.0	
5092			2.2	83	16.9	17.9	
5094			2.3	83	16.0	17.8	
5096			2.4	82	15.5	17.2	
5098			2.4	82	16.1	16.4	
5100			2.3	83	16.7	16.0	
5102			2.2	85	17.0	15.9	
5104			2.2	87	16.7	15.8	
5106			2.2	84	15.0	15.0	
5108			2.2	80	14.1	13.2	
5110			2.3	80	15.9	12.6	
5112			2.2	83	16.8	13.0	
5114			2.2	85	15.6	12.8	
5116			2.3	85	16.0	13.3	
5118			2.4	87	17.3	14.0	
5120			2.4	88	17.5	14.2	
5122			2.4	87	17.6	14.6	
5124			2.4	88	17.8	14.2	
5126			2.4	89	17.9	13.9	
5128			2.4	89	18.0	14.2	
5130			2.4	88	18.0	14.2	
5132			2.4	87	17.8	13.8	
5134			2.3	87	17.4	13.8	
5136			2.3	86	17.0	14.0	
5138			2.4	86	17.0	14.1	
5140			2.3	86	17.6	14.4	
5142			2.2	86	18.0	14.5	
5144			2.3	84	17.2	15.0	
5146			2.3	83	16.9	15.0	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
5148			2.4	84	17.6	14.6	
5150			2.4	84	17.8	14.5	
5152	21.5	242	2.4	85	17.1	14.3	D
5154	22.7	235	2.4	86	16.8	13.9	D
5156	19.1	231	2.4	86	17.3	13.8	D
5158			2.4	86	17.5	14.0	
5160			2.4	85	17.5	14.2	
5162			2.4	84	17.5	14.3	
5164			2.4	83	17.3	14.3	
5166			2.3	83	16.7	14.1	
5168			2.2	83	16.2	14.1	
5170			2.2	83	16.3	14.0	
5172			2.2	84	16.9	14.1	
5174			2.2	85	17.3	14.4	
5176			2.2	88	17.2	14.6	
5178			2.2	87	16.6	14.2	
5180			2.2	85	15.4	13.2	
5182			2.2	85	14.7	13.0	
5184			2.2	84	14.4	13.0	
5186			2.2	84	14.3	13.1	
5188			2.2	85	14.3	13.3	
5190			2.2	86	14.4	13.3	
5192			2.1	85	14.7	13.2	
5194			2.0	82	14.9	13.1	
5196			2.0	82	14.6	12.8	
5198	21.5	180	2.0	82	14.1	12.6	D
5200	15.4	191	2.0	82	13.8	12.7	D
5202			2.0	81	13.8	12.8	
5204			2.0	80	13.6	12.8	
5206			2.0	81	13.5	12.7	
5208			2.1	82	13.5	12.6	
5210			2.1	82	13.5	12.6	
5212			2.0	81	13.4	12.5	
5214	16.8	187	2.0	82	13.2	12.5	D
5216			2.0	81	13.2	12.5	
5218			2.0	80	13.1	12.5	
5220	48.8	235	2.0	81	13.2	12.5	B
5222	48.2	235	2.0	81	13.2	12.5	D
5224	47.5	237	2.0	80	13.2	12.5	D
5226			2.0	80	13.2	12.5	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
5228			2.0	80	13.1	12.5	
5230			2.0	79	13.1	12.5	
5232			2.0	79	13.0	12.6	
5234			2.0	80	12.9	12.5	
5236			2.0	80	12.9	12.5	
5238			2.0	79	12.9	12.5	
5240			2.0	79	12.7	12.4	
5242			2.0	79	12.7	12.4	
5244			2.0	79	12.8	12.5	
5246			2.0	78	12.7	12.5	
5248			2.0	78	12.7	12.5	
5250			2.0	78	12.7	12.5	
5252			2.0	79	12.7	12.5	
5254			2.0	80	12.7	12.5	
5256			2.0	80	12.7	12.4	
5258			2.0	80	12.6	12.4	
5260			2.0	79	12.6	12.4	
5262			2.0	79	12.6	12.4	
5264			2.0	79	12.6	12.3	
5266			2.0	79	12.6	12.3	
5268	37.1	97	2.0	78	12.7	12.4	B
5270	37.1	100	2.0	77	12.6	12.4	D
5272	38.6	99	2.0	78	12.6	12.3	D
5274			2.0	78	12.6	12.3	
5276			2.0	79	12.6	12.4	
5278			2.0	79	12.6	12.3	
5280			2.0	79	12.7	12.3	
5282			2.0	79	12.7	12.3	
5284			2.0	79	12.7	12.4	
5286			2.0	78	12.6	12.4	
5288			2.0	79	12.6	12.4	
5290			2.0	79	12.7	12.4	
5292			2.0	79	12.6	12.4	
5294			2.0	79	12.6	12.4	
5296			2.0	80	12.6	12.4	
5298			2.0	80	12.6	12.5	
5300			2.0	80	12.6	12.5	
5302			2.0	78	12.6	12.4	
5304			2.0	78	12.6	12.5	
5306			2.0	78	12.6	12.5	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
5308			2.0	77	12.6	12.5	
5310			2.0	78	12.6	12.5	
5312			2.0	78	12.6	12.5	
5314			2.0	78	12.6	12.5	
5316			2.0	78	12.6	12.5	
5318			2.0	79	12.6	12.5	
5320			2.0	80	12.6	12.5	
5322			2.0	79	12.7	12.6	
5324			2.0	80	12.7	12.6	
5326			2.0	80	12.7	12.5	
5328	84.5	6	2.0	80	12.7	12.5	D
5330			2.0	79	12.6	12.5	
5332			2.0	79	12.6	12.4	
5334	68.2	27	2.0	80	12.6	12.4	D
5336			2.0	80	12.5	12.4	
5338			2.0	80	12.5	12.4	
5340	21.5	176	2.0	79	12.4	12.5	B
5342	21.4	175	2.0	79	12.4	12.5	B
5344			2.0	79	12.4	12.5	
5346	38.0	238	2.0	79	12.3	12.4	D
5348	40.5	234	2.0	79	12.3	12.4	D
5350	39.6	235	2.0	79	12.4	12.5	B
5352	32.3	220	2.0	80	12.4	12.6	B
5354	33.5	219	2.0	80	12.4	12.6	B
5356	29.9	212	2.0	80	12.5	12.6	B
5358	31.6	210	2.0	80	12.6	12.6	B
5360			2.0	80	12.6	12.6	
5362			2.0	80	12.5	12.5	
5364	47.3	226	2.0	79	12.3	12.5	D
5366	42.6	231	2.0	79	12.3	12.4	D
5368	39.7	232	2.0	80	12.3	12.4	D
5370	37.9	204	2.0	80	12.3	12.4	D
5372	31.3	203	2.0	80	12.3	12.4	D
5374	30.4	214	2.0	81	12.4	12.5	D
5376			2.0	81	12.3	12.5	
5378			2.0	81	12.3	12.4	
5380			2.0	80	12.4	12.4	
5382			2.0	80	12.3	12.4	
5384	15.8	189	2.0	80	12.3	12.3	D
5386			2.0	79	12.3	12.3	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
5388	21.1	163	2.0	78	12.3	12.3	D
5390	21.4	165	2.0	79	12.3	12.2	B
5392	21.1	167	2.0	79	12.3	12.2	D
5394			2.0	79	12.3	12.2	
5396			2.0	80	12.3	12.2	
5398	28.8	243	2.0	79	12.3	12.2	B
5400	31.1	244	2.0	80	12.3	12.3	B
5402	25.6	238	2.0	80	12.3	12.2	B
5404	24.3	239	2.0	80	12.3	12.2	B
5406	17.5	247	2.0	80	12.2	12.2	B
5408	21.5	250	2.0	80	12.2	12.1	D
5410	44.0	235	2.0	79	12.2	12.1	D
5412	45.4	236	2.0	80	12.3	12.2	D
5414	47.5	234	2.0	80	12.3	12.2	D
5416	47.1	234	2.0	80	12.3	12.1	D
5418	38.5	236	2.0	80	12.4	12.1	A
5420	39.3	237	2.0	80	12.4	12.1	A
5422	39.4	236	2.0	80	12.4	12.1	A
5424	37.5	237	2.0	81	12.4	12.2	C
5426	37.0	236	2.0	81	12.4	12.2	C
5428	31.9	240	2.0	81	12.5	12.4	C
5430	34.8	28	2.0	80	12.6	12.4	B
5432	40.6	235	2.0	80	12.7	12.5	A
5434	45.9	234	2.0	80	12.7	12.5	C
5436	37.6	232	2.0	80	12.6	12.4	C
5438			2.0	80	12.6	12.4	
5440			2.0	80	12.6	12.4	
5442	79.2	226	2.0	80	12.7	12.5	B
5444			2.0	81	12.7	12.5	
5446			2.0	81	12.7	12.5	
5448			2.0	81	12.7	12.4	
5450			2.0	81	12.8	12.5	
5452	79.9	222	2.0	81	12.7	12.5	D
5454			2.0	80	12.7	12.5	
5456	78.3	49	2.0	81	12.8	12.6	B
5458			2.0	81	12.8	12.7	
5460			2.0	81	12.8	12.9	
5462			2.0	81	13.0	13.0	
5464			2.0	81	13.0	12.9	
5466			2.0	80	12.8	12.6	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
5468	40.4	255	2.0	80	12.7	12.5	D
5470	36.8	254	2.0	79	12.7	12.5	B
5472	34.3	255	2.0	78	12.7	12.6	B
5474			2.0	78	12.7	12.7	
5476			2.0	79	12.7	12.6	
5478	44.6	254	2.0	79	12.7	12.6	C
5480	43.6	253	2.0	79	12.7	12.6	A
5482	41.4	255	2.0	79	12.6	12.6	A
5484	41.0	262	2.0	80	12.7	12.6	A
5486			2.0	80	12.8	12.6	
5488			2.0	80	12.8	12.6	
5490			2.0	80	12.9	12.5	
5492			2.0	80	12.8	12.5	
5494			2.0	80	12.8	12.5	
5496			2.0	80	12.8	12.5	
5498			2.0	80	12.7	12.5	
5500			2.0	80	12.7	12.4	
5502			2.0	79	12.7	12.5	
5504			2.0	81	12.8	12.5	
5506	34.8	247	2.0	82	12.8	12.5	B
5508	40.7	244	2.0	82	12.7	12.4	B
5510	43.4	243	2.0	82	12.7	12.4	D
5512	44.5	243	2.0	82	12.7	12.4	D
5514	40.8	244	2.0	82	12.7	12.4	D
5516	41.2	246	2.0	82	12.8	12.5	B
5518	40.3	247	2.0	82	12.8	12.5	B
5520	40.0	241	2.0	82	12.8	12.4	D
5522	39.6	57	2.0	82	12.8	12.4	B
5524	40.6	57	2.0	82	12.8	12.4	B
5526	25.5	53	2.0	82	12.8	12.4	B
5528	21.8	252	2.0	81	12.8	12.4	D
5530	33.7	246	2.0	81	12.7	12.4	B
5532	33.7	244	2.0	81	12.8	12.5	D
5534	29.6	253	2.0	81	12.8	12.5	D
5536	31.7	251	2.1	82	12.8	12.5	D
5538			2.2	82	12.8	12.5	
5540			2.2	82	12.8	12.5	
5542			2.2	83	12.9	12.5	
5544	32.9	251	2.2	83	13.0	12.6	B
5546			2.2	83	13.0	12.6	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
5548			2.2	84	13.0	12.5	
5550	22.3	263	2.2	84	13.0	12.5	D
5552	22.5	266	2.2	83	13.0	12.4	B
5554			2.2	83	13.0	12.4	
5556			2.2	83	13.0	12.4	
5558			2.2	83	13.0	12.4	
5560			2.2	83	13.0	12.5	
5562			2.2	82	13.0	12.5	
5564			2.1	81	13.0	12.5	
5566	21.5	249	2.0	80	13.0	12.4	D
5568	20.5	244	2.0	80	13.1	12.4	B
5570	20.4	254	2.1	80	13.1	12.4	D
5572	30.9	204	2.2	80	13.1	12.4	C
5574	31.7	209	2.2	81	13.1	12.5	A
5576	29.9	214	2.2	81	13.2	12.5	A
5578	33.4	202	2.2	81	13.3	12.5	A
5580	31.2	211	2.2	81	13.3	12.4	A
5582	28.9	224	2.2	81	13.3	12.4	A
5584	22.6	229	2.2	80	13.3	12.4	C
5586	35.6	190	2.2	80	13.3	12.3	D
5588	56.7	222	2.2	80	13.3	12.4	D
5590	56.1	224	2.2	81	13.3	12.4	D
5592	38.9	208	2.2	81	13.4	12.5	D
5594	38.0	196	2.2	81	13.5	12.6	D
5596			2.2	81	13.7	12.7	
5598	38.1	236	2.2	81	13.7	12.7	D
5600	37.0	198	2.2	80	13.8	12.7	D
5602	35.8	195	2.2	80	13.8	12.7	D
5604	32.9	198	2.2	79	13.9	12.7	B
5606			2.2	79	14.0	12.7	
5608			2.2	78	14.2	12.7	
5610			2.2	78	14.5	12.7	
5612			2.2	79	14.8	12.8	
5614			2.2	79	14.8	12.9	
5616			2.2	79	14.9	13.0	
5618			2.2	79	15.0	13.0	
5620			2.2	79	15.4	13.0	
5622			2.2	80	16.5	13.0	
5624			2.2	79	17.6	13.0	
5626			2.2	78	17.0	13.1	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
5628			2.2	76	15.7	13.0	
5630			2.2	75	15.0	13.0	
5632			2.2	76	14.4	12.9	
5634			2.2	76	14.1	12.7	
5636			2.2	75	13.8	12.6	
5638			2.2	74	13.8	12.6	
5640			2.2	76	14.1	12.7	
5642			2.2	77	14.3	12.7	
5644			2.2	76	14.3	12.6	
5646	41.7	220	2.2	75	14.0	12.6	B
5648	40.4	219	2.2	77	13.7	12.6	B
5650	36.6	224	2.2	78	13.6	12.6	D
5652			2.2	78	13.6	12.6	
5654	38.1	228	2.2	77	13.8	12.7	D
5656			2.2	77	13.8	12.7	
5658			2.2	78	13.8	12.6	
5660			2.2	78	13.7	12.6	
5662			2.2	77	14.0	12.7	
5664	34.3	220	2.2	77	14.3	12.7	D
5666			2.2	77	14.2	12.6	
5668			2.2	77	14.1	12.6	
5670			2.2	76	14.1	12.6	
5672			2.2	76	14.1	12.6	
5674			2.2	75	14.0	12.6	
5676			2.2	74	13.9	12.6	
5678			2.2	75	13.9	12.6	
5680			2.2	75	13.9	12.6	
5682			2.2	75	13.9	12.6	
5684			2.2	74	13.9	12.6	
5686			2.2	75	13.8	12.6	
5688			2.2	75	13.8	12.5	
5690			2.2	75	13.8	12.5	
5692			2.1	75	13.7	12.5	
5694			2.0	74	13.7	12.6	
5696			2.0	73	13.7	12.6	
5698	36.6	215	2.0	73	13.7	12.6	D
5700	46.1	211	2.0	73	13.7	12.5	D
5702	42.7	204	2.0	73	13.7	12.5	D
5704	43.3	207	2.0	73	13.6	12.5	D
5706			2.0	73	13.6	12.6	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
5708			2.0	73	13.4	12.6	
5710			2.0	72	13.3	12.6	
5712			2.0	72	13.2	12.6	
5714			2.1	71	13.2	12.6	
5716			2.1	71	13.2	12.6	
5718			2.1	72	13.2	12.6	
5720			2.0	72	13.2	12.6	
5722			2.0	72	13.2	12.6	
5724			2.0	72	13.3	12.6	
5726			2.0	72	13.5	12.7	
5728			2.0	72	13.7	12.8	
5730			2.0	72	13.7	13.0	
5732	65.8	140	2.0	70	13.8	13.1	B
5734			2.0	70	13.6	13.0	
5736			2.0	71	13.3	12.7	
5738			2.0	72	13.2	12.5	
5740			2.0	72	13.2	12.6	
5742			2.0	73	13.2	12.6	
5744			2.0	73	13.2	12.7	
5746	15.2	140	2.0	74	13.2	12.7	A
5748	16.8	147	2.0	74	13.2	12.7	A
5750			2.0	73	13.2	12.7	
5752			2.0	71	13.3	12.8	
5754			2.0	70	13.3	12.8	
5756	21.8	155	2.0	70	13.3	12.7	A
5758	19.1	131	2.0	69	13.2	12.7	C
5760	19.2	137	2.0	69	13.2	12.7	A
5762	23.3	142	2.0	70	13.2	12.7	A
5764	24.0	142	2.0	70	13.2	12.7	A
5766	21.6	147	2.0	70	13.2	12.7	A
5768	21.1	148	2.0	71	13.2	12.6	A
5770	17.3	150	2.0	72	13.2	12.7	A
5772	16.6	142	2.0	72	13.2	12.7	A
5774	28.6	237	2.0	72	13.2	12.7	D
5776	25.3	246	2.0	72	13.2	12.7	D
5778	21.2	155	2.0	72	13.2	12.7	A
5780	20.3	143	2.0	72	13.2	12.7	A
5782	18.7	132	2.0	72	13.2	12.7	C
5784			2.0	72	13.2	12.7	
5786			2.0	71	13.2	12.7	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
5788	37.5	210	2.0	70	13.1	12.7	B
5790			2.0	70	13.1	12.7	
5792			2.0	70	13.1	12.7	
5794	32.3	207	2.0	71	13.1	12.7	D
5796	34.4	210	2.0	72	13.2	12.7	B
5798	38.1	208	2.0	72	13.1	12.7	B
5800	38.8	208	2.0	72	13.1	12.7	B
5802			2.0	72	13.1	12.7	
5804			2.0	72	13.1	12.7	
5806			2.0	72	13.1	12.7	
5808			2.0	72	13.2	12.7	
5810	19.2	183	2.0	72	13.2	12.7	D
5812			2.0	73	13.2	12.7	
5814			2.0	72	13.1	12.7	
5816			2.0	71	13.1	12.7	
5818			2.0	70	13.1	12.7	
5820	23.9	172	2.0	71	13.1	12.7	B
5822	25.1	173	2.0	72	13.1	12.7	B
5824			2.0	72	13.1	12.7	
5826	26.4	146	2.0	72	13.3	12.8	C
5828	16.4	119	2.0	72	13.4	12.9	C
5830			2.0	72	13.4	12.8	
5832	22.9	167	2.0	72	13.2	12.7	C
5834	19.7	146	2.0	72	13.1	12.7	A
5836	21.3	147	2.0	71	13.0	12.6	A
5838	22.8	157	2.0	71	13.0	12.6	C
5840	25.1	159	2.0	71	13.0	12.6	A
5842	24.3	164	2.0	71	13.0	12.6	A
5844	22.1	161	2.0	71	13.0	12.5	A
5846	20.8	158	2.0	71	13.0	12.5	A
5848	21.3	154	2.0	71	13.0	12.6	A
5850	20.4	152	2.0	71	13.0	12.6	A
5852	21.3	156	2.0	71	13.0	12.6	A
5854	22.5	159	2.0	70	13.0	12.6	A
5856	22.7	163	2.0	71	13.0	12.6	A
5858	20.1	164	2.0	71	13.0	12.6	A
5860	15.2	160	2.0	71	13.1	12.7	A
5862	19.8	154	2.0	72	13.1	12.7	A
5864	17.8	157	2.0	71	13.0	12.7	A
5866	19.3	151	2.0	70	13.0	12.6	A

