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 10-12-77

OW ..... WW ..... TA ..... SI

GW X OS ..... PA .....

Location Inspected .....

Bond released

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 OGC-1a

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

SUBMIT IN TRIPLICATE*
(Other instructions on reverse side)

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK

1a. Type of Work: DRILL [X] DEEPEN [ ] PLUG BACK [ ]

b. Type of Well: Oil Well [X] Gas Well [ ] Other Single Zone [ ] Multiple Zone [X]

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

3. Address of Operator: 707 United Bank Tower, Denver, CO 80290

4. Location of Well (Report location clearly and in accordance with any State requirements.*)
At surface: ~~1980'~~ 1890' FSL ~~660'~~ 672' FEL, NE SE 20, 13N, 7E
At proposed prod. zone: Missippian Devonian

5. Lease Designation and Serial No.: Fee

6. If Indian, Allottee or Tribe Name:

7. Unit Agreement Name:

8. Farm or Lease Name: Hogback Ridge

9. Well No.: 20-1

10. Field and Pool, or Wildcat: Wildcat

11. Sec., T., R., M., or Blk. and Survey or Area: NE SE 20, 13N, 7E

12. County or Parrish: Rich County, 13. State: Utah

14. Distance in miles and direction from nearest town or post office*: 12 M ENE Lake Town, Utah

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. line, if any): 660' FNL 660' FSL

16. No. of acres in lease: 640

17. No. of acres assigned to this well: 160

18. Distance from proposed location* to nearest well, drilling, completed, or applied for, on this lease, ft.: None

19. Proposed depth: 12,500

20. Rotary or cable tools: Rotary

21. Elevations (Show whether DF, RT, GR, etc.): Est. GL 6450

22. Approx. date work will start*: 12-20-76

23. PROPOSED CASING AND CEMENTING PROGRAM

Size of Hole	Size of Casing	Weight per Foot	Setting Depth	Quantity of Cement
24"	20"	94#	60'	Circulate
17½"	13 3/8"	48#	500'	Circulate
12½"	9 5/8"	36#	4000'	800 sx
8½"	7"	32#	12500'	800 sx

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: [signature] Title: Operations Manager Date: 11-19-76

(This space for Federal or State office use)

Permit No. 43-033-30003 Approval Date

Approved by Title Date

Conditions of approval, if any:

*See Instructions On Reverse Side

RESOURCE SERVICES

(303) 377-3791
(303) 234-1337

Environmental-Engineering-Petroleum Geology

1835 Bellaire Street
Denver, Colorado 80220

November 20, 1976

Mr. Patrick L. Driscoll
Chief Petroleum Engr.
Div. of Oil, Gas, & Mining
State Of Utah
Salt Lake City, Utah 84116

Re: Environmental Assessment
"Hogback Ridge 20-1"
drilling project, American
Quasar Petroleum Company.

Dear Mr. Driscoll:

The following information constitutes the findings of field inspections conducted on the 14 and 17 of November. It has been requested by American Quasar Petroleum Company that this information be held in strict confidence in behalf of their best interests.

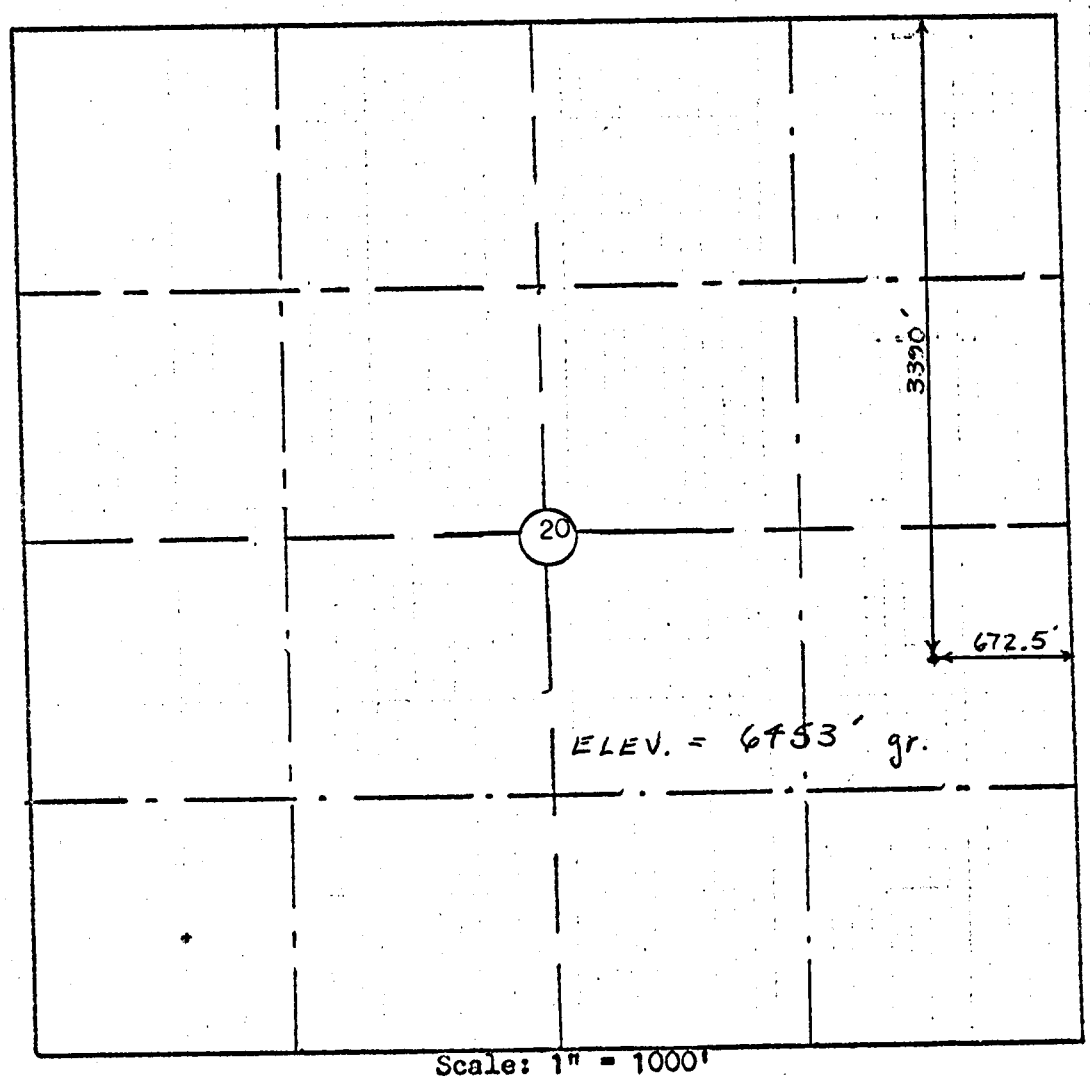
The specific well location is shown on the attached map. It is in the center of the NE¼ SE¼, sec. 20, T. 13 N., R. 7 E. in Rich County, Utah. It can be reached via Utah State Highway 16 to Sage Creek Junction (north of Randolph), thence northeast approximately 5 miles on a blacktop-gravel road to the Sixmile Creek Road turnoff. From here, it is 5 miles to the west.

The proposed well site lies just south of Sixmile Creek in the stream valley. This is a perennial drainage, and a temporary culvert crossing will have to be constructed to bridge it. An access road of approximately 400 feet in length will have to be constructed to reach the well site from the main road. If necessary, gravel for surfacing this road may be acquired from a surface borrow pit three miles to the east of the site, adjacent to the access road. Care must be taken to prevent damage to the existing channel of Sixmile Creek.

With exception of the above mentioned access road, and one other unimproved dirt road in the section, there are no other improvements, or cultural features in the section. Currently, the area is used for open grazing.

Hogsback Ridge 20-1

R. 7 E.



T. 13 N.

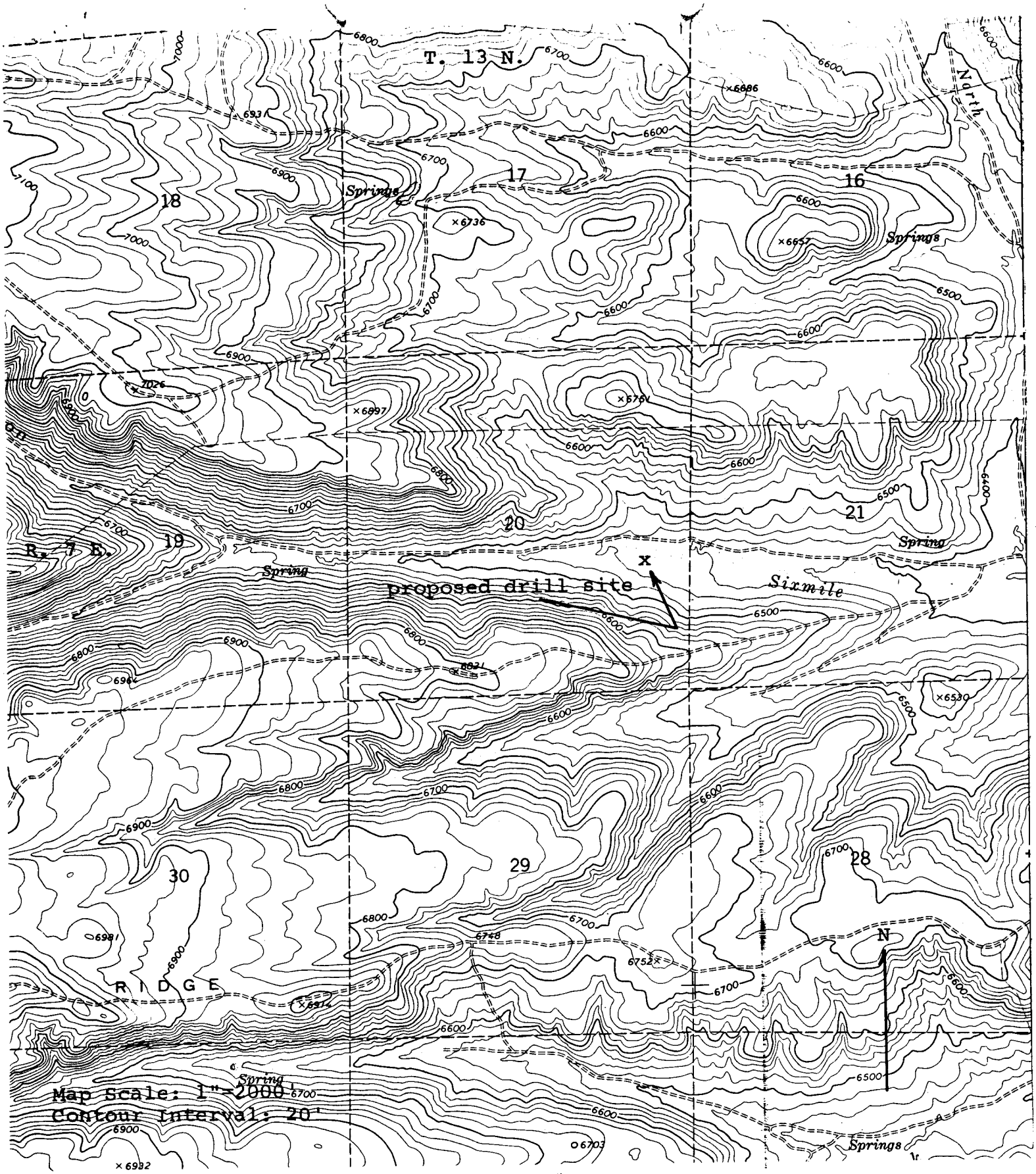
Scale: 1" = 1000'

