Requested Confidential – 2/24/77 – Conf. Status released 9-12-77.
Plugged & Abandoned: 2/12/77

FILE NOTATIONS

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

COMPLETION DATA:

| | | | |
|---|---|---|---|
| Date Well Completed | 2-12-77 | Location Inspected | |
| OW | WW | TA ✓ | Bond released |
| GW | OS | PA ✓ | State of Fee Land |

LOGS FILED

Driller's Log ✓

Electric Logs (No. ) ✓

E ____ I ____ E-I ____ GR ____ GR-N ____ Micro ____

Lat ____ Mi-L ____ Sonic ____ Others ____

Form DOGC-1a

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL & GAS

# APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

5. Lease Designation and Serial No. (Fee)

6. If Indian, Allottee or Tribe Name

7. Unit Agreement Name

8. Farm or Lease Name: Hoffman

9. Well No.: 1

10. Field and Pool, or Wildcat: Wildcat

11. Sec., T., R., M., or Blk. and Survey or Area: Sec. 31-11N-7E

12. County or Parish: Rich

13. State: Utah

1a. Type of Work: DRILL ☒ DEEPEN ☐ PLUG BACK ☐

b. Type of Well: Oil Well ☒ Gas Well ☐ Other Single Zone ☒ Multiple Zone ☐

2. Name of Operator: American Quasar Petroleum Co. of New Mexico

3. Address of Operator: 330 Pacific Western Life Bldg., Casper, Wyoming 82601

4. Location of Well (Report location clearly and in accordance with any State requirements.*)
At surface: 1320' FNL & 1620' FEL Sec. 31, T. 11N, R. 7E
At proposed prod. zone

14. Distance in miles and direction from nearest town or post office*: Approx. 1 mile SW of Randolph, Utah

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. line, if any): 1320'

16. No. of acres in lease: 179.55

17. No. of acres assigned to this well: 40.00

18. Distance from proposed location* to nearest well, drilling, completed, or applied for, on this lease, ft.: No wells drilled on lease.

19. Proposed depth: 11,000'

20. Rotary or cable tools: Rotary

21. Elevations (Show whether DF, RT, GR, etc.): Ungraded GR 6,275'

22. Approx. date work will start*: 6/20/76

23. PROPOSED CASING AND CEMENTING PROGRAM

| Size of Hole | Size of Casing | Weight per Foot | Setting Depth | Quantity of Cement |
|---|---|---|---|---|
| 22" | 20" | 60# | 60' | 50 sx |
| 17½" | 13-3/8" | 48# | 1,000' | 700 sx |
| 12¼" | 9-5/8" | 36# | 4,000' | 300 sx |
| 8-3/4" | 7" | 23,26&29# | 11,000' | 300 sx |

American Quasar Petroleum Co. proposes to drill an 11,000' well on the above-described location to test the Madison formation. Drilling and cementing will be performed as above. Testing of potential zones will be at the discretion of the wellsite supervisor. Electric logs will be run to TD. Mud weight will be sufficient for pressures encountered.

The BOP's will be opened and closed during each 24-hour period to insure proper function during the drilling of the well. Pressure-tests with chart recorder will be performed each 30 days.

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: John F. Sindelar Title: Division Drilling Supt. Date: 6/7/76

(This space for Federal or State office use)

Permit No. ..... Approval Date .....

Approved by ..... Title ..... Date .....

Conditions of approval, if any:

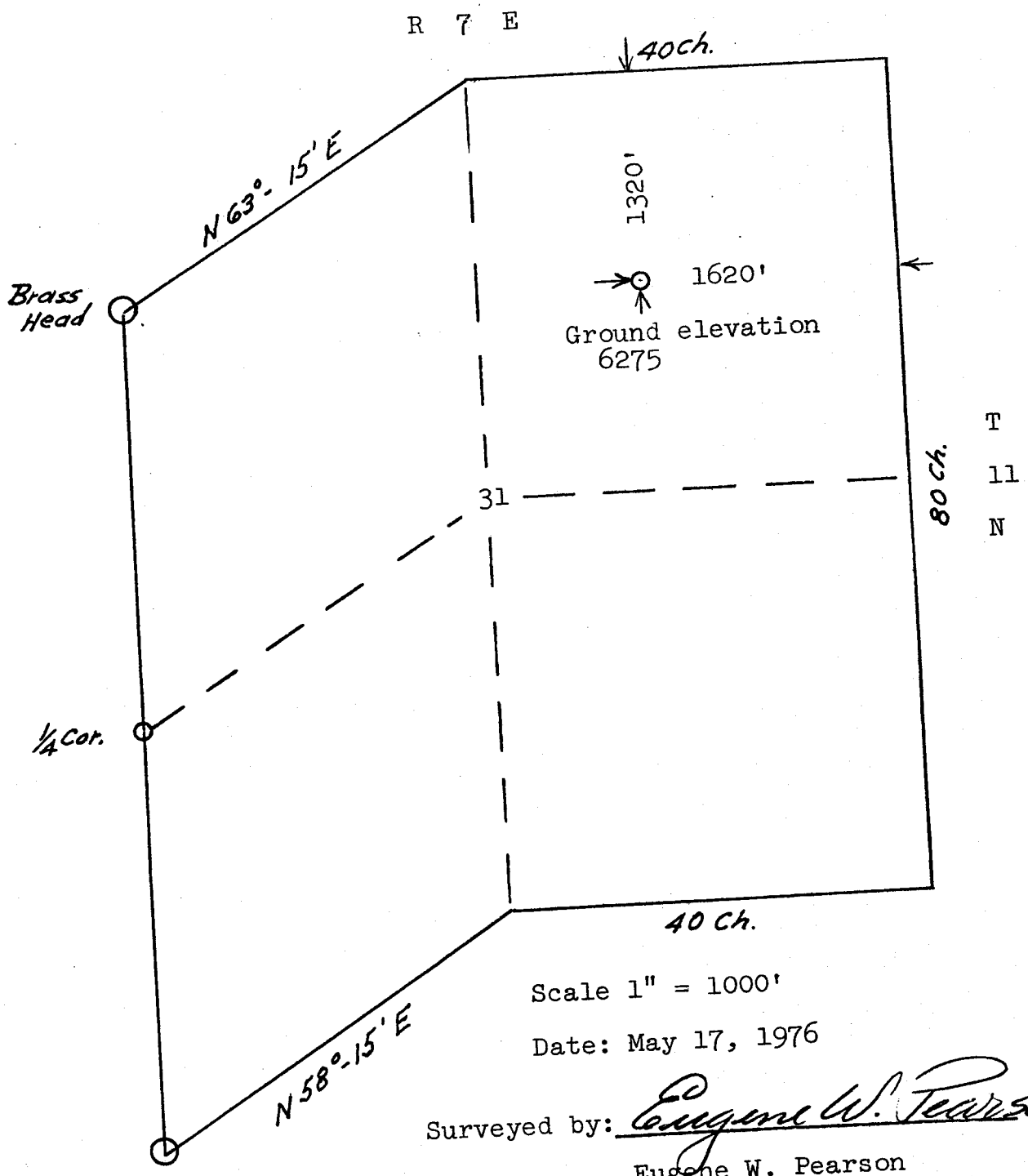
*See Instructions On Reverse Side

PLAT OF SURVEY OF PROPOSED WELL LOCATION

RICH COUNTY, UTAH

FOR

HOFFMAN ~~RANDOLPH~~ NO. 1




Scale 1" = 1000'

Date: May 17, 1976

Surveyed by: Eugene W. Pearson

Eugene W. Pearson
License No. 1633

BERGE EXPLORATION - UTAH

Jack
7-5
K

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS, AND MINING
1588 West North Temple
Salt Lake City, Utah 84116

M E M O R A N D U M

TO: ENVIRONMENTAL COORDINATING COMMITTEE (ECC)

FROM: RONALD W. DANIELS, COORDINATOR OF MINED LAND DEVELOPMENT

DATE: JULY 27, 1976

SUBJECT: NOTICE OF PROPOSED ACTION TO APPROVE A WILDCAT OIL WELL

A wildcat oil well is in the process of being approved for the NE ¼ of Section 31, Township 11 North, Range 7 East, Rich County, Utah.

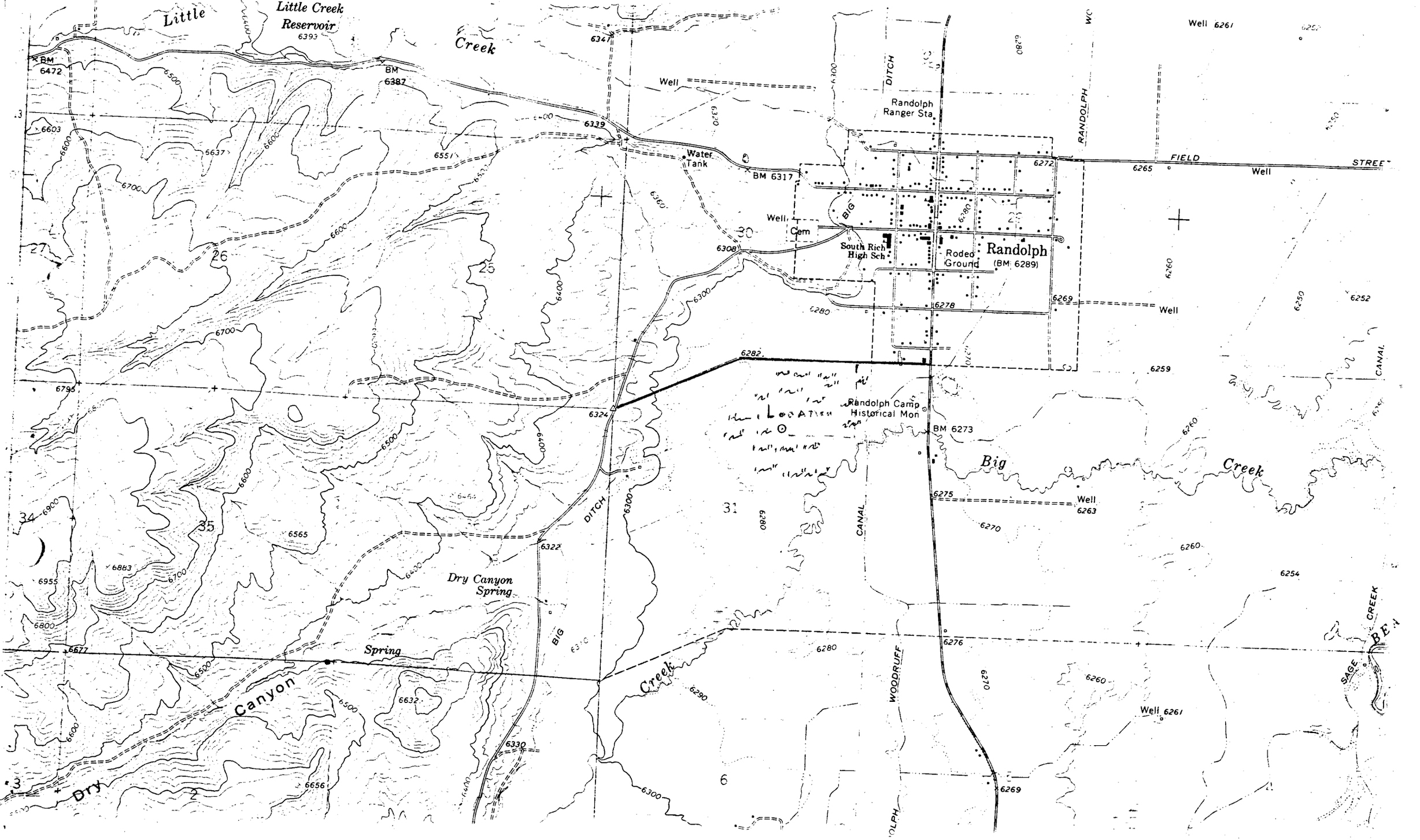
This description of the action will replace the environmental assessment usually called for on wildcat wells since the impacts of this well are small and it is located wholly on fee acreage.

The attached map shows the proposed well location about ½ mile southwest of the town of Randolph, Utah. The area is a very poorly drained bog, used marginally for cattle grazing and as habitat for migratory wildlife. Surface water, numerous sedges, and rushes dominate the area of both the access road and the proposed well pad. Fill material will be hauled into the site to construct a pad of approximately 300' x 300'. Right-of-way has been secured through the fee owners from an existing country road.

Drilling fluids, cuttings, and chemicals will be contained while drilling in a fill pit or shallow tankage. Residue remaining after evaporation of the liquid portion will be deposited in a suitable local landfill. A filled road will remain on the property after drilling, thus allowing access year-round to the property.

It is proposed that this action will not significantly effect the environment and that no further assessment is necessary.

Further information may be obtained from Ron Daniels at 533-5771.


Little Creek Reservoir
Little Creek
BM 6472
BM 6387
Well
Randolph Ranger Sta
DITCH
RANDOLPH
Well 6261
FIELD STREET
Water Tank
BM 6317
Well
Cem
BIG
South Rich High Sch
Roded Ground
Randolph
(BM 6289)
Well
Randolph Camp Historical Mon
BM 6273
Big Creek
Well
Well 6263
CANAL
DITCH
Dry Canyon Spring
Spring
Dry Canyon
BIG Creek
WOODRUFF
SAGE CREEK
Well 6261

Form DOGC-1a

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL & GAS

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

# APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work: DRILL ☒ DEEPEN ☐ PLUG BACK ☐

b. Type of Well: Oil Well ☒ Gas Well ☐ Other — Single Zone ☒ Multiple Zone ☐

2. Name of Operator: American Quasar Petroleum Co. of New Mexico

3. Address of Operator: 330 Pacific Western Life Bldg., Casper, Wyoming 82601

4. Location of Well (Report location clearly and in accordance with any State requirements.*)
At surface: Surface location 1320' FNL & 1620' FEL Sec. 31, T. 11N, R. 7E
At proposed prod. zone: 800' FNL & 1100' FEL, Bottom Hole Location

5. Lease Designation and Serial No.: (Fee)

6. If Indian, Allottee or Tribe Name:

7. Unit Agreement Name:

8. Farm or Lease Name: Hoffman

9. Well No.: 1

10. Field and Pool, or Wildcat: Wildcat

11. Sec., T., R., M., or Blk. and Survey or Area: Sec. 31-11N-7E

12. County or Parish: Rich 13. State: Utah

14. Distance in miles and direction from nearest town or post office*: Approx. 1 mile SW of Randolph, Utah

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. line, if any): 1320'

16. No. of acres in lease: 179.55

17. No. of acres assigned to this well: 40.00

18. Distance from proposed location* to nearest well, drilling, completed, or applied for, on this lease, ft.: No wells drilled on lease.

19. Proposed depth: 11,000'

20. Rotary or cable tools: Rotary

21. Elevations (Show whether DF, RT, GR, etc.): Ungraded GR 6,275'

22. Approx. date work will start*: 6/20/76

23. PROPOSED CASING AND CEMENTING PROGRAM

| Size of Hole | Size of Casing | Weight per Foot | Setting Depth | Quantity of Cement |
|---|---|---|---|---|
| 22" | 20" | 60# | 60' | 50 sx |
| 17½" | 13-3/8" | 48# | 1,000' | 700 sx |
| 12¼" | 9-5/8" | 36# | 4,000' | 300 sx |
| 8-3/4" | 7" | 23,26&29# | 11,000' | 300 sx |

American Quasar Petroleum Co. proposes to drill an 11,000' well on the above-described location to test the Madison formation. Drilling and cementing will be performed as above. Testing of potential zones will be at the discretion of the wellsite supervisor. Electric logs will be run to TD. Mud weight will be sufficient for pressures encountered.

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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: John F. Sindelar Title: Division Drilling Supt. Date: 6/7/76

(This space for Federal or State office use)

Permit No. 43-033-30001 Approval Date

Approved by Title

Conditions of approval, if any:

RECEIVED JUN 19 1976 DIVISION OF OIL, GAS, & MINING

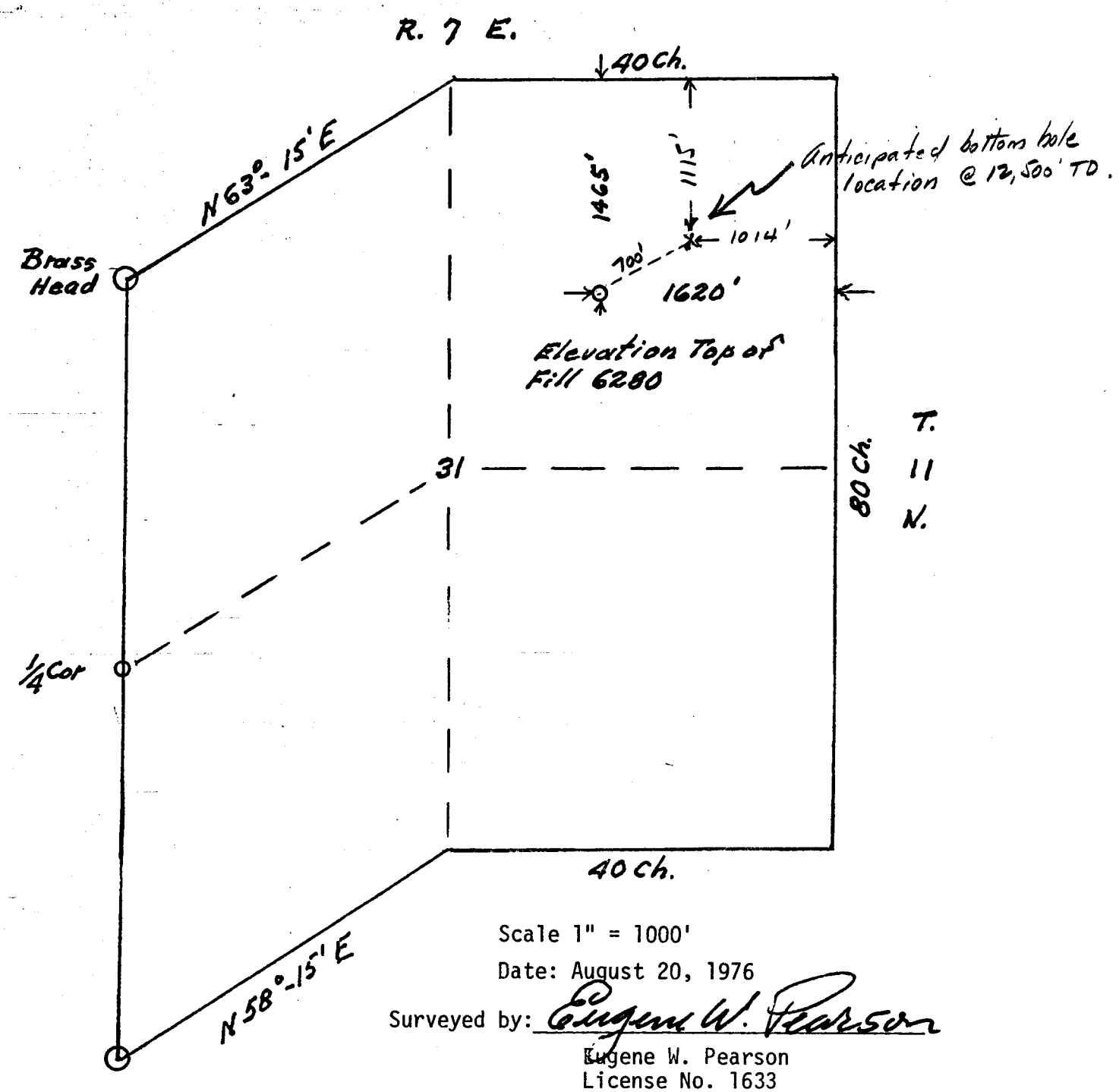
*See Instructions On Reverse Side

PLAT OF SURVEY OF PROPOSED WELL LOCATION

RICH COUNTY, UTAH

FOR

HOFFMAN NO. 1 - AMENDED SURVEY




Scale 1" = 1000'

Date: August 20, 1976

Surveyed by: Eugene W. Pearson

Eugene W. Pearson
License No. 1633

BERGE EXPLORATION - UTAH

DIVISION OF OIL, GAS, AND MINING

*FILE NOTATIONS*

Date: August 11, 1976

Operator: American Quasar Petroleum Co

Well No: Hoffman #1

Location: Sec. 31 T. 11N R. 7E County: Rich

---

File Prepared ☑ Entered on N.I.D. ☑

Card Indexed ☑ Completion Sheet ☑

---

Checked By:

Administrative Assistant: [illegible]

Remarks: 8/12/76 Verbal approval to drill this date by CBF + PLB. — K 8-19-76

Petroleum Engineer/Mined Land Coordinator: [illegible] Pat - Environmental Assessment Submitted. no replies

Remarks: location is off spacing pattern

Director: [illegible]

Remarks:

---

Include Within Approval Letter:

Bond Required ☐ Survey Plat Required ☐

Order No. _____ ☐ Blowout Prevention Equipment ☐

Rule C-3(c) Topographical 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

# AMERICAN QUASAR PETROLEUM CO.

330 PACIFIC WESTERN LIFE BUILDING / CASPER / WYOMING 82601 U.S.A. / TELEPHONE (307) 265-3362


August 18, 1976

RECEIVED
AUG 20 1976
DIVISION
GAS, & MINING

Division of Oil, Gas & Mining
1588 West North Temple
Salt Lake City, Utah 84116

Attention: Cleon B. Feight, Director

Re: Hoffman #1
1320' FNL & 1620' FEL
Section 31, T. 11N, R. 7E
Rich County, Utah

Gentlemen:

In accordance with our discussion, this is to advise that although this surface location falls near the center line of the NE/4 of Section 31, the anticipated bottom hole location on top of the well's formation is approximately 700' NE of the surface location and should penetrate the pay zone in the SW/4 NE/4 of said Section 31.

If additional information is required, please advise.

Very truly yours,

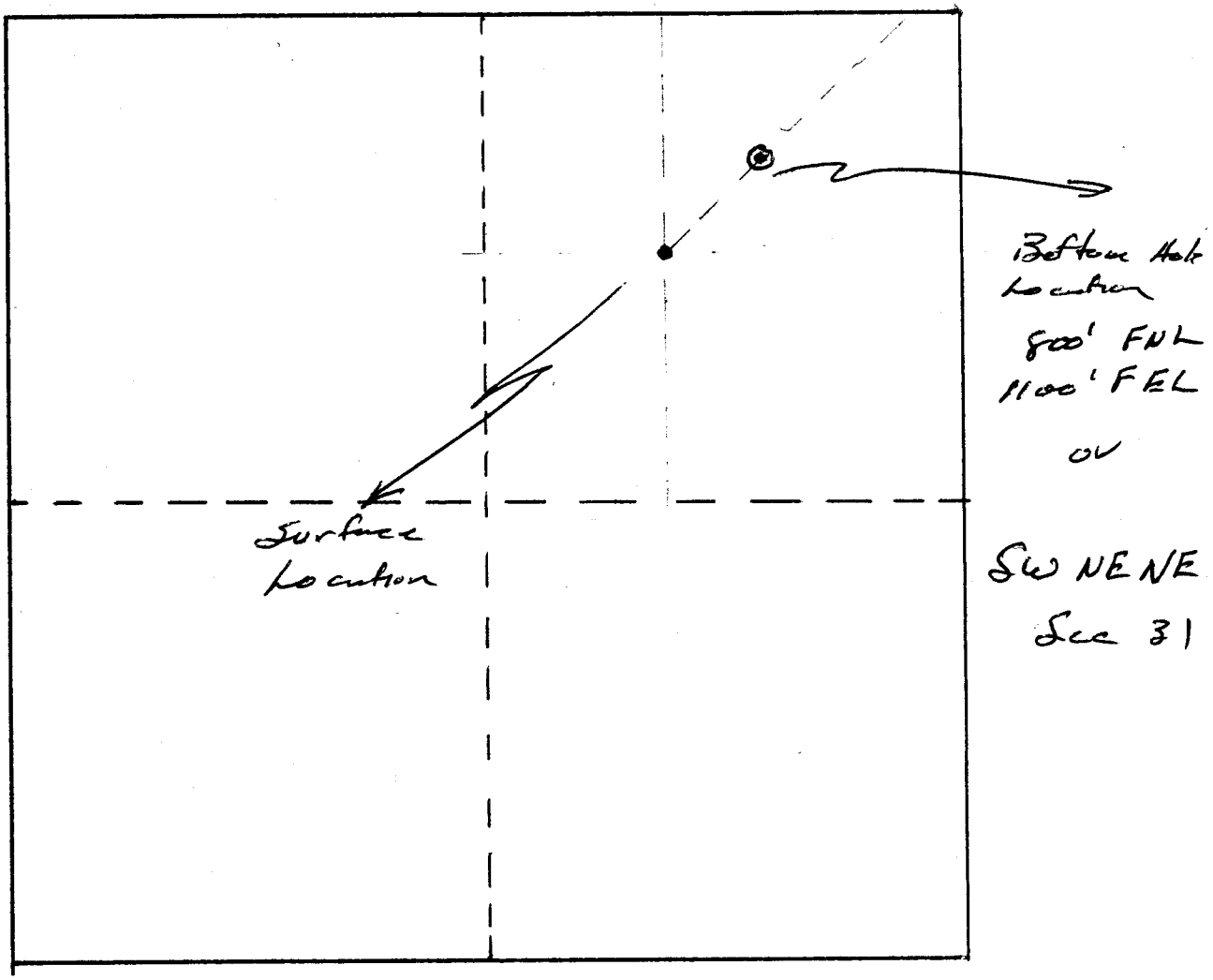
AMERICAN QUASAR PETROLEUM CO.

A. H. Hurley, Jr.
Division Operations Manager

AHH:bh

If anticipated drift is followed as above, the Bottom Hole location will be SW NE NE ~ 800' FNL 1100 FEL

Should include in approval letter, Deviations must be submitted and Bt. hole calculated on final depth




Section 31

1" ≅ 1,000'

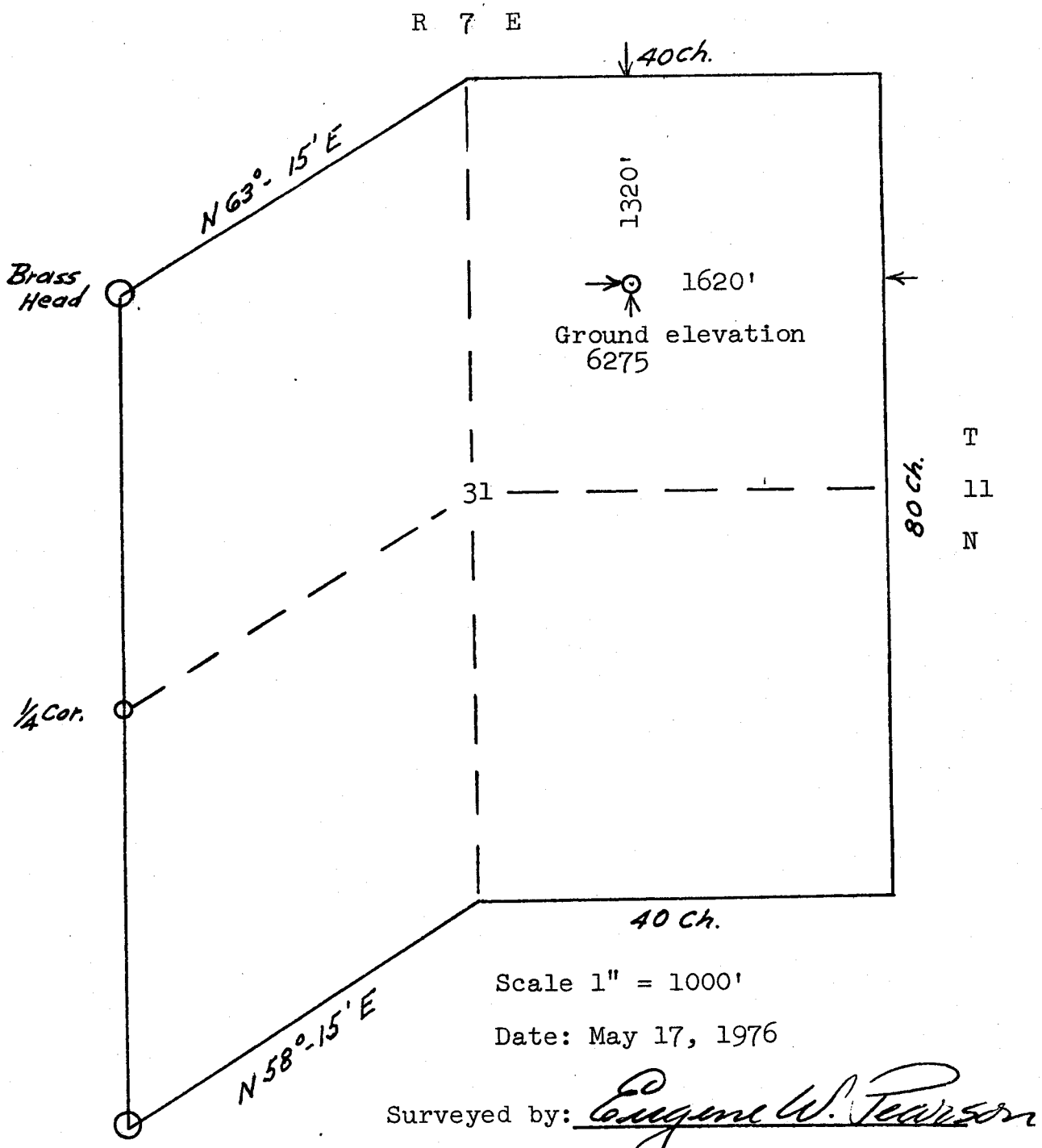
Hoffman #1, Per Letter
1370 FNL
1670 FEL Surface

PLAT OF SURVEY OF PROPOSED WELL LOCATION

RICH COUNTY, UTAH

FOR

HOFFMAN
~~RANDOLPH~~ NO. 1




Scale 1" = 1000'

Date: May 17, 1976

Surveyed by: Eugene W. Pearson

Eugene W. Pearson
License No. 1633

BERGE EXPLORATION - UTAH

August 20, 1976

American Quasar Petroleum Company
330 Pacific Western Life Building
Casper, Wyoming 82601

Re: Well No. Hoffman #1
Sec. 31, T. 11 N, R. 7 E,
Rich County, Utah

Gentlemen:

Insofar as this office is concerned, approval to drill the above referred to well is hereby granted in accordance with Rule C-3(c), General Rules and Regulations and Rules of Practice and Procedure.

It should be noted, however, that is is requested that deviations must be submitted to this Division, and the bottom hole location calculated on final depth.

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

PATRICK L. DRISCOLL - Chief Petroleum Engineer
HOME: 582-7247
OFFICE: 533-5771

Enclosed please find Form OGC-8-X, which is to be completed whether or not water sands (aquifers) are encountered during drilling.

The API number assigned to this well is 43-033-30001.

Very truly yours,

DIVISION OF OIL, GAS, AND MINING

CLEON B. FEIGHT
DIRECTOR

CBF:sw

AMERICAN QUASAR PETROLEUM CO.
330 PACIFIC WESTERN LIFE BUILDING / CASPER / WYOMING 82601 U.S.A. / TELEPHONE (307) 265-3362

RECEIVED
AUG 27 1976
DIVISION OF OIL, GAS, & MINING

August 25, 1976

Mr. Cleon B. Feight, Director
Division of Oil, Gas & Mining
1588 West North Temple
Salt Lake City, Utah 84116

Re: Hoffman #1
Section 31, T. 11N, R. 7E
Rich County, Utah

Dear Mr. Feight:

Pursuant to Mr. Hurley's letter to you of August 18th and my verbal conversation with you, we enclose herewith three (3) plats showing the description of resurveyed location and anticipated bore hole at total depth.

Very truly yours,

AMERICAN QUASAR PETROLEUM CO.

John Sindelar
Div. Drilling Supt.

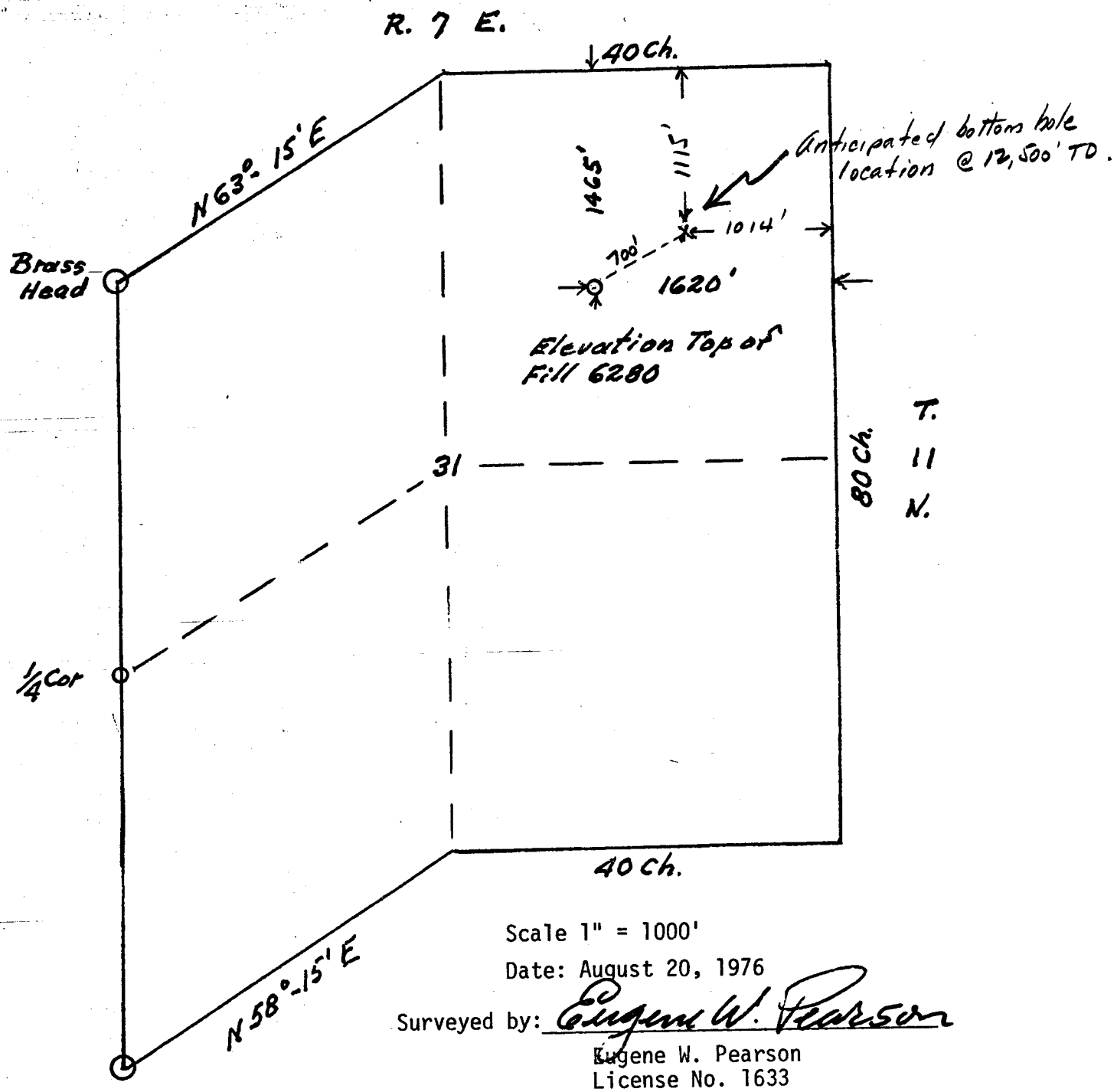
JS:bh
Enc's

PLAT OF SURVEY OF PROPOSED WELL LOCATION

RICH COUNTY, UTAH

FOR

HOFFMAN NO. 1 - AMENDED SURVEY




Scale 1" = 1000'

Date: August 20, 1976

Surveyed by: Eugene W. Pearson

Eugene W. Pearson
License No. 1633

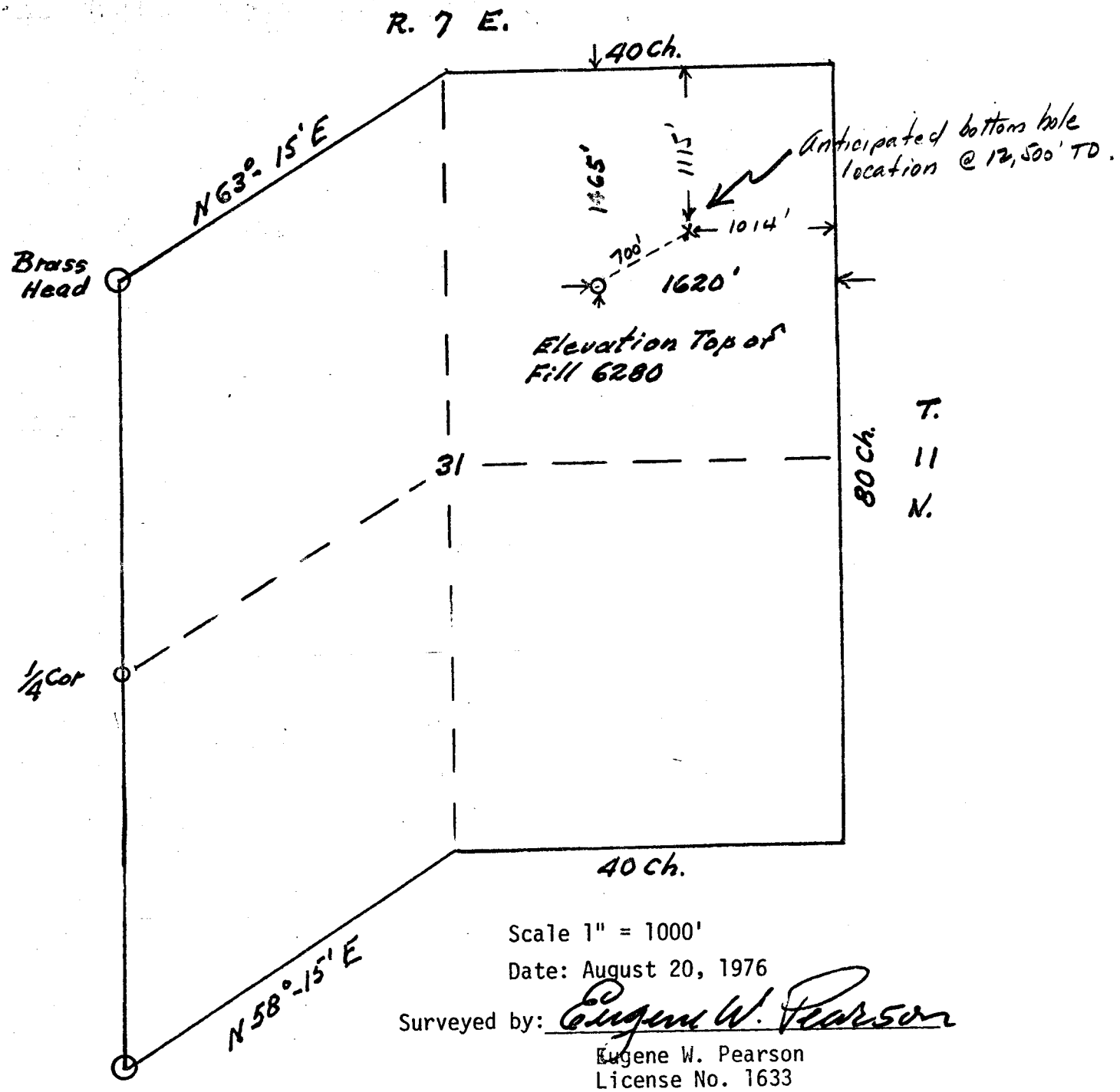
BERGE EXPLORATION - UTAH

PLAT OF SURVEY OF PROPOSED WELL LOCATION

RICH COUNTY, UTAH

FOR

HOFFMAN NO. 1 - AMENDED SURVEY




Scale 1" = 1000'

Date: August 20, 1976

Surveyed by: Eugene W. Pearson

Eugene W. Pearson
License No. 1633

BERGE EXPLORATION - UTAH

Return to Pat

Pat

Ron,

I note that this was sampled from D.S.T.

It's very possible this water was sampled from two different points as the drilling string was broken down. As you note from the D.S.T, the total recovery is too small to be reliable insofar as results are. As for duplication, its almost impossible in this type of test.

The Brine will actually float on the drilling mud due to difference in densities; so you can have salt water on top of fresh water, and if one water sample is caught on top, and they wait to pull one or more stands to catch the second sample, you can expect differences in composition.

Unless you have 1000' or more of formation water -- uncontaminated -- then D.S.T results are only ball park representations at the best.

Ro

Phone
522-1206 Area 303

# LYNES, INC.

Box 712
Sterling, Colo. 80751

Operator American Quasar Petroleum Co.
Address See Distribution
Well Name and No. Hoffman #1
Ticket No. 2361
Date 9-15-76
DST No. 1
No. Final Copies 23

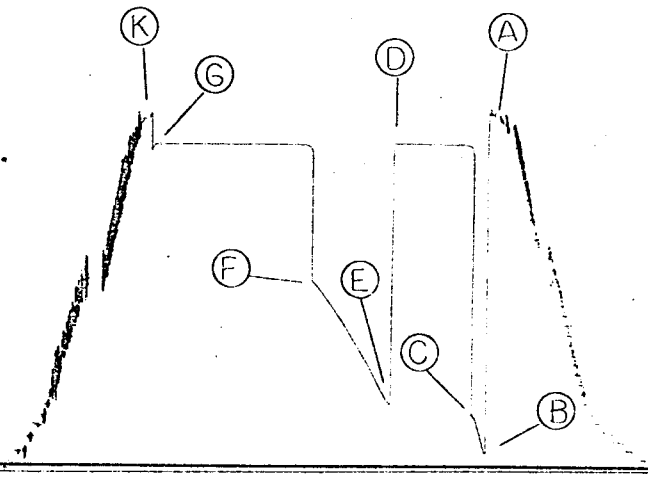
| | | | |
|---|---|---|---|
| Contractor | Noble Drlg. Corp. | Top Choke | 1" |
| Rig No. | N84 | Bottom Choke | 9/16" |
| Spot | NE-NE | Size Hole | 12¼" |
| Sec. | 31 | Size Rat Hole | -- |
| Twp. | 11 N | Size & Wt. D. P. | 4½" 16.60 |
| Rng. | 7 E | Size Wt. Pipe | -- |
| Field | Wildcat | I. D. of D. C. | 2 3/4" |
| County | Rich | Length of D. C. | 441' |
| State | Utah | Total Depth | 3529' |
| Elevation | 6300' "K.B." | Interval Tested | 3460-3529' |
| Formation | Nugget | Type of Test | Bottom Hole Conv. |

| | | |
|---|---|---|
| Flow No. 1 | 10 | Min. |
| Shut-in No. 1 | 60 | Min. |
| Flow No. 2 | 60 | Min. |
| Shut-in No. 2 | 120 | Min. |
| Flow No. 3 | -- | Min. |
| Shut-in No. 3 | -- | Min. |

Bottom Hole Temp. 98°F
Mud Weight 9.2
Gravity --
Viscosity 45

Tool opened @ 8:40 AM.

RECEIVED
SEP 22 1976
DIVISION OF OIL, GAS, & MINING




Outside Recorder

PRD Make Kuster AK-1
No. 3697 Cap. 3700 @ 3480'

| Press | | Corrected |
|---|---|---|
| Initial Hydrostatic | A | 1684 |
| Final Hydrostatic | K | 1664 |
| Initial Flow | B | 95 |
| Final Initial Flow | C | 277 |
| Initial Shut-in | D | 1543 |
| Second Initial Flow | E | 329 |
| Second Final Flow | F | 893 |
| Second Shut-in | G | 1543 |
| Third Initial Flow | H | -- |
| Third Final Flow | I | -- |
| Third Shut-in | J | -- |

Our Tester: Claude Womack
Witnessed By: Birl Lynch

Did Well Flow – Gas No Oil No Water No

RECOVERY IN PIPE: 2030' Total fluid
200' Water cut mud = 2.84 Bbl.
1530' Slightly mud cut water = 20.75 Bbl.
300' Fresh water = 2.19 Bbl.
---

REMARKS:
1st Flow- Tool opened with 1" underwater blow, increased to bottom of bucket in 10 minutes.
2nd Flow- Tool opened with 1" underwater blow, began surging in 5 minutes from 3" underwater blow to bottom of bucket.
---

LYNES UNITED SERVICES
DIVISION OF LYNES, INC.

Operator American Quasar Petr. Co. Lease & No. Hoffman #1 DST No. 1

Recorder No. 3697 @ 3480'

FIRST SHUT IN PRESSURE:

| TIME(MIN) PHI | (T"PHI) /PHI | PSIG |
|---|---|---|
| 0.0 | 0.0000 | 277 |
| 6.0 | 2.6667 | 1540 |
| 12.0 | 1.8333 | 1542 |
| 18.0 | 1.5556 | 1543 |
| 24.0 | 1.4167 | 1543 |
| 30.0 | 1.3333 | 1543 |
| 36.0 | 1.2778 | 1543 |
| 42.0 | 1.2381 | 1543 |
| 48.0 | 1.2083 | 1543 |
| 54.0 | 1.1852 | 1543 |
| 60.0 | 1.1667 | 1543 |

EXTRAPLN OF FIRST SHUT IN : 1543.0

SECOND SHUT IN PRESSURE:

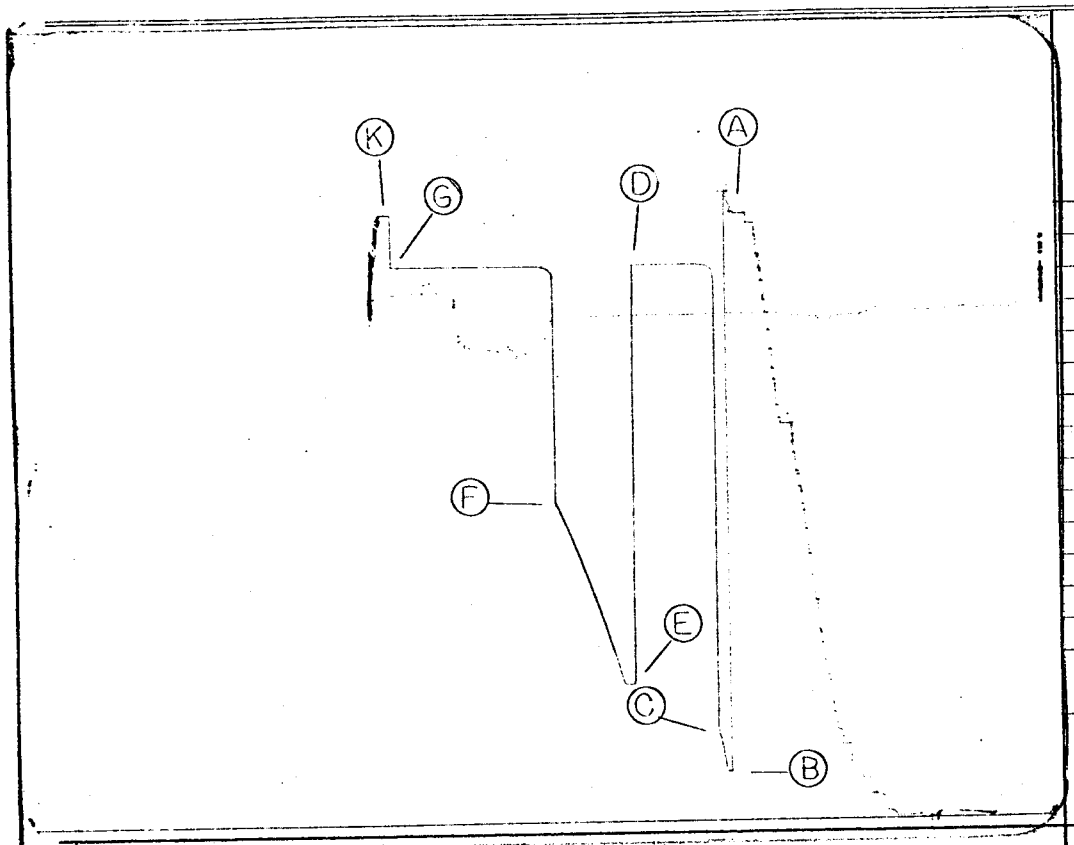
| TIME(MIN) PHI | (T"PHI) /PHI | PSIG |
|---|---|---|
| 0.0 | 0.0000 | 893 |
| 12.0 | 6.8333 | 1540 |
| 24.0 | 3.9167 | 1541 |
| 36.0 | 2.9444 | 1542 |
| 48.0 | 2.4583 | 1542 |
| 60.0 | 2.1667 | 1543 |
| 72.0 | 1.9722 | 1543 |
| 84.0 | 1.8333 | 1543 |
| 96.0 | 1.7292 | 1543 |
| 108.0 | 1.6481 | 1543 |
| 120.0 | 1.5833 | 1543 |

EXTRAPLN OF SECOND SHUT IN : 1543.0 M : 0.2

Extrapolations of reservoir pressures should be used as indicators only.

# LYNES, INC.

Operator American Quasar Petr. Co. Lease & No. Hoffman #1 DST No. 1




Inside Recorder

PRD Make Kuster AK-1

No. 4152 Cap. 2100 @ 3470'

| Press | | Corrected |
|---|---|---|
| Initial Hydrostatic | A | 1681 |
| Final Hydrostatic | K | 1670 |
| Initial Flow | B | 167 |
| Final Initial Flow | C | 271 |
| Initial Shut-in | D | 1541 |
| Second Initial Flow | E | 402 |
| Second Final Flow | F | 886 |
| Second Shut-in | G | 1541 |
| Third Initial Flow | H | -- |
| Third Final Flow | I | -- |
| Third Shut-in | J | -- |
| | | |
| | | |
| | | |
| Pressure Below Bottom Packer Bled To | | |

Clock indicates clock stopped on trip out of hole.

PRD Make

No. Cap. @

| Press | | Corrected |
|---|---|---|
| Initial Hydrostatic | A | |
| Final Hydrostatic | K | |
| Initial Flow | B | |
| Final Initial Flow | C | |
| Initial Shut-in | D | |
| Second Initial Flow | E | |
| Second Final Flow | F | |
| Second Shut-in | G | |
| Third Initial Flow | H | |
| Third Final Flow | I | |
| Third Shut-in | J | |
| | | |
| | | |
| | | |
| Pressure Below Bottom Packer Bled To | | |

Form 3

LYNES UNITED SERVICES
DIVISION OF LYNES, INC.

# Fluid Sample Report

Date 9-15-76 Ticket No. 2361

Company American Quasar Petroleum Co.

Well Name & No. Hoffman #1 DST No. 1

County Rich State Utah

Sampler No. 14 Test Interval 3460-3529'

Pressure in Sampler 25 PSIG BHT 98 °F

Total Volume of Sampler: 2100 cc.

Total Volume of Sample: 2100 cc.

Oil: None cc.

Water: 2100 cc.

Mud: None cc.

Gas: None cu. ft.

Other: None

**Resistivity**

Water: 1.4 @ 80°F of Chloride Content 3700 ppm.

Mud Pit Sample 0.5 @ 70°F of Chloride Content 13,000 ppm.

Gas/Oil Ratio Gravity °API @ °F

Where was sample drained On Location

Remarks:

LYNES UNITED SERVICES
DIVISION OF LYNES, INC.

# DISTRIBUTION OF FINAL DST REPORTS

Operator American Quasar Petr. Co. Lease Hoffman #1 Well No. 1

Original copy: American Quasar Petr. Co., Attn: C. Gregg, 1630 Denver Club Bldg., Denver, Colorado, 80202.

1 copy: American Quasar Petr. Co., Attn: B. Hurley, 332 Pacific Western Life Bldg., Casper, Wyoming, 82601.

3 copies: American Quasar Petr. Co., Attn: B. Bogert, 2500 Fort Worth Nat'l Bank Bldg., Fort Worth, Texas, 76102.

1 copy: American Quasar Petr. Co., Attn: H. Ware, 1000 Midland Bank Tower, Midland, Texas, 79701.

2 copies: Gulf Energy & Minerals Co.-U.S., Attn: E.K. Ericson, Box 2619, Casper, Wyoming, 82602.

2 copies: Patrick Petr. Corp. of Michigan, Attn: J.Orr, 744 W. Michigan Ave., Jackson, Michigan, 49204.

3 copies: W.R. Grace & Co., 2925 L.B.J. Freeway, Dallas, Texas, 75234.

2 copies: Utah Oil & Gas Conservation Division, 1588 W. North Temple, Salt Lake City, Utah, 84116.

2 copies: United States Geological Survey, Attn: Geologist in Charge, 8426 Federal Bldg., Salt Lake City, Utah, 84111.

3 copies: Cities Service Oil Co., Attn: D.M. Fosher, 900 Colo. State Bank Bldg., Denver Colorado, 80202.

3 copies: Ram Petroleums, Inc., Attn: R.G. Opekar, Box 90, Toronto, Ontario, M5H 2Y4.

Form DOGC-4

RECEIVED SEP 27 1976 DIV. OIL, GAS, & MINING

# STATE OF UTAH

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL & GAS CONSERVATION

1588 WEST NORTH TEMPLE
SALT LAKE CITY, UTAH 84116
328-5771

State Lease No. Fee
Federal Lease No.
Indian Lease No.
Fee & Pat.

API NO: 43-003-30001

## REPORT OF OPERATIONS AND WELL STATUS REPORT

STATE Utah COUNTY Rich FIELD/LEASE Wildcat

The following is a correct report of operations and production (including drilling and producing wells) for the month of: August, 1976.

Agent's Address 330 Pacific Western Life Bldg
Casper, Wyoming 82601

Phone No. 307-265-3362

Company AMERICAN QUASAR PETROLEUM CO.
Signed A. H. Hurlburt, Jr.
Title Division Operations Manager

| Sec. and ¼ of ¼ | Twp. | Range | Well No. | Days Produced | Barrels of Oil | Gravity | Cu. Ft. of Gas (In thousands) | Gallons of Gasoline Recovered | Barrels of Water (If none, so state) | REMARKS (If drilling, depth; if shut down, cau date and result of test for gasoline content of gas) |
|---|---|---|---|---|---|---|---|---|---|---|
| SEC. 31 SW NE HOFFMAN | 11N | 7E | 1 | | | | Location: 1,320' FNL & 1,620' FEL. Set 76' of 20" 94# H-40 casing and cemented to surface. Spudded at 9:30 p.m. 8-25-76. Drilled 12-1/4" hole to 996' and reamed to 17-1/2" to 976'. Set 23 jts. (101') 13-3/8" 48# H-40 casing at 976' and cemented with 1000 sax. Now WOC. | | | |

GAS: (MCF)
Sold None
Flared/Vented None
Used On/Off Lease None

OIL or CONDENSATE: (To be reported in Barrels)
On hand at beginning of month None
Produced during month None
Sold during month None
Unavoidably lost None
Reason:
On hand at end of month None

DRILLING/PRODUCING WELLS: This report must be filed on or before the sixteenth day of the succeeding month following production for each well. Where a well is temporarily shut-in, a negative report must be filed. *THIS REPORT MUST BE FILED IN DUPLICATE*

Form DOGC-4

# STATE OF UTAH

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL & GAS CONSERVATION

1588 WEST NORTH TEMPLE
SALT LAKE CITY, UTAH 84116
328-5771

State Lease No. FEE
Federal Lease No.
Indian Lease No.
Fee & Pat.

NOV 4 1976
DIVISION OF OIL, GAS, & MINING

## REPORT OF OPERATIONS AND WELL STATUS REPORT

STATE Utah COUNTY Rich FIELD/LEASE Wildcat

The following is a correct report of operations and production (including drilling and producing wells) for the month of: September, 19 76.

Agent's Address 707 United Bank Tower
1700 Broadway
Denver, CO 80290
Phone No. 303/861-8437

Company American Quasar Petroleum Co.
Signed A. H. Hurley
Title A. H. Hurley
Division Operations Manager

| Sec. and ¼ of ¼ | Twp. | Range | Well No. | Days Produced | Barrels of Oil | Gravity | Cu. Ft. of Gas (In thousands) | Gallons of Gasoline Recovered | Barrels of Water (if none, so state) | REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas) |
|---|---|---|---|---|---|---|---|---|---|---|
| Section 31 SW NE Hoffman | 11N | 7E | 31-1 | | | | | | | TD 4665. Set csg. |

Gas Sold 0
Flared/Vented 0
Used on/off Lease 0

NOTE: There were -0- runs or sales of oil; -0- M. cu. ft. of gas sold; -0- runs or sales of gasoline during the month.