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
5868			2.0	70	13.0	12.6	
5870			2.0	70	12.9	12.6	
5872	23.7	133	2.0	70	13.0	12.6	A
5874	23.0	144	2.0	69	13.2	12.7	A
5876	21.4	143	2.0	69	13.3	12.8	A
5878	21.3	139	2.0	69	13.2	12.7	A
5880	15.8	150	2.0	69	13.1	12.6	A
5882	17.5	148	2.0	69	13.0	12.6	A
5884	18.7	143	2.0	69	13.0	12.6	A
5886	19.0	145	2.0	69	13.0	12.6	A
5888	19.1	147	2.0	69	13.0	12.5	A
5890	19.8	142	2.0	69	13.1	12.5	A
5892	19.4	143	2.0	70	13.1	12.6	A
5894	19.1	141	2.0	69	13.1	12.6	A
5896	19.0	141	2.0	69	13.0	12.6	A
5898	19.8	146	2.0	70	13.1	12.6	A
5900	18.1	147	2.0	70	13.1	12.6	C
5902			2.0	71	13.2	12.7	
5904	38.3	137	2.0	69	13.2	12.6	B
5906			2.0	67	13.1	12.5	
5908			2.0	67	13.2	12.5	
5910			2.0	67	13.2	12.6	
5912			2.0	69	13.2	12.5	
5914			2.0	70	13.2	12.5	
5916			2.0	70	13.0	12.6	
5918			2.0	69	13.0	12.6	
5920			2.0	69	13.2	12.7	
5922			2.0	68	13.4	12.9	
5924			2.0	68	13.7	13.0	
5926			2.0	67	14.0	13.5	
5928			2.0	66	14.0	13.5	
5930			2.0	66	13.4	12.9	
5932			2.0	67	13.0	12.6	
5934			2.0	67	13.0	12.6	
5936			2.0	68	13.1	12.5	
5938			2.0	69	13.1	12.5	
5940			2.0	68	13.1	12.5	
5942			2.0	68	13.2	12.6	
5944			2.0	69	13.5	12.7	
5946			2.0	69	13.5	12.9	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
5948			2.0	69	13.4	12.8	
5950			2.0	70	13.4	12.8	
5952			2.0	69	13.6	13.0	
5954			2.0	68	13.7	13.0	
5956			2.0	68	13.5	13.0	
5958			2.0	67	13.2	12.8	
5960	16.7	250	2.0	67	13.0	12.5	D
5962			2.0	68	13.0	12.5	
5964	20.4	248	2.0	68	13.0	12.6	B
5966	21.2	244	2.0	68	13.0	12.5	B
5968			2.0	67	13.0	12.6	
5970			2.0	66	13.1	12.7	
5972	25.8	232	2.0	67	13.3	13.0	D
5974			2.0	68	13.5	13.3	
5976			2.0	68	13.3	12.9	
5978	22.4	11	2.0	68	13.1	12.5	B
5980	23.6	13	2.0	69	13.1	12.5	B
5982	23.8	356	2.0	68	13.0	12.5	D
5984			2.0	68	13.1	12.5	
5986			2.0	68	13.1	12.5	
5988			2.0	68	13.1	12.5	
5990	78.0	349	2.0	69	13.0	12.6	B
5992			2.0	69	13.0	12.8	
5994			2.0	68	13.0	12.8	
5996			2.0	68	13.1	12.8	
5998			2.0	68	13.4	12.7	
6000	78.9	191	2.0	69	13.7	12.8	B
6002	27.3	96	2.0	69	13.7	13.1	B
6004	20.4	252	2.0	67	13.9	13.3	B
6006	26.5	248	2.0	68	14.1	13.3	B
6008	23.1	246	2.0	68	14.1	13.3	D
6010	16.5	235	2.0	69	13.9	13.2	B
6012	12.4	264	2.0	69	13.7	13.0	D
6014	22.1	254	2.0	69	13.7	12.9	B
6016	25.6	253	2.0	69	13.8	12.9	B
6018	17.8	264	2.0	68	13.7	12.8	D
6020			2.0	68	13.3	12.6	
6022			2.0	68	13.2	12.5	
6024	28.2	258	2.0	68	13.1	12.6	D
6026	31.3	265	2.0	68	13.0	12.6	D

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
6028	23.9	262	2.0	68	13.1	12.6	D
6030	28.2	262	2.0	68	13.2	12.6	D
6032	16.5	256	2.0	67	13.2	12.6	D
6034	25.0	253	2.0	67	13.2	12.5	B
6036	23.6	250	2.0	67	13.2	12.5	B
6038	24.2	261	2.0	68	13.1	12.5	D
6040			2.0	68	13.1	12.5	
6042			2.0	69	13.1	12.5	
6044			2.0	69	13.1	12.5	
6046			2.0	69	13.2	12.5	
6048			2.0	69	13.3	12.5	
6050			2.0	69	13.2	12.5	
6052			2.0	69	13.2	12.5	
6054			2.0	69	13.1	12.5	
6056			2.0	69	13.1	12.5	
6058			2.0	68	13.1	12.5	
6060			2.0	68	13.2	12.6	
6062			2.0	68	13.4	12.8	
6064			2.0	69	13.6	12.8	
6066			2.0	70	13.6	12.7	
6068			2.0	70	13.5	12.7	
6070			2.0	69	13.5	12.7	
6072			2.0	68	13.5	12.7	
6074			2.0	68	13.5	12.8	
6076			2.0	67	13.4	12.7	
6078			2.0	67	13.4	12.6	
6080			2.0	69	13.3	12.6	
6082			2.0	70	13.4	12.6	
6084			2.0	70	13.4	12.7	
6086			2.0	70	13.3	12.9	
6088			2.0	69	13.2	12.9	
6090	5.4	191	2.0	69	13.2	12.8	B
6092			2.0	69	13.2	12.7	
6094			2.0	70	13.2	12.7	
6096			2.0	68	13.3	12.9	
6098			2.0	67	13.5	13.0	
6100	78.2	101	2.0	67	13.6	12.9	D
6102			2.0	69	13.4	12.8	
6104			2.0	70	13.2	12.5	
6106			2.0	70	13.1	12.4	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
6108			2.0	69	13.0	12.4	
6110			2.0	68	13.1	12.5	
6112			1.9	68	13.2	12.6	
6114			1.9	68	13.2	12.6	
6116	81.4	99	1.9	68	13.2	12.6	D
6118			1.9	68	13.2	12.7	
6120			1.8	67	13.2	12.7	
6122	20.5	133	1.8	67	13.2	12.6	D
6124			1.8	67	13.2	12.6	
6126			1.8	68	13.2	12.5	
6128			1.8	69	13.2	12.5	
6130	17.1	132	1.8	70	13.2	12.5	D
6132	18.4	134	1.8	71	13.2	12.5	B
6134			1.8	71	13.2	12.5	
6136	28.1	335	1.9	71	13.2	12.5	D
6138	28.7	339	1.9	71	13.2	12.4	D
6140	16.7	132	2.0	71	13.1	12.4	A
6142	17.0	132	1.9	70	13.0	12.3	A
6144	16.6	139	1.8	69	13.0	12.4	A
6146	15.4	129	1.8	68	13.1	12.5	A
6148	14.2	132	1.8	68	13.1	12.5	C
6150			1.8	69	13.1	12.5	
6152			1.8	70	13.0	12.4	
6154			1.8	71	12.9	12.3	
6156			1.8	70	13.1	12.3	
6158			1.8	71	13.3	12.4	
6160	26.0	243	1.8	71	13.7	12.5	D
6162	21.9	247	1.8	71	13.9	12.6	D
6164	22.5	242	1.8	72	13.8	12.6	B
6166	10.8	252	1.8	72	13.7	12.5	D
6168	18.3	246	1.8	72	13.7	12.4	D
6170	24.4	239	1.8	71	13.8	12.5	B
6172	6.0	137	1.8	71	13.9	12.6	B
6174	19.5	228	1.8	70	13.9	12.6	D
6176			1.8	69	13.8	12.7	
6178			1.8	68	13.7	12.7	
6180			1.8	68	13.7	12.7	
6182			1.8	69	13.6	12.5	
6184			1.8	69	13.5	12.4	
6186			1.8	69	13.6	12.4	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
6188			1.8	69	13.8	12.4	
6190			1.8	70	14.0	12.4	
6192			1.8	72	14.1	12.4	
6194			1.8	73	14.1	12.3	
6196			1.8	73	14.1	12.3	
6198			1.8	72	14.0	12.3	
6200			1.8	70	14.0	12.3	
6202	81.9	69	1.8	69	13.9	12.3	D
6204			1.8	68	13.8	12.4	
6206			1.8	67	13.7	12.4	
6208	7.9	322	1.8	67	13.7	12.5	D
6210	7.6	325	1.8	67	14.0	12.6	B
6212			1.8	67	14.4	12.7	
6214			1.8	68	14.5	12.6	
6216			1.8	68	14.5	12.6	
6218			1.8	68	14.6	12.5	
6220			1.8	69	14.5	12.4	
6222			1.8	70	14.4	12.2	
6224			1.8	71	14.4	12.2	
6226			1.8	71	14.5	12.2	
6228	32.6	77	1.8	70	14.5	12.2	B
6230	32.9	77	1.8	70	14.5	12.2	B
6232			1.8	69	14.6	12.3	
6234			1.8	68	14.7	12.5	
6236			1.8	68	14.9	12.6	
6238			1.8	70	14.9	12.7	
6240			1.8	70	14.7	12.7	
6242			1.8	68	14.6	12.7	
6244			1.8	67	14.8	12.7	
6246			1.8	68	14.8	12.7	
6248			1.8	69	14.8	12.6	
6250			1.8	70	14.7	12.4	
6252			1.8	70	14.5	12.2	
6254			1.8	69	14.5	12.2	
6256			1.8	68	14.4	12.1	
6258	24.6	256	1.8	69	14.3	12.1	D
6260			1.8	68	14.3	12.2	
6262	16.2	249	1.8	67	14.2	12.2	D
6264			1.7	68	14.2	12.3	
6266	27.5	205	1.6	69	14.2	12.4	D

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
6268	24.0	211	1.6	69	14.2	12.5	B
6270	24.1	215	1.6	68	14.3	12.7	D
6272			1.6	67	14.6	13.2	
6274			1.6	68	15.1	13.8	
6276	22.5	207	1.6	69	15.6	14.1	D
6278			1.6	69	15.4	13.8	
6280			1.6	69	14.9	13.1	
6282			1.6	71	14.5	12.9	
6284			1.6	72	14.2	12.8	
6286			1.6	73	14.1	12.7	
6288			1.6	73	14.1	12.9	
6290			1.6	74	14.2	13.1	
6292			1.6	75	13.9	13.0	
6294			1.6	76	13.5	12.8	
6296			1.6	75	13.4	12.8	
6298	13.7	156	1.6	74	13.3	12.8	B
6300	12.7	164	1.6	76	13.2	12.8	B
6302			1.6	78	13.3	12.9	
6304			1.6	80	13.6	13.2	
6306			1.6	79	13.9	13.3	
6308			1.6	78	14.1	13.4	
6310			1.6	77	14.2	13.5	
6312			1.6	77	14.3	13.6	
6314	29.3	266	1.6	78	13.8	13.4	B
6316	35.0	267	1.6	78	13.3	13.2	D
6318			1.6	76	13.6	13.5	
6320			1.6	76	14.1	13.8	
6322			1.6	77	14.2	13.9	
6324			1.6	78	14.2	13.8	
6326			1.6	80	14.1	13.8	
6328			1.5	80	14.1	13.8	
6330			1.5	81	14.2	13.8	
6332			1.4	82	14.2	13.8	
6334			1.5	83	14.0	13.6	
6336			1.6	85	13.7	13.4	
6338	22.1	257	1.6	86	13.7	13.4	A
6340	21.9	257	1.6	87	13.7	13.7	A
6342	22.1	256	1.6	86	13.8	13.8	A
6344	22.1	252	1.6	86	13.9	13.9	A
6346	20.6	244	1.6	86	13.8	13.9	A