SUMMIT ENGINEERING INC. located the following described point for the purpose of locating an oil well for American Quasar Petroleum Co, Hogsback Ridge 20-1.

A point located South 3390.0 feet from the North section line and West 672.5 feet from the East section line, Section 20, T.13.N., R.7.E., SLB&M, Rich County, Utah.

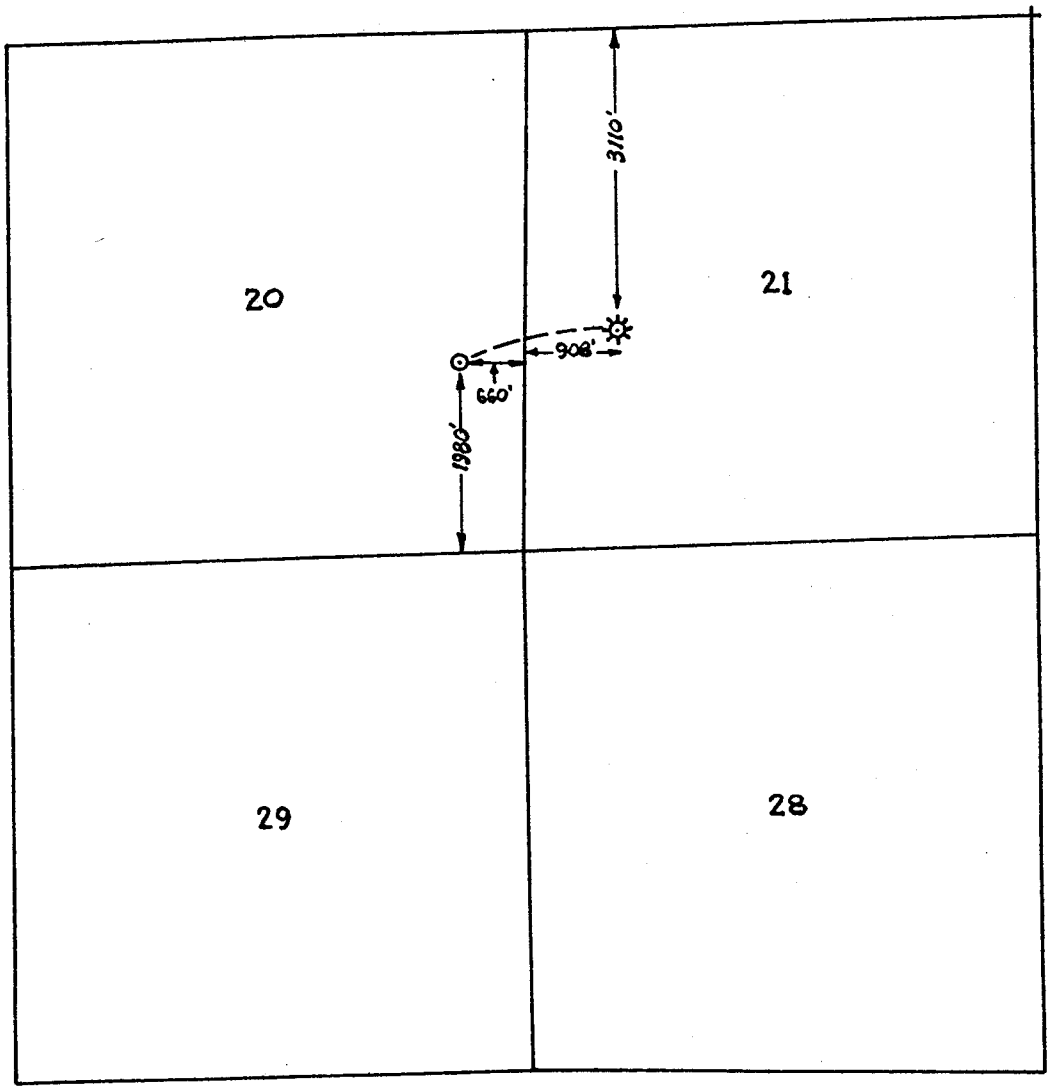
DATE Dec. 1, 1976

D. J. SILVER
No. 3491



Attachment. Proposed well location in NE¼ SE¼, sec. 20 T. 13 N., R. 7 E.

HOGBACK AREA



T 13N - R 7E RICH COUNTY, UTAH

AMERICAN QUASAR PETROLEUM CO.

Hogback Ridge 20-1

CONFIDENTIAL

RESOURCE SERVICES

(303) 377-3791
(303) 234-1337

Environmental-Engineering-Petroleum Geology

1835 Bellaire Street
Denver, Colorado 80220

December 5, 1976

Mr. Patrick L. Driscoll
Chief Petroleum Engr.
Div. of Oil, Gas, & Mining
State of Utah
1588 West North Temple
Salt Lake City, Utah 84116

RECEIVED
DEC 7 1976
DIVISION OF OIL, GAS, & MINING

Dear Mr. Driscoll:

Enclosed is an environmental assessment of the potential impact which could result from drilling of the proposed American Quasar Petroleum Company "Hogback Ridge 20-1" exploratory oil well. There is also an application for permit to drill the well, and a plat survey of the designated location. Please treat this application "confidiental".

As per your instructions in our telephone conversation of November 12, this information is being submitted for your review, and approval in the event that you find everything satisfactory. I regret that this application could not have been submitted sooner. However, there was some difficulty in acquiring the location survey.

I will be contacting you in the near future concerning the approval of this application. In the meantime, should you have any questions, or comments, concerning the proposed drilling project, please do not hesitate to call me collect. I can be reached at the Rodeway Inn, Richfield, Utah. The telephone number is (801) 896-5491. I thank you for your time and consideration, and the professional help which you have thus far provided in our efforts to satisfy the application requirements to drill the intended well.

Respectfully submitted,

Doyle L. Scroggs

Doyle L. Scroggs
Engineering Geologist

cc:
John Sindelar
Bud Hurley

RESOURCE SERVICES

(303) 377-3791
(303) 234-1337

Environmental-Engineering-Petroleum Geology

1835 Bellaire Street
Denver, Colorado 80220

During drilling, all drilling fluids and produced water will be confined to the mud pit, which will be fenced. All waste materials will be disposed of in an environmentally acceptable manner, and the site will be restored to as nearly feasible its original condition upon completion of drilling.

There are no access or surface use conflict problems, and any adverse environmental impact will be restricted to the immediate vicinity of the drilling site. Such impact will be directly related to drilling or construction of the site, and will be temporal in nature. For these reasons, it is recommended that the proposed drilling project be given approval within the realm of environmental considerations.

Respectfully submitted,

Doyle L. Scroggs

Doyle L. Scroggs
Engineering Geologist

cc: John Sindelar
Bud Hurley

Confidential

STATE OF UTAH
DIVISION OF OIL, GAS, AND MINING

** FILE NOTATIONS **

Date: Dec. 9-

Operator: American Quasar

Well No. Hogback Ridge 20-1

Location: Sec. 20 T. 13N R. 7E, County: Rich

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

Card Indexed [✓] Completion Sheet [✓]

Checked By:

Administrative Assistant: DW

Remarks: Verbal approval 12/10/76 Dwl; No wells in Sec, Bond on file. DW

Petroleum Engineer: OS PW

Remarks:

Director: 7

Remarks:

Include Within Approval Letter:

Bond Required [ ] Survey Plat Required [ ]

Order No. _____ [ ] Surface Casing Change [ ]
to _____

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

December 10, 1976

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

RE: WELL NO. HOGBACK RIDGE #20-1
Sec. 20, T. 13 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 the General Rules and Regulations and Rules of Practice and Procedure, Rule C-3.

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 43-033-30003.