DRILLING/PRODUCING WELLS: This report must be filed on or before the sixteenth day of the succeeding month following production for each well. Where a well is temporarily shut-in, a negative report must be filed. *THIS REPORT MUST BE FILED IN DUPLICATE.*

CALVIN L. RAMPTON
*Governor*

GORDON E. HARMSTON
*Executive Director,*
*NATURAL RESOURCES*

CLEON B. FEIGHT
*Director*

**STATE OF UTAH**
DEPARTMENT OF NATURAL RESOURCES
**DIVISION OF OIL, GAS, AND MINING**
**1588 West North Temple**
**Salt Lake City, Utah 84116**
**(801) 533-5771**

OIL, GAS, AND MINING BOARD

GUY N. CARDON
*Chairman*

CHARLES R. HENDERSON
ROBERT R. NORMAN
I. Daniel Stewart
HYRUM L. LEE

*October 21, 1976*

*Soil, Plant, & Water Analysis Lab*
*Utah State University, UMC 48*
*Logan, Utah 84322*

*Gentlemen:*

*Please analyze the enclosed water sample for the ions listed on the form attached.*

*Bill this Division for the costs of this test.*

*Very truly yours,*
*DIVISION OF OIL, GAS, AND MINING*

Ron Daniels

*Ronald W. Daniels*
*Coordinator of Mined*
*Land Development*

RECEIVED
NOV 16 1976
DIVISION OF OIL, GAS, & MINING

*RWD/lc*

*Enclosure*

Collect

#6279

API FORM 45-1

# API WATER ANALYSIS REPORT FORM

| | | | | |
|---|---|---|---|---|
| Company: Am. Quas. Hoffman #1 | | Sample No. | Date Sampled | |
| Field | Legal Description: C-NE 1/4, S.31, T11N, R7E | | County or Parish | State |
| Lease or Unit | Well | Depth | Formation | Water, B/D |
| Type of Water (Produced, Supply, etc.) | Sampling Point | | | Sampled By |

## DISSOLVED SOLIDS

| CATIONS | | mg/l | me/l |
|---|---|---|---|
| Sodium, Na (calc.) | ✓ | | |
| Calcium, Ca | ✓ | | |
| Magnesium, Mg | ✓ | | |
| Barium, Ba | X | | |
| | | | |
| | | | |

| ANIONS | | mg/l | me/l |
|---|---|---|---|
| Chloride, Cl | ✓ | | |
| Sulfate, $SO_4$ | ✓ | | |
| Carbonate, $CO_3$ | ✓ | | |
| Bicarbonate, $HCO_3$ | ✓ | | |
| | | | |
| | | | |
| | | | |

Total Dissolved Solids (calc.) _____

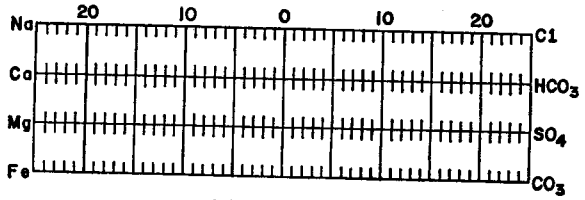
| | | |
|---|---|---|
| Iron, Fe (total) | ✓ | |
| Sulfide, as $H_2S$ | X | |

## OTHER PROPERTIES

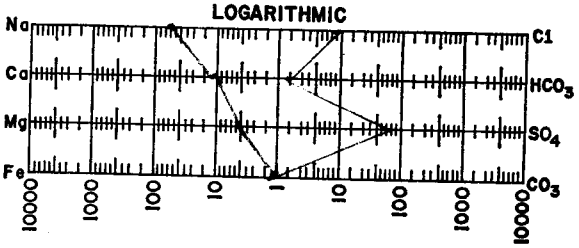
| | |
|---|---|
| pH | |
| Specific Gravity, 60/60 F. | |
| Resistivity (ohm-meters)_____F. | |
| | |
| | |
| | |

## WATER PATTERNS — me/l

STANDARD




LOGARITHMIC




REMARKS & RECOMMENDATIONS:

UTAH STATE UNIVERSITY · LOGAN, UTAH 84322

SOIL, PLANT and WATER
ANALYSIS LABORATORY
UMC 48

RECEIVED
NOV 16 1976
DIVISION OF OIL, GAS, & MINING

November 12, 1976

Hoffman #1
C. of NE¼ Sec. 31, T. 11N, R7E.
SLBM

Ronald W. Daniels
Division Of Oil, Gas, And Mining
1588 W. North Temple
Salt Lake City, Utah 84116

Dear Mr. Daniels,

The results of your water analysis is listed below:

| Lab. # | meq/l Na | meq/l Ca | meq/l Mg | meq/l $Cl$ | meq/l $SO_4$ | meq/l $CO_3$ | meq/l $HCO_3$ | ppm Fe(total) |
|---|---|---|---|---|---|---|---|---|
| 6279 | 72.8 | 11.4 | 5.7 | 9.3 | 76.2 | 0 | 1.8 | 8 |

RCL

Swan & Kan test.

API FORM 45-1

# API WATER ANALYSIS REPORT FORM

| | | | | |
|---|---|---|---|---|
| Company: AMERICAN QUASAR PETROLEUM | | Sample No. | Date Sampled | |
| Field: WILDCAT | Legal Description: C. OF NE 1/4 S.31, T.11N., R.7E. | County or Parish: RICH | State: UT | |
| Lease or Unit | Well: HOFFMAN #1 | Depth: 3460 | Formation: MUDLIT | Water, B/D |
| Type of Water (Produced, Supply, etc.) | Sampling Point | | Sampled By | |

## DISSOLVED SOLIDS

| CATIONS | mg/l | me/l |
|---|---|---|
| Sodium, Na (calc.) | 4600 | 200 |
| Calcium, Ca | 400 | 20 |
| Magnesium, Mg | 12 | 1 |
| Barium, Ba | NO TEST | |

| ANIONS | mg/l | me/l |
|---|---|---|
| Chloride, Cl | 4600 | 129.6 |
| Sulfate, $SO_4$ | 720 | 15 |
| Carbonate, $CO_3$ | 0 | 0 |
| Bicarbonate, $HCO_3$ | 134 | 2 |
| HYDROXIDE | 0 | 0 |

Total Dissolved Solids (calc.) 10,466

Iron, Fe (total) 0

Sulfide, as $H_2S$ LESS THAN 1 PPM

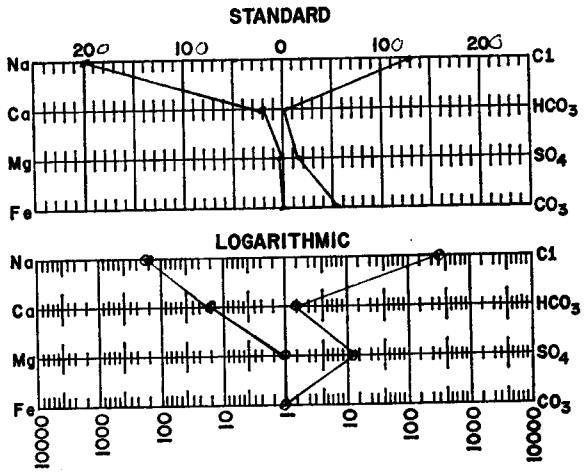
## OTHER PROPERTIES

pH 6.8

Specific Gravity, 60/60 F.

Resistivity (ohm-meters) ____ F.

## WATER PATTERNS — me/l




REMARKS & RECOMMENDATIONS:

(9)

Form DOGC-4

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL & GAS CONSERVATION
1588 WEST NORTH TEMPLE
SALT LAKE CITY, UTAH 84116
328-5771

State Lease No. FEE
Federal Lease No.
Indian Lease No.
Fee & Pat.

# REPORT OF OPERATIONS AND WELL STATUS REPORT

STATE Utah COUNTY Rich FIELD/LEASE Wildcat

The following is a correct report of operations and production (including drilling and producing wells) for the month of: October, 19 76.

Agent's Address 707 United Bank Tower
1700 Broadway
Denver, CO 80290
Phone No. 303/861-8437

Company American Quasar Petroleum Co.
Signed A. H. Hurley
Title A. H. Hurley
Division Operations Manager

| Sec. and ¼ of ¼ | Twp. | Range | Well No. | Days Produced | Barrels of Oil | Gravity | Cu. Ft. of Gas (in thousands) | Gallons of Gasoline Recovered | Barrels of Water (if none, so state) | REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas) |
|---|---|---|---|---|---|---|---|---|---|---|
| Section 31 SW NE Hoffman | 11N | 7E | 31-1 | | | | | | | TD 6744. Set Csg. |

Gas Sold 0
Flared/Vented 0
Used on/off Lease 0

NOTE: There were 0 runs or sales of oil; 0 M. cu. ft. of gas sold; 0 runs or sales of gasoline during the month.

DRILLING/PRODUCING WELLS: This report must be filed on or before the sixteenth day of the succeeding month following production for each well. Where a well is temporarily shut-in, a negative report must be filed. *THIS REPORT MUST BE FILED IN DUPLICATE.*

Phone
522-1206 Area 303

# LYNES, INC.

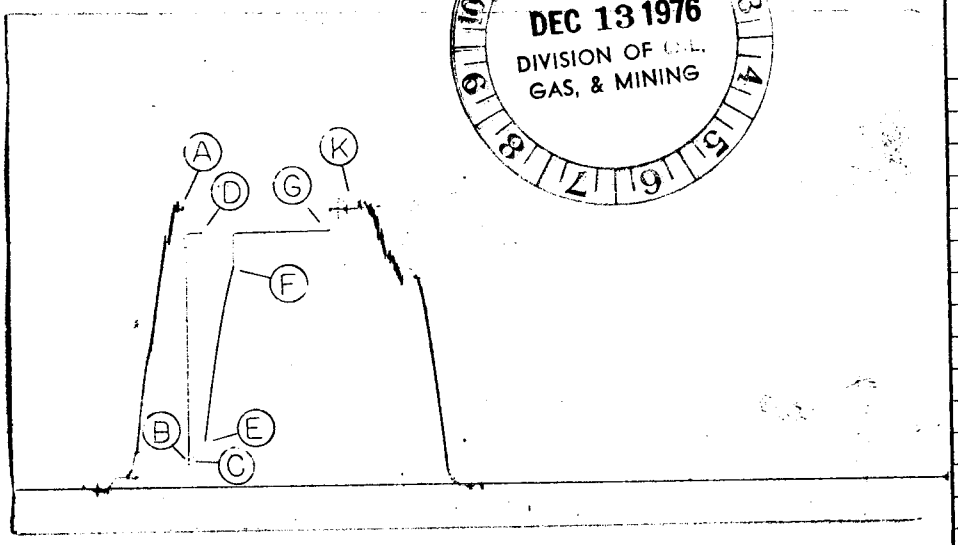
Box 712
Sterling, Colo. 80751

Operator American Quasar Petroleum Co.
Address See Distribution
Well Name and No. Hoffman #1
Ticket No. 4147
Date 12-6-76
No. Final Copies 24

| | | | | | |
|---|---|---|---|---|---|
| Contractor | Noble Drlg. Co. | Top Choke | 9/16" | Flow No. 1 | 10 Min. |
| Rig No. | 84 | Bottom Choke | 1" | Shut-in No. 1 | 60 Min. |
| Spot | NE-NE | Size Hole | 8 3/4" | Flow No. 2 | 120 Min. |
| Sec. | 31 | Size Rat Hole | -- | Shut-in No. 2 | 300 Min. |
| Twp. | 11 N | Size & Wt. D. P. | 4½" 16.60 | Flow No. 3 | -- Min. |
| Rng. | 7 E | Size Wt. Pipe | -- | Shut-in No. 3 | -- Min. |
| Field | Wildcat | I. D. of D. C. | 2 7/8" | | |
| County | Rich | Length of D. C. | 409' | Bottom Hole Temp. | -- |
| State | Utah | Total Depth | 9365' | Mud Weight | 9.1 |
| Elevation | 6300' "K.B." | Interval Tested | 9232-9365' | Gravity | -- |
| Formation | Phosphoria | Type of Test | Bottom Hole Conventional | Viscosity | 35 |

Tool opened @ 7:58 PM.

RECEIVED
DEC 13 1976
DIVISION OF OIL, GAS, & MINING




Outside Recorder

PRD Make Kuster K-3
No. 12845 Cap. 7200 @ 9265'

| Press | | Corrected |
|---|---|---|
| Initial Hydrostatic | A | 4386 |
| Final Hydrostatic | K | 4367 |
| Initial Flow | B | 386 |
| Final Initial Flow | C | 629 |
| Initial Shut-in | D | 4018 |
| Second Initial Flow | E | 734 |
| Second Final Flow | F | 3459 |
| Second Shut-in | G | 4018 |
| Third Initial Flow | H | -- |
| Third Final Flow | I | -- |
| Third Shut-in | J | -- |

Our Tester: James O'Connor
Witnessed By: Chuch Walter

Did Well Flow – Gas No Oil No Water No

RECOVERY IN PIPE: 8023 Total fluid (Ran 254' of ammonia water cushion)
254' Ammonia water = 3.61 Bbl.
7769' Sulphur water = 107.78 Bbl.
---

REMARKS:
1st Flow- Tool opened with strong blow, increased to bottom of bucket in 3 minutes.
2nd Flow- Tool opened with strong blow, increased to bottom of bucket in 3 minutes.
---

# LYNES, INC.

Operator American Quasar Petr. Co. Lease & No. Hoffman #1 DST No. 2

Recorder No. 12485 @ 9265'

FIRST SHUT IN PRESSURE:

| TIME(MIN) PHI | (T"PHI) /PHI | PSIG |
|---|---|---|
| 0.0 | 0.0000 | 629 |
| 6.0 | 2.6667 | 3997 |
| 12.0 | 1.8333 | 4006 |
| 18.0 | 1.5556 | 4012 |
| 24.0 | 1.4167 | 4013 |
| 30.0 | 1.3333 | 4014 |
| 36.0 | 1.2778 | 4015 |
| 42.0 | 1.2381 | 4016 |
| 48.0 | 1.2083 | 4017 |
| 54.0 | 1.1852 | 4018 |
| 60.0 | 1.1667 | 4018 |

EXTRAPLN OF FIRST SHUT IN : 4022.6

SECOND SHUT IN PRESSURE:

| TIME(MIN) PHI | (T"PHI) /PHI | PSIG |
|---|---|---|
| 0.0 | 0.0000 | 3459 |
| 30.0 | 5.3333 | 3994 |
| 60.0 | 3.1667 | 3999 |
| 90.0 | 2.4444 | 4003 |
| 120.0 | 2.0833 | 4006 |
| 150.0 | 1.8667 | 4009 |
| 180.0 | 1.7222 | 4011 |
| 210.0 | 1.6190 | 4013 |
| 240.0 | 1.5417 | 4015 |
| 270.0 | 1.4815 | 4017 |
| 300.0 | 1.4333 | 4018 |

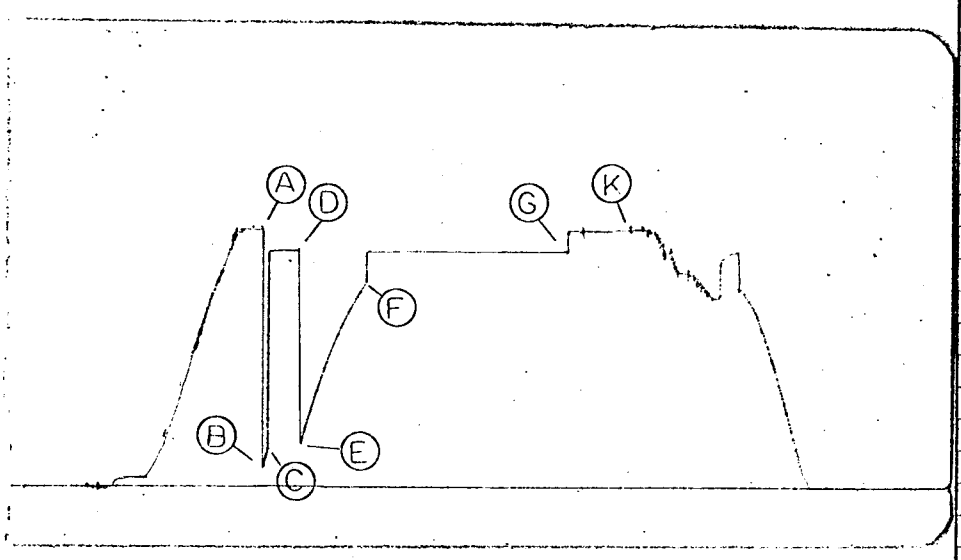
EXTRAPLN OF SECOND SHUT IN : 4032.0 M : 89.6

Extrapolations of reservoir pressures should be used as indicators only.

Form 2

# LYNES, INC.

Operator American Quasar Petr. Co. Lease & No. Hoffman #1 DST No. 2




PRD Make Inside Recorder Kuster K-3

No. 6584 Cap. 8000 @ 9240'

| Press | | Corrected |
|---|---|---|
| Initial Hydrostatic | A | 4380 |
| Final Hydrostatic | K | 4356 |
| Initial Flow | B | 385 |
| Final Initial Flow | C | 634 |
| Initial Shut-in | D | 4020 |
| Second Initial Flow | E | 732 |
| Second Final Flow | F | 3463 |
| Second Shut-in | G | 4020 |
| Third Initial Flow | H | -- |
| Third Final Flow | I | -- |
| Third Shut-in | J | -- |
| | | |
| | | |
| | | |
| Pressure Below Bottom Packer Bled To | | |

PRD Make

No. Cap. @

| Press | | Corrected |
|---|---|---|
| Initial Hydrostatic | A | |
| Final Hydrostatic | K | |
| Initial Flow | B | |
| Final Initial Flow | C | |
| Initial Shut-in | D | |
| Second Initial Flow | E | |
| Second Final Flow | F | |
| Second Shut-in | G | |
| Third Initial Flow | H | |
| Third Final Flow | I | |
| Third Shut-in | J | |
| | | |
| | | |
| | | |
| Pressure Below Bottom Packer Bled To | | |

Form 3

# LYNES, INC.

## Fluid Sample Report

Date: 12-6-76 Ticket No. 4147

Company: American Quasar Petroleum Co.

Well Name & No.: Hoffman #1 DST No. 2

County: Rich State: Utah

Sampler No.: 7 Test Interval: 9233-9365'

Pressure in Sampler: 0 PSIG BHT: -- °F

Total Volume of Sampler: 2200 cc.

Total Volume of Sample: 2200 cc.

Oil: None cc.

Water: 2200- Black sulphur water cc.

Mud: None cc.

Gas: None cu. ft.

Other: None

**Resistivity**

Water: 1.0 @ 42°F of Chloride Content 9000 ppm.

Mud Pit Sample 0.75 @ 62°F of Chloride Content 9000 ppm.

Gas/Oil Ratio Gravity °API @ °F

Where was sample drained On Location

Remarks:

# LYNES, INC.

## DISTRIBUTION OF FINAL DST REPORTS

Operator American Quasar Petroleum Co. Lease Hpffman Well No. 1

Original & 1 copy: American Quasar Petr. Co., 707 United Bank Bldg., Denver, Colo., 80202.

2 copies: Patrick Petr. Corp., 1655 Colo. Nat'l Bank Bldg., Denver, Colo., 80202.

1 copy: American Quasar Petr. Co., 332 Pacific Western Life Bldg., Casper, Wyoming, 82601.

3 copies: American Quasar Petr. Co., 2500 Ft. Worth Nat'l Bank Bldg., Ft. Worth, Tex., 76102.

1 copy: American Quasar Petr. Co., 1000 Midland Bank Tower, Midland, Texas, 79701.

2 copies: Gulf Energy & Minerals Co., Box 2619, Casper, Wyoming, 82602.

3 copies: W.R. Grace Co., 2925 LBJ Freeway, Dallas, Texas, 75234.

3 copies: Cities Service Oil Co., 900 Colo. State Bank Bldg., Denver, Colorado, 80202.

3 copies: Ran Petr., Inc., Box 90, Toronto, Ontario, Canada, MRH 2Y4.

2 copies: Utah Oil & Gas Commission, 1588 W. N. Temple, Salt Lake City, Utah, 84116.

2 copies: U.S. Geological Survey, 8426 Federal Bldg., Salt Lake City, Utah, 84117.

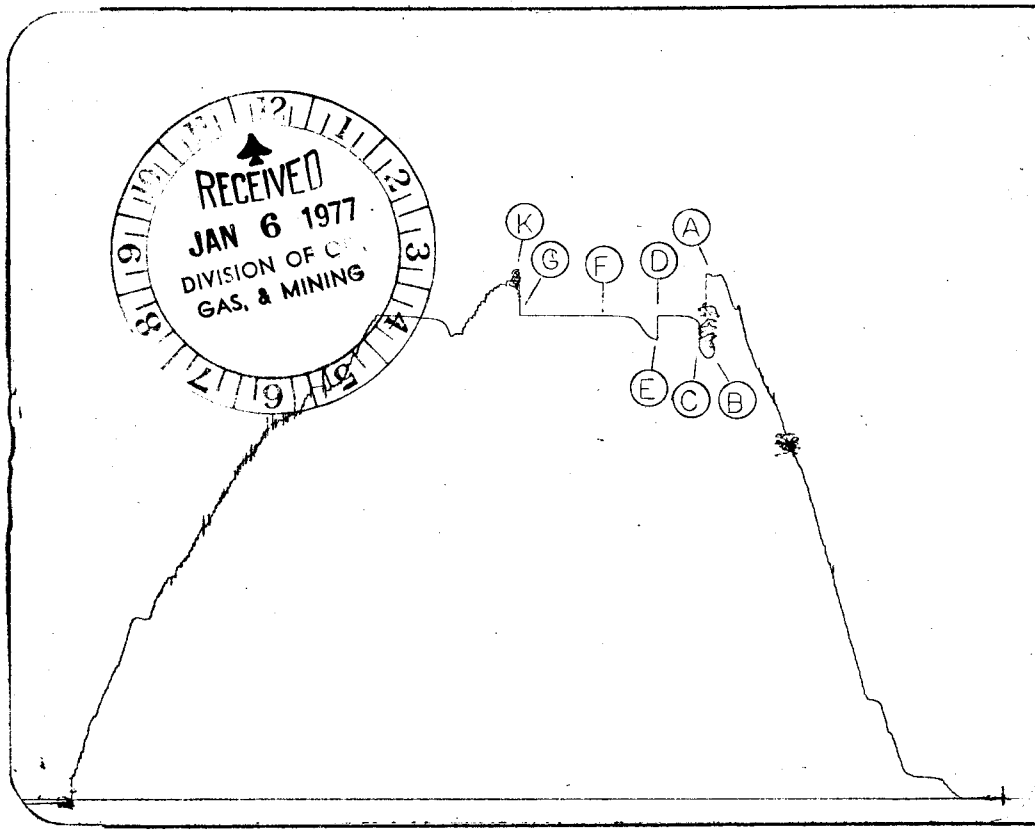
Phone
522-1206 Area 303

# LYNES, INC

Box 712
Sterling, Colo. 80751

Operator American Quasar Petroleum Co.
Address See Distribution
Well Name and No. Hoffman #1
Ticket No. 2295
Date 12-28-76
DST No. 3
No. Final Copies 24

| | | | | | |
|---|---|---|---|---|---|
| Contractor | Noble Drlg. Co. | Top Choke | 1" | Flow No. 1 | 10 Min. |
| Rig No. | 84 | Bottom Choke | 9/16" | Shut-in No. 1 | 60 Min. |
| Spot | NE-NE | Size Hole | 8 3/4" | Flow No. 2 | 75 Min. |
| Sec. | 31 | Size Rat Hole | -- | Shut-in No. 2 | 120 Min. |
| Twp. | 11 N | Size & Wt. D. P. | 4½" 16.60 | Flow No. 3 | -- Min. |
| Rng. | 7 E | Size Wt. Pipe | -- | Shut-in No. 3 | -- Min. |
| Field | Wildcat | I. D. of D. C. | 2¼" | | |
| County | Rich | Length of D. C. | 532' | | |
| State | Utah | Total Depth | 11705' | Bottom Hole Temp. | 172°F |
| Elevation | 6300' "K.B." | Interval Tested | 11590-11705' | Mud Weight | 8.8 |
| Formation | Mississippian | Type of Test | Bottom Hole Conventional | Gravity | -- |
| | | | | Viscosity | 35 |
| | | | | Tool opened @ | 8:53 AM. |




Inside Recorder

PRD Make Kuster AK-1
No. 973 Cap. 7900 @ 11600'

| Press | | Corrected |
|---|---|---|
| Initial Hydrostatic | A | 5361 |
| Final Hydrostatic | K | 5327 |
| Initial Flow | B | 4556 |
| Final Initial Flow | C | 4606 |
| Initial Shut-in | D | 4956 |
| Second Initial Flow | E | 4704 |
| Second Final Flow | F | 4956 |
| Second Shut-in | G | 4964 |
| Third Initial Flow | H | -- |
| Third Final Flow | I | -- |
| Third Shut-in | J | -- |

Our Tester: Perry Eker
Witnessed By: Lewis Almond

Did Well Flow – Gas No Oil No Water No

RECOVERY IN PIPE: 11675' Total fluid(ran 227' Ammonia & 300' water cushion).
427' Ammonia & water cushion
11148' Sulfur water = 153.36 bbl.
Test was reverse circulated.

REMARKS:

1st Flow- Tool opened with good 3" underwater blow, and remained for 1 minute. Increased to strong blow to bottom of bucket, and remained thru flow period.

2nd Flow- Tool opened with bottom of bucket blow. Test line was frozen for 42 minutes, with a pressure of 200 psig. at surface. Reopened test line with bottom of bucket blow, decreasing to dead in 55 minutes.

Form 1

# LYNES, INC.

Operator American Quasar Petroleum Co. Lease & No. Hoffman #1 DST No. 3

Recorder No. 973 @ 11600'

FIRST SHUT IN PRESSURE:

| TIME(MIN) PHI | (T"PHI) /PHI | PSIG |
|---|---|---|
| 0.0 | 0.0000 | 4606 |
| 6.0 | 2.6667 | 4916 |
| 12.0 | 1.8333 | 4936 |
| 18.0 | 1.5556 | 4947 |
| 24.0 | 1.4167 | 4950 |
| 30.0 | 1.3333 | 4952 |
| 36.0 | 1.2778 | 4954 |
| 42.0 | 1.2381 | 4955 |
| 48.0 | 1.2083 | 4956 |
| 54.0 | 1.1852 | 4956 |
| 60.0 | 1.1667 | 4956 |

EXTRAPLN OF FIRST SHUT IN : 4958.3

SECOND SHUT IN PRESSURE:

| TIME(MIN) PHI | (T"PHI) /PHI | PSIG |
|---|---|---|
| 0.0 | 0.0000 | 4956 |
| 12.0 | 8.0833 | 4959 |
| 24.0 | 4.5417 | 4961 |
| 36.0 | 3.3611 | 4963 |
| 48.0 | 2.7708 | 4964 |
| 60.0 | 2.4167 | 4964 |
| 72.0 | 2.1806 | 4964 |
| 84.0 | 2.0119 | 4964 |
| 96.0 | 1.8854 | 4964 |
| 108.0 | 1.7870 | 4964 |
| 120.0 | 1.7083 | 4964 |

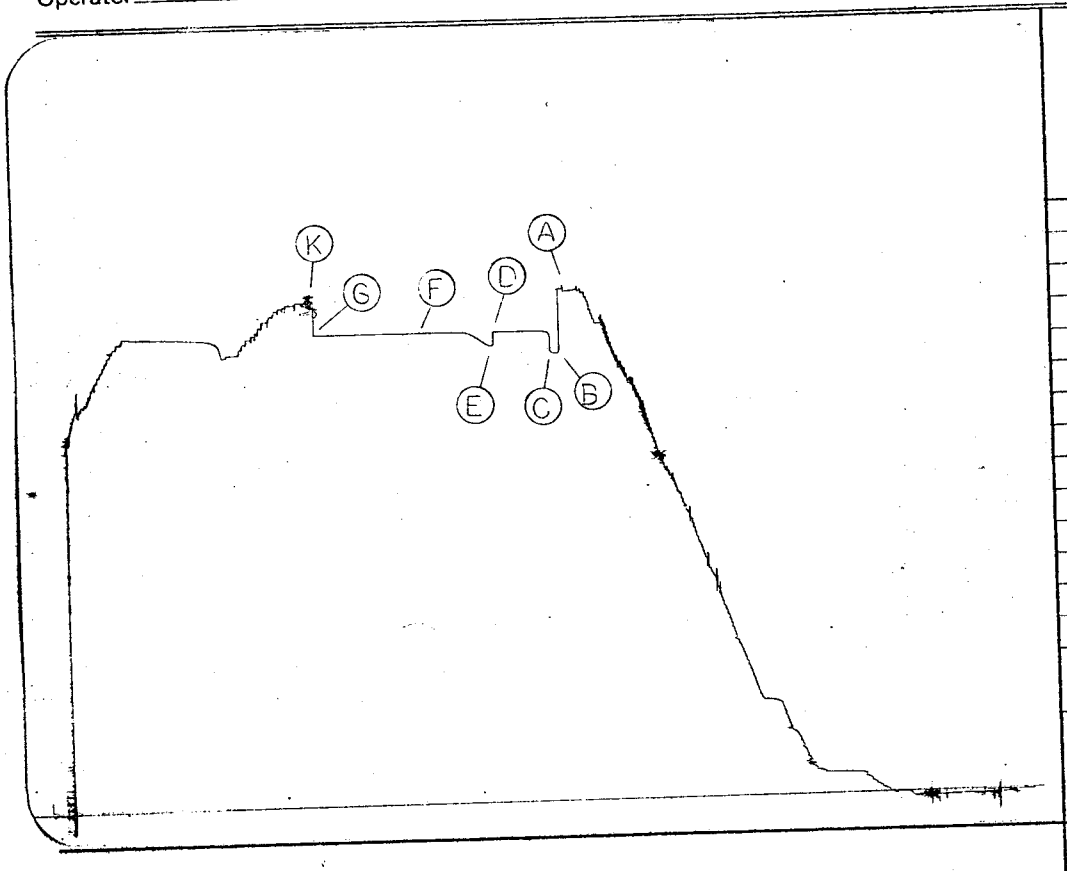
EXTRAPLN OF SECOND SHUT IN : 4964.0 M : 0.2

Extrapolations of reservoir pressures should be used as indicators only.

Form 2

# LYNES, INC.

Operator American Quasar Petroleum Co. Lease & No. Hoffman #1 DST No. 3




Outside Recorder

PRD Make Kuster AK-1

No. 1478 Cap. 8100 @ 11700'

| Press | | Corrected |
|---|---|---|
| Initial Hydrostatic | A | 5399 |
| Final Hydrostatic | K | 5339 |
| Initial Flow | B | 4764 |
| Final Initial Flow | C | 4777 |
| Initial Shut-in | D | 4996 |
| Second Initial Flow | E | 4854 |
| Second Final Flow | F | 4995 |
| Second Shut-in | G | 5003 |
| Third Initial Flow | H | -- |
| Third Final Flow | I | -- |
| Third Shut-in | J | -- |
| | | |
| | | |
| | | |
| Pressure Below Bottom Packer Bled To | | |

PRD Make

No. Cap. @

| Press | | Corrected |
|---|---|---|
| Initial Hydrostatic | A | |
| Final Hydrostatic | K | |
| Initial Flow | B | |
| Final Initial Flow | C | |
| Initial Shut-in | D | |
| Second Initial Flow | E | |
| Second Final Flow | F | |
| Second Shut-in | G | |
| Third Initial Flow | H | |
| Third Final Flow | I | |
| Third Shut-in | J | |
| | | |
| | | |
| | | |
| Pressure Below Bottom Packer Bled To | | |

Form 3

# LYNES, INC.

## Fluid Sample Report

Date 12-28-76 Ticket No. 2295

Company American Quasar Petroleum Co.

Well Name & No. Hoffman #1 DST No. 3

County Rich State Utah

Sampler No. 10 Test Interval 11590-11705'

Pressure in Sampler 0 PSIG BHT 172 °F

Total Volume of Sampler: 2100 cc.

Total Volume of Sample: 900 cc.

Oil: None cc.

Water: 900-Black sulfur water cc.

Mud: None cc.

Gas: None cu. ft.

Other: None

**Resistivity**

Water: 1.8 @ 50°F of Chloride Content 4300 ppm.

Mud Pit Sample 1.0 @ 67°F of Chloride Content 6400 ppm.

Gas/Oil Ratio Gravity °API @ °F

Where was sample drained On Location

Remarks:

Form 5

# LYNES, INC.

## DISTRIBUTION OF FINAL DST REPORTS

Operator American Quasar Petroleum Co. Lease Hoffman Well No. 1

Original copy: American Quasar Petroleum Co., Attn: C. Gregg, 1630 Denver Club Bldg., Denver, Colorado 80202

1 copy: American Quasar Petroleum Co., Attn: B. Hurley, 332 Pacific Western Life Bldg., Casper, Wyoming 82601

3 copies: American Quasar Petroleum Co., Attn: B. Bogert, 2500 Fort Worth National Bank Bldg., Fort Worth, Texas 76102

1 copy: American Quasar Petroleum Co., Attn: H. Ware, 1000 Midland Bank Tower, Midland, Texas 79701

2 copies: Gulf Energy & Minerals Co. US., Attn: E.K. Ericson, Box 2619, Casper, Wyoming 82602

2 copies: Patrick Petroleum Corporation, 744 West Michigan Ave., Jackson, Michigan 49204

3 copies: W.R. Grace & Co., 2925 LBJ Freeway, Dallas, Texas 75234

2 copies: Utah Oil & Gas Conservation Division, 1588 W. North Temple, Salt Lake City, Utah 84116

2 copies: United States Geological Survey, Attn: Geologist in Charge, 8426 Federal Bldg., Salt Lake City, Utah 84111

3 copies: Cities Service Oil Co., Attn: D.M. Fosher, 900 Colorado State Bank Bldg., Denver, Colorado 80202

3 copies Ram Petroleums, Inc., Attn: R.G. Opekar, Box 90, Toronto, Ontario, M5H 2Y4

1 copy: Patrick Petroleum Corporation, Suite 1655, Colorado National Bank Bldg., 950 17th St., Denver, Colorado 80202 Attn: Jim Nance

(9)

Form DOGC-4

# STATE OF UTAH

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL & GAS CONSERVATION

1588 WEST NORTH TEMPLE
SALT LAKE CITY, UTAH 84116
328-5771

State Lease No. FEE
Federal Lease No.
Indian Lease No.
Fee & Pat.

RECEIVED JAN 10 1977 DIVISION OF OIL, GAS, & MINING

## REPORT OF OPERATIONS AND WELL STATUS REPORT

STATE Utah COUNTY Rich FIELD/LEASE Wildcat

The following is a correct report of operations and production (including drilling and producing wells) for the month of: November, 19 76.

Agent's Address 707 United Bank Tower
1700 Broadway
Denver, CO 80290
Phone No. 303/861-8437

Company American Quasar Petroleum Co.
Signed A H Hurley
Title A. H. Hurley
Division Operations Manager

| Sec. and ¼ of ¼ | Twp. | Range | Well No. | Days Produced | Barrels of Oil | Gravity | Cu. Ft. of Gas (in thousands) | Gallons of Gasoline Recovered | Barrels of Water (if none, so state) | REMARKS (If drilling, depth; if shut down, cause date and result of test for gasoline content of gas) |
|---|---|---|---|---|---|---|---|---|---|---|
| Section 31 SW NE Hoffman | 11N | 7E | 1 | | | | | | | Drlg. @ 9,001' |

Gas Sold 0
Flared/Vented 0
Used on/off Lease 0

NOTE: There were 0 runs or sales of oil; 0 M. cu. ft. of gas sold; 0 runs or sales of gasoline during the month.

DRILLING/PRODUCING WELLS: This report must be filed on or before the sixteenth day of the succeeding month following production for each well. Where a well is temporarily shut-in, a negative report must be filed. *THIS REPORT MUST BE FILED IN DUPLICATE.*

Form OGC-1b

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

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

# SUNDRY NOTICES AND REPORTS ON WELLS

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

5. LEASE DESIGNATION AND SERIAL NO.: FEE

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: Hoffman

9. WELL NO.: 1

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: 31-11N-7E

12. COUNTY OR PARISH: Rich

13. STATE: Utah

1. OIL WELL ☐ GAS WELL ☐ OTHER: Drilling Well

2. NAME OF OPERATOR: American Quasar Petroleum Co of New Mexico

3. ADDRESS OF OPERATOR: 707 United Bank Tower, 1700 Broadway, Denver, CO 80290

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 1465' FNL, 1620' FEL

RECEIVED JAN 10 1977 DIVISION OF OIL, GAS, & MINING

14. PERMIT NO.: API No. 43-033-30001

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 6280' GL Ungraded

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

NOTICE OF INTENTION TO:

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

SUBSEQUENT REPORT OF:

| | | | |
|---|---|---|---|
| WATER SHUT-OFF | ☐ | REPAIRING WELL | ☐ |
| FRACTURE TREATMENT | ☐ | ALTERING CASING | ☐ |
| SHOOTING OR ACIDIZING | ☐ | ABANDONMENT* | ☐ |
| (Other) Change plans | | | X |

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

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

As of this date, the Hoffman No. 1 is drilling at a depth of 12,717'.

Anticipated total depth before spud was 11,000'. Objective horizons have been encountered substantially lower than anticipated, so it is now projected that the well will be drilled to 14,000' in order to test the original objective, the Madison formation.

(All depths mentioned are "measured depth".)

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

SIGNED K F Kerner TITLE Division Drlg. Engr. DATE 1-5-77

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

K PI P

Form OGCC-1 b

STATE OF UTAH

OIL & GAS CONSERVATION COMMISSION

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

# SUNDRY NOTICES AND REPORTS ON WELLS

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

RECEIVED JAN 20 1977 DIVISION OF OIL, GAS, & MINING

1. OIL WELL ☐ GAS WELL ☐ OTHER Drilling Well

2. NAME OF OPERATOR: American Quasar Petroleum Co of New Mexico

3. ADDRESS OF OPERATOR: 707 United Bank Tower, 1700 Broadway, Denver, CO 80290

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 1465' FNL, 1620' FEL

5. LEASE DESIGNATION AND SERIAL NO.: FEE

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: Hoffman

9. WELL NO.: 1

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: 31-11N-7E

14. PERMIT NO.: API No. 43-033-30001

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 6280' GL Ungraded

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 | ☐ | (Other) Change Plans | | | X |
| (Other) | | | ☐ | (NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.) | | | |

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

As of this date, the Hoffman No. 1 is drilling at a depth of 14,094'.

Anticipated total depth before spud was 11,000'. Objective horizons have been encountered substantially lower than anticipated, so it is now projected that the well will be drilled to 15,000' in order to test the original objective, the Madison formation.

(All depths mentioned are "measured depth".)

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

SIGNED [signature] TITLE Division Drlg. Engr. DATE 1-18-77

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

9.

Form DOGC-4

# STATE OF UTAH

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL & GAS CONSERVATION

1588 WEST NORTH TEMPLE
SALT LAKE CITY, UTAH 84116
328-5771

State Lease No. FEE
Federal Lease No.
Indian Lease No.
Fee & Pat.

## REPORT OF OPERATIONS AND WELL STATUS REPORT

STATE Utah COUNTY Rich FIELD/LEASE Wildcat

The following is a correct report of operations and production (including drilling and producing wells) for the month of: December, 19 76.

Agent's Address 707 United Bank Tower
1700 Broadway
Denver, CO 80290
Phone No. 303/861-8437

Company American Quasar Petroleum Co.
Signed A. H. Hurley
Title A. H. Hurley
Division Operations Manager

| Sec. and ¼ of ¼ | Twp. | Range | Well No. | Days Produced | Barrels of Oil | Gravity | Cu. Ft. of Gas (In thousands) | Gallons of Gasoline Recovered | Barrels of Water (If none, so state) | REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas) |
|---|---|---|---|---|---|---|---|---|---|---|
| Section 31 SW NE Hoffman | 11N | 7E | 1 | | | | | | | Drlg. @ 12,061' |

RECEIVED FEB 7 1977 DIVISION OF OIL, GAS, & MINING

Gas Sold 0
Flared/Vented 0
Used on/off Lease 0

NOTE: There were 0 runs or sales of oil; 0 M. cu. ft. of gas sold; 0 runs or sales of gasoline during the month.

DRILLING/PRODUCING WELLS: This report must be filed on or before the sixteenth day of the succeeding month following production for each well. Where a well is temporarily shut-in, a negative report must be filed. *THIS REPORT MUST BE FILED IN DUPLICATE.*

FORM OGC-8-X
FILE IN QUADRUPLICATE

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS, AND MINING
1588 West North Temple
Salt Lake City, Utah 84116

RECEIVED
FEB 15 1977
DIVISION OF OIL, GAS, & MINING

## REPORT OF WATER ENCOUNTERED DURING DRILLING

Well Name and Number Hoffman "31" No. 1

Operator American Quasar Petroleum Co.

Address 707 United Bank Bldg., Denver, Colo. 80202

Contractor Noble Drlg. Co. Rig N 84

Address

Location C 1/4, NE 1/4, Sec. 31; T. 11 N; R. 7 E; Rich County

Water Sands:

| | Depth: From- | To- | Volume: Flow Rate or Head- | Quality: Fresh or salty- |
|---|---|---|---|---|
| D.S.T No. 2 | | | | |
| 1. | 9232 | to 9365 | 7769 feet in 4½" Drill Pipe | Blk. Sulphur Water |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |

(continue on reverse side if necessary)

Formation Tops: Phosphoria

NOTE: (a) Upon diminishing supply of forms, please inform this office.
(b) Report on this form as provided for in Rule C-20, General Rules And Regulations and Rules of Practice and Procedure.
(c) If a water quality analysis has been made of the above reported zone, please forward a copy along with this form.

For Complete test results see reverse side

DST No. 2 - 9232 to 9365' (133') 1" x 9/16" chokes
254' Ammonia Blanket to Neutralize any $H_2S$
~~Times~~:
Pre Flow 10 minutes; Initial Shut In 60 minutes
Final Flow 120 minutes Final Shut In 360 minutes
Blow: Pre Flow: Tool opened with good blow - Bottom of bucket in 3 min.
Final Flow: Tool opened with medium blow - Bottom of bucket in 3 minutes
Estimated: 2600 CF Air/day at end of test (4 1/2# psi 1/4" orfice) (No Decrease) No gas to surface
Recovery: P 8023 feet fluid being ~~be~~ 254' Ammonia Blanket + 7769 feet Black Sulphur Water - Trace gas (checked on Chromatograph - all Methane)
Samplers: Pressure 0 Recovery: 2200cc Sulphur Water
Pit Rw. 75 @ 62°F.
Recovery Rw: ~~Not Checked~~ .751 @ 72°F. (Schlumberger) BHT - Thermometer broke
Pressures:

| | |
|---|---|
| IHP 4373 psi | FHP 4343 psi |
| IFP 389 to 718 psi | FFP 718 to 3435 psi |
| ISIP 3951 psi / 1 hr. | FSIP 3951 psi / 6 hrs |

Testing Company: Lynes Inc. - Rock Springs, Wyo.
Testing Technician: Jim O' Conner
Water sample to be delivered to Div. Oil & Gas Office -

W. H. Dunlap
Consulting Geologist
Casper, Wyo.

FORM OGC-8-X
FILE IN QUADRUPLICATE

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS, AND MINING
1588 West North Temple
Salt Lake City, Utah 84116

## REPORT OF WATER ENCOUNTERED DURING DRILLING

Well Name and Number Hoffman "31" No. 1

Operator American Quasar Petroleum Co.

Address 707 United Bank Bldg., Denver, Colo. 80202

Contractor Noble Drlg. Co. Rig N. 84

Address

Location C 1/4, NE 1/4, Sec. 31; T. 11 N; R. 7 E; Rich County

Water Sands:

| | Depth: From- | To- | Volume: Flow Rate or Head- | Quality: Fresh or salty- |
|---|---|---|---|---|
| DST No. 3 | | | | |
| 1. | 11,590 to 705 | | 11,148' in 4½" Drill Pipe | Sulphure Water |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |

(continue on reverse side if necessary)

Formation Tops: Mississippian 11,600 ??

NOTE: (a) Upon diminishing supply of forms, please inform this office.
(b) Report on this form as provided for in Rule C-20, General Rules And Regulations and Rules of Practice and Procedure.
(c) If a water quality analysis has been made of the above reported zone, please forward a copy along with this form.

For results see reverse side

DST No. 3 11,590 to 11,705' (115') Mississippian 1" x 9/16" chokes
227' Ammonia + 300' Water Cushion; Total 527' Cushion

Times:
Pre Flow 10 min.; Initial Shut In 60 min.; Final Flow 75 min.;
Final Shut In - 120 min.

Blow:
Pre Flow:- Tool opened with good blow 3" to bottom of bucket 1 min.
Final Flow: Opened with strong blow immediately (Test line frozen for 42 min) ~~Opened~~ Thawed line - blow still off bottom; Decreased to dead in 55 min. from opening time - No Gas

Recovered: 11,675 feet of Fluid being 527' Ammonia - Water Cushion + 11,148 feet sulphur Water; Reversed out water

Samples:
Pressure 0 psi
Recovery: 300 cc Blk. sulphur Water
Pit Rw 1.0 @ 67°F BHT 172°F
Recovered Water Rw 1.8 @ 50°F (.831 @ 72°F. Schlumberger)
Reversed water Cl 450 ppm (Barrel mud man)

Pressures:

| | | | |
|---|---|---|---|
| IHP | 5353 psi | FHP | 5313 psi |
| IFP | 4512 to 4592 psi | FFP | 4692 to 4952 psi |
| ISIP | 4952 psi / 60 min | FSIP | 4952 psi / 120 min. |

Testing Company: Lynes Inc. Rock Springs, Wyo.
Testing Technician: J. Sanor; P. Eker.

Hoffman #1

FORM OGC-8-X
FILE IN QUADRUPLICATE

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS, AND MINING
1588 West North Temple
Salt Lake City, Utah 84116

## REPORT OF WATER ENCOUNTERED DURING DRILLING

Well Name and Number Hoffman No. 1

Operator American Quasar Petroleum Corp

Address 1630 Denver Club Bldg, Denver, Colo. 80202

Contractor Noble Drilling Co.

Address

Location C 1/4, NE 1/4, Sec. 31; T. 11 N; R. 7 E; Rich County

Water Sands:

| | Depth: From- | To- | Volume: Flow Rate or Head- | Quality: Fresh or salty- |
|---|---|---|---|---|
| 1. | 3460 | 3529 (DST) | Rec. 2030' M.C. Wtr. in DP (See reverse side) | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |

(continue on reverse side if necessary)

Formation Tops: Tent. top Nugget 3198

NOTE: (a) Upon diminishing supply of forms, please inform this office.
(b) Report on this form as provided for in Rule C-20, General Rules And Regulations and Rules of Practice and Procedure.
(c) If a water quality analysis has been made of the above reported zone, please forward a copy along with this form.

DST No. 1 3460 - 3529 Nugget

Choke 1" x 9/16"

Pre Flow 10 min

ISI 60 min Initial Shut In

Final Flow 60 min.

Final Shut In 120 min

Pre Flow opened w/ 1" blow increasing to bottom of bucket (12") in 10 min

Final Flow opened w/ 1" ~~blow~~ blow then began surging from 3" to bottom of bucket after 5 min.

Recovered: 2030' Fluid, being 200' Water Cut Mud

1530' Slightly Mud cut water; 300' Water

IHP 1671 psi FHP 1661

IFP 83 to 269 psi FFF 325 to 725 psi

ISIP 1531 psi / 1hr. FSIP 1531 psi / 2hrs.

MFE Sampler Pressure 25 psi

Recovered: 2100 cc water BHT 98°F.

R. 1.4 @ 80° 4500 ppm by Virgies Testers

Schlumberger measured Rw @ 1.25 @ 76°F.

Pit Mud .5 @ 70° (12,000 ppm Cl)

Note: Mud Engineer Measured Cl of water @ 350 ppm by titration

Pit Mud Cl were running 300 to 375 ppm Cl before and after test

CIRCULATE TO:

DIRECTOR ☐
PETROLEUM ENGINEER ☑
MINE COORDINATOR ☐
ADMINISTRATIVE ASSISTANT ☐
ALL ☐

RETURN TO Kathy FOR FILING

February 16, 1977

Memo to File:

Re: American Quasar Petroleum Company
Hoffman #1
1520' FNL & 1660' FWL
Sec. 31, T. 11 N, R. 7 E.
Rich County, Utah

Verbal permission to plug this well was given to American Quasar on the 14th of February 1977.

The pertinent facts are:

9 5/8",Surface to 4,665'

Tops:

Ankarah.....4,262'
Thaynes.....6,038'
Dinwoody.....8,256'
Phosphoria.....8,630'
Welles.....9,473'
Bridger.....10,525'
(Second)Nugget.....14,810

Plugs will be set as follows:

50 sacks.....13,975-14,075'
50 " .....10,450-10,550'
50 " ..... 8,250- 8,150'
100 " ..... 5,930- 5,950'
100 " ..... Half in & Half out of Surface
10 " ..... 15'- Surface

A regulation dry hole marker will be erected and the location will be cleaned.

PATRICK L. DRISCOLL
CHIEF PETROLEUM ENGINEER

PLD/tlb

Form OGC-1b

PI

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

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

RECEIVED FEB 17 1977 DIVISION OF 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 "APPLICATION FOR PERMIT—" for such proposals.)

5. LEASE DESIGNATION AND SERIAL NO.: (Fee)

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

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

7. UNIT AGREEMENT NAME:

2. NAME OF OPERATOR: American Quasar Petroleum Co. of New Mexico

8. FARM OR LEASE NAME: Hoffman

3. ADDRESS OF OPERATOR: 707 United Bank Center, 1700 Broadway, Denver, Colo. 80290

9. WELL NO.: #1

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 1320' FNL & 1620' FEL Sec. 31, T. 11N, R. 7E

10. FIELD AND POOL, OR WILDCAT: (Wildcat)

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 31-11N-7E

14. PERMIT NO.:

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 6275' GR

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* | [X] | SHOOTING OR ACIDIZING | [ ] | ABANDONMENT* | [ ] |
| REPAIR WELL | [ ] | CHANGE PLANS | [ ] | (Other) | | | [ ] |
| (Other) | | | [ ] | (NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.) | | | |

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

Plugged well, per verbal approval on Feb. 11, 1977, from Patrick L. Driscoll, Chief Petr. Engr., Div. of Oil, Gas & Mining, as follows:

4665' of 9-5/8" csg. cemented to surface -- 10-sk Class G plug @ surface w/4" dry hole marker.

8-3/4" hole drld. from 4665' to 15,400'.

| | | |
|---|---|---|
| 100-sk Class G plug | - | 4,500- 4,700' (half in & half out of surf. pipe) |
| 50-sk " " " | - | 5,950- 6,050' |
| 50-sk " " " | - | 8,550- 8,650' |
| 50-sk " " " | - | 10,450-10,550' |
| 50-sk " " " | - | 13,975-14,075' |

APPROVED BY THE DIVISION OF OIL, GAS, AND MINING
DATE: Feb. 18, 1977
BY: P. L. Driscoll

Job completed 2/12/77.