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
6348	21.1	243	1.5	86	13.6	13.6	A
6350	20.4	252	1.4	85	13.7	13.7	A
6352	19.0	254	1.4	85	13.8	13.9	A
6354	19.0	253	1.4	84	13.9	13.9	A
6356	20.3	254	1.4	84	13.9	13.8	A
6358	17.2	262	1.4	84	13.9	13.8	A
6360	18.2	265	1.4	85	13.8	13.7	A
6362	21.8	268	1.4	85	13.7	13.6	A
6364	18.4	263	1.4	84	13.6	13.7	A
6366	24.6	272	1.5	85	13.7	13.8	C
6368	24.5	252	1.6	87	13.7	13.7	A
6370	28.7	273	1.6	89	13.7	13.6	C
6372	20.7	255	1.6	90	13.7	13.7	C
6374	20.7	258	1.6	89	13.6	13.7	A
6376	26.4	264	1.6	88	13.5	13.5	A
6378	28.4	265	1.5	88	13.4	13.3	A
6380	26.3	265	1.5	87	13.3	13.2	A
6382	25.7	268	1.6	88	13.3	13.3	A
6384	24.7	269	1.6	89	13.4	13.3	C
6386	26.9	262	1.6	88	13.4	13.2	A
6388	26.3	263	1.5	87	13.4	13.3	A
6390	24.5	262	1.4	87	13.4	13.4	A
6392	33.8	269	1.4	87	13.4	13.4	C
6394			1.4	86	13.3	13.3	
6396			1.4	87	13.3	13.3	
6398	30.0	252	1.5	88	13.3	13.3	C
6400			1.6	90	13.3	13.3	
6402			1.6	89	13.4	13.4	
6404			1.6	88	13.5	13.5	
6406			1.6	88	13.4	13.4	
6408			1.6	88	13.3	13.3	
6410			1.6	87	13.3	13.3	
6412			1.6	87	13.3	13.3	
6414			1.6	87	13.2	13.3	
6416			1.6	87	13.3	13.3	
6418			1.6	87	13.3	13.3	
6420			1.6	88	13.4	13.3	
6422			1.6	87	13.5	13.4	
6424			1.6	88	13.5	13.4	
6426			1.6	89	13.6	13.5	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
6428			1.6	89	13.8	13.5	
6430			1.6	88	13.7	13.4	
6432			1.6	87	13.6	13.4	
6434			1.6	87	13.7	13.4	
6436			1.6	87	13.8	13.4	
6438			1.6	86	13.8	13.5	
6440	74.0	250	1.6	87	13.9	13.6	B
6442			1.6	86	13.9	13.7	
6444			1.6	86	13.9	13.8	
6446			1.5	87	13.9	13.8	
6448			1.5	87	14.0	13.8	
6450			1.5	87	14.2	14.0	
6452			1.6	87	14.5	14.1	
6454			1.6	87	14.5	14.2	
6456			1.6	87	14.3	14.2	
6458	22.3	188	1.6	86	14.4	14.4	D
6460			1.6	87	14.5	14.6	
6462			1.6	88	14.4	14.7	
6464			1.6	87	14.4	14.8	
6466			1.6	86	14.6	14.9	
6468			1.6	86	14.8	14.9	
6470			1.6	87	14.6	14.9	
6472	26.2	191	1.6	87	14.2	14.7	D
6474			1.6	88	14.0	14.6	
6476	22.3	227	1.6	88	13.9	14.5	B
6478	28.0	195	1.6	88	13.9	14.5	D
6480	25.8	192	1.6	87	14.0	14.5	A
6482	21.7	180	1.6	86	14.1	14.6	C
6484	16.2	190	1.6	85	14.2	14.7	C
6486	14.1	198	1.6	84	14.3	14.8	A
6488	23.6	187	1.6	85	14.4	14.9	A
6490	20.5	206	1.6	85	14.5	14.9	A
6492	18.8	200	1.6	86	14.7	15.0	A
6494	13.6	166	1.6	87	14.9	15.1	A
6496	10.5	172	1.6	87	15.1	15.4	A
6498	17.6	189	1.6	87	15.3	15.5	C
6500			1.6	86	15.3	15.4	
6502			1.6	86	15.3	15.3	
6504			1.6	85	15.3	15.4	
6506			1.6	85	15.3	15.4	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
6508			1.6	86	15.3	15.4	
6510			1.6	86	15.3	15.4	
6512			1.6	85	15.3	15.4	
6514			1.6	85	15.3	15.5	
6516			1.6	86	15.3	15.7	
6518			1.6	86	15.2	15.7	
6520	16.3	264	1.6	85	15.1	15.6	D
6522	19.1	257	1.6	85	15.0	15.5	D
6524			1.6	87	15.0	15.5	
6526	38.7	256	1.6	87	15.0	15.5	D
6528	31.5	262	1.6	85	14.9	15.4	B
6530	20.6	269	1.6	83	14.8	15.3	D
6532	17.7	254	1.6	82	14.7	15.4	B
6534	16.9	249	1.6	82	14.6	15.3	B
6536	14.5	238	1.6	83	14.5	15.2	D
6538	34.1	267	1.6	83	14.3	15.0	D
6540	15.8	257	1.6	82	14.3	15.0	A
6542	15.2	258	1.6	82	14.4	15.1	A
6544	13.3	263	1.6	83	14.4	15.1	A
6546	13.4	255	1.6	85	14.4	15.1	A
6548	15.5	248	1.6	85	14.5	15.2	A
6550	15.4	248	1.6	85	14.7	15.4	A
6552	15.4	244	1.6	85	14.7	15.6	A
6554	12.2	222	1.6	84	14.8	15.6	A
6556	11.5	207	1.6	84	15.0	15.8	C
6558			1.6	84	15.1	15.9	
6560	12.9	223	1.6	85	15.2	16.0	D
6562	18.1	245	1.6	85	15.3	16.2	B
6564	18.3	243	1.6	85	15.1	16.2	D
6566	17.5	246	1.6	84	15.0	16.2	D
6568	20.8	244	1.6	83	15.1	16.3	D
6570	14.5	256	1.6	82	15.3	16.5	D
6572	10.1	261	1.6	81	15.5	16.7	D
6574			1.6	81	15.4	16.8	
6576	16.8	248	1.6	81	15.3	16.7	D
6578			1.6	81	15.3	16.7	
6580			1.7	81	15.5	16.8	
6582			1.8	81	15.7	17.0	
6584	12.4	191	1.8	81	15.8	17.1	B
6586			1.8	81	15.8	17.1	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
6588			1.8	80	15.8	17.2	
6590			1.8	80	15.8	17.1	
6592	14.2	203	1.8	80	15.5	16.9	D
6594			1.8	80	15.2	16.6	
6596	32.8	140	1.8	80	15.1	16.5	B
6598			1.8	81	15.3	16.7	
6600	3.5	271	1.8	81	15.5	16.9	D
6602	3.3	261	1.8	81	15.1	16.5	B
6604	5.0	258	1.8	81	14.5	15.9	D
6606			1.8	80	14.4	15.8	
6608			1.8	79	14.3	15.7	
6610			1.8	79	14.4	15.7	
6612			1.8	79	14.7	15.8	
6614	23.0	184	1.8	80	14.9	16.0	B
6616			1.8	82	14.9	16.0	
6618	23.6	228	1.8	83	14.9	16.0	B
6620	26.2	204	1.8	81	14.8	15.9	D
6622	14.1	208	1.8	81	14.8	16.0	B
6624			1.8	83	14.8	16.1	
6626			1.8	84	14.8	16.1	
6628	24.2	203	1.8	82	14.8	15.9	D
6630	29.5	201	1.8	82	14.7	15.7	D
6632	26.6	197	1.8	83	14.8	15.7	B
6634	16.6	181	1.8	83	15.0	15.9	D
6636			1.8	83	15.2	16.1	
6638			1.8	83	15.0	16.0	
6640	22.0	256	1.8	84	14.6	15.8	D
6642			1.8	83	14.4	15.6	
6644	21.2	265	1.8	82	14.6	15.6	D
6646	21.2	263	1.8	81	14.7	15.8	B
6648			1.8	80	14.2	15.7	
6650	18.5	241	1.8	80	13.6	15.3	B
6652	18.9	260	1.8	80	13.4	15.2	D
6654			1.8	80	13.3	15.4	
6656	19.8	262	1.8	79	13.1	15.5	D
6658	21.9	260	1.8	79	13.0	15.3	A
6660	21.4	259	1.8	78	12.8	15.0	A
6662	18.9	259	1.9	78	12.7	15.0	A
6664	20.1	259	2.0	77	12.7	15.2	C
6666	21.2	230	2.0	77	12.7	15.2	A

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
6668	15.2	246	2.0	78	12.6	15.1	A
6670	14.4	247	2.0	79	12.6	15.1	A
6672	20.8	248	2.0	78	12.5	15.1	A
6674	20.1	250	2.0	78	12.4	15.1	A
6676	20.4	249	2.0	78	12.3	15.2	A
6678	20.4	257	2.0	78	12.4	15.3	A
6680	16.5	256	2.0	77	12.4	15.3	A
6682	18.3	251	2.0	76	12.2	15.1	A
6684	21.5	249	2.0	77	12.3	15.2	A
6686	21.8	254	2.0	77	12.2	15.2	A
6688	22.0	256	2.0	76	12.2	15.1	A
6690	27.2	257	2.1	77	12.2	15.1	A
6692	19.9	246	2.2	76	12.4	15.2	A
6694	19.1	249	2.2	75	12.5	15.3	A
6696	17.0	250	2.2	76	12.6	15.3	A
6698	17.5	252	2.2	76	12.8	15.3	A
6700	21.0	245	2.2	75	12.7	15.2	A
6702	20.5	249	2.2	75	12.7	15.1	C
6704	20.4	256	2.2	76	13.1	15.3	A
6706	19.7	265	2.2	77	13.2	15.5	A
6708	16.5	249	2.2	77	13.1	15.5	A
6710	18.8	252	2.2	77	12.9	15.4	A
6712	19.0	256	2.2	75	12.7	15.3	A
6714	17.7	247	2.2	73	12.8	15.3	C
6716	22.9	258	2.3	73	12.8	15.3	A
6718	21.1	266	2.4	76	13.4	15.7	A
6720	21.2	250	2.3	76	13.4	16.0	A
6722	19.9	247	2.2	74	12.9	15.8	A
6724	19.3	258	2.3	76	13.3	15.8	A
6726	17.7	257	2.3	77	13.7	16.1	A
6728	23.6	246	2.3	76	13.3	15.9	A
6730	23.8	252	2.4	75	13.0	15.6	A
6732			2.4	75	13.2	15.5	
6734			2.4	75	13.4	15.4	
6736			2.4	75	13.7	15.6	
6738			2.4	76	14.1	15.9	
6740			2.4	76	13.8	16.0	
6742			2.4	77	13.2	15.7	
6744			2.4	77	13.2	15.7	
6746			2.4	78	13.3	15.7	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
6748			2.4	77	13.3	15.8	
6750			2.4	75	13.2	15.9	
6752			2.4	76	13.4	15.9	
6754			2.4	76	13.5	15.9	
6756			2.4	74	13.0	15.7	
6758			2.4	74	12.6	15.4	
6760	21.5	253	2.4	73	12.6	15.4	A
6762	20.7	253	2.4	73	12.6	15.3	A
6764	19.2	252	2.4	73	12.6	15.3	A
6766	20.3	255	2.5	73	12.5	15.3	A
6768	20.7	253	2.6	73	12.4	15.2	A
6770	20.5	251	2.6	74	12.4	15.1	A
6772	19.8	253	2.6	74	12.4	15.1	A
6774	20.9	251	2.6	74	12.4	15.1	A
6776	20.4	250	2.6	76	12.5	15.2	A
6778	21.3	255	2.6	77	12.8	15.3	D
6780			2.7	78	13.4	15.5	
6782			2.7	78	13.4	15.7	
6784			2.6	79	12.9	15.7	
6786			2.6	80	13.0	15.8	
6788	20.4	249	2.6	79	13.2	16.4	D
6790			2.6	79	13.0	16.1	
6792	17.5	258	2.6	78	12.7	15.1	D
6794	15.6	259	2.6	78	12.7	14.9	D
6796			2.6	76	12.8	14.9	
6798			2.6	75	12.8	14.9	
6800	22.9	243	2.6	74	12.8	15.1	D
6802	18.6	242	2.7	75	12.7	15.1	D
6804			2.8	75	12.7	15.0	
6806			2.8	77	13.1	15.3	
6808			2.8	77	13.3	15.7	
6810			2.8	76	12.7	15.5	
6812	36.9	232	2.8	77	12.1	15.1	D
6814	26.4	223	2.8	77	12.1	15.1	D
6816			2.8	77	12.2	15.1	
6818	26.4	239	2.8	77	12.3	15.0	D
6820	28.4	231	2.8	77	12.5	14.8	B
6822	32.9	238	2.8	77	12.4	14.7	B
6824	33.6	240	2.8	77	12.4	14.7	A
6826	27.0	218	2.8	76	12.4	14.6	C

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
6828	27.1	232	2.9	75	12.4	14.6	A
6830	30.5	239	3.0	75	12.4	14.7	C
6832	32.8	250	3.0	76	12.5	14.8	C
6834	33.7	239	3.0	76	12.5	14.9	C
6836	40.4	237	3.0	75	12.6	15.0	A
6838	38.8	225	3.0	75	12.8	15.3	A
6840	39.0	218	3.0	76	13.2	15.5	C
6842	36.8	224	3.0	77	13.3	15.3	A
6844			2.9	78	12.8	15.1	
6846			2.9	77	12.6	14.9	
6848			2.8	75	12.6	14.9	
6850			2.8	75	12.9	15.0	
6852			2.8	74	13.3	15.2	
6854			2.8	73	13.3	15.2	
6856			2.8	74	12.8	14.9	
6858	30.6	34	2.9	74	12.4	14.5	B
6860	20.7	317	3.0	73	12.4	14.5	B
6862	21.4	312	3.0	74	12.4	14.5	D
6864			3.0	74	12.4	14.7	
6866			3.0	75	12.5	14.8	
6868	22.5	238	3.0	75	12.7	14.8	A
6870	17.6	230	3.0	76	13.1	15.0	A
6872	14.9	235	3.0	76	13.2	14.7	A
6874	14.1	248	3.0	75	13.1	14.3	C
6876	20.6	238	3.0	74	14.4	15.4	A
6878	12.8	284	3.0	73	15.6	16.1	C
6880	25.0	242	3.0	74	16.0	15.8	C
6882			3.0	74	15.7	15.4	
6884			3.0	75	14.4	14.5	
6886	36.7	258	3.0	76	13.8	14.2	B
6888	36.3	255	3.0	76	13.9	14.0	B
6890	16.3	242	3.0	77	13.6	13.8	B
6892	19.6	247	3.1	77	13.3	13.9	D
6894			3.2	79	13.6	14.1	
6896			3.2	78	13.5	14.3	
6898			3.2	76	13.1	14.4	
6900	19.9	253	3.1	76	12.7	14.3	D
6902	20.1	255	3.0	75	12.9	14.2	D
6904	12.1	232	3.1	73	12.9	14.0	C
6906	14.0	225	3.2	72	12.6	13.8	A

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
6908	12.2	255	3.2	74	12.6	13.7	C
6910	19.4	241	3.2	76	12.8	13.8	A
6912	20.6	235	3.2	76	13.1	13.9	A
6914	17.6	231	3.2	74	13.0	13.8	A
6916	19.3	246	3.2	74	12.7	13.8	A
6918	19.8	245	3.2	75	12.8	13.8	A
6920	24.3	239	3.2	75	12.9	13.7	A
6922	23.0	235	3.2	74	13.0	13.7	A
6924	17.3	238	3.2	74	13.0	13.9	C
6926	16.8	249	3.2	74	12.8	13.9	A
6928	16.8	239	3.2	72	12.7	13.9	A
6930	19.3	241	3.2	73	12.7	13.8	A
6932	19.2	240	3.2	73	12.8	13.9	D
6934	19.2	242	3.2	73	12.9	13.8	B
6936	20.5	246	3.2	73	13.0	13.4	B
6938	21.1	247	3.2	75	13.3	13.3	B
6940	17.4	249	3.2	75	14.3	13.6	D
6942			3.2	73	15.0	13.7	
6944	35.3	248	3.2	73	14.6	13.5	B
6946	34.9	245	3.2	75	14.3	13.6	B
6948			3.2	76	14.5	14.2	
6950			3.2	85	15.1	14.6	
6952			3.3	76	15.1	15.1	
6954	25.0	253	3.2	79	14.3	14.1	B
6956	23.0	248	3.2	81	13.7	13.2	B
6958	27.9	245	3.2	81	15.7	14.8	B
6960			3.2	80	17.6	16.4	
6962	29.3	239	3.3	77	17.8	17.3	D
6964			3.4	78	17.3	17.1	
6966			3.4	80	15.5	16.2	
6968			3.4	79	14.4	16.1	
6970			3.4	78	13.9	15.4	
6972	22.7	249	3.4	77	13.5	14.0	C
6974	26.8	252	3.5	76	13.3	12.9	C
6976	25.4	248	3.6	75	13.2	12.9	A
6978	26.3	250	3.6	77	13.2	12.9	A
6980	25.1	250	3.6	77	13.2	12.9	B
6982	25.2	255	3.6	75	13.3	12.9	B
6984	19.2	257	3.5	76	13.3	13.0	B
6986	22.6	261	3.5	77	13.4	13.1	D