Very truly yours,

DIVISION OF OIL, GAS, AND MINING

CLEON B. FEIGHT
Director

/SW

CONFIDENTIAL

AMERICAN QUASAR PETROLEUM COMPANY

#1-20 HOGBACK RIDGE

3390' from North line & 672.5' from East line

Section 20, Township 13 North, Range 7 East

Overthrust Belt Exploration Well

RICH COUNTY, UTAH

William H. Dunlap
Consulting Geologist
Casper, Wyoming

American Quasar
#1-20 Hogback Ridge

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Sample & Drilling Time Log	Pocket

WELL DATA

Operator:	American Quasar Petroleum Company 707 United Bank Building 1700 Broadway Denver, Colorado 80202
Well Name:	Hogback Ridge "20" No. 1
Location:	NE/SE (3390' FNL & 672.5' FEL) Section 20, Township 13 North, Range 7 East
County:	Rich
State:	Utah
Elevation:	Rotary Kelly Bushing 6467 feet Ground Level Graded 6453 feet
Contractor:	Loffland Brothers Company (Rig 214, Farmington District) P. O. Box 2847 Tulsa, Oklahoma 74101
Toolpushers:	Bill Day; Burl Akins; Leo Long; Howard Hammons
Mud Company:	IMCO Services (Halliburton)
Mud Type:	Low solids non dispersed (LSND) Low solids dispersed (LSD)
Mud Engineers:	Ray Perkins; Ray Fichte; R. Coleman (Vernal, Utah); Carl Hulslander
Gas Detector Logging Unit:	Rocky Mountain Geo-Engineering Company, Grand Junction, Colorado
Logging Engineers:	L. Prendergast to 2600'; J. Robison to T.D.
Formation Testers:	DST No. 1, C. Womack, Lynes United Services, Rock Springs, Wy. DST No. 2, P. Eker & J. Samoy, " " DST No. 3, J. Samoy, " " DST No. 4, W. Hockaday, " " DST No. 5, J. Burnett, Halliburton, Rock Springs, Wy. DST No. 6, J. Burnett, " " DST No. 7, J. Haggard, " , Vernal, Utah DST No. 8, R. Hayes, " , Rock Springs, Wy. DST No. 9, R. Hayes, " "
DST Recovered waters	were sent to Chemical & Geological Laboratories in Casper, Wyoming, for analysis. Duplicate samples were sent to the State of Utah, Dept. of Natural Resources, Div. Oil & Gas, Salt Lake City, Utah
Gas Sample:	Sent to Chemical & Geological Laboratories, Casper, Wyoming
Nitrogen for DST No. 9 -	NOWSCO, Vernal, Utah
Electric Logging:	Schlumberger Well Services Corp., Rock Springs, Wyoming
Engineers:	Jack Walker, Evanston, Wyoming: Brian Parks, Frisinger, W. Elias & D. Driggs, Rock Springs, Wyoming
Commenced:	20:30 hours 5 January 1977

Conductor Casing: 20" @ 48' cemented to surface
Surface Casing: 13-3/8" @ 749' w/800 sx
Intermediate Casing: 9-5/8" @ 3711' w/1400 sx
Liner: 7-5/8" from 3563' to 8142' w/600 sx
Liner: 5" from 7856' to 9809' w/200 sx
Tie back: 7-5/8" from 3569'(?) to surface w/50 sx
Liner: 2-7/8" from 9661' to 10,907' w/55 sx
Liner Hanging: Brown Oil Tool, Ken Lynch, Casper, Wyoming

Pit Level & Flow Monitoring: SWACO, Rock Springs, Wyoming

Depth Control: Totco recorder & steel line measurement (SLM)

Deviation Tool: TOTCO

Cementing Company: Halliburton Services, Rock Springs, Wyoming

Completed:

Field Operations Supervision: B. Greenhow & B. Lynch (Reddig & Associates); Lewis Almond, W. Bowen (American Quasar); K. Grandbouche (Mineral Management)

Company Supervision: Geological: C. Gregg, Denver, Colorado
G. Keller, Denver, Colorado
Geophysical: J. Albertis, Denver, Colorado
Operations: J. Sindelar, Casper, Wyoming

Terrain: Rolling - location in 6 Mile Canyon
Weather: Mid winter to mid summer
Temperatures: -25° to 88° F

Location: 5-1/2 miles North of Sage Creek Junction; turn left at 6 Mile Canyon sign - 6 miles up 6 Mile Canyon. 10 miles from Laketown, Utah; 19 miles from Randolph, Utah; 23 miles from Cokeville, Wyoming

WELL HISTORY

1-6-77 (1) Drlg 12-1/4" @ 95' (47' in 8 hrs) Mud: Wt 8.7, Vis 45. Spud 20:30 hrs 5 January 1977; top cement in 20" conductor pipe @ 48' KB

1-7-77 (2) Drlg 12-1/4" @ 515' (420' in 16-1/4 hrs) Dev. 1/4° @ 103'; 1/4° @ 165'; 1/4° @ 331'; 1/4° @ 490'. Mud: Wt 8.5, Vis 41, WL -, PV 3, YP 5, GS 3/6, ph 9.5, Cl 900, Ca 30, Solids 1-1/4%

1-8-77 (3) Drlg 12-1/4" @ 914' (399' in 17-3/4 hrs) Dev. 3/4° @ 678'; 1° @ 808'. Mud: Wt 8.6, Vis 40, WL -, PV 13, YP 11, GS 10/35, ph 9.5, Cl 1000, Ca 40, Solids 2%

1-9-77 (4) TD 12-1/4" @ 1022', opening hole to 17-1/2" @ 372' (108' in 7-1/2 hrs) Dev. 1-1/2° @ 1022'. Mud: Wt 8.5, Vis 40, WL -, PV 5, YP 3, GS 1/5, ph 8.5, Cl 800, Ca 30, Solids 1-1/4%

1-10-77 (5) TD 17-1/2" @ 768', running casing (4426' in 12-1/4 hrs) Mud: Wt 8.5, Vis -, WL -, PV 4, YP 9, GS 5/9, ph 9.0, Cl 800, Ca 40

1-11-77 (6) TD 1022', nippling up

1-12-77 (7) TD 1022', nippling up

1-13-77 (8) TD 1022', pressure test

1-14-77 (9) Drlg 12-1/4" @ 1060' (38' in 1-3/4 hrs) Limestone. Mud: Wt 8.5, Vis 34, WL NC, PV 6, YP 26, GS 9/13, ph 11.0, Cl 1200, Ca 400, Solids 1-1/4%. BGG trace. Drill out 0400 hours 1-14-77

1-15-77 (10) TD 1112' Testing (52' in 2-1/4 hrs) Limestone. Dev. 2-1/4° @ 1112'. Mud: Wt 8.5, Vis 37, WL NC, PV 10, YP 16, GS 11/18, ph 11.0, Cl 1100, Ca 160, Solids 3-1/2%, nitrates 110. BGG trace. DST #1, 1041-1112' - See DST results

1-16-77 (11) Drlg 12-1/4" @ 1292' (180' in 14-1/4 hrs) Limestone. Dev. 1-1/4° @ 1143'; 1-3/4° @ 1236'. Mud: Wt 8.6, Vis 36, WL 8.8, PV 8, YP 5, GS 0/1, ph 10.5, Cl 800, Ca 20, Solids 2%, Nitrates 82. BGG trace

1-17-77 (12) Drlg 12-1/4" @ 1550' (258' in 21-3/4 hrs) Limestone. Dev. 2° @ 1340'; 1-3/4° @ 1392'; 1-3/4° @ 1490'. Mud: Wt 8.9, Vis 35, WL 8.4, FC 2/32, PV 12, YP 6, GS 1/2, ph 10.5, Cl 1000, Ca 80, Solids 4%, nitrates 65. BGG - 1 unit

1-18-77 (13) Drlg 12-1/4" @ 1800' (250' in 22 hrs) Limestone. Dev. 2-1/4° @ 1595'; 2-3/4° @ 1685'; 2-3/4° @ 1779'. Mud: Wt 9.0, Vis 33, WL 16.2, FC 2/32, PV 5, YP 5, GS 3/6, ph 9.0, Cl 700, Ca 140, Solids 4-3/4%, nitrates 58. BGG - 1 unit; @ 1600' - 2 units. DST #1 Sample: Cl 900 ppm, Ca 100, nitrates 78 ppm

1-19-77 (14) Drlg 12-1/4" @ 1946' (146' in 15 hrs) Limestone. Dev. 2-3/4° @ 1846'; 2-3/4° @ 1904'. Mud: Wt 9.0, Vis 33, WL 12.6, FC 2/32, PV 6, YP 6, GS 2/7, ph 9.5, Cl 700, Ca 180, Solids 4-3/4%, nitrates 118. BGG 1 unit; trip gas 2 units

1-20-77 (15) TD 2085' tripping (139' in 16-3/4 hrs) Limestone. Dev. 2-3/4° @ 1999'; 3° @ 2070'. Mud: Wt 9.0, Vis 35, WL 9.4, FC 2/32, PV 4, YP 3, GS 0/3, ph 10.5, Cl 700, Ca 60, Solids 5%, nitrates 134. BGG 1 unit; 2006' - sl fluor in spls (contam?), 2030' - 6 units

1-21-77 (16) TD 2185' tripping (100' in 19 hrs) Limestone. Dev. 3° @ 2130'. Mud: Wt 9.0, Vis 34, WL 9.8, PV 6, YP 3, GS 1/3, ph 10, Cl 900, Ca 60, Solids 5-1/2%, nitrates 130. BGG - 1 unit

1-22-77 (17) TD 2186' tripping (1' in 1 hr) Dev. 3-3/4° @ 2185'. Mud: Wt 9.0, Vis 32, WL 11.4, PV 3, YP 1, GS 0/1, ph 10, Cl 900, Ca 80, Solids 4-3/4%, nitrates 136. Twisted off @ 2186'. Top fish 1899', retrieved fish

1-23-77 (18) Drlg 12-1/4" @ 2276' (88' in 21-1/4 hrs) Limestone. Dev. 2-3/4° @ 2224'. Mud: Wt 9.0, Vis 35, WL 12.2, FC 2/32, PV 2, YP 1, GS 0/0, Cl 900, Ca 80, Solids 4%, nitrates 118. BGG 1 unit; 1 unit increase @ 2271'. No shows. Lost est. 140 bbls mud from 2192-2197'.