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

SIGNED John F. Sindelar TITLE Div. Drlg. Supt. DATE 2/14/77

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Re: American Quasar Petroleum Co.
Hoffman 31#1
Sec. 31 - T11N, R7E

Please keep information on this well confidential as authorized by Sec. 40-6-5 U.C.A. 1953

William A. Dudley
Consulting Geologist

CONFIDENTIAL

as of: Feb. 24, 1977

AMERICAN QUASAR PETROLEUM COMPANY

HOFFMAN "31" No. 1

1320' from North line & 1620' from East line

Section 31, Township 11 North, Range 7 East

Overthrust Belt Exploration Well

RICH COUNTY, UTAH

RECEIVED
FEB 24 1977
DIVISION OF OIL
GAS, & MINING

William H. Dunlap
Consulting Geologist
Casper, Wyoming

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# WELL DATA

| | |
|---|---|
| Operator: | American Quasar Petroleum Company<br>707 United Bank Building<br>Denver, Colorado 80202 |
| Well Name: | Hoffman "31" No. 1 |
| Location: | C/NE (1320' FNL & 1620' FEL) Section 31, Township 11 North, Range 7 East |
| County: | Rich |
| State: | Utah |
| Elevation: | Rotary Kelly Bushing 6300 feet<br>Ground Level Graded 6280 feet |
| Contractor: | Noble Drilling Company, Rig N-84<br>Suite 600, 1924 South Utica<br>Tulsa, Oklahoma 74104 |
| Toolpusher: | Terry Evans, Mark Carpenter (Relief) |
| Mud Company: | Baroid Petroleum Services (National Lead) |
| Mud Type: | Low solids non dispersed (LSND) |
| Mud Engineers: | Larry Clark, Frank Canon, Ms. B. Hodges, Rock Springs, Wyo. |
| Gas Detector Logging Unit: | Tooke Engineering Co., Casper, Wyoming |
| Logging Engineers: | Robert Groeth - Intermediate Depth; John Ross, Craig Morgan, & George Wing |
| Testers: | Lynes, Inc., Rock Springs, Wyoming |
| Testing Technicians: | DST #1 - C. Womack<br>DST #2 - Jim O'Conner<br>DST #3 - P. Eker & J. Samoy<br>Recovered waters were sent to Chemical & Geological Laboratories in Casper, Wyoming for analysis. A duplicate water sample was sent to the Utah State Dept. of Natural Resources, Division of Oil & Gas, Salt Lake City, Utah |
| Electric Logging: | Schlumberger Well Surveying Corp., Rock Springs, Wyoming |
| Engineers: | Mr. Fix, Rock Springs; J. Walker, Evanston, Wyoming |
| Commenced: | 2230 hours 25 August 1976 |
| Conductor Casing: | 20" @ 76' cemented to surface |
| Surface Casing: | 13-3/8" @ 976' w/1000 sx |
| Intermediate Casing: | 9-5/8" @ 4664' w/1850 sx |
| Pit Level & Flow Monitoring: | TOTCO |
| Depth Control: | Totco recorder & steel line measurement (SLM) |
| Completed: | 2300 hours 11 February 1977 (170 days) |

Cementing Company: Halliburton Service, Rock Springs, Wyoming

Plugs: 50 sx @ 14,075' to 13,975'; 50 sx @ 10,550' to 10,450'; 50 sx @ 8650' to 8550'; 50 sx @ 6050' to 5950'; 100 sx @ 4700' to 4500'; 10 sx @ surface w/marker

Operations Supervision: Reddig Associates; Les Hurst, Burl Lynch; C. Walter; L. Almond

Company Supervision: Geological: C. Gregg, Denver, Colorado
Gary Keller, Denver, Colorado
Operations: John Sindelar, Casper, Wyoming

American Quasar
Hoffman "31" No.
C/NE/4 Sec. 31, Twp 11N, Rge 7E
Rich County, Utah
Elevation: 6280' GL; 6300' KB

## WELL HISTORY

8-26-76 (1) Drlg 12-1/4" @ 228' (153' in 7½ hrs) Boulders & gray clay. Dev. 1/4° @ 109'; 1/4° @ 168'. Mud: Wt 8.6, Vis 34, WL 10.2, ph 12.5, PV 10, YP 5, GS 2/5, FC 2, Ca 400. Spud: 9:30 PM 25 August 1976

8-27-76 (2) TD 681' (453' in 12½ hrs) Red beds & gravel. Trip in hole. Dev. 1/4° @ 287'; 1/2° @ 407'; 1/4° @ 530'; 1/2° @ 681'. Mud: Wt 8.8, Vis 42, WL 9.8, FC 2/32, ph 12, PV 12, YP 7, GS 4/11, Ca 400

8-28-76 (3) TD 996' (335' in 10 hrs) Shale, red beds, gravel. Dev. 1/2° @ 809'; 3/4° @ 996'. Mud: Wt 9.2, Vis 59, WL 9, FC 2/32, ph 11, PV 18, YP 9, GS 4/13, solids 3%, NaCl 400 ppm, Ca 25 ppm

8-29-76 (4) Reaming 17-1/2" @ 507' (432' in 15 hrs) Dev. 1/4° @ 108', 1/4° @ 196', 1/8° @ 330'. Mud: Wt 9, Vis 59, WL 9.2, FC 2/32, Ph 11.5, PV 22, YP 10, GS 5/15, NaCl 400, Ca 25, Solids 4%

8-30-76 (5) TD 976' (469' of 17-1/2" in 18 hrs) Circ for 13-3/8". Dev. 1/4° @ 480'. Mud: Wt 9.2, Vis 55, WL 9.0, FC 2/32, Ph 10, PV 18, YP 12, GS 4/12, NaCl 400, Ca 25, solids 6%

8-31-76 (6) TD 976 (0') WOC. Dev. 1/2° @ 976'. Mud: Wt 9.4, Vis 62, WL 9.8, FC 2/32, Ph 10, PV 13, YP 11, GS 6/14, NaCl 400 ppm, Ca 25, Solids 6½%. Ran joints of 13-3/8", cemented w/200 sx HOWCO Light + 12½#/sx gilsonite @ 976', 1/4# Flocele/sx + 2% CaCl, tailed w/300 sx Class G _ 2% CaCl + 1/4# Flocele/sx, displaced w/154½ bbls of water. Bumped plug w/1000 psi. Plug down @ 19:00 hrs, 31 August 1976

9-1-76 (7) TD 976'. WOC - Nipple up

9-2-76 (8) TD 976', testing BOP, tag cement @ 923' KB. Tested small choke, 3000 psi, blind & pipe rams, upper kelly cock 3000 psi, Hydril to 1500 psi. Mud: Wt 8.5, Vis 33, WL 14, Ph 10, PV 6, YP 2, GS 4/3, solids 3%, NaCl 400 ppm, Ca 145 ppm

9-3-76 (9) Drlg 12-1/4" @ 1330' (334' in 10½ hrs) Shale & lime. Dev. 1° @ 1086'; 1-1/8° @ 1242'. Mud: Wt 8.7, Vis 36, WL 10, FC 2/32, Ph 11.5, PV 5, YP 2, G/X 1/4; NaCl 400 ppm, Ca 30 ppm, solids 3%. Drilled out from under surface 7:15 AM 2 September 1976

9-4-76 (10) Drlg 12-1/4" @ 1620' (290' in 16 hrs) Dev. 2° @ 1398'; 2-1/4° @ 1490'; 2-1/4° @ 1530'. Mud: Wt 9.5, Vis 38, WL 9.8, FC 2/32, Ph 10.5, PV 7, YP 1, G/S 1/3, NaCl 350 ppm, Ca 30 ppm

9-5-76 (11) Tripping @1914' (294' in 20½ hrs) Lime & shale. Dev: 2½° @ 1655'; 3° @ 1780', 3° @ 1905'. Mud: Wt 9.4, Vis 35, WL 9, FC 2/32, Ph 9.5, PV 10, YP 3, G/X 1/3, Salt 300 ppm, Ca 30 ppm, solids 7%

9-6-76 (12) Drlg 12-1/4" @ 2175' (261' in 18½ hrs) Lime & shale. Dev. 3-1/4° @ 2061'. Mud: Wt 9.2, Vis 40, WL 9.8, FC 2/32, Ph 9.5, PV 13, YP 4, G/S 2/6, Salt 300 ppm, Ca 30 ppm, solids 5%

9-7-76 (13) Drlg 12-1/4" @ 2374' (199' in 17 hrs) Lime. Dev. 3-1/4° @ 2186'; 3-1/4° @ 2268'; 3-1/4° @ 2362'. Mud: Wt 8.9, Vis 36, WL 10, FC 2/32, Ph 9.5, PV 9, YP 2, GS 1/5, Salt 25 ppm, Ca 40 ppm, solids 3%

9-8-76 (14) Tripping @ 2537' (163' in 14 hrs) Lime & anhydrite. Dev. 3-3/4° @ 2519'; 3-1/2° @ 2537'. Mud: Wt 8.9, Vis 53, WL 9, FC 2/32, Ph 9.5, PV 10, YP 5, GS 1/5, Salt 200 ppm, Ca 40 ppm, solids 2%

9-9-76 (15) Drlg 12-1/4" @ 2669' (132' in 19½ hrs) Dev. 3-1/4° @ 2644'. Mud: Wt 8.9, Vis 35, WL 12.6, FC 2/32, Ph 10, PV 15, YP 6, GS 2/6, Salt 300 ppm, Ca 210 ppm, solids 3%

9-10-76 (16) Drlg 12-1/4" @ 2790' (121' in 13 hrs) Dev. 3-1/8° @ 2737'. Mud: Wt 9.0, Vis 34, WL 9, FC 2/32, Ph 10.5, PV 9, YP 3, GS 2/7, salt 35 ppm, Ca 60 ppm, solids 3%. Rig shut down to repair hydromatic, part of day, parts washed out around jets, ran new bit

9-11-76 (17) Drlg 12-1/4" @ 2987' (181' in 22 hrs) Lime & shale. Dev. 3-1/8° @ 2860'; 3-1/2° @ 2971'. Mud: Wt 9.0, Vis 37, WL 9, FC 2/32, Ph 10.5, PV 12, YP 4, GS 2/7, salt 400 ppm, Ca 60 ppm, solids 4%

9-12-76 (18) Drlg 12-1/4" @ 3150' (163' in 20 hrs) Lime & shale. Dev. 3-1/4° 3142'. Mud: Wt 9.0, Vis 42, WL 9, FC 2/32, PV 13, YP 4, GS 3/8, Ph 10.2, Cl 35p ppm, Ca 60 ppm, sand 1/8%, solids 4%

9-13-76 (19) Drlg 12-1/4" @ 3284' (134' in 16½ hrs) Lime, anhydrite, redbeds. Dev. Failed @ 3223'; 3° @ 3246'. Mud: Wt 9.0, Vis 38, WL 9.0, FC 2/32, PV 12, YP 4, GS 2/7, Ph 10.2, Cl 350 ppm, Ca 80 ppm, sand 1/8%, solids 3.7%

9-14-76 (20) Drlg 12-1/4" @ 3473' (189' in 23 hrs) Dolomite, anhydrite & redbeds. Dev. 3° @ 3402'. Mud: Wt 8.8, Vis 43, WL 10, FC 2/32, PV 12, YP 3, GS 2/8, Ph 10.2, Cl 300, Ca 8 ppm, sand 1/8%, solids 4.6%

9-15-76 (21) Prep to DST No. 1, 3529' (56' in 6 hours) Sand. Dev. 4° @ 3529'; SLM 3530.98, Board 3529.80 - no correction. Mud: Wt 9.1, Vis 40, WL 8.0, FC 2/32, PV 10, YP 3, GS 2/4, Ph 11.0, Cl 375 ppm, Ca 80 ppm, sand 1/4%, solids 5%

9-16-76 (22) Drlg 12-1/4" @ 3550' (21' in 6½ hrs) Sandstone. Mud: Wt 9.1+, Vis 36, WL 8, FC 2/32, PV 11, YP 3, GS 2/5, Ph 11.5, Cl 350 ppm, Ca 50 ppm, sand 1/4%, solids 5%, nitrates 286 ppm

9-17-76 (23) Drlg 12-1/4" @ 3652' (102' in 23½ hrs) Sandstone. Dev. 3-3/4° @ 3587'. Mud: Wt 9.1, Vis 36, WL 8, FC 2/32, PV 11, YP 3, GS 2/5, Ph 11.5, Cl 350 ppm, Ca 50 ppm, sand 1/4%, solids 5%

9-18-76 (24) Drlg 12-1/4" @ 3753' (101' in 17 hrs) Sandstone. Dev. 3-1/2° @ 3657'. Mud: Wt 9.0, Vis 38, WL 8.4, FC 2/32, PV 8, YP 2, GS 2/4, Ph 11.0, Cl 350 ppm, Ca 50 ppm, Sand 1/4%, solids 5%, nitrates 264 ppm

9-19-76 (25) Drlg 12-1/4" @ 3829' (76' in 16½ hrs) Sandstone. Dev. 4° @ 3784'. Mud: Wt 9.0, Vis 38, WL 8, FC 2/32, PV 15, YP 3, GS 2/6, Ph 10.5, Cl 375, Ca 50, sand 1/4%, solids 4%, nitrates 220 ppm

9-20-76 (26) Drlg 12-1/4" @ 4012' (183' in 22½ hrs) Sandstone. Dev. 3-3/4° @ 3919'. Mud: Wt 8.9, Vis 42, WL 8, FC 2/32, PV 16, YP 5, GS 2/6, Ph 10.5, Cl 375 ppm, Ca 50 ppm, sand 1/8%, solids 4%, nitrates 176 ppm

9-21-76 (27) Drlg 12-1/4" @ 4104' (92' in 11½ hrs) Sandstone. Dev. 4-1/2° @ 4057'. Mud: Wt 9.0, Vis 36, WL 8, FC 2/32, PV 10, YP 2, GS 1/3, Ph 10.0, Cl 300 ppm, Ca 50 ppm, sand-trace, solids 5%, nitrates 120 ppm

9-22-76 (28) Tripping @ 4156' (52' in 9½ hrs) Sandstone. Dev. 5°+ @ 4149'. Mud: Wt 8.9+, Vis 42, WL 8, FC 2/32, PV 18, YP 3, GS 2/7, Ph 10, Cl 280 ppm, Ca 80 ppm, sand-trace, solids 4%, nitrates 100 ppm

9-23-76 (29) Drlg 12-1/4" @ 4179' (23' in 4 hrs) Sandstone. Mud: Wt 8.8, Vis 34, WL 8.4, FC 2/32, PV 5, YP 1, GS 1/2, Ph 10.0, Cl 250 ppm, Ca 60 ppm, sand-trace, solids 3%, nitrates 132 ppm

9-24-76 (30) Drlg 12-1/4" @ 4328' (142' in 23 hrs) Sandstone. Dev. 4-1/4° @ 4142'. Mud: Wt 8.9, Vis 40, WL 8.0, FC 2/32, PV 13, YP 2, GS 2/5, Ph 10.0, Cl 200 ppm, Ca 70 ppm, sand 1/8%, solids 4%, nitrates 176 ppm

9-25-76 (31) Drlg 12-1/4" @ 4396' (68' in 18 hrs) Sandstone. Dev. 4-1/4° @ 4328'. Mud: Wt 8.9, Vis 41, WL 9.0, FC 2/32, PV 13, YP 2, GS 2/5, Ph 9.8, Cl 200 ppm, Ca 60 ppm, sand 1/8%, solids 4%, nitrates 180 ppm. Lost 50 bbls mud - very gradual since last evening

9-26-76 (32) Drlg 12-1/4" @ 4480' (96' in 16½ hrs) Sandstone. Dev. 4-1/4° @ 4427', 4-1/2° @ 4476'. Mud: Wt 8.9+, Vis 36, WL 7.8, FC 2/32, Ph 10.5, PV 12, YP 2, GS 1/2, Cl 350 ppm, Ca 50 ppm, solids 4%, nitrates 160 ppm. SLM 4493.33; Board 4488.09

9-27-76 (33) Drlg 12-1/4" @ 4584' (104' in 23 hrs) Sandstone. Dev. 4-1/4° @ 4555'. Mud: Wt 9.1, Vis 39, WL 7.4, FC 2/32, Ph 10.5, PV 18, YP 2, GS 2/4, Cl 375 ppm, Ca 50 ppm, solids 5%, nitrates 135 ppm

9-28-76 (34) Drlg 12-1/4" @ 4654' (70' in 18 hrs) Sandstone, siltstone & shale. Dev. 4° @ 4621'. Mud: Wt 9.2, Vis 38, WL 7.0, FC 2/32, PV 17, YP 1, GS 2/4, Ph 10.5, Cl 375 ppm, Ca 50 ppm, solids 6%, nitrates 120 ppm

9-29-76 (35) TD 4665' Logging (11' in 3 hrs) Red shale. Dev. 4° @ 4665', SLM 4663.92', Board 4665', Log 4664'. Ran DIL-SP & Dipmeter, prep to run BHC Sonic & CNL-FDC-Caliper-GR. Had panel failure on BHC so ran Dipmeter. Mud: Wt 9.3, Vis 56, WL 6.8, FC 2/32, PV 28, YP 6, GS 3/8, Ph 10, Cl 400 ppm, Ca 70 ppm, solids 7%, nitrates 120 ppm

9-30-76 (36) TD 4665' driller, 4664' log. Ran BHC Sonic Gamma Ray-Caliper & CNL-FDC-Gamma Ray Caliper logs, 4665' to 976', now running 9-5/8" casing. Mud: Wt 9.1, Vis 56

10-1-76 (37) TD 4665' driller, 4664' log. Ran casing. Could not circulate through casing,pulling casing out of hold. Mud: Wt 9.2, Vis 59

10-2-76 (38) TD 4665'. Conditioning hole, building mud volume, prep to run 9-5/8" casing. Mud: Wt 9.0, Vis 50

10-3-76 (39) TD 4665' driller. Prep to cement 9-5/8" casing. Re-ran 9-5/8" casing. Mud: Wt 9.1, Vis 56, WL 7.0, Ph 10.0

10-4-76 (40) TD 4665' driller. WOC & nipple up. Ran 106 joints S-80-40# ST&C 9-5/8" casing @ 4664' w/1350 sx Howco lite cement w/12½#/sx gilsonite, 1/4#/sx Flocele, 1% $CaCl_2$ (12.7#/gal) + 500 sx regular Class G cement (15.8#/gal). Circ 40 sx. Plug down 2 bbls returns, plug down 10:05 AM 4 October 1976. Casing weight 161,000# on slips. Mud: Wt 9.0, Vis 56, WL 7.0, Ph 10.0

10-5-76 (41) TD 4665' driller. Nipple up again. Put wrong ring seal in head, would not hold pressure

10-6-76 (42) TD 4665' driller. Testing BOP, will not hold pressure, nippling up & down

10-7-76 (43) Drilling cement inside 9-5/8" casing @ 4571'. Top cement @ 4571'. Test BOP to 5000 psi; hydril 2000 psi

10-8-76 (44) Drlg 8-3/4" @ 4755' (90' in 9 hrs) Red shale. Mud: Wt 8.7, Vis 36, WL 11.2, FC 2/32, PV 11, YP 0, GS 1/6, Ph 11.0, Cl 400 ppm, Ca 80 ppm, solids 3%. Driller out of 9-5/8" @ 12 noon 7 October 1976. Milling cement @ 0:200 hrs 7 October

10-9-76 (45) Drlg 8-3/4" @ 4958' (203' in 21½ hrs) Red shale & sandstone & limestone. Dev. 5° @ 4810'; 4-3/4° @ 4936'. Mud: Wt 8.6, Vis 34, WL 12.0, FC 2/32, PV 10, YP 0, GS 1/4, Ph 10.5, Cl 400 ppm, Ca 40 ppm, solids 2.7%

10-10-76 (56) Drlg 8-3/4" @ 5144' (186' in 23 hrs) Gray shale. Dev. 5-1/2° @ 5061'. Mud: Wt 8.8, Vis 35, PV 9, YP 0, GS 0/7, Ph 10.0, WL 13.2, FC 2/32, Cl 425 ppm, Ca 80 ppm, sand 1/4%, solids 3½%, no nitrates. Prep to trip. BGG - tr, no increase

10-11-76 (47) Drlg 8-3/4" @ 5240' (96' in 15 hrs) Dolomite & red shale. Dev. 5-3/4° @ 5144'. Mud: Wt 8.8, Vis 32, WL 13.2, FC 2/32, PV 6, YP 0, Ph 10, GS 0/3, Cl 425 ppm, Ca 40 ppm, sand .1%, solids 3.5%, nitrates 90 ppm. BGG - tr; trip gas 1

10-12-76 (48) Drlg 8-3/4" @ 5368' (128' in 23 hrs) Sandstone. Dev. 5-1/2+° @ 5280'. Mud: Wt 8.8, Vis 32, WL 10.2, PV 7, YP 0, Ph 10.2, GS 0/5, Cl 400 ppm, Ca 80 ppm, solids 3.5%, sand .1%, nitrates 100 ppm

10-13-76 (49) Drlg 8-3/4" @ 5412' (44' in 14½ hrs) Red sandstone. Dev. 6-1/2° @ 5360'. Mud: Wt 8.8, Vis 38, WL 11.2, PV 9, YP 4, Ph 11.0, GS 2/10, Cl 400 ppm, Ca 140 ppm, solids 3.5%, sand tr, nitrates 85 ppm. BGG 1; trip gas 1 unit

10-14-76 (50) Drlg 8-3/4" @ 5476' (64' in 23 hrs) Red sandstone. Dev. 6+° @ 5440'. Mud: Wt 8.7, Vis 31, WL 9.6, FC 1/32, PV 6, YP 0, Ph 11.0, GS 0/1, Cl 400 ppm, Ca 60 ppm, solids 3%, sand tr, nitrates 200 ppm. BGG tr

10-15-76 (51) Drlg 8-3/4" @ 5564' (88' in 22½ hrs) Red sandstone & shale. Dev. 6° @ 5499'; 6-1/2° @ 5562'. Mud: Wt 8.7, Vis 31, WL 10.0, FC 1/32, PV 6, YP 0, GS 0/2, Ph 11.2, Cl 425 ppm, Ca 100 ppm, solids 3%, sand tr, nitrates 200 ppm. BGG tr, no shows

10-16-76 (52) Tripping @ 5656' (92' in 22½ hrs) Red sandstone & shale. Dev. 7+° @ 5624'. Mud: Wt 8.7, Vis 33, WL 10.0, FC 1/32, PV 7, YP 0, GS 0/3, Ph 12.0, Cl 650 ppm, Ca 140 ppm, solids 3%, sand tr, nitrates 200 ppm. BGG tr

10-17-76 (53) Drlg 8-3/4" @ 5700' (44' in 17 hrs) Red sandstone & shale. Dev. 7-1/2° @ 5686'. Mud: Wt 8.7, Vis 33, WL 9.4, FC 1/32, PV 9, YP 0, GS 0/3, Ph 11.0, Cl 600 ppm, Ca 100 ppm, solids 3.1%, sand .2%, nitrates 200 ppm. BGG tr; trip gas 1 unit, no shows

10-18-76 (54) Drlg 8-3/4" @ 5774' (74' in 22-3/4 hrs) Shale & siltstone. Dev. 6-1/2+° @ 5747'. Mud: Wt 8.8, Vis 32, WL 10.0, PV 8, YP 0, GS 0/4, Ph 11.0, Cl 450 ppm, Ca 140 ppm, solids 3%, sand .2%, nitrates 200 ppm. BGG tr

10-19-76 (55) Drlg 8-3/4" @ 5900' (126' in 22½ hrs) Sandstone & shale. Dev. 7-1/4° @ 5811'; 7° @ 5874'. Mud: Wt 8.8, Vis 32, WL 10.2, PV 7, YP 0, GS 0/3, Ph 10.7, Cl 450 ppm, Ca 160 ppm, sand .25%, solids 3.5%, nitrates 200 ppm. BGG tr

10-20-76 (56) Drlg 8-3/4" @ 6000' (100' in 21½ hrs) Sandstone & shale. Dev. 7-1/4° @ 5935'; 8-1/4° @ 5997'. Mud: Wt 8.8, Vis 33, WL 10.5, FC 1/32, PV 7, YP 0, GS 0/9, Ph 11.0, Cl 450 ppm, Ca 240 ppm, solids 3.5%, nitrates 180 ppm. BGG tr

10-21-76 (57) Tripping @ 6068' (68' in 15 hrs) Dolomite. Dev. 8° @ 6060'. Mud: Wt 8.8, Vis 32, WL 9.6, FC 1/32, PV 6, YP 0, GS 0/2, Ph 10.7, Cl 450 ppm, Ca 320 ppm, sand 1/4%, solids 3.5%, nitrates 200 ppm. BGG tr

10-23-76 (59) Drlg 8-3/4" @ 6230' (94' in 22½ hrs) Limestone & sandstone. Dev. 8° @ 6155'; 7-3/4° @ 6220'. Mud: Wt 8.8, Vis 31, WL 10.2, FC 1/32, PV 5, YP 0, GS 0/1, Ph 10.7, Cl 450 ppm, Ca 160 ppm, sand tr, solids 4%, nitrates 110 ppm. BGG tr

10-24-76 (60) Drlg 8-3/4" @ 6370' (140' in 23 hrs) Limestone & dolomite. Dev. 7-1/2° @ 6270'; 8° @ 6340'. Mud: Wt 8.8, Vis 31, WL 10.2, FC 1/32, PV 5, YP 0, GS 0/1, Ph 10.5, Cl 450 ppm, Ca 40 ppm, sand tr, solids 4%, nitrates 80 ppm. BGG tr

10-25-76 (61) Drlg 8-3/4" @ 6470' (100' in 21½ hrs) Dolomite, siltstone & limestone Dev. 9° @ 6402'; 8-3/4° @ 6466'. Mud: Wt 8.8, Vis 32, WL 10.1, FC 1/32, PV 6, YP 0, GS 0/1, Ph 10.3, Cl 450 ppm, Ca 50 ppm, sand tr, solids 4%, nitrates 110 ppm. BGG tr

10-26-76 (62) Drlg 8-3/4" @ 6577' (107' in 23 hrs) Dolomite. Dev. 9-3/4° @ 6515'. Mud: Wt 8.8, Vis 31, WL 10, FC 1/32, PV 6, YP 0, GS 0/1, Ph 10.5, Cl 450 ppm, Ca 40 ppm, sand tr, solids 4%, nitrates 120 ppm. BGG tr

10-27-76 (63) Drlg 8-3/4" @ 6649' (72' in 22½ hrs) Limestone & siltstone. Dev. 10-1/4° @ 6578'. Mud: Wt 8.8, Vis 35, WL 10.2, FC 1/32, PV 10, YP 2, GS 0/3, Ph 10.3, Cl 600 ppm, Ca 60 ppm, sand tr, solids 4%, nitrates 114 ppm. BGG tr

10-28-76 (64) Tripping @ 6659' (10' in 3 hrs) Limestone. Dev. 10-3/4° @ 6628.2'. Mud: Wt 8.8, Vis 36, WL 9.8, FC 1/32, PV 10, YP 3, GS 0/2, Ph 10.8, Cl 500 ppm, Ca 60 ppm, sand tr, solids 4%, nitrates 110 ppm

10-29-76 (65) Drlg 8-3/4" @ 6699' (40' in 20½ hrs) Limestone & shale. Dev. 11° @ 6660'. Mud: Wt 8.8, Vis 35, WL 9.8, FC 1/32, PV 8, YP 2, GS 0/2, Ph 11, Cl 550 ppm, Ca 50 ppm, sand tr, solids 4%, nitrates 105 ppm. BGG tr; trip gas 1 unit

10-30-76 (66) Tripping @ 6702' (3' in 12 hrs) Limestone & shale. Dev. 11° @ 6702'. Mud: Wt 8.8, Vis 34, WL 10.4, FC 1/32, PV 7, YP 3, GS 0/2, Ph 11.0, Cl 600 ppm, Ca 60 ppm, sand tr, solids 4%, nitrates 100 ppm. BGG tr

10-31-76 (67) Drlg 8-3/4" @ 6744' (42' in 9 hrs) Limestone & dolomite. Mud: Wt 8.7, Vis 33, WL 10.6, PV 5, YP 3, GS 0/1, Ph 10.5, Cl 560 ppm, Ca 60 ppm, sand tr, solids 3%, nitrates 90 ppm. BGG tr

11-1-76 (68) Drlg 8-3/4" @ 6790' (46' in 13 hrs) Dolomite & shale. Dev. 10-3/4° @ 6754'. Mud: Wt 8.7+, Vis 31, WL 10.4, FC 1/32, PV 5, YP 1, GS 0/2, Ph 11.0, Cl 525 ppm, Ca 50 ppm, sand tr, solids 3.5%, nitrates 110 ppm

11-2-76 (69) Tripping for wire line @ 6821' (31' in 11 hrs) Dolomite. Dev. 10-1/2° @ 6803'. Mud: Wt 8.7+, Vis 36, WL 10.5, PV 5, YP 1, GS 0/2, Ph 11, Cl 500 ppm, Ca 40 ppm, sand tr, solids 3.4%, nitrates 88 ppm. BGG tr

11-3-76 (70) Tripping # 6857' (36' in 16½ hrs) Limestone & shale. Mud: Wt 8.8, Vis 31, WL 10.2, PV 6, YP 0, GS 0/1, Ph 11, Cl 500 ppm, Ca 50 ppm, sand tr, solids 4%, nitrates 80 ppm. BGG tr

11-4-76 (71) Drlg 8-3/4" @ 6924' (67' in 15 hrs) Limestone & siltstone. Dev. 10° @ 6857'; 10° @ 6905'. Mud: Wt 8.8, Vis 33, WL 10, PV 10, YP 3, GS 0/3, Ph 10.5, Cl 500 ppm, Ca 50 ppm, sand tr, solids 3.7%, nitrates 115 ppm. BGG tr

11-5-76 (72) Drlg 8-3/4" @ 6957' (33' in 8½ hrs) Limestone. Dev. 10° @ 6935'. Mud: Wt 8.8, Vis 32, WL 11.0, PV 7, YP 2, GS 0/2, Ph 10.3, Cl 550 ppm, Ca 60 ppm, sand tr, solids 3.7%, nitrates 100 ppm

11-6-76 (73) Drlg 8-3/4" @ 7044' (87' in 21 hrs) Dev. 10° @ 6933'. Mud: Wt 8.8, Vis 33, WL 10, PV 9, YP 2, GS 0/2, Ph 10, Cl 550 ppm, Ca 50 ppm, sand tr, solids 3.7%, nitrates 100 ppm. Drlg w/diamond bit from 6957'

11-7-76 (74) Drlg 8-3/4" @ 7146' (102' in 22 hrs) Redbeds. Dev.10° @ 7042'. Mud: Wt 8.8, Vis 32, WL 9.6, PV 7, YP 1, GS 0/2, Ph 9.7, Cl 600 ppm, Ca 60 ppm, sand tr, solids 3.7%, nitrates 90 ppm

11-8-76 (75) Drlg 8-3/4" @ 7250' (104' in 16½ hrs) Redbeds & limestone. Dev. 10° @ 7103'; 10° @ 7163'. Mud: Wt 8.8, Vis 33, WL 10, PV 6, YP 1, GS 0/2, Ph 10.3, Cl 550 ppm, Ca 60 ppm, sand tr, solids 3.7%, nitrates 90 ppm. BGG tr

11-9-76 (76) Drlg 8-3/4" @ 7280' (30' in 10 hrs) Siltstone & dolomite. Dev. 10-1/2° @ 7267'. Mud: Wt 8.8, Vis 33, WL 10, PV 7, YP 2, GS 0/4, Ph 10.7, Cl 600 ppm, Ca 60 ppm, sand tr, nitrates 90 ppm. BGG tr. solids 3.7%

11-10-76 (77) Drlg 8-3/4" @ 7325' (45' in 16½ hrs) Sandstone & dolomite. Dev. 10-1/2° @ 7302'. Mud: Wt 8.8+, Vis 34, WL 10.6, PV 7, YP 3, GS 0/5, Ph 10.6, Cl 600 ppm, Ca 60 ppm, sand .2%, nitrates 110 ppm, solids 4%. BGG tr

11-11-76 (78) Drlg 8-3/4" @ 7358' (33' in 23½ hrs) Siltstone & dolomite. Dev. 11° @ 7322'. Mud: Wt 8.8+, Vis 36, WL 14.4, PV 9, YP 5, GS 2/4, Ph 11.0, Cl 600 ppm, Ca 200 ppm, sand 2%, solids 4%, oil tr, nitrates 100 ppm, Note: Oil in mud from diesel additive & reserve pit contamination. BGG tr

11-12-76 (79) Drlg 8-3/4" @ 7456' (98' in 12½ hrs) Limestone. Dev. 10-1/2+° @ 7362'; 10-1/4° @ 7410'. Mud: Wt 8.9, Vis 36, WL 12.0, PV 9, YP 5, GS 0/3, Ph 11.0, Cl 600 ppm, Ca 80 ppm, sand .25%, solids 4.1%, nitrates 95 ppm, oil tr. BGG tr

11-13-76 (80) Drlg 8-3/4" @ 76257' (171' in 20½ hrs) Limestone & shale. Dev. 10-3/4° @ 7487'; 12° @ 7550'. Mud: Wt 8.9, Vis 33, WL 10.5, PV 7, YP 2, GS 2/4, Ph 11.0, Cl 600 ppm, Ca 60 ppm, sand .25%, solids 4.1%, oil tr, nitrates 95 ppm. BGG tr

11-14-76 (81) Drlg 8-3/4" @ 7707' (80' in 21½ hrs) Shale & limestone. Dev. 12-3/4° @ 7611'; 13.0+° @ 7670'. Mud: Wt 8.9, Vis 34, WL 10.5, PV 8, YP 2, GS 1/4, Ph 11.0, Cl 600 ppm, Ca 60 ppm, sand .25%, solids 4.1%, oil 0, nitrates 90 ppm. BGG tr

11-15-76 (82) Drlg 8-3/4" @ 7742' (35' in 12 hrs) Limestone & shale. Dev. 13° @ 7727'. Mud: Wt 8.8, Vis 35, WL 8.4, PV 9, YP 3, GS 2/5, Ph 11.0, Cl 600 ppm, Ca 160 ppm, sand .2%, solids 3.9%, oil tr, nitrates 115 ppm. BGG tr

11-16-76 (83) Drlg 8-3/4" @ 7810' (68' in 16-3/4 hrs) Siltstone & limestone. Dev. 12-1/2° @ 7772'. Mud: Wt 8.9, Vis 34, WL 9.0, PV 11, FC 1/32, YP 2, GS 1/3, Ph 11.0, Cl 600 ppm, Ca 32 ppm, solids 4.1%, nitrates 110 ppm. BGG tr

11-17-76 (84) Drlg 8-3/4" @ 7826' (16' in 7 hrs) Siltstone & limestone. Dev. 12-1/2° @ 7815'. Mud: Wt 8.9, Vis 35, WL 10.0, FC 1/32, PV 10, YP 3, GS 1/4, Ph 11.0, Cl 600 ppm, Ca 30 ppm, solids 4.1%, nitrates 100 ppm. BGG tr

11-18-76 (85) Drlg 8-3/4" @ 7955' (129' in 21½ hrs) Siltstone & shale. Dev. 12° @ 7885'; 12-1/4° @ 7947'. Mud: Wt 8.8, Vis 35, WL 10.0, PV 9, YP 3, GS 1/5, Ph 10.7, Cl 550, Ca 20, solids 3.7%, nitrates 100 ppm. BGG tr

11-19-76 (86) Drlg 8-3/4" @ 8071' (116' in 22 hrs) Red beds. Dev. 12-1/4° @ 8008'. Mud: Wt 8.8, Vis 35, WL 10.0, PV 8, YP 3, GS 2/5, Ph 10.5, Cl 600 ppm, Ca 20 ppm, solids 3.6%, nitrates 100 ppm. BGG tr

11-20-76 (87) Tripping @ 8071' (0) Dev. 13° @ 8070'. Mud: Wt 8.9, Vis 35, WL 9.5, FC 1/32, PV 8, YP 3, GS 1/6, Ph 10.6, Cl 600 ppm, Ca 300 ppm, solids 4.1%, nitrates 90 ppm, BGG tr

11-21-76 (88) TD 8105' Tripping (34') Redbeds. Mud: Wt 8.8, Vis 36, WL 10, FC 1/32, PV 8, YP 5, GS 2/8, Ph 10.0, Cl 600 ppm, Ca 350 ppm, sand tr, oil tr, solids 3.5%, nitrates 90 ppm. BGG tr

11-22-76 (89) Drlg 8-3/4" @ 8201' (101' in 17½ hrs) Dev. 12° @ 8100'; 11-3/4° @ 8190'. Mud: Wt 8.9, Vis 35, WL 10.1, FC 1/32, PV 8, YP 6, GS 1/4, Ph 11.0, Cl 590 ppm, Ca 160 ppm, sand tr, oil tr, solids 4.1%, nitrates 160 ppm. BGG tr

11-23-76 (90) Drlg 8-3/4" @ 8290' (89' in 15 hrs) Red beds. Dev. 11-3/4° @ 8238'. Mud: Wt 9.0, Vis 35, WL 10.1, FC 1/32, PV 8, YP 4, GS 2/5, Ph 10.5, Cl 580 ppm, Ca 600 ppm, sand tr, oil tr, solids 4.8%, nitrates 140 ppm. BGG tr

11-24-76 (91) TD 8390' tripping (90' in 15½ hrs) Shale & siltstone. Dev. 11-3/4° @ 8291'; 11-3/4° @ 8380'. Mud: Wt 8.9, Vis 32, WL 10.4, PV 6, YP 3, GS 1/2, Ph 11, Cl 700 ppm, Ca 250 ppm, sand tr, oil 0, solids 5%, nitrates 130 ppm. BGG tr

11-25-76 (92) Drlg 8-3/4" @ 8488' (98' in 21 hrs) Fractured anhydrite, shale & siltstone. Dev. 9-3/4° @ 8448'. Mud: Wt 8.9, Vis 32, WL 10.2, PV 6, YP 2, GS 1/2, Ph 11, Cl 750 ppm, Ca 250 ppm, sand tr, oil tr, solids 4.1%, nitrates 125 ppm. BGG tr

11-26-76 (92) TD 8568' tripping (80' in 14½ hrs) Dolomite & red beds. Dev. 7-3/4° @ 8543'; 8-1/2° @ 8558'. Mud: Wt 8.9, Vis 35, WL 10.3, PV 10, YP 3, GS 1/2, Ph 11, Cl 750 ppm, Ca 200 ppm, sand tr, oil tr, solids 4%, nitrates 125 ppm. BGG tr

11-27-76 (94) Drlg 8-3/4" @ 8681' (113' in 15 hrs) Dolomite & siltstone. Dev. 8° @ 8654'. Mud: Wt 8.9, Vis 36, WL 10.4, PV 11, YP 3, GS 1/4, Ph 10.7, Cl 550 ppm, Ca 200 ppm, sand .1%, solids 4%, nitrates 125 ppm. BGG tr

11-28-76 (95) Drlg 8-3/4" @ 8827' (146' in 22½ hrs) Dev. 8-1/4° @ 8717'. Mud: Wt 8.9, Vis 36, WL 10.1, PV 9, YP 3, GS 1/4, Ph 11.0, Cl 550 ppm, Ca 50 ppm, sand .1%, oil 0, solids 4%, nitrates 125 ppm. BGG tr

11-29-76 (96) Drlg 8-3/4: @ 8915' (88' in 22½ hrs) Dev. 8-1/4° @ 8904'. Mud: Wt 8.9, Vis 35, WL 10.3, FC 1/32, PV 9, YP 2, GS 1/4, Ph 11, Cl 550 ppm, Ca 60 ppm, sand .2%, solids 4%, nitrates 105 ppm. BGG tr

11-30-76 (97) Drlg 8-3/4" @ 8995' (80' in 22½ hrs) Lime, dolomite & chert. Dev. 8-1/4° @ 8904'. Mud: Wt 8.8, Vis 36, WL 10.2, FC 1/32, PV 10, YP 3, GS 1/2, Ph 11.3, Cl 550 ppm, Ca 200 ppm, sand .25%, oil tr, solids 3.4%, nitrates 105 ppm

12-1-76 (98) TD 9001, prep to mill cone (6' in 3½ hrs) Chert & lime. Dev. 8° @ 8995'. Mud: Wt 8.8, Vis 34, WL 10.0, PV 8, YP 2, GS 1/3, Ph 11.3, Cl 600 ppm, Ca 250 ppm, sand .25%, oil tr, solids 3.6%, nitrates 100 ppm

12-2-76 (99) Drlg 8-3/4" @ 9014' (13' in 6 hrs) Dolomite & chert. Mud: Wt 8.8, Vis 35, WL 12, PV 10, YP 3, GS 2/4, Ph 11.2, Cl 600 ppm, Ca 400 ppm, sand .25%, oil tr, solids 3.6%, nitrates 100 ppm

12-3-76 (100) TD 9015' tripping (1' in 2 hrs) Dolomite. Mud: Wt 8.8+, Vis 37, WL 12, PV 12, YP 5, GS 2/4, Ph 11.5, Cl 600 ppm, Ca 240 ppm, sand .5%, oil tr, solids 3.6%, nitrates 100 ppm

12-4-76 (101) Drlg 8-3/4" @ 9150' (135' in 17½ hrs) Chert & dolomite. Dev. 8-1/4° @ 9095'. Mud: Wt 8.8+, Vis 35, WL 11.0, PV 9, YP 3, GS 2/4, Ph 11.4, Cl 600 ppm, Ca 300 ppm, sand .3%, oil tr, solids 3.6%, nitrates 100 ppm

12-5-76 (102) Drlg 8-3/4" @ 9225' (75' in 12½ hrs) Dolomite & limestone. Mud: Wt 8.8, Vis 37, WL 12.0, PV 11, YP 3, GS 2/7, Ph 11.5, Cl 800 ppm, Ca 80 ppm, sand .25%, oil tr, solids 3.4%, nitrates 105 ppm

12-6-76 (103) TD 9365' (140' in 21½ hrs) Lime & shale. Mud: Wt 8.7+, Vis 35, WL 10.0, PV 10, YP 3, GS 2/9, Ph 11.5, Cl 850 ppm, Ca 140 ppm, sand .25%, oil tr, solids 3.1%, nitrates 65 ppm

12-7-76 (104) Tripping @ 9365', testing (0) Mud: Wt 8.8, Vis 36, WL 10.5, PV 9, YP 4, GS 2/7, Ph 11.5, Cl 850 ppm, Ca 150 ppm, sand .2%, oil tr, solids 3.8%, nitrates 115 ppm.

12-8-76 (105) Drlg 8-3/4" @ 9386' (21' in 3½ hrs) Shale. Mud: Wt 8.8, Vis 34, WL 9.8, PV 11, YP 6, GS 2/8, Ph 11.3, Cl 850 ppm, Ca 80 ppm, solids 3.6%, oil tr, sand .2%, nitrates. BGG H.W. 2-5 units $C_1$ 30 units $C_2$ tr. Trip gas (after test) 80 units. Total gas: $C_1$ 360, $C_2$ tr

12-9-76 (106) Drlg 8-3/4" @ 9531' (145' in 23½ hrs) Limestone & sandstone. Mud: Wt 8.7+, Vis 35, WL 10, FC 1/32, PV 9, YP 8, GS 5/12, Ph 11, Cl 700 ppm, Ca 140 ppm, sand .5%, solids 3.1%, oil tr, nitrates 90 ppm. BGG tr; $C_1$ tr

12-10-76 (107) Drlg 8-3/4" @ 9606' (75' in 15 hrs) Limestone & sandstone. Dev. 9° @ 9535'. Mud: Wt 8.8, Vis 37, WL 9, PV 10, YP 6, GS 2/6, Ph 11, Cl 700 ppm, Ca 70 ppm, sand .25%, solids 3.4%, oil tr, nitrates 90 ppm. BGG tr

12-11-76 (108) Tripping @ 9675' (69' in 12½ hrs) Sandstone & limestones. Dev. 8-1/2° @ 9675'. Mud: Wt 8.6, Vis 38, WL 8.8, PV 11, YP 9, GS 2/8, Ph 11.5, Cl 1200 ppm, Ca 40 ppm, sand .25%, solids 2%, oil tr, nitrates 130 ppm. BGG tr

12-12-76 (109) Drlg 8-3/4" @ 9786' (111' in 20½ hrs) Sandstone & limestones. Mud: Wt 8.7+, Vis 37, WL 8.5, PV 10, YP 5, GS 3/11, Ph 10.7, Cl 600 ppm, Ca 500 ppm, sand .3%, oil tr, solids 3.1%, nitrates 110 ppm. BGG tr

12-13-76 (110) Tripping @ 9864' (78' in 14½ hrs) Dolomite & chert. Dev. 9-1/4° @ 9818'. Mud: Wt 8.8, Vis 37, WL 12.0, PV 9, YP 9, GS 2/6, Ph 11.5, Cl 2500 ppm, Ca 360 ppm, sand tr, solids 3.4%, nitrates 100 ppm. BGG tr

12-14-76 (111) Drlg 8-3/4" @ 9888' (24' in 5 hrs) Dolomite, sandstone & chert. Dev. 9° @ 9864'. Mud: Wt 8.8, Vis 35, WL 10.0, PV 8, YP 3, GS 2/5, Ph 11.3, Cl 2200 ppm, Ca 340 ppm, sand .2%, solids 3.4%, oil tr, nitrates 95 ppm

12-15-76 (112) Drlg 8-3/4" @ 9938' (50' in 9½ hrs) Sandstone. Dev. 9° @ 9897'. Mud: Wt 8.8, Vis 34, WL 11.0, PV 9, YP 2, GS 1/3, Ph 11.0, Cl 2000 ppm, Ca 280 ppm, sand .5%, solids 3.4%, nitrates 95 ppm

12-16-76 (113) Drlg 8-3/4" @ 10,061' (123' in 23½ hrs) Dolomite & sandstone. Mud: Wt 8.8, Vis 37, WL 9.6, FC 1/32, PV 9, YP 3, GS 2/4, Ph 11.3, Cl 1800 ppm, Ca 360 ppm, sand .25%, solids 3.4%, nitrates 95 ppm. BGG tr

12-17-76 (114) Drlg 8-3/4" @ 10,079' (18' in 5½ hrs) Dolomite & sandstone. Dev. 9° @ 10,063'. Mud: Wt 8.8, Vis 38, WL 9.7, PV 9, YP 3, GS 1/3, Ph 11, Cl 1550 ppm, Ca 330 ppm, sand tr, solids 3.5%, nitrates 93 ppm. BGG tr

12-18-76 (115) Drlg 8-3/4" @ 10,198' (119' in 22½ hrs) Siltstone & anhydrite. Mud: Wt 8.8, Vis 37, WL 9.9, PV 10, YP 4, GS 1/3, Ph 11, Cl 250 ppm, Ca 200 ppm, sand tr, solids 3.4%, nitrates 93 ppm. BGG tr
Louis Almond took over as drilling supervisor

12-19-76 (116) Drlg 8-3/4" @ 10,329' (131' in 23½ hrs) Dolomite. Mud: Wt 8.9, Vis 36, WL 9.9, PV 11, YP 3, GS 1/3, Ph 11, Cl 200 ppm, Ca 180 ppm, solids 4%, sand tr, nitrates 136 ppm, BGG tr

12-20-76 (117) Drlg 8-3/4" @ 10,441' (112' in 23½ hrs) Sand & anhydrite. Mud: Wt 8.8, Vis 37, WL 4.6, PV 12, YP 4, GS 2/7, Ph 11.5, Cl 400 ppm, Ca 410 ppm, solids 3.4%, sand .2%, nitrates 100 ppm. BGG tr

12-21-76 (118) Drlg 8-3/4" @ 10,493' (52' in 10 hrs) Sandstone & dolomite. Dev. 9-3/4° @ 10,418'; 9-3/4° @ 10,450'. Mud: Wt 8.8, Vis 37, WL 5.3, PV 11, YP 6, GS 2/7, Ph 11.2, Cl 400 ppm, Ca 400 ppm, solids 3.4%, sand .2%, nitrates 120 ppm. BGG tr; trip gas 2 units

12-22-76 (119) Drlg 8-3/4" @ 10,659' (166' in 20 hrs) Dolomite. Dev. 8-1/2° @ 10,600'. Mud: Wt 8.8, Vis 36, WL 5.4, PV 11, YP 3, GS 2/6, Ph 11.0, Cl 400 ppm, Ca 400 ppm, solids 3.4%, sand .2%, nitrates 140 ppm, BGG tr

12-23-76 (120) Drlg 8-3/4" @ 10,865' (206' in 23½ hrs) Dolomite. Mud: Wt 8.7+, Vis 37, WL 4.4, PV 10, YP 5, GS 2/6, Ph 10, Cl 450 ppm, Ca 420 ppm, solids 3.1%, sand .1%, nitrates 110 ppm. BGG tr

12-24-76 (121) Drlg 8-3/4" @ 11,025' (160' in 22½ hrs) Dolomite & sandstone. Dev. 7-1/4° @ 10,875'. Mud: Wt 8.8, Vis 35, WL 5.2, PV 10, YP 5, GS 2/5, Ph 10, Cl 450 ppm, Ca 420 ppm, solids 3.4%, sand tr, nitrates 100 ppm. BGG tr.

12-25-76 (122) Drlg 8-3/4" @ 11,141' (116' in 12 hrs) Dolomite. Dev. 7° @ 11,013'. Mud: Wt 8.8, Vis 36, WL 5.0, FC 1/32, PV 8, YP 3, GS 2/5, Ph 10.0, Cl 450, Ca 480, solids 3.4%, sand tr, nitrates 100 ppm. BGG tr; trip gas tr

12-26-76 (123) Drlg 8-3/4" @ 10,402' (261' in 22½ hrs) Dolomite. Dev. 6-1/2° @ 11,307'. Mud: Wt 8.8, Vis 37, WL 4.6, PV 10, YP 5, GS 1/7, Ph 9.5, Cl 400 ppm, Ca 400 ppm, solids 3.5%, sand tr, nitrates 100 ppm. BGG tr; incr 11,283 1 unit

12-27-76 (124)TD 11,481' tripping (79' in 11½ hrs) Dolomite & sandstone. Dev. 6-3/4° @ 11,464'. Mud: Wt 8.8, Vis 37, WL 4.9, FC 1/32, PV 12, YP 5, GS 2/8, Ph 10, Cl 400 ppm, Ca 400 ppm, solids 3.4%, sand .2%, nitrates 75 ppm. BGG tr

12-28-76 (125) Drlg 8-3/4" @ 11,650' (169' in 20½ hrs) Dolomite & sandstones Mud: Wt 8.8, Vis 38, WL 4.9, PV 10, YP 5, GS 2/6, Ph 10.0, Cl 400 ppm, Ca 380 ppm, solids 3.4%, sand .25%, nitrates 110 ppm. BGG tr

12-29-76 (126) TD 11,705' testing (55' in 5 hrs) Dolomite. Dev. 6-3/4° @ 11,670'. Mud: Wt 8.8, Vis 38, WL 7.5, PV 8, YP 7, GS 1/5, Ph 11.0, Cl 200 ppm, Ca 280 ppm, solids 3.4%, sand .25%, nitrates 100 ppm. BGG tr, 11,675-11,682 tr

12-30-76 (127) TD 11,705' testing (0) Mud: Wt 8.8, Vis 39, WL 7.5, PV 10, YP 7, GS 2/4, Ph 11, Cl 100 ppm, Ca 320 ppm, solids 3.3%, sand tr, Nitrates 110 ppm.

12-31-76 (128) Drlg 8-3/4" @ 11,944' (239' in 21 hrs) Dolomite & chert. Mud: Wt 8.7+, Vis 37, WL 5.6, FC 1/32, PV 8, YP 8, GS 2/6, Ph 10.3, Cl 200 ppm, Ca 260 ppm, solids 3%, sand .3%, nitrates 105 ppm. BGG tr; trip after test 26 units

1-1-77 (129) Drlg 8-3/4" @ 12,061' (117' in 11½ hrs) Dolomite & chert. Dev. 7-1/2° @ 12,030'. Mud: Wt 8.7+, Vis 36, WL 6.0, PV 9, YP 8, GS 2/6, Ph 10, Cl 200 ppm, Ca 210 ppm, solids 3%, sand .2%, nitrates 95 ppm. BGG tr; trip gas 6 units

1-2-77 (13) Drlg 8-3/4" @ 12,326' (264' in 22 hrs) Dolomite. Mud: Wt 8.6+, Vis 37, WL 7.0, PV 8, YP 6, GS 2/5, Ph 10.0, Cl 300 ppm, Ca 240 ppm, solids 2.5%, sand .3%, nitrates 80 ppm. BGG tr

1-3-77 (131) Drlg 8-3/4" @ 12,527' (201' in 23½ hrs) Limestone. Mud: Wt 8.7, Vis 36, WL 9.0, PV 8, YP 6, GS 2/9, Ph 10.2, Cl 300 ppm, Ca 260 ppm, solids 3.0%, sand .2%, nitrates 100 ppm. BGG tr

1-4-77 (132) TD 12,717' tripping (190' in 21½ hrs) Limestone. Mud: Wt 8.7, Vis 37, WL 7.5, FC 1/32, PV 11, YP 9, GS 3/9, Ph 10.3, Cl 300 ppm, Ca 400 ppm, sand .3%, solids 3%, nitrates 90 ppm. BGG tr

1-5-77 (133) TD 12,717' (0) wash to bottom. Dev. 9-3/4° @ 12,673'. Mud: Wt 8.7, Vis 36, WL 6.6, PV 8, YP 4, GS 2/8, Ph 9.0, Cl 400 ppm, Ca 200 ppm, solids 3%, sand .2%, nitrates 110 ppm. BGG tr; trip gas 48 units (contamination from magnaflux)

1-6-77 (134) Drlg 8-3/4" @ 12,923' (206' in 22½ hrs) Dolomite & limestone. Mud: Wt 8.7+, Vis 37, WL 7.2, PV 8, YP 5, GS 2/9, Ph 9.5, Cl 400 ppm, Ca 200 ppm, solids 3.2%, sand .2%, nitrates 100 ppm. BGG tr

1-7-77 (135) Drlg 8-3/4" @ 13,116' (193' in 23½ hrs) Limestone, dolomite & anhydrite. Mud: Wt 8.6+, Vis 37, WL 7.5, PV 10, YP 5, GS 2/11, Ph 9.5, Cl 400 ppm, Ca 280 ppm, solids 2.6%, sand .2%, nitrates 100 ppm. BGG tr

1-8-77 (136) TD 13,244' tripping (128' in 15½ hrs) Dolomite & anhydrite. Dev. no good. Mud: Wt 8.6, Vis 37, WL 8.0, PV 12, YP 5, GS 2/10, Ph 10.5, Cl 420 ppm, Ca 360 ppm, solids 2.2%, sand .1%, nitrates 90 ppm, BGG tr

1-9-77 (137) Drlg 8-3/4" @ 13,400' (156' in 18½ hrs) Limestone. Mud: Wt 8.6, Vis 37, WL 8.0, PV 14, YP 8, GS 2/10, Ph 10.5, Cl 400 ppm, Ca 400 ppm, solids 2.2%, sand .25%, nitrates 110 ppm. BGG tr; trip gas 2 units; $C_1$ 12; $C_2$ 2; $C_3$ tr

1-10-77 (138) Drlg 8-3/4" @ 13,472' (72' in 9½ hrs) Limestone & dolomite. Dev. 12-3/4° @ 13,450'. Mud: Wt 8.6+, Vis 36, WL 8.0, PV 14, YP 7, GS 2/10, Ph 10.5, Cl 400 ppm, Ca 400 ppm, solids 2.5%, sand .2%, nitrates 100 ppm. BGG tr; trip gas (13,467') 2 units; $C_1$ 20; $C_2$ 2; $C_3$ 0

1-11-77 (139) Drlg 8-3/4" @ 13,622' (150' in 22 hrs) Siltstone, dolomite & sandstone. Mud: Wt 8.6+, Vis 37, WL 10, PV 7, YP 11, GS 7/12. Ph 10, Cl 300 ppm, Ca 200 ppm, solids 2.5%, sand tr, nitrates 80 ppm. BGG tr; $C_1$ tr

1-12-77 (140) Drlg 8-3/4" @ 13,732' (110' in 23 hrs) Sandstone. Mud: Wt 8.7, Vis 35, WL 10.0, PV 8, YP 4, GS 4/6, Ph 10.5, Cl 250 ppm, Ca 300 ppm, solids 2.4%, sand .2%, nitrates 75 ppm. BGG tr; $C_1$ 1

1-13-77 (141) Drlg 8-3/4" @ 13,780' (48' in 12½ hrs) Sandstone & shale. Dev. 13° @ 13,730'. Mud: Wt 8.7, Vis 36, WL 9.0, PV 7, YP 5, GS 3/5, Ph 10.5, Cl 250 ppm, Ca 260 ppm, Solids 2.4%, sand .25%, nitrates 75 ppm. BGG tr; $C_1$ tr; trip gas tr

1-14-77 (142) Drlg 8-3/4" @ 13,867' (87' in 23½ hrs) Shale. Mud: Wt 8.7, Vis 38, WL 8.0, FC 1/32, PV 18, YP 12, GS 7/10, Ph 11.5, Cl 100 ppm, Ca 400 ppm, solids 2.5%, sand .25%, nitrates 75 ppm. BGG tr; $C_1$ tr

1-15-77 (143) TD 13,883' tripping (16' in 7½ hrs) Sandstone & shale. Dev. 13-1/2° @ 13,870'. Mud: Wt 8.7, Vis 36, WL 8, PV 9, YP 5, GS 1/2, Ph 11.5, Cl 250 ppm, Ca 200 ppm, solids 2.5%, sand .25%, nitrates 155 ppm. BGG tr; $C_1$ tr

1-16-77 (144) Drlg 8-3/4" @ 13,975' (92' in 18 hrs) Red shale. Mud: Wt 8.7, Vis 36, WL 8.0, PV 10, YP 4, GS 1/2, Ph 12, Cl 250 ppm, Ca 20 ppm, solids 2.5%, sand .25%, nitrates 150 ppm. BGG tr; $C_1$ tr; trip gas tr, $C_1$ tr

1-17-77 (145) TD 14,083 tripping (108' in 20 hrs) Sandstone & siltstone. Mud: Wt 8.8, Vis 36, WL 7.9, PV 11.0, YP 5, GS 2/5, Ph 11.0, Cl 300 ppm Ca 130 ppm, solids 3.4%, sand .2%, nitrates 120 ppm, BGG tr; $C_1$ tr; <u>Hydrogen Sulphide 3 ppm</u>

1-18-77 (146) TD 14,094' tripping (0) Depth correction. Mud: Wt 8.8, Vis 36, WL 7.8, FC 1/32, PV 10, YP 5, GS 2/6, Ph 11.7, Cl 300 ppm, Ca 100 ppm, sand .2%, nitrates 100 ppm. BGG - no drlg

1-19-77 (147) TD 14,193' tripping (99' in 11½ hrs) Sandstone. Dev. 13-1/2° @ 14,170'. Mud: Wt 8.8, Vis 36, WL 7.9, PV 12, YP 6, GS 2/5, Ph 12.0, Cl 300 ppm, Ca 120 ppm, solids 3.6%, sand .2%, nitrates 90 ppm. BGG tr; $C_1$ tr; trip gas - tr; $C_1$ 6 units

1-20-77 (148) Drlg 8-3/4" @ 14,334' (141' in 20 hrs) Sandstone. Mud: Wt 8.7+, Vis 36, WL 8.0, PV 10, YP 5, GS 2/4, Ph 12.3, Cl 350 ppm, Ca 140 ppm, solids 3.1%, sand .15%, nitrates 110 ppm. BGG tr; $C_1$ tr; trip gas 1 unit; $C_1$ 7 units; $C_2$ tr

1-21-77 (149) Drlg 8-3/4" @ 14,487' (153' in 22½ hrs) Sandstone. Mud: Wt 8.7, Vis 36, WL 8.0, Ph 12, PV 7, YP 4, GS 2/5, Cl 1000 ppm, Ca 100 ppm, solids 3.0%, sand .25%, nitrates 100 ppm. BGG 1 unit; $C_1$ 1-2 units came in 14,450-14,460', poss related to drlg rate

1-22-77 (150) Drlg 8-3/4" @ 14,500' (13' in 4½ hrs) Sandstone. Dev. 13° @ 14,470'. Mud: Wt 8.7, Vis 37, WL 8.6, PV 8, YP 6, GS 3/9, Ph 12.0, Cl 1000 ppm, Ca 100 ppm, solids 3.0%, sand .2%, nitrates 115 ppm. BGG tr; trip gas 3 units; $C_1$ 14; $C_2$ tr

1-23-77 (151) TD 14,533' tripping (33' in 7 hrs) Sandstone. Mud: Wt 8.7, Vis 35, WL 8.4, FC 1/32, PV 7, YP 4, GS 3/8, Ph 12, Cl 1000 ppm, Ca 100 ppm, solids 3%, sand .2%, nitrates 110 ppm. BGG tr

1-24-77 (152) Drlg 8-3/4" @ 14,551' (18' in 7 hrs) Mud: Wt 8.7, Vis 35, WL 7.6, PV 7, YP 4, GS 2/5, Ph 12.0, Cl 1000 qpm, Ca 100 ppm, solids 3%, sand .1%, nitrates 110 ppm. BGG tr; trip gas @ 14,333' 2 units; $C_1$ 11 units; $C_2$ tr; trip gas @ 14,335' 1 unit; $C_1$ 7 units