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
6988			3.4	76	13.8	13.7	
6990			3.4	75	14.0	15.3	
6992			3.4	75	14.8	16.2	
6994			3.5	76	15.8	15.7	
6996			3.5	77	15.2	15.7	
6998	33.5	254	3.6	78	14.1	16.0	D
7000	36.0	250	3.6	79	13.5	15.1	C
7002	26.2	243	3.6	80	13.3	13.7	C
7004	18.6	245	3.6	80	13.1	13.4	A
7006	26.8	245	3.6	79	13.0	13.1	A
7008	24.7	251	3.6	78	13.0	13.1	A
7010	23.4	256	3.7	77	12.9	13.0	A
7012	23.8	254	3.7	78	12.9	13.0	A
7014	28.5	252	3.6	78	12.9	13.2	A
7016	31.5	248	3.6	77	12.9	13.2	A
7018	28.1	251	3.6	77	12.9	13.5	A
7020	25.8	256	3.6	79	12.9	14.5	A
7022	12.3	233	3.6	80	13.1	15.2	C
7024	21.5	254	3.6	79	13.2	14.8	A
7026	20.3	245	3.6	77	13.0	13.6	A
7028	18.2	244	3.6	77	12.8	13.0	A
7030	16.9	243	3.6	76	12.8	12.9	A
7032	19.2	248	3.6	76	12.8	12.9	A
7034	16.7	246	3.6	76	12.8	12.8	A
7036	20.4	238	3.6	76	12.7	12.8	A
7038	21.3	237	3.6	75	12.8	12.8	A
7040	22.5	248	3.6	75	12.8	12.9	B
7042	23.4	253	3.6	75	12.9	12.9	D
7044	17.5	232	3.6	74	12.8	12.9	D
7046			3.6	73	12.8	12.9	
7048			3.6	73	12.8	12.9	
7050	18.8	259	3.6	74	12.7	12.8	B
7052	19.8	264	3.6	75	12.7	12.8	B
7054	30.9	265	3.6	74	12.9	12.9	D
7056			3.6	74	12.9	13.0	
7058			3.6	75	12.8	12.9	
7060			3.6	75	12.8	12.9	
7062	0.6	345	3.6	74	12.8	13.0	B
7064	0.1	18	3.6	76	12.9	13.0	B
7066			3.6	79	12.9	13.0	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
7068			3.6	79	13.0	13.2	
7070			3.6	79	13.1	13.4	
7072	12.4	259	3.7	78	13.1	13.8	D
7074			3.7	76	13.1	14.8	
7076	20.4	241	3.7	75	13.1	14.8	B
7078	17.9	242	3.6	75	13.1	13.5	B
7080	13.7	234	3.7	75	13.0	13.0	D
7082	18.8	233	3.8	76	13.0	13.0	D
7084	19.7	233	3.8	77	13.0	13.0	D
7086			3.8	77	13.0	13.0	
7088			3.8	78	13.0	13.0	
7090	10.9	242	3.8	79	12.9	13.0	B
7092	14.6	240	3.7	79	12.9	13.1	D
7094			3.6	79	13.0	13.2	
7096	12.5	241	3.6	78	13.0	13.7	D
7098	13.6	230	3.6	76	13.0	15.9	D
7100			3.6	76	13.1	17.1	
7102			3.7	75	13.2	17.0	
7104			3.7	76	13.2	16.9	
7106			3.7	78	13.2	15.1	
7108			3.8	79	13.2	13.8	
7110			3.8	79	13.2	13.5	
7112			3.8	79	13.1	13.4	
7114			3.9	79	13.1	13.5	
7116			4.0	79	13.2	14.4	
7118			4.0	80	13.3	14.8	
7120			3.9	78	13.3	14.2	
7122			3.8	78	13.4	14.4	
7124			3.8	77	13.4	14.7	
7126			3.8	77	13.4	15.0	
7128			3.8	77	13.4	15.3	
7130	13.8	191	3.8	76	13.5	15.8	D
7132			3.8	76	13.6	16.0	
7134			3.8	76	13.8	17.0	
7136			3.8	77	13.6	17.9	
7138	16.3	185	3.8	77	13.4	16.6	B
7140	15.6	196	3.8	78	13.4	14.7	D
7142			3.8	78	13.3	13.9	
7144			3.8	77	13.2	14.1	
7146			3.9	78	13.3	14.2	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
7148	15.8	198	3.9	79	13.4	14.2	B
7150			4.0	79	13.4	14.3	
7152			4.0	78	13.5	14.4	
7154	19.8	187	3.9	78	13.6	15.3	D
7156			3.8	76	13.6	16.3	
7158	13.4	188	3.8	76	13.7	16.7	D
7160			3.8	78	13.7	16.8	
7162			3.8	78	13.8	17.0	
7164			3.8	75	14.0	17.1	
7166			3.8	72	14.4	17.6	
7168			3.8	71	14.8	18.0	
7170			3.8	73	15.1	18.0	
7172			3.9	77	15.7	17.9	
7174			4.0	78	15.3	17.9	
7176			4.0	77	14.6	18.0	
7178	16.5	222	4.1	77	14.9	18.0	B
7180	13.6	222	4.2	77	15.6	18.0	B
7182	9.3	220	4.2	76	16.5	18.0	D
7184	32.2	210	4.2	77	16.8	17.9	D
7186			4.2	78	16.6	17.8	
7188			4.2	78	16.7	17.6	
7190			4.2	77	16.6	17.2	
7192			4.2	76	16.2	16.9	
7194			4.2	75	16.0	16.6	
7196			4.2	78	16.8	17.1	
7198			4.2	77	17.3	18.0	
7200			4.2	78	17.1	17.9	
7202			4.2	77	17.2	17.5	
7204			4.2	77	17.5	17.6	
7206			4.2	80	17.6	17.3	
7208			4.1	79	17.1	16.5	
7210			4.0	79	16.9	15.5	
7212			4.1	78	16.8	14.5	
7214			4.2	76	16.4	13.9	
7216			4.2	76	16.0	14.1	
7218			4.2	77	15.9	14.2	
7220			4.1	76	16.0	14.0	
7222			4.0	76	15.5	13.6	
7224			4.0	76	15.2	13.3	
7226			4.0	76	15.4	13.3	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
7228			4.0	76	15.4	13.5	
7230			4.0	75	15.5	13.8	
7232			4.0	75	15.5	13.9	
7234			4.0	77	15.3	13.7	
7236			4.0	77	15.4	13.6	
7238			4.0	77	15.8	13.8	
7240			4.0	76	15.9	14.0	
7242			4.0	75	15.9	14.0	
7244			4.0	76	16.0	14.0	
7246			4.0	77	16.2	14.1	
7248			4.0	77	16.3	14.7	
7250			4.0	77	16.4	15.9	
7252			4.0	79	16.3	16.3	
7254			4.0	78	15.7	15.0	
7256			4.0	76	14.8	13.6	
7258			4.0	76	14.3	13.2	
7260			4.0	77	14.0	13.4	
7262			4.0	78	13.9	13.3	
7264			4.0	78	13.9	13.1	
7266			4.1	77	13.8	13.0	
7268			4.2	75	14.0	13.1	
7270			4.1	74	14.5	13.6	
7272			4.0	73	14.7	13.9	
7274			4.0	75	15.0	14.1	
7276	27.6	249	4.1	77	15.5	14.9	B
7278			4.1	76	15.8	15.5	
7280	20.9	259	4.1	75	16.0	15.8	A
7282	18.8	260	4.0	75	15.5	15.9	A
7284	19.7	254	4.0	74	14.7	15.3	A
7286	21.0	255	4.1	75	14.4	14.7	A
7288	24.0	254	4.1	76	14.2	14.5	D
7290	19.0	259	4.2	77	13.9	14.3	D
7292	26.7	255	4.2	78	13.9	14.2	B
7294	27.3	258	4.2	78	14.0	14.0	B
7296	22.1	249	4.2	76	14.0	13.8	B
7298	24.3	265	4.2	76	13.8	13.7	D
7300			4.2	77	13.9	13.9	
7302			4.2	78	13.9	13.9	
7304	22.3	234	4.1	78	13.7	13.7	D
7306			4.1	77	13.4	13.5	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
7308			4.1	77	13.2	13.4	
7310	21.2	273	4.1	77	13.0	13.2	B
7312			4.0	77	12.9	13.1	
7314			4.0	76	12.8	13.1	
7316			4.1	75	12.7	13.0	
7318			4.2	74	12.5	12.8	
7320			4.2	74	12.4	12.8	
7322	20.0	218	4.1	74	12.7	13.0	B
7324	18.9	223	4.0	76	13.5	13.9	B
7326			4.0	76	14.4	15.2	
7328			4.0	75	14.4	14.8	
7330			4.0	73	14.3	14.5	
7332			4.0	73	15.4	16.0	
7334			4.0	75	16.2	16.5	
7336			4.0	75	16.0	16.3	
7338			4.0	75	16.6	17.0	
7340			4.1	74	16.5	16.8	
7342			4.2	73	15.5	15.7	
7344			4.2	73	15.3	15.8	
7346			4.3	72	15.2	16.2	
7348			4.3	72	14.9	16.0	
7350			4.4	74	14.9	16.1	
7352			4.4	76	15.1	15.4	
7354	19.0	261	4.4	76	14.3	14.2	D
7356	22.5	251	4.4	78	13.6	13.5	B
7358	23.8	255	4.4	77	13.6	13.5	B
7360	24.1	257	4.4	77	13.7	13.5	B
7362	19.3	284	4.3	77	13.7	13.5	D
7364	19.7	261	4.2	77	13.7	13.4	B
7366	24.1	256	4.2	76	13.6	13.3	D
7368	23.5	257	4.2	76	13.5	13.1	D
7370	18.9	254	4.2	74	13.4	13.0	D
7372	23.3	239	4.2	74	13.4	13.0	D
7374			4.2	75	13.4	13.1	
7376			4.2	76	13.4	13.1	
7378			4.2	76	13.4	13.1	
7380	21.1	248	4.2	76	13.6	13.3	D
7382	20.3	245	4.2	76	13.7	13.4	B
7384	21.1	239	4.2	76	13.5	13.4	B
7386	23.6	251	4.2	76	13.5	13.2	D

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
7388	32.0	258	4.2	76	13.3	13.0	D
7390	35.0	258	4.2	76	13.3	13.0	D
7392	27.5	247	4.2	76	13.4	13.1	A
7394	26.9	254	4.2	76	13.4	13.1	A
7396	25.9	252	4.2	76	13.3	13.0	A
7398	20.4	246	4.2	76	13.1	12.9	A
7400	25.8	262	4.2	76	13.2	12.9	C
7402	20.2	262	4.2	76	13.3	13.0	C
7404	19.7	257	4.2	76	13.3	13.0	C
7406	21.2	250	4.2	75	13.3	13.1	A
7408	20.5	249	4.2	75	13.3	13.0	A
7410	21.7	243	4.2	76	13.2	13.0	A
7412	24.7	249	4.2	76	13.2	12.9	A
7414	25.1	245	4.2	76	13.2	12.9	A
7416	23.4	247	4.2	76	13.2	13.0	C
7418	20.9	252	4.2	76	13.2	13.0	A
7420	29.8	256	4.2	76	13.1	12.9	A
7422	30.5	259	4.2	76	13.1	12.8	A
7424	23.5	257	4.2	76	13.1	12.9	A
7426	22.2	257	4.2	75	13.1	12.9	A
7428	24.6	247	4.2	74	13.1	13.0	C
7430	20.7	246	4.2	74	13.1	13.0	C
7432			4.2	75	13.1	13.0	
7434			4.2	75	13.2	13.0	
7436	38.4	270	4.2	74	13.2	13.0	B
7438	39.3	275	4.2	74	13.1	13.1	D
7440			4.2	74	13.1	13.3	
7442			4.2	74	13.2	13.4	
7444			4.2	75	13.2	13.4	
7446			4.2	74	13.1	13.2	
7448			4.2	75	13.0	13.1	
7450			4.2	77	12.9	13.3	
7452			4.2	77	12.9	13.3	
7454	38.0	241	4.2	77	12.9	13.2	D
7456	41.0	240	4.2	76	12.8	13.1	D
7458	36.5	259	4.2	74	12.8	13.1	D
7460	38.4	239	4.2	74	12.7	13.4	D
7462	29.4	240	4.2	76	12.7	13.6	B
7464	36.6	237	4.2	75	12.9	14.0	B
7466	22.1	239	4.2	73	14.4	15.9	D