1-24-77 (19) TD 2280' testing (6' in 1 hr) Limestone. Dev. 3-1/2° @ 2280'. Mud: Wt 8.9, Vis 36, WL 10.4, PV 7, YP 5, GS 0/2, ph 11.0, Cl 800, Ca 40, Solids 4%, nitrates 104. BGG 1 unit; no increase; DST interval 2167-2280'. See DST #2 results

1-25-77 (20) Drlg 12-1/4" @ 2405' (125' in 14-1/4 hrs) Dolomite. Dev. 3° @ 2317', 3-1/2° @ 2378'. Mud: Wt 8.9, Vis 35, WL 8.9, FC 2/32, PV 12, YP 8, GS 1/6, ph 11.0, Cl 800, Ca 40, Solids 4%, nitrates 100. BGG - 1 unit. DST #2 Sampler mud: Cl 900 ppm, Ca 60, nitrates 88 ppm

1-26-77 (21) TD 2592', circ for DST #3 (187' in 17-3/4 hrs) Sandstone. Dev. 3-1/2° @ 2439', 3° @ 2504'. Mud: Wt 9.0, Vis 36, WL 10.8, FC 2/32, PV 12, YP 8, GS 1/22, ph 10.5, Cl 800, Ca 100, Solids 4-3/4%, nitrates 102. BGG - 1-2 units 2579-80', 4 units C_1 625 ppm. Top Gypsum Springs 2348'; Top Nugget 2541'. DST interval recommended 2551-2592'

1-27-77 (22) TD 2592' tripping in after trip (0) Mud: Wt 9.0, Vis 38, WL 10.8, PV 12, YP 8, GS 1/22, ph 10.5, Cl 800, Ca 100, Solids 4-3/4%, nitrates 96. DST #3 interval 2545-2592'. See DST results

1-28-77 (23) TD 2718' tripping (126' in 17-1/4 hrs) Sandstone. Dev. 3-1/2° @ 2628'. Mud: Wt 8.9, Vis 34, WL 10.5, PV 11, YP 4, GS 1/3, ph 10.5, Cl 800, Ca 120, Solids 4-3/4%, nitrates 90. BGG - 1 unit. DST #3 recovered water: Cl 900 ppm, Ca 680 ppm, Nitrates 30 ppm

1-29-77 (24) Drlg 12-1/4" @ 2851' (133' in 14-1/2 hrs) Sandstone. Dev. 4° @ 2719'; 3° @ 2816'. Mud: Wt 8.9, Vis 33, WL 10, PV 13, YP 5, GS 2/6, ph 11, Cl 800, Ca 120, Solids 4-3/4%, nitrates 112. BGG - 1 unit, no increase

1-30-77 (25) Drlg 12-1/4" @ 3015' (164' in 17-1/4 hrs) Sandstone. Dev. 3-1/4° @ 2911'; NP @ 3006'. Mud: Wt 8.9, Vis 34, WL 9.9, PV 12, YP 4, GS 1/3, ph 11, Cl 800, Ca 110, Solids 4-3/4%, nitrates 105. BGG - 1 unit; increase @ 2930' - 1 unit

1-31-77 (26) Drlg 12-1/4" @ 3214' (199' in 22-3/4 hrs) Sandstone. Dev. 3° @ 3060'; 3-1/4° @ 3193'. Mud: Wt 8.9, Vis 34, WL 8.8, FC 2/32, PV 9, YP 4, GS 1/1, ph 10.5, Cl 800, Ca 100, nitrates 88. BGG - 1 unit; no increase

2-1-77 (27) Drlg 12-1/4" @ 3410' (196' in 22-1/4 hrs) Sandstone. Dev. 3-1/4° @ 3279'; 3-1/4° @ 3383'. Mud: Wt 8.9, Vis 34, WL 8.6, PV 8, YP 3, GS 1/1, ph 10.5, Cl 800, Ca 80, Solids 4%, nitrates 124 ppm. BGG - 1 unit, no increase

2-2-77 (28) Drlg 12-1/4" @ 3526' (116' in 13-3/4 hrs) Sandstone. Dev. 3-3/4° @ 3414'. Mud: Wt 8.9, Vis 35, WL 9.6, PV 7, YP 3, GS 1/1, ph 10.5, Cl 800, Ca 80, Solids 3-3/4%, nitrates 120. BGG - 1 unit; trip gas - tr

2-3-77 (29) Drlg 12-1/4" @ 3637' (111' in 17-1/2 hrs) Sandstone. Dev. 3-3/4° @ 3530', 4° @ 3631'. Mud: Wt 8.8, Vis 36, WL 11.4, FC 2/32, PV 7, YP 4, GS 2/4, ph 11, Cl 600, Ca 100, Solids 3-1/2%, nitrates 84 ppm. BGG - 1 unit

2-4-77 (30_ TD 3716' Driller, 3711' Log, tripping for 9-5/8" casing (79' in 11 hrs) Sandstone. Dev. 4° @ 3689'. Mud: Wt 8.9, Vis 38, WL 11.6, PV 7, YP 5, GS 1/6, ph 10.5, Cl 700, Ca 60, Solids 3-1/2%, nitrates 106. BGG - 1 unit, no increase. SLM 3711.48'; Board 3716.36'; Schlumberger 3711' - 5' uphole correction. Ran Dual Induction-SP log 746-3711'; BHC Sonic-Caliper-GR, 742-3711'; Dipmeter 742' to TD

2-5-77 (31) TD 3711' WOC. Mud: Wt 8.8, Vis 36, WL 12, PV 8, YP 5, GS 2/5, ph 10.5, Cl 700, Ca 60, Solids 3-1/2%, nitrates 104. Ran 92 joints 9-5/8", K-55, 40# L.T.&C. Casing, total length 3722.19'. Set @ 3711' KB, cemented w/1100 sx HOWCO Lite cement w/12% Gilsonite; 1% CaCl; 1/4#/bbl Floseal followed w/300 sx Kaiser Class G 1% CaCl, 1/4#/bbl Floseal; 15.8#/gal. Displaced w/278.7 bbls mud. Plug down @ 1:35 AM

2-6-77 (32) TD 3711', nippling up, pressure tested pack off w/3000 psi - OK

2-7-77 (33) TD 3711', nippling up & pressure test

2-8-77 (34) TD 3711', tripping in. Pressure tested pipe rams, blind rams, choke manifold to 5000 psi, Hydril to 2000 psi, Kelly Cock to 5000 psi, valve below Swaco choke to 3000 psi - OK

2-9-77 (35) TD 3711', drlg float 7-3/4 hrs. Mud: Wt 8.8, Vis 32. Pressure up on casing to 2000 psi - OK

2-10-77 (36) Drlg 8-3/4" @ 3763' (49' in 10-1/4 hrs) Sandstone. Dev. 4° @ 3754'. Mud: Wt 8.8, Vis 33, WL 18.6, PV 5, YP 6, GS 3/5, ph 10.5, Cl 600, Ca 60, Solids 2%, nitrates tr. BGG trace, no increase. Lag 25 min. Drill out 1930 hours 9 February 1977

2-11-77 (37) Drlg 8-3/4" @ 3850' (87' in 16-1/2 hrs) Shale & sandstone. Dev. 4° @ 3815'. Mud: Wt 8.7, Vis 32, WL 19.8, PV 5, YP 4, GS 3/10, ph 11, Cl 600, Ca 100, Solids 2-1/4%, nitrates 96. BGG - 1 unit, no increase. Pressure checked choke line valve & Swaco choke 5000 psi for 20 min - OK

2-12-77 (38) Drlg 8-3/4" @ 4020' (170' in 22 hrs) Shale. Dev. 3-1/4° @ 3874', 4-1/4° @ 3957'. Mud: Wt 8.8, Vis 35, WL 14, FC 2/32, PV 5, YP 4, GS 1/5, ph 10.5, Cl 700, Ca 40, Solids 2-3/4%, nitrates 88. BGG - 1 unit, no crease. Lost 30 bbls of mud 3851-3853'

2-13-77 (39) Drlg 8-3/4" @ 4222' (202' in 20-1/4 hrs) Shale & dolomite. Dev. 4-1/4° @ 4029', 4° @ 4093', 3-1/2° @ 4187'. Mud: Wt 8.8, Vis 34, WL 11.8, PV 6, YP 2, GS 0/2, ph 10.5, Cl 700, Ca 40, Solids 3-1/4%, nitrates 112. BGG trace

2-14-77 (40) TD 4370' tripping (148' in 22-3/4 hrs) Shale & dolomite. Dev. 4-3/4° @ 4303'. Mud: Wt 8.8, Vis 40, WL 12.4, PV 9, YP 8, GS 2/14, ph 10.5, Cl 700, Ca 40, Solids 3-1/4%, nitrates 120. BGG trace

2-15-77 (41) Drlg 8-3/4" @ 4447' (77' in 15-1/4 hrs) Shale & siltstone. Dev. 5° @ 4370'; 4-1/2° @ 4405'; 5° @ 4436'. Mud: Wt 8.9, Vis 33, WL 12.8, PV 6, YP 4, GS 0/5, ph 10.5, Cl 700, Ca 80, Solids 4%, nitrates 108. BGG - 1 unit. Trip gas 2 units @ 4370'

2-16-77 (42) Drlg 8-3/4" @ 4573' (126' in 22-1/2 hrs) Shale & siltstone. Dev. 5° @ 4462'; 5° @ 4515'; 5-1/2° @ 4560'. Mud: Wt 9.0, Vis 35, WL 12.2, PV 8, YP 7, GS 2/21, ph 11.0, Cl 700, Ca 40, nitrates 102. BGG - 1 unit

2-17-77 (43) Drlg 8-3/4" @ 4660' (87' in 15-1/2 hrs) Shale & sandstone. Dev. 5-1/2° @ 4591'; 5-1/2° @ 4651'. Mud: Wt 9.0, Vis 34, WL 13.2, FC 2/32, PV 8, YP 7, GS 2/22, ph 10.5, Cl 700, Ca 40, Solids 4-3/4%, nitrates 96. BGG - 1 unit. Trip gas 5 units @ 4591'

2-18-77 (44) Drlg 8-3/4" @ 4850' (170' in 22-3/4 hrs) Sandstone & shale. Dev. 6° @ 4687'; 6-1/2° @ 4780'; 6-1/2° @ 4810'. Mud: Wt 8.9, Vis 33, WL 17.2, PV 7, YP 4, GS 2/21, ph 9.5, Cl 700, Ca 100, Solids 4-1/2%, nitrates 144. BGG - 1 unit, C_1 trace