1-25-77 (153) TD 14,569' tripping (18' in 7 hrs) Sandstone. Mud: Wt 8.7, Vis 36, WL 7.5, PV 7, YP 4, GS 2/5, Ph 11.7, Cl 1000 ppm, Ca 100 ppm, solids 3%, sand .7%, nitrates 75 ppm. BGG tr

1-26-77 (154) TD 14,617' tripping (48' in 15 hrs) Sandstone. Mud: Wt 8.7, Vis 36, WL 7.0, PV 8, YP 4, GS 1/4, Cl 200 ppm, Ca 80 ppm, solids 2.6%, sand .25%, nitrates 75 ppm. BGG tr

1-27-77 (155) TD 14,617' stuck (0) Sandstone. Dev. 13-1/2° @ 14,600'. Mud: Wt 8.7, Vis 40, WL 6.6, PV 12, YP 8, GS 3/5, Ph 12.0, Cl 100 ppm, Ca 40 ppm, solids 2.6%, sand .5%, nitrates 75 ppm. BGG tr

1-28-77 (156) TD 14,617' conditioning mud (0) Mud: Wt 8.7, Vis 61, WL 6, PV 16, YP 20, GS 7/12, Ph 11.5, Cl 150 ppm, Ca 120 ppm, solids 2.6%, sand .5%, nitrates 74 ppm. BGG tr. Pipe loose @ 3:00 pm 1-27-77

1-29-77 (157) Drlg 8-3/4" @ 14,629' (12' in 4 hrs) Sandstone & L.C.M. Mud: Wt 8.6, Vis 70, WL 7.0, PV 27, YP 13, GS 7/12, Ph 12.4, Cl 150 ppm, Ca 120 ppm, solids 3.6%, sand..25%, nitrates 72 ppm. BGG 10 units; $C_1$ 6; $C_2$ 6; $C_3$ 6; $C_4$ 6 - from 150 bbls diesel added to mud

1-30-77 (158) Drlg 8-3/4" @ 14,711' (82' in 23½ hrs) Sandstone & dolomite. Mud: Wt 8.6, Vis 54, WL 6.8, PV 12, YP 10, GS 3/8, Ph 12, Cl 900 ppm, Ca 100 ppm, solids 2.4%, oil 8%, sand .2%, nitrates 90 ppm. BGG tr

1-31-77 (159) Drlg 8-3/4" @ 14,734' (23' in 8½ hrs) Sandstone & dolomite. Dev. 13-1/2° @ 14,724'. Mud: Wt 8.6, Vis 49, WL 6, FC 1/32, PV 18, YP 12, GS 3/12, Ph 12.3, Cl 900 ppm, Ca 200 ppm, solids 2.6%, oil 8%, sand .25%, nitrates 90 ppm. BGG tr

2-1-77 (160) Drlg 8-3/4" @ 14,826' (92' in 23½ hrs) Sandstone & dolomite. Mud: Wt 8.7, Vis 56, WL 4.2, PV 26, YP 14, GS 3/12, Ph 12.3, Cl 800 ppm, Ca 160 ppm, Solids 2.7%, oil 8%, sand .25%, nitrates 90 ppm. BGG tr

2-2-77 (161) Drlg 8-3/4" @ 14,843' (17' in 10 hrs) Red siltstone, shale & anhydrite. Dev. 13° @ 14,800'. Mud: Wt 8.7, Vis 53, WL 3.8, PV 15, YP 10, GS 3/10, Ph 11.7, Cl 800 ppm, Ca 300 ppm, solids 2.5%, oil 7%, sand .25%, nitrates 85 ppm. BGG tr

2-3-77 (162) Drlg 8-3/4" @ 14,900' (57' in 22½ hrs) Red shale & siltstone. Mud: Wt 8.8, Vis 55, WL 4.0, PV 12, YP 9, GS 3/9, Ph 12, Cl 850 ppm, Ca 260 ppm, solids 2.8%, oil 7%, sand .25%, nitrates 110 ppm. BGG tr

2-4-77 (163) Drlg 8-3/4" @ 14,934' (34' in 10½ hrs) Mud: Wt 8.8, Vis 55, WL 4.0, PV 17, YP 10, GS 240, Ph 12, Cl 800 ppm, Ca 240 ppm, solids 2.7%, oil 7%, sand .25%, nitrates 120 ppm. BGG tr; trip gas tr

2-5-77 (164) Drlg 8-3/4" @ 15,054' (120' in 23½ hrs) Limestone & dolomite. Mud: Wt 8.7+, Vis 51, WL 3.6, PV 20, YP 10, GS 3/7, Ph 11.8, Cl 800 ppm, Ca 300 ppm, solids 2.5%, oil 6%, sand .25%, nitrates 110 ppm. BGG tr; lost approx 100 bbls mud

2-6-77 (165) Drlg 8-3/4" @ 15,194' (140' in 23½ hrs) Limestone. Mud: Wt 8.8, Vis 53, WL 3.9, FC 1/32, PV 19, YP 12, GS 2/7, Ph 12, Cl 850 ppm, Ca 300 ppm, Solids 2+%, oil 6%, sand .25%, nitrates 110 ppm. BGG tr

2-7-77 (166) TD 15,307 tripping (113' in 19 hrs) Limestone. Mud: Wt 8.8, Vis 50, WL 3.8, PV 18, YP 8, GS 3/7, Ph 11.9, Cl 1100 ppm, Ca 360 ppm, solids 3%, oil 5%, sand .3%, nitrates 85 ppm. BGG tr; sample lag 140 min

2-8-77 (165) TD 15,400' circulating to log (93' in 12 hrs) Limestone. Dev. 16° @ 15,280'. Mud: Wt 8.7, Vis 54, WL 4.0, FC 1/32, PV 20, YP 10, GS 3/10, Ph 12, Cl 1100 ppm, Ca 410 ppm, solids 2.8%, oil 4%, sand .2%, nitrates 110 ppm. BGG tr; trip gas tr

2-9-77 (168) TD 15,400' driller; 15,393' log (0) Mud: Wt 8.7, Vis 54, WL 4.5, Ph 12, Cl 350 ppm, Ca 200 ppm, nitrates 110 ppm, PV 22, YP 11, Gs 3/11, solids 2.8%, oil 4%, sand .2%. Ran Dual Laterolog 4664-15,392; BHC Sonic Gamma Ray, Caliper 4665-15,393'. Running CNL-FDC log; SLM 15,410.0; Board 15,400'

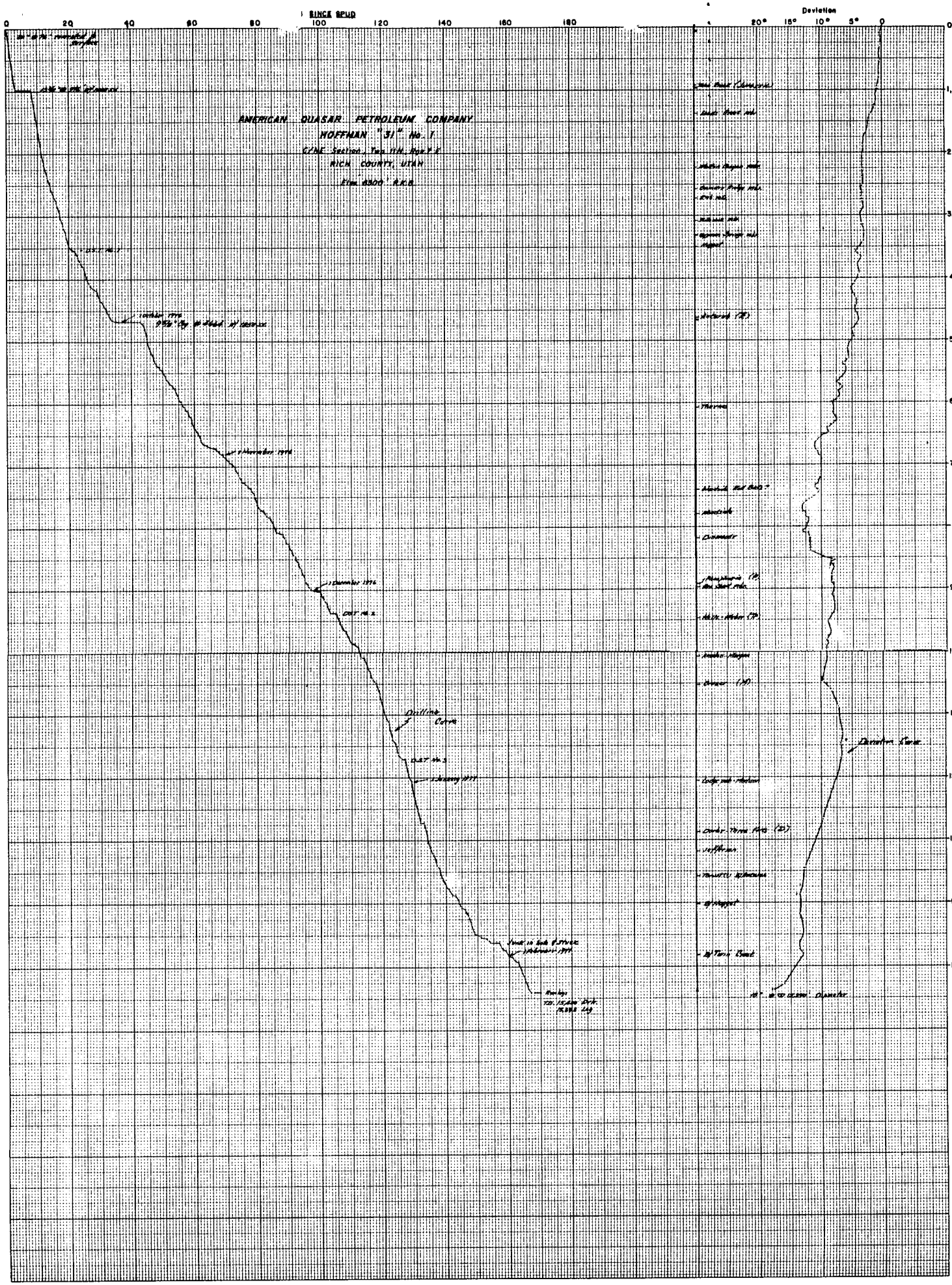
2-10-77 (169) TD 15,400' driller; 15,395' log (0) WOO. Mud: Wt 8.7, Vis 52, WL 4.5, FC 1/32, PV 22, YP 11, GS 3/11, Ph 12, Cl 350 ppm, Ca 200 ppm, solids 2.8%, oil 4%, sand .2%, nitrates 100 ppm. Ran CNL-FDC-Caliper-Gamma Ray 4665-15,395'; Dipmeter 4665-T.D. Dev. 18° @15,390'

2-11-77 (170) TD 15,400' driller; 15,393' log. Laying down drill pipe & plugging

2-12-77 (171) TD 15,400' driller; 15,393' log. Nippling down

Plugs:
50 sx @ 14,075 to 13,975 feet
50 sx @ 10,550 to 10,450 feet
50 sx @ 8,650 to 8550 feet
50 sx @ 6,050 to 5,950 feet
100 sx @ 4,700 to 4,500 feet
10 sx @ surface with marker

Plugged & Abandoned 2300 hours 11 February 1977


SINCE SPUD
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20
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60
80
100
120
140
160
180
Deviation
20°
15°
10°
5°
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13,000
14,000
15,000
AMERICAN QUASAR PETROLEUM COMPANY
HOFFMAN "31" No. 1
C/NE Section, Twp 11N, Rge 7 E
RICH COUNTY, UTAH
Elev. 6500' R.K.B.
Drilling Curve
Deviation Curve
EUGENE DIETZGEN CO.
MADE IN U. S. A.
NO. 340DR-20 DIETZGEN GRAPH PAPER
20 X 20 PER INCH

# HUGHES BIT RECORD

N U.S.A. — SHEET 1 OF 4 — FILE NUMBER

| FIELD | STATE | X IF OFFSHORE | SECTION | TOWNSHIP | RANGE | OPERATOR | X (1) |
|---|---|---|---|---|---|---|---|
| Rich Exploration | Utah | C/NE | 31 | 11N | 7E | American Quasar Petroleum Co. | |

| CONTR | X(2) | RIG NO. | LOCATION | WELL NO. | SPUD | US | INTER | TOTAL DEPTH DATE | TOOL PUSHER |
|---|---|---|---|---|---|---|---|---|---|
| Noble Drlg Co. | | N-84 | 1320 FNL & 1620 FEL C/NE Hoffman | "31"-1 | 8-25-76 | 9-2-76 (Off. 15) | 10-4-76 | 2-8-77 | Evans, T. |

| GIVE SIZE & TYPE | DRILL COL. | PUMPS | LINER | DRAWWORKS & POWER | FUEL | WATER |
|---|---|---|---|---|---|---|
| 1. 16 ea Grade E; 2. 4½" | O.D. 6⅝ x 4½; O.D. | 1. National N-900; 2. " C-350 | 6" x 16"; 5" x 18" | National 80B | Diesel | |

| AREA | STOCKPOINT NO. | DO NOT USE | STATE | ZONE | COUNTY | CONTRACTOR | OPERATOR | DATE | PURCHASER |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

| T USE TYPE | T USE WC | NO. | SIZE 20" | MAKE | TYPE | JET 32ND IN | SERIAL | DEPTH OUT 70' | FEET | HOURS | FT HR | ACCUM. DRLG. HRS. | WT. 1000 LBS. | R P M | VERT. DEV. | PUMP PRESS | SPM 1 | SPM 2 | MUD WT. | MUD VIS. | MUD W.L. | DULL. COND. T | B | G | OTHER | FORMATION CALL DATES REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 12¼ | Smith | DTJ | 14-14 14 | 240DS | 996 | 926 | 30½ | 30.4 | 30½ | 20 | 80 | ½° | 300 | 60 | | 8.9 | 40 | 9.0 | | | | | |
| | | 1 | 17½ | Grant | Hole Opener | | 1750 | 976 | 906 | 35 | 25.9 | | 10 | 112 | | 700 | 66 | 58 | 8.9 | 40 | 9.0 | | | | | |
| | | 2 | 12¼" | Servco | Junk Mill | | | 996 | 73 | 2½ | 29.2 | | | | | | | | | | | | | | | |
| | | 3 | 12¼" | Hughes | OSC3AJ | 12-12 12 | MS387 | 1491 | 495 | 19 | 26.0 | 49½ | 25 | 64 | 2¼° | 1800 | 60 | | 9.3 | 40 | 9.8 | 4 | 4 | I | | |
| | | 4 | 12¼" | Reed | S13GJ | 16-16 16 | 305780 | 1914 | 423 | 28 | 15.1 | 77½ | 20 | | 3° | 1300 | 53 | 45 | 9.4 | 40 | 9.0 | 3 | 3 | I | | |
| | | 5 | 12¼" | Hughes | OSC1GJ | 16-16 16 | RV004 | 2268 | 354 | 25 | 14 | 102½ | 15 | 92 | 3¼° | 1500 | 54 | 46 | 8.9 | 40 | 10.0 | 4 | 6 | 1/16" | | |
| | | 6 | 12¼" | Security | S4TG-J | 16-16 18 | 637090 | 2537 | 269 | 24½ | 10.9 | 127 | 15 | 92 | 3¾° | 1500 | 54 | 46 | 8.9 | 40 | 10 | 4 | 5 | I | | |
| | | 7 | 12¼" | Security | S84 | 16-16 18 | 545479 | 2713 | 176 | 25 | 7 | 152 | 15 | 84 | 3⅛° | 1000 | 40 | 43 | 8.7 | 40 | 9 | 2 | 2 | I | | |
| | | 8 | 12¼" | Security | S86 | 16-16 16 | 525607 | 3223 | 510 | 59½ | 8.5 | 211½ | 15 | 98 | 3¼° | 1350 | 50 | 43 | 9 | 40 | | 3 | 5 | I | | washed out around jet 3498' upper |
| | | 9 | 12¼" | Security | S86 | 16-16 16 | 518257 | 3529 | 306 | 35½ | 8.6 | 247 | 15 | 88 | 4° | 1350 | 51 | 42 | 9 | 40 | 10 | 4 | 4 | 1/16 | DST No. 1 | |
| | | 10 | 12¼" | Security | S88 | 16-16 16 | 566109 | 3657 | 128 | 31½ | 4 | 278½ | 15 | 48 | 3½° | 1350 | 48 | 45 | 9 | 39 | 8.0 | 6 | 8 | 1" | | |
| | | 11 | 12¼" | Smith | 5JS | 16-16 16 | 678EF | 3800 | 143 | 28 | 5 | 306½ | 15 | 48 | 4° | 1350 | 48 | 42 | 9 | 40 | 8.0 | 5 | 5 | 3/8" | | |
| | | 12 | 12¼" | Smith ~~Hughes~~ | 6JS | 16-16 16 | 036CL | 4067 | 267 | 30 | 8.9 | 336½ | 15/16 | 48 | 4½° | 1300 | 48 | 42 | 9 | 40 | 8.0 | | | 3/8" | | |
| | | 13 | 12¼" | Hughes | X55R | 16-16 16 | JC694 | 4156 | 89 | 18 | 4.9 | 354½ | 7 | 48 | 5° | 1300 | 48 | 42 | 9 | 39 | 8.4 | | | | | |
| | | 14 | 12¼" | Smith | 6JS | 16-16 16 | 759CJ | 4329 | 173 | 27½ | 6.2 | 382 | 12/15 | 48 | 4¼° | 1300 | 48 | 42 | 9 | 38 | 9.0 | 4 | 8 | I | 3 Cones Locked | |
| | | 15 | 12¼" | Smith | F5T | 16-16 16 | 706BP | 4476 | 147 | 33 | 4.4 | 415 | 15 | 48 | 4½° | 1350 | 48 | 42 | 9 | 40 | 7.8 | 4 | 3 | 3/16" | | |
| | | 16 | 12¼" | Smith | 6JS | 16-16 16 | 034CL | 4621 | 145 | 34 | 4.2 | 449 | 15 | 48 | 4° | 1350 | 48 | 42 | 9 | 40 | 7 | 4 | 5 | I | | |
| | | 17 | 12¼" | Smith | 4JS | 16-16 16 | 446EF | 4665 | 44 | 11 | 4.4 | 460 | 15 | 48 | 4° | 1350 | 48 | 42 | 9 | 40 | | 3 | 2 | I | | |
| | | 18 | 12¼" | Hughes | OWV | 16-16 16 | LJ763 | 4665 | Circ. with after logging - Sent to AQ #1 Putnam | | | | | | | | | | | | | | | | | |
| | | 19 | 8¾" | Acme | Junk Mill | | | 4668 | 3 | 1 | 3 | 461 | 25 | 52 | | 900 | 64 | | 8.7 | 41 | | | | | | Mill No. 2 |
| | | 20 | 8¾ | Hughes | J22 | 12-12 12 | XH677 | 5144 | 476 | 53 | 8.9 | 514 | 25/30 | 48 | 5¾° | 1600 | 58 | | 8.8 | 31 | | 7 | 4 | 1/16 | | Broken teeth |
| | | 21 | 8¾ | Smith | F3 | 12-12 12 | 037EN | 5381 | 237 | 43 | 5.5 | 557 | 25 | 48 | 6½° | 1700 | 58 | | 8.8 | 32 | | 3 | 3 | 1/16 | | |

H.

BIT CONDITION CODE: RP – REPAIRED RR – RERUN

# HUGHES BIT RECORD

IN U.S.A. — SHEET 2 OF 4

| FILE NUMBER | FIELD | STATE | X IF OFFSHORE | SECTION | TOWNSHIP | RANGE | OPERATOR | X (1) |
|---|---|---|---|---|---|---|---|---|
| | Exploratory | Utah | | 31 | 11N | 7E | American Quasar Petroleum Co. | |

| FOR | X(2) | RIG NO. | LOCATION | WELL NO. | SPUD | US | INTER | TOTAL DEPTH DATE | TOOL PUSHER |
|---|---|---|---|---|---|---|---|---|---|
| | | N-84 | Hoffman C/NE | 31-1 | 8-25-76 | 9-2-76 | | | T. Evans |

| GIVE SIZE & TYPE | O.D. | DRILL COL. | NO. | O.D. | I.D. | PUMPS | LINER | DRAWWORKS & POWER | FUEL | WATER |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. | | | | | | 1. | | National 80B | | |
| 2. | | | | | | 2. | | | | |

| AREA | STOCKPOINT NO. | DO NOT USE | STATE | ZONE | COUNTY | CONTRACTOR | OPERATOR | DATE | PURCHASER |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

| JET USE TYPE | JET USE WC | NO. | SIZE | MAKE | TYPE | JET 32ND IN | SERIAL | DEPTH OUT | FEET | HOURS | FT HR | ACCUM. DRLG. HRS. | WT. 1000 LBS. | RPM | VERT. DEV. | PUMP PRESS | SPM 1 | SPM 2 | MUD WT. | MUD VIS. | MUD W.L. | DULL. COND. T | DULL. COND. B | DULL. COND. G | DULL. COND. OTHER | FORMATION CALL DATES REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 22 | 8 3/4" | Hughes | J-22 | 12-12 9 | XH555 | 5656 | 275 | 78 | 3.5 | 635 | 15/20 | 48 | 7° | 1800 | 56 | | 8.8 | 30 | 10 | 6 | 5 | I | | |
| | | 23 | | Hughes | J33 | 11-11 11 | XV506 | 6068 | 416 | 101½ | 4.1 | 735½ | 15/25 | 90 | 8° | 1800 | 52 | | 8.9 | 32 | 9.6 | 5 | 8 | 1/4" | one cone locked | |
| | | 24 | | Smith | F3 | 10-10 10 | EX721 | 6659 | 591 | 128 | 4.6 | 863½ | 18 | 90 | 11° | 2000 | 48 | | 8.8 | 32 | 10° | 5 | 5 | 1/16" | teeth broken | |
| | | 25 | | Reed | FP53 | 11-11 11 | 602187 | 6702 | 43 | 22½ | 1.9 | 886 | 8/10 | 90 | 11° | 1800 | 45 | | 8.8 | 34 | | 3 | 3 | I | | |
| | | 26 | | Hughes | J44 | 11-11 11 | TN997 | 6702 | — | — | — | — | — | — | # | | | | | | | 2 | 2 | I | Reaming | |
| | | 27 | 8 3/4" | Hughes | OWVJ | 11-11 11 | SV174 | 6757 | 55 | 15½ | 3.5 | 901½ | 15/20 | 90 | 10¾ | 1800 | 54 | | 8.8 | 32 | 10.2 | 3 | 7 | I | | |
| | | 28 | | Hughes | OWV-J | 11-11 11 | SW480 | 6803 | 46 | 14 | 3.3 | 915½ | 30 | 60 | 10½ | 1800 | 54 | | 8.8 | 32 | 10.2 | 5 | 7 | I | | |
| | | 29 | | Security | M4NJ | 10-11 12 | 701924 | 6857 | 54 | 24 | 2.3 | 939½ | 27 | 60 | 10° | 1800 | 54 | | 8.8 | 32 | 10.2 | 8 | 7 | I | | |
| | | 30 | | Hughes | XWR | 11-11 11 | LT736 | 6957 | 100 | 23½ | 4.3 | 963 | 27 | 60 | 10° | 1800 | 54 | | 8.9 | 32 | 11° | 3 | 3 | I | | |
| | | 31 | | American Coldset | Pioneer | .40 | 12.625 | 7258 | 301 | 62½ | 4.8 | 1025 | 23 | 100 | 10½ | 950 | 54 | | 8.8 | 33 | 10 | Green | | | | |
| | | 32 | 8 3/4" | " | Pioneer | .40 | 12637 | 7359 | 101 | 48½ | 2.1 | 1074 | 20 | 120 | 10½ | 1200 | 55 | | 8.8 | 32 | 10.6 | | " | | | |
| | | 33 | | Smith | F2 | 11-11 11 | 576EE | 7737 | 378 | 64 | 5.9 | 1138 | 9/22 | 90 | 13° | 1800 | 54 | | 8.8 | 34 | 10.2 | 2 | 4 | I | | |
| | | 34 | | Security | DS88 | 12-12 12 | 6986-18 | 7799 | 62 | 16 | 3.8 | 1154 | 10/25 | 56/60 | 12½ | 1450 | 54 | | 8.9 | 34 | 10.6 | 5 | 7 | 1/4" | | T broken |
| | | 35 | | Security | DS88 | 12-12 12 | 6986-52 | 7819 | 20 | 7 | 2.9 | 1161 | 25 | 56 | 12½ | 1450 | 54 | | 8.7 | 35 | 10.2 | 5 | 6 | 1/8" | | |
| | | 36 | | Hughes | J55R | 12-12 12 | XX174 | 8072 | 253 | 46 | 5.2 | 1207 | | 90 | 13 | 1500 | 54 | | 8.3 | 35 | 10.5 | | | | | |
| | | 37 | 8 3/4" | Security | DMJ | 12-12 12 | 670521 | 8105 | 33 | 9 | 3.7 | 1216 | 15 | 90 | 12½ | 1000 | 56 | | 8.9 | 35 | 10.1 | 6 | 7 | I | | |
| | | 38 | | Security | DS88 | 12-12 12 | 700706 | 8238 | 138 | 22 | 6.3 | 1238 | 20 | 60 | 11¾ | 1600 | 54 | | 8.9 | 35 | 10.4 | 4 | 6 | I | | Broken teeth |
| | | 39 | | Security | DS88 | 12-12 12 | 704150 | 8380 | 142 | 25½ | 5.6 | 1263.5 | 20 | 60 | 11¾ | 1600 | 54 | | 8.9 | 35 | 10.5 | 3 | 3 | I | | " " |
| | | 40 | | Security | DS88 | 12-12 12 | 672442 | 8568 | 188 | 35½ | 5.3 | 1299 | 36/35 | 90 | 8½ | 1600 | 54 | | 8.9 | 35 | | 3 | 3 | I | | 2 teeth broken |
| | | 41 | | Hughes | J55R | 12-12 12 | XV140 | 9001 | 433 | 86 | 5.0 | 1385 | | 90 | 8° | 1600 | 54 | | 8.9 | 36 | 10.4 | 8 | 8 | | | Lost 1 cone & Spear |
| | | 42 | 8 3/4" | Acme | Junk Mill | | | | | | | 1386 | | 50 | | 1500 | 54 | | 8.8 | 37 | | — | | | | |
| | | 43 | | Hughes | J55R | 12-12 12 | XN704 | 9015 | 14 | 7 | 2 | 1393½ | | 90 | | 1650 | 54 | | 8.8 | 37 | | 8 | 8 | I | | Lost 3 spear points |

BIT CONDITION CODE: RR — REPAIRED, RR — RERUN

# HUGHES BIT RECORD

IN U.S.A. — SHEET 3 OF 4

| FILE NUMBER | FIELD | STATE | X IF OFFSHORE | SECTION | TOWNSHIP | RANGE | OPERATOR | X (1) |
|---|---|---|---|---|---|---|---|---|
| | Rich | Exploratory | Utah | | 31 | 11N | 7E | American Quasar Petroleum Co. |

| OR | X(2) | RIG NO. | LOCATION | WELL NO. | SPUD | US | INTER | TOTAL DEPTH DATE | TOOL PUSHER |
|---|---|---|---|---|---|---|---|---|---|
| Noble Drlg. Co. | | N-84 | Hoffman C/NE/4 | 31-1 | 8-25-76 | 9-22-76 | 10-4-76 | 2-8-77 | T. Evans |

| GIVE SIZE & TYPE | O.D. | DRILL COL. | NO. | O.D. | I.D. | PUMPS | LINER | DRAWWORKS & POWER | FUEL | WATER |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. | | | | | | 1. | | National 80B | | |
| 2. | | | | | | 2. | | | | |

| AREA | STOCKBOUND NO. | DO NOT USE | STATE | ZONE | COUNTY | CONTRACTOR | OPERATOR | DATE | PURCHASER |
|---|---|---|---|---|---|---|---|---|---|
| *Note: Drlg. Supervisor reporting water loss double what actual.* | | → Why? | New Drlg. Super | | | | | | |

| BIT USE TYPE | WC | NO. | SIZE | MAKE | TYPE | JET 32ND IN | SERIAL | DEPTH OUT | FEET | HOURS | FT HR | ACCUM. DRLG. HRS. | WT. 1000 LBS. | RPM | VERT. DEV. | PUMP PRESS | SPM 1 | SPM 2 | MUD WT. | MUD VIS. | MUD W.L. | DULL. COND. T | B | G | OTHER | FORMATION CALL DATES REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 44 | 8 3/4" | Hughes | J55R | 12-12-12 | VB323 | 9210 | 195 | 28 | 6.9 | 1421½ | 30 | 90 | 8° | 1650 | 54 | | 8.8 | 36 | 12 | 4 | 5 | 1/16" | | |
| | | 45 | | Smith | F57 | 12-12-12 | 173EK | 9556 | 346 | 54 | 6.4 | 1475½ | 35 | 75 | 9° | 1600 | 54 | | 8.8 | 36 | | 3 | 2 | I | | |
| | | 46 | | Smith | F57 | 12-12-12 | 271DK | 9675 | 121 | 24 | 5.0 | 1499½ | 35 | 90 | 8½° | 1600 | 54 | | 8.8 | 36 | 10 | 3 | 2 | 1/16 | | Buttons gone. |
| | | 47 | | Hughes | J55R | 12-12-12 | RV512 | 9864 | 189 | 35 | 5.4 | 1534½ | 35 | 65 | 10½° | 1650 | 54 | | 8.8 | 36 | 11 | 4 | 2 | 1/4 | | " |
| | | 48 | | Hughes | J55R | 12-12-12 | RK324 | 9875 | 11 | 3 | 3.7 | 1537½ | 10 | 95 | 10½° | 1650 | 54 | | 8.8 | 37 | 12 | | | | | |
| | | 49 | 8 3/4" | Hughes | XWR | 12-12-12 | AR976 | 9897 | 22 | 4 | 5.5 | 1541½ | 30 | 60 | 9° | 1650 | 54 | | 8.8 | 36 | 11 | | | | | |
| | | 50 | * | Hughes | J55R | 12-12-12 | XP115 | 10,063 | 166 | 32½ | 5.1 | 1574 | 35 | 75 | 9° | 1650 | 54 | | 8.8 | 36 | 11 | 8 | 7 | 1/16" | | |
| | | 51 | | Smith | F57 | 12-12-12 | 960EJ | 10,485 | 422 | 82½ | 5.1 | 1656½ | 35/40 | 75/52 | 9¾° | 1700 | 57 | | 8.8 | 36 | 5 | 6 | 2 | 1/4" | | * |
| | | 52 | | Smith | F57 | 12-12-12 | 045EK | 11,048 | 563 | 71 | 7.9 | 1725½ | 35/40 | 48 | 7° | 1750 | 56 | | 8.8 | 36 | 5 | 8 | 2 | 1/4" | | |
| | | 53 | | Smith | F57 | 12-12-12 | 047DK | 11,481 | 433 | 42 | 10.6 | 1769½ | 35/50 | 48 | 6¾° | 1750 | 54 | | 8.8 | 37 | 4.9 | 8 | 5 | 1/8" | | |
| | | 54 | 8 3/4" | Hughes | J55R | 12-12-12 | VB317 | 11,705 | 224 | 25½ | 8.8 | 1795 | 45 | 48 | 6¾° | 1750 | 54 | | 8.8 | 36 | 4.9 | 8 | 6 | 1/8" | | |
| | | 55 | | Smith | F57 | 12-12-12 | 370AW | 12,057 | 352 | 32 | 11.0 | 1827 | 35/35 | 48 | 7½ | 1750 | 54 | | 8.8 | 37 | 5.6 | 5 | 2 | 0 1/4" | | |
| | | 56 | | Smith | F5 | 12-12-12 | 723CX | 12,717 | 660 | 67½ | 9.7 | 1894½ | 25/40 | 48 | 9¾° | 1750 | 54 | | 8.7 | 37 | 7.0 | 4 | 2 | 1/8" | | Broken buttons |
| | | 26 | RR | Hughes | J44 | 12-12-12 | TN997 | 13,244 | 527 | 61½ | 8.6 | 1956 | 40 | 45 | – | 1750 | 54 | | 8.6 | 36 | 8.0 | 7 | 2 | 3/8" | | |
| | | 35 | RR | Security | DS88 | 12-12-12 | 698652 | 13,467 | 223 | 27½ | 8.1 | 1988½ | 40/30 | 48 | 12¾° | 1750 | 54 | | 8.6 | 37 | 8.0 | 6 | 2 | I | | |
| | | 57 | 8 3/4" | Smith | F5 | 12-12-12 | 050FR | 13,738 | 271 | 49 | 5.3 | 2032½ | 45 | 48 | 13° | 1750 | 54 | | 8.6 | 37 | 10 | 4 | 5 | I | | |
| | | 58 | | Hughes | J55R | 12-12-12 | XN988 | 13,883 | 145 | 40 | 3.8 | 2072½ | 50 | 48 | 13½° | 1750 | 54 | | 8.7 | 37 | 7.9 | 2 | 2 | I | | |
| | | 59 | | Hughes | J44 | 12-12-12 | XH916 | 14,094 | 211 | 38 | 5.5 | 2110½ | 45 | 48 | NP | 1750 | 54 | | 8.7 | 36 | 8.0 | 8 | 8 | 2 1/4" | | |
| | | 60 | | Smith | F7 | 12-12-12 | 323FJ | 14,194 | 99 | 11½ | 8.6 | 2122 | 30/35 | 48 | 13½° | 1750 | 53 | | 8.6 | 35 | 7.9 | 2 | 2 | 1/4" | | |
| | | 61 | | Smith | F9 | 12-12-12 | 606FS | 14,495 | 302 | 45½ | 6.6 | 2167½ | 30/35 | 48 | 13 | 1750 | 54 | | 8.6 | 35 | | 8 | 2 | 1/4" | | |
| | | 62 | 8 3/4" | Security | H100F | 12-12-12 | 707936 | 14,533 | 38 | 8½ | 4.3 | 2176 | 30/48 | 48 | – | 1750 | 54 | | 8.6 | 35 | | Gone | | | | Lost 3 cones & shank. |
| | | 63 | | Smith | F9 | 12-12-12 | 467FE | 14,535 | 2 | 2½ | .8 | 2178½ | 40 | 48 | – | 1750 | 54 | | 8.7 | 35 | | 7 | 2 | I | | Drlg jund |

BIT CONDITION CODE: RR – REPAIRED  RR – RERUN

# HUGHES BIT RECORD

IN U.S.A.

SHEET 4 OF 4

FILE NUMBER

| FIELD | STATE | X IF OFFSHORE | SECTION | TOWNSHIP | RANGE | OPERATOR | X (1) |
|---|---|---|---|---|---|---|---|
| Rich Exploratory | Utah | | 31 | 11N | 7E | American Quasar Petroleum Co. | |

| OR | X(2) | RIG NO. | LOCATION | WELL NO. | SPUD | US | INTER | TOTAL DEPTH DATE | TOOL PUSHER |
|---|---|---|---|---|---|---|---|---|---|
| Noble Drlg. Co. | | N84 | Hoffman C/NE/4 | 31-1 | 8-25-76 | 9-2-76 | 10-4-76 | 2-8-77 | T. Evans |

| GIVE SIZE & TYPE | O.D. | DRILL COL. | NO. | O.D. | I.D. | PUMPS | LINER | DRAWWORKS & POWER | FUEL | WATER |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. | | | | | | 1. | | National 80 B | Diesel | |
| 2. | | | | | | 2. | | | | |

| AREA | STOCKPOINT NO. | DO NOT USE | STATE | ZONE | COUNTY | CONTRACTOR | OPERATOR | DATE | PURCHASER |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

| T USE TYPE | WC | NO. | SIZE | MAKE | TYPE | JET 32ND IN | SERIAL | DEPTH OUT | FEET | HOURS | FT HR | ACCUM. DRLG. HRS. | WT. 1000 LBS. | R P M | VERT DEV. | PUMP PRESS | SPM 1 | SPM 2 | MUD WT. | MUD VIS. | MUD W.L. | DULL. COND. T | B | G | OTHER | FORMATION CALL DATES REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 64 | 8¾" | Security | H100F | 13-13 – | 707935 | 14,569 | 34 | 8½ | 4° | 2187 | 45 | 48 | – | 1750 | 54 | | 8.7 | 37 | | 8 | 4 | 1/16" | | |
| | | 65 | | Security | H100F | 13-13 – | 697385 | 14,617 | 48 | 15 | 3.2 | 2202 | 45 | 36 | 13½° | 1750 | 54 | | 8.7 | 35 | | 7 | 2 | 1/8" | | |
| | | 66 | | Smith | F9 | 12-12 12 | 601FR | 14,734 | 117 | 36 | 3.25 | 2238 | 45 | 36 | 13½° | 1850 | 52 | | 8.6 | 50 | | 8 | 2 | 1/4" | | |
| | | 67 | | Smith | F9 | 13-13 – | 614FJ | 14,826 | 92 | 24 | 3.8 | 2262 | 48 | 46 | 13° | 1850 | 52 | | 8.7 | 50 | | 6 | 2 | 1/16" | | |
| | | 68 | | Reed | FP83 | 12-12 12 | 608599 | 14,901 | 75 | 33 | 2.3 | 2295 | 48 | 46 | – | 1850 | 52 | | 8.7 | 50 | | 1 | 1 | I | | |
| | | 69 | 8¾" | Smith | F57 | 12-12 12 | 526EN | 15,307 | 406 | 75½ | 5.4 | 2370½ | 48 | 46 | 16° | 1850 | 52 | | 8.7 | 50 | | 2 | 6 | I | | |
| | | 70 | | Smith | F5 | 13-13 12 | 711FP | 15,400 | 93 | 12 | 7.75 | 2382½ | 48 | 46 | 18° | 1850 | 52 | | 8.7 | 55 | | 2 | 8 | I | | Total Depth P&A |

H

BIT CONDITION CODE: RP – REPAIRED RR – RERUN

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## RIG

| | |
|---|---|
| Derrick: | Lee C. Moore 700,000# 133' |
| Drawworks: | National 80 B |
| Pumps: | 1. National N900<br>2. National C350 |
| Drawworks Power: | 3 Superior 455 HP |
| Pumps & Power: | Compound |
| Drill Pipe: | 4½" Grade 16.60# - 20#/ft |
| Drill Collars: | 6-5/8" x 2-3/4" 25 collars |

3 Mud Tanks (300 bbl) w/two shale shakers & Brandt sand separator, Baroid centrifuge

| | |
|---|---|
| Drillers: | Gary Lee<br>Richard Pope<br>J. T. Sloan<br>D. Nichols |

## LOGGING UNIT

Unit and trailer from Tooke Engineering Co., Casper, Wyoming

Loggers: R. Groeth to 4665'; John Ross, George Wing & Craig Morgan, 4665' to TD

The logging unit had a hot wire gas detector (Bacrach Filament), chromatograph, and hydrogen sulphide detector. This unit was in operation 24 hours a day. The operators caught the samples of drill cuttings.

## DRILL STEM TESTS

DST #1, 3460-3529' (69') Nugget
Choke 1 x 9/16"
441' drill collars

Pre Flow 10 min; ISIP 60 min; FF 60 min; FSIP 120 min

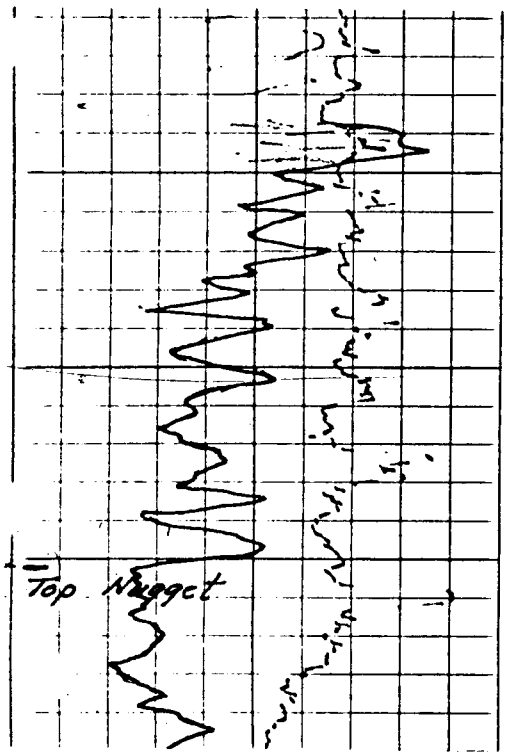
IF opened w/1" blow increasing to bottom of bucket in 10 min
FF opened w/1" blow, then began surging from 3" to bottom of bucket and back in 5 min

Rec. 2030' of fluid (25.78) bbls) being 200' water cut mud (2.84 bbls); 1530' slightly mud cut water (20.75 bbls); 300' fresh water (2.19 bbls)

| | | | |
|---|---|---|---|
| IHP | 1671 psi | FHP | 1661 psi |
| IFP | 83-269 psi | FFP | 325-725 psi |
| ISIP | 1531 psi/1 hr | FSIP | 1531 psi/2 hrs |

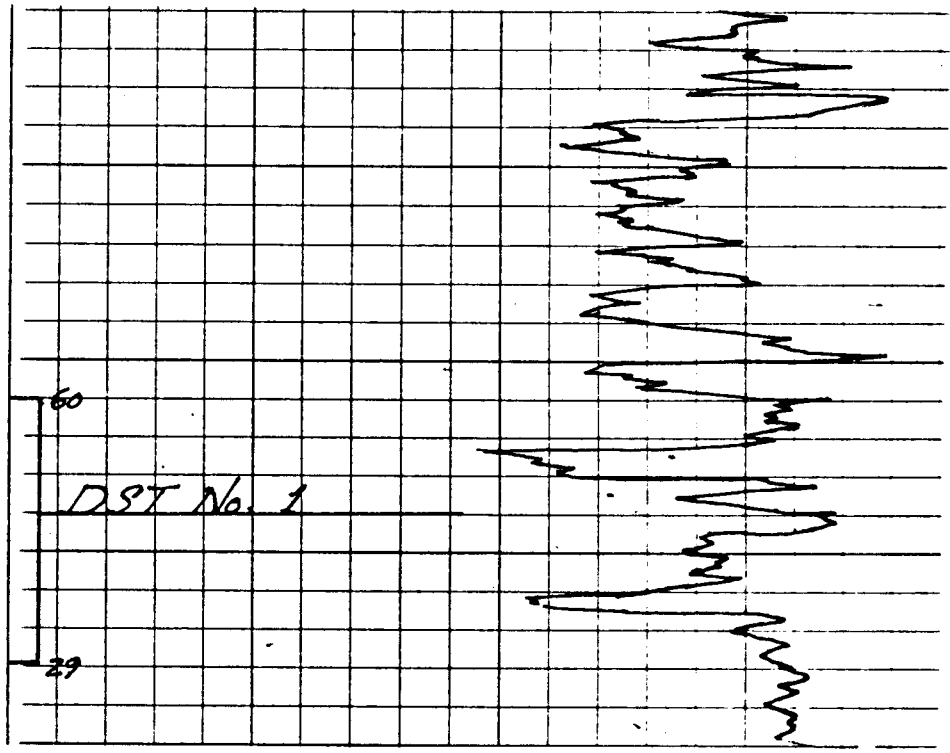
Sampler:
Rec. 2100 cc (all) water

$R_w$ 1.4 @ 80°, 4500 ppm Sj 1.25 @ 76° F
Pit mud: .5 @ 70°, 12,000 ppm; 300-375 ppm Cl
Recovered water - 350 ppm Cl




3400

3500



## DRILL STEM TESTS

DST #2, 9232-9365' (133') Phosphoria
Chokes 1" x 9/16"
254' ammonia blanket to neutralize possible $H_2S$

Pre Flow 10 min; ISIP 60 min; FF 120 min; FSIP 360 min

PreFlow - Tool opened with good blow, bottom of bucket in 3 min
Final Flow - tool opened with medium blow, bottom of bucket in 3 min; estimated 2600 CF air/day at end of test (no decrease)
No gas to surface

Recovery: 7769' black sulphur water, trace gas - checked on chromatograph, all $C_1$
Total Fluid: 8023', being 254' ammonia blanket + sulphur water AA

Sampler: Pressure 0 psi; recovery 2200 cc sulphur water

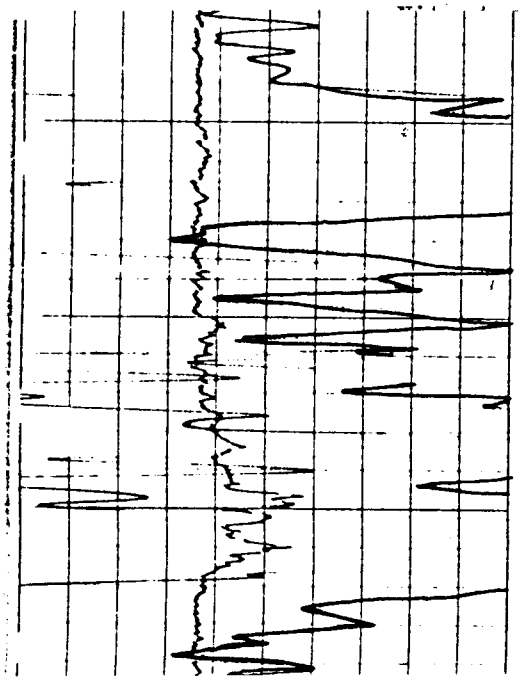
Pit Rw .75 @ 62°F BHT - Thermometer broke
Recovery Rw .751 @ 72° F (Schlumberger)

Pressures:

| | | | |
|---|---|---|---|
| IHP | 4373 psi | FHP | 4343 psi |
| IFP | 389 to 718 psi | FFP | 718 to 3435 psi |
| ISIP | 2951 psi/1 hr | FSIP | 3951 psi/6 hrs |

Testing Company: Lynes Inc., Rock Springs, Wyo.
Testing Technician: Jim O'Conner

Water analysis by Baroid engineer
Sampler: Chlorides 4000 ppm
Alkalinity 0./44
Calcium 280 ppm
Magnesium 120 ppm



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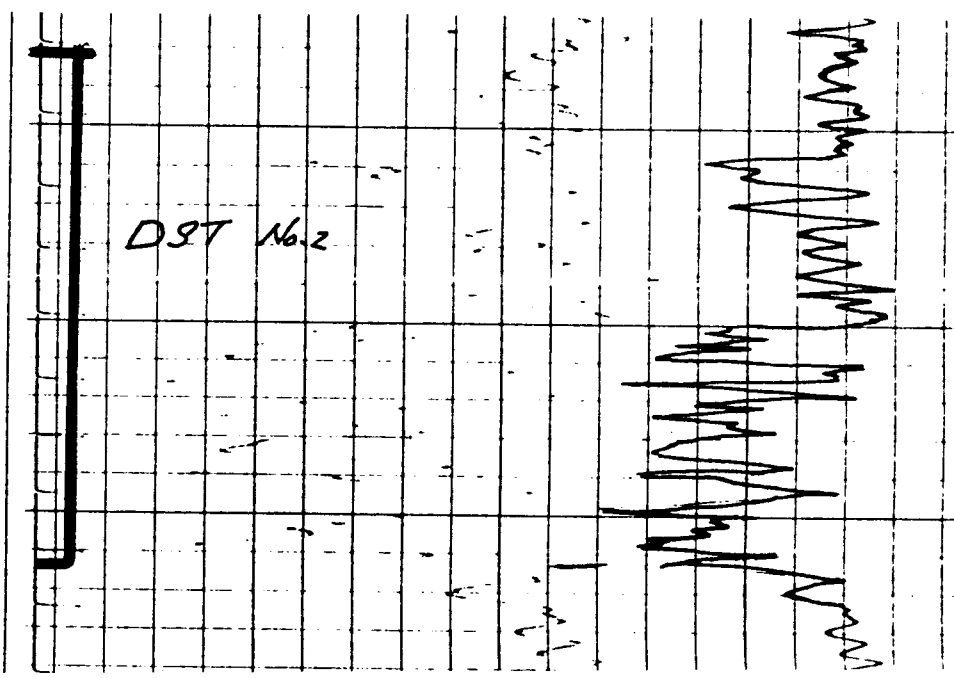


CL1-12A (REV. 1964)

25

JAN 11 1977

# CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming

## WATER ANALYSIS REPORT

OPERATOR American Quasar Petroleum Co DATE January 5, 1977 LAB NO. 22223
WELL NO. Hoffman No. 1 LOCATION NE NE 31-11N-7E
FIELD Wildcat FORMATION
COUNTY Rich INTERVAL 9232-9365
STATE Utah SAMPLE FROM DST No. 2 (MFE)

REMARKS & CONCLUSIONS:

| Cations | mg/1 | meq/1 | Anions | mg/1 | meq/1 |
|---|---|---|---|---|---|
| Sodium | 3402 | 148.00 | Sulfate | 3680 | 76.54 |
| Potassium | 84 | 2.15 | Chloride | 3000 | 84.60 |
| Lithium | | | Carbonate | 12 | 0.40 |
| Calcium | 238 | 11.88 | Bicarbonate | 476 | 7.81 |
| Magnesium | 89 | 7.32 | Hydroxide | | |
| Iron | - | | Hydrogen sulfide | - | |
| Total Cations | | 169.35 | Total Anions | | 169.35 |

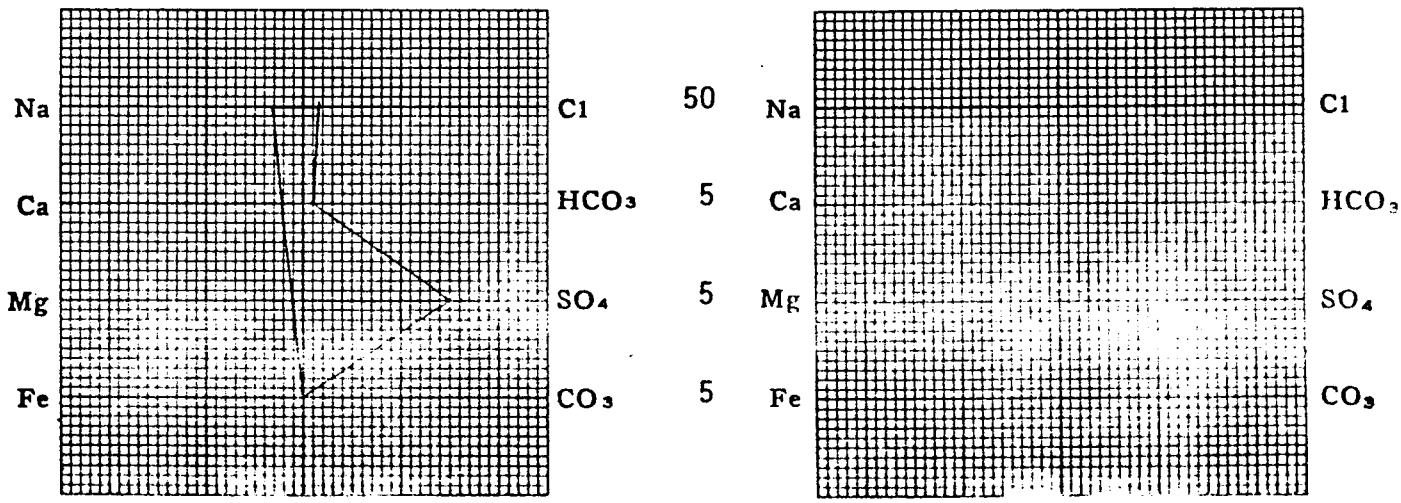
Total dissolved solids, mg/1 10739
NaCl equivalent, mg/1 8874
Observed pH 8.2

Specific resistance @ 68°F.:
Observed 0.82 ohm-meters
Calculated 0.75 ohm-meters

### WATER ANALYSIS PATTERN

Sample above described

Scale
MEQ per Unit




(Na value in above graphs includes Na, K, and Li)
NOTE: Mg/1=Milligrams per liter Meq/1= Milligram equivalents per liter
Sodium chloride equivalent=by Dunlap & Hawthorne calculation from components

## DRILL STEM TESTS

DST #3, 11,590-11,705' (115')
Choke 1" x 9/16"
227' ammonia + 300 feet water cushion

Pre Flow 10 min; ISIP 60 min; FF 75 min; FSIP 120 min

Tool opened with good blow 3" to bottom of bucket in 1 min
Final flow opened with strong blow immediately. Test line frozen 42 minutes.
Opened test line - blow still off bottom; decreased to dead in 55 min from time opened. No Gas

Recovered: 11,675' of fluid, being 527' water-ammonia cushion + 11,148' sulphur water

Sampler: Pressure 0 psi; recovery 300 cc black sulphur water

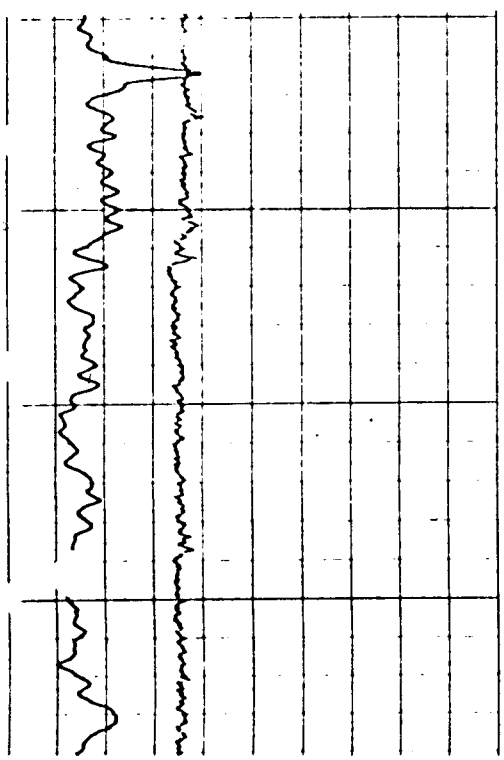
Pit Rw 1.0 @ 67° F BHT - 172° F
Recovery Rw 1.8 @ 50° F; .831 @ 72° F (Schlumberger)

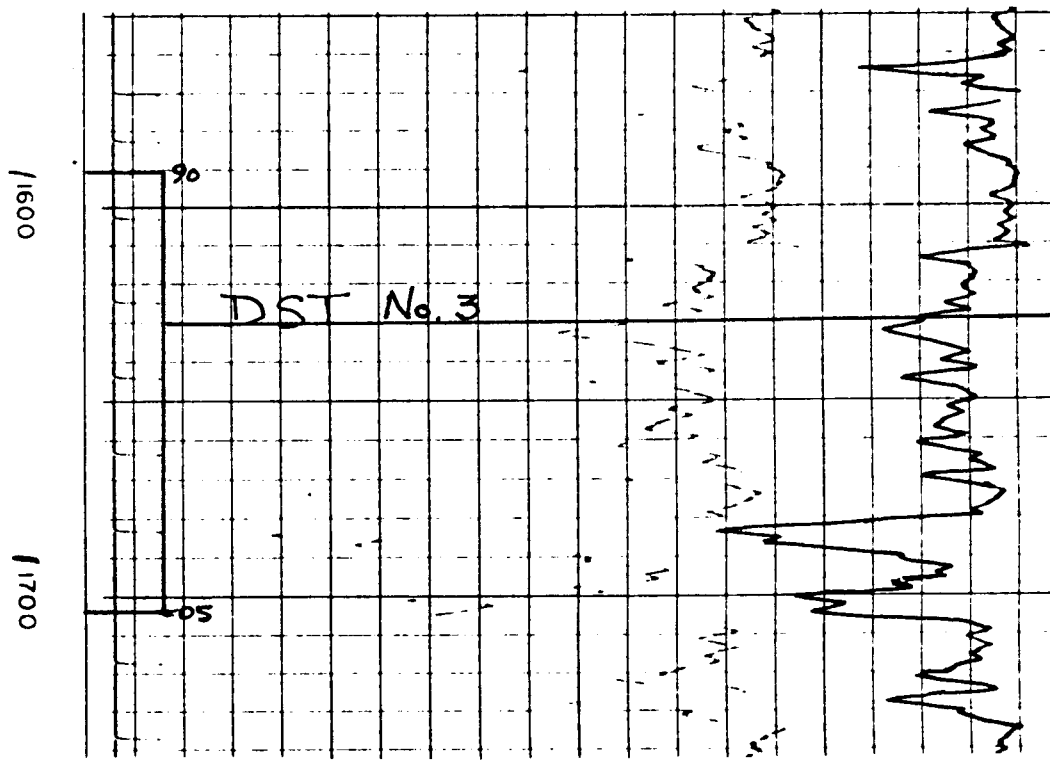
Pressures:

| | | | |
|---|---|---|---|
| IHP | 5353 psi | FHP | 5313 psi |
| IFP | 4512 to 4592 psi | FFP | 4692 to 4952 psi |
| ISIP | 4952 psi/60 min | FSIP | 4952 psi/120 min |

Testing Company: Lynes Inc., Rock Springs, Wyoming
Testing Technician: J. Samoy, P. Eker

Reversed water: from middle - Cl 450 ppm
Trace 3-4 ppm nitrates &
3700 ppm chlorides - checked by Baroid





CL1-12A (REV. 1964)

# CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming

## WATER ANALYSIS REPORT

OPERATOR American Quasar Petroleum Co DATE January 10, 1977 LAB NO. 22257-3
WELL NO. Hoffman No. 1 LOCATION NE NE 31-11N-7E
FIELD Wildcat FORMATION
COUNTY Rich INTERVAL
STATE Utah SAMPLE FROM DST No. 3 (Sampler)(12-29-76)

REMARKS & CONCLUSIONS:

| Cations | mg/1 | meq/1 | Anions | mg/1 | meq/1 |
|---|---|---|---|---|---|
| Sodium | 3964 | 172.45 | Sulfate | 5800 | 120.64 |
| Potassium | 162 | 4.15 | Chloride | 2740 | 77.27 |
| Lithium | | | Carbonate | - | |
| Calcium | 577 | 28.79 | Bicarbonate | 817 | 13.40 |
| Magnesium | 72 | 5.92 | Hydroxide | | |
| Iron | - | | Hydrogen sulfide | - | |
| Total Cations | | 211.31 | Total Anions | | 211.31 |

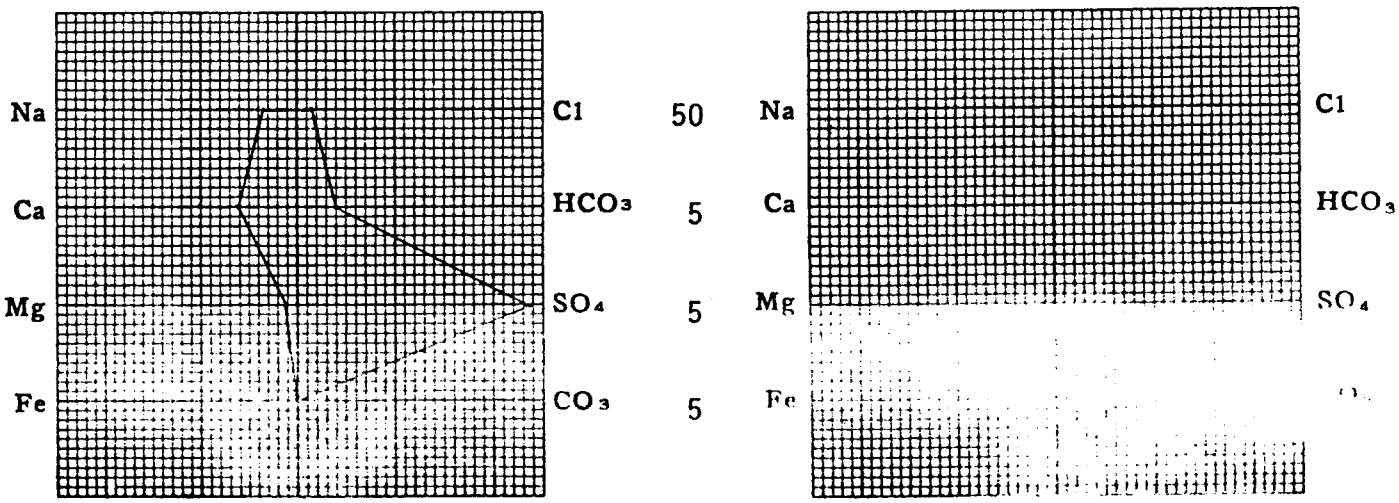
Total dissolved solids, mg/1 13717
NaCl equivalent, mg/1 10679
Observed pH 8.1

Specific resistance @ 68°F.:
Observed 0.69 ohm-meters
Calculated 0.62 ohm-meters

### WATER ANALYSIS PATTERN

Sample above described

Scale
MEQ per Unit




(Na value in above graphs includes Na, K, and Li)
NOTE: Mg/1=Milligrams per liter Meq/1= Milligram equivalents per liter
Sodium chloride equivalent=by Dunlap & Hawthorne calculation from components

## ELECTRIC LOG SUMMARY

### LOG TOPS

| Formation | Electric Log Top | Datum | Sample Top |
|---|---|---|---|
| Twin Creek (Jurassic) | 917 | (+5383) | 914 |
| Leeds Creek Member | 1366 | (+4934) | 1360 |
| Walton Canyon Member | 2230 | (+4070) | 2225 |
| Boundary Ridge Member | 2574 | (+3726) | 2570 |
| Rich Member | 2738 | (+3562) | |
| Sliderock Member | 3086 | (+3214) | 3080 |
| Gypsum Springs Member | 3305 | (+2995) | 3290 |
| Nugget | 3502 | (+2798) | 3498 |
| Ankarah (Triassic) | 4622 | (+1678) | 4620 |
| Thaynes | 6098 | (+ 202) | 6037 |
| Woodside | 7794 | (-1494) | 7050 |
| Dinwoody | 8192 | (-1892) | |
| Phosphoria (Permian) | 8920 | (-2620) | 8920 |
| Rex Chert Member | 8972 | (-2672) | 8968 |
| Wells-Weber | 9470 | (-3170) | 9470 |
| Amsden-Morgan | 10,074 | (-3774) | 10,089 |
| Brazer (Mississippian) | 10,516 | (-4216) | 10,527 |
| Lodgepole-Madison | 12,054 | (-5754) | 12,045 |
| Darby-Three Forks (Devonian) | 12,872 | (-6572) | 12,889 |
| Jefferson | 13,178 | (-6878) | 13,185 (?) |
| Thrust/back into Ankarah (Triassic) | 13,574 | (-7274) | 13,565-13,570(?) |
| B/Nugget (overturned?) | 14,028 | (-7728) | 14,029 |
| B/Gypsum Springs Member | 14,810 | (-8510) | 14,788 |

In Twin Creek formation @ T.D. 15,400'

### LOG CALCULATIONS

No calculations were made at the well site due to the necessity of getting logs to Salt Lake City to air freight to interested parties. Also a computorized log (coriband) was to be run from the log tapes making log calculations redundant.