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
7468	34.0	242	4.3	73	14.7	16.8	D
7470	26.6	237	4.4	73	13.2	14.8	B
7472	35.3	39	4.4	73	12.6	13.3	D
7474	41.1	34	4.4	73	12.6	13.1	D
7476	40.5	36	4.4	73	12.6	13.1	B
7478	41.1	234	4.4	73	12.6	13.0	B
7480	36.6	31	4.4	73	12.5	13.0	B
7482	27.8	241	4.4	73	12.4	13.0	D
7484	22.9	247	4.4	72	12.5	13.0	D
7486			4.4	72	12.4	13.0	
7488	35.0	249	4.4	73	12.4	13.0	D
7490	35.5	251	4.4	73	12.4	13.0	B
7492	23.2	250	4.4	72	12.4	12.9	A
7494	25.3	239	4.4	73	12.4	13.0	A
7496	24.7	239	4.4	73	12.4	13.0	A
7498	19.3	241	4.4	72	12.4	13.0	C
7500	20.0	242	4.4	72	12.4	13.0	C
7502			4.3	71	12.4	12.8	
7504	31.4	230	4.2	72	12.3	12.7	C
7506	24.9	243	4.3	72	12.3	12.7	A
7508	23.6	240	4.4	71	12.3	12.8	A
7510	17.3	238	4.4	72	12.4	12.9	A
7512	23.2	246	4.4	73	12.4	12.9	A
7514	22.3	252	4.4	73	12.4	12.9	A
7516	28.4	256	4.4	72	12.3	12.9	A
7518	24.1	237	4.4	72	12.3	12.8	A
7520	18.5	249	4.4	72	12.3	12.9	C
7522	20.1	264	4.4	73	12.4	13.0	A
7524	24.5	251	4.4	72	12.4	12.9	A
7526	22.0	241	4.4	72	12.4	12.9	A
7528	23.0	236	4.4	73	12.4	12.9	A
7530	29.5	247	4.4	73	12.4	12.8	A
7532	28.8	248	4.4	73	12.4	12.7	B
7534	29.7	246	4.4	73	12.4	12.7	B
7536	45.6	259	4.4	73	12.4	12.7	B
7538	43.1	259	4.4	73	12.3	12.7	D
7540	34.7	254	4.4	73	12.4	12.7	B
7542	34.0	255	4.4	73	12.4	12.7	D
7544			4.4	73	12.3	12.7	
7546			4.4	73	12.3	12.7	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
7548			4.4	73	12.3	12.7	
7550	36.0	251	4.4	73	12.3	12.7	B
7552			4.4	73	12.3	12.7	
7554			4.4	72	12.3	12.7	
7556	35.7	272	4.4	72	12.2	12.6	D
7558			4.4	72	12.2	12.6	
7560			4.4	72	12.2	12.5	
7562	34.4	253	4.4	72	12.2	12.5	D
7564	34.2	252	4.3	72	12.2	12.4	D
7566	33.9	258	4.2	72	12.2	12.4	D
7568	33.7	258	4.2	71	12.3	12.5	B
7570	31.0	257	4.3	70	12.2	12.5	D
7572	27.8	264	4.4	71	12.2	12.5	B
7574	28.2	259	4.4	72	12.1	12.5	D
7576			4.3	72	12.1	12.4	
7578	27.3	248	4.2	71	12.1	12.4	D
7580	30.8	272	4.2	71	12.1	12.5	B
7582	33.8	282	4.2	72	12.0	12.5	D
7584	30.3	268	4.2	72	12.0	12.4	D
7586	22.6	278	4.2	70	12.1	12.4	D
7588	22.3	277	4.2	70	12.2	12.4	D
7590	25.9	244	4.2	70	12.2	12.3	B
7592	30.1	251	4.2	71	12.2	12.3	B
7594	26.5	239	4.2	71	12.2	12.3	D
7596			4.2	72	12.2	12.3	
7598	44.6	224	4.2	72	12.2	12.3	D
7600	39.2	225	4.2	72	12.2	12.3	D
7602	34.8	225	4.2	71	12.3	12.3	D
7604	38.6	266	4.2	71	12.3	12.4	D
7606	49.8	230	4.2	72	12.3	12.4	D
7608	43.1	219	4.2	72	12.2	12.4	B
7610	25.9	249	4.2	72	12.2	12.4	B
7612	30.7	235	4.2	72	12.2	12.3	D
7614	31.4	245	4.2	72	12.2	12.3	B
7616			4.2	72	12.3	12.3	
7618	29.6	252	4.2	72	12.8	12.6	B
7620	30.7	254	4.2	71	12.8	12.7	B
7622	30.5	251	4.2	71	12.3	12.4	B
7624	24.6	253	4.2	71	12.3	12.4	D
7626			4.2	70	12.4	12.4	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
7628	18.9	45	4.2	70	12.4	12.4	D
7630	28.3	254	4.2	70	12.4	12.3	D
7632	24.2	248	4.2	70	12.4	12.4	A
7634	20.0	246	4.2	71	12.4	12.5	A
7636			4.2	71	12.5	12.6	
7638	17.0	258	4.2	71	12.5	12.5	A
7640	23.0	255	4.2	71	12.5	12.6	A
7642	15.1	259	4.2	71	12.6	12.6	A
7644	14.6	251	4.2	74	13.9	12.8	A
7646	7.3	318	4.2	75	14.6	13.1	D
7648	10.3	311	4.2	74	13.3	12.9	B
7650	15.6	257	4.3	75	12.5	12.7	A
7652	19.8	250	4.4	76	12.4	12.6	A
7654	20.8	256	4.4	77	12.7	12.7	A
7656	23.2	258	4.4	76	13.0	12.9	C
7658	20.8	247	4.4	75	12.7	12.8	A
7660	21.0	244	4.4	75	12.4	12.5	A
7662	22.5	255	4.4	77	12.5	12.5	A
7664	23.7	262	4.4	76	12.5	12.6	A
7666	17.6	255	4.4	74	12.4	12.6	A
7668	17.4	252	4.4	73	12.4	12.5	A
7670	17.6	251	4.4	73	12.3	12.5	A
7672	18.0	251	4.4	72	12.3	12.5	A
7674	16.5	255	4.4	72	12.3	12.4	A
7676	17.5	250	4.4	73	12.3	12.4	A
7678	20.0	251	4.4	74	12.4	12.5	A
7680	19.3	252	4.4	73	12.4	12.5	A
7682			4.4	73	12.4	12.6	
7684			4.4	73	12.4	12.6	
7686			4.4	73	12.4	12.5	
7688	21.3	239	4.4	72	12.4	12.5	B
7690	16.5	243	4.4	72	12.4	12.5	B
7692	15.6	243	4.4	72	12.4	12.5	B
7694	12.4	254	4.4	72	12.3	12.5	D
7696			4.4	73	12.4	12.6	
7698	17.9	258	4.4	73	12.4	12.6	D
7700	13.3	260	4.4	73	12.5	12.6	D
7702			4.4	71	12.6	12.7	
7704	6.5	229	4.4	69	12.5	12.7	D
7706	15.4	244	4.4	71	12.3	12.7	B

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
7708	15.3	241	4.4	70	12.3	12.7	B
7710			4.4	68	12.3	12.6	
7712	16.8	250	4.4	67	12.4	12.6	B
7714	16.1	251	4.4	67	12.4	12.6	B
7716	37.0	259	4.4	68	12.4	12.6	B
7718			4.4	69	12.5	12.7	
7720			4.4	69	12.5	12.7	
7722			4.4	69	12.5	12.6	
7724			4.4	69	12.4	12.6	
7726	20.5	249	4.4	68	12.4	12.6	B
7728	22.8	249	4.4	68	12.4	12.6	B
7730	26.1	251	4.4	68	12.6	12.6	B
7732	16.8	214	4.4	68	12.7	12.7	D
7734	16.0	217	4.4	68	13.1	12.7	B
7736	16.0	218	4.4	69	13.1	12.7	B
7738			4.4	70	13.8	12.7	
7740			4.4	70	15.4	12.7	
7742			4.4	70	15.9	12.7	
7744	11.3	180	4.4	69	15.7	12.7	D
7746			4.5	69	16.3	12.7	
7748	28.4	242	4.5	72	15.8	12.7	C
7750	33.4	248	4.6	72	14.4	12.7	C
7752	32.2	257	4.6	70	13.9	12.9	A
7754	31.4	259	4.6	71	14.5	13.0	C
7756	31.4	252	4.6	73	16.3	13.1	A
7758	29.4	257	4.7	74	16.0	13.1	A
7760	25.2	259	4.7	73	14.7	13.1	A
7762	32.7	255	4.7	73	15.6	12.9	A
7764	32.9	251	4.8	74	16.8	13.0	A
7766	32.4	256	4.8	73	16.4	13.1	A
7768	30.9	275	4.8	73	15.0	13.2	C
7770	29.1	251	4.8	70	13.7	13.2	A
7772	30.1	251	4.8	69	13.7	13.4	C
7774	29.4	249	4.8	71	14.4	13.4	C
7776	26.9	259	4.8	70	14.5	13.3	C
7778	27.3	258	4.8	71	14.5	13.1	A
7780	26.7	253	4.8	72	14.7	13.1	A
7782	27.0	252	4.8	70	14.7	13.3	C
7784	27.4	246	4.8	72	14.7	13.3	A
7786	31.9	253	4.8	73	14.8	13.2	A

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
7788	33.5	251	4.8	71	14.5	13.2	A
7790	29.7	250	4.8	70	14.1	13.2	A
7792	34.2	255	4.8	70	14.4	13.1	A
7794	30.5	257	4.9	72	15.6	13.1	A
7796	28.6	254	5.0	72	15.9	13.0	A
7798	16.0	261	5.0	72	16.9	13.1	C
7800	28.8	239	5.0	70	17.7	13.1	C
7802	29.2	262	5.0	70	16.8	13.0	C
7804			5.0	71	15.7	12.8	
7806	37.9	254	5.0	72	14.5	12.8	C
7808	35.6	257	5.1	72	15.2	12.9	A
7810	38.9	263	5.2	72	17.0	13.0	C
7812	29.7	263	5.2	72	16.1	13.0	A
7814	28.8	257	5.2	71	14.3	13.0	A
7816	27.8	249	5.2	70	14.1	12.9	A
7818	32.0	255	5.2	71	14.1	12.7	A
7820	30.1	251	5.2	73	14.3	12.6	A
7822	43.4	253	5.2	73	14.3	12.6	C
7824	28.8	252	5.2	73	14.0	12.6	A
7826	28.1	254	5.2	74	13.7	12.6	A
7828	35.3	249	5.2	73	13.5	12.6	C
7830	32.6	250	5.2	72	13.3	12.6	A
7832	30.8	251	5.2	71	13.6	12.7	A
7834	30.4	256	5.2	70	14.0	12.7	A
7836	36.7	254	5.2	71	14.1	12.7	C
7838	42.3	261	5.2	72	14.4	12.7	A
7840	38.1	261	5.2	72	13.7	12.6	A
7842	27.2	250	5.2	70	13.5	12.7	C
7844			5.2	70	14.2	12.7	
7846	35.3	262	5.2	71	14.1	12.6	C
7848	30.3	257	5.2	70	13.9	12.6	A
7850	30.0	258	5.2	70	14.1	12.6	A
7852	32.9	240	5.2	70	14.9	12.7	C
7854			5.2	70	15.6	12.7	
7856			5.3	70	15.7	12.7	
7858	26.6	236	5.4	68	15.0	12.6	D
7860	23.6	236	5.4	68	13.3	12.5	D
7862	35.0	248	5.4	69	12.4	12.4	D
7864	26.0	248	5.4	72	12.7	12.5	B
7866	24.3	244	5.4	72	13.7	12.6	B

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
7868	25.6	246	5.4	71	14.1	12.6	B
7870	22.6	242	5.4	70	15.0	12.7	B
7872	24.4	239	5.4	71	16.6	12.7	D
7874			5.4	70	16.1	12.8	
7876	28.4	264	5.4	69	14.6	12.8	D
7878	29.4	249	5.4	69	14.3	12.8	A
7880	28.8	249	5.4	70	15.4	12.7	A
7882	25.6	246	5.5	68	15.5	12.8	A
7884	30.2	247	5.5	68	14.5	12.9	A
7886	35.6	255	5.4	69	15.3	12.8	C
7888	27.9	250	5.5	69	17.1	12.8	C
7890	30.4	259	5.6	69	17.7	12.9	C
7892			5.6	70	16.3	13.0	
7894			5.6	69	15.3	13.1	
7896	29.2	255	5.6	69	15.3	12.9	A
7898	35.7	256	5.7	71	15.7	12.7	A
7900	45.9	253	5.8	71	15.2	12.7	A
7902	43.2	254	5.9	70	14.0	12.8	A
7904	45.0	256	6.0	69	13.5	12.8	C
7906	38.5	262	6.0	71	12.7	12.7	A
7908	37.9	256	6.0	71	12.7	12.6	C
7910	39.5	260	6.0	68	13.4	12.7	C
7912	39.5	262	5.9	67	13.7	12.8	A
7914	29.0	241	5.8	70	13.7	12.8	B
7916	33.8	254	5.8	70	15.0	12.9	C
7918	31.9	248	5.8	68	15.9	13.0	A
7920	29.3	253	5.8	67	14.9	13.0	A
7922			5.8	65	13.7	12.9	
7924	33.2	257	5.9	67	13.6	12.8	A
7926	27.9	251	6.0	69	13.9	12.8	A
7928	26.3	252	6.0	69	14.8	12.9	A
7930	35.8	244	6.0	68	15.2	13.0	A
7932	31.0	249	6.0	68	14.8	13.0	A
7934	29.7	247	6.1	69	15.6	13.0	A
7936	35.2	247	6.1	69	16.2	13.0	A
7938	32.4	249	6.1	68	15.9	13.0	A
7940	31.5	253	6.2	68	16.2	13.0	A
7942	26.5	246	6.2	67	16.4	13.0	A
7944	30.7	248	6.2	67	15.6	13.1	A
7946	33.4	249	6.2	68	15.4	13.1	A

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
7948			6.1	68	15.8	13.1	
7950			6.1	68	16.4	13.2	
7952	36.6	251	.2	67	17.0	13.2	C
7954	33.1	250	.2	67	16.7	13.1	A
7956	30.3	249	6.2	69	15.3	13.0	A
7958	31.0	252	.2	72	14.0	12.8	A
7960	32.6	255	6.2	72	14.6	12.8	A
7962	32.4	248	6.2	68	16.2	12.9	A
7964	62.1	242	6.2	67	16.0	12.9	B
7966	35.1	255	6.2	70	13.9	12.7	A
7968	26.2	250	6.2	72	12.8	12.6	C
7970			6.2	73	12.9	12.6	
7972			6.1	71	14.7	12.7	
7974			6.2	67	16.9	12.7	
7976	33.2	251	6.2	67	16.0	12.8	A
7978	31.4	243	6.2	69	15.7	13.0	D
7980	29.3	249	6.3	71	17.0	13.0	D
7982	36.6	247	6.4	70	15.0	12.8	B
7984	39.9	253	6.4	65	12.9	12.7	D
7986			6.4	64	12.6	12.6	
7988			6.4	65	12.6	12.5	
7990	47.1	248	6.4	68	12.6	12.5	D
7992	43.7	247	6.4	71	12.6	12.5	D
7994	39.1	249	6.3	68	12.7	12.5	B
7996			6.2	68	12.6	12.5	
7998	34.3	252	6.2	69	12.8	12.5	D
8000	39.6	254	6.2	68	13.9	12.6	B
8002	37.2	254	6.2	68	15.4	12.7	B
8004	36.2	252	6.2	68	15.0	12.7	B
8006	33.5	250	6.2	67	13.7	12.7	B
8008	32.4	251	6.2	67	13.2	12.8	D
8010	34.3	255	6.3	69	13.0	13.0	D
8012			6.3	71	12.8	12.9	
8014			6.4	64	12.7	12.8	
8016			6.4	61	14.2	13.0	
8018	27.4	242	6.4	67	16.5	13.3	D
8020	32.3	251	6.4	68	16.2	13.2	B
8022	30.9	249	6.4	68	14.9	13.0	B
8024	34.4	268	6.4	69	15.1	12.9	D
8026	34.1	247	6.4	68	15.1	12.9	D

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
8028	26.6	253	6.4	67	13.9	12.9	D
8030	34.5	257	6.4	66	13.0	13.0	D
8032	33.7	243	6.4	67	12.9	13.0	D
8034			6.5	68	12.9	13.0	
8036	23.1	253	6.5	69	12.9	13.0	D
8038			6.5	70	12.9	13.0	
8040	40.5	252	6.4	71	13.0	13.0	A
8042	32.0	237	6.4	70	13.0	13.0	C
8044	34.5	252	6.4	68	13.0	12.9	A
8046	37.4	256	6.4	67	13.5	13.0	A
8048	35.5	249	6.4	66	14.2	13.0	A
8050	33.5	248	6.5	65	14.3	13.1	A
8052	30.7	266	6.5	66	13.7	13.0	B
8054	38.7	252	6.6	67	13.5	12.9	A
8056	37.8	251	6.6	66	14.2	13.0	A
8058	39.2	250	6.6	67	14.3	13.0	A
8060	38.3	249	6.6	66	14.0	13.0	A
8062	35.1	249	6.6	66	14.0	12.9	A
8064	37.1	249	6.6	68	14.4	12.9	A
8066	40.2	253	6.6	68	15.0	13.1	D
8068	34.3	258	6.6	67	14.1	13.0	D
8070	43.7	249	6.6	67	12.9	12.8	B
8072	41.5	249	6.6	65	12.8	12.7	B
8074	43.5	244	6.6	66	12.7	12.7	D
8076			6.6	67	12.7	12.7	
8078	39.7	241	6.6	67	12.7	12.7	D
8080	28.2	263	6.6	67	12.7	12.7	D
8082	38.9	258	6.6	70	12.8	12.7	D
8084	41.6	243	6.6	71	12.9	12.7	D
8086	40.0	249	6.6	69	14.5	12.9	C
8088	43.7	246	6.6	66	15.1	13.0	C
8090			6.6	64	14.1	13.0	
8092	37.4	245	6.6	65	13.6	13.0	A
8094	37.8	273	6.6	69	13.8	12.9	B
8096	38.9	248	6.6	69	14.5	13.0	A
8098	38.1	243	6.6	68	14.8	13.0	C
8100	38.7	239	6.6	67	15.6	13.0	C
8102	34.8	250	6.7	67	16.3	13.0	A
8104	36.6	253	6.8	69	15.9	13.0	A
8106	33.6	252	6.8	69	16.7	13.1	C