2-19-77 (45) Drlg 8-3/4" @ 4946' (116' in 22-1/2 hrs) Shale & siltstone. Dev. 6-1/2° @ 4843'; 6-1/2° @ 4873'; 6-1/4° @ 4905' (W.L.); 6-1/2° @ 4935'. Mud: Wt 8.9, Vis 34, WL 15.2, PV 6, YP 4, GS 2/20, ph 11.5, Cl 700, Ca 60, Solids 4-1/2%, nitrates 116. BGG - 1 unit, C_1 trace

2-20-77 (46) Drlg 8-3/4" @ 5037' (91' in 15-1/2 hrs) Red shale. Dev. 6-1/2° @ 4969'; 7° @ 5037'. Mud: Wt 8.9, Vis 33, WL 17.6, PV 5, YP 4, GS 2/23, ph 11.5, Cl 700, Ca 80, Solids 4%, nitrates 112. BGG - 1 unit, C_1 trace

2-21-77 (47) Drlg 8-3/4" @ 5163' (126' in 22-1/4 hrs) Siltstone & shale. Dev. 7° @ 5100'; 7-1/2° @ 5162'. Mud: Wt 8.9, Vis 33, WL 17.2, PV 7, YP 7, GS 4/29, ph 10.5, Cl 600, Ca 40, Solids 3-3/4%, nitrates 106. BGG - 1 unit, C_1 trace

2-22-77 (48) Drlg 8-3/4" @ 5252' (89' in 23 hrs) Siltstone, shale & gypsum. Dev. 7-1/2° @ 5225'. Mud: Wt 8.9, Vis 35, WL 19.2, PV 7, YP 8, GS 12/44, ph 10.5, Cl 700, Ca 60, Solids 3-1/2%, nitrates 102. BGG - 1 unit, C_1 trace

2-23-77 (49) Drlg 8-3/4" @ 5294' (42' in 12-3/4 hrs) Siltstone-sandstone. Dev. 8° @ 5252' (Totco-trip); 8° @ 5288' (Teledrift). Mud: Wt 8.9, Vis 33, WL 12.2, PV 6, YP 4, GS 1/12, ph 11.0, Cl 700, Ca 60, Solids 4-1/4%, nitrates 128. BGG - 1 unit, C_1 trace; trip gas 5 units, C_1 450 ppm

2-24-77 (50) Drlg 8-3/4" @ 5410' (116' in 22-1/2 hrs) Dev. 8° @ 5319'; 8° @ 5352'; 8° @ 5383'. Mud: Wt 8.9, Vis 36, WL 13.0, PV 5, YP 4, GS 2/13, ph 10.5, Cl 700, Ca 80, Solids 4-3/4%, nitrates 126.

2-25-77 (51) TD 5504' (94' in 19-3/4 hrs) Prep to fish, twisted off. Dolomite & sandstone. Dev. 8-1/2° @ 5415' (Totco); 8-1/2° @ 5446'; 8-1/2° @ 5477' (Teledrift). Mud: Wt 8.9, Vis 34, WL 13.9, PV 5, YP 6, GS 2/15, ph 11.0, Cl 800, Ca 120, Solids 3-3/4%, nitrates 100. BGG - 2 units @ 5501', gas increased to 18 units total gas, C_1 1000 ppm, no C_2

2-26-77 (52) TD 5504' (0) Wash to bottom. Mud: Wt 8.9, Vis 33, WL 10.4, PV 6, YP 4, GS 1/5, ph 11.5, Cl 800, Ca 80, Solids 4-1/2%, nitrates 128. BGG - 1 unit total gas; trip gas 10 units @ 4211' (bridge)

2-27-77 (53) TD 5504' (0) Ream & wash. Mud: Wt 8.9, Vis 55, WL 9.8, PV 32, YP 8, GS 3/18, ph 11.0, Cl 900, Ca 80, Solids 3-3/4%, nitrates 110. BGG trace, trip gas no increase. Ream & wash 4211-4250', stuck @ 4220'; trip @ 4251' for jars; hit fill up @ 4211'

2-28-77 (54) TD 5504', Ream & wash @ 4303' (83' in 24 hrs) Mud: Wt 9.2, Vis 87, WL 8.0, PV 55, YP 10, GS 4/22, ph 11.0, Cl 800, Ca 80, Solids 3-3/4%, nitrates 110. BGG trace

3-1-77 (55) Reaming 8-3/4" @ 4283' (8' in 17 hrs) Dev. 3° @ 4275'; 3° @ 4240'. Mud: Wt 9.2, Vis 97, WL 6.2, FC 2/32, PV 64, YP 19, GS 8/28, ph 10.5, Cl 800, Ca 320, Solids 6-3/4%, nitrates 92

3-2-77 (56) Tripping @ 4292' (9' in 7-1/4 hrs) Dev. 3-1/2° @ 4292' Teledrift, 4° @ 4292' Totco. Mud: Wt 9.2, Vis 101, WL 5.4, FC 2/32, PV 37, YP 34, GS 5/25, ph 10, Cl 700, Ca 160, Solids 6-1/4%, nitrates 86, oil 1-1/2% (Add 12 bbls diesel to mud)

3-3-77 (57) Drlg 8-3/4" @ 4334' (new hole) (42' in 22 hrs) Red shale & siltstone. Dev. 3° @ 4315' (Teledrift). Mud: Wt 9.1, Vis 79, WL 5, PV 39, YP 26, GS 3/10, ph 9, Cl 700, Ca 160, Solids 6.5%, oil 3%, nitrates 80. BGG trace

3-4-77 (58) Washing out @ 4343' (9' in 5 hrs) Dev. 3° @ 4343'. Mud: Wt 9.0, Vis 70, WL 5.2, FC 2/32, PV 33, YP 12, GS 2/7, ph 9.0, Cl 700, Ca 280, Solids 5-3/4%, oil 3%, nitrates 76. BGG trace

3-5-77 (59) Drlg 8-3/4" @ 4427' (84' in 21 hrs) Dev. 3° @ 4354'; 3° @ 4385'. Mud: Wt 9.1, Vis 45, WL 4.6, PV 30, YP 11, GS 3/6, ph 9.0, Cl 700, Ca 160, Solids 5-3/4%, oil 5%, nitrates 72. BGG trace

3-6-77 (60) Drlg 8-3/4" @ 4454' (27' in 14-3/4 hrs) Red beds & anhydrite. Dev. 4° @ 4440' 4° @ 4447' (Teledrift). Mud: Wt 9.1, Vis 52, WL 4.4, PV 17, YP 6, GS 2/4, ph 9.5, Cl 800, Ca 180, Solids 5-1/4%, oil 5%, nitrates 154. BGG trace

3-7-77 (61) Drlg 8-3/4" @ 4531' (77' in 22-3/4 hrs) Dolomite & limestone. Dev. 3-1/2° @ 4510' (Teledrift). Mud: Wt 9.0, Vis 45, WL 3.4, PV 22, YP 11, GS 1/4, ph 10.5, Cl 700, Ca 240, Solids 5-1/4%, oil 5-1/2%, nitrates 144. BGG trace

3-9-77 (63) Drlg 8-3/4" @ 4648' (45' in 13-1/4 hrs) Red shale, bentonite & silt. Dev. 4-1/2° @ 4608', 4-1/2° @ 4635' (Teledrift). Mud: Wt 8.9, Vis 64, WL 3.8, PV 30, YP 17, GS 3/6, ph 10, Cl 750, Ca 110, Solids 3.5%, oil 6%, nitrates 120. BGG trace

3-10-77 (64) Tripping @ 4708' (60' in 18 hrs) Red brown shale. Dev. 4° @ 4699' (Teledrift), 4-1/2° @ 4708' (Totco). Mud: Wt 8.8, Vis 66, WL 3.0, PV 30, YP 17, GS 3/8, ph 10.5, Cl 800, Ca 110, Solids 4-1/4%, oil 4-1/2%, nitrates 109. BGG trace

3-11-77 (65) Drlg 8-3/4" @ 4763' (55' in 17-1/4 hrs) Red beds. Dev. 4-1/2° @ 4732', 4° @ 4764'. Mud: Wt 8.9, Vis 75, WL 2.6, PV 30, YP 17, GS -, ph 10.5, Ca 800, Solids 4-3/4%, oil 6%. BGG trace

3-12-77 (66) Drlg 8-3/4" @ 4824' (61' in 24 hrs) Siltstone, shale & sandstone. Dev. 5° @ 4796'. Mud: Wt 8.8, Vis 73, WL 3, PV 29, YP 22, GS 3/6, ph 10.5, Cl 750, Solids 4%, oil 5%. BGG trace

3-13-77 (67) Drlg 8-3/4" @ 4856' (32' in 12-3/4 hrs) Redbeds. Dev. 6° @ 4827' (Teledrift), 6° @ 4856'. Mud: Wt 8.8, Vis 75, WL 3.1, PV 31, YP 24.1, GS 3/6, ph 10.3, Cl 750, Ca 120, Solids 4%, oil 5%, Sd tr.

3-14-77 (68) Drlg 8-3/4" @ 4944' (88' in 24 hrs) Red shale, bentonite & anhydrite. Dev. 6° @ 4890', 6° @ 4922'. Mud: Wt 8.9, Vis 64, WL 3.0, PV 28, YP 19, GS 3/5, ph 10.5, Cl 750, Ca 120, Solids 4.5%, oil 5.5%, nitrates 140.