### LOG OPERATIONS

Log operations on this well were relatively smooth. No special problems and hole conditions were good. Some problems were encountered on the first run with log calculations. The engineer on the job did not seem to be too cognizant of interpretation procedures.

The last run was perhaps one of the smoothest for the depth I have encountered. The engineer from Evanston (Jack Walker) is one of the best I have used in recent years. His operation is smooth with a minimum of problems.

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Form DOGC-4

# STATE OF UTAH

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL & GAS CONSERVATION

1588 WEST NORTH TEMPLE
SALT LAKE CITY, UTAH 84116
328-5771

State Lease No. FEE
Federal Lease No.
Indian Lease No.
Fee & Pat.

RECEIVED FEB 25 1977

## REPORT OF OPERATIONS AND WELL STATUS REPORT

STATE Utah COUNTY Rich FIELD/LEASE Wildcat

The following is a correct report of operations and production (including drilling and producing wells) for the month of: January, 19 77.

Agent's Address 707 United Bank Tower
1700 Broadway
Denver, CO 80290
Phone No. 303/861-8437

Company American Quasar Petroleum Co.
Signed [signature]
Title A. H. Hurley
Division Operations Manager

| Sec. and ¼ of ¼ | Twp. | Range | Well No. | Days Produced | Barrels of Oil | Gravity | Cu. Ft. of Gas (In thousands) | Gallons of Gasoline Recovered | Barrels of Water (if none, so state) | REMARKS (If drilling, depth; if shut down, cause; date and result of test for gasoline content of gas) |
|---|---|---|---|---|---|---|---|---|---|---|
| Section 31 SW NE Hoffman | 11N | 7E | 1 | | | | | | | Drlg. @ 14,826' |
| | | | | | | | | | | Gas Sold 0 |
| | | | | | | | | | | Flared/Vented 0 |
| | | | | | | | | | | Used on/off Lease 0 |

NOTE: There were 0 runs or sales of oil; 0 M. cu. ft. of gas sold; 0 runs or sales of gasoline during the month.

DRILLING/PRODUCING WELLS: This report must be filed on or before the sixteenth day of the succeeding month following production for each well. Where a well is temporarily shut-in, a negative report must be filed. *THIS REPORT MUST BE FILED IN DUPLICATE.*

9

Form DOGC-4

# STATE OF UTAH

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF OIL & GAS CONSERVATION

1588 WEST NORTH TEMPLE
SALT LAKE CITY, UTAH 84116
328-5771

State Lease No. FEE
Federal Lease No.
Indian Lease No.
Fee & Pat.

## REPORT OF OPERATIONS AND WELL STATUS REPORT

STATE Utah COUNTY Rich FIELD/LEASE Wildcat

The following is a correct report of operations and production (including drilling and producing wells) for the month of: February, 19 77.

Agent's Address 707 United Bank Tower
1700 Broadway
Denver, CO 80290
Phone No. 303/861-8437

Company American Quasar Petroleum Co.
Signed
Title A. H. Hurley
Division Operations Manager

| Sec. and ¼ of ¼ | Twp. | Range | Well No. | Days Produced | Barrels of Oil | Gravity | Cu. Ft. of Gas (In thousands) | Gallons of Gasoline Recovered | Barrels of Water (if none, so state) | REMARKS (If drilling, depth; if shut down, caus date and result of test for gasoline content of gas) |
|---|---|---|---|---|---|---|---|---|---|---|
| Section 31 SW NE Hoffman | 11N | 7E | 1 | | | | | | | TD 15,400'<br>Ran Logs<br>Well P & A<br>2-11-77 |
| | | | | | | | | | | Gas Sold 0<br>Flared/Vented 0<br>Used on/off Lease 0 |

NOTE: There were 0 runs or sales of oil; 0 M. cu. ft. of gas sold; 0 runs or sales of gasoline during the month.

DRILLING/PRODUCING WELLS: This report must be filed on or before the sixteenth day of the succeeding month following production for each well. Where a well is temporarily shut-in, a negative report must be filed. *THIS REPORT MUST BE FILED IN DUPLICATE.*

CALVIN L. RAMPTON
*Governor*

GORDON E. HARMSTON
*Executive Director,*
*NATURAL RESOURCES*

CLEON B. FEIGHT
*Director*

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS, AND MINING
1588 West North Temple
Salt Lake City, Utah 84116

OIL, GAS, AND MINING BOARD

GUY N. CARDON
*Chairman*

CHARLES R. HENDERSON
ROBERT R. NORMAN
JAMES P. COWLEY
HYRUM L. LEE

May 16, 1977

American Quasar Petroleum Co.
707 United Bank Tower
1700 Broadway
Denver, Colorado 80290

Re: Well No. Hoffman #1
Sec. 31, T. 11N, R. 7E
Rich County, Utah
Well No. Putnam 23-1
Sec. 23, T. 9N, R. 6E
Rich County, Utah

Gentlemen:

This letter is to advise you that the Well Completion or Recompletion Report and Log for the above referred to well is due and has not been filed with this office as required by our rules and regulations.

Please complete the enclosed Form OGC-3 in duplicate, and forward them to this office as soon as possible.

Thank you for your cooperation relative to the above.

Very truly yours,

DIVISION OF OIL, GAS, AND MINING

KATHY OSTLER
RECORDS CLERK

13

Form OGC-3

SUBMIT IN DUPLICATE*
(See other instructions on reverse side)

CONFIDENTIAL

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

# WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ DRY ☒ Other

b. TYPE OF COMPLETION: NEW WELL ☐ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other P & A

2. NAME OF OPERATOR: American Quasar Petroleum Co. of New Mexico

3. ADDRESS OF OPERATOR: 707 United Bank Tower, 1700 Broadway, Denver, CO 80290

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements*)*
At surface: 1320' FNL, 1620' FEL Sec. 31, T11N-R7E
At top prod. interval reported below: Same
At total depth: Same

CONFIDENTIAL

5. LEASE DESIGNATION AND SERIAL NO.: Fee

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: Hoffman

9. WELL NO.: 1

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec. 31-11N-7E

12. COUNTY OR PARISH: Rich

13. STATE: Utah

14. PERMIT NO.: API 43-033-30001 DATE ISSUED: 8-20-76

15. DATE SPUDDED: 8-26-76

16. DATE T.D. REACHED: 2-9-77

17. DATE COMPL. (*Ready to prod.*): P&A 2-12-77

18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*: 6275' GR

19. ELEV. CASINGHEAD: NA

20. TOTAL DEPTH, MD & TVD: 15,400'

21. PLUG, BACK T.D., MD & TVD: NA

22. IF MULTIPLE COMPL., HOW MANY*: NA

23. INTERVALS DRILLED BY → ROTARY TOOLS: 0-TD CABLE TOOLS:

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*: NA

25. WAS DIRECTIONAL SURVEY MADE: Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN: DIL-BHC Sonic, CNL-FDC, Dipmeter, Velocity Survey

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 |
|---|---|---|---|---|---|
| 20" | 94# | 76' | 26" | | |
| 13 3/8" | 48# | 996' | 17½" | 1000 sx | |
| 9 5/8" | 40# | 4665' | 12¼" | 1750 sx | |

29. LINER RECORD

| SIZE | TOP (MD) | BOTTOM (MD) | SACKS CEMENT* | SCREEN (MD) |
|---|---|---|---|---|
| None | | | | |

30. TUBING RECORD

| SIZE | DEPTH SET (MD) | PACKER SET (MD) |
|---|---|---|
| NA | | |

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

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

| DEPTH INTERVAL (MD) | AMOUNT AND KIND OF MATERIAL USED |
|---|---|
| | NA |

33.* PRODUCTION

DATE FIRST PRODUCTION: NA

PRODUCTION METHOD (*Flowing, gas lift, pumping—size and type of pump*): NA

WELL STATUS (*Producing or shut-in*): NA

| DATE OF TEST | HOURS TESTED | CHOKE SIZE | PROD'N. FOR TEST PERIOD → | OIL—BBL. | GAS—MCF. | WATER—BBL. | GAS-OIL RATIO |
|---|---|---|---|---|---|---|---|
| NA | NA | NA | | NA | NA | NA | NA |

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

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

TEST WITNESSED BY: NA

35. LIST OF ATTACHMENTS: Log Tops

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

SIGNED [signature] TITLE Division Operations Manager DATE 6-8-77

*(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.)

**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. |
|---|---|---|---|
| DST #1 Nugget | 3460 | 3529 | TO 10" w/fair, incr. to good blow; SI 60"; TO 60" w/strong to good blow thruout; SI 120". Rec. 200' WC mud, 1530' slily MC wtr, & 300' clear wtr. IHP 1671; IFP 83/269; ISIP 1531; FFP 325/891, FSIP 1531, FHP 1661; BHT 98° F. |
| DST #2 Phosphoria | 9232 | 9365 | TO 10" w/immed strong blow; SI 60"; TO 120" w/strong blow throut period; SI 240". Rec. 254' ammonia wtr blanket & 7769' sulphurous wtr--no shows. IHP 4373; IFP 389/718; ISIP 3951; FFP 718/3435; FSIP 3951; FHP 4373 (No BHT-thermometer broke) |
| DST #3 Brazer | 11590 | 11705 | TO 10" w/fair, incr to strong blow in 3"; SI 60"; TO 60" w/strong blow remaining constant for 55", then died instantly; SI 120". Rec 11,148' brakish wtr. IHP 5353; IFP 4512/4592; ISIP 4952; FFP 4692/4952; FSIP 4952; FHP 5313; BHT 172°F |

**38. GEOLOGIC MARKERS**

| NAME | TOP MEAS. DEPTH | TOP TRUE VERT. DEPTH |
|---|---|---|
| SEE ATTACHMENT | | |

ATTACHMENT - HOFFMAN #1
COMPLETION REPORT

| Formation | Electric Log Top |
|---|---|
| Twin Creek (Jurassic) | 917 |
| Leeds Creek Member | 1366 |
| Walton Canyon Member | 2230 |
| Boundary Ridge Member | 2574 |
| Rich Member | 2738 |
| Sliderock Member | 3086 |
| Gypsum Springs Member | 3305 |
| Nugget | 3502 |
| Ankarah (Triassic) | 4622 |
| Thaynes | 6098 |
| Woodside | 7794 |
| Dinwoody | 8192 |
| Phosphoria (Permian) | 8920 |
| Rex Chert Member | 8972 |
| Wells-Weber | 9470 |
| Amsden-Morgan | 10,074 |
| Brazer (Mississippian) | 10,516 |
| Lodgepole-Madison | 12,054 |
| Darby-Three Forks (Devonian) | 12,872 |
| Jefferson | 13,178 |
| Thrust/back into Ankarah (Triassic) | 13,574 |
| B/Nugget (overturned?) | 14,028 |
| B/Gypsum Springs Member | 14,810 |

In Twin Creek formation @ T.D. 15,400'

American Quasar
Hoffman "31" No. 1

Location: 1320' FNL & 1620' FEL, Sec. 31, T-11-N, R-7-E, Rich County, Utah
Elevation: G.L. 6280' graded: R.K.B. 6300'

## SAMPLE DESCRIPTION

Abbreviations: AA - as above or ditto; tr - trace (5-10% of samples); SP - some pieces (less than 5%); sl - slight; dolo - dolomite or dolomitic; ls - limestone; anhy - anhydrite or anhydritic; ss - sandstone; sltstn - siltstone; sh - shale; sd - sand; clayst - claystone; mdst - mudstone; congl - conglomerate; conglc - conglomeratic; qtzt - quartzite; calc - calcareous; arg - argillaceous; gran - granular; sucr - sucrosic; silic - siliceous; carb - carbonaceous; bent - bentonite or bentonitic; glauc - glauconitic; sdy - sandy (arenaceous); v - very; f - fine; m - medium; crse - coarse; hd - hard; blky - blocky; flky - flakey; fiss - fissile; splint - splintery; gr - grain; xln - crystalline; interxln - intercrystalline; min - mineral; incl - inclusions; s - sub; ang - angular; rdd - rounded; w - well; cmtd - cemented; dse - dense; wh - white; blk - black; gry - grey; grn - green; brn - brown; S&P - salt & pepper; lt - light; dk - dark; por - porosity; ppp - pinpoint porosity; vug - vugular; fluor - fluorescence; perm - permeability; incr - increase or increasing; decr - decrease or decreasing; pred - predominantly; occ - occasional; unconsol - unconsolidated; drlg - drilling; lith - lithology; poss - possibly; w/ - with; forams - foraminifera; foss - fossils; sl - slight

| | |
|---|---|
| 0-70 | No samples - ran 20" casing to 76' |
| 70-190 | 100% lime mdst - 2/3 buff - 1/3 pink, v.soft, earthy, arg (lot of clay) breaks down when wet w/some ang-s.rdd f-crse clear qtz unconsol sd gr; some min fluor, no cut<br>100 - some v.lt tan<br>160 - decr pink |
| 190-220 | 100% sh - lt.gry-buff, soft-earthy, v.calc, grades to lime mdst AA, sl more induration; some reddish brn grades to v.arg ls, SP red weathered tight hard silic calc ss or weathered igneous frags & red f.gr tight firm v.calc ss; some min fluor in ls, no cut |
| 220-280 | 10% sh - AA, v.calc<br>90% ls - buff-wh, chalky-f.microxln, soft-hard, some indistinct forms, pisolites? (caliche?); some f.microvug & clear calcite incl, some min fluor, no cut; SP pale pink tine; SP w/tr f.isolated microvugs |
| 280-310 | 30% sh - lt.gry-grnish gry-tan, earthy-smooth, blky, soft, calc-v.calc<br>70% ls - AA, more chalky, less dse, some f.isolated vugs AA |
| 310-340 | No sample |
| 340-3470 | 30% sh - brick red, v.soft earthy, sl.calc-calc, some unconsol f.qtz sd gr<br>70% ls - AA, pink, f.microxln, some looks like anhy, may be anhy; w/some microvugs AA |
| 370-400 | No sample |
| 400-490 | 100% sh - brick red, earthy, soft, v.calc - red lime mdst (redbeds)<br>SP ls - AA<br>430-460 AA, becoming less calc downward |

490-530 50% congl - var (pred red) f.gr, tight, calc, arg ss-grit-pebbles of qtz, ss, chert, ls, reworked & weathered - matrix prob red calc sh-sltstn & ss
50% sh-sltstn - AA

530-560 30% congl - AA
30% sh - lt.gry-buff, soft, v.calc clayst-arg mdst (lime)
40% sh - red,firm, silty, calc, grades to arg calc sltst - tight

560-620 60% congl - AA, pred grit size unconsol qtz, chert, ls, some dk min gr, s.rdd-ang (sub-congl) & some red sltst-ss matrix(?)
20% sh - red - AA
20% sh mdst - AA
Tr ls - red, dse, firm-soft (slough or in congl)

620-680 100% congl - pred yellowish brn (limonite) grit - f-m pebbles of ls, chert, qtz, ss, some weathered dark minerals; some that appears to be weathered ss, may be weathered igneous, poorly rdd, fair srtg, unconsol, pred ang-s.ang

680-770 No samples

770-860 100% congl - gry-yellow-orange, some red, pred calc (surface cement & incl in pebbles); most of material w/persistant acid reaction, appears to be in weathered surface, between grains, fine pits in surface of grit - pebbles w/some rdd surface, many ang pieces (larger pebbles breaking up or more breccia than congl) much chert, much silic w/spicular appearance (from weathering?), occ blk basalt pebble, some yellow f.gr ss
806-30 Congl - AA, more pebble size - ang (drilling very well to be as hard & sharp) prob poorly consolidated, SP gry arg dse ls-calc sh
830-60 More dk fragments, much w/yellow color, translucent-transparent w/wh ang specks throughout; much gry arg ls-calc sh fragments

860-890 50% sh - m-m.dk.gry, smooth blky, v.calc-calc, grades to arg ls (much rdd, may be reworked?)
10% ls - gry, arg, dse, grades to sh - AA
40% congl - AA

890-920 100% congl - AA, some rounding ang-s.rdd, pred ang grit-pebble size unconsol
Tr sh - gry - AA
<u>Top Twin Creek</u> - 914'

920-950 30% sh - gry - AA
70% congl - AA

950-980 100% sh - m-m.dk.gry, smooth-v.f.velvety, blky, calc-v.calc, some white vein fill
SP congl pebbles - AA

980-1000 No sample - after 13-3/8" casing @ 976'

1000-1060 60% ls - gry-gry.tan, arg, dse, f.microxln grades to calc sh, 10% wh calcite frac fill
40% sh - m-m.dk.gry, smooth blky, v.calc-calc, grades to ls

Note: Very difficult to classify lithology - mostly gradational from very calcareous shale-shaley limestone. Perhaps better designation would be lime-clay mudstone. Very fine clay size material - brittle, firm

1060-1090 No samples

1090-1150 30% ls - AA, decr wh calcite fill
70% sh - AA
Occ piece pyrite in samples

1150-1300 40% ls - arg-v.arg, grades to calc sh - AA; incr (10%) wh calcite
60% sh - AA
1180 - decr wh calcite (tr)
1240 - sl incr wh calcite frac fill - AA

1300-1330 50% ls - AA, transitional ls-sh
50% sh - AA

1330-1420 60% ls - pred gry-m.dk.gry w/brn tint, firm, brittle, arg, f micro-xln-cryptoxln (litho), fair amount residue after acid
40% sh - AA
1360-1420 - tr cement & uphole types from behind casing

1420-1450 40% ls - AA, occ piece calcite w/v.dull min fluor
60% sh - m-dk.gry, smooth, blky, calc-v.calc, brittle, firm, grades to ls

1450-1480 10% sltstn - gry-tan gry, v.f.gr, tight, firm, calc, grades to silty ls & sh
40% ls - AA, silty in part
50% sh - AA

1480-1510 70% ls - pred brnish gry, firm, cryptoxln, arg, dse, grades to sh; samples carry SP lt.gry-wh calcite frac fill
30% sh - AA

1510-1540 90% ls - AA, sl incr wh calcite
10% sh - AA

1540-1630 60% ls - AA
40% sh - AA

1630-1720 60% sh - AA, grades to arg ls
40% ls - AA, tr wh-clear calcite (frac fill)

1720-1750 70% ls - AA
30% sh - AA

1750-1840 90% ls - AA
10% sh - AA

Note: Limestone gradational to calc-v.calc shale - lime clay mudstone, firm-dense, fractured

1840-1900 100% ls - gry-gry.brn cryptoxln, dse, hard, brittle, sharp, ang, arg
Tr sh - AA
1840-60 No sample

1900-1910 10% ss - lt.gry, sl S&P, f.gr, hard, tight, silic, calc, ang-s.ang, w.cmtd
Tr sltstn - lt.gry, tight, calc, grades to ss
Tr sh - AA
90% ls - AA, some dk.brn-blk carb ptgs?

1910-1930 20% ss - AA
Tr sltstn - AA
80% ls - AA, some wh calcite frac fill, some silty ls

1930-1960 Tr ss-sltstn - AA
100% ls - pred gry-m.dk.gry w/brn tint, cryptoxln-v.f.microxln, dse, sl silic? w/abundant wh secondary calcite, frac fill & along edges, occ pyrite incl

1960-1970 10% ss - lt.gry w/grn cast, sl S&P, f.gr, tight, calc, some clay infill, silic in part (tuffaceous?)
90% ls - pred m.dk.gry w/brn tint, cryptoxln, dse, w/some v.thin gry sh lams

1970-1980 Tr ss-sltstn - AA
100% ls - AA

1980-2000 10% sltstn - gry brn, tight, hard, v.calc, grades to silty ls
90% ls - incr gry-brn silty, hard
Note: Calcite in healed fractures, on edges, and free in samples. Occ piece w/crystals (vug along fracture plane?); some calcite along sh interface (ptgs)

2000-2040 100% ls - AA, pred hard, sl silic, v.dse (lithographic) v.arg (much residue after acid). Tr healed fractures & wh calcite vein fill - calcite looks like anhy but total reaction to acid
Decr silt in ls & sltstn
2010-40 - some red crse gr ang friable arg ss, red ls nodules, red earthy calc sh - rdd, may be uphole slough or from mud system

2040-2070 100% ls - m.dk.gry-dk.gry.brn, cryptoxln (litho)-v.f.microxln, ang, brittle, hard, silic in part, v.dse, fractured (healed), abundant wh calcite frac fill (tr-10%)

2070-2080 10% sltstn - lt.gry-gry.tan, tight, v.calc, grades to silty ls as thin ptgs & beds
90% ls - AA, silty in part

2080-2090 10% sh - gry.brn, v.calc, firm-hard, blky, grades to ls
90% ls - AA, decr silty, silic in part

2090-2160 100% ls - AA
Tr sh - AA
2100 - some sl silty, some silty ptgs, occ pyrite incl
2110 - pred gry.brn cryptoxln (litho) dse, fractured

2160-2170 100% ls - AA, SP sdy-silty
Tr ss - lt.gry-tan, f.gr, tight, v.calc, grades to sdy ls, friable in part

2170-2180 SP ss - lt.gry w/grn tint, f-v.f.gr, tight, calc, grades to silt
100% ls - brn-gry.brn, cryptoxln dse, SP silty w/wh calcite frac fill, occ piece looks like anhy but acid reacts. No show

2180-2190 SP gypsum - occ piece clear & occ piece wh gran anhy, may be as incl in ls, secondary ?
90% ls - AA, some lt.gry w/dk.oolites
10% sltstn - lt.gry, tight, calc, grades to silty ls

2190-2210 SP anhy - wh, soft, v.fragile
100% ls - AA, some oolitic AA, some silty-sdy
SP sltstn - AA
2200-10 Tr sltstn - lt.gry, hard, tight, calc

2210-2220 20% sltstn - lt.gry-tan, v.f.gr, tight, calc, grades to sdy-silty ls
80% ls - AA, silty in part (tr), silic in part; some wh calcite frac fill, occ piece clear gypsum & wh anhy - AA

2220-2240 80% sltstn - AA, lt.gry-tan, friable, hard, silic, calc, tight, sdy in part, grades to f.gr silty ss
20% ls - AA
Pc wh pearly fibrous asbestos

2240-2250 10% sltstn - AA
90% ls - AA, no apparent oolites

2250-2260 100% ls - pred brn cryptoxln dse, some gry-tan sl.chalky dse, some wh xln calcite vein & frac fill-edge coating & free, occ tr pyrite incl

2260-2280 10% ss - lt.gry-tan, f.gr ang-s.ang, calc-silic, silty in part, tight, hard, w.cmtd
90% ls - AA, pred darker gry-gry.brn, dse, more arg

2280-2290 Tr ss-sltstn - AA
100% ls - AA, dk.gry-dk.gry.brn, cryptoxln to f.microxln, dse, brittle, hard

2290-2330 100% ls - incr brn cryptoxln dse, hard, brittle, silic; tr-10% wh frac filling (calcite

2330-2350 100% ls - dk.gry-dk.brnish gry, f-micro-cryptoxln, dse, incr arg dk.gry dse, hard, tr wh frac fill calcite
Tr sh - gry, blky, firm-smooth-f.velvety, v.calc, occ wh anhy & clear gypsum-xln
Note: More gray - less brown

2350-2360 100% ls - AA, pred dk.gry w/brn tint, crypto-f.microxln, dse, arg, silic in part

2360-2370 100% ls - AA, silic in part, tr wh calcite
SP sltstn - v.f.gr ss, lt.gry, sl S&P, tight, calc, silic, hard
2360 - ls cleaning up

2370-2420 100% ls - abrupt color change to brown cryptoxln dse w/abundant (10-15%) wh calcite frac fill; some brn ls w/healed fractures
Note: Only SP dk.gry ls - AA (boiler house sample?)
2380 - more gry.brn, incr f.microxln dse; some tan-lt.brn f.microxln-sl.chalky dse, no show
SP clear gypsum, prob as incl, may be more associated w/vein fill, hard to separate from ls & calcite
2700 - incr tan sl.chalky - AA
2410 - decr tan chalky, occ piece gypsum & anhy, wh xln

2420-2450 100% ls - pred brn-gry.brn crypto-f.microxln, dse, silic in part, silty in part
Tr sltstn - lt.gry.tan, tight, calc (tuffaceous?)
2430-40 - occ piece oolitic
Note: Most of gypsum & anhy associated w/ls or calcite
2430 - becoming more dk.gry.brn-dk.gry, crypto-f.microxln, dse, hard, silic in part, some silty

2450-2480 100% ls - pred brn.gry-gry.brn, crypto-f.microxln, dse, v.arg in part, SP fossiliferous
SP sltstn - gry, tight, calc, hard
Some calcite frac fill, SP anhy-calc
2460-70 - Incr brn cryptoxln, dse, hard, brittle, decr silty-non silty, frac fill calcite

2480-2490 100% ls - AA, SP dk.gry f.microxln, dse-cryptoxln arg, tr wh calcite frac fill

2490-2500 10% anhy - wh, xln, SP clear gypsum-selenite
60% sh - dk.gry, blky, v.f.velvety-smooth, calc-v.calc, grades to arg ls
30% ls - AA becoming more arg in part

2500-2510 10% sh - AA
Tr anhy - AA
90% ls - AA, some tan cryptoxln dse

2510-2520 40% sh - AA, grades to arg ls
Tr anhy - AA
60% ls - AA

2520-2530 20% anhy - wh, sucrosic-f.xln
30% sh - AA
50% ls - AA

2530-2540 70% anhy - wh - AA, wh-brn mottled w/ls incl
10% sh - AA
20% ls - AA

2540-2550 70% anhy - AA, speckled or mottled w/ls incl
30% ls - AA, some w/anhy incl
SP yellow, red, brn crse qtz & speckled crse ang gr (uphole or from system)

2550-2560 60% anhy - AA w/ls incl, grades to anhy ls
40% ls - gry-brn cryptoxln-f.microxln w/anhy incl in part
Tr sh - AA

2560-2570 70% anhy - AA, pred wh granular soft
30% ls - AA
Some crse clear ang qtz gr, unconsol sd

Note: Noticed muddy samples off shaker were pink - hand checked - approx 2575, some very soft pink earthy calc sh

2570-2580 70% anhy - AA
10% sh - brick red-pink, earthy, calc, silty-sdy in part, SP gry blky calc sh
20% ls - AA

2580-2590 30% anhy - AA
20% ss - red, arg, f.gr, s.rdd, calc, tight, grades to sltstn
20% sltstn - red, arg, calc, tight, grades to ss & sh
20% sh - red, earthy, silty-sdy in part, calc
Tr ls - AA

2590-2600 50% anhy - AA
50% ls - gry-dk.brn, crypto-f.microxln, dse
SP grn (glauc?) arg
Tr red sltstn & sh - AA

Note: Caught hand sample - mottled dk.gry-gry.brn-buff f.microxln, oolitic in part, dse @ 2603'; some wh calcite frac fill

2600-2610 40% ss-sltstn - tan-gry.brn, v.f.gr-silt, ang-s.ang, tight, firm-friable, w.cmtd, calc-v.calc, grades to sdy-silty ls, no fluor
10% anhy - AA
50% ls - pred brn silty-sdy, dse, grades to sltstn-ss, no fluor

2610-2620 30% ss-sltstn - AA, no shows
20% anhy - AA, wh xln-gran w/some ls incl
50% ls - AA, more sdy-silty

2620-2640 10% anhy - AA
30% ss-sltstn - AA
60% ls - AA

2640-2670 100% ls - brn-gry.brn, cryptoxln, dse, silic, hard in part, occ pyrite
SP ss-sltstn, anhy - AA
2660-70 - tr+lt.gry-gry.grn tight silic calc sltstn

2670-2680 80% sltstn - lt.med.gry, tight, hard, sl.calc-arg-v.arg, or possibly dolomitic (sl acid reaction) tuffaceous??, v.fine texture, some looks like sh
20% ls - AA, tr anhy

2680-2690 60% anhy - pred wh xln
10% sltstn - gry - AA
30% sh - red-brn, firm, silty in part, sl calc or dolo, looks like red brn carbonate but v.little acid reaction even in concentrated. SP anhydritic, could be anhydrite, sl.calc, sl.silic, well indurated, 1 pc w/wh calcite along edge (frac fill)

2690-2700 10% anhy-gypsum
20% sh - gry-dk.gry, blky (looks like arg ls) but almost no acid reaction, firm-m.hard, grades to sltstn
70% sltstn - m.gry, sl.calc, tight as 2670-80-v.f.sdy, tr pyritic, some biotite flakes(?)-tuff(?)
Note: Could red brn be weathered gry tuffaceous material - almost looks as if baked

2700-2710 20% ss - lt-m.gry, f-v.f.gr, silty, calc, tight w.cmtd, ang, silic in part, anhy??, hard-friable grades to sltstn
10% anhy - AA, calc in part
70% sltstn - AA, grades to ss
Tr sh, ls, occ red brn sh?

2713 Trip for repair to rig, change bit also, out of hole about 12 hours

2710-2750 90% ls - dk.gry w/brn tinge, f.micro-cryptoxln, v.arg, brittle, lot of residue (brn) after acid
Tr ss-sltstn - AA, only 2 or 3 pieces of anhy - (unusual after trip & having anhy above, as if hole caved in or drlg in different hole. Some wh calcite (frac fill?), some edge contacts, no fluor
10% sh - gry, blky, smooth, v.calc, grades to arg ls
2720 - decr sltstn-ss - AA
2740 - SP lt.gry v.f.gr calc tight hard ss-sltstn carried

2750-2770 80% ls - AA, may be classified sh, v.calc & arg
20% sh - AA, may also be ls, v.calc
Most samples contain a lot of wh calcite frac fill - up to 40% in one hand caught sample

2770-2810 90% ls - AA, dk.gry cryptoxln, arg, grades to calc sh
10% sh - dk.gry, blky, v.calc, grades to ls

2810-2820 100% ls - pred dk.gry-gry.brn, cryptoxln, dse, arg, tr wh calcite - AA

2820-2840 30% sh - dk.gry, splint, smooth, v.calc, grades to ls - (AA, this may be also calssed as ls
70% ls - AA

2840-2870 90% ls - pred dk.gry-dk.gry.brn, cryptoxln, dse, arg-v.arg, grades to calc sh (20-30%), wh calcite frac fill, occ piece pyrite
10% sh - blky, dk.gry, smooth, calc, grades to ls, may be ls
2860-70 - incr wh calcite (30%)

2870-2890 20% sh - AA
80% ls - AA, decr wh calcite, some healed fracs - SP pyrite in ls, no fluor, occ contact could be stained, but no cut

2890-2900 20% sltstn-ss - lt.gry, v.f.gr qtz-silt silic-calc, tight, hard
70% ls - AA, more arg
10% sh - AA

2900-2910 10% sltstn - AA
10% sh - dk.gry, blky-flky, hard-firm, v.calc, grades to arg ls
80% ls - pred dk.gry-dk.brn.gry, cryptoxln, dse, arg, some m.gry chalky, arg

2910-2920 40% sh - AA
60% ls - AA
Tr sltstn - AA
Note: Ls-sh gradational - dk.gry-gry.blk, limey-clay mudstone, seems to be more ls than sh - v.rapid acid reaction, has more crystalline appearance, dense, no porosity unless some related w/ fractures

2920-2940 60% limey sh - AA
40% ls - AA, only occ piece wh calcite fragment

2940-2950 70% sh - dk.gry-gry.blk, blky-splint, smooth, v.calc (may be v.arg ls)
30% ls - AA, grades to sh
SP uphole trash - sltstn, gry clyst, etc.

2950-2960 40% sh - AA
60% ls - AA, tr pyrite, occ fine hairline healed fracture

Note: I think this may be all ls - some more arg than other

2960-2990 60% sh - m.dk-dk.gry, blky-splint, smooth, calc-v.calc, grades to arg ls
40% ls - AA, pred v.arg, tr gry-lt.gry chalky, arg, SP wh calcite AA
Most samples contain SP lt.gry-tan sltstn & f.gr ss

2990-3000 70% sh - AA, has brn tinge
30% ls - AA, SP wh calcite
Some fine uphole debris, crse qtz gr, tr red sh etc as fine cuttings

3000-3090 90% sh - m.dk-dk.gry smooth, blky-flky-splint, calc-v.calc, hard, brittle, grades to arg ls
10% ls - AA, SP wh calcite
SP sltstn - gry, tight, calc - AA
3080-90 - sl incr wh calcite

3090-3100 90% ls - brn, f.micro-cryptoxln, dse
Tr pyrite incl
10% sh - AA, some dark brn-blk, earthy, calc
Some free wh calcite & healed fractures in ls

3100-3160 100% ls - brn - AA, some free calcite & some healed wh calcite filled fracs, some chalky in part, tight, may have fracture porosity, no shows

3100-3160 (Cont)
3120-30 - AA, 10-15% wh calcite frac fill, some tan chalky arg ls, some dk.brn v.arg (carb?) ls, earthy sh, occ pyrite incl
3140-50 - occ piece lt.gry f.gr-silt gr calc ss-sltstn, tight, no show

3160-3200 100% ls - AA, becoming more dk.gry.brn, some tan-gry chalky (may be bit flour from button bit); some(?) edge poros, secondary clear-wh calcite xls, occ blk carb surface (styolites), also occ blk carb plant remains, no cut, tr wh calcite frac fill
3190-3200 - becoming more brn

3200-3210 100% ls - brn, f.micro-cryptoxln, dse, sl.sdy-silty in part, some dk.gry-brn-blk arg ptgs & lams

3210-3220 100% ls - dk.gry-gry.brn, f.micro-cryptoxln, dse, some mottled dk.gry-buff-wh oolitic (dk oolites), some v.arg bands & ptgs, SP pyrite

3220-3230 30% ss - lt.gry, v.f-f.gr, tight, silty, calc (dolo?), firm, w.cmtd, ang-s.ang, no fluor
50% sltstn - lt.gry, tight, calc (dolo?), firm, sdy in part, no fluor, grades to ss
20% 12 - AA, some lt-m.gry, silty-sdy, grades to ss-sltstn

3230-3240 70% ls - dk.gry-brn, f.xln-arg, dse, some oolitic
10% sh - dk.gry-gry, blky-splint, smooth, calc, grades to ls
20% ss-sltstn - AA, tight
Tr dolo - tan, f.microxln, silty-sdy, dse

3240-3250 40% dolo - tan, f.micro-cryptoxln, silty in part, occ piece cut by calcite frac edge
60% sltstn - lt.gry, tight, dolo - AA, no fluor
Tr sh - grnish gry, silty, sl calc

3250-3260 Tr sh - red, earthy, blky, firm, v.sl.calc or sl.dolo
70% ls - m.dk.gry-brn, f.micro-cryptoxln, dse, arg-v.arg, grades to calc sh, occ oolitic
30% sh- m.dk.gry-dk.gry, firm, blky-calc, v.calc

3260-3270 Tr dolo - tan-lt.brn, cryptoxln, dse, silic, hard
Tr anhy - pink-wh, xln-gran
40% sh - brick red-red brn, blky, silty in part, sl.calc, occ piece w/wh calcite frac fill on edge
60% ls - AA
SP sltstn - AA, tr sh - gry - AA

3270-3280 60% dolo - buff-lt.gry-tan-lt.brn-pink, cryptoxln, dse, hard, silic in part
30% sh - red - AA
Tr anhy, gypsum & gry sh - AA
10% sltstn - AA

3280-3290 90% dolo - AA, pred lt.tan, occ grn & wh, lot hard silic
10% sh - red, silty-sdy - AA
Tr gry sh, ls, wh calcite, anhy - AA
SP chert - translucent-milky-red
<u>Top Gypsum Springs Member</u> 3290'

3290-3300 20% anhy - wh-lt.gry xln
80% dolo - AA, no show, some pipe dope fluor occ
Carry SP ls, sltstn, calcite, etc - AA

3300-3310 40% sh - brick red-red brn, smooth-earthy, blky, firm, dolo
30% dolo - AA, SP w/v.v.dull min fluor in dse dolo
30% anhy - AA

3310-3340 90% sh - pred brick red, earthy-smooth, firm, blky, sl dolo
10% anhy - AA
SP dolo - AA
Some of red sh anhydritic, some silty in part, tr dk.gry, f.micro-cryptoxln arg dolo

3340-3360 10% dolo - AA
10% anhy - AA, some red w/arg sh incl & ptgs
80% sh - AA, red

3360-3370 40% sh - red - AA
30% anhy - AA, tr clear gypsum laths
30% dolo - pred lt.tan-lt.brn, f.micro-cryptoxln, dse, hard
Note: Poor sample - tr uphole ss,sltstn, ls, etc

3370-3380 40% sh - red
20% sh - m.gry-grn.gry, smooth, blky, dolo
30% anhy - AA
10% dolo - AA, anhy in part

3380-3400 30% sh - pred brick red, blky, silty in part, dolo
10% sh - gry-grn - AA
40% anhy - AA
20% dolo - AA

3400-3410 40% sh - red - AA
30% anhy - AA
20% sh - gry-apple grn, blky, smooth, sl dolo
10% dolo - AA
Occ piece red chert

3410-3430 40% sh - red - AA
30% anhy - AA
20% dolo - tan-lt.brn, dse - AA
10% sh - gry-grn - AA
Occ red chert (jasper)

3430-3440 40% sh - red (brick), blky, smooth-earthy, sl calc
30% anhy - wh-lt.gry, gran-xln, SP gypsum-clear
30% dolo - tan-lt.brn, crypto-microxln, dse, hard, occ anhy,
SP pyrite
Tr sh - gry-grn - AA

3440-3450 40% sh - red - AA
40% anhy - AA
10% dolo - AA
10% sh - gry-grn - AA
Note: Lot of sample mixing & slough in samples, some uphole ls & sltstn

3450-3460 60% dolo - pred lt.brn-tan, cryptoxln, dse, hard
20% anhy - AA
20% red sh - AA
Tr gry sh - AA

3460-3470 30% anhy - AA
20% sh - red - sltstn - AA
30% dolo - brn-tan - AA, grades in part to
20% ls - brn-gry-blk, f.microxln, dse, grades to dolo ls; some blk carb (gilsonite) stain or incl, no cut or fluor

3470-3480 20% sh - red - AA - Very poor sample, too fine
20% anhy - AA
Some ls & dolo healed frags w/calcite
40% dolo - tan-brn, gran in part, recrystallized
20% ls - AA

3480-3490 Tr sh - red - AA
Tr anhy - AA
30% dolo - AA, some calc, tr tan-brn f.gran w/tr sl-v.sl intergran poros, no stain or fluor
70% ls - tan-gry, chalky-xln-v.f.gran, dolo in part, silty in part
Tr sltstn - gry-tan, calc, tight

3490-3500 20% sltstn - gry, tight, f.gr, sdy, calc, grades to silty ls & dolo
10% ss - gry, f-v.f.gr, tight, calc-dolo, silty
Tr sh - red - AA
40% ls - brn-gry, f.microxln-chalky, dolo in part
30% dolo - AA, calc in part, f.gran in part w/tr sl interxln poros, no fluor or stain, some carb material or gilsonite(?), no cut
Top Nugget 3498

3500-3510 60% ls - AA
10% ss-sltstn - AA
30% dolo - AA
Tr sh - red - AA, occ piece brn-gry opaque-translucent chert

3510-3515 Hand sample
100% ss - lt.gry-wh, f-crse gr qtz, f.ang-crse-rdd frosted gr, silic, firm-hard, poorly sorted, some pink-orange orthoclase(?) gr, fair amount crse unconsol v.f.qtz gr, consol pred tight, qtz overgrowths, no fluor or stain

3515-3525 100% ss - orthoquartzite, some glassy w/broken gr, pred silic, sl calc, pred tight, no stain or fluor; decr unconsol sd (tr); tr pyrite, tr ls, ss, sltstn, dolo, red sh, anhy - AA (slough)
3520-25 - more silic

Trip out of hole to look for hole in pipe - will condition hole, circulate out when get back to bottom - T.D. 3529'

15" circulating 90% ss - wh-lt.gry - AA, v.w.cmtd, hard
Tr ss - gry, f.gr, calc, hard, tight, gry arg silic sltstn
10% ls - brn-gry, cryptosilic-f.microxln, dse, hard uphole types

30" circulating 10% sltstn-ss-silty sh, gry S&P, f-v.f.gr, arg, calc, silic, hard
10% ls - AA
80% ss - wh-lt.gry - AA

45"-90" circulating 100% ss - AA, about 10% m.gr f-v.f.gr; tr ls - AA; tr red sh-ss; more unconsol sd (crse) in samples - hole clean up

Called Denver - reported Top Nugget

Evaluation: Drilling break w/good drill off, no gas increase on hot wire, no fluorescence, cut, stain, or other evidence of hydrocarbon. Probably fair porosity (from drilling time). Probably water bearing.

Received instructions to run DST #1 - See DST sheet

3529-3530 10% dolo - brn, cryptoxln, dse, silic (uphole type)
20% gry-brn cryptoxln-f.microxln, dse, silic in part ls
10% anhy - wh-pink, xln-gran
Tr sh - red - AA
All the above after test & trip "trash", hole clean up
60% ss - wh-lt.gry - AA

3530-3540 30% ls - gry-brn, f.microxln-cryptoxln, dse, many types
10% dolo - AA
60% ss - wh-lt.gry, hard, v.silic, orthoquartzitic in part, abundant qtz overgrowths
Tr anhy & red sh - AA

3540-3600 100% ss - wh-buff, pred f.gr qtz w.cmtd, silic, hard, ang-s.rdd, w.srtd, occ orange & blk gr, one grn gr. Some bit flour from crushing action of button bit. Some ss seems friable but may be fractured by bit, v.sl.calc
Tr ls - gry-brn, dse - AA
Tr red sh, anhy - AA, SP grn sh - all uphole "trash"
3570-80 - more orange gr (arkosic), SP glassy orthoquartzitic, hard v.tight, v.w.cmtd
Samples carry SP red beds
3580-90 - Ss becoming more f-crse s.rdd, more poorly sorted, w.cmtd, silic, hard, almost non-calc, occ grn gr (glauc or chlorite) SP tr sl intergran poros, no stain or fluor
3590-3600 SP tr sl intergran poros, no stain or fluor
Note: Some wh amorphous chalky material, sl.calc

3600-3650 100% ss - lt.gry-wh, f.gr, ang-s.rdd qtz, w.cmtd, tight, firm-hard, silic, sl.calc, tr gypsum matrix, may be more friable due to crushing action of bit inserts. Some orange gr, glassy in part, some clay fill
Tr ls - AA
3620-30 - some f-m.gr, tr bit flour, glassy in part (orthoquartzite)
3640-50 - incr crse ang-s.ang qtz gr

3650-3690 100% ss - lt.gry-wh, f.gr, some m.gr, ang-s.ang, sl.calc, v.hard-friable, tight, much glassy, no stain or fluor; some pink-orange-grn gr; some wh chalky non-calc amorphous material - anhy(?)-prob bit flour
3660-70 - much crse m.gr unconsol sd
3670 - samples larger

3690-3750 100% ss - lt.gry-wh, f-m.gr w/pink-reddish tinge, sparse orange, grn, dk.gry gr, much glassy hard orthoquartzitic, tight, some buff clay(?) infill, tr gypsum - clear matrix
SP sh - red & ls carried(slough)
3710 - incr orange-lt.red (salmon) f-m.gr ss, pred f.gr, tight, w.cmtd, f-poor srtg, sl.calc in part, silic, hard
3720-30 - 1/2-2/3 lt.salmon red, glassy in part, orthoquartzitic, tight, no fluor or stain

3750-3810 100% ss - salmon red (orange red) f.gr, s.ang-s.rdd, pred qtz, some orthoclase feldspar (arkosite), w.cmtd, silic, v.sl.calc, glassy in part, no fluor or stain
Samples carry tr wh-lt.gry ss - AA, SP sl.more calc. Color seems to be from red clay (from feldspar weathering?). Carry SP gry calc sh-arg ls (slough
3760-70 Some f-med.gr ss
3780 - better sorting, pred f.gr
Note: Cuttings very fine

3810-3830 100% ss - salmon, pred f.gr, some m.gr, s.ang-s.rdd, w.cmtd, hard-friable, sl.calc, silic, some gypsum in matrix, some pieces appear to be weathered (smooth) as if reworked

3830-3850 100% ss - AA becoming more med.gr-crse.med.gr, lighter color to pink. SP tr sl intergran poros (isolated), low perm, no stain
3840 - m-crse poorly srtd, crse pred rdd-s.rdd, frosted, hard-friable, silic, some gypsum(?) matrix in friable, also wh clay(?), SP tr sl intergran poros, no show

3850-3910 100% ss - salmon red, pred f.gr, s.ang-s.rdd, v.sl.calc, silic, firm-hard, tr clay fill & gypsum(?) fill, fair srtg, no fluor, tr sl poros, pred tight
3870-3900 - some m.gr in ss, not as glassy silic

3910-3970 100% ss - salmon red (pale), f.gr, ang-s.rdd, firm-hard-friable, silic in part, clay filled in part, some med.gr, pred w.sorted, v.sl.calc, some silic (orthoquartzitic in part) glassy
3930 - incr clear gypsum matrix - SP tr sl intergran poros, low perm, no stain, primary cement silicon

3970-4050 100% ss - salmon red - AA, SP tr sl intergran poros, no stain, pred silic, hard, tr gypsum matrix AA, some clay matrix
3990-4000 - ss more silic, orthoquartzitic, hard, tight, some like shards
4000-10 - more salmon red, v.f-f.gr, hard, brittle, v.silic, v.sl-non calc, some friable w/gypsum(?) matrix, some wh clay infill, pred tight
4010-20 No sample
4030-60 - Ss w/some med-crse gr AA, conglc; Bit stopped drilling @ 4067' - logger had them circulate samples to check on formation - bit worn out of gauge.