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
8108	34.7	243	6.8	68	15.8	13.1	A
8110	32.0	249	6.9	68	14.0	13.0	A
8112	27.9	251	6.9	68	14.6	13.0	A
8114	32.2	250	6.8	68	15.9	13.1	A
8116	35.3	253	6.9	69	15.5	13.2	A
8118			7.0	68	14.3	13.2	
8120	24.9	257	7.0	67	14.2	13.2	C
8122	38.3	259	7.0	71	13.8	13.1	C
8124	41.1	254	6.9	72	13.3	13.0	A
8126	29.2	257	6.8	69	13.3	13.0	A
8128	27.6	254	6.8	68	13.1	13.0	A
8130	27.3	250	6.8	69	13.3	13.0	A
8132	26.6	252	6.8	70	13.9	13.1	A
8134	30.5	256	6.8	71	13.3	13.0	A
8136	27.5	264	6.8	70	12.7	12.9	A
8138	28.9	260	6.8	68	12.7	13.0	A
8140	30.5	256	6.8	67	12.6	13.0	A
8142	28.3	251	6.8	66	12.6	12.9	A
8144	27.9	247	6.8	65	12.5	12.9	A
8146	28.4	246	6.8	65	12.5	12.8	A
8148	28.5	253	6.8	66	12.5	12.8	A
8150	27.4	252	6.8	66	12.6	12.8	A
8152	27.9	252	6.8	66	12.5	12.7	A
8154	28.9	261	6.8	67	12.6	12.5	A
8156	28.9	256	6.8	67	12.7	12.6	A
8158	28.0	248	6.8	66	12.8	12.6	A
8160	27.3	250	6.7	67	13.1	12.7	C
8162	25.9	252	6.7	68	13.5	12.7	A
8164	23.0	253	6.8	69	13.4	12.7	A
8166	25.3	252	6.8	68	13.3	12.8	A
8168	25.1	253	6.8	68	13.6	12.9	A
8170	27.6	252	6.8	67	13.7	12.9	A
8172	28.2	252	6.8	67	13.4	12.9	A
8174	28.6	250	6.9	68	13.4	13.0	A
8176	27.4	253	7.0	69	13.5	13.1	A
8178	25.5	251	7.0	69	13.8	13.1	A
8180	28.3	237	7.0	69	13.8	13.1	C
8182	21.8	247	6.9	69	13.4	13.0	A
8184	22.8	245	6.9	69	13.5	13.0	A
8186	25.5	250	6.8	68	13.6	13.0	A

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
8188	28.1	251	6.8	67	14.3	13.0	A
8190	27.7	251	6.8	69	15.0	13.1	A
8192	22.9	267	6.8	69	14.5	13.3	C
8194	12.5	242	6.8	66	13.4	13.2	C
8196	24.2	249	6.8	67	13.1	13.1	A
8198	24.8	245	6.8	69	14.0	13.3	A
8200	29.4	237	6.8	67	14.7	13.7	C
8202			6.9	67	13.7	13.7	
8204	26.5	242	6.9	67	13.0	13.6	C
8206	30.4	245	6.8	67	13.6	13.6	A
8208	26.6	249	6.8	68	13.8	13.4	A
8210	26.6	248	6.8	67	14.3	13.3	A
8212	25.5	247	6.8	65	15.6	13.3	C
8214	33.5	244	6.8	65	16.8	13.3	D
8216			6.8	66	16.3	13.3	
8218	26.7	238	6.8	68	15.6	13.3	D
8220	26.8	254	6.8	68	15.5	13.3	D
8222	29.5	245	6.8	69	15.2	13.5	B
8224	26.7	245	6.9	70	14.5	13.6	B
8226	27.0	246	7.0	68	14.1	13.6	B
8228	27.4	243	7.0	67	14.8	13.6	B
8230	27.8	249	7.0	69	14.9	13.6	D
8232	28.2	252	7.0	70	14.7	13.5	D
8234	26.6	258	7.0	69	14.1	13.3	A
8236	26.3	254	7.0	67	13.7	13.1	A
8238	28.1	250	7.0	69	14.0	13.0	A
8240	28.0	253	7.0	70	13.4	12.9	A
8242	21.1	262	6.9	67	12.7	12.8	C
8244	26.5	251	6.9	68	13.2	12.8	A
8246	25.4	251	6.9	69	13.8	12.9	C
8248	26.0	251	6.9	68	14.7	13.0	A
8250	28.7	252	6.9	69	15.1	13.0	A
8252	26.4	250	7.0	68	13.8	13.1	A
8254	25.2	251	6.9	67	12.9	13.2	A
8256	24.4	251	6.8	67	12.8	13.1	A
8258	27.5	255	6.8	67	12.8	13.0	A
8260	23.0	258	6.8	67	13.2	13.0	A
8262	20.7	262	6.8	67	13.1	13.0	A
8264			6.8	68	12.7	12.8	
8266	29.9	249	6.8	69	12.6	12.7	C

Schlumberger

DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
8268	26.8	250	6.8	70	12.6	12.7	D
8270	24.9	250	6.8	68	12.6	12.7	D
8272			6.8	67	12.6	12.7	
8274			6.8	65	12.6	12.7	
8276	28.6	252	6.8	65	12.6	12.7	D
8278	31.0	251	6.8	66	12.6	12.7	D
8280	41.2	254	6.8	68	12.8	12.6	D
8282	32.5	257	6.8	68	13.5	12.8	B
8284	27.6	255	6.8	67	14.4	12.9	B
8286	37.7	247	6.8	67	15.4	13.2	D
8288	35.8	248	6.8	67	14.9	13.3	D
8290			6.8	67	13.6	13.3	
8292	39.2	259	6.8	67	13.5	13.3	D
8294			6.8	67	13.4	13.1	
8296	33.6	252	6.8	66	13.1	13.0	B
8298	35.1	253	6.8	67	12.9	13.0	B
8300	33.5	258	6.8	68	12.8	13.1	D
8302	28.2	254	6.8	67	12.6	13.0	D
8304	25.9	254	6.8	68	13.3	13.1	D
8306	37.9	250	6.8	68	14.2	13.4	D
8308	26.4	257	6.8	68	14.0	13.5	A
8310	25.9	257	6.8	68	14.3	13.6	A
8312	30.4	258	6.7	67	14.9	13.8	A
8314	31.8	260	6.6	67	15.0	13.9	A
8316	24.6	264	6.6	68	14.9	13.9	C
8318	27.5	258	6.6	68	13.9	14.0	A
8320	31.5	252	6.7	66	13.4	14.0	C
8322	38.2	271	6.7	67	14.2	14.0	C
8324	33.7	264	6.8	70	14.2	14.0	A
8326	28.2	252	6.8	68	13.2	14.0	C
8328			6.8	66	13.0	13.9	
8330			6.8	68	13.9	13.9	
8332			6.8	70	14.0	13.8	
8334	35.3	266	6.8	68	13.5	13.6	D
8336	44.9	253	6.8	68	14.0	13.3	D
8338	37.7	262	6.8	72	14.7	13.4	D
8340	29.7	261	6.8	71	14.5	13.7	D
8342	40.2	259	6.8	68	13.6	13.9	B
8344	37.3	255	6.8	66	13.4	13.7	D
8346			6.8	67	14.5	13.4	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
8348			6.8	69	15.5	13.4	
8350			6.7	69	15.4	13.7	
8352			6.7	69	14.5	14.0	
8354	42.7	257	6.7	68	14.1	14.1	D
8356	32.9	257	6.7	70	14.1	14.1	D
8358	39.4	248	6.8	70	13.5	14.2	D
8360	43.8	259	6.7	67	13.0	14.2	B
8362			6.7	66	13.7	14.0	
8364			6.7	66	15.0	13.9	
8366	37.8	256	6.6	68	15.9	13.8	D
8368			6.6	69	16.1	13.8	
8370			6.7	69	16.3	13.6	
8372			6.8	68	15.9	13.7	
8374			6.8	66	14.4	13.6	
8376			6.8	66	13.5	13.2	
8378	18.1	259	6.8	67	13.2	12.7	D
8380			6.7	68	13.0	12.6	
8382	20.3	262	6.6	68	13.1	12.6	B
8384	29.1	264	6.6	68	13.4	12.6	B
8386	28.6	262	6.5	70	14.3	12.7	D
8388			6.4	71	15.3	13.2	
8390			6.4	67	16.2	14.1	
8392			6.5	63	17.3	14.1	
8394			6.6	63	18.0	13.3	
8396			6.6	66	17.9	13.0	
8398			6.4	66	16.6	12.9	
8400			6.3	64	15.1	12.9	
8402			6.4	65	15.3	12.9	
8404			6.5	65	15.0	13.0	
8406			6.6	66	13.4	12.8	
8408	32.0	92	6.6	68	13.4	12.8	B
8410	33.1	116	6.6	71	13.2	12.8	D
8412	33.8	105	6.6	70	12.6	12.7	D
8414	27.6	129	6.5	69	12.5	12.7	B
8416			6.4	71	12.5	12.7	
8418			6.4	71	12.4	12.6	
8420	36.0	118	6.3	70	12.5	12.6	D
8422	35.2	121	6.2	70	12.6	12.6	B
8424	31.0	111	6.2	70	12.8	12.6	D
8426	37.6	106	6.2	68	13.0	12.7	D

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
8428			6.2	66	12.8	12.7	
8430			6.2	64	12.6	12.7	
8432			6.2	63	12.5	12.7	
8434			6.2	63	12.5	12.7	
8436			6.2	62	12.6	12.7	
8438			6.2	62	12.6	12.7	
8440			6.2	63	12.6	12.8	
8442			6.2	64	12.6	12.8	
8444			6.2	63	12.7	12.8	
8446			6.2	63	12.7	12.8	
8448	30.2	138	6.2	63	12.7	12.8	D
8450	26.7	133	6.2	61	12.7	12.7	D
8452	21.7	119	6.2	61	12.7	12.6	D
8454			6.1	62	12.7	12.5	
8456			6.0	62	12.7	12.5	
8458			6.0	63	12.9	12.6	
8460			6.0	64	13.2	12.6	
8462	22.7	136	6.0	65	13.2	12.6	D
8464	22.0	147	5.9	66	13.1	12.6	D
8466	28.7	128	5.8	67	13.2	12.6	B
8468	25.4	131	5.8	65	13.0	12.6	B
8470	28.2	128	5.8	64	12.8	12.6	B
8472	26.1	126	5.8	64	13.1	12.7	D
8474			5.8	61	14.3	12.8	
8476	32.9	125	5.8	59	16.2	12.9	B
8478	34.8	133	5.8	60	16.3	12.9	D
8480			5.7	60	14.3	12.9	
8482	25.5	118	5.6	61	13.9	12.9	D
8484			5.6	62	14.8	13.0	
8486	35.3	135	5.6	61	15.1	13.0	D
8488	12.0	150	5.6	60	14.2	13.0	A
8490	12.3	147	5.6	61	13.8	13.0	A
8492	12.1	141	5.6	63	14.4	13.0	A
8494	15.5	136	5.6	63	13.7	13.1	A
8496	16.2	136	5.6	62	13.0	13.0	A
8498			5.6	62	12.7	12.8	
8500			5.7	63	12.6	12.7	
8502			5.7	64	12.6	12.6	
8504			5.6	63	12.6	12.6	
8506	33.3	270	5.6	60	12.7	12.6	D

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
8508	36.5	267	5.6	61	12.7	12.6	B
8510	33.9	245	5.6	62	12.7	12.5	D
8512	31.2	245	5.6	61	12.8	12.6	D
8514			5.6	61	12.8	12.6	
8516	29.3	246	5.6	60	12.8	12.6	D
8518			5.6	61	12.8	12.6	
8520			5.6	63	13.0	12.8	
8522			5.7	62	13.1	12.9	
8524	31.9	255	5.8	60	13.2	12.9	D
8526	32.9	256	5.7	61	13.4	13.0	B
8528	31.9	255	5.7	61	13.3	13.0	B
8530	39.7	253	5.8	62	13.7	13.0	D
8532	37.6	253	5.8	65	14.3	13.1	D
8534	40.7	240	5.8	65	15.3	13.1	D
8536	35.6	249	5.8	61	14.6	13.1	B
8538	39.0	247	5.9	62	13.7	13.1	D
8540	33.1	246	6.0	64	14.9	13.2	D
8542			6.0	63	16.9	13.3	
8544	35.0	250	6.0	62	16.1	13.5	B
8546	38.4	248	6.0	62	14.4	13.7	B
8548	32.0	250	6.0	62	14.5	13.6	D
8550	30.2	262	6.0	64	14.0	13.5	B
8552	28.4	266	6.0	63	13.6	13.3	B
8554	29.8	256	6.0	62	13.5	13.1	D
8556	28.9	254	6.0	63	13.4	13.0	D
8558			6.0	64	13.2	12.9	
8560			6.0	65	13.2	12.8	
8562			6.0	65	13.3	12.8	
8564			5.9	64	13.3	12.8	
8566	26.8	265	5.8	65	13.0	12.7	D
8568			5.8	64	12.8	12.6	
8570			5.8	64	12.7	12.6	
8572			5.8	64	12.7	12.6	
8574			5.8	64	12.7	12.6	
8576			5.8	65	12.7	12.6	
8578			5.8	65	12.7	12.6	
8580			5.8	65	12.7	12.6	
8582			5.8	65	12.7	12.6	
8584			5.8	65	12.7	12.6	
8586			5.8	65	12.7	12.6	

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
8588			5.8	65	12.7	12.7	
8590			5.8	65	12.7	12.8	
8592	35.8	247	5.8	64	12.6	12.8	D
8594	44.3	250	5.8	62	12.6	12.7	D
8596			5.9	63	12.9	12.7	
8598	37.4	243	5.9	64	13.8	12.8	B
8600	34.3	242	6.0	63	15.9	12.8	D
8602	41.8	247	6.0	62	15.8	12.8	D
8604			6.0	62	13.8	12.9	
8606	36.6	243	6.1	62	13.2	13.0	B
8608	35.6	252	6.2	62	13.1	13.0	B
8610	29.8	250	6.2	62	13.0	12.9	B
8612	34.9	253	6.2	62	13.3	12.9	B
8614	31.1	255	6.2	62	13.5	13.0	B
8616	31.0	256	6.2	64	13.5	13.1	B
8618	35.5	247	6.2	65	13.9	13.3	D
8620			6.2	64	13.7	13.3	
8622			6.2	64	12.9	13.0	
8624	33.5	250	6.2	63	12.7	12.7	D
8626	71.4	67	6.2	63	12.7	12.6	B
8628			6.2	64	12.7	12.6	
8630	29.9	258	6.2	64	12.8	12.7	C
8632	28.9	260	6.1	65	12.8	12.7	C
8634	28.4	257	6.1	65	12.8	12.7	A
8636	33.2	263	6.0	65	12.8	12.7	C
8638	32.9	254	6.0	64	12.8	12.9	C
8640	29.1	254	6.0	62	13.0	13.0	A
8642	32.3	253	6.0	63	13.5	13.0	A
8644	30.2	256	6.0	63	14.9	12.9	A
8646	35.2	259	6.1	61	14.9	12.9	C
8648	30.5	254	6.2	61	13.4	13.1	A
8650	31.1	254	6.2	62	13.0	13.2	B
8652	35.3	258	6.2	62	13.0	13.1	B
8654	33.6	257	6.2	63	13.0	12.9	B
8656	29.0	247	6.2	61	13.4	12.8	D
8658			6.2	60	13.5	12.8	
8660			6.2	63	12.9	12.7	
8662	36.6	244	6.2	66	12.4	12.6	D
8664			6.2	66	12.6	12.6	
8666	42.0	251	6.2	65	12.8	12.6	D

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DEPTH	FORMATION DIP	FORMATION DIP AZI.	BOREHOLE DEV.	BOREHOLE DEV. AZI.	BOREHOLE DIAM 1-3	BOREHOLE DIAM 2-4	QUAL. INDEX BEST =A
8668	41.8	250	6.2	64	12.7	12.6	D
8670	42.1	272	6.1	65	12.4	12.5	C
8672			6.0	66	12.3	12.4	
8674	34.0	259	6.0	65	12.4	12.4	C
8676	32.2	269	6.0	64	12.4	12.3	C
8678	37.5	275	6.1	64	12.5	12.3	A
8680	30.4	269	6.2	64	12.4	12.4	A
8682	42.9	267	6.2	65	12.3	12.4	C
8684	39.8	267	6.2	65	12.2	12.4	A
8686	41.9	266	6.3	65	12.2	12.4	A
8688	47.7	266	6.4	66	12.2	12.3	C
8690	47.0	258	6.4	67	12.3	12.4	D
8692	47.3	258	6.4	67	12.3	12.3	D
8694	45.7	267	6.4	66	12.3	12.3	C
8696			6.4	65	12.3	12.4	
8698			6.4	65	12.2	12.3	
8700	38.3	267	6.4	65	12.2	12.2	A
8702	38.3	266	6.4	64	12.2	12.3	A
8704	35.2	269	6.4	63	12.3	12.3	A
8706	36.5	266	6.4	64	12.3	12.3	C
8708	34.1	266	6.5	65	12.4	12.3	A
8710			6.5	65	12.6	12.3	
8712			6.4	65	12.4	12.3	
8714			6.4	64	12.2	12.3	
8716			6.4	64	12.3	12.3	
8718	28.7	39	6.4	64	12.3	12.3	B
8720	30.4	41	6.4	64	12.2	12.3	D
8722	23.0	277	6.4	65	12.3	12.2	B
8724	22.2	279	6.4	66	12.3	12.2	B
8726	24.0	272	6.3	66	12.2	12.2	B
8728			6.2	66	12.2	12.2	

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SCHLUMBERGER DIRECTIONAL SURVEY

MARATHON OIL COMPANY

OTTER CREEK #1-21

WILDCAT

RICH COUNTY,UTAH

RUN NO.	1	1348 -	2514	24-MAY-80	7121
RUN NO.	2	2506 -	8730	26-AUG-80	7430

START OF SURVEY IS AT 1348 FT.