3-15-77 (69) Drlg 8-3/4" @ 5056' (112' in 24 hrs) Red & lavender shale & bentonitic shale & anhydrite & sandstone. Dev. 6° @ 4952' (Teledrift), 6-1/2° @ 5044' (Teledrift). Mud: Wt 8.9, Vis 71, WL 2.8, PV 35, YP 20, GS 4/10, ph 10, Cl 800, Ca 160, Solids 5%, oil 5%, nitrates 140

3-16-77 (70) Tripping @ 5124' (68' in 21 hrs) Red beds & anhydrite. Dev. 6-1/2° @ 5076' (Teledrift), 6-1/2° @ 5109' (Teledrift). Mud: Wt 8.9, Vis 67, WL 2.8, PV 32, YP 18, GS 3/8, ph 10, Cl 800, Ca 160, Solids 4-1/2%, oil 4-1/2%, nitrates 134

3-17-77 (71) TD 5124' SDR (0) Fix air clutch. Dev. 7° @ 5120'. Mud: Wt 8.9, Vis 62, WL 2.9, PV 30, YP 18, GS 3/6, ph 10.5, Cl 800, Ca 160, Solids 4%, oil 5%, nitrates 150

3-18-77 (72) TD 5124' (0) Reaming & washing. Mud: Wt 8.9, Vis 70, WL 3, PV 31, YP 16, GS 3/5, ph 11, Cl 800, Ca 160, Solids 4%, oil 5%, nitrates 150. Cemented hole @ 4250', cement from 4180-4285' w/300 sx, 3% CaCl, squeeze to 1000 psi (New hole)

3-19-77 (73) Drlg 8-3/4" @ 4411' (120' in 23-1/2 hrs) Red shale, bentonite & siltstone. Dev. 4° @ 4350'. Mud: Wt 9.0, Vis 66, WL 4.2, PV 30, YP 17, GS 3/12, ph 11.5, Cl 1200, Ca 160, Solids 5-1/2%, oil 4-1/2%, nitrates 146

3-20-77 (74) Drlg 8-3/4" @ 4513' (102' in 22-3/4 hrs) Red beds. Dev. 4-1/4° @ 4416', 4-1/4° @ 4468'. Mud: Wt 9.0, Vis 68, WL 4.2, PV 32, YP 19, GS 3/12, ph 10.5, Cl 1000, Ca 160, Solids 5-1/4%, oil 4%, nitrates 146

3-21-77 (75) Drlg 8-3/4" @ 4636' (123' in 22-3/4 hrs) Red beds & tr anhydrite. Dev. 4-3/4° @ 4510', 5-1/4° @ 4604'. Mud: Wt 9.1, Vis 65, WL 3.8, PV 30, YP 18, GS 3/11, ph 11, Cl 1000, Ca 280, Solids 6%, oil 3-1/2%, nitrates 142

3-22-77 (76) Drlg 8-3/4" @ 4742' (106' in 12-1/2 hrs) Sandstone, bentonite & anhydrite. Dev. 6-1/4° @ 4666' (Teledrift), 6° @ 4689' (Teledrift), 6-1/2° @ 4720' (Teledrift). Mud: Wt 8.9, Vis 50, WL 3.9, PV 16, YP 8, GS 2/4, ph 10.5, Cl 900, Ca 200, Solids 4-1/2%, oil 2-1/2%, nitrates 165

3-23-77 (77) Drlg 8-3/4" @ 4920' (178' in 23-1/4 hrs) Siltstone & red shale. Dev. 6-1/2° @ 4752', 6-1/2° @ 4783', 6-1/2° @ 4814' (all Teledrift). 7° @ 4908' (Teledrift). Mud: Wt 8.9, Vis 50, WL 4.0, PV 20, YP 9, GS 2/4, ph 10.5, Cl 800, Ca 200, Solids 4%, oil 2-1/2%, nitrates 160

3-24-77 (78) Drlg 8-3/4" @ 5068' (148' in 23-1/2 hrs) Red beds. Dev. 7° @ 4937', 7° @ 4968', 7-1/2° @ 4993', 8° @ 5038', 8-1/2° @ 5066' (all Teledrift). Mud: Wt 9.0, Vis 48, WL 5.2, PV 19, YP 9, GS 2/3, ph 11, Cl 800, Ca 160, Solids 5%, oil 2-1/2%, nitrates 160

3-25-77 (79) TD 5222' tripping (154' in 24 hrs) Shale & sandstone. Dev. 8-1/2° @ 5128', 8-1/2° @ 5160', 8-1/2° @ 5190'. Mud: Wt 9.0, Vis 48, WL 5.8, PV 21, YP 9, GS 2/4, ph 10.5, Cl 800, Ca 160

3-26-77 (80) Drlg 8-3/4" @ 4393' (64' in 8-1/4 hrs) Red beds. Dev. 5-1/2° @ 4350' (Totco). Mud: Wt 9.0, Vis 47, WL 6.2, PV 20, YP 10, GS 2/18, ph 12, Cl 800, Ca 220, Solids 5%, oil 3%, nitrates 160. Set plug @ 4400', squeeze to 1000# OK w/225 sx _ 2% CaCl. Tag cement @ 4252' (4th new hole @ 4329')

3-27-77 (81) Drlg 8-3/4" @ 4595' (202' in 22-1/4 hrs) Red beds. Dev. 6-3/4° @ 4430' (Totco), 7-1/2° @ 4595' (Teledrift). Mud: Wt 8.9, Vis 40, WL 11.5, PV 15, YP 9, GS 2/4, ph 6, Cl 800, Ca 160, Solids 4-1/2%, oil 3-1/2%, nitrates 160

3-28-77 (82) Drlg 8-3/4" @ 4823' (228' in 24 hrs) Redbeds. Dev. 7-1/2° @ 4628', 7-1/2° @ 4660', 8° @ 4692', 9° @ 4787', 9° @ 4819' (all Teledrift). Mud: Wt 9.0, Vis 42, WL 6, PV 16, YP 7, GS 1/6, ph 10.5, Cl 800, Ca 120, Solids 5%, oil 5%, nitrates 160

3-29-77 (83) Tripping @ 5066' (233' in 23-1/2 hrs) Red beds. Dev. 9° @ 4850, 9° @ 4880', 9-1/2° @ 4910', 9-1/2° @ 4942', 9° @ 5054' (all Teledrift). Mud: Wt 9.0, Vis 40, WL 5.8, PV 17, YP 7, GS 2/4, ph 10.5, Cl 750, Ca 320, Solids 5%, oil 5%, nitrates 160

3-30-77 (84) Drlg 8-3/4" @ 5114' (48' in 7-3/4 hrs) Red beds. Dev. 12° @ 5066', 12-1/4° @ 5100 (both Totco). Mud: Wt 9.0, Vis 40, WL 6.0, PV 13, YP 6, GS 1/3, ph 10, Cl 700, Ca 300, Solids 5%, oil 3%, nitrates 145

3-31-77 (85) Drlg 8-3/4" @ 5230' (116' in 23-1/4 hrs) Red beds. Dev. 14° @ 5172' (Totco). Mud: Wt 8.9, Vis 47, WL 6, PV 14, YP 9, GS 1/4, ph 9.5, Cl 700, Ca 340, Solids 4-1/2%, oil -, nitrates 140. Lost 50 bbls mud @ 5211'

4-1-77 (86) Drlg 8-3/4" @ 5295' (67' in 13-1/2 hrs) Red beds. Dev. 14° @ 5237', 14° @ 5280' (both Totco). Mud: Wt 8.8, Vis 45, WL 6.5, PV 17, YP 11, GS 1/6, ph 9.5, Cl 700, Ca 280, Solids 4.1%, oil 3%, nitrates 140

4-2-77 (87) Drlg 8-3/4" @ 5373' (78' in 23-1/4 hrs) Red beds. Dev. 13-1/2° @ 5360'. Mud: Wt 8.9, Vis 41, WL 7.3, PV 10, YP 5, GS 1/2, ph 9.0, Cl 600, Ca 360, Solids 4.4%, oil 2-1/2%, nitrates 140

4-3-77 (88) Drlg 8-3/4" @ 5454' (81' in 23 hrs) Red beds. Dev. 13° @ 5380', 13-1/2° @ 5440'. Mud: Wt 8.9, Vis 45, WL 7.4, PV 11, YP 6, GS 1/4, ph 8.5, Cl 450, Ca 320, Solids 4.4%, oil 2-1/2%, nitrates 180

4-4-77 (89) Drlg 8-3/4" @ 5516' (62' in 17-1/4 hrs) Siltstone, red shale & tr anhydrite. Dev. 13-1/2° @ 5457', 13-1/4° @ 5484' (Totco). Mud: Wt 8.8, Vis 47, WL 6.2, PV 20, YP 10, GS 3/6, ph 9, Cl 450, Ca 400, Solids 3.8%, oil 2-1/2%, nitrates 180. BGG 4 units - trip gas 9 units - Drilling new hole @ 5504'(?) SLM @ 5480' Board 5411 - correct 18' uphole error in tally - will strap out next trip to check 1861' error

4-5-77 (90) Drlg 8-3/4" @ 5631' (115' in 22-3/4 hrs) Siltstone, limestone. Dev. 13-1/2° @ 5520', 13° @ 5608'. Mud: Wt 8.8, Vis 43, WL 6.2, PV 14, YP 9, GS 1/4, ph 9.0, Cl 500, Ca 80, Solids 3.9%, oil 4%, nitrates 150. BGG - 2 units

4-6-77 (91) Drlg 8-3/4" @ 5741' (110' in 23-1/4 hrs) Siltstone & limestone. Dev. 13-1/2° @ 5671'. Mud: Wt 8.9, Vis 43, WL 6.0, PV 15, YP 6, GS 1/3, ph 8.5, Cl 700, Ca 240, Solids 4-1/2%, oil 3-1/2%, nitrates 120. BGG - 1 unit

4-7-77 (92) Drlg 8-3/4" @ 5772' (31' in 15-3/4 hrs) Limestone & shale. Dev. 13-1/2° @ 5724', 13-1/4° @ 5745'. Mud: Wt 8.9, Vis 42, WL 6.0, PV 14, YP 7, GS 1/3, ph 9.0, Cl 700, Ca 240, Solids 4-1/2%, oil 3-1/2%, nitrates 120. SLM 5724'; Board 5776' - corrected uphole 52'. BGG - 1 unit; trip gas 5 units

4-8-77 (92) Drlg 8-3/4" @ 5881' (109' in 21 hrs) Dolomite & siltstone. Dev. 13-1/4° @ 5811'. Mud: Wt 9.0, Vis 43, WL 6.0, PV 19, YP 7, GS 1/3, ph 8.5, Cl 700, Ca 280, Solids 5%, oil 3%, nitrates 120. BGG - 1 unit