Note: No apparent major lithologic change in samples. Buff w/pink specks chalky material v.sl.calc (bit flour from crushing action of bit); some ss glassy breaks across grains - orthoquartzitic, v.hard

4050-4060 100% ss - red - AA, pred f.gr qtz, hard, tight, silic, glassy ortho-quartzitic in part, no stain or fluor, tr clay fill, non-sl.calc

4060-4070 No sample - Trip @ 4067'

4070-4150 100% ss - AA, tr wh-lt.gry f.gr (uphole slough from Upper Nugget section)
Tr red, blky & gry sh, gry ls, wh calcite, various types ls & sh - trip trash - only running 7000# on bit because of deviation
4070 - some f-m.gr ss - AA, decr ls & gry & red sh
4100-10 - some friable, pred f.gr ang-s.rdd qtz, tight, some wh-pink chalky non-calc amorphous material in most samples - bit flour?
4120 - some glassy silic (orthoquartzitic), pred tight, some buff clay infill, f.gr, ang-s.rdd

4150-4200 100% ss - AA & wh, f.gr, v.silic, tight, from uphole; pred salmon red f.gr, silic, hard, tight-friable, non.calc-v.sl.calc, tr sl intergran poros, no fluor or stain
SP dolo - wh, xln, dse
Tr ls - gry, dse, arg, grades to calc sh - trip trash
Note: Occ piece w/tr calcite on one side (fracture edge), may have some fracture poros & tr v.sl intergran poros, pred tight, no fluor or stain

4200-4250 100% ss - salmon red (lt.red), f.gr - AA; occ f-crse gr graded piece, ss hard, silic-friable, pred tight, tr sl intergran poros, no stain or fluor. Appears to contain tr gypsum in matrix, low perm

4250-4350 100% ss - AA, pred hard, silic, w.cmtd, tight qtz sd; some blk gr, occ piece w/tr sl poros, no stain or fluor
4300 - more silic, orthoquartzitic in part, pred f.gr, tight, occ silica frac fill; some wh calcite but often assoc w/gry uphole sh & ls (slough)
4340 - some friable poorly cmtd w/tr sl poros, no stain or fluor, some gypsum(?) matrix

4350-4450 100% ss - salmon red (red orange), f.gr, s.ang-s.rdd, fair-w.srtd, w.cmtd, silic-friable, non calc-sl.calc, occ lt.gry incl, v.calc, pred tight, tr sl intergran poros, no stain or fluor, sparse blk gr in ss, some orthoclase gr, occ wh calcite on edge - also qtz (secondary) frac lining on fill, SP sl poros
Note: Most samples carry SP uphole gry calc sh to gry-brn arg dse ls & wh xln calcite
4360 - ss more silic, hard, tight
4380 - some ss lighter color - tan
4410-20 - incr tan-buff f-v.f.gr silic, hard, sl.calc (or sl. dolo - v.poor acid reaction) tight

4450-4500 100% ss - red (salmon), f.gr, w.cmtd, hard, non-sl.calc, silic, glassy in part (orthoquartzitic), tr sl poros in some friable p.cmtd, some fracture edges
4420 - lt.tan-wh ss decreasing
4470 - some ss sl dolo
4480-90 - more silic, hard, glassy

4500-4560 100% ss - AA & lt.tan-buff, v.sl S&P, f.gr, sl.calc, silic-v.silic, hard-friable, tr sl-m poros
Some buff chalky sl.calc (bit flour)
4520 - decr tan ss, much glassy, hard orthoquartzitic, tr lt.tan-wh, SP sl poros, no stain or fluor; SP red silty sh ptgs
4530-60 - tr brick red sdy, arg sltstn

4560-4580 100% ss - incr (1/3) lt.tan-buff-pink, f.gr, silic, v.sl.calc, friable-hard, sl intergran poros in part; also some red w/sl poros, no stain or fluor; lt.tan-pink-buff ss incr downward; some ss porous, sl, grades to silic, v.tight, no shows

4580-4610 100% ss - AA, about 60% lt.tan-pink-buff f.gr, ang-s.rdd qtz, silic cement, v.sl.calc, tight - sl intergran poros in part; some w/rdd m-crse floating sd gr
4590-4600 - about 80% lt colored ss, incr m-crse v.f floating qtz gr, more tight, SP sl poros, no fluor or stain
4600 - pred pink-buff-lt.tan, f.gr, ang-s.rdd w/m-crse s.rdd-rdd frosted floating qtz gr, v.sl-sl.calc, hard, silic-friable, tr sl-m intergran poros, no stain

4610-4620 100% ss - AA, incr red orange (salmon), f.gr, tight, silic; some w/m-crse rdd frosted gr AA; tr sl-m intergran poros, no stain or fluor, red pred tight, SP friable w/poros, some m-crse unconsol rdd sd

4620-4630 10% sh - red-brn, blky, smooth-earthy, silty in part, sl.calc, some w/apple grn sh incl
20% sltstn - red, arg, tight
70% ss - AA & red, arg, silty, grades to sltstn; pred red-salmon - AA, some dk.gry-blk gr
<u>Top Ankarah</u> - 4620'
4630-4650 10% sh - AA
40% sltstn - AA, some silic, hard
50% ss - AA, pred hard, tight, silic
Most samples carry tr gr sh, ls, sltstn - rdd uphole slough

Hand caught sample 4653' - pred brick red, blky, smooth, firm w.indurated, sl. calc shale

4650 - 45" circulating sample
90% sh - brick red, blky, smooth, firm, tr earthy-gummy-soft, sl.calc, some hard silty silic, some wh xln dolo frac fill & incl; some pale grn (apple) sh incl
10% sltstn - red, arg, tight, sl.calc
Tr ss & uphole debris; some wh (uphole?) calcite frac fill

T.D. 4665' - Circulate out for logs - shaker by passed after 45" to put in mica L.C.M. to seal hole seepage. Circulating samples contain some mica L.C.M.
9-5/8" casing set @ 4664'
4665-4700 100% sh - brick red, smooth, blky, sl.calc w/some pale grn incl, some wh-lt.gry calc-f.xln dolo incl, SP blk rubber plug frags & metal bit frags
4680 - more dolo & dolo incl, some silty-sdy, occ piece clear secondary calcite and/or dolo (occ clear qtz shards from shoe)

4700-4710 100% sh - red - AA, some silic, dolo, hard-firm, more orange red, pred smooth-blky

4710-4720 70% ss - red, v.f-f.gr, firm-hard qtz, ang-s.ang, sl dolo, arg, tight, silty in part, grades to sltstn, some dark gry-blk gr, silic in part
20% sltstn - red, arg, tight, dolo, sdy in part
10% sh - red - AA

4720-4730 100% ss - AA, tight, no shows
Tr sltstn & sh - AA

4730-4760 80% ss - AA, occ piece w/wh dolo frac lining
20% sltstn - AA, grades to ss
Tr red sh & red f.microxln dse dolo
4750-60 - some pink-red earthy, soft calc sh

4760-4770 80% sh - brick red, some maroon, pred blky, some sdy-silty
20% ss - AA
Tr dolo - red-pink-gry, f.microxln-cryptoxln, dse, arg in part
SP wh calcite frac fill or incl

4770-4840 100% sh - AA, occ dk.gry-blk sd gr in sh, calc-non calc, some pink-lt.gry clyst, becoming more earthy
Tr ss, dolo & calcite - AA
4780 - samples finer, some grn sh incl, ls & dolo - nodular - incl?; sh rust red- red orange - maroon, blky, smooth-earthy, firm-soft
4810 - sh becoming more rough blky maroon red, tr dolo AA, silic, hard in part, less calc

4840-4850 20% ls-dolo ls - red-pink-maroon, lt.gry mottled, arg, grades to calc sh - dse, no fluor, reworked(?)
80% sh - AA

4850-4860 70% ls - buff-red-maroon-brn.red-pink-lt.gry mottled, fragmental (reworked), f.micro-cryptoxln, dse, firm-brittle, arg in part, tr dull yellow min fluor, no cut, poros or stain
30% sh - red - AA
Tr dolo & ss - AA

4860-4870 80% ls - AA, becoming more m.gry
20% sh - AA

4870-4880 20% ls - AA, becoming more red, arg, grades to calc sh - AA
80% sh - red-red brn, blky, smooth-f.velvety-rough, earthy, v.calc-non calc, some sdy & some w/ls incl

4880-4900 Tr ls - AA
100% sh - incr brick red blky, some pale grn sh as incl, occ piece red, arg dolo, prob as incl
4890 - sh pred brick red-red brn, blky, firm, velvety-earthy, sl. calc-non calc
Tr ss - red, f.gr, firm, tight, arg

4900-4910 70% ls - red-wh-gry mottled - AA, cryptoxln, dse
30% sh - AA, no shows

4910-4920 10% ls - AA
90% sh - AA, many cuttings rdd
Tr dolo - red, arg, f.microxln, dse, tight

4930-4940 100% sh - brick red-red brn-maroon-lavendar red, blky-platey, smooth-f.velvety-earthy, non-sl.calc
Tr ls & ss & SP grn sh - AA
4930-40 - incr maroon-lav red sh (1/3-1/2), some xls on dry samples, sh may be sl anhy

4940-4950 10% unconsol arg-s.ang qtz sd - translucent chert, tr wh opaque chert
10% anhy(?) - wh-pink, f.microxln-v.f.gran, no xls after acid, amorphous in part
10% sltstn - red, arg, tight
70% sh - AA

4950-4970 10% anhy - AA
80% sh - AA, some brick red silty
10% dolo - red-pink-brn pink, cryptoxln, dse, hard
Tr ls - AA; tr ang clear crse qtz sd
4960 - sh pred silty, brick red

4970-4980 40% sh - pred brick red, blky, velvety earthy, non calc, silty, v.f.sdy in part, firm
Tr ss, ls, dolo, anhy - AA
SP calcite, wh-milky & SP dolo, clear-wh, prob as incl in sh, possible frac fill
60% sltstn - red, arg, tight, grades to silty sdy sh

4980-5020 80% sltstn - AA, v.f.gr
20% ss - AA, silty-sdy
Some silty red calc sh, more v.f.sdy calc, tr pink v.calc sh, arg silty ls, brn.red
5000 - pred rust red v.f.sdy-silty blky sh, occ piece w/wh calcite frac fill, no shows

5020-5040 100% sltstn - brick red (orange red), arg, tight, v.f.sdy, v.sl.calc calc, firm
Tr sh - red silty-sdy - AA
Occ piece wh anhy, some wh calcite (frac fill?)

5040-5060 20% sh - brick red, silty, v.f.sdy, sl calc, grades to sltstn - AA
80% sltstn - AA, firm, tight, no fluor or show

5060-5090 100% sltstn - AA, occ calcite healed frac
Tr sh - AA

5090-5100 80% sltstn - AA
20% sh - red - AA, grades to sltstn

5100-5110 Tr ss - red-brn, f-v.f.gr, tight, sl.calc, arg
40% sltstn - AA, incr red brn, tight, arg, some w/wh chalky xls when dry (anhy)
60% sh - AA, much silty-sdy

5110-5130 10% sltstn - AA w/wh chalky anhy(?) - AA
90% sh - AA, some grn smooth sh

5120-5130 40% sh - gry-grnish gry, blky smooth, non-sl.calc
20% sltstn - AA
30% sh - red-brn - AA, silty-sdy-smooth, blky
SP ss - gry-grn, f.gr, silty in part, silic in part, calc
1 piece blk coal.. - v.hard, rhomb, sl.calc-calc edge

5130-5140 80% sh - m.gry-blk, flky-blky, smooth-f.velvety, sl.calc, carb in part
10% sh - red - AA
10% ss - lt.gry-red & S&P mottled, silic, ang-s.ang
SP blk coal, grades to low grade coal-carb sh, ss arkosic in part, (orange orthoclase)

5140-5160 60% ss - lt.gry-lt.tan mottled, f-m.gr qtz, ang-s.ang S&P, some dk.gry gr, tight-friable-hard, calc (in inclusions), poss ls fragments, w.cmtd, poorly srtd, some qtz overgrowths?
40% sh - red, smooth, blky-earthy, some lavender-maroon, some wh chalky soluble residue on dry cuttings (anhydrite?)
Tr gry sh & sltstn - AA
5150 - tr gry sdy ls; some ss v.calc w/gry sh & ls incl & gr, grades to sdy ls; SP wh anhy, xln, dse; incr purple-lavender sh

5160-5170 30% sh - red - AA
20% sh - gry, blky-f.velvety-smooth blky
Tr sltstn - red - gry - AA
40% ss - AA, some pyrite in ss
10% ls - AA
SP anhy & gypsum - AA
Very poor sample - much mixing

5170-5180 30% sh - red - AA, pred brick red
10% sh - gry - AA, occ blk coal
50% ss - AA w/some ls nodules & gr tight, no fluor or show, calc-sl.calc, no stain
10% anhy - wh, xln, may be matrix in ss & gypsum
Tr dolo - buff-lt.tan, f.xln, dse

5180-5190 20% sh-sltstn - red - AA, tr gry sh
20% ss - AA, some gr like breccia
60% ls - gry-lt.gry, f.micro-cryptoxln, dse, arg in part, sdy in part, fragmental in part, SP blk asphaltic material
Tr dolo - AA, some brn siderite, some gry arg dolo

5190-5200 20% dolo - gry, arg, tan f.micro-cryptoxln, dse, pred arg, some arg gry-grn
50% ls - AA
20% sh - red - AA, tr gry sh
10% ss - AA, grades in part to ls
SP blk asphalt w/pyrite

5200-5210 80% dolo - m.gry-grnish gry-tan-reddish, f.microxln, pred cryptoxln, dse, tr f banding, silic in part, occ anhy filled frac edge
20% sh - red-brn.red, blky, non-sl.calc, smooth-earthy-f.velvety
Tr sh - gry.grn, smooth, blky, dolo, grades to dolomite

5210-5220 90% dolo - AA
10% sh - red - AA
SP ss & ls - AA

5220-5230 70% dolo - pred gry-brn, f.micro-cryptoxln, dse, arg in part, grades to sh, occ anhy filled fracture
30% sh - gry, blky-smooth-f.velvety, calc (prob dolo)
Tr red sh - AA
Samples carry occ piece pyrite

5230-5240 100% sh - red brn, firm-hard, blky, earthy-f.velvety-smooth, sl dolo(?), tr grn smooth sh, calc-dolo
Tr dolo & SP ss & ls - AA

5240-5250 30% sltstn - red-pink, arg, tight, silic in part, calc-dolo, no fluor, grades to sh
10% ss - pink, v.f.gr, tight, grades to sltstn
60% sh - red - AA, becoming more silty-sdy

5250-5260 40% ss - red-brn.red, f-v.f.gr, arg, silty, tight, sl dolo, grades to sltstn, anhy, sl mica
50% sltstn - red brn, tight, arg, dolo or sl.calc, f.sdy in part, anhy(?), some pink anhy frac fill
10% sh - red - AA

5260-5270 100% sltstn - AA, grades to v.f.gr ss - AA
Tr ss & sh - AA, SP lt.gry uphole (5140-60) ss

5270-5280 20% sh - brn-red brn, blky, smooth, some silty
Tr sh - gry.grn, blky, smooth
Tr clear-wh-lt.gry xln dolo
80% sltstn - more arg
Tr ss - AA
Poor sample - lot of uphole slough

5280-5290 30% sltstn - AA, becoming brn, more arg
70% sh - pred chocolate brn, blky, silty in part, v.sl-sl.calc, firm
Tr ss - AA

5290-5300 10% sltstn - AA
90% sh - brn - AA
Tr ss - AA
Less than 10% slough

5300-5320 10% ss - red-red brn, v.f-f.gr, arg, tight, sl.calc, silty in part, w/tr wh calcite healed fracture; some gry, v.f.gr, hard silic, tight ss
90% sh - red brn, blky smooth-f.velvety, silty-v.f.sdy, non calc-calc, occ grn sh incl

5320-5330 20% ss - red brn, v.f.gr, arg, tight, grades to sltstn
30% sltstn - red brn, arg, tight, grades to ss & sh
50% sh - red brn, blky, f.velvety, silty in part, non calc-calc w/tr calcite frac fill
SP wh xln anhy, ss-sltstn prob anhydritic, some ss lighter red brn, more calc, most sh sl.calc

5330-5340 10% ss - AA
30% sltstn - AA
60% sh - AA

5340-5370 20% sltstn - AA
80% sh - AA, silty in part, calc, firm, hard
Tr ss - AA; tr uphole types
5360 - incr pink-lt.red-wh xln anhy, as incl & frac fill?, some of sltstn & sh prob anhydritic

Note: Section series of "Red Beds" - red arg v.f-f.gr sandstones and siltstones, silty shales, sl.calc-calc w/some calcite anhy-healed fractures

5370-5380 60% ss - lt.red brn-red brn, v.f-f.gr qtz, hard, tight, silic, calc-arg, tr anhy incl (lighter color, more calc)
30% sh - AA, some brick red, prob slough
10% sltstn - AA

5380-5400 50% ss - AA, grades to sltstn, anhy in part
40% sltstn - red-brn-brn.red, tight, hard, silic, calc
10% sh - AA
5390 - more arg, anhy, some wh calcite frac fill, pred calc, 1 piece gypsum

5400-5410 60% ss - AA, tight, arg, calc, no fluor, no show
40% sltstn - AA
Tr sh - bri-red brn - AA

5410-5420 40% ss - red brn, v.f.gr, tight, arg, calc, no fluor
60% sltstn - red brn, arg, tight, calc, grades to ss
Tr sh - AA

5420-5430 20% sh - red brn, silty, blky, rough, sl calc-calc, grades to sltstn
60% sltstn - AA, sdy in part
20% ss - AA

5430-5440 60% sh - AA & red brn blky, f.velvety, sl.calc-calc, grades in part to sltstn, some wh calcite incl
30% sltstn - AA
10% ss - AA

5440-5450 10% sh - AA
20% ss - AA
70% sltstn - AA, grades to silty sh
Tr-10% uphole brick red sh, mottled ss, purple sh etc

5450-5460 30% sh - brick red, pred lavender, blky, smooth-f.velvety, sl calc in part
40% ss - red-red brn-lt.tan, f-v.f.gr, qtz, ant-s.ang, tight, sl calc-calc (tan), no fluor

5460-5470 50% sh - variegated, pred red-lavender - AA
30% sltstn - AA
20% ss - AA
Lot of slough in samples

5470-5480 10% sh - AA
60% ss - AA, some lt-m.gry, v.f-f.gr qtz, hard, tight, silic, calc, no fluor; most red ss w/some blk gr
30% sltstn - AA, silic, hard

5484 or 5485 Hand sample
90% ss - lt.gry S&P, f-v.f.gr qtz, ang-s.ang, hard, tight, calc, no fluor or stain
10% ss - red - AA, tr red-lavender sh & sltstn

5480-5490 10% sh - AA
90% ss - red brn-red tan - AA (20% lt.gry), no fluor
Tr sltstn - AA

5490-5500 30% ss - AA
70% sh - AA, pred chocolate brn, blky, silty-sdy in part, sl.calc-calc
Carry SP gry-blk sh, some brick red sh, slough

5500-5510 70% sh - chocolate brn-red brn, blky, calc, silty in part, occ wh calcite healed frac
30% ss-sltstn - AA, SP gry ss - AA

5510-5520 100% sh - more red brn - AA, spotty calc
Tr ss - AA

5520-5530 30% sltstn - v.f.gr ss - lt.gry S&P, v.f.gr, silic, hard, tight, calc-dolo, some w/grn tint, no fluor
70% sh - AA, silty-sdy in part

5530-5540 40% sh - becoming more silty
20% sltstn - red brn-brn, arg, sl.calc, tight
40% ss - red brn-brn, v.f.gr, arg, calc, tight, firm, no fluor or stain

5540-5550 30% sltstn - lt.gry, sdy, lt.gry-grn tight, sl.calc-silic, firm, hard-friable, tr red sltstn - AA
Tr gry grn silty sh
70% sh - red brn - AA

5550-5560 80% sh - red brn - AA, silty in part
10% ss - lt.gry grn, sl S&P, v.f.gr, tight, silty, dolo, no fluor
10% sh - arg, dolo, gry.grn, cryptoxln, blky, dse, silty in part
Tr anhy - wh-lt.gry, xln-f.gran

5560-5570 90% sh - AA, silty-sdy in part, non calc-calc
10% ss - pred lt.gry S&P, v.f.gr, tight AA, red arg
Tr grn blky sh
Some wh calcite & SP wh anhy & anhy incl

5570-5580 70% sh - red brn, more silty-sdy
30% ss - pred red brn, arg, tight, v.f-f.gr, no shows; tr calcite filled fracs, SP gry ss - AA
SP anhy - clear gypsum (selenite)

5580-5600 80% sh - AA, non calc-calc
20% ss - AA, SP gry - AA
Occ piece anhy & calcite AA; some sh w/ang-rdd incl of anhy, some wh calcite healed fractures

5600-5620 100% sh - variegated red-brick red-red brn - AA, tr gry blky, firm, smooth, 10-20% lavender, sl silty in part

5620-5640 10% sltstn - red, arg, tight
90% sh - AA, some anhy, no stain, poros, or fluor
Tr anhy - AA
5630-40 - sh more silty, v.f.sdy; SP anhy, wh, xln-gran incl & in fractures; decr lavender sh

5640-5660 40% ss - lt.gry-wh, v.f-f.gr, ang-s.ang, tight, firm, hard, calc; red, arg, calc, tight (color varies between), no fluor or stain, some anhy
60% sh - red AA, tr grn, 10% lavender, pred brick red-red brn, smooth-f.velvety-earthy, blky, firm, calc-non.calc, tr anhy - AA
Some wh calcite frac fill & lining
5650-60 - some "trip trash", trip @ 5656'

5660-5670 60% ss - pred red brn-red tan, v.f-f.gr, silty, arg, calc, tight, no fluor or stain, tr m-crse gr, decr lt.gry ss
10% sh - AA
30% sltstn - red-red brn, arg, calc, tight
Note: A lot of red-brn-blk pipe scale last two samples, tr pipe dope fluor (contamination)

5670-5680 60% ss - AA
20% sltstn - AA
20% sh - red brn-red - AA

5680-5690 90% sh - brick red-pred red brn, blky-smooth-v.f.velvety, calc-sl.calc
10% ss - AA
Tr sltstn - AA
Tr anhy - wh-pin, xln, firm

5690-5700 80% sh - AA, silty-sdy in part, no fluor
20% ss-sltstn - AA, no fluor
SP anhy-calcite - AA, incl & frac fill

5700-5710 40% ss-sltstn - red brn-brn, v.f.gr, tight, calc, arg ss grades to sltstn, tr wh calcite frac fill
60% sh - red brn-brick red-lavender, blky - AA
SP anhy - wh, xln

5710-5720 70% ss-sltstn - AA, no fluor or stain
30% sh - AA, silty, SP anhy, occ piece typsum

5720-5730 40% sh, incr chocolate brn, blky
60% ss - AA, more arg

5735 Hand sample - drilling better
90% sh - AA, silty-sdy in part
10% ss-sltstn - AA, pred pink-red, calc, tight, v.f.gr

5730-5740 10% sltstn-ss - AA, some blk gr concentrated in thin layer (ripple marks??)
90% sh - AA, pred brn
SP anhy, wh & orange, SP wh calcite

5740-5750 100% sh - AA, occ piece gry & grn smooth
Tr ss-sltstn - AA
SP anhy & occ calcite - AA
5750-60 - sh silty in part

5760-5770 10% sltstn - red, arg, tight, calc, tr v.f.gr ss, no fluor
90% sh - AA
Tr ss-sltstn - AA

5770-5780 30% sltstn, tr ss - red-red brn, arg-silic, hard, tight, calc, no fluor
70% sh - AA
Tr anhy - wh-pink, xln, occ piece gypsum

5780-5790 10% ss-sltstn - AA, SP lt.gry v.f-f.gr, tight, calc
90% sh - red brn - AA

5790-5800 20% ss-sltstn - red - AA, tr lt.gry-wh - AA, no fluor
80% sh - red - AA, occ piece grn - AA

5800-5810 20% ss - AA
50% sltstn - AA
30% sh - AA, more silty
SP anhy - AA

5810-5820 30% ss - AA, 2/3 lt.gry, f.gr, ang-s.ang, anhy, sl.calc-calc, tight, w.cmtd, no fluor
10% sltstn - AA
60% sh - red - AA
Tr anhy - AA

5820-5830 20% sltstn-ss - dk.gry-blk, v.f.gr-silt, firm, calc-dolo, no fluor
10% dolo - gry-brn.gry, f.microxln, dse, silty, grades to above
Tr anhy - wh, xln
20% sltstn - red - AA
50% sh - red, grades to siltstn
Note: Blk silt anhydritic w/anhy inclusions - appears to be carbonaceous (poss phosphatic), no fluor

5835 Hand sample - no incr gas, no fluor, no live oil stain
50% dolo - blk-dk.gry, hard, silic, carb, f.microxln, dse; some gry-gry.brn, f.microxln, dse, grades to sltstn & sh
40% sltstn - dk.gry-blk, hard, tight, dolo & anhy, micaceous
Tr sh - blk, blky-flky, smooth, dolo
10% sh - red - AA
Tr ss & sltstn - red - AA
Note: Only about 10% slough in sample. Lot of gummy tar like material in sample - no fluor but w/yellow cut which fades on drying. Pipe dope has pale yellow fluor. Has appearance of pipe dope, some copper flakes. Logger scraped shaker screen to get sample - checked screen - same material on end - build up of pipe dope which has become oxidized. No show, no poros, no fluor or cut from blk slt & dolo - is this carb material in rock or could it be phosphate. It has no oolites

5840-5850 Tr blk-dk.gry dolo & sltstn
50% sh - pred red brn, blky - AA, silty in part
10% ss - pred wh-lt.gry, f.gr, ang-s.ang qtz, calc-sl.calc, tight, firm, some red ss - AA, no fluor
40% sltstn - red-red brn, tight, firm-hard, calc

5850-5860 30% sh - red-brn - AA
10% sltstn - AA
60% ss - pred red, arg, calc; 10% lt.gry, v.f-m.gr, poorly sorted in part, hard, silic, sl.calc-firm, friable, tight, no fluor or stain
SP wh calcite

5860-5870 10% sh - red-brn - AA, occ piece gry blky
20% sltstn - rust red - AA
70% ss - red brn, v.f.gr, arg, calc, grades to sltstn; incr lt.gry-gry-wh AA, some v.silic, v.sl.calc, like chert orthoquartzitic hard (20%)
Tr anhy - wh-lt.gry, xln; occ piece selenite gypsum; occ piece blk dolo & sltstn as @ 5835'

5870-5890 20% sh - red-brn - AA
20% sltstn - AA
10% anhy - AA, dolo in part
50% ss - AA, 30% lt.gry-gry orthoquartzitic
5880 - incr anhy & anhy ss, tr dolo - lt.gry, f.microxln, dse, sdy, anhy

5890-5900 30% sh - red brn, pred brn, blky, smooth, sl.calc
20% sltstn - AA
10% anhy - AA, dolo
Tr dolo - AA, grades to dolo anhy
40% ss - AA, pred lt.gry-wh gry - AA, tight, dolo, no fluor, anhy in part

5900-5920 10% dolo - gry-brn, f.micro-cryptoxln, dse, anhy in part
10% anhy - AA
20% sltstn - AA
30% sh - red-brn, blky, sl.calc-non calc, smooth, silty in part
50% ss - AA

5920-5950 20% sh - red brn - AA, more silty
40% sltstn - red brn (rust color), arg, sl.calc, tight
40% ss - AA, silty, v.f.gr, grades to sltstn; tr gry
Tr anhy & dolo - AA

5950-5970 50% sh - brick red, blky; pred chocolate brn, blky smooth, non-sl. calc, occ grn sh
Tr dolo - gry-blk-tan, xln, dse - AA
10% ss - red - AA, SP gry
40% sltstn - red-red brn
Tr anhy - wh, xln-f.gran; occ piece gypsum

5970-5980 30% dolo - gry, cryptoxln, anhy, dse; tr gry grn dolo sh; tr anhy - AA as incl & frac fill
20% sh - red - AA
40% sltstn - AA, red
10% ss - AA, some lt.gry v.f-f.gr, tight, anhy-calc

5980-5990 20% dolo - AA
40% sh - red - AA
30% sltstn - AA
10% ss - AA
Tr anhy - AA

5990-6010 10% dolo - tan-gry, cryptoxln, dse
30% sh - red brn - AA
20% ss - pred red, arg, tight, v.f.gr
40% sltstn - AA
Tr anhy - AA

6010-6030 20% sh - chocolate brn, smooth blky, some brick red
Tr dolo - AA
20% ss - AA
60% sltstn - AA
6020 - SP gry-grn blky smooth sl dolo sh

6030-6040 80% dolo - lt.gry-tan, f.microxln-cryptoxln, dse w/tr sl-med microvug poros, no fluor or stain; some f.sdy in part
10% sh - red - AA
10% sltstn - ss - AA
SP anhy - AA
Top Thaynes - 6037'

6040-6060 90% dolo - AA, tr sl-m. microvug poros, no stain or fluor (fair poros) should give up fluid
Tr anhy - wh, x.n, dse; tr wh calcite, xln
10% sltstn-ss-sh - red-brn - AA (slough)
6050-60 - Tr ss - gry, firm, v.f.gr, dolo, tight, grades to tr gry sdy dolo; leached foss & tr sl-m microvug poros, no stain

6060-6070 60% sltstn - ss - lt.gry-gry, v.f.gr, ang-s.ang, dolo-silic, grades to sltstn, no fluor or stain
20% sh-sltstn - red-red brn (slough)
20% dolo - AA, some dk.gry, silty, SP microvug poros AA
Sample caught before trip @ 6068'

6070-6080 80% ss-sltstn - AA, pred m.gry, v.f-silt gr, hard, silic, sl dolo, some tan gr (clay?); some dk.gry gr, no fluor or stain or poros
20% sh - red-brn - AA, calc in part, slough
Tr ss - AA - "trip trash"

6080-6090 90% ss-sltstn - AA, tight, no fluor or stain
10% sh-ss - red - AA, slough
Tr ls - gry-lt.gry, f.micro-cryptoxln, dse, sl silty in part, no fluor or stain

6090-6100 10% ls - AA
10% dolo - gry, dse, silty-v.f.sdy, grades to ss-sltstn
80% ss-sltstn - AA
Tr sh-ss-sltstn - red-red brn, slough

6100-6110 30% ls - AA & some v.f.silty-sdy, grades to calc ss
70% ss-sltstn - pred gry, tight, hard, silic, dolo - becoming more calc, grades to sdy ls, no fluor
Samples carry tr of slough

6110-6120 30% ss - gry - AA
70% ls - pred dk.gry, microxln, arg, dse, gry-wh-brn mottled f.micro-cryptoxln, dse; fragmental in part, arg in part, sdy in part, chalky in part, no fluor or stain

6120-6140 30% ls - AA
40% sltstn - gry, v.f.gr, silic, tight, hard, dolo-calc
30% dolo - gry-brn, sdy-f.microxln, dse
6130-40 - more calc

6140-6150 40% ls - AA
60% sltstn - AA, tight, hard, silic, calc-dolo
Samples still carrying tr ss-sh "red beds" slough

6150-6160 60% ls - lt-m.gry, f.micro-cryptoxln, dse, grades in part to sdy-silty ls
40% sltstn - gry, v.f.-slt.gr, tight, hard, silic, calc, no fluor

6160-6170 70% sltstn - v.f.gr ss - AA, no fluor or stain
30% ls - AA

6170-6180 20% sh - m.gry, flky-blky-splint, smooth, sl.calc, grades to gry arg ls
Tr dolo - gry-brn, f.microxln, dse
80% ls - AA, some gry, arg, dse & w/sh spots, grades to calc sh
Tr sltstn - AA & carried slough

6180-6190 10% sh - gry - AA
30% sltstn - gry, tight w/cmtd, calc - AA
60% ls - AA

6190-6200 40% sh - gry - AA
20% sltstn - AA
40% ls - AA
No shows; tr dolo - gry, silty; tr carried slough

6200-6210 10% sh - gry - AA
10% dolo - gry, silty, dse, arg in part
40% ls - AA
40% sltstn - gry, tight, dolo-calc

6210-6220 80% ls - lt.gry-buff, chalky; gry f.micro-cryptoxln, dse; m-dk.gry arg, silty
10% sltstn - AA
10% dolo - AA, silty, more calc
Tr sh - gry - AA

6220-6230 20% sltstn - AA, hard, silic, tight
20% dolo - gry, arg, dse
60% ls - AA, no fluor
Tr sh - gry, blky, dolo; tr sh-sltstn - red carried slough

6230-6270 100% ls - lt.gry chalky; gry-tan-gry-brn mottled f.micro-cryptoxln, dse, some fragmental, no fluor
Tr red-gry sh & dolo & sltstn
6250-60 - tr gry dse f.microxln-microgran arg dolo & dk.gry-brn f.microxln dse dolo ls

6230-6270 Cont
6260-70 - tr f.microvug poros, no stain or fluor; tr secondary calcite crystals

6270-6280 20% dolo - gry-gry.brn, f.microxln-v.f.microgran, dse, arg-silty
80% ls - buff-gry mottled, f.micro-cryptoxln, some gry-brn dse, chalky in part, dolo in part
Note: Most samples carry tr-10% red-red brn sh & sltstn (uphole slough)

6280-6290 20% dolo - AA, calc in part, grades to dolo ls
80% ls - incr gry, f.microxln, dse, dolo ls

6290-6300 70% ls - AA, incr gry, dolo ls, silty, may grade in part to dolo sltstn, tr v.f. pyrite xls
20% dolo - gry, silty, dse, calc
10% sltstn - gry, tight, dolo, silic, grades to dolo & dolo ls
Sample carrying about 20% redbeds

6300-6320 20% ls - AA
20% dolo - AA, silty-arg, dse
60% sltstn - gry, tight, calc-dolo, v.f.gr, silic in part, w/rather grn gry tint

6320-6330 40% ls - AA, silty-arg, dse in part
20% dolo - pred silty, gry, firm
40% sltstn - AA
Tr red sh - AA (slough)

6330-6340 60% ls - gry-gry.brn, f.micro-cryptoxln, incr some buff chalky & silty, arg - AA, some dolo, no fluor
Tr dolo - AA
40% sltstn - AA
Occ pipe dope fluor

6340-6350 40% ls - AA, grades in part to sltstn
60% sltstn - pred gry, tight, w.cmtd, calc
Tr dolo - AA; tr red beds slough

6350-6360 60% ls - AA, gry, silty, dolo in part
40% sltstn - AA
Tr dolo - gry, arg, silty, calc, grades to dolo ls

6360-6380 50% ls - AA, less dolo, grades to sltstn
50% sltstn - AA, more calc

6380-6400 60% ls - pred gry-grnish gry, silty, dolo, grades to sltstn
40% sltstn - AA, tight, no fluor or stain
Tr dolo - gry, silty, calc

Note: Section pred silty carbonates to calc-dolo siltstone; arg in general with no shows or porosity - very difficult to differentiate siltstone to silty dolomitic limestone

6400-6410 40% ls - gry-gry.tan, f.microxln, dse, arg in part, grades to gry v.calc sh
20% sltstn - gry, calc, tight
40% sh - gry w/grnish tint, blky, dolo, silty in part

6410-6420 80% ls - incr wh-gry-tan mottled cryptoxln-chalky, dse; gry-brn.gry f.microxln-cryptoxln, arg-v.arg in part
20% sh - AA
Tr sltstn - AA

6420-6430 40% sh - m.gry, flky-blky, silty in part, calc-dolo
60% ls - AA, grades in part to calc sh; some w/v.cull min(?) fluor in wh calcite-ls, no cut

6430-6440 60% sh - gry, flky-sl.splint, smooth-v.v.f.velvety, sl.calc, some w/fine ls frags
40% ls - AA

6440-6450 50% sh - AA, more calc
10% dolo - gry, f.xln, arg, dse, may be sl.calc sh
40% ls - AA

6450-6470 60% ls - pred gry, arg-dse, silty in part (20% lt-gry-wh, clean)
30% dolo-ls - gry, arg, dse, silty in part, grades to ls
10% sh - AA; tr red beds slough
6660 - incr gry, arg, f.microxln dse dolo, grades to sh & dolo ls

6470-6480 60% ls - AA
10% dolo - brn, f.microxln; gry, arg
Tr sh - brn, blky-flky, smooth, sl.calc
10% sh - gry - AA
30% dolo ls - AA
Samples carry 10% sh - red - AA, slough

6480-6490 30% sh - brn, smooth, blky, sl.calc
30% ls - AA
30% dolo ls - AA
10% sh - gry - AA
Tr dolo - AA

6490-6500 20% sh - brn - AA
50% ls - AA
20% dolo ls - AA
10% sh - gry-grn.gry - AA

6500-6510 60% sh - gry-gry.brn, blky-flky, smooth-v.f.velvety, dolo, calc, silty in part, firm, grades to arg ls
30% ls - AA
10% sltstn - gry-grn.gry, tight, calc, arg, grades to sh

6510-6520 30% ls - gry-wh mottled, f.microxln; lt.gry silty; gry, arg, grades to calc sh & sltstn
10% sltstn - gry, firm, tight, calc
60% sh - gry-brn.gry, some w/grn tint, dolo, some calc, flky-blky, firm, smooth-f.velvety

6520-6550 10% ls - AA
20% sltstn - AA, sl-v.arg
70% sh - AA
Most samples carry tr-10% red beds slough

Note: Limestone-siltstone-shale gradational from one to another - thin bedded; probably more argillaceous shaley-more silty to more calcareous. Some pieces rounded (slough). Most of shale very active in acid when crushed.

6550-6570 30% ls - AA
20% sltstn - AA, more calc
50% sh - AA, more calc

6570-6590 40% ls - AA & m.dk.gry, f.xln, silty, dse
30% sltstn - AA, has grn tint to gry calc
30% sh - AA, pred calc

6590-6600 20% ls - AA
40% sltstn - gry, v.f.gr, tight, calc, grades to silty sh
40% sh - gry w/grn tint, blky-flky, lot of rounding

6600-6610 40% ls - pred gry.brn, f.microxln, dse; wh-buff chalky-f.microxln, dse
10% sltstn - AA
50% sh - AA, sl more calc

6610-6630 20% ls - AA, some w/ang gry sh incl
30% sltstn - gry-grn.gry, tight, arg, calc, grades to ls & sh
50% sh - gry-grnish gry, blky, calc, pred silty, grades to sltstn, firm-brittle

6630-6640 70% ls - AA, incr lt.gry, soft, chalky
10% sltstn - AA
20% sh - AA

6640-6650 90% ls - AA
10% sh - gry - AA
Tr sltstn - AA
Samples carry tr red-lavender uphole shales (slough)

6650-6660 40% ls - pred gry-brn.gry, f.microxln, dse, arg in part, wh calcite-chalky, no poros
60% sh - gry-grnish gry, blky-flky, smooth, calc
Tr brick red sh slough

Trip @ 6659'

6660-6670 50% ls - AA
50% sh - gry-grnish gry, blky-flky, calc, may be dolo in part, silty in part, grades to arg sltstn
Incr brick red sh, smooth blky-earthy, calc (after trip trash 10-20%)
Tr sltstn - AA

6670-6680 20% ls - AA
20% sltstn - gry-grnish gry, tight, calc, grades to silty sh
60% sh - AA

6680-6690 40% ls - AA, arg in part
20% sltstn - AA
40% sh - gry - AA
20% red bed slough

6690-6700 70% ls - buff-brn-gry mottled, f.microxln, dse; lt.gry chalky in part, silty in part, no show
30% sh - gry - AA
Tr sltstn - AA

6700-6710 40% gry-brn ls, f.microxln, dse, arg & silty in part
30% dolo - gry, arg, dse
30% sh - gry, blky-flky, calc-dolo

Note: Trip to change stabilizers @ 6702' - lot of slough in samples - up to 20% red sh, red ss

6710-6720 70% ls - pred gry-brn, f.microxln, dse; tr wh calcite; lt.gry chalky in part, occ frac edge, no fluor or stain
20% dolo - gry, arg, dse, grades to dolo ls
10% sh - gry - AA
Decr red beds to tr

6720-6730 80% ls - AA, incr lt.gry f.microxln-chalky
20% dolo - gry, arg - AA
Tr sh - gry & red - AA

6730-6750 60% sltstn - gry, tight, v.dolo-sl.calc, no fluor
20% ls - AA
20% dolo - AA & gry silty, grades to sltstn
6740 - becoming more arg & calc

6750-6760 50% ls - gry-brn, f.microxln, dse, silty-arg in part
30% sltstn - AA
20% sh - gry - AA
After trip sample - 20% of sample red beds slough

6760-6770 70% ls - AA, becoming more lt.gry chalky silty
20% dolo - m.dk.gry, silty-arg, dse
10% sltstn - AA
Decr in slough (10%)

6770-6780 70% ls - pred lt.gry, f.microxln-chalky, silty, grades to calc sltstn, some gry-brn, f.micro-cryptoxln, dse, firm
20% dolo - gry-m.dk.gry, f.microxln, dse, silty
10% sltstn - gry, tight, calc-v.calc, grades to silty ls
Tr sh - gry & red - AA

6780-6790 40% sltstn - gry-dk.gry, calc-v.calc - AA
20% dolo - gry-dk.gry, silty, dse, arg in part
40% ls - AA
Tr sh - AA

6790-6800 60% ls - lt.gry, chalky, silty, arg; gry-brn, f.microxln, dse, no poros or fluor or stain; some w/mica flake incl
30% dolo - gry, f.microxln-arg, calc, silty, dse, grades to ls & sltstn
10% sltstn - AA

6800-6810 40% ls - AA, becoming more silty
20% dolo - AA
40% sltstn - m-m.dk.gry, tight, w.cmtd, firm, calc, grades to silty ls

6810-6840 40% ls - pred gry-brn, f.crypto-microxln, dse, silty-v.silty, firm-hard, no fluor or poros
60% sltstn - AA, dolo in part
Tr dolo - AA
Samples carry tr-10% red bed slough
6820 - becoming more dark, arg sltstn to silty dolo ls
6830 - some dk.gry-blk f.microxln arg-carb(?) dse & dk.brn dse

Note: Brown-dark gray v.calc siltstone grades to silty limestone. Interbedded limestone and siltstone, dense, tight, no fluorescence but occ pipe dope fluor. No stain or show. Extremely difficult to describe - grades from limestone-dolomitic limestone-siltstone, some healed fractures

6840-6850 60% ls - pred silty-v.silty, dse, incr dk.gry-blk, some wh calcite healed fracs & edges
40% sltstn - AA
Tr sh - gry-gry.grn rdd & red beds (slough)

6850-6860 70% ls - incr dk.gry-blk, f.microxln-microgran, arg, silty, dolo, carb in part, dse, no fluor, stain or cut
30% sltstn - more calc
Tr dolo - AA; 10-15% red beds
After trip sample

Note: This is probably what is described as the "black lime" section - some may have very very slight intergranular porosity. Cut several times w/very slight residual porosity, no ring or fluorescence. May be contamination from dish or trichlorethane, no gas.

6860-6870 90% ls - pred dk.gry-blk - AA, pred silty
10% sltstn - AA, grades to ls
Tr dolo & red beds (10%) slough - AA

6870-6900 100% ls - dk.gry-blk-dk.brn, f.microxln-f.microgran, arg-silty, carb in part; some lt.gry chalky, pred dse, firm, no fluor or cut, tr healed fractures
Tr dolo & sltstn - AA, may be more calc sltstn as considerable residue after acid

6900-6950 100% ls - dk.gry-blk-gry.brn, f.microxln-v.f.microgran, dse, pred arg-carb, silty in part, sl.mica; tr lt.gry soft-firm, arg, chalky, no fluor
SP wh-clear xln calcite (frac fill), tr healed fractures
6910-20 - some dk.gry-blk velvety calc flky-blky sh
6920-30 - incr gry-brn f.microxln, sl.chalky
Samples w/SP wh-clear calcite & calcite healed fractures w/occ min fluor & pipe dope fluor. Samples carry SP red beds (uphole slough)

6950-6970 90% ls - AA
10% sh - dk.gry-blk, calc, grades to arg ls as ptgs in ls. Incr red sh-brick red smooth-earthy, silty in part, calc in part (slough) - after trip sample - 6957' - new bit diamond bit
6960 - less arg & silty, decr red beds

6970-7020 100% ls - AA, incr tan gry-gry.brn, soft, chalky, decr dk.gry-blk; pred m.gry f.microxln-chalky, soft-firm, tr calcite - AA
SP red & gry sh - AA
6980 - decr chalky - pred m.dk-m.gry-gry.brn, f.microxln arg ls, incr red beds slough
7000 - pred arg-silty, some v.f. healed (wh calcite) fractures

7020-7030 90% ls - AA
10% sh - m-m.dk.gry, flky-blky, smooth-f.velvety, calc, grades to shly ls

7030-7040 20% sh - AA, tr red sh - AA
80% ls - AA

7040-7050 100% ls - AA, some gry.brn cryptoxln, frag, no fluor, stain or poros; pred v.arg, grades to calc sh
Tr sh - gry & redbeds (10%) - AA

7050-7060 10% sh - gry.brn-olive grn, blky-flky, v.smooth, non-sl.calc
15% sh - red, smooth, blky-earthy, silty in part
Tr sh - gry - AA
75% ls - AA, pred gry, v.arg, dse
Top Woodside - Redbeds - 7050'

7060-7070 30% sh - gry.brn, smooth - AA, v.fragile, breaks down
Tr sh-red beds - AA
70% ls - AA, some calcite AA

7070-7080 40% sh - red brn-brick, blky-smooth-earthy, silty, some gry.brn - AA, non-sl.calc
60% ls - AA
Tr sltstn - red, arg, tight

7080-7090 60% sh - red-lavender - AA, some sdy, tight, no fluor
40% ls - AA

7090-7100 70% sh - red - AA
10% sltstn - red, arg
20% ls - AA
Tr dolo - lt.gry, f.microxln, dse

7100-7130 60% sh - red-lavender AA w/dolo incl in part, sdy-silty in part
20% sltstn - AA, pred red, arg, tight
20% ls - gry-dk.gry, arg in part, no fluor or stain, some lt.gry-buff, xln calcite, some w/pyrite
SP wh-red f-m.gr dolo ss; SP pink-wh xln anhy

7130-7150 30% ls - pred dk.gry-gry.brn, f.microxln-dse-arg, silty in part
10% sltstn - AA
60% sh - red-lavender - AA
Tr dolo - gry-dk.gry, f.gran-xln, dse, arg-silty
7140-50 - incr gry-wh-brn mottled f.micro-cryptoxln dse ls, no fluor or stain

7150-7160 70% ls - pred gry-wh mottled - AA, chalky in part
10% sltstn - red, arg, tight
20% sh - red - AA
Tr dolo - AA, some gry, f.microxln, dse

7160-7170 80% ls - AA, some wh calcite frac fill, occ glauc incl
20% sh - red - AA
Tr sltstn - AA

7170-7180 70% ls - AA
30% sh - red-lavender - AA, tr sltstn
Tr dolo - AA, some gry.grn, arg, dse

7180-7190 80% ls - AA, 10% blk arg ls (slough), tr secondary xls, SP f.vug poros
20% sh - AA
Tr dolo - AA

7190-7200 100% ls - pred lt.gry-gry-dk.gry mottled, f.micro-cryptoxln-chalky, tr f.vug (secondary calcite xls may be related to frac), no fluor or stain
Tr red sh & gry-gry.grn dolo - AA

7200-7210 20% sltstn - lt-m.gry, tight, calc, grades to silty ls
70% ls - AA, incr m.gry silty, firm dse
10% sh - red - AA

7210-7220 40% sltstn - AA
40% ls - pred silty, grades to sltstn, some dolo ls
20% sh - red - AA

7220-7230 30% ls - AA Poor sample
10% sltstn - gry
20% sltstn - red, arg, tight, grades to silty sh
30% sh - red-lavender - AA
Tr wh xln anhy

7230-7250 30% sh - red - AA
Tr sltstn - red & anhy - AA
30% sltstn - gry- AA, dolo & calc
40% ls - AA
Tr dolo - gry, silty, dse

7250-7260 50% dolo - lt.gry-gry.tan, f.micro-cryptoxln, dse, calc in part, has v.dull weak min fluor, no stain
20% ls - AA, xln in part
30% sh - red, smooth-blky, silty in part
Tr wh-pink xln anhy & sltstn - AA

7260-7270 40% dolo - AA, some silty-arg, dse, tr min fluor
10% ls - gry, arg, dse - AA, occ piece chalky w/dull blue fluor w/weak colorless cut, no color to ring
20% sltstn - brick red, arg, tight
30% sh - brick red
Tr ss - brn, v.f.arg, tight, sl.calc, no fluor

7270-7280 10% ls - gry, f.microxln, arg, dse
20% dolo - AA, pred silty, grades to sltstn
20% sltstn - red - AA, sdy in part; tr gry, tight, dolo sltstn
50% sh - red-lavender, AA, some pipe dope fluor

7280-7290 30% sltstn - gry, v.tight, w.cmtd, firm, dolo, calc in part
20% sltstn - red, arg - AA
50% sh - brick red-brn-lavender, blky-non-sl.calc
Tr dolo & ls - AA; tr wh-pink xln anhy
Tr red-gry tight, f.gr calc-dolo ss

7290-7300 20% sltstn - gry - AA
20% sltstn - red - AA
10% dolo - gry, dse, silty, arg in part
50% sh - red - AA; some gry sh & arg dolo (slough)

Note: Samples fair to poor - lot of mixing, slough. Pred red beds, some gry dolo siltstones. Mud pits have black oily looking foam covering 1/4 of surface. Checked in blender w/gas detector - no gas; some dull yellow fluor. No apparent crude oil odor. Been building up over past several days. No trip gas - think it is from make up water from reserve pit which is covered by drained & leakage oil from the rig (contamination)

7300-7330 30% sltstn - red - AA, non-sl.calc; 10% sl5s5n - gry - AA
10% sh - gry, blky-smooth, sl.calc, firm
Tr dolo & ls - AA, SP red, arg, dse ls
50% sh - red & purpls - AA, non-sl.calc, grades to red sltstn in part
Tr ss - lt.gry-red, f.gr, tight, calc, some crse s.rdd-rdd qtz gr w/tr red sltstn matrix, some med gr clusters

7330-7350 20% sh - gry, blky, smooth, dolo, silty in part, grades to sltstn
Tr sltstn - gry - AA
10% dolo - gry, arg, silty, grades to silty sh-sltstn
20% sltstn - red - AA
50% sh - red
Tr ls - AA; SP anhy - lt.gry-wh, xln

7350-7360 20% sltstn - red, arg, tight, sl.calc-calc, sdy in part, grades to silty red sh & red arg silty calc ss
10% sltstn - gry, tight, calc-dolo
10% ls - gry-lt.gry mottled, arg in part, dse
Tr sh - gry, sl.calc, blky smooth, tr wh calcite, no show
Tr dolo - AA
60% sh - pred brick red, blky-smooth earthy-silty-sdy in part
Much "trip trash"

7360-7370 10% sh - red - AA
20% sltstn - red - AA
40% sltstn - gry, tight, hard, dolo, grades to silty dolo
20% ls - AA
10% dolo - gry, dse, silty, grades to sltstn

7370-7380 20% dolo - gry, blky, arg-silty, grades to gry arg blky dolo sh
10% sltstn - gry, arg, dolo, tight
70% ls - buff, chalky, gry-gry.brn, f.micro-cryptoxln, dse, tr frac edges & wh calcite frac fill, tr v.dull min fluor, no cut, no stain
SP red sh, sltstn - AA

7380-7430 10% dolo - AA, occ w/pyrite incl, dse
90% ls - AA, more lt.gry, cahlky-f.microxln, dse; some secondary xls along edge, tr frac poros, no stain or fluor
Tr sltstn-ss - silty-sdy dolo, tight
7390 - becoming more f.micro-cryptoxln, dse, less chalky, tr edge poros, tr wh calcite

7430-7450 40% sh - gry, blky-flky, smooth-v.f.velvety, sl.calc dolo, firm-hard
50% ls - AA, much wh calcite
10% dolo - gry, dse, arg, grades to dolo sh

7450-7460 20% sh - gry, v.smooth, blky - AA, some w/v.f. pyrite
10% dolo - AA
70% ls - AA, incr lt.gry-buff chalky, tr foss (bryz?)

7460-7470 30% sh - gry - AA
10% dolo - pred m.dk-dk.gry, arg, grades to sh
60% ls - AA

7470-7480 40% sh - AA, carry tr red sh (slough)
60% ls - AA, more arg in part, dse, no fluor
Tr dolo - AA

7480-7500 60% sh - gry-m.dk.gry, smooth-v.f.velvety, blky-flky, sl.calc-calc, firm-brittle
40% ls - lt.gry-wh, xl calcite; gry-gry.brn, f.microxln-chalky
Tr dolo - gry, arg, dse
7490 - sh becoming more calc-dolo

7500-7510 70% sh - pred m.dk.gry, blky-smooth-f.velvety, calc
30% ls - AA, 1 pc xl cluster milky calcite - frac fill, no fluor, occ wh calcite healed frac & edge

7510-7550 80% sh - AA, dk.gry-blk; some sh w/brnish tint, some v.f pyrite disseminated through sh, sh grades in part to arg ls
20% ls - AA
Tr dolo - AA; samples carry tr red beds uphole slough

7550-7560 90% sh - dk.gry-blk, blky-flky, firm, smooth-v.f.velvety, sl.calc (dolo?)-calc, grades in part to arg ls
10% ls - buff-gry, chalky-f.microxln, dse, arg in part
Tr pyrite in ls & sh - AA; 1 piece milky translucent chert

7560-7570 20% ls - AA
80% sh - gry-blk - AA; some healed (wh calcite) fracs & calcite lined frac edges

7570-7580 10% ls - AA
90% sh - AA, more blk (carb?)

7580-7610 20% ls - some blk, dse, firm carb(?), arg, no shows
80% sh - AA, more blk, pred sl-v.calc, grades in part to arg ls - AA (2/3 blk)
7600 - incr blk arg (carb?) dse ls - SP w/calcite - AA

7610-7620 90% sh - pred blk, firm, blky-platey, ve.vety, calc-v.calc, grades to blk carb arg ls, silty in part
10% ls - AA

7620-7650 60% sh - pred blk - AA (Phosphates? - I do not think it is)
40% ls - AA, silty in part

7650-7670 40% sh - AA
60% ls - gry-gry.brn, f.microxln, dse; lt.gry chalky, arg in part, silty in part; ls laminated arg & silty

7670-7680 10% sh - AA
90% ls - AA, some m-dk.gry, hd, dolo, dse, arg in part

7680-7690 20% sh - AA, more calc in part, pred blk, blky
80% ls - AA, dolo in part, lt.gry-gry mottled, some dk.gry-blk, dse, arg-carb

7690-7700 30% sh - AA
70% ls - AA becoming more arg, silty, occ piece lt.gry translucent chert

7700-7720 20% sh - pred blk, blky, f.velvety, calc, firm
Tr sltstn - gry, hard, silic, tight, grades to silty ls
80% ls - AA, silty in part, dolo in part, no fluor, tr calcite healed fractures & frac fill
7210 - decr silty, incr wh calcite, pred gry-lt.gry-gry.brn, f.micro-cryptosln, sl chalky in part

7720-7740 100% ls - AA, some blk arg, no shows
Tr sh - AA - samples carry SP red-lavender sh & sltstn - uphole slough, some pipe dope fluor after trip @ 7737'

7740-7750 10% dolo - m.dk.gry, blky, arg, dse, f.microxln
10% sh - m.dk.gry, blky, calc-dolo, grades to dolo AA, tr blk sh - AA
80% ls - AA, some gry arg dse dolo ls, no fluor, tr clear-wh xln calcite frac fill? No stain or fluor. 1 piece sdy buff ls

7750-7770 100% ls - pred wh-lt.m.gry-gry.brn, chalky-f.micro-cryptoxln, dse, tr wh calcite, arg-silty in part, tr secondary calcite, tr frac poros, no stain or fluor
Tr sh - gry, calc, blky, firm-hard
7760 - about 1/2 gry, hard, silty-arg

7770-7780 90% ls - AA, no fluor
10% sh - gry, blky, smooth-v.f.velvety, sl.calc-calc, silty in part

7780-7800 90% sltstn - lt-m.gry, tight, silic, firm-hard, calc-dolo, sl S&P, no fluor or stain
Tr ss - gry, f.gr, silty, tight, calc
10% ls - AA, more silty
SP chert, lt.gry, translucent w/ls incl & m.gry pellets(?)