RADIUS OF CURVATURE METHOD

REFERENCE JOB 7430.

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DEPTH FEET	DEVIATION DEGREES	AZIMUTH DEGREES	TRUE VERTICAL DEPTH FEET	CO-ORDINATES + NORTH - SOUTH	CO-ORDINATES + EAST - WEST	COURSE LENGTH FEET
1348.0	0.0	0.0	1348.0	0.0	0.0	0.0
1360.0	1.2	110.0	1360.0	-0.1	0.2	0.2
1380.0	1.2	120.0	1380.0	-0.2	0.6	0.7
1400.0	1.2	117.0	1400.0	-0.5	1.0	1.1
1420.0	1.0	135.0	1420.0	-0.7	1.3	1.5
1440.0	1.0	134.0	1440.0	-1.0	1.6	1.9
1460.0	1.0	127.0	1460.0	-1.2	1.9	2.2
1480.0	1.4	123.0	1480.0	-1.4	2.3	2.7
1500.0	1.3	125.0	1500.0	-1.7	2.6	3.1
1520.0	1.2	130.0	1520.0	-2.0	3.0	3.6
1540.0	1.2	121.0	1540.0	-2.2	3.3	4.0
1560.0	1.0	126.0	1560.0	-2.4	3.6	4.4
1580.0	1.2	113.0	1580.0	-2.6	4.0	4.7
1600.0	1.0	125.0	1599.9	-2.8	4.3	5.1
1620.0	0.9	123.0	1619.9	-3.0	4.6	5.5
1640.0	1.1	125.0	1639.9	-3.1	4.9	5.8
1660.0	1.2	119.0	1659.9	-3.3	5.2	6.2
1680.0	0.8	126.0	1679.9	-3.5	5.5	6.5
1700.0	1.1	130.0	1699.9	-3.7	5.8	6.9
1720.0	1.4	125.0	1719.9	-4.0	6.1	7.3
1740.0	1.5	126.0	1739.9	-4.2	6.5	7.8
1760.0	1.6	129.0	1759.9	-4.6	6.9	8.3
1780.0	1.7	134.0	1779.9	-5.0	7.4	8.9
1800.0	1.8	121.0	1799.9	-5.3	7.8	9.5
1820.0	1.8	136.0	1819.9	-5.7	8.3	10.1
1840.0	2.0	130.0	1839.9	-6.2	8.8	10.8
1860.0	2.2	136.0	1859.9	-6.7	9.3	11.5
1880.0	2.1	137.0	1879.8	-7.2	9.8	12.2
1900.0	2.0	138.0	1899.8	-7.8	10.3	12.9
1920.0	2.2	144.0	1919.8	-8.3	10.7	13.6
1940.0	2.2	143.0	1939.8	-8.9	11.2	14.3
1960.0	2.0	144.0	1959.8	-9.5	11.7	15.1
1980.0	2.2	135.0	1979.8	-10.1	12.1	15.8
2000.0	2.2	143.0	1999.8	-10.7	12.6	16.5
2020.0	2.2	140.0	2019.8	-11.3	13.1	17.3
2040.0	2.2	142.0	2039.7	-11.9	13.5	18.0
2060.0	2.2	141.0	2059.7	-12.5	14.0	18.8
2080.0	2.2	142.0	2079.7	-13.1	14.5	19.5
2100.0	2.2	145.0	2099.7	-13.7	15.0	20.3
2120.0	2.1	140.0	2119.7	-14.3	15.4	21.0
2140.0	2.2	135.0	2139.7	-14.8	15.9	21.8
2160.0	2.2	145.0	2159.7	-15.4	16.4	22.5
2180.0	2.2	140.0	2179.6	-16.0	16.9	23.3
2200.0	2.3	136.0	2199.6	-16.6	17.4	24.1
2220.0	2.0	142.0	2219.6	-17.2	17.9	24.8
2240.0	2.2	134.0	2239.6	-17.7	18.4	25.5

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DEPTH FEET	DEVIATION DEGREES	AZIMUTH DEGREES	TRUE VERTICAL DEPTH FEET	CO-ORDINATES + NORTH - SOUTH	CO-ORDINATES + EAST - WEST	COURSE LENGTH FEET
2260.0	2.0	141.0	2259.6	-18.2	18.8	26.2
2280.0	1.8	137.0	2279.6	-18.7	19.3	26.9
2300.0	1.8	141.0	2299.6	-19.2	19.7	27.5
2320.0	1.6	144.0	2319.6	-19.7	20.1	28.1
2340.0	1.6	132.0	2339.5	-20.1	20.4	28.6
2360.0	1.8	137.0	2359.5	-20.5	20.8	29.2
2380.0	1.4	139.0	2379.5	-20.9	21.2	29.8
2400.0	1.4	134.0	2399.5	-21.3	21.6	30.3
2420.0	1.4	129.0	2419.5	-21.6	21.9	30.8
2440.0	1.4	131.0	2439.5	-21.9	22.3	31.3
2460.0	1.2	129.0	2459.5	-22.2	22.7	31.7
2480.0	1.6	131.0	2479.5	-22.5	23.1	32.2
2500.0	1.7	128.0	2499.5	-22.9	23.5	32.8
2520.0	1.6	147.0	2519.5	-23.2	23.9	33.3
2540.0	1.6	147.0	2539.5	-23.7	24.2	33.9
2560.0	1.6	144.0	2559.5	-24.1	24.5	34.4
2580.0	1.6	160.0	2579.5	-24.6	24.8	34.9
2600.0	1.8	135.0	2599.5	-25.0	25.2	35.5
2620.0	1.8	134.0	2619.4	-25.5	25.6	36.1
2640.0	2.0	130.0	2639.4	-25.9	26.1	36.6
2660.0	2.0	124.0	2659.4	-26.3	26.7	37.5
2680.0	2.0	123.0	2679.4	-26.7	27.3	38.2
2700.0	1.9	122.0	2699.4	-27.1	27.8	38.8
2720.0	1.8	116.0	2719.4	-27.4	28.4	39.5
2740.0	2.0	110.0	2739.4	-27.7	29.0	40.1
2760.0	2.1	118.0	2759.4	-28.0	29.7	40.8
2780.0	2.0	107.0	2779.3	-28.3	30.3	41.5
2800.0	2.0	108.0	2799.3	-28.5	31.0	42.1
2820.0	2.0	108.0	2819.3	-28.7	31.6	42.7
2840.0	1.8	106.0	2839.3	-28.9	32.3	43.4
2860.0	2.0	108.0	2859.3	-29.1	32.9	44.0
2880.0	2.0	107.0	2879.3	-29.3	33.6	44.6
2900.0	2.0	109.0	2899.3	-29.6	34.3	45.3
2920.0	2.0	109.0	2919.3	-29.8	34.9	45.9
2940.0	2.0	106.0	2939.2	-30.0	35.6	46.5
2960.0	1.8	106.0	2959.2	-30.2	36.3	47.2
2980.0	2.0	108.0	2979.2	-30.4	36.9	47.8
3000.0	2.0	107.0	2999.2	-30.6	37.6	48.4
3020.0	2.0	106.0	3019.2	-30.8	38.2	49.1
3040.0	2.0	103.0	3039.2	-30.9	38.9	49.7
3060.0	2.0	100.0	3059.2	-31.1	39.6	50.3
3080.0	2.0	101.0	3079.2	-31.2	40.3	51.0
3100.0	2.0	99.0	3099.2	-31.3	41.0	51.6
3120.0	2.1	95.0	3119.1	-31.4	41.7	52.2
3140.0	2.2	95.0	3139.1	-31.5	42.4	52.8
3160.0	2.0	94.0	3159.1	-31.5	43.2	53.4

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DEPTH FEET	DEVIATION DEGREES	AZIMUTH DEGREES	TRUE VERTICAL DEPTH FEET	CO-ORDINATES + NORTH - SOUTH	CO-ORDINATES + EAST - WEST	COURSE LENGTH FEET
3180.0	2.1	91.0	3179.1	-31.6	43.9	54.1
3200.0	2.2	95.0	3199.1	-31.6	44.7	54.7
3220.0	2.2	96.0	3219.1	-31.6	45.4	55.4
3240.0	2.2	95.0	3239.1	-31.7	46.2	56.0
3260.0	2.2	99.0	3259.0	-31.8	47.0	56.7
3280.0	2.2	98.0	3279.0	-31.9	47.7	57.4
3300.0	2.2	97.0	3299.0	-32.0	48.5	58.1
3320.0	2.2	97.0	3319.0	-32.1	49.2	58.8
3340.0	2.2	99.0	3339.0	-32.2	50.0	59.5
3360.0	2.2	94.0	3359.0	-32.3	50.8	60.2
3380.0	2.2	97.0	3379.0	-32.4	51.5	60.9
3400.0	2.2	98.0	3398.9	-32.5	52.3	61.6
3420.0	2.2	95.0	3418.9	-32.6	53.0	62.3
3440.0	2.2	97.0	3438.9	-32.7	53.8	62.9
3460.0	2.2	94.0	3458.9	-32.7	54.6	63.6
3480.0	2.2	96.0	3478.9	-32.8	55.3	64.3
3500.0	2.2	97.0	3498.9	-32.9	56.1	65.0
3520.0	2.2	99.0	3518.8	-33.0	56.9	65.7
3540.0	2.2	99.0	3538.8	-33.1	57.6	66.5
3560.0	2.2	98.0	3558.8	-33.2	58.4	67.2
3580.0	2.2	100.0	3578.8	-33.4	59.1	67.9
3600.0	2.2	99.0	3598.8	-33.5	59.9	68.6
3620.0	2.2	98.0	3618.8	-33.6	60.7	69.3
3640.0	2.2	98.0	3638.8	-33.7	61.4	70.1
3660.0	2.2	99.0	3658.7	-33.8	62.2	70.8
3680.0	2.2	99.0	3678.7	-34.0	62.9	71.5
3700.0	2.1	98.0	3698.7	-34.1	63.7	72.2
3720.0	2.0	97.0	3718.7	-34.1	64.4	72.9
3740.0	1.8	96.0	3738.7	-34.2	65.1	73.5
3760.0	1.8	95.0	3758.7	-34.2	65.7	74.1
3780.0	1.8	95.0	3778.7	-34.3	66.3	74.7
3800.0	1.8	95.0	3798.7	-34.4	66.9	75.2
3820.0	1.6	101.0	3818.7	-34.4	67.5	75.8
3840.0	1.6	106.0	3838.6	-34.6	68.1	76.3
3860.0	1.6	103.0	3858.6	-34.7	68.6	76.9
3880.0	1.6	108.0	3878.6	-34.8	69.1	77.4
3900.0	1.6	110.0	3898.6	-35.0	69.7	78.0
3920.0	1.8	109.0	3918.6	-35.2	70.2	78.6
3940.0	1.8	109.0	3938.6	-35.4	70.8	79.2
3960.0	1.8	110.0	3958.6	-35.6	71.4	79.8
3980.0	1.8	110.0	3978.6	-35.9	72.0	80.4
4000.0	1.8	108.0	3998.6	-36.1	72.6	81.0
4020.0	1.8	109.0	4018.6	-36.3	73.2	81.7
4040.0	1.8	100.0	4038.6	-36.4	73.8	82.3
4060.0	2.0	100.0	4058.5	-36.5	74.4	82.9
4080.0	2.0	98.0	4078.5	-36.6	75.1	83.6

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DEPTH FEET	DEVIATION DEGREES	AZIMUTH DEGREES	TRUE VERTICAL DEPTH FEET	CO-ORDINATES + NORTH - SOUTH	+ EAST - WEST	COURSE LENGTH FEET
4100.0	2.0	99.0	4098.5	-36.7	75.8	84.2
4120.0	2.0	100.0	4118.5	-36.8	76.5	84.9
4140.0	2.0	100.0	4138.5	-37.0	77.2	85.6
4160.0	2.2	101.0	4158.5	-37.1	77.9	86.3
4180.0	2.2	101.0	4178.5	-37.2	78.6	87.0
4200.0	2.2	101.0	4198.5	-37.4	79.4	87.7
4220.0	2.1	106.0	4218.4	-37.6	80.1	88.4
4240.0	2.2	109.0	4238.4	-37.8	80.8	89.2
4260.0	2.2	108.0	4258.4	-38.0	81.5	89.9
4280.0	2.2	110.0	4278.4	-38.3	82.2	90.7
4300.0	2.2	106.0	4298.4	-38.5	82.9	91.4
4320.0	2.2	107.0	4318.4	-38.7	83.6	92.2
4340.0	2.2	106.0	4338.4	-38.9	84.4	92.9
4360.0	2.2	104.0	4358.3	-39.2	85.1	93.7
4380.0	2.2	105.0	4378.3	-39.3	85.8	94.4
4400.0	2.2	108.0	4398.3	-39.6	86.6	95.2
4420.0	2.2	104.0	4418.3	-39.8	87.3	96.0
4440.0	2.2	104.0	4438.3	-39.9	88.1	96.7
4460.0	2.2	101.0	4458.3	-40.1	88.8	97.5
4480.0	2.2	101.0	4478.3	-40.3	89.6	98.2
4500.0	2.2	101.0	4498.2	-40.4	90.3	99.0
4520.0	2.2	98.0	4518.2	-40.5	91.1	99.7
4540.0	2.2	99.0	4538.2	-40.7	91.8	100.4
4560.0	2.2	99.0	4558.2	-40.8	92.6	101.2
4580.0	2.2	99.0	4578.2	-40.9	93.4	101.9
4600.0	2.2	100.0	4598.2	-41.0	94.1	102.7
4620.0	2.2	103.0	4618.2	-41.2	94.9	103.4
4640.0	2.2	100.0	4638.1	-41.3	95.6	104.2
4660.0	2.2	99.0	4658.1	-41.5	96.4	104.9
4680.0	2.2	101.0	4678.1	-41.6	97.1	105.7
4700.0	2.2	99.0	4698.1	-41.7	97.9	106.4
4720.0	2.2	100.0	4718.1	-41.8	98.6	107.2
4740.0	2.4	95.0	4738.1	-42.0	99.5	107.9
4760.0	2.4	95.0	4758.0	-42.0	100.3	108.8
4780.0	2.4	99.0	4778.0	-42.1	101.1	109.5
4800.0	2.4	95.0	4798.0	-42.3	101.9	110.3
4820.0	2.2	100.0	4818.0	-42.3	102.7	111.1
4840.0	2.2	99.0	4838.0	-42.5	103.5	111.8
4860.0	2.0	99.0	4858.0	-42.6	104.2	112.6
4880.0	2.0	98.0	4878.0	-42.7	104.9	113.2
4900.0	1.8	98.0	4897.9	-42.8	105.5	113.9
4920.0	2.0	94.0	4917.9	-42.8	106.2	114.5
4940.0	1.8	102.0	4937.9	-42.9	106.9	115.2
4960.0	2.4	93.0	4957.9	-43.0	107.6	115.9
4980.0	2.6	88.0	4977.9	-43.1	108.5	116.7
5000.0	2.2	84.0	4997.9	-43.0	109.3	117.5