4-9-77 (94) Drlg 8-3/4" @ 5983' (102' in 21-3/4 hrs) Siltstone & dolomite. Dev. 13° @ 5894', 13° @ 5968'. Mud: Wt 9.0, Vis 42, WL 5.0, PV 18, YP 6, GS 1/3, ph 9.0, Cl 700, Ca 200, Solids 4-1/2%, oil 3%, nitrates 120. BGG - 1 unit

4-10-77 (95) Drlg 8-3/4" @ 6100' (117' in 22-1/4 hrs) Dolomite, shale & siltstone. Dev. 12° @ 6063'. Mud: Wt 9.0, Vis 41, WL 6.2, PV 16, YP 5, GS 1/3, ph 9.0, Cl 700, Ca 120, Solids 5.2%, oil 2%, nitrates 140. BGG - 1 unit

4-11-77 (96) Drlg 8-3/4" @ 6132' (32' in 6-1/2 hrs) Shale. Dev. 11-1/2° @ 6129'. Mud: Wt 9.0. Vis 44, WL 5.8, PV 18, YP 7, GS 1/3, ph 9.0, Cl 700, Ca 160, Solids 5%, oil 2%, nitrates 140. BGG - 1 unit. Trip @ 6129' - Bridges @ 4281-4321' & 4471-4511' - tight hole. Trip gas - no increase

4-12-77 (97) Drlg 8-3/4" @ 6260' (128' in 23 hrs) Shale & shaley limestone. Dev. 10° @ 6219'. Mud: Wt 9.1, Vis 46, WL 6.4, PV 16, YP 5, GS 1/2, ph 9.0, Cl 550, Ca 240, Solids 5%, oil 2%, nitrates 160. BGG - 1 unit

4-13-77 (98) Drlg 8-3/4" @ 6420' (160' in 21-1/2 hrs) Shale & lime. Dev. 9-1/2° @ 6279', 10° @ 6344', 10-1/2° @ 6415'. Mud: Wt 9.0+, Vis 52, WL 5.8, PV 26, YP 9, GS 3/5, ph 9, Cl 500, Ca 200, Solids 5.2%, oil 2-1/2%, nitrates 140. BGG tr

4-14-77 (99) Drlg 8-3/4" @ 6550' (130' in 22-1/2 hrs) Lime & shale. Dev. 10-1/2° @ 6465', 10-3/4° @ 6529'. Mud: Wt 9.1, Vis 48, WL 5.8, PV 22, YP 6, GS 2/3, ph 9, Cl 500, Ca 200, Solids 5.9%, oil 2%, nitrates 140. BGG - 1-2 units, C_1 trace

4-15-77 (100) Drlg 8-3/4" @ 6644' (94' in 23-1/4 hrs) Limestone & siltstone. Dev. 10° @ 6600'. Mud: Wt 9, Vis 51, WL 5.8, PV 23, YP 8, GS 2/3, ph 9.0, Cl 450, Ca 120, Solids 5.1%, oil 2%, nitrates 120. BGG - 1 unit

4-16-77 (101) Drlg 8-3/4" @ 6671' (27' in 11 hrs) Siltstone & limestone. Dev. 10-1/2° @ 6640'. Mud: Wt 9.1, Vis 48, WL 6, PV 16, YP 2, GS 1/2, ph 9.0, Cl 400, Ca 120, Solids 5.9%, oil 2%, nitrates 120. BGG - 1 unit

4-17-77 (102) Drlg 8-3/4" @ 6711' (40' in 23 hrs) Siltstone & limestone. Dev. 10° @ 6690'. Mud: Wt 9, Vis 45, WL 6, PV 18, YP 3, GS 1/2, ph 8.5, Cl 400, Ca 200, Solids 5%, oil 1-1/2%, nitrates 120. BGG - 1 unit

4-18-77 (103) Drlg 8-3/4" @ 6787' (76' in 23 hrs) Limestone & siltstone. Dev. 9-1/2° @ 6760'. Mud: Wt 8.9+, Vis 53, WL 5.6, PV 24, YP 7, GS 2/3, ph 9.5, Cl 400, Ca 160, Solids 4.4%, oil 2%, nitrates 120. BGG - 1 unit

4-19-77 (104) Drlg 8-3/4" @ 6861' (74' in 23 hrs) Siltstone & limestone. Dev. 9° @ 6825'. Mud: Wt 8.9, Vis 46, WL 5.6, FC 1/32, PV 24, YP 9, GS 2/4, ph 10, Cl 500, Ca 120, Solids 4.4%, oil 2%, nitrates 120. BGG - 1 unit

4-20-77 (105) Drlg 8-3/4" @ 6931' (70' in 24 hrs) Siltstone & limestone. Mud: Wt 9.0, Vis 46, WL 5.4, PV 19, YP 4, GS 1/2, ph 10.0, Cl 500, Ca 200, Solids 5.1%, oil 2%, nitrates 110. BGG - 1 unit. Prep to trip for new bit

4-21-77 (106) Drlg 8-3/4" @ 7005' (76' in 15-3/4 hrs) Lime & siltstone. Dev. 8° @ 6930'. Mud: Wt 8.9, Vis 54, WL 5.4, PV 25, YP 10, GS 2/4, ph 10, Cl 500, Ca 120, Solids 4.5%, oil 3%, nitrates 110. BGG - 1 unit; trip gas 5 units - all methane

4-22-77 (107) Drlg 8-3/4" @ 7147' (142' in 22-1/4 hrs) Lime & shale. Dev. 7-3/4° @ 7007', 7-3/4° @ 7104'. Mud: Wt 8.8+, Vis 47, WL 5.6, PV 23, YP 6, GS 1/2, ph 10, Cl 500, Ca 100, Solids 4.1%, oil 4-1/2%, nitrates 110. BGG - 1 unit

4-23-77 (108) Drlg 8-3/4" @ 7328' (181' in 23-1/4 hrs) Lime, shale & siltstone. Dev. 8° @ 7225'. Mud: Wt 8.8, Vis 47, WL 5.2, PV 19, YP 6, GS 2/3, ph 10, Cl 500, Ca 100, Solids 4%, oil 5%, nitrates 102. BGG - 2 units; increase 4 units over BGG of 1 unit from diesel from 7100-7150'; 2 units over 1 unit by 7200'

4-24-77 (109) Drlg 8-3/4" @ 7423' (95' in 20-1/2 hrs) Limestone. Dev. 14-3/4° @ 7351', 15-1/4° @ 7383'. Mud: Wt 8.9+, Vis 49, WL 5.2, PV 20, YP 6, GS 2/3, ph 10, Cl 200, Ca 160, Solids 4%, oil 5%, nitrates 96. BGG - 2 units; 7348 - incr 3 units over BGG 2 units - diesel oil to mud system

4-25-77 (110) Drlg 8-3/4" @ 7464' (41' in 13-1/4 hrs) Dolomite & siltstone. Dev. 15-1/2° @ 7428', 15° @ 74421' (trip). Mud: Wt 8.9, Vis 53, WL 5.4, PV 23, YP 9, GS 2/3, ph 10, Cl 450, Ca 200, Solids 4.6%, oil 5%, nitrates 96. BGG - 2 units; no trip gas
Note: Filter cake has remained at 1/32 since 4-6-77

4-26-77 (111) Drlg 8-3/4" @ 7542' (78' in 23-1/4 hrs) Silty lime. Dev. 15-1/2° @ 7485'. Mud: Wt 8.8, Vis 45, WL 5.4, PV 13, YP 3, GS 1/2, ph 10, Cl 400, Ca 100, Solids 4%, nitrates 90, oil 5%. BGG - 1 unit

4-27-77 (112) Drlg 8-3/4" @ 7582' (40' in 17-1/4 hrs) Lime & silt. Dev. 16° @ 7553'. Mud: Wt 8.8, Vis 48, WL 5.4, PV 18, YP 7, GS 1/2, ph 10.0, Cl 450, Ca 120, Solids 3.9%, oil 4-1/2%, nitrates 120. BGG - 1 unit; trip gas - 12 units @ 7553'

4-28-77 (113) Drlg 8-3/4" @ 7645' (63' in 23 hrs) Lime & siltstone. Mud: Wt 8.8, Vis 46, WL 5.6, PV 18, YP 7, GS 1/2, ph 10, Cl 450, Ca 120, Solids 3.9%, oil 4-1/2%, nitrates 110. BGG - 1 unit

4-29-77 (114) Drlg 8-3/4" @ 7720' (75' in 23 hrs) Limestone. Mud: Wt 8.8, Vis 52, WL 5.8, PV 16, YP 6, GS 1/2, ph 11.0, Cl 320, Ca 120, Solids 3.2%, oil 4%, nitrates 110. BGG - 1 unit

4-30-77 (115) Drlg 8-3/4" @ 7785' (65' in 23 hrs) Limestone & shale. Dev. 16° @ 7738'. Mud: Wt 8.8, Vis 50, WL 5.9, PV 18, YP 7, GS 1/2, ph 10, Cl 350, Ca 120, Solids 3.6%, oil 4%, nitrates 120. BGG - 1 unit

5-1-77 (116) T.D. 7813' tripping (28' in 7-3/4 hrs) Limestone & shale. Dev. 16° @ 7810'. Mud: Wt 8.7, Vis 47, WL 5.9, PV 21, YP 11, GS 2/4, ph 9.5, Cl 600, Ca 120, Solids 3.2%, oil 4%, nitrates 130. BGG - 1 unit. SLM 7811', Board 7813' - no correction. Schlumberger TD 7814'. Ran BHC Sonic-Gamma Ray-Caliper & Dipmeter, 3711' to TD

5-2-77 (117) Drlg 8-3/4" @ 7846' (33' in 8 hrs) Shale. Dev. 19-1/2° @ 7832'. Mud: Wg 8.8, Vis 52, WL 6, PV 20, YP 12, GS 2/5, ph 11.0, Cl 600, Ca 120, Solids 3.8%, oil 3%, nitrates 110. BGG - 1 unit; no trip gas