7800-7820 100% sltstn - AA, no fluor
Tr ls & sh - AA; tr wh calcite frac fill & edge on sltstn - AA, no fluor or stain
Tr sh - gry, blky, sl.calc
7310-20 - sltstn gry, arg in part

7820-7840 10% ls - wh-lt.gry, chalky, wh calcite, chalky is silty in part, may be bit flour
90% sltstn - lt-lt.m.gry, tight, firm-hard, silic, grades to v.f.gr ss, calc-sl.calc, no fluor or stain, lot of metal bit fragments
Note: Interbedded sltstn w/thin silty chalky ls, SP uphole red beds, SP gry f.microxln-dse, silty dolo

7840-7850 70% sltstn - AA (20% red-brn dolo, tight, hard)
20% dolo - reddish brn-m.brn, silty-arg, dse
10% sh - reddish brn, blky-flky, dolo

7850-7860 80% sh - rust red-red brn, blky, smooth-silty, sl.calc-calc
20% sltstn - AA
Tr ls - AA, slough
Tr dolo - AA

7860-7870 30% sltstn - gry - AA
20% sltstn - red brn, tight, arg
50% sh - red-brn - AA
Tr ls - AA; SP clear-wh gypsum

7870-7880 90% sltstn - lt.m.gry, tight, dolo, silic, firm-hard, wh calc, sdy
Tr sh - red - AA, slough
10% ss - wh-buff, v.f.gr, dolo, silty, tight

7880-7890 -0% gypsum - wh-clear, silty in part, sl calc
30% sltstn - AA
60% sh - red brn - AA, carry SP ls & dolo

7890-7900 10% sltstn - gry, dolo, tight - AA
10% sltstn - red brn, arg, tight
80% sh - red brn, blky, sl-non.calc, firm, gyps
SP ls - gry, cryptoxln, dse
Note: Tr gypsum as incl or frac fill

7900-7910 30% sltstn - red - AA, tight, dolo-arg, firm, anhy
70% sh - red brn - AA, much silty, anhy in part

7910-7920 80% sh - red - AA
20% sltstn - AA, tr wh gran anhy

7920-7930 20% sltstn - lt-m.gry, tight, hard, silic, calc, anhy
10% sltstn - red - AA
70% sh - red brn - AA

7930-7940 20% red beds - sh-sltstn "carry over"
30% dolo - gry tan, dse, silty, arg in part, no fluor
50% sltstn - gry, more dolo - AA, anhy in part

7940-7950 60% sltstn - v.f.gr ss - gry-grnish gry, tight, firm-hard-silic, dolo, anhy in part
20% sltstn - red-red brn, tight, arg, sl.calc or dolo, silic in part
10% sh - red, blky-firm, silty, sl dolo
10% dolo - tan-gry, f.microxln-silty, dse, hard, grades to dolo sltstn, SP wh xln dolo frac fill

7950-7970 60% sltstn - AA, dolo, silic, hard, no fluor or stain
10% sltstn - red - AA
10% sh - red - AA
20% dolo - AA, SP blk-gry rdd uphole shales

7970-7980 60% sltstn - v.f.gr ss - red, arg, tight, anhy in part, silic in part, sl.calc, tr calcite healed fracs
30% sh - red-red brn, blky, smooth-velvety, firm, pred silty, grades to sltstn
10% sltstn - gry - AA, SP wh calcite healed fractures, tr dolo - AA

7980-8000 40% sltstn - red - AA, lt.red soft, arg, anhy
60% sh - AA, tr clear-wh-pink xln anhy frac fill & incl in sh & sltstn
Tr sltstn - gry - AA; tr gry xln ls & sh (slough)

Note: Red Beds - red silty-sdy shale grades to red arg sltstn-v.f.gr ss; occ m.s.ang floating qtz gr, some blk dark gr in sltstn (winnowed)

8000-8020 60% sltstn-v.f.gr ss - red-red brn, arg, tight, grades to silty sh, tr mica, sl.calc, no fluor
40% sh - red brn, silty; brick red blky smooth-earthy, sl-non.calc, some wh calcite (sparry) frac fill & SP clear wh anhy - AA
SP sltstn - gry, dolo, silic, glassy

8020-8030 60% sh - red brick, blky-flky, smooth, silty in part, anhy in part
40% sltstn - AA, red, arg, tight, anhy
Occ piece gry f.micro-cryptoxln ls & sltstn slough; occ clear wh calcite

8030-8050 Tr sltstn - gry, blky, tight, silic, calc, no fluor or show
60% sltstn - red - AA
40% sh - red, grades to sltstn, dolo, firm
Tr anhy - wh-lt.gry-clear, xln

8050-8060 70% sltstn - AA, calc-dolo, some blk gr, some sdy
30% sh - red, silty, blky, some platey smooth
Tr sltstn - gry - AA, SP ls - AA, some anhy incl - AA

8060-8070 10% sltstn - gry, tight, silic-calc-dolo - AA
50% sltstn - red, tight, arg, dolo, firm-hd, sl silic in part, sdy in part
40% sh - brick red-brn.red, blky, smooth, sl dolo-silty dolo, some wh xln anhy incls in sltstn & sh
SP ls & wh calcite

8070-8100 70% sh - red - AA, much silty (trip @ 8072')
30% sltstn - AA
Tr sltstn - gry - AA; SP ls & calcite - AA, calcite prob as frac fill, some w/contact w/red sh; decr gry ls-sltstn (slough), SP anhy - wh-xln as incl & frac fill, sltstn anhy in part, no fluor or stain
8105 - hole in drill pipe - bottom hole sample essentially the same but bottoms up time questionable

8100-8110 100% sltstn - lt.gry-gry, tight, w.cmtd, firm-hard, silic, glassy in part, buff-anhy, dolo, firm-friable; grades to f ss; sltstn mica in part (muscovite & phlogopite - copper color), no fluor or stain
Tr dolo, ls, sh - AA (slough)

8110-8120 20% sltstn-ss - gry - AA
20% sltstn - red brn, tight, arg, dolo
60% sh - red brn, blky-platey, firm, sl dolo, silty in part, tr anhy
SP dolo - red-tan, f.microxln, dse, silty in part

8120-8130 20% sltstn - gry - AA
10% anhy - wh, gran-xln, calc in part
70% sh - AA, more brick red
Tr dolo & red sltstn - AA

8130-8140 90% sh - AA, anhy in part
10% anhy - AA
Tr sltstn - red & gry - AA

8140-8160 90% sh - red - AA, some anhy frac fill or lams
10% sltstn - red, tight, arg, anhy, sdy in part
Samples carry tr gry sltstn, SP dolo, etc - AA, occ piece wh calcite, some blk-dk.blue metallic gr (galena?)
8150 - incr anhy - wh-clear, gran, xln as frac fill and lams, also prob incl (10% of sample); sh - non-sl.dolo, silty-sdy in part, carry tr uphole slough

8160-8170 20% sltstn - red, arg - AA
80% sh - brick red, blky, smooth-earthy, sl calc & silty in part
Samples carry 10% anhy, as frac fill, incl & lams

8170-8180 90% sh - red - AA
10% anhy - AA, think as incl, lams & frac fill

8180-8200 10% sltstn - ss - red, arg, tight, some bdd w/blk gr
90% sh - red - AA
8190 - incr anhy, carry tr tan-gry sltstn-calcite (uphole slough)

8200-8210 100% sh - red - AA, silty in part
Tr+ gyp-anhy, wh gran-clear xln as frac fill & incl; tr red arg sh; SP ls, dolo & gry sltstn

8210-8220 70% sh - red - AA
20% anhy-gypsum - AA
10% sltstn - red-brn, tight, dolo, arg - AA, no shows

8220-8230 10% dolo - tan-brn, f.microxln, sl sucr, sl arg, dse, silty in part, grades to sltstn
10% sltstn - AA
20% anhy-gypsum - AA
60% sh - red - AA

8230-8240 20% sltstn - red, tight, arg - AA
10% anhy-gyp - AA
Tr dolo - AA
70% sh - red - AA
Trip sample - lot of pipe dope fluor

8240-8250 60% sltstn - red-brn-brick red, arg, tight, anhy, grades to silty sh, dolo in part, no fluor or stain
40% sh - red - AA, silty in part
Tr anhy, ls, occ clear calcite xls - AA

8250-8270 40% sltstn-ss - red-brn, v.f.gr ss, - AA, firm-hard, sl silic, dolo, tight
60% sh - AA w/some anhy incl
Tr anhy - AA

8270-8290 10% sltstn - red - AA, anhy, dolo
90% sh - red, anhy, sl-non dolo - AA
Tr anhy - AA
8280 - sh sl more silty

8290-8310 20% sltstn - AA
70% sh - red - AA
10% anhy & gyp - wh-clear xln

8310-8350 90% sh - brn.red-brick red, blky, smooth-f.velvety, sl dolo, silty in part, grades to sltstn
10% sltstn-f.ss - red-brn.red, arg, tight, dolo in part
Tr anhy - wh-clear gran-xln, as vein, partings, incl

8350-8370 80% sh - pred brick red, blky, smooth-f.velvety, silty-f.sdy in part, anhy in part, some blk gr
20% sltstn - AA, grades to sh, silty ss, no fluor
Tr anhy, occ piece ls - AA
8360 - some incr anhy

8370-8380 60% sltstn-ss - AA, tight, no fluor or stain
40% sh - AA
Tr anhy, SP gypsum, tr ls & uphole types
Lot of pipe dope fluor, after trip sample

8380-8390 30% sltstn - red, tight, arg-anhy
70% sh - red - AA
Tr anhy - AA

8390-8400 20% sltstn - AA
20% anhy-gyp - AA
60% sh - AA

8400-8410 20% sltstn - pred red, firm-hard, arg, tight, silic in part, sl calc grades to silty sh, no fluor
20% anhy - wh-clear, xln-gran, some pink f.gran
60% sh - red - AA
Tr wh calcite & gry dse f.xln ls

8410-8420 30% anhy - AA, occ w/some red sh incl
10% sltstn - AA
60% sh - AA
Tr calcite & ls - AA

8420-8430 40% anhy - AA
10% sltstn - AA
50% sh - AA
Tr ls - AA, slough

8430-8450 20% anhy - AA
20% sltstn - think as thin partings & bands in sh
60% sh - red - AA, some v.anhy
Tr ls - gry, f.microxln, dse, firm, no fluor - as thin partings

8450-8460 30% anhy - AA, some blk metallic flecks
10% sltstn - AA
60% sh - AA
Tr ls - AA

8460-8470 50% anhy - wh-lt.gry-clear, xln-gran w/some gry-blk metallic (adamantine) flecks & flakes
Tr sltstn - AA, grades to silty sh
50% sh - brick red-brn.red, blky, smooth-v.f.velvety-earthy, silty in part, non-sl.calc
Tr ls - gry, f.microxln, dse, as nodules in anhy??
Tr wh calcite - frac fill or incl

8470-8490 60% anhy - AA, wh-clear-red arg
40% sh - AA, some v.firm
Tr sltstn & SP ls - AA
Some thin sltstn partings & bands

8490-8510 10% anhy - AA
Tr sltstn - AA
90% sh - pred brick red-brn.red, blky, smooth, silty in part, firm-v.firm, non-sl.calc

8510-8520 40% dolo - grnish gry, f.micro-cryptoxln, dse, arg in part, anhy, no fluor or stain
Much unconsolidated sd - crse, s.ang-rdd, frosted qtz gr
60% sh - red - AA
Tr anhy & sltstn, SP ls - AA

8520-8530 30% dolo - AA, some tan-buff, f.micro-cryptoxln, dse, no fluor or stain
70% sh - red-brn.red, blky, smooth-f.velvety, dolo in part, silty in part
Tr anhy - AA

8530-8540 70% solo - incr tan-buff, red arg, grades to dolo sh
30% sh - red - AA
Tr anhy - AA

8540-8550 80% dolo - AA, tr v.dull min fluor, no cut
20% sh - red - AA
SP anhy, ls & calcite, dolo-ls - dk.gry-blk, f.microxln dse

8550-8560 60% dolo - AA, about 1/2 red arg, ostracod in gry, anhy, dse, no fluor or stain
40% sh - red - AA, grades in part to dolo
Tr anhy & red sltstn - AA

8560-8570 80% dolo - incr buff-flesh pink, some w/orange spots, red, cryptoxln, dse, also gry anhy in part, firm-hard, no fluor or stain
20% sh - red, blky, dolo, silty in part
Tr anhy & sltstn - AA

8570-8580 50% sltstn - gry, tight, w.cmtd, dolo, grades to silty dolo, grades to v.f.gr tight dolo ss, pred hard, silic
40% dolo - AA, incr gry silty dse
10% sh - red - AA, prob after trip (8568') trash

8580-8590 90% sltstn-ss - AA
10% dolo - AA
Tr red sh & anhy - AA

8590-8600 70% sltstn-v.f.gr ss - AA, hard, tight
30% dolo - AA, pred buff-lt.gry, f.micro-cryptoxln, dse, tr v.dull min fluor, no stain

8600-8610 90% dolo - buff-lt.gry-gry.tan, f-m.microxln, dse, SP blk styolites, some foss phantoms, pred anhy, some buff chalky gran, no stain, v.v.dull min fluor w/v.v.sl dull cut (contamination), tr v.sl interxln poros, tr edge? poros
10% sltstn - gry - AA, occ piece red & dk.gry - AA

8610-8620 30% sltstn-v.f.gr ss - incr gry, tight, hard, silic, dolo, grades to silty dolo
70% dolo - AA, some silty w/v.v.dull min fluor, carries some secondary edge poros(?) xls

8620-8625 30% sltstn - gry - AA Hand sample
10% dolo - AA
60% sh - red brn-brn, blky, firm, smooth-velvety, sl.dolo-dolo

8625-8630 40% sh - AA
30% dolo - AA, pred tan-gry, f.microxln, lt.orange cryptoxln, SP pyrite
30% sltstn - gry - AA

8630-8640 40% sh - AA
60% sltstn - AA, some grnish gry, some v.arg

8640-8660 90% sltstn - gry - AA, arg in part, v.f. in part, hard-silic in part
10% dolo - AA
SP sh - red - carried
8650 - some gry silty blky dolo sh

Note: Samples carry fine broken film & blobs of colorless oil on water in samples. Has very dull hazy fluor and probably is the source of the sl v.v. dull cut which is noted in checking sltstn & dolo

8660-8690 100% sltstn-ss - m.gry-lt.gry w/sl. grn tint, v.f.gr-silt, tight, dolo, firm, hard, silic; some grn (glauc?) gr, no fluor
Tr dolo - tan-buff-orange-lt.gry f.micro-cryptoxln, dse, silty in part
Samples carry occ piece red beds & anhy - AA
8680 - incr gry-grn.gry, blky, silty, sl dolo sh (tr)

8690-8700 30% sh - brn, platey-blky, smooth-v.f.velvety, sl dolo
10% sh - gry, blky, smooth
10% dolo - gry, silty, arg
50% sltstn - AA, more arg (Poor sample, lot of slough)

8700-8710 30% sh - brn - AA
20% dolo - buff-gry - AA
50% sltstn - grades to dolo
Tr anhy - AA

8710-8730 100% sltstn - pred lt-m.gry, grnish in part, tight, hard, silic & dolo, grades to tight f.gr ss in part
Tr dolo & red sh
8720-30 - incr red brn sh - AA

8730-8740 10% sltstn - brn, arg, tight, dolo
30% sh - brn, blky, hard-firm, smooth, dolo-v.dolo
30% sltstn - AA
30% dolo - gry, arg-silty dse-f.microxln, brn arg dse

8740-8750 20% sh - brn - AA
40% sltstn - brn - AA, pred dolo, grades to arg silty dolo
Tr dolo - some gry-brn f.microxln
Tr sh - gry, blky, dolo, smooth-silty
40% sltstn - gry - AA

8750-8760 Tr dolo - brn, v.arg, dse, grades to dolo sh
30% sh - brn, dolo-v.dolo, firm-hard, blky
40% sltstn - gry-grnish.gry - AA
Tr anhy - wh-gry, dolo, xln
10% dolo - gry, arg, silic
20% sh - gry, blky silty-arg, dolo

Note: Gradational red & gry-grn.gry shale, dolomite & siltstone. Brown looks like brn dolomite, but pred clay

8760-8770 20% sh - brn - AA
10% sh - gry - AA
20% dolo , gry, arg-silty-f.microxln, grades to sh & sltstn - dse; tr brn dolo - AA
50% sltstn - AA

8770-8780 10% sh - gry, blky, dolo, silty, hard, firm
40% dolo - gry, arg-silty, dse-f.microxln, anhy(?)
50% sltstn - gry, tight, dolo, arg in part, silic in part, firm-hard

8780-8790 20% dolo - AA, gry-grnish.gry, arg-silty
20% sh - gry-grnish.gry, blky-smooth, dolo
60% sltstn - gry-grnish.gry, dolo - AA, grades to dolo & dolo sh

8790-8800 40% sh - gry - AA
30% dolo - AA
30% sltstn - AA
(Samples carry tr uphole red beds)

8900-8910 30% sh - gry-grn.gry - blky-flky, firm, dolo, grades to dolo
70% dolo - gry, f.microxln, dse, grn.gry arg, dse, grades to dolo sh, silty in part
Tr ls - gry, f.microxln-chalky, dse, some wh calcite fill
Tr sltstn - AA

8810-8830 50% sh - AA, grades to v.arg dolo
40% dolo - AA
10% ls - AA
Tr sltstn

8830-8840 60% sh - gry w/grn tint, blky-smooth, silty in part, grades to arg dolo - dolo firm-v.f.velvety
30% dolo - AA, lt.gry, grnish.gry, arg-silty, dse
10% ls - AA

8840-8860 60% sh - AA, gradational to dolo, tr pyrite
20% dolo - AA
20% ls - gry.brn, f.micro-cryptoxln; lt.gry chalky, dse, no fluor or stain
Samples carry SP-tr uphole red beds slough

8860-8870 30% ls - AA, some buff-lt.gry, f.microxln, dse
60% sh - AA
10% dolo - AA, pred arg

8870-8880 40% ls - incr buff-lt.gry - AA, chalky in part
10% dolo - AA
50% sh - gry-grnish.gry, dolo - AA

8880-8890 70% ls - AA, some wh calcite frac fill
20% sh - gry - AA
10% dolo - AA

8890-8900 80% ls - gry.brn-gry.tan-buff-wh, f.micro-cryptoxln, dse, arg in part, chalky in part, no fluor or stain
20% sh - gry & tr grnish.gry, blky-smooth-velvety, dolo
Tr dolo & SP sltstn - AA

8900-8910 40% ls - AA
60% sh - gry, dolo - AA, incr m.dk.gry dolo-calc, grades to arg ls in part

8910-8920 40% ls - AA
40% dolo - gry, arg, silty, dse
20% sh - gry - AA
Tr sltstn - gry, tight, dolo
Tr brick red-brn sh & red dolo

8920-8930 20% ls - AA, no fluor or stain
10% sh - gry - AA
20% dolo - AA & gry, silty, f.xln, dse
50% sltstn - gry, tight, w.cmtd, dolo, silic, hard in part, some pyritic
Top Phosphoria - 8920'

8930-8940 60% ls - m-m.dk.gry-gry.brn, f.microxln, dse, arg in part, silty in part, incr dk.gry, arg, some pyrite
30% dolo - AA
10% sltstn - AA
Tr gry sh & SP red beds AA

8940-8950 70% ls - AA, pred wh-gry mottled, f.microxln, dse; some dk.gry-blk v.arg (carb?)
20% dolo - AA
Tr sh - gry - AA, SP blk blky calc
10% sltstn - gry, tight, calc-dolo

8950-8960 70% sltstn - gry, tight, silic in part
20% dolo - gry, silty, dse
10% ls - AA, some wh calcite frac fill. Tr bright yellow min fluor w/v.sl v.pale yellow-colorless ring; cut may be contamination from thin film of oil on wash water. Drilling break (rough) fracture zone, 2 units hot wire, 6 units $C_1$, no $C_2$; pred assoc w/ wh calcite frac fill. 5' samples 8960-8990

8960-8965 60% sltstn - AA
30% dolo - AA
10% ls - AA, tr yellow fluor in calcite - AA, ? cut
Tr sh - gry - AA
Gas Detector: HW 2 units, $C_1$ 4 units; 1 ft drill off 8960-61'
Evaluation: Two thin fractured(?) zones - some seconcary edge porosity in calcite frac fill - pred min fluor, tr? cut; nothing but $C_1$ methane - two thin methane zones - doubt enough to test.
Called Denver - drill ahead

8965-8970 70% ls - gry.brn-gry-buff, f.microxln, sl foss-sl fragmental; some dk.gry, arg, pyritic in part, chalky in part, SP fluor - AA (slough)
20% dolo - gry - AA
10% sltstn - AA
Top Rex Chert Member - 8968'

8970-8975 100% ls - gry.brn-brn-gry-lt.gry, f.microxln, pyritic in part, some blk arg (phosphatic?) ls; some fragments in ls above; SP pelletal-oolites, no fluor
Tr dolo & sltstn - AA

8975-8980 80% ls - AA, more blk, silic in part - cherty
10% sltstn - AA
10% dolo - AA
Tr gry sh - AA - Samples carry 10% red beds (sh - blky-smooth-earthy, sl calc in part)

8980-8985 90% ls - pred blk, phosphatic(?), carbonaceous, f.xln, dse, silic
10% sh - dk.gry, v.soft, fragile, calc, grades to ls, some pyrite incl (10% red beds AA)

8985- 8990 30% chert - blk, opaque, sl.calc, hard, some milky translucent, grades to ls & dolo
10% ls - blk, silic-cherty
60% dolo - blk, cherty-f.microxln, arg-phosphatic, hard, grades to chert, calc in part

8990-9000 30% chert - blk, opaque, sl.dolo, some wh milky transl incl
70% dolo - blk, flmicroxln, silic, hard-firm, phosphatic(?), carb, some fine pyrite disseminated in part
Tr ls - AA
Trip @ 9001', lost one cone-milled up junk

9000-9010 30% sh - gry-gry.grn, blky, smooth, sl dolo (slough?)
50% ls - gry, arg; blk, f.microxln, arg (phosph?), firm-hd, silic
10% dolo - dk.gry-blk, silic, hard, grades to ls
10% sh - red beds - "trip trash"

9010-9015 Hand Sample
90% dolo - dk.gry, blky-v.f.microxln, dse, arg-v.arg, may be dolo-sh in part, pyritic in part, some hd silic
10% ls - AA
Bit stopped drilling - trip out - lost 3 cone spears - fish w/magnetic tool

9015-9020 40% ls - v.dk.gry-blk, f.microxln, arg in part, silic in part, dolo in part, lot w/gry ang med.gr breccia, occ oolites, some pyrite nucleous, grades to dolo
50% dolo - blk, f.microxln, arg (phosphatic?), firm-hd, dse, silic in part, pyritic in part
10% chert - blk, opaque, lt.gry transl
30% ls - AA
40% dolo - blk - AA, silic, hard in part, grades to chert & ls
Note: Looks fragmental, some fragments (breccia) in part, pyritic

9030-9050 50% ls - AA, pred wh-buff, f.micro-cryptoxln-chalky w/gry-blk fragments
20% chert - AA
30% dolo - AA, pred silic, blk, no fluor or stain

9050-9060 30% chert - lt.gry-dk.gry, grainey, mottled, dolo in part
60% ls - gry-buff, f.microxln-chalky, silic in part, some frac fill, some pyrite incl
10% dolo - AA

9060-9070 40% chert - AA, pred milky, transl, speckled
20% ls - AA, ls & dolo cherty-gradational
30% dolo - AA

9070-9080 60% dolo - AA, incr lt.gry-gry.tan, f-m.microxln, dse, grades to dk gry cherty
40% chert - dk.gry-milky-gry.brn, transl-opaque, dolo, some filled (dolo) fractures, SP ls - AA

9080-9090 50% dolo - AA
50% chert - AA, dolo in part
SP ls - AA

9090-9100 20% ls - gry-wh, f.microxln-chalky, dse
20% chert - AA, grades to cherty dolo
60% dolo - AA, more microxln, dse

9100-9110 70% ls - gry-wh mottled, f-m.microxln, dse
10% chert - AA
20% dolo, pred "cherty", silic, hard; some lt.gry f-crse microxln dse

9110-9130 50% ls - gry-lt.gry, f.microxln, dse, no fluor or stain
10% chert - blk-lt.gry, op-transl, sl.calc-dolo
40% dolo - gry-wh mottled, silic-hard, dse

Note: Dolomite-limestone-chert gradational, ls dolo in part, dolo calc in part, both are silic, "cherty" in part. Probably classify as cherty, dolo ls. Occ piece of chalky-xln calcite or dolo w/dull min fluor, v.sl dull? cut from oil in wash water(?) Occ healed fracture

9130-9150 20% ls - AA, more dolo, arg, silty
80% dolo - becoming pred dk.gry, arg, dse, silic, firm-hard, pyritic in part
Tr gry chert

9150-9160 60% ls - lt-m.gry, f.microxln, dse, grades to dk.gry silty hard, arg dolo ls
30% dolo - AA
10% chert - AA, pred blk-dk.gry, op, calc-dolo

9160-9170 60% dolo - dk.gry-blk, dse, silic, hard, silty in part
30% ls - AA
10% chert - AA

9170-9180 20% chert - gry-wh, op-transl, calc-dolo
80% dolo - AA, pred cherty, silic
Tr ls - AA

9180-9190 30% ls - wh, calcite frac fill; lt-m.gry, f.microxln dse
10% chert - AA
60% dolo - AA

9190-9210 20% chert - m-dk.gry, mottled in part, sl calc & calc incl
60% ls - AA
20% dolo - AA

9210-9220 40% chert - pred blk, op, cl.calc-dolo
50% ls - AA, cherty in part
10% dolo - AA
Some uphole "trip trash"

9220-9230 10% chert - AA, some pipe dope fluor
20% sh - blk, carbonaceous (phosphatic), blky, hard, silic, calc, grades to ls & dolo
40% ls - pred blk - AA, some blk silty dse, SP gry, xln & wh calcite frac fill
30% dolo - blk, silty

9230-9240 Tr ls - AA, tr wh calcite
40% dolo - blk, arg-silty, dse, silic in part
60% sh - blk, carb (phosph) blky
Tr chert - blk, op, calc-dolo, hard, occ healed fracture

9240-9250 20% dolo - AA, blk, grades to silty sh
80% sh - blk, silty, dolo-calc - AA, silic in part
Tr ls - AA

9250-9270 30% ls - blk (phos), arg, carb, dse, some pellets & oolites
50% sh, blk - AA
20% dolo - AA
No fluor or stain

9270-9280 20% ls - AA, occ piece wh calcite in contact w/blk
70% sh - blk, hard, silty in part, silic in part, some pelletal material, dolo-calc, occ pyrite
10% dolo - AA
Tr chert - blk, op

9280-9300 20% ls - AA
30% dolo - blk-dk.gry, arg, grades to sh
50% sh - blk - AA

9300-9310 60% ls - blk, carb, phosphatic, firm-m.soft, arg, grades to sh
40% sh - AA, some dk.gry-wh, speckled-mottled, silic, calc, grades 5o ls
Tr dolo - AA
Note: Think ls fine-m.gr of foss frag & debris in black carb-phosph. material

9310-9350 40% ls - AA, occ piece wh calcite frac fill
60% sh - AA, some non-calc, occ piece w/wh calcite healed frac, becoming softer; some of sh & ls w/blk nodules or poor oolites
9330-50 - some v.soft calc blk-v.dk.gry, some nodular sh-ls glossy surface - sample wash water black - material poorly consolidated indurated. No show

9350-9365 70% sh - blk - AA, some glossy surface, flat black earthy v.soft-firm, v.calc-non calc, carb, phosphatic, occ healed (wh calcite) fracture, no fluor
30% ls - blk, grades to sh - AA, some pellets, f.nodules, no fluor or stain

9365 Circulate out for test of series of small methane gas increases, w/no drilling breaks. Some rough drilling, some healed (wh calcite) fractures, some free calcite & some edges w/wh calcite & dolo coating (fractures porosity?) - no fluor or stain. Zones may give up gas. Should be checked further - rec DST, Denver concurred (DST #2 - 9232-9365' - see DST results)

9365-9370 70% sh - AA
30% ls - blk, arg - AA, tr wh calcite
SP dolo - lt.gry-buff, f.xln (frac fill?), tr red & brn sh slough from uphole after trip

9370-9380 80% sh - AA, v.blk, some glossy, some w/nodules to botryoidal appearance, tr pyrite, silty in part
20% ls - AA, decr red beds & dolo

9380-9390 30% ls - gry.brn cryptoxln-dk.gry-gry mottled, firm, arg, no fluor or stain
70% sh - AA, blk

9390-9410 40% ls - incr fracs & wh frac fill (calcite), some healed, some edge lining, some free
60% sh - blk - AA, silty in part

9410-9420 30% ls - dk.gry-gry mottled-f.speckled, some hairline filled (wh calcite) fracs
70% sh - blk - AA, no fluor or stain

9420-9450 60% ls - AA
40% sh - AA, tr fracs - AA, occ piece blk, op, arg, chert

9450-9470 80% ls - pred dk.gry-blk, firm-hard, v.arg-arg, tr wh calcite frac fill - AA, grades to sh
20% sh - blk - AA, grades to ls, silty in part
9460 - incr gry f.xln, arg, dse ls

9470-9480 100% ls - pred dk.gry-blk-wh mottled, f.microxln-chalky, fragmental, foss, dse, firm, tr frac fill
Tr sh - AA
Top Wells - 9470'

9480-9490 90% ls - AA, pred wh-buff-gry.blk mottled, f.micro-cryptoxln, dse, SP blk, silic, hd
10% dolo - tan-lt.brn, cryptoxln, dse
SP chert - blk op, tan transl

9490-9500 30% dolo - AA, some w/blk specks & incl, S&P, f.gran, sdy, calc
Tr chert - tan-brn, op-transl
Tr ss - gry-wh, S&P, v.calc, tight, grades to sdy-silty ls
70% ls - gry-blk-wh f.microxln-chalky, gran, sdy, grades to ss - looks like S&P ss, but pred ls, grades to dolo ls

9500-9510 20% dolo - tan-buff, f.xln-gran, calc in part, grades to dolo ls
80% ls - AA, pred buff-tan, f.microxln-f.gran, much dolo gran
Tr chert - AA wh-tan, transl, prob as incl in carbonates

9510-9520 80% dolo - tan-gry.tan, f.microxln-v.f.gran, dse, firm, calc in part, grades to dolo ls, tr sl intergran poros
20% ls - pred lt.brn-tan, f.microxln, dolo, grades to dolo

9520-9530 70% dolo - AA, tr sl intergran poros, no fluor or stain
30% ls - AA, pred dolo ls
SP chert - AA

9530-9540 60% ls - AA, pred dolo, some brn cryptoxln dse
40% dolo - AA, SP sl poros, tr chert - AA

9540-9550 20% ls - AA, grades to dolo ls, dolo
80% dolo - tan-gry.tan, f.microxln-f.gran, calc in part, tr f.microvug poros, some pyrite incl, SP sl intergran poros, no stain or fluor

9550-9560 30% ss - lt.gry-wh, f.s.ang-rdd gr qtz.w-poorly sorted, tight, calc-dolo, anhy in part
70% dolo - tan-lt.brn, f.microxln-f.gran, calc in part, sdy in part, some w/clear-wh calcite incl, pred dse, occ piece v.f.microvug poros-sl tr interxln poros, no stain
Tr red, blk sh & blk ls, SP chert - AA, trip trash - trip @ 9555'

9560-9570 40% ss - AA, some m.rdd gr qtz, floating sd gr
60% dolo - AA, incr sdy-silty firm-tight
Tr ls - tan-brn-gry, f.microxln, dse
Occ piece chert - AA, tr "trip trash"

9570-9580 90% ss - pred lt.gry-wh - AA, silty, sl anhy, tight, occ piece w/dull fluor, tr v.dull yellow cut w/no color to ring, think contamination, no gas from detector
10% dolo - AA, pred brn, f.microxln, dse
Tr ls - AA

9580-9590 100% ss - AA, anhy in part, hd, silic, tight, w.cmtd, some crse mff.qtz gr
Tr dolo - gry-brn, f.microxln, sdy-silty in part
Tr sltstn - gry, tight, hd, silic
Samples carry some bit flour, wh-gry mashed ss from button bit

9590-9600 10% ls - grn-gry, crypto-microxln, dse, dolo in part
10% anhy - wh, xln-f.gran
80% ss - incr med rdd frosted "floating" qtz gr

9600-9610 90% ss - lt.gry-wh, f-m.gr, ang-rdd, poorly srtd, dolo-anhy, tight, w.cmtd, some fine gr w/incr floating m.crse frosted qtz gr
10% anhy - AA

9610-9620 20% dolo - brn, f.gran- tan-brn f.crypto-microxln, dse, sdy in part, calc in part, silic in part
20% anhy - AA
Tr chert - gry, transl
60% ss - AA, some lt.gry silty & silic, hard
SP ls - brn microxln, dse

9620-9630 10% dolo - AA
10% anhy - AA, some v.dull min fluor, v.sl. cut
80% ss-sltstn - AA, some grades in part to silty-sdy dolo

9630-9640 30% dolo - AA, sdy in part
20% anhy - wh, xln-chalky (bit flour) w/min fluor
50% ss-sltstn - AA, grades to dolo
Note: Wh anhy & bit flour has some weak dull min(?) fluor w/?? cut, dull, no ring, probably contamination from make up water as uphole.

9640-9650 10% anhy - AA
Tr ss - AA
90% dolo - dk.gry-gry.brn, f.micro-cryptoxln, dse-hard, silic, some anhy, no fluor or stain

9650-9660 50% dolo - AA
40% ss - AA, sltstn in part, some S&P
10% anhy - AA

9660-9680 80% ss - lt.gry-wh, f.gr w/floating m.crse frosted rdd sd gr
20% dolo - AA
Tr red sh - pink-brick red (slough?)
Note: Much of anhy & wh chalky sl calc anhy bit flour has dull fluor w/v.v.weak? cut from mud contamination. Most ss v.tight, anhydritic

9680-9690 30% anhy - wh, xln-gran-chalky - AA
20% dolo - AA, sdy in part
50% ss - AA
Tr red beds, blk phosphatic sh & uphole types

9690-9700 40% anhy - AA, much chalky bit flour washes out of samples w/dull min fluor - AA
50% dolo - AA, some gry f.microxln, arg
10% ss - AA

9700-9710 10% anhy - AA, tr min fluor
40% dolo - AA
50% ss - AA, SP clear-wh, f-crse, s.ang-rdd dolo cgl, some w/blk carb incl, no fluor

9710-9720 10% dolo - AA, sdy in part
10% anhy - AA
80% ss - AA, incr dk.gry-blk f.gr ang-s.rdd qtz, tight, carb(?), dolo
Some pieces red beds & black phosph sh (slough)

9720-9730 20% dolo - AA, grades to anhy
10% ss - AA
70% anhy - wh-lt.gry, xln-gran

9730-9740 40% anhy - AA, some contact w/dolo
30% ss - AA
30% dolo - AA, pred brn, f.microxln-f.gran, dse

9740-9750 60% dolo - AA, sdy in part, anhy in part, dk.gry
30% anhy - AA, some sdy
10% ss - AA, SP red-pink, tight, dolo, f.gr

9750-9760 30% ss - AA, some dk.blk - AA, some tan-brn, dolo, tight, f.gr
10% cgl - lt.gry-red dolo, sdy (breccia in part)
20% anhy - AA
40% dolo - AA, some sdy cgl, grades to above
Note: 9740-60 - reworked section, many types dolo & ss

9760-9770 20% anhy - AA
40% ss-cgl - pred blk-dk.gry, f-crse gr, tight, dolo, carb? (poss gilsonitic), occ piece blk op chert
40% dolo - AA, much blk grades to ss-cgl

9770-9780 30% anhy - AA, some sdy
30% ss - AA, anhy in part, blk phosphatic?
40% dolo - AA, anhy in part

9780-9790 20% anhy - AA
50% dolo - grades to anhy & ss, some pyrite incl
30% ss - blk, carb, f.gr, arg-dolo, anhy, grades to dolo & anhy

9790-9800 70% ss - lt.gry-buff, f.gr, tight, dolo-silic, some silic ortho-quartzitic, decr blk matrix (carb-gilsonite?)
20% dolo - tan-brn-gry, f.microxln; tr wh-buff f.gran w/blk residual (gilsonite) stain
10% anhy - wh, xln-gran, sdy in part
Occ piece chert - milky-blue, transl

9800-9810 Tr anhy - AA
10% dolo - AA
90% ss - lt.gry, f-m.gr qtz, poorly sorted, silic-dolo, tight, s.ang-s.rdd

9810-9820 30% dolo - brn-dk.gry, f.microxln, dse; tan-gry-brn f.microxln, sdy in part
10% anhy - AA
60% ss - AA, blk-dk.gry in part, tight

9820-9830 60% anhy - sl dolo in part, some dolo incl
20% ss - AA, pred dk.brn-blk, dolo, tight
20% dolo - AA, pred dse

9830-9840 20% anhy - AA, as incl in part in dolo
70% dolo - pred gry-brn.gry, anhy in part, sdy in part
10% ss - AA, grades to dolo

9840-9850 20% chert - tan-brn-lt.gry, transl-op, some milky, as incl in part in dolo
80% dolo - dk.gry-brn-gry, crypto-f.microxln, cherty in part, some buff f.gran w/blk gilsonite stain, some styolites, some calcite incl, SP ss - AA
Occ piece brick red sh (slough), some wh calcite frac fill; tr anhy - wh - AA

9850-9860 40% chert - AA
40% dolo - AA, some sdy, some lt.gry S&P (carb), f.gran w/f. blk gr in gran (?)
20% ss - lt.gry-wh, f.gr, v.dolo w/blk infill (gilsonite?)

9860-9870 60% ss - lt-m.gry, f-v.f-m.gr, poorly srtd, dolo, silic, tight
30% dolo - AA, pred sdy-silty, dse
10% chert - AA

Note: Dolo ss may be gran dolo w/secondary calcite infill. After acid, silicate appears to be angular as if conforming to dolo crystal structure. May come under classification of dolomitic orthoquartzite-silicious dolomite

| | |
|---|---|
| 9870-9880 | 90% ss - orthoquartzite - lt.gry-gry-gry.brn, f.gr, v.dolo, grades to silic dolo<br>10% dolo - gry, silic, dse |
| 9880-9900 | 30% dolo - AA<br>70% ss-orthoqtz - AA, some rdd pieces may be from bottom hole assembly bit torquing up. Lot of glassy surface and broken grains<br>Tr chert - aa, pred milky, transl |
| 9900-9910 | 10% dolo - gry-brn, f.microxln-cryptoxln, silic<br>90% ss-orthoqtz - AA, some so quartzose like qtz<br>Tr chert - gry-milky, op-transl; occ piece anhy - wh, xln |
| 9910-9920 | 90% ss-orthoqtz - AA, more quartzose, tight<br>10% chert - AA, tr dolo - AA |
| 9920-9940 | 100% orthoqtz - lt.gry-buff, hard, dse, dolo-sl.dolo in part, glassy in part, no fluor or stain<br>Tr chert & SP dolo - AA<br>Samples fine, possibly fractured in part<br>9930-40 - occ piece yellow transparant sulphur |
| 9940-9950 | 30% dolo - gry-brn, cryptoxln, dse, silic, hd, occ piece sulphur along fracture(?)<br>60% orthoqtz-ss - some lt.gry, f.gr, tight, dolo ss, darker gry<br>10% chert - AA |
| 9950-9960 | 20% dolo - gry-brn, f.micro-cryptoxln, dse, silic-v.silic in part<br>80% ss-orthoqtz - AA<br>Tr pyrite & free sulphur; tr chert - gry-tan, op-transl |
| 9960-9970 | 80% ss-orthoqtz - AA, no fluor or stain, more dolo in part<br>10% chert - AA<br>10% dolo - AA |
| 9970-9980 | 90% dolo - buff, chalky-gran, dse; & gry-brn, f.microxln, silic, hd, dse in part, sdy in part<br>10% ss-qtz - AA<br>Tr chert - AA |
| 9980-10,000 | 90% dolo - incr buff-lt.gry, f.microxln-f.gran, anhy in part, tr pyrite incl, silic in part, tr microvug poros, no stain or fluor<br>10% chert - lt.gry-milky, op-transl<br>Some ss-orthoqtz - AA, no stain or fluor<br>Tr clear xln selenite & wh v.f.gran anhy, some sulphur associated w/dolo & anhy incl<br>Note: Most samples carry SP red beds (slough from up hole) |

10,000-10,060 100% dolo - lt.gry-lt.tan, f.micro-cryptoxln, dse, anhy in part, some sl gran, some silty, some silic, pyritic in part, no fluor or stain
Tr chert & ss-orthoqtz - AA
Tr anhy - wh-lt.gry, f.gran, dolo in part
10,010 - sl darker tan & gry, some fossil phantoms
10,040 - pred dse, lt.tan-lt.gry, cryptoxln, when dry darker tan-brn, some xl faces of pyrite in incl in dolo

10,060-10,070 20% sh - red-brn, silty in part, blky, smooth-earthy
Tr sh - blk, carb, phosphatic(?) (Phosphoria type)
Tr chert & anhy - AA
10% ss-orthoqtz - AA, lot of "trip trash" - trip @ 10,063
70% dolo - AA, some gry, arg, no fluor or stain, much pipe dope fluor

10,070-10,080 30% ss - lt.gry-blk, f.gr, ang-s.rdd qtz, p.srtd, tight, w.cmtd, dolo, silic, carb in part, grades in part to sdy dolo
70% dolo - AA, some sdy, dse
Tr chert - wh qtz - AA; SP anhy & gypsum - AA

10,080-10,090 20% sltstn - v.f.gr ss - brick red, arg, tight, dolo
40% ss- AA
20% anhy - wh, f.xln-gran, some clear selenite
20% dolo - AA, some reddish, dse
Top Morgan - 10,089'

10,090-10,100 30% anhy - AA
20% dolo - red, dse, arg, anhy in part
10% sh - brick red, silty, dolo
30% sltstn-ss - red - AA
10% ss - AA

10,100-10,120 30% anhy - AA
10% dolo - AA, gry, arg, red arg, tan cryptoxln, dse
20% sh - red, silty, smooth-earthy, sl dolo
40% sltstn-f.gr ss - red, arg, al dolo-dolo, tight, anhy
SP sh - gry, blky, smooth

10,120-10,130 20% anhy - pred wh gran
Tr dolo
20% sh - red - AA
60% sltstn-ss, red v.f.gr, arg, tight, anhy in part, sl dolo

10,130-10,140 40% anhy - AA
10% sh - red - AA
50% sltstn-ss - red - AA

10,140-10,150 10% dolo - tan-brn-gry, f.xln-gran, anhy, grades to dolo anhy
60% anhy - AA, some w/brn-gry dolo incl
10% sh - red - AA
20% sltstn-ss - red - AA

10,150-10,160 70% anhy - pred wh-clear, gran-xln
Tr dolo - AA
20% sltstn-ss - red - AA
10% sh - red - AA Red Beds

10,160-10,170 100% anhy - AA
Tr red beds & dolo - AA

10,170-10,180 No sample - shale shaker broken down, line to other plugged and frozen up. Circulated and fixed same

10,180-10,190 20% dolo - gry-tan, f.micro-cryptosln, dse, arg & anhy in part, grades to dolo anhy
20% anhy - AA, grades to dolo & sh & sltstn
10% sh - red - AA
50% ss-sltstn - red - AA

10,190-10,200 100% ss - pink-red, f.gr, tight, w.cmtd, p.srtd, friable-hard, anhy-silic, sl dolo, dolo ang-s.ang qtz gr
Tr dolo, anhy & sh - AA

10,200-10,210 60% anhy - AA & pink, silty-sdy, silic, hard in part
40% sltstn-ss - red-pink, arg, anhy, dolo in part
Tr red earthy anhy sh & gry-brn cryptoxln dse dolo

10,210-10,230 30% anhy - clear-wh, gran-xln
70% sltstn-ss - red, v.f.gr, silty, arg, anhy, dolo, tight
SP dolo - AA

10,230-10,240 10% dolo - buff, cryptoxln, dse
20% anhy - AA
70% sltstn-ss - pred red, v.f-f.gr, some m-crse gr, tight, arg, anhy, w-p srtd, w.cmtd

10,240-10,250 30% sltstn-ss - AA
20% dolo - AA
50% anhy - AA

10,250-10,260 50% sltstn-ss - red - AA, tight, anhy-arg
50% anhy - AA
Tr dolo - tan, cryptoxln, dse in part w/dull yellow min fluor

10,260-10,270 70% anhy - clear-wh, xln-gran, some w/buff incl
30% ss-sltstn - red - AA
Tr dolo - aa, buff, cryptoxln, as incl in anhy?, w/yellow min fluor, no cut
Tr red sh - AA

10,270-10,280 50% anhy - AA
20% dolo - lt.tan-gry-buff, cryptoxln, anhy w/dull yellow min fluor, dse, no poros
30% ss - red - AA
Tr red sh - AA

10,280-10,290 30% ss - red in part, pink-wh, f-m.gr, qtz, ang-s.ang, firm, p.srtd, dolo-silic-anhy, tight, no fluor; some red - AA; dk.gry-blk, f.gr, carb, dolo, tight, silic
10% dolo - AA
60% anhy - AA, sdy in part, grades to anhy ss

10,290-10,300 40% ss - AA, some unconsol m.gr, qtz sd
10% dolo - AA
50% anhy - AA

10,300-10,310 10% ss-sltstn - red, arg, sl dolo, tight, anhy in part
40% anhy - AA
50% dolo - incr brn-gry.brn, f.microxln, dse

10,310-10,320 Tr ss & anhy - AA, occ piece red bed
100% dolo - pred gry.brn, f.microxln, dse, hard

10,320-10,330 30% dolo - AA
40% ss - pred lt.gry-buff, f, some m.gr, p.srtd, silic & anhy in part, dolo
30% anhy - AA, grades to ss in part

10,330-10,340 10% dolo - AA
20% anhy - AA
70% ss - pred wh-lt.gry, f-m.gr, p.srtd, silic, dolo, firm-hard

10,340-10,350 20% anhy - AA w/tr dull min fluor
20% dolo - lt.tan-lt.gry, f.cryptoxln-f.microxln, sdy in part, part grades to dolo ss
60% ss - AA, grades in part to dolo

10,350-10,360 80% ss - lt.gry-buff, f-crse gr, ang-s.ang, tight, w.cmtd, p.srtd, silic-v.silic, dolo, anhy in part, orthoquartzite, sl S&P, some pyrite crystal incl, glassy in part
10% anhy - AA
10% dolo - AA

10,360-10,380 70% ss - AA
20% dolo - pred tan, cryptoxln, dse, some w/v.dull yellow min fluor, no poros or stain
10% anhy - AA
10,370-80 - some pink-red, dse-f.microxln dolo

10,380-10,390 20% dolo - pred pink-red brn-tan-gry.tan
20% anhy - AA
60% ss - AA

10,390-10,400 40% dolo - red-brn.red AA, grades to anhy in part
20% anhy - AA
40% ss-orthoqtz - AA

10,400-10,410 20% dolo - pred tan-gry, f.microxln, dse
20% ss - pink, silic-anhy, dolo, tight, f.gr
60% anhy - AA, wh, chalky-xln-gran

10,410-10,420 40% anhy - AA
40% ss - pink, anhy, tight, f.gr; gry, f.gr, silic in part, tight, dolo
20% dolo - AA, anhy in part

10,420-10,430 70% ss - AA, tr silic
20% anhy - AA
10% dolo - AA

10,430-10,440 30% anhy - wh, xln-gran
50% ss - tan dolo; pink & red AA, grades to sdy dolo
20% dolo - buff-tan pink, sdy in part, dse, f.micro-cryptoxln, grades to ss
Note: Anhy as partings & frac fill in ss

10,440-10,450 50% anhy - AA
30% ss - AA
20% dolo - AA, sdy in part

10,450-10,460 20% anhy - wh-clear - AA, sdy in part
30% dolo - red-pink-buff-tan, sdy in part, anhy in part
50% ss - pink-wh-lt.tan-lt.gry, f-m.gr, ang-s.rdd qtz, anhy in part, dolo-v.dolo (floating sd gr)

10,460-10,480 20% anhy - AA
20% ss - AA, decr red
60% dolo - incr buff-lt.tan cryptoxln, dse
10,470 - dolo more "floating" sdy

10,480-10,490 20% anhy - AA
30% ss - AA, v.dolo, tight, grades to sdy dolo
50% dolo - pred lt.tan-buff, sdy, dse

10,490-10,500 30% anhy - AA
60% dolo - AA, red in part, incr gry.brn, f.microxln, dse, sdy in part, grades in part to anhy, sl min fluor
10% ss - AA

Note: Samples have some dull yellow mineral fluorescence. No cut in anhy and dolo. Best fluorescence in v.dse dolo & anhy.

10,500-10,510 40% anhy - AA
50% dolo - AA
10% ss - AA
Samples carry SP red beds

10,510-10,520 30% anhy - AA
Tr sh - red beds, red sltstn
60% dolo - AA, sdy in part,; tr gry.brn litho
10% ss - AA, v.dolo in part
Poor sample

10,520-10,530 90% dolo - tan-lt.brn-brn.gry, cryptoxln & some f.microxln, dse, silic in part; some dk.gry, f.microxln dse; SP lt.gry-wh chalky-xln calcite incl, prob frac fill
10% anhy - AA
Occ piece ss
<u>Top Brazer</u> - 10,527'

10,530-10,550 90% dolo - AA, incr sdy f-m.gr qtz
Tr ss - tan-gry.brn, f-m.gr, v.dolo, tight
10% anhy - wh-clear, xln-gran
Occ piece wh chalky anhy - bit flour

10,550-10,560 20% anhy - AA
20% sltstn - lt.gry-buff, tight, dolo
Tr ss - lt.gry, f-m.gr, dolo-anhy, tight
60% dolo - AA, sdy in part, not as silic

10,560-10,570 20% anhy - AA, prob as incl in dolo
80% dolo - tan-brn-gry, cryptoxln, silic in part, some sl chalky, f-microxln, dse; occ piece w/sulphur frac lining
SP ss - AA

10,570-10,590 100% dolo - incr brn-dk.gry.brn, cryptoxln, dse, hard, silic w/occ hairline healed fracture, tr frac edge, no fluor or stain; occ piece yellow sulphur frac lining
Tr anhy - AA

10,590-10,600 10% anhy - AA
20% ss - lt.gry, f-m.gr, ang-s.ang, w.cmtd, firm, dolo-v.dolo, grades to sdy dolo
70% dolo - AA, some grades to v.sdy to ss

10,600-10,610 100% dolo - pred tan-brn-dk.gry, cryptoxln, dse, silic in part, tr frac lining, some anhy incl, tr styolites
Tr anhy & SP ss - AA

10,610-10,620 20% ss (breccia) lt.gry-tan, f-m.gr qtz, v.dolo, tight, grades to sdy dolo
80% dolo - more sdy, grades to dolo ss
Tr anhy - AA

10,620-10,640 10% ss - AA, more dolo, tight, transition to sdy dolo; occ piece microvug poros, no fluor or stain
90% dolo - AA, silic & sdy in part
Tr chert - tan-brn, transl, hard
SP anhy - AA, occ clear crystals incl in dolo

10,640-10,680 100% dolo - lt.brn-tan-gry.brn, crypto-f.microxln, dse, silic-sdy in part, some sl calc, no fluor
Tr wh anhy, frac edge, SP-10% f.microvug poros, frac edge?, no stain
Tr ss, chert & anhy - AA
10,650 - darker gry-brn.gr mottled crypto-f.microxln, some f.gran, tr f.microvug poros, pyritic in part, tr f.microvug poros & secondary xls, no stain
10,660 - more f.micro-cryptoxln tan-brn-gry.brn, v.dse, silic in part, decr poros, SP microvug poros
10,670 - some dk.gry.brn, hd, dse, silic, no shows

10,680-10,690 30% ss - lt.gry-clear, f-crse gr, ang-s.rdd, p.srtd, friable-w.cmtd, dolo, some calc
70% dolo - AA, some tan-lt.gry sdy (f-crse gr) dse
Tr anhy - AA, sl v.v.dull min fluor

10,690-10,700 40% ss - AA, sl S&P, occ feldspar gr, pred qtz, occ blk asphaltic-carb? dead stain
60% dolo - AA, occ anhy incl
Tr anhy - AA

10,700-10,710 100% dolo - AA, pred lt.brn-tan, f.microxln, sl gran, some sl chalky, some w/calc-ls incl, dse
Tr ss - AA
Samples carry SP anhy - AA (slough)

10,710-10,720 40% ss - clear-tan-lt.gry, f-m.gr, s.ang-s.rdd, p.srtd, firm-hard, dolo, tight, grades in part to sdy dolo, silic in part
60% dolo - AA, some dse sdy

10,720-10,750 80% ss - AA, pred silic, hard, tight, f-crse gr, grades in part to sdy dolo
20% dolo - AA, pred sdy ("floating gr")

10,750-10,760 60% ss-orthoqtz - AA, cgl, f-crse, ang-s.rdd, w.cmtd, tight, firm-hard, silic in part, p.srtd dolo grades to sdy dolo, calc in part, no poros, fluor, or stain, some v.silic
40% dolo - tan-brn, f.micro-cryptoxln, dse, sdy in part; tr wh-tan, xln-chalky ls, dse, frac fill in part; some brn ls, dse, prob as incl in dolo

10,760-10,770 30% ss-orthoqtz - AA, calc in part, pred v.silic quartzose
70% dolo - AA, dse
Tr ls - brn-wh - AA

10,770-10,790 40% ss-orthoqtz, tight, calc in part
60% dolo - AA, tan-dk.gry, sdy in part
Tr ls - AA

Note: Some calcite & dolo frac fill & lining in most samples - tr fracture porosity?, no stain or fluor

10,790-10,810 100% dolo - lt.tan-lt.brn-lt.gry.brn, f.micro-cryptoxln, dse, SP f.gran w/tr intergran poros, no stain or fluor, calc in part
Tr ss - AA; Tr lt.gry-buff chalky-xln dse ls & calcite
10,800-10 - some secondary xls, some buff v.f.gran chalky ls

10,810-10,850 100% dolo - tan-brn-dk.gry.brn, f-m.microxln, dse, tr f.microvug & edge poros, no fluor or stain, silic in part, some sdy, some calcite edge lining
Tr ss - AA
10,820 - pred dk.gry.brn, f-m.microxln, dse, tr f.microvug poros, incr secondary calcite & dolo; some vugs w/dark brn-blk residual stain, no cut, no shows
Note: Vugs have some blk-dk.brn residual "dead" stain, no cut - Gilsonite staining
10,830 - change to tan-lt.brn cryptoxln dse
10540-50 - pred tan-lt.brn, cryptoxln dse

10,850-10,860 10% ss - wh-clear, f-m.gr, qtz, silic-dolo, tight - AA, no fluor or stain, some wh calcite & dolo frac fill
90% dolo - tan-gry.brn, crypto-f.microxln, dse, silic in part

10,860-10,870 30% ss - AA
70% dolo - AA

10,870-10,880 70% ss - pred lt.gry, v.sl S&P - AA, glassy in part, no fluor or stain, tight, orthoquartzitic in part
30% dolo - AA

10,880-10,910 80% ss - AA, much glassy-orthoquartzitic, some chert gr
20% dolo - AA, more silic

10,910-10,950 100% ss - orthoqtz - pred lt.gry-wh, f-m & some crse gr, ang-s. ang, p.srtd, w.cmtd, dolo, calc in part, silic-v.silic, firm-hard, tight, no fluor, occ dk pink gr, glassy in part
Tr dolo - AA, most samples carry tr anhy - AA

Note: Some dk.brn-blk residual stain on some dolo and tr spotty on some ss. No fluor or cut. Ss is cglc.

10,950-10,960 30% ss - AA
70% dolo - tan-lt.brn, f.micro-cryptoxln, some buff v.f. chalky, gran, sl calc in part, dse, no fluor

10,960-10,970 10% ss - AA, tr blk gilsonite gr occ
90% dolo - AA, darker brn, dk.gry-brn, f.microxln, dse, silic in part, hard. Some blk gilsonite stain of frac surfaces

10,970-11,000 100% dolo - AA, some lt.gry tan, v.f.gran, tr blk residual stain AA; pred tan-brn, f.micro-cryptoxln
Tr ss - AA
Some secondary crystallization w/staining indicate fracturing planes & surfaces. Fracture & f.microvugular poros, some blk "dead" residual stain (gilsonite?), no fluor
10,970 - sl incr v.f.gran w/sl tr intergran poros, no stain or fluor

11,000-11,030 100% dolo - brn-gry.brn-tan, f.microxln, dse-v.f-f.gran w/v.sl tr intergran poros, some blk residual stain
Tr anhy frac fill, occ piece w/microvug poros
11,010 - some sdy (f-m ang sd), tr tan, f-m gr v.dolo ss, tight, grades to sdy dolo

11,030-11,070 100% dolo - AA, decr sdy, pred brn-gry.brn, f.microxln, dse, occ anhy incl
Tr ss - AA
11040-50 "trip trash", lot of pipe dope, trip @ 11,048, samples carry SP red beds - slough
11060-070 Dolo becoming more gran w/fair f-m microvug & leached & frac? poros, no fluor. Blk residual stain, occ dk.gry.brn dse dolo ls

11,070-11,100 100% dolo - buff-tan-gry.brn, mottled in part, f.microxln-f.gran, fair microvug & sl tr intergran poros, no fluor or "live" stain, lot of blk residual stain, no fluor
Decr ls - AA, occ piece pipe dope fluor
11,080 - decr porosity
11090-11100 - incr tan-lt.brn cryptoxln dse, tr wh calcite frac lining, incro microvug poros, occ sl.silty, no fluor

11,110-11, 140 100% dolo - tan-lt.brn-gry.brn-dk.gry, f.microxln, dse, arg, silic in part, some f.microvug poros, blk residual stain, no fluor
Occ piece ss - AA

11,140-11,150 100% dolo - pred dk.gry-gry.brn, f.microxln, dse, arg, silic in part, some f.microvug poros, no fluor, blk residual stain

11,150-11,200 100% dolo - pred dk.gry-gry.brn, f.microxln-f.gran, dse, carb, SP f.microvug poros w/some blk residual stain, some calc grades to dolo ls
11170-180 Some tan-lt.brn, f.microxln-f.gran dse, some silic, tr microvug & SP frac fill
Note: Some healed hairline fracs (calcite & dolo) & frac fill & edging
11180- dolo - AA becoming blk-dk.gry, carb?, some wh xln calcite edges & frac fill, occ piece blk op chert
11190- pred dk.gry-blk - AA

11,200-11,260 100% dolo - AA, pred dk.gry-blk, f.microxln f.gran, carb, silic in part, dse, no fluor, may be phosphatic?, much wh frac edging & healed fracs w/calcite & dolo, SP calcite & occ piece w/f.microvug poros, no stain or fluor, some blk residual stain
11250- some healed fracs & frac edge lining, calcite & dolo
Samples carry tr anhy & ss (uphole slough)

11,260-11,350 100% dolo - pred dk.gry-blk, f.microxln, dse, hd, silic, some w/ f.pyrite disseminated, some fracturing healed by calcite & dolo, occ piece milky qtz; 1 pc wh chalky ("bit flour") calcite w/min fluor, SP anhy, wh, xln, hard, silic(?) as incl; occ blk chert; occ piece w/f.microvug poros
11280- sl more gran in part, tr blk op chert, sl more fracturing?, no fluor or stain
Note: Some of dark dolo has large pieces of blk carb material
11300- dolo AA, some crse wh xls (crinoidal?), some frac edges, some carb incl, some v.f.blk xls in edge lining
11330- pred dk.gry-dk.brn.gry w/some f.gran lt.brn-wh crse xln incl, calcite & dolo - pred dse, firm, hard, no fluor. Incr frac edges & healed hairline fracs, occ piece dk.brn.gry-blk op chert, tr pyrite filled fracs in chert, occ f.microvug poros, no fluor or stain

11,350-11,410 100% dolo - lt.gry-brn-dk.gry mottled & blk, f.micro-cryptoxln, chalky in part, some wh calcite & dolo incl & some f.gran soft frac edging, SP w/v.f.vug in healed fracs, some silt in most dolo
11380-90 more lt.gry-wh-blk mottled, fragmental, foss (phantoms), dse, more calc to dolo ls
11390-400 tr lt.gry f.gr tight hard dolo, silic, grades to sdy dolo
11400- tr blk sh, smooth, firm, blky, sl dolo, tr slickensides(??), some sdy, some v.silic

11,410-11,420 30% ss - lt.gry, f.gr, qtz, dolo-calc, v.silic, friable-hard, tight, no fluor, grades to sdy calc dolo
70% dolo - AA, more sdy, tr microvug poros, no stain or fluor
Occ brn-blk op chert nodule

11,420-11,430 80% ss - AA, v.tight, lt.gry S&P, f-m.gr qtz, w.cmtd, p.srtd, tight, calc, silic-v.silic, hd, sl glassy, no stain or fluor, no cut
20% dolo - AA

11,430-11,460 100% ss - lt.gry S&P, f-m.gr qtz, w.cmtd, p.srtd, tight, calc, silic-v.silic, hd, sl glassy, no stain or fluor, no cut
Tr dolo - AA
Note: Matrix pred silica & dolomite

11,460-11,475 10% dolo - dk.gry-brn-blk, f.microgran-xln, dse, carb, some fine calc-calcite incl, some frac fill - AA
90% ss - AA, silic, AA
Tr ls - brn, f.microxln, dse

Trip @ 11,481'

11,480-11,490 10% ls - calcite - pred wh, xln calcite
90% dolo - AA, becoming more arg, shlky, carb, some v.f.microvug poros
Tr red beds, ss & sh, sltstn, pred brick red - slough "trip trash"

11,490-11,500 100% dolo - dk.gry.brn-blk, f.microxln, dse
Tr ls - calcite - AA
Some frac fill and edging, some incl & healed fracs

Note: Caught hand sample 11,497 on 7 units hot wire kick (duration of "kick" 1 minute) Dolo AA, only fluor from pipe dope. Checked w/crews, "kick" lags back to connection period. Nothing on chromatograph. Opinion - some type of contamination. Too rapid in building up and dropping out

11,500-11,590 100% dolo - dk.gry-blk-lt.gry mottled, f-m.microxln, dse-sl.gran, tr wh anhy incl, some hairline calcite & dolo healed fracs & frac edging, occ isolated f.microvug (no to poor perm), carb in part, tr foss & foss phantoms
11520- some brn-gry.brn, f.gran, no fluor, occ piece brn-blk op chert, dolo hard, silic in part
11570- sl incr (tr) chert - blk-brn, op, milky transl, dolo more silic, decr fractures
11580-90 incr chert - tr - AA, some milky transl

11,590-11,600 100% dolo - AA, some brn, f.microxln, tan f.microxln-v.f.microxln, decr silic, occ isolated microvug poros, no fluor
SP chert - AA

11,600-11,640 100% dolo - AA, 40% tan-lt.brn, f-m.microxln, dse, some f.microgran, 15% fair microvug poros, some f.rhomb clusters w/m.interxln poros (related to vugs), no fluor, no live stain; v.v.sl dull weak pale cut? from sample wash water (contamination)
SP chert - AA
11610- 10% vug poros AA, 2/3 tan-brn dolo - AA
11620- becoming tan-lt.gry, v-m.microxln-gran, dse in part
11630- some blk residue in some vugs, some vugs & secondary crystallization related to fractures?