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DEPTH FEET	DEVIATION DEGREES	AZIMUTH DEGREES	TRUE VERTICAL DEPTH FEET	CO-ORDINATES + NORTH - SOUTH	CO-ORDINATES + EAST - WEST	COURSE LENGTH FEET
5020.0	2.2	88.0	5017.9	-42.9	110.1	118.2
5040.0	2.2	91.0	5037.8	-42.9	110.9	118.9
5060.0	2.4	89.0	5057.8	-42.9	111.7	119.7
5080.0	2.4	84.0	5077.8	-42.9	112.5	120.4
5100.0	2.3	83.0	5097.8	-42.8	113.3	121.1
5120.0	2.4	88.0	5117.8	-42.7	114.1	121.9
5140.0	2.3	86.0	5137.8	-42.7	114.9	122.6
5160.0	2.4	85.0	5157.7	-42.6	115.8	123.4
5180.0	2.2	85.0	5177.7	-42.5	116.6	124.1
5200.0	2.0	82.0	5197.7	-42.5	117.3	124.7
5220.0	2.0	81.0	5217.7	-42.4	118.0	125.4
5240.0	2.0	79.0	5237.7	-42.2	118.7	126.0
5260.0	2.0	79.0	5257.7	-42.1	119.4	126.6
5280.0	2.0	79.0	5277.7	-41.9	120.1	127.2
5300.0	2.0	80.0	5297.7	-41.8	120.7	127.8
5320.0	2.0	80.0	5317.6	-41.7	121.4	128.4
5340.0	2.0	79.0	5337.6	-41.6	122.1	129.0
5360.0	2.0	80.0	5357.6	-41.4	122.8	129.6
5380.0	2.0	80.0	5377.6	-41.3	123.5	130.2
5400.0	2.0	80.0	5397.6	-41.2	124.2	130.8
5420.0	2.0	80.0	5417.6	-41.1	124.9	131.4
5440.0	2.0	80.0	5437.6	-40.9	125.6	132.1
5460.0	2.0	81.0	5457.6	-40.8	126.2	132.7
5480.0	2.0	79.0	5477.5	-40.7	126.9	133.3
5500.0	2.0	80.0	5497.5	-40.6	127.6	133.9
5520.0	2.0	82.0	5517.5	-40.5	128.3	134.5
5540.0	2.2	82.0	5537.5	-40.4	129.0	135.2
5560.0	2.2	83.0	5557.5	-40.3	129.8	135.9
5580.0	2.2	81.0	5577.5	-40.1	130.5	136.5
5600.0	2.2	80.0	5597.5	-40.0	131.3	137.2
5620.0	2.2	79.0	5617.5	-39.9	132.0	137.9
5640.0	2.2	76.0	5637.4	-39.7	132.8	138.6
5660.0	2.2	78.0	5657.4	-39.5	133.5	139.2
5680.0	2.2	75.0	5677.4	-39.3	134.3	139.9
5700.0	2.0	73.0	5697.4	-39.1	135.0	140.5
5720.0	2.0	72.0	5717.4	-38.9	135.7	141.1
5740.0	2.0	72.0	5737.4	-38.7	136.3	141.7
5760.0	2.0	69.0	5757.4	-38.5	137.0	142.3
5780.0	2.0	72.0	5777.3	-38.3	137.6	142.9
5800.0	2.0	72.0	5797.3	-38.0	138.3	143.4
5820.0	2.0	71.0	5817.3	-37.8	139.0	144.0
5840.0	2.0	71.0	5837.3	-37.6	139.6	144.6
5860.0	2.0	71.0	5857.3	-37.4	140.3	145.2
5880.0	2.0	69.0	5877.3	-37.1	140.9	145.8
5900.0	2.0	70.0	5897.3	-36.9	141.6	146.3
5920.0	2.0	69.0	5917.3	-36.6	142.2	146.9

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DEPTH FEET	DEVIATION DEGREES	AZIMUTH DEGREES	TRUE VERTICAL DEPTH FEET	CO-ORDINATES + NORTH - SOUTH	CO-ORDINATES + EAST - WEST	COURSE LENGTH FEET
5940.0	2.0	68.0	5937.3	-36.4	142.9	147.4
5960.0	2.0	67.0	5957.2	-36.1	143.5	148.0
5980.0	2.0	69.0	5977.2	-35.8	144.2	148.6
6000.0	2.0	69.0	5997.2	-35.6	144.8	149.1
6020.0	2.0	68.0	6017.2	-35.3	145.5	149.7
6040.0	2.0	68.0	6037.2	-35.1	146.1	150.3
6060.0	2.0	68.0	6057.2	-34.8	146.8	150.8
6080.0	2.0	69.0	6077.2	-34.6	147.4	151.4
6100.0	2.0	67.0	6097.2	-34.3	148.1	152.0
6120.0	1.8	67.0	6117.1	-34.1	148.7	152.6
6140.0	2.0	71.0	6137.1	-33.8	149.3	153.1
6160.0	1.8	71.0	6157.1	-33.6	149.9	153.6
6180.0	1.8	68.0	6177.1	-33.4	150.5	154.2
6200.0	1.8	70.0	6197.1	-33.2	151.1	154.7
6220.0	1.8	69.0	6217.1	-32.9	151.7	155.2
6240.0	1.8	70.0	6237.1	-32.7	152.3	155.7
6260.0	1.8	68.0	6257.1	-32.5	152.9	156.3
6280.0	1.6	69.0	6277.1	-32.3	153.4	156.8
6300.0	1.6	76.0	6297.1	-32.1	153.9	157.2
6320.0	1.6	76.0	6317.1	-32.0	154.5	157.7
6340.0	1.6	87.0	6337.0	-31.9	155.0	158.3
6360.0	1.4	85.0	6357.0	-31.9	155.5	158.7
6380.0	1.5	87.0	6377.0	-31.9	156.0	159.3
6400.0	1.6	90.0	6397.0	-31.8	156.6	159.8
6420.0	1.6	88.0	6417.0	-31.8	157.1	160.3
6440.0	1.6	87.0	6437.0	-31.8	157.7	160.8
6460.0	1.6	87.0	6457.0	-31.8	158.2	161.4
6480.0	1.6	87.0	6477.0	-31.7	158.8	161.9
6500.0	1.6	86.0	6497.0	-31.7	159.3	162.4
6520.0	1.6	85.0	6517.0	-31.7	159.9	163.0
6540.0	1.6	82.0	6537.0	-31.6	160.4	163.5
6560.0	1.6	85.0	6557.0	-31.5	161.0	164.0
6580.0	1.7	81.0	6577.0	-31.5	161.6	164.6
6600.0	1.8	81.0	6597.0	-31.4	162.2	165.2
6620.0	1.8	81.0	6616.9	-31.2	162.8	165.8
6640.0	1.8	84.0	6636.9	-31.2	163.4	166.3
6660.0	1.8	78.0	6656.9	-31.1	164.0	166.9
6680.0	2.0	77.0	6676.9	-30.9	164.7	167.6
6700.0	2.2	75.0	6696.9	-30.7	165.4	168.2
6720.0	2.3	76.0	6716.9	-30.6	166.2	168.9
6740.0	2.4	76.0	6736.9	-30.4	167.0	169.7
6760.0	2.4	73.0	6756.8	-30.1	167.8	170.5
6780.0	2.7	78.0	6776.8	-29.9	168.6	171.3
6800.0	2.6	74.0	6796.8	-29.7	169.5	172.1
6820.0	2.8	77.0	6816.8	-29.5	170.5	173.0
6840.0	3.0	76.0	6836.8	-29.2	171.5	173.9

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DEPTH FEET	DEVIATION DEGREES	AZIMUTH DEGREES	TRUE VERTICAL DEPTH FEET	CO-ORDINATES + NORTH - SOUTH	CO-ORDINATES + EAST - WEST	COURSE LENGTH FEET
6860.0	3.0	73.0	6856.7	-28.9	172.4	174.8
6880.0	3.0	74.0	6876.7	-28.7	173.4	175.8
6900.0	3.1	76.0	6896.7	-28.4	174.5	176.8
6920.0	3.2	75.0	6916.6	-28.1	175.5	177.8
6940.0	3.2	75.0	6936.6	-27.8	176.6	178.8
6960.0	3.2	80.0	6956.6	-27.7	177.7	179.9
6980.0	3.6	77.0	6976.5	-27.4	178.9	181.0
7000.0	3.6	79.0	6996.5	-27.1	180.1	182.1
7020.0	3.6	79.0	7016.5	-26.9	181.3	183.3
7040.0	3.6	75.0	7036.4	-26.6	182.5	184.4
7060.0	3.6	75.0	7056.4	-26.2	183.7	185.6
7080.0	3.7	75.0	7076.4	-26.0	185.0	186.8
7100.0	3.6	76.0	7096.3	-25.7	186.2	188.0
7120.0	3.9	78.0	7116.3	-25.4	187.5	189.2
7140.0	3.8	78.0	7136.2	-25.1	188.8	190.5
7160.0	3.8	78.0	7156.2	-24.8	190.2	191.8
7180.0	4.2	77.0	7176.1	-24.5	191.5	193.0
7200.0	4.2	78.0	7196.1	-24.2	192.9	194.4
7220.0	4.1	76.0	7216.0	-23.9	194.3	195.7
7240.0	4.0	76.0	7236.0	-23.5	195.6	197.1
7260.0	4.0	77.0	7255.9	-23.2	197.0	198.4
7280.0	4.1	75.0	7275.9	-22.8	198.4	199.7
7300.0	4.2	77.0	7295.8	-22.5	199.8	201.1
7320.0	4.2	74.0	7315.8	-22.1	201.2	202.4
7340.0	4.1	74.0	7335.7	-21.7	202.6	203.7
7360.0	4.4	77.0	7355.7	-21.3	204.0	205.1
7380.0	4.2	76.0	7375.6	-21.0	205.4	206.5
7400.0	4.2	76.0	7395.6	-20.6	206.9	207.9
7420.0	4.2	76.0	7415.5	-20.3	208.3	209.3
7440.0	4.2	74.0	7435.4	-19.9	209.7	210.6
7460.0	4.2	74.0	7455.4	-19.5	211.1	212.0
7480.0	4.4	73.0	7475.3	-19.1	212.6	213.4
7500.0	4.4	72.0	7495.3	-18.6	214.0	214.8
7520.0	4.4	72.0	7515.2	-18.1	215.5	216.3
7540.0	4.4	73.0	7535.2	-17.7	217.0	217.7
7560.0	4.4	72.0	7555.1	-17.2	218.4	219.1
7580.0	4.2	71.0	7575.0	-16.7	219.8	220.5
7600.0	4.2	72.0	7595.0	-16.2	221.2	221.8
7620.0	4.2	71.0	7614.9	-15.8	222.6	223.2
7640.0	4.2	71.0	7634.9	-15.3	224.0	224.5
7660.0	4.4	75.0	7654.8	-14.9	225.4	225.9
7680.0	4.4	73.0	7674.8	-14.5	226.9	227.4
7700.0	4.4	73.0	7694.7	-14.0	228.4	228.8
7720.0	4.4	69.0	7714.7	-13.5	229.8	230.2
7740.0	4.4	70.0	7734.6	-12.9	231.2	231.6
7760.0	4.7	73.0	7754.5	-12.4	232.8	233.1

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DEPTH FEET	DEVIATION DEGREES	AZIMUTH DEGREES	TRUE VERTICAL DEPTH FEET	CO-ORDINATES + NORTH - SOUTH	CO-ORDINATES + EAST - WEST	COURSE LENGTH FEET
7780.0	4.8	72.0	7774.5	-11.9	234.3	234.6
7800.0	5.0	70.0	7794.4	-11.3	235.9	236.2
7820.0	5.2	73.0	7814.3	-10.7	237.6	237.9
7840.0	5.2	72.0	7834.2	-10.2	239.4	239.6
7860.0	5.4	68.0	7854.1	-9.6	241.1	241.3
7880.0	5.4	70.0	7874.1	-8.9	242.8	243.0
7900.0	5.8	71.0	7894.0	-8.2	244.7	244.8
7920.0	5.8	67.0	7913.9	-7.5	246.6	246.7
7940.0	6.2	68.0	7933.7	-6.7	248.5	248.6
7960.0	6.2	72.0	7953.6	-5.9	250.5	250.6
7980.0	6.3	71.0	7973.5	-5.3	252.6	252.6
8000.0	6.2	68.0	7993.4	-4.5	254.6	254.7
8020.0	6.4	68.0	8013.3	-3.6	256.7	256.7
8040.0	6.4	71.0	8033.1	-2.8	258.7	258.8
8060.0	6.6	66.0	8053.0	-1.9	260.8	260.8
8080.0	6.6	67.0	8072.9	-1.0	262.9	262.9
8100.0	6.6	67.0	8092.7	0.0	265.0	265.0
8120.0	7.0	67.0	8112.6	0.9	267.2	267.2
8140.0	6.8	67.0	8132.5	1.8	269.4	269.4
8160.0	6.7	67.0	8152.3	2.7	271.6	271.6
8180.0	7.0	69.0	8172.2	3.6	273.8	273.8
8200.0	6.8	67.0	8192.0	4.5	276.0	276.0
8220.0	6.8	68.0	8211.9	5.4	278.2	278.2
8240.0	7.0	70.0	8231.8	6.3	280.5	280.5
8260.0	6.8	67.0	8251.6	7.1	282.7	282.8
8280.0	6.8	68.0	8271.5	8.0	284.9	285.0
8300.0	6.8	68.0	8291.3	8.9	287.1	287.2
8320.0	6.7	66.0	8311.2	9.8	289.3	289.4
8340.0	6.8	71.0	8331.0	10.7	291.4	291.6
8360.0	6.7	67.0	8350.9	11.6	293.6	293.9
8380.0	6.7	68.0	8370.8	12.4	295.8	296.1
8400.0	6.3	64.0	8390.6	13.3	297.9	298.2
8420.0	6.3	70.0	8410.5	14.1	300.0	300.3
8440.0	6.2	63.0	8430.4	15.0	301.9	302.3
8460.0	6.0	64.0	8450.3	16.0	303.8	304.2
8480.0	5.7	60.0	8470.2	16.9	305.6	306.1
8500.0	5.7	63.0	8490.1	17.9	307.3	307.9
8520.0	5.6	63.0	8510.0	18.8	309.1	309.7
8540.0	6.0	64.0	8529.9	19.7	310.9	311.5
8560.0	6.0	65.0	8549.8	20.6	312.8	313.4
8580.0	5.8	65.0	8569.7	21.5	314.6	315.3
8600.0	6.0	63.0	8589.6	22.4	316.4	317.2
8620.0	6.2	64.0	8609.5	23.4	318.4	319.2
8640.0	6.0	62.0	8629.3	24.3	320.3	321.2
8660.0	6.2	63.0	8649.2	25.3	322.2	323.2
8680.0	6.2	64.0	8669.1	26.2	324.1	325.2

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DEPTH FEET	DEVIATION DEGREES	AZIMUTH DEGREES	TRUE VERTICAL DEPTH FEET	CO-ORDINATES + NORTH - SOUTH	+ EAST - WEST	COURSE LENGTH FEET
8700.0	6.4	65.0	8689.0	27.2	326.1	327.2
8720.0	6.4	64.0	8708.9	28.1	328.1	329.3
8730.0	6.2	66.0	8718.8	28.6	329.1	330.4

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*                        BOTTOM HOLE LOCATION                               *
*                                                                           *
*                        COURSE LENGTH:          330.4  FEET                *
*                                                                           *
*                        COURSE AZIMUTH:          85.0  DEGREES             *
*                                                                           *
*                                                                           *
*                        MEASURED DEPTH:        8730.0  FEET                *
*                                                                           *
*                        TRUE VERTICAL DEPTH:   8718.8  FEET                *
*                                                                           *
*                        DISTANCE NORTH:          28.6  FEET                *
*                                                                           *
*                        DISTANCE EAST:          329.1  FEET                *
*                                                                           *
*                                                                           *
*                        EXACT RADIUS OF CURVATURE METHOD                   *
*                                                                           *
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