5-3-77 (118) Drlg 8-3/4" @ 7936' (90' in 21 hrs) Shale & lime. Dev. 22° @ 7894'. Mud: Wt 8.9, Vis 54, WL 5.9, PV 24, YP 14, GS 2/4, ph 11, Cl 600, Ca 120, Solids 3.5%, oil 2-1/2%, nitrates 140. BGG - 1 unit

5-4-77 (119) Drlg 8-3/4" @ 8036' (100' in 22 hrs) Shale & limestone. Dev. 23° @ 7965', 24° @ 8016'. Mud: Wt 8.9, Vis 50, WL 6.0, PV 22, YP 14, GS 2/4, ph 10, Cl 600, Ca 160, Solids 4.4%, oil 2%, nitrates 120. BGG - 1 unit

5-5-77 (120) Drlg 8-3/4" @ 8132' (96' in 23 hrs) Limestone & shale. Dev. 26° @ 8078'. Mud: Wt 8.8, Vis 55, WL 5.6, FC 1/32, PV 24, YP 13, GS 2/3, ph 11, Cl 500, Ca 120, Solids 3.7%, oil 2%, nitrates 120. BGG - 1 unit

5-6-77 (121) TD 8142' Stuck (10' in 2-1/2 hrs) Lime & shale. Mud: Wt 9.1, Vis 52, WL 5.6, PV 23, YP 11, GS 2/4, ph 11, Cl 500, Ca 120, Solids 5.7%, oil 2%, nitrates 120

5-7-77 (122) TD 8142' fishing (0) Mud: Wt 9.1, Vis 52, WL 5.6, FC 1/32, PV 23, YP 11, GS 2/4, ph 11, Cl 500, Ca 120, Solids 5.7%, oil 2%, nitrates 120. Top Drill collars 4150', free @ 4163', stuck @ 4170', backed off @ 4140'

5-8-77 (123) TD 8142' circ for log. Mud: Wt 9.1, Vis 60, WL 5.4, PV 29, YP 16, GS 2/4, ph 10, Cl 450, Ca 120, Solids 5.3%, oil 2%, nitrates 100. BGG - 1 unit; trip gas 4 units over BGG

5-9-77 (124) TD 8142' condition hole for liner. Mud: Wt 9.1, Vis 57, WL 6.2, PV 22, YP 12, GS 2/4, ph 10, Cl 450, Ca 120, Solids 5.7%, oil 2%, nitrates 110. BGG - 1 unit. Ran Dual Laterolog-SP logs from 8129-3711'

5-10-77 (125) TD 8142' waiting on casing crew to hang liner. Mud: Wt 9.1, Vis 54, WL 6.0, PV 23, YP 11, GS 2/4, ph 10, Cl 450, Ca 120, Solids 5.6%, oil 2%, nitrates 110. BGG - 1 unit

5-11-77 (126) TD 8142' WOC - Lay down 4-1/2" drill pipe. Ran 7-5/8" liner to 8142'; top liner @ 3563' (150' overlap). 7-5/8" - 29.70#/ft, 103 joints cemented w/400 sx HOWCO Lite w/10# Gilsonite/sx & .3% HR5 (12.1#/gal) + 200 sx Class G w/15% HR2, 1/4# Flocele/sx; 3/4% CFR2; 10% NaCl (15.9#/gal). Plug down @ 0100, 5-11-77 w/2500 psi

5-12-77 (127) TD 8142' waiting on 3-1/2" drill pipe. Tag liner, no cement, pressure to 1000 psi - OK

5-13-77 (128) TD 8142' picking up 3-1/2" drill pipe - prep to drill out

5-14-77 (129) Drlg 6-1/2" @ 8169' (27' in 8 hrs) Limestone & shale. Mud: Wt 8.8, Vis 38, WL 9.4, FC 2/32, PV 12, YP 6, GS 1/4, ph 11.0, Cl 600, Ca 140, Solids 3-1/2%, no oil, nitrates 110. Cement @ 8091'. Drill out @ 2300 hours 13 May 1977

5-15-77 (130) Drlg 6-1/2" @ 8292' (77' in 23 hrs) Siltstone. Dev. 25° @ 8225'. Mud: Wt 8.7, Vis 37, WL 9.0, FC 1/32, PV 10, YP 4, GS 1/4, ph 11, Cl 600, Ca 180, Solids 2.8%, nitrates 110. BGG - 2 units

5-17-77 (132) Drlg 6-1/2" @ 8353' (61' in 16 hrs) Dolomite & siltstone. Dev. 25° @ 8282', 26° @ 8310'. Mud: Wt 8.8, Vis 38, WL 8.2, FC 2/32, PV 13, YP 5, GS 1/3, ph 11, Cl 400, Ca 180, Solids 3-1/2%, nitrates 110. BGG - 1 unit; trip gas - no increase

5-18-77 (133) Drlg 6-1/2" @ 8438' (85' in 23 hrs) Siltstone. Dev. 27° @ 8400'. Mud: Wt 8.8, Vis 38, WL 8.2, PV 14, YP 6, GS 1/3, ph 11, Cl 350, Ca 80, Solids 3-1/2%, nitrates 115. BGG - 1 unit, no increase

5-19-77 (134) Drlg 6-1/2" @ 8490' (52' in 14-1/2 hrs) Red shale & siltstone. Dev. 26-1/2° @ 8460'. Mud: Wt 8.9, Vis 36, WL 8.2, PV 9, YP 4, GS 1/2, ph 11, Cl 600, Ca 120, Solids 4.2%, nitrates 110. BGG - 1 unit; trip gas 2 units over BGG @ 8466'

5-20-77 (135) Drlg 6-1/2" @ 8585' (95' in 23 hrs) Red shale & siltstone streaks. Dev. 27° @ 8525'. Mud: Wt 8.8, Vis 38, WL 7.2, FC 2/32, PV 600, YP 160, GS 1/2, ph 11, Cl 600, Ca 160, Solids 3-1/2%, nitrates 105. BGG - 1 unit

5-21-77 (136) Drlg 6-1/2" @ 8673' (88' in 23-1/4 hrs) Siltstone. Dev. 26-1/2° @ 8590'. Mud: Wt 8.8, Vis 40, WL 7.4, PV 12, YP 4, GS 1/2, ph 11, Cl 500, Ca 140, Solids 3-1/2%, nitrates 105. BGG 1 unit - no increase

5-22-77 (137) Drlg 6-1/2" @ 8774' (101' in 13 hrs) Red shale & siltstone. Dev. 27° @ 8640', 26° @ 8710'. Mud: Wt 8.7, Vis 37, WL 7.0, FC 2/32, PV 11, YP 3, GS 1/1, ph 10.5, Cl 500, Ca 200, Solids 2.8%, nitrates 100. Ran Dynadrill and diamond bit @ 8673'. BGG - 1 unit, no increase

5-23-77 (138) Drlg 6-1/2" @ 8930' (156' in 21-1/4 hrs) Red shale. Dev. 28-1/2° @ 8800', 30° @ 8890'. Mud: Wt 8.8, Vis 37, WL 7.2, FC 2/32, PV 11, YP 3, GS 1/2, ph 10.5, Cl 500, Ca 200, Solids 3.6%, nitrates 95. BGG - 1 unit

5-24-77 (139) TD 9014' tripping (84' in 17-1/4 hrs) Red shale & anhydrite. Dev. 31-1/2° @ 8950'. Mud: Wt 8.8, Vis 38, WL 7.4, FC 2/32, PV 12, YP 3, GS 1/2, ph 10.5, Cl 450, Ca 280, Solids 3.6%, nitrates 130. BGG - 1 unit, no increase

5-25-77 (140) Drlg 6-1/2" @ 9070' (56' in 14-3/4 hrs) Red shale & anhydrite. Dev. 32-1/2° @ 9042'. Mud: Wt 8.8, Vis 37, WL 7.2, FC 2/32, PV 11, YP 4, GS 1/2, ph 10.5, Cl 450, Ca 240, Solids 3-1/2%, nitrates 140. BGG - 1 unit; trip gas 3 units over BGG. Drilling w/J33, no Dynadrill

5-26-77 (141) Drlg 6-1/2" @ 9152' (82' in 22-1/4 hrs) Red shale & anhydrite. Dev. 31° @ 9130'. Mud: Wt 8.8, Vis 41, WL 7.0, FC 2/32, PV 13, YP 6, GS 1/3, ph 11, Cl 500, Ca 200, Solids 3.6%, nitrates 140. BGG - 1 unit, no increase

5-27-77 (142) Drlg 6-1/2" @ 9216' (64' in 14 hrs) Red shale. Dev. 30-1/2° @ 9155', 30-1/4° @ 9189'. Mud: Wt 8.8, Vis 42, WL 6.8, PV 15, YP 5, GS 1/3, ph 10.5, Cl 550, Ca 200, Solids 3.5%, FC 2/32, nitrates 140. BGG - 1 unit

5-28-77 (143) Drlg 6-1/2" @ 9278' (62' in 10-3/4 hrs) Sand & shale. Dev. 29° @ 9229', 27-3/4° @ 9249'. Mud: Wt 8.8, Vis 42, WL 6.8, FC 2/32, PV 15, YP 5, GS 1/3, ph 10.5, Cl 550, Ca 200, Solids 3.5%, nitrates 140. BGG - 1 unit

5-29-77 (144) Drlg 6-1/2" @ 9368' (89' in 21-1/4 hrs) Red shale & anhydrite. Dev. 28° @ 9295', 29° @ 9326', 28° @ 9358'. Mud: Wt 8.8, Vis 40, WL 6.8, FC 2/32, PV 10, YP 5, GS 1/2, ph 10.5, Cl 300, Ca 240, Solids 3.5%, nitrates 140. BGG - 1 unit

5-30-77 (145) Drlg 6-1/2" @ 9458' (90' in 22-1/4 hrs) Red shale, anhydrite & dolomite. Dev. 27-1/2° @ 9388', 27-1/2° @ 9419', 27-1/2° @ 9448'. Mud: Wt 8.8, Vis 36, WL 6.4, FC 2/32, PV 9, YP 