Circ. drilling break @ 11,647'

11,640-11,647 Incr tan-lt.gry - AA, incr blk residual material, will no cut, no fluor

Evaluation: Fair drilling break - porosity came in before break, some torquing, fair porosity (vug & intergranular), tr residual black stain or fill, no cut or fluor, no gas on hot wire or chromatograph, water productive

11,650-11,670 100% dolo - AA, 70% tan-brn-lt.gry, f-m microxln-gran, fair(30%) microvug-vug poros w/some blk residual fill
11660- dolo AA, incr dk.gry-brn-blk dse, f.microxln, 10% microvug-vug poros, AA

11,670-11,690 10% chert - brn-gry, op-transl
90% dolo - AA, decr tan-lt.gry (40%) 20% vug poros AA, incr dk.gry-blk f.microxln-microgran, some porous
11680 - incr dse brn-gry dolo (10% vug poros - AA)

11,690-11,705 20% chert - AA, grades to silic dolo
80% dolo - pred dk.gry-gry.brn- f.microxln, silic in part, firm-hard, tr vug poros AA, no fluor, stain or cut

Evaluation: Fair porosity, no fluorescence or oil stain, some residual black stain. No cut, very sl gas show - tr - on hot wire detector and $C_1$ - 2 units; $C_3$ - Tr; $C_4$ - tr on chromatograph. Analysis - water productive. Called Denver - wanted to test - See DST #3

11,705-11,710 10% red beds - sh, sltstn, red arg, blky "trip trash" after DST
Tr anhy & ls
90% dolo - AA, 10% vug poros AA, no shows

11,710-11,720 40% chert - gry-tan-lt.brn-milky, trans-op, sl dolo, grades to silic dolo
60% dolo - gry-tan-brn, f-m.microxln-microgran (sucrosic), some rhomb clusters (10%), fair microvug vug poros, no fluor or stain, occ piece w/blk residual stain, silic in part, dse

11,720-11,750 20% chert - AA, prob as nodules in dolo
80% dolo - dk.gry-gry.brn, pred dse, silic in part, SP vug AA, no fluor, SP brn "dead" stain
11730-40- some blk op chert, some brn-gry-milky mottled-speckled foss(?) in part; some dolo w/tr sl intergran poros, no shows
11740- tr vug & frac poros, no stain or fluor

11,750-11,760 10% chert - AA, pred dk.gry-brn-blk op
90% dolo - tan-f.gran, silic, xln; gry-brn f.microxln dse, SP vug poros, no fluor

11,760-11,790 20% chert - AA
80% dolo - AA, tr vug poros AA, tr ls & calcite, lt.gry, xln, dse
11770- more silic & more sucrosic, some dolo w/calc-calcite incl, some chert w/arg lt.gry chert incl & some foss

11,790-11,800 40% chert - AA
60% dolo - AA, some tan-lt.gry, f-m.microxln, tr f.microvug poros, occ piece w/blk residual stain, no cut

11,800-11,810 70% dolo - incr lt.gry-tan - AA, tr vug & edge poros, no show
30% chert - pred tan-m-lt.gry, transl-op

11,810-11,820 10% chert - AA
90% dolo - pred lt.gry-tan - AA, tr vug-microvug poros, no stain or fluor

11,820-11,840 20% chert - AA
80% dolo - pred dk.gry-dk.gry.brn, f-m microxln, dse; tr-10% f.microvug-vug poros, no shows

11,840-11,850 30% chert - blk-gry-brn-tan, milky-transl-op
70% dolo - AA, tr vug, some secondary dolo xls along edges (fracs?) no fluor

11,850-11,860 20% chert - milky-gry-brn-tan, transl-op, dolo in part
80% dolo - tan-lt.brn, f.microxln-gran & dk.gry f.microxln, dse, silic, hard
Tr-10% vug poros - AA, no fluor, some blk residual stain, tr secondary xls on edge

11,860-11,880 10% chert - AA, mottled in part, nodules finer
90% dolo - AA, decr dk.gry-blk, dse, incr tan-brn w/tr isolcated f.microvug-vug poros, no fluor
11870- decr to SP vug poros

11,880-11,910 70% dolo - AA, tr poor vug poros, no show
30% chert - AA, incr buff-lt.gry-brn mottled
11890- pred buff-lt.tan-lt.gry, f-m.microxln-gran, occ piece chert foss; dolo SP vug, no fluor

11,910-11,930 80% dolo - pred tan-lt.gry, tr f.vug poros, SP edge poros, no fluor or cut
20% chert - AA

11,930-11,950 40% chert - blk-milky, op-transl
60% dolo - AA incr dk.gry-blk, tr vug AA, no fluor, SP vug fill calcite, no stain

11,950-11,980 30% chert - pred lt.gry mottled op-sl.transl
70% dolo - much dk.gry, f.microxln, dse, silic in part; tr microvug-vug poros, perm ?, no fluor, SP secondary xls on edge, frac poros?
11970- dolo becoming pred dse dk.gry - AA

11,980-12,000 50% chert - pred m-dk.gry-blk mottled, op; some blk op
50% dolo - dk.gry-blk, f-m.microxln, dse
SP f.microvug-vug & edge poros - AA, no fluor, stain or cut

12,000-12,020 40% chert - incr lt.gry op, sl dolo in part
60% dolo - AA, incr lt.gry, f-m.xln, dse, occ edge & microvug poros - AA, no shows
12010- more silic-cherty

12,020-12,030 70% chert - AA, pred lt.gry, speckled in part
30% dolo - pred dk.gry, dse, silic - AA

12,030-12,040 40% chert - AA, incr blk op
60% dolo - pred dk.gry, f-m.microxln, dse, silic

12,040-12,050 60% chert - pred gry-dk.gry op
40% dolo - AA, no fluor or stain, some wh calcite frac fill
Occ piece anhy - wh, gran, xln, red beds (slough)
<u>Top Lodgepole</u> - 12,045'

12,050-12,070 70% chert - pred blk op, some milky transl
30% dolo - pred dk.gry-blk, dse, cherty-silic
SP f.vug poros, no shows
12060- some milky mottling in blk chert

12,070-12,090 30% chert - AA
70% dolo - dk.gry-blk, gry-brn, f.microxln, sl sucrosic, dse, tr wh calcite frac fill, some edge poros
SP anhy - wh, f.gran-microxln

12,090-12,100 20% chert - AA
80% dolo - incr gry.brn, xln-sucrosic, dse

12,100-12,110 10% chert - AA, some w/calcite incl
90% dolo - AA, some silic, hard, dse
Tr dolo ls - gry-brn, dse, xln, grades to calc dolo

12,110-12,120 Tr chert - AA
100% dolo - AA, more sucrosic but not well developed, silic, dse in part, SP wh xln dolo (frac fill), tr oolites
Tr ls - AA, tr oolitic ls, blk oolites, wh matrix, some oolitic ls & some blk, carb, shiny, v.arg sh-shly dolo

Circulate up drilling break, 12,125-12,146' - no gas or show - returned to drilling after catching 12,135' sample

12,120-12,125 90% dolo - pred gry.brn, f.microxln-sl sucrosic, tr f.microvug poros, no stain or fluor
10% chert - gry-blk, op - AA

12,125-12,130 Tr chert - AA, occ piece blk flky carb sh (phosphatic?)
100% dolo - SP vug poros
Tr ls - oolitic - AA

12,130-12,135 100% dolo - AA, some calc, occ piece w/f.microvug poros, no stain or fluor, doubt perm - dse
Tr chert - AA
SP oolitic ls - AA, blk-wh mottled, phosphatic?

12,135-12,140 90% dolo - AA, tr sl intergran poros in tr f.sucrosic & SP f.microvug poros & edge poros; some blk dse oolitic firm-hd-nodular ls
10% chert - gry-brn-blk, transl-op

12,140-12,150 100% dolo - gry-brn, f.microxln-f.microgran, SP calc, more sucrosic, 10% vug - AA, some secondary xls (fractures), occ piece w/blk residual stain, no cut
Note: Nodular-oolitic blk w/wh calcite matrix (phosphatic??)

12,150-12,180 100% dolo - pred gry.brn-dk.gry, f.microxln-f.gran, occ sulphur along edge fracture, tr f.microvug poros, no shows, tr sl intergran poros
SP chert - AA
Some dolo - silic, occ piece w/chert fragment, 10%+ w/fair f. microvug-vug poros

12,180-12,200 100% dolo - incr dk.gry-blk, f.microxln, dse, silic in part, tr microvug poros - AA

12,180-12,200 (cont.)
Tr ls - wh-gry, f.microxln, dse
Tr chert - AA
12,190- incr gry.brn f.microxln, dse, decr poros

12,200-12,300
100% dolo - gry.brn-blk, f.microxln-sl.sucrosic, silic in part, Tr poor-fair poros (low perm), pred dse, some gry tan dse calc, some fracturing, some anhy healed fractures
12,240-50 - decr poros (tr)
12250- more dk.gry brn f.microxln, silic, hd in part, incr lt.brn-tan m.microxln
12260- incr tan-lt.brn dolo - AA, occ sulphur incl, pred silic, hd, some dk.gry arg
12270- more lt.gry-lt.brn xln - AA, tr gry, firm, splintery v.f. velvety sh, tr lt.gry chalky-xln ls grades to dolo ls, tr vug poros

12,300-12,330
100% dolo - gry.brn-dk.gry, f-m.microxln-sl sucrosic in part, some arg, some lighter colored gry.brn, calc, dse, silic in part, occ vug
SP chert - blk, op
12310-20- more arg, more dk.gry, dse, hd, silic in part, occ vug isolated, ? perm
12320-30- incr lt.gry-gry mottled dolo ls, more calc, occ vug & tr edge poros, no fluor

12,330-12,340
20% dolo ls, gry.brn-tan, f.microxln-chalky, dse
80% dolo - AA, tr healed fractures, pred dse, firm

12,340-12,350
40% ls - gry-dk.gry-lt.gry, f.microxln-chalky, dse, dolo in part, grades to dolo
60% dolo - AA, more calc in part

12,350-12,360
20% ls - AA, incr gry-tan, f.microxln, dse, wh calcite frac fill
80% dolo - pred dk.gry-gry.brn, f.microxln, dse, SP vug & edge poros, along fracture

12,360-12,370
30% ls - AA
70% dolo - AA Note: Most fractures appear healed

12,370-12,390
60% ls - brn-tan, f.microxln, fragmental in part, foss, chalky in part, dse; some gry, arg, dse dolo ls in part
40% dolo - AA, some calc grades to dolo ls, no shows

12,390-12,400
80% ls - pred buff-gry-brn mottled, f.micro-cryptoxln, dse, some wh calcite, chalky in part, fragmental foss in part

12,400-12,440
100% ls - gry-gry.brn, arg; tan-brn f.microxln-cryptoxln, fragmental foss, dse, lt.gry f.microxln-chalky, soft; dk.brn cryptoxln (thin pieces), tr crinoidal, some wh calcite fill, some healed fractures, no fluor
Tr dolo - AA, occ piece chert - AA
10410- incr brn buff mottled xln, dse, some wh calcite healed fractures & calcite frac fill
10430- tr dk.gry, blky, velvety, v.calc sh ptgs

12,440-12,450
10% sh - dk.gry - AA
90% ls - AA

12,450-12,500 100% ls - pred lt.gry-brn, f.microxln-chalky, arg in part, grades to gry calc sh in part, no fluor
Tr sh - gry - AA, about 1/3 calc sh-arg ls
12470-80- incr wh calcite healed fractures
12490-500- Tr wh crinoidal, m-crse xln calcite

12,500-12,600 100% ls - AA, pred lt.gry, f.microxln, chalky, dse, soft; some v.arg gry grades to v.calc sh; some lt mottled by darker gry-brn chalky
Tr sh - dk.gry, v.calc - AA
12520-30- incr lighter gry-brn
Note: Ls pred chalky, lt.gry w/thin sh-arg ls ptgs & darker firm, f.microxln
12580- sl incr dk.gry, more f.microxln dse

12,600-12,650 100% ls - pred lt.gry-m.gry-gry-brn mottled, f.microxln-chalky dse, fragmental foss in part, tr healed fractures & some wh calcite frac fill, some dk.gry arg
12620-30- ls becoming more dk.gry-gry.brn, f.microxln, dse, frac tured in part, healed in part, arg in part
12640-50- tr brachiopod shell, occ piece of dolo w/vug poros (slough)
12650-60- tr more arg, dk.gry ls
12670- becoming more lt.gry-gry-lt.gry.brn, f.microxln-chalky in part, fragmental foss in part, dse, some v.dull weak min fluor in wh calcite
Note: Limestone probably thin bedded as 2-3 distinct types in each sample

12,700-12,750 100% ls - pred lt-m.gry mottled w/tan tint in part, f.microxln, chalky in part, some dk.gry arg, dk.gry.brn cryptoxln, dse; some healed fracs & frac fill, tr foss; occ piece chert, blk, op from uphole, SP dolo - dk.gry.brn, xln, dse (slough)
12710- incr dk.gry, more healed fractures
12730- incr dk.gry, dse arg ls (30%)

12,750-12,890 100% ls - wh calcite, lt-m.gry-dk.gry, some blk, f.micro-crypto-xln, dse, sl foss (crinoid stem), some wh calcite may be crinoidal
12760- pred dk.gry-blk, f.micro-cryptoxln, dse, many healed fractures (wh calcite) some w/brn tint, carb, no fluor or stain
12800- pred dk.gry-blk, f.micro-cryptoxln dse w/many wh calcite healed fractures, some m.gry arg, blk may be carb, some cuttings w/many webbed healed fracs, tr wh free calcite
12850- some gry, soft, marly arg ls
Note: Most samples carry 6± pieces red beds (slough)
Top Darby - 12,889'

12,890-12,900 30% dolo - tan-lt.gry.brn-brn, f.microxln, dse, no fluor
70% ls - AA, no fluor

12,900-12,910 60% dolo, pred lt.gry-tan, f.microxln, dse, firm, occ silic, hard, occ piece pale grn arg dse
40% ls - AA

12,910-12,930 70% dolo - AA, becoming lt.gry tan
30% ls - AA
SP anhy - wh, gran-xln
12930- occ piece pink-orange, f.xln arg(?) dolo w/m-crse s.ang floating sd gr

12,930-12,940 20% ls - dk.gry-blk, carb - AA
30% dolo - tan-lt.gry-lt.grn-pink red, f.xln, cryptoxln, anhy in part, some w/m-crse s.ang-s.rdd floating sd gr
50% anhy - wh - AA

12,940-12,960 30% dolo - AA, some brn cryptoxln dse, SP pale grn glauc?, some pink dse - AA
70% anhy - AA, some w/tan-brn-grn dolo incl
Tr ss - AA
10950- incr red-pink crypto-f.microxln anhy dolo
Note: Dolo probably as fine partings in anhy
Tr red flky smooth-earthy sh

12,960-12,970 10% sh - brick red-pink - AA
30% dolo - AA, some healed fractured
60% anhy - AA, some m-crse gr sdy

12,970-12,980 20% sh - red - AA, anhy in part
40% dolo - AA, varicolored, f.micro-cryptoxln
40% anhy - AA

12,980-12,990 50% anhy - AA
30% dolo - AA
20% sh - red - AA

12,990-13,000 60% anhy - AA
30% dolo - AA
10% sh - red - AA

13,000-13,010 70% anhy - AA, pred wh xln-gran w/some pale grn dolo incl
30% dolo - lt.gry-pale grn-gry.grn-tan, f.micro-cryptoxln, anhy, dse
Tr sh - red, blky, smooth, anhy & dolo
Tr ls - blk-dk.gry - AA, uphole slough

13,010-13,020 60% anhy - AA
30% dolo - AA
10% sh - red - AA

13,020-13,030 80% anhy - AA
20% dolo - AA
Tr sh - red - AA

13,030-13,050 20% sh - red - AA
30% dolo - AA
50% anhy - AA
Tr ls - AA

13,050-13,060 10% sh - red brick-brn.red, blky - AA
40% dolo - red, grn, lt.gry, tan, f.micro-cryptoxln
50% anhy - wh-pale grn, grades to anhy dolo

13,060-13,070 20% sh - red - AA
40% dolo - AA
40% anhy - AA, some w/crse-m qtz floating sd gr

13,070-13,090 20% sh - AA, pred red dolo-anhy, grades to dolo & anhy
30% anhy - AA
50% dolo - AA

13,090-13,110 10% sh - red - AA
30% anhy - AA
60% dolo - AA, some v.anhy, sdy m-crse "floating" gr, no fluor or stain

13,110-13,120 20% sh - red - AA, grades to red, arg dolo
20% anhy - AA, sdy in part
60% dolo - incr grn & red brn, sdy in part
Note: Sdy dolo & anhy - m-crse gr, ang-rdd qtz

13,120-13,140 30% sh - red - AA
20% anhy - AA, occ grn dolo incl
50% dolo - AA

13,140-13,150 20% sh - red - AA
60% dolo - AA, varicolored, red-grn, lt.gry-gry-tan, f.microxln, dse

13,150-13,170 Tr sh - red - AA, SP pale grn dolo sh
90% dolo - pred lt.gry-v.pale grn, about 1/2 w/floating ang-rdd sd gr, some unconsol rdd crse frosted qtz gr
10% anhy - AA

13,170-13,180 20% sh - brick red, anhy-dolo, firm, blky, silty in part
10% anhy - AA
70% dolo - AA, sdy in part, grades to tr lt.gry v.dolo tight ss, some crse v.f. qtz gr

13,180-13,190 50% dolo - AA
40% sh - red, blky, firm-f.velvety, some silty
10% anhy - AA
Tr unconsol crse sd - AA, v.f. qtz gr

13,190-13,210 20% anhy - gry-wh, xln-gran, dolo in part, sdy in part
50% dolo - lt.gry-v.pale grn, lt.tan, f.microxln, dse, some f.gr, occ unconsol crse frosted qtz gr, some red arg dolo
30% sh - red - AA
Tr ls - dk.gry-blk, arg, dse (slough)

13,210-13,230 80% dolo - big incr dk.gry-gry.brn, f.microxln, anhy-v.anhy in part, grades to dolo anhy, anhy incl in dolo
20% anhy - AA, wh-gry, xln, dolo in part
Tr sh - red, blky, velvety, earthy, sl dolo, anhy

13,230-13,240 90% dolo - pred dk.gry-dk.gry brn, f.micro-cryptoxln, dse, anhy to many anhy incl, silic in part
10% anhy - AA

13,240-13,250 100% dolo - pred dk.gry brn-brn.gry, f.microxln, dse, silic in part, hd, tr healed fractures, anhy in part
Tr red beds & ls - slough

13,250-13,260 90% dolo - AA
10% anhy - AA, dolo in part, frac fill in part
Tr red beds slough, SP ls - gry-blk, xln - AA

13,260-13,270 20% anhy - AA
80% dolo - AA

13,270-13,290 30% anhy - incr dk.gry xln, dolo, grades to dolo
70% dolo - AA, pred more lt.gry, microxln, dse, anhy-v.anhy, grades to dolo anhy

13,290-13,300 30% ls - dk.gry-gry.brn, f.microxln w/some healed fractures & frac edges
20% anhy - AA
50% dolo - AA

13,300-13,310 50% ls - AA, fractured in part, healed wh calcite
50% dolo - AA
Tr anhy - AA, occ piece red beds

13,310-13,320 70% ls - dk.gry-gry.brn - AA, some lt.gry, f.microxln-chalky, dse
30% dolo - AA

13,320-13,340 90% ls - lt-dk.gry-dk.gry.brn, f.microxln-cryptoxln, some styolites, healed fractures, tr wh calcite frac fill, some dolo in part
10% dolo - pred dk.gry, f.microxln, gry.grn, f.xln, no shows

13,340-13,470 100% ls - pred dk.gry, f.microxln, dse; lt.gry chalky, some gry v.arg ptgs, no fluor or stain, some dolo in part
Tr dolo - AA, dk.gry, f.microxln-sl.gran, arg
13370- incr m-lt.gry, f.microxln-chalky, dse, decr dolo
13,400- incr lt.gry chalky ls, rest gry.brn, f.micro-cryptoxln, dse, tr fracturing, wh calcite - AA
13410- incr dk.gry-gry.brn cryptoxln, dse - AA, some foss, occ oolite, SP pyritic
13,420- incr lt.gry chalky - AA
13,430- pred dk xln ls - AA, dse
13,450- ls - AA, tr dk.gry-blk, v.arg dolo (slough?)

13,470-13,480 90% ls - AA, some sl dolo, grades to dolo below
10% dolo - AA, some lt.gry-tan, f.microxln-sl.gran, sl pyritic in part, dse

13,480-13,490 60% dolo - AA, some w/sl grnish tint, arg, grades to SP gry.grn, blky, pyritic dolo sh (bentonitic?)
40% ls - AA

13,490-13,500 80% dolo - AA, silty in part, grades to sltstn
20% ls - AA
Tr sltstn - gry-gry.grn, dolo
Tr sh - lt.gry-lt.gry.grn, dolo - AA

13,500-13,530 30% ls - wh-buff, f.xln w/brn spots, chalky, dse
40% sltstn - gry, some grn tint, dolo-calc, tight, grades to silty dolo, no fluor or stain
30% dolo - gry-gry.grn, silty, calc in part
Samples carry SP red sh & sltstn

13,530-13,540 30% sltstn - pred lt-m.gry w/grn tint, calc, grades to silty ls & dol
10% dolo - AA, silty
60% ls, pred silty-v.silty, dse, some wh calcite

13,54013,550 50% ls - wh-buff, f.microxln - calcite xls, gry-grn.gry silty - AA, no fluor
30% sltstn - gry-grn.gry, calc-dolo, tight
20% dolo - gry - AA, grades to sltstn, calc in part

13,550-13,560 30% ls - AA, pred silty, dolo
Tr sltstn - red, tight, dolo, firm
40% sltstn - gry-grnish gry, tight, calc-dolo
30% dolo ls - silty, dse - AA

13,560-13,570 10% sltstn - red - AA
20% sltstn - gry - AA
40% dolo - gry, f.microxln, silty, dse
30% ls - AA

Note: Siltstone, dolomite, limestone section above could probably be classified as a calcareous dolomitic siltstone to dolomitic silty limestone interval

13,570-13,580 20% sltstn - red - AA
40% dolo-ls - gry, silty, dse - AA
20% sltstn - AA
20% dolo - AA

13,580-13,590 40% sltstn - red - AA, grades to v.f.dolo ss
20% sltstn - buff-gry - AA, some sdy
40% dolo ls - silty, tight, dse

13,590-13,600 70% sltstn - red, tight, dolo, some hd silic
10% ls-dolo ls - AA, some wh calcite
20% dolo - gry, f.microxln, dse, silty in part

13,600-13,610 80% sltstn - red, tight, firm-hard, sl dolo, silic in part, grades to red silty ss
20% dolo ls - gry, silty - AA
Tr ls & dolo - AA, some gry, dolo, silic sltstn

13,610-13,620 20% sltstn - red - AA
80% ss - red-pink-buff, v.f-f.gr, some m.gr, ang-rdd qtz gr, p.srtd, in general w.cmtd, dolo, silic, firm-hard, tight, no fluor or stain, arg-v.arg in part
Tr dolo ls - AA; SP anhy - AA, slough(?)

13,620-13,630 20% dolo ls - gry-grn.gry, f.microxln, silty, dse, calc in part
80% ss - red - AA
Tr sltstn & anhy as incl

13,630-13,640 10% dolo - AA, some brn f.microxln calc-arg, dse
40% ss-sltstn - brn, v.f-f.gr, tight, dolo, tr anhy edge (anhy filled frac or incl), no fluor
50% ss-sltstn - red - AA, pred v.f.gr, tight, dolo, arg in part

13,640-13,650 40% ss-sltstn - red - AA
50% dolo ls - calc dolo - gry-tan gry, tr grn.gry, dse, silty in part, grades to tr gry dolo tight sltstn; ls, buff-gry-brn mottled, f.xln, dse
This sample seems to be mixed w/a lot of slough - may be because of slow drilling

13,650-13,660 80% ss - pred red-pink, v.f-f.gr, w.cmtd, tight, p.srtd, qtz s.ang-s.rdd, calc, some dolo, silic in part, friable-firm, anhy(?) in part, some silty, no fluor
20% sltstn - red, tight, calc-dolo, pred arg
Tr sh - red, blky-sdy (f-m.gr)
Tr ls & dolo - gry-brn - AA
Tr mica - LCM
Tr ss - lt.gry, f.gr qtz gr, tight, dolo

13,660-13,670 10% sh - red - AA, some lavender, soft, smooth, flky
10% sltstn - red - AA
80% ss - red - AA
Tr ls - dolo, dk.gry-brn-blk (slough)

13,670-13,690 30% sh - red, smooth, blky-earthy, silty-sdy, soft-firm, some wh anhy filled fracs
20% sltstn, red, arg
50% ss - AA, red, occ crse rdd frosted unconsol sd gr
Tr ls-dolo - gry - AA; SP anhy - AA

13,690-13,700 10% sh - red - AA, silty-sdy in part
20% sltstn - red - AA, sdy, arg in part
70% ss - red - AA, tr wh xln-gran anhy

13,700-13,720 Tr sh - red - AA
20% sltstn - red, tight, arg-dolo-calc in part
80% ss - red-orange (salmon), f-v.f.gr, tight - AA, some m-crse rdd frosted floating qtz gr, some pink-buff
Tr ls & dolo - gry-buff - AA, slough

13,720-13,740 30% sh - red (rust-brick), blky-flky, smooth-earthy, fiss, sl calc or dolo
20% sltstn - red, arg, tight - AA, grades to silty sh
50% ss - red - AA, finer gr
13,740- sample caught before trip

Note: Checked some Nugget samples - upper red Nugget more coarse grained; lower, slight more coarse; both less arg, no shale

13,740-13,750 30% "trip trash", pred gry arg carbonates & anhy
50% sh - red - AA, some lavender
20% ss-sltstn - red - AA

13,750-13,760 Tr carbonates - uphole slough
20% sh - red - AA
80% ss - red, med-f.gr, tight, w.cmtd, p.srtd, calc-sl.calc, some lt.gry-buff, tr anhy
Tr sltstn - red - AA

13,760-13,770 90% sh - brick red-red brn, blky, calc-sl.calc, v.soft-firm, tr silty
10% ss - AA

13,770-13,780 10% dolo - pale grn, dse, silty in part
70% sh - red - AA
20% ss - AA, red-pink, no fluor or stain, no poros

13,780-13,790 20% sh - red - AA
80% ss - red-pink-tr wh, calc, tight - AA
Tr carbonates - AA

13,790-13,800 40% sh - red - AA
60% ss - AA
Tr sltstn - red, arg, tight, sl.calc

13,800-13,810 30% sh - red - AA
20% sltstn - red - AA
50% ss - red - AA, tr lt.gry-buff, f.gr, calc, tight

13,810-13,820 10% sh - red - AA
30% sltstn - red - AA
60% ss - red, v.f-f.gr, about 1/2 lt.gry, f-m.gr, ang-s.ang qtz gr, w.cmtd, p.srtd, calc, tight, some lt-m.gry mottled, tr grn glauc gr

13,820-13,830 30% sh - red - AA, incr red orange earthy-v.soft, sl.calc
20% sltstn - red - AA
50% ss - red-lt.gry - AA, decr lt.gry
Tr anhy-gypsum, wh-clear
Samples carry some uphole carbonates

13,830-13,840 60% sh - incr orange red, v.fragile, much probably washes out, silty in part
30% ss - AA, decr lt.gry (tr) w/some s.ang crse qtz gr, no fluor or stain
10% sltstn - red - AA

13,840-13,850 70% sh - red - AA, much brick red, v.smooth-s.waxy
30% ss - red & 1/3 gry - AA, no fluor or stain

13,850-13,870 80% sh - brick red-red orange, smooth-earthy blky, some s.waxy (slickensides?), silty-sdy in part, some mottled pink-red blky, sl dolo
10% ss - red, f.gr, tight, arg
10% ls & dolo - gry-dk.gry-wh-tan, xln (uphole slough)
SP gypsum, clear, xln, prob in sh; occ wh anhy; some yellow f.microxln dolo (weathered?); some ls - red, f.microxln, dse, arg in part

13,870-13,880 10% ls-dolo - red-pink, f.micro-cryptoxln, dse; tan-gry f.microxln, dse (tan-gry slough)
10% ss - red-red brn, silty, arg, tight, calc
80% sh - red-red orange-red brn - AA, sdy-silty in part
Note: Poor sample- lot of slough, various types of uphole carbonates, occ piece chert, 1 piece blk hd sh appears to be weathered(?); samples carry tr mica - LCM; some clear ang qtz w/mica LCM, some pipe dope fluor

13,880-13,900 90% sh - pred red orange (brick) red brn, flky-blky, firm-v.soft fragile, much washes out, some buff-red mottled
10% ls & dolo - gry-dk.gry, occ blk chert, op
SP gypsum - clear-wh, anhy, xln; some sh-silty sdy

13,900-13,910 90% sh - red - AA, silty-sdy in part, occ yellow (weathered?)
10% ls-dolo - slough - AA
Tr ss - red, f.gr, arg; tr gyp & anhy - AA

13,910-13,920 70% sltstn - red brn, tight, arg, sdy in part, grades to silty ss & silty-sdy sh
30% sh - red - AA, some silty-sdy
Tr ls-dolo - uphole slough

13,920-13,930 30% sltstn-ss - AA
70% sh - red-red brn, less silty-sdy
Tr ls-dolo - AA; occ piece typsum, clear - AA; SP dolo, red, f.microxln, dse

13,930-13,980 100% sh - red - incr blky maroon, velvety, sl dolo, firm, some orange red, soft (rdd), decr silty
Tr uphole carbonates - AA; occ piece typ - AA
13,940- incr brick red
12950- pred brick red (orange red) blky, velvety-earthy, dolo, w/ some gry dolo incl &healed fractures, tr silic anhy & dolo incl, dse, tr clear gypsum frac fill
13,970- some red chert incl, some red, silic, arg dolo, dse , hard, grades to dolo sh (30%); some red orange sh, more calc, grades to arg ls

13,980-13,990 20% ls - red, arg, dse, grades to calc sh
80% sh - red - AA, more calc in part, silty-sdy in part

13,990-14,000 100% sh - red, blky, f.velvety-earthy, pred silty-v.f.sdy, calc-dolo, firm

14,000-14,010 20% dolo - brn-buff, f.microxln, dse; red arg, f.micro-cryptoxln, dse; some may be fragments in sh
80% sh - brick red, blky, earthy-f.velvety, firm, dolo, some w/ dolo & ls incl
Tr ls - red, arg; wh xln calcite

14,010-14,020 10% ls - AA
10% dolo - AA, dse
80% sh - AA

14,020-14,030 10% dolo - pred red, arg, dse, grades to dolo sh
90% sh - red - AA
Tr ls - AA, dse
SP ss - lt.gry-buff, f.gran, dolo as below
Top - Base/Nugget - 14,029'

14,030-14,050 10% sh - red - AA
10% ss - red, arg, dolo, tight, grades to arg, sdy dolo
80% ss - buff-pink-salmon red, f.gr, tight, ang-s.ang, firm, sl dolo, silic, hd, some "floating" m-crse rdd frosted sd gr, some red ss, glassy, no fluor

14,040-14,050 Ss pred buff, some pink to red, anhy in part, some buff-wh chert, sl dolo, v.silic dolo, dse, occ piece w/sl tr intergran poros, no fluor or stain, no shows

14,050-14,070 100% ss - AA, decr buff, pred pink-salmon red, f.gr qtz, w-p.srtd, w.cmtd, sl dolo, silic-v.silic, glassy in part, tight, no fluor or stain, ss appears to be sl anhy

14,070-14,080 30% sh - red, smooth-earthy, silty in part (slough?)
Tr ss - red, arg
70% ss - pink-salmon red-buff - AA
SP dolo - ls - gry - slough

Trip @ 14,083' - Bit 2-1/4" out of gauge - lost circulation during trip - lost at least 80 bbls mud. Depth correction to 14,094

14,090-14,100 90% ss - pred pink-buff, f.gr, s.ang, w-f.srtd, w.cmtd, silic, anhy in part, tr clear gypsum, dolo in part
10% sh - red - AA, prob slough - much LCM
SP anhy - wh, xln

14,100-14,160 100% ss - AA, pred pink; lot of nut plug LCM in sample; some dk.gry gr, pred qtz, incr p.srtd, some m.gr, glassy in part, tr sl intergran poros, no fluor or stain
Tr sh - red - AA
14120-130 - incr buff, decr pink, occ m.rdd frosted gr, SP v.sl. dolo, occ orange feldspar grains,; some wh-pink chalky amorphous anhydrite (bit flour), tr sl intergran poros, no fluor or stain

14,160-14,240 100% ss - pred pink, some salmon red, some dk.gry grains - AA
Lot of LCM (Nut Plug & Mica) in samples
14180-200 - tr red flky smooth sh, some red arg tight sltstn; tr sl intergran poros, no fluor or stain
Some after trip & slow drilling trash in samples
14200-220 - pred red-red brn-pink, f.gr qtz, ang-s.ang, hard, glassy, silic, sl dolo, firm; some buff
Tr red sh - AA, S&P (occ dk.gry gr)
Pred tight, occ sl intergran poros, no stain or fluor
14210-20 - tr sl intergran poros
14220- incr red-salmon red - AA

14,240-14,340 100% ss - pred pink-buff, f.gr qtz, s.ang, p.srtd, w.cmtd, tight, hard, silic, glassy-v.sl.dolo, friable in part, anhy in part, tr chalky buff anhy; some m.gr clusters & isolated gr ang; SP sh - red blky-flky, waxy-smooth. (Some ss orthoquartzitic) some orange orthoclase feldspar gr
14,360 - incr ss - buff, f.gr, qtz, w.cmtd, silic, hard, sl dolo, friable, anhy in part
14,340 - incr buff ss - AA

14,340-14,400 100% ss - buff-wh, f.gr, qtz, s.ang, tight, w.cmtd, poor-f.srtd, silic, sl dolo, anhy in part, some m.ang-rdd frosted in part thin zones & as "floating" med gr, tr sl intergran poros, no fluor or stain

14,350 - pred wh f.gr, s.ang qtz, fair-p.srtd, sl dolo, w.cmtd, silic-hard-friable, anhy in part, tight; some m.gr floating & thin zones, s.ang-rdd frosted, no fluor or stain. Some contamination (blue) of cuttings from pipe dope. Cuts w/blue hazy fluor w/v.weak fluor to ring, no color in plate. Contamination
Some wh, sl dolo, chalky material (prob bit flour); some glassy, tr sl-v.sl tr intergran poros
14,360 - some clusters of cutting adhering to pipe dope which have soaked up oil from dope and have stain & blue fluor as does pipe dope. Will cut w/weak blue fluor - contamination. Pred tight
14,400 - ss - wh - AA, tr sl intergran poros; ss occ w/pyrite incl
14,420-430 - some fluor in samples, none when fresh, had some pipe dope. Checked w/logger, said no fluor last night. Contamination from pipe dope - AA, pale bright blue fluor w/v.weak cut, no color to ring, cut blue - AA, like pipe dope, no gas on detector - contamination

14,430-14,450 100% ss - wh, f.gr, s.ang qtz, w.cmtd, fair-poor srtd, silic, hard, glassy in part, anhy in part. Some m. "floating" sd gr, occ crse qtz gr, ss sl dolo, pred tight, SP sl intergran poros (some white bit flour?), no fluor or stain; some f-m.gr s.ang-s.rdd tight, some dk.gr in ss

14,450-14,500 100% ss - wh, f.gr, s.ang-s.rdd qtz, well cmtd, friable-hard - silic, sl dolo, tight; some wh chalky, sdy anhy (may be bit flour), some m.gr qtz, s.rdd, p.srtd, frosted, silic; some pyrite incl
SP ls - gry, cryptoxln-microxln, dolo, some red sh & sltstn slough
Note: Friable ss may be due to crushing action of button bits
14,490- lot of red bed & carbonate "trip trash"

14,500-14,510 90% ss - wh, f.gr, ang-s.ang, w-p.srtd, w.cmtd, sl dolo, silic, hard; some pink, f.gr, tight - AA; some med gr, anhy
10% sh - sltstn - red beds slough
Tr ls-dolo - gry, xln, blk phosphatic sh slough

14,510-14,520 80% ss - AA, some med-crse, rdd, frosted qtz gr, unconsol
20% sh-sltstn - red beds slough AA, after trip trash

14,520-14,530 100% ss - AA
Tr red beds, ls & dolo - AA

14,530-14,540 20% ss - AA
20% ls & dolo, gry, xln - after trip trash
SP chert - gry-blk, op " " "
60% sh - red, smooth-waxy, flky-blky, some earthy

14,540-14,550 40% ss - AA
60% slough - AA, after trip @ 14,533' & 14,535'

14,550-14,560 SP ss - wh - AA
100% LCM

14,560-14,570 10% ss - wh- AA
90% L.C.M.

14,570-14,580 50% ss - wh - AA
10% sh - red - sltstn - slough "trip trash"
10% carbonates - AA - "trip trash"
30% L.C.M.

14,580-14,600 100% ss - AA & wh, about 1/3 pink to salmon red, f.gr, tight, hard, silic, sl dolo, w.cmtd
Tr L.C.M. & slough
44,590-600 - ss - AA, pred wh, f.gr, hd, silic, tight, sl dolo, much LCM

14,600-14,610 No sample - lost circulation, no returns

14,610-14,640 SP wh f.gr, s.ang qtz, w.cmtd, tight, sl dolo, silic, hard
100% L.C.M. (nut plug & mica)
Some incr in 14630-40, some clear qtz shards (from mica LCM?)

14,640-14,650 30% ss - wh, f.gr - AA, anhy in part, silic, hd-friable, some m.gr rdd frosted qtz gr
70% L.C.M.

14,650-14,660 80% ss - wh - AA, v.silic, glassy in part, anhy in part, some pyrite incl
10% sh-sltstn - "red beds" slough
10% L.C.M.

14,660-14,670 10% sh-sltstn - red - slough
Tr dolo - gry, f.microxln - slough
Tr ls - gry, f.microxln - slough, tr LCM
90% ss - AA, lot of chalky anhy or bit flour

14,670-14,690 30% L.C.M.
70% ss - AA, tr slough - AA
14680-90 - Tr dolo - gry-brn, f.microxln, dse; tr sh, red, blky, smooth

14,690-14,700 90% dolo - gry-brn-buff, mottled in part, anhy in part (wh), f.micro-cryptoxln, dse, sl sucrosic
10% ss - wh - AA

14,700-14,710 100% dolo - tan-brn-buff-gry, mottled, f.micro-cryptoxln, dse, some fractured
Tr anhy - wh, xln-chalky
Tr red beds & ss - AA, slough

14,710-14,720 80% dolo - AA
10% ss - wh, f.gr, tight, silic, hd - AA
10% anhy - AA
Lot of L.C.M.

14,720-14,730 20% dolo - AA
10% anhy - AA, some wh chalky, may be anhy but I think it is bit flour from button bits
70% ss - wh - AA, some wh amorphous qtz w/some sd gr, anhy in part

14,730-14,740 10% dolo - dk.gry-brn, f.microxln-sl.sucrosic
10% sh-sltstn - red - slough
10% anhy - wh, sln-gran
70% ss - wh, f.gr, ang-s.ang, silic, hd, glassy in part, sl dolo, anhy in part

14,740-14,750 10% dolo - AA
10% sh - "red beds"
80% ss - wh - AA

14,750-14,780 90% ss - wh, AA
Tr anhy - AA, some L.C.M.
10% sh - red - AA
Tr dolo - AA

14,780-14,790 100% ss - AA, wh, f.gr, tight
Tr anhy, red sh, dolo - AA
Top - Base/Gypsum Springs - 14,788'

14,790-14,810 20% dolo - brn-gry-buff, crypto-f.microxln, dse
30% anhy - AA
50% ss - wh - AA

14,810-14,820 60% dolo - gry-brn-buff-wh mottled, dse, anhy in part
30% anhy
10% sh - red, blky, f.velvety-earthy
Tr ss - wh - AA

14,820-14,830 30% dolo - AA
10% sh - red - AA, silty in part, wome w/crse milky qtz gr
60% anhy - wh, xln-v.f.gran, occ orange silic
Tr ss - wh - AA
SP chert - orange transl, grades to orange silic anhy

14,830-14,840 70% sh - brn-red brn, blky-smooth-earthy, firm-v.soft, sl.calc-calc, silty in part
20% dolo - pred brn-gry, f.microxln dse
10% anhy - AA
Tr ss - wh - AA, SP gyp - clear - AA
SP lt-m.gry-buff gran, sl.calc ashy material (weathered)

14,840-14,860 80% sh - brn-rust red brn - AA
10% dolo - AA, some blk uphole type (carb), arg in part
10% anhy - AA, some orange silic - AA
Occ piece orange anhy chert as incl in sh, occ piece pyrite
Tr ss - wh, f.gr, tight, silic - AA, slough
Tr ls - blk, carb, dse, phosphatic(?) (uphole)

14,860-14,880 10% anhy - AA, SP orange
80% sh - brn, blky-crumbly, earthy-f.velvety, silty-v.silty in part, grades to arg sltstn, non-calc
10% sltstn - brn-red brn, arg, v.tight
Tr chert - occ piece qtz & orange op-transl

14,880-14,890 20% anhy - wh-lt.gry, xln-gran
40% sh - gry-gry.grn-pale grn, blky, flky, smooth, firm
30% sh - brn - AA
10% dolo - gry-brn, f.microxln, dse, gry-grn arg, SP orange - AA

14,890-14,900 50% sh - gry-grn - AA, some grn smooth-s.waxy, bentonitic?
10% anhy - AA
10% dolo - AA
30% sh - brn - AA

14,900-14,910 10% dolo - tan-gry-gry.grn, f.microxln, dse
10% sh - gry-gry.grn - AA
Tr anhy - wh, xln-gran
80% sh - red brn, blky-smooth-earthy-f.velvety, firm, sl.dolo, silty-sdy in part, w/some anhy incl

14,910-14,920 50% sh - red
10% anhy - AA, occ piece orange silic, grades to orange chert
20% dolo - AA, some arg, grades to gry sh
20% sh - gry-grn - AA, dolo-anhy in part

14,920-14,930 40% sh - red - AA
10% anhy - AA, wh-gry, xln
10% dolo - AA
40% sh - dk.gry, flky-blky, smooth, gry-grn blky, smooth-s.waxy, anhy in part

14,930-14,940 10% anhy - AA
Tr dolo - AA
20% sh - gry-grn - AA
70% sh - red, incr orange red (brick), earthy, v.soft

14,940-14,950 20% sh - gry-grn, dolo in part
Tr anhy - AA, some orange, prob as incl in red sh
80% sh - red brn-brick red

14,950-14,960 20% anhy - AA
10% dolo - brn-gry, f.micro-cryptoxln, arg in part, dse
Tr sh - gry - AA
70% sh - red - AA

14,960-14,970 20% anhy - wh-lt.gry, xln-f.gran
10% sh - gry-gry.grn, blky-flky, smooth-s.wzxy, bent
Tr dolo - gry-lt.tan, v.anhy, dse, some w/v.dull min fluor
70% sh - brick red-red brn-rust red, blky-fiss, smooth-earthy, sl silty in part, sl dolo in part

14,970-14,980 10% dolo - AA, SP lt.tan cryptoxln, v.dse
15% sh - gry-grn - AA
15% anhy - AA
60% sh - red - AA

14,980-15,000 80% dolo - pred lt.tan-lt.gry.tan, cryptoxln, v.dse, silic, hd in part, some anhy incl, tr styolites, some wh xln dolo frac fill
10% anhy - wh - AA
10% sh - red - AA

15,000-15,010 90% dolo - AA
10% anhy - AA
Tr sh - red - AA; SP gry sh slough

15,010-15,020 10% sh - red - AA, some gyp incl
Tr anhy - AA, prob as incl in dolo
90% dolo - tan-gry.tan, cryptoxln, dse, some healed fracs, some v.dull min fluor, no cut

15,020-15,030 90% ls - dk.gry-brn, f.micro-cryptoxln, dse, v.arg in part, some wh calcite healed fracs, some oolitic, some tan chalky-xln w/gry oolites
10% dolo - AA

15,030-15,040 60% ls - AA
40% dolo - AA
Tr red sh & anhy - AA

15,040-15,050 90% ls - AA, becoming more arg, grades to calc sh, oolitic in part
10% dolo - AA
SP red sh - AA, slough

15,050-15,060 100% ls - AA, tr oolitic, some tan w/gry oolites
Tr sh - dk.gry, some gry, silty, blky-flky, smooth, v.calc, grades to ls
Tr dolo - AA, v.dse w/v.cull weak yellow min fluor
Tr wh xln calcite (frac fill)

15,060-15,080 20% sh - dk-m.gry, flky-blky, v.f.velvety-smooth, calc-v.calc, grades to arg ls
80% ls - pred dk.gry-gry.brn, f.micro-cryptoxln, dse, some buff-gry brn-gry mottled, tr fragmental, occ oolites

Note: Samples carry SP redbeds & dolo & ss slough; most samples carry tr+ wh calcite frac fill

15,080-15,090 80% ls - pred dk.gry-brn (some w/brn tint), dse
20% sh - dk.gry, v.calc - AA, some calcite healed fracs
Tr ss - red beds, dolo - AA, slough

15,090-15,120 30% sh - dk.gry, calc - AA
70% ls - AA, abundant wh calcite AA, some healed fracs, some med.gry, v.dse

15,120-15,200 100% ls - pred dk.gry, cryptoxln, v.dse, arg
Tr sh - dk.gry, grades to the above
15,140-50 - incr m.gry, chalky, more fractured, some pyrite incl, SP ls w/many hairline calcite healed fracs, v.arg in part, some silic ls, occ piece calcite w/v.dull min fluor, no cut or stain
15,150- pred dk.gry w/brn tint, crypto-v.f.microxln, v.dse, arg-v.arg in part, some healed fracs & some wh free calcite frac fill, some m.gry-gry.tan chalky dse, occ piece calcite w/dull min fluor, no cut
Tr sh - dk.gry, blky, firm, v.calc, grades to arg ls; some pyrite ptgs & incl
15,180- incr wh calcite - AA
15,190- about 10% wh xln calcite - AA

15,200-15,230 100% ls - gry.brn-dk.gry, cryptoxln, arg, some f.microxln, dse-v.dse, tr wh-tan calcite, tr pyrite ptgs & incl, SP tan-gry chalky
Tr sh - red, blky-flky, smooth-earthy; occ piece red-grn;
occ piece tan dse cryptoxln dolo - slough
15220-30 SP sltstn - lt.gry, tight, v.calc

15,230-15,240 40% sltstn - lt.gry-buff, tight, w.cmtd, calc-v.calc, grades to silty ls
60% ls - AA, pred arg & wh calcite - AA

15,240-15,250 70% sltstn - lt.gry-gry.tan, tight, w.cmtd, calc-v.calc, no fluor or stain
30% ls - dk.gry, crypto-f.microxln, dse, arg in part, dse, some silty
Tr red beds - AA

15,250-15,260 30% sltstn - AA
Tr anhy - wh-pink, xln-gran
20% sh - red-brn, blky-flky, silty, smooth-earthy, sl.calc (think this is slough)
50% ls - pred gry - AA

15,260-15,270 10% sltstn - AA
10% sh - red - AA
Tr anhy - AA
80% ls - pred dk.gry-gry, cryptoxln, arg, dse

15,270-15,300 100% ls - brn-gry-buff mottled, crypto-f.microxln, oolitic, pelletal, fragmental in part, some wh calcite healed fracs, some wh free calcite, arg in part
SP anhy - red sh - slough, SP sltstn - AA
22,290 - some tan v.sdy-silty dse oolitic in part, some free wh xln calcite

15,300-15,310 10% sh - gry, calc, blky, smooth, grades to ls
90% ls - AA, incr gry cryptoxln-f.microxln, arg; decr sdy-silty, SP oolitic, SP hd, silic, dse, no fluor
SP sltstn - gry, hd, tight, silic, tuffaceous(?)
Tr sh - brick red-red brn, smooth-earthy, v.sl.calc

15,310-15,320 60% sh - brick red, smooth-earthy, blky, silty in part, non-calc calc ("trip trash"?)
10% sltstn - gry-brn, v.calc, tight, w.cmtd, grades to silty-sdy ls.
Tr red arg sltstn
30% ls - AA
Tr gry sh

15,320-15,330 30% sh - red - AA
20% dolo - gry-grn.gry, arg-xln, dse
50% ls - gry-brn, f.micro-cryptoxln, arg, dse
Note: This section very diverse mixed look (reworked?)

15,330-15,340 10% sltstn - gry-dk.grn, calc, grades to some silty ls
70% ls - buff-tan-brn, f.micro-cryptoxln, fractured in part (healed)
Tr pyrite fill - gry-dk.gry v.arg-arg, dse, some oolitic, occ anhy incl, silty in part
20% sh - red - AA, some anhy incl

| | |
|---|---|
| 15,340-15,370 | 90% ls - AA, becoming pred buff-lt.gry-tan, f.microxln-chalky, dse, some pyrite incl, some gry.brn cryptoxln v.dse<br>10% sh - red - AA<br>SP sltstn-silty ls - AA, slough<br>15,350- incr gry.brn-brn.gry cryptoxln v.dse w/wh calcite healed fracs, occ free wh calcite, occ piece wh xln gran anhy<br>15,360- incr buff-brn tan mottled, cryptoxln-chalky |
| 15,370-15,390 | 100% ls - buff-gry.brn-gry.tan-brn-tan, mottled, cryptoxln, dse, chalky in part, soft-hd<br>Tr sh - red - AA<br>15,380- incr gry.brn-brn cryptoxln, v.dse, some healed fracs |
| 15,390-15,400 | 10% sh - red, smooth-earthy, blky-flky-s.waxy (slickensides?)<br>90% ls - AA<br>Occ piece wh anhy - AA |
| 15,400 | Circulate for electric logs |
| 1 hr Circ. | 10% sh - red - AA<br>90% ls - AA; some anhy - AA; some wh xln free calcite |
| 2 hr Circ. | 10% sh - red, earthy-smooth-waxy (slickensides) blky-platey<br>90% ls - pred gry-brn, f.microxln dse, cryptoxln, firm, hard, silic in part, v.dse; some wh xln calcite - AA frac fill; some buff chalky<br>Tr anhy - wh-pink, xln<br>1 clear calcite crystal cluster |

Ran Dual Laterolog; BHC Sonic-GR-Caliper; CNL-FDC G/R, Caliper, Dipmeter, Velocity Survey

Plugged and abandoned 2-11-77

Sample Disposition: One dry cut of the samples from 1000' to 15,400' was sent via motor freight to the Sample Library, Utah Geological Survey, Salt Lake City, Utah.
The other dry cut will be shipped to American Quasar Petroleum Co., Denver, Colorado via motor freight.

Pat

Fr-12
File

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS, AND MINING
1588 West North Temple
Salt Lake City, Utah 84116

M E M O R A N D U M

TO: ENVIRONMENTAL COORDINATING COMMITTEE (ECC)

FROM: RONALD W. DANIELS, COORDINATOR OF MINED LAND DEVELOPMENT

DATE: JULY 27, 1976

SUBJECT: NOTICE OF PROPOSED ACTION TO APPROVE A WILDCAT OIL WELL

43-033-30001

A wildcat oil well is in the process of being approved for the NE ¼ of Section 31, Township 11 North, Range 7 East, Rich County, Utah.

This description of the action will replace the environmental assessment usually called for on wildcat wells since the impacts of this well are small and it is located wholly on fee acreage.

The attached map shows the proposed well location about ½ mile southwest of the town of Randolph, Utah. The area is a very poorly drained bog, used marginally for cattle grazing and as habitat for migratory wildlife. Surface water, numerous sedges, and rushes dominate the area of both the access road and the proposed well pad. Fill material will be hauled into the site to construct a pad of approximately 300' x 300'. Right-of-way has been secured through the fee owners from an existing country road.

Drilling fluids, cuttings, and chemicals will be contained while drilling in a fill pit or shallow tankage. Residue remaining after evaporation of the liquid portion will be deposited in a suitable local landfill. A filled road will remain on the property after drilling, thus allowing access year-round to the property.

It is proposed that this action will not significantly effect the environment and that no further assessment is necessary.

Further information may be obtained from Ron Daniels at 533-5771.

Form OGC-1b

SUBMIT TRIPLICATE*
(Other instructions on reverse side)

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

# SUNDRY NOTICES AND REPORTS ON WELLS

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

RECEIVED NOV 13 1978 DIVISION OF OIL & MINING

5. LEASE DESIGNATION AND SERIAL NO.: Fee

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

1. OIL WELL ☐ GAS WELL ☐ OTHER (Dry)

2. NAME OF OPERATOR: American Quasar Petroleum Co.

8. FARM OR LEASE NAME: Hoffman

3. ADDRESS OF OPERATOR: 204 Superior Bldg., Casper, Wyo. 82601

9. WELL NO.: #1

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 1320' FNL & 1620' FEL

10. FIELD AND POOL, OR WILDCAT: Wildcat

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: 31-11N-7E

14. PERMIT NO.:

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 6275' GR

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:

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

SUBSEQUENT REPORT OF:

| | | | |
|---|---|---|---|
| WATER SHUT-OFF | ☐ | REPAIRING WELL | ☐ |
| FRACTURE TREATMENT | ☐ | ALTERING CASING | ☐ |
| SHOOTING OR ACIDIZING | ☐ | ABANDONMENT* | X |
| (Other) | | | ☐ |

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

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

This location has been rehabilitated according to landowner's specifications and is ready for inspection.

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

SIGNED John F. Sindelar TITLE Division Drlg. Supt. DATE 11/9/78

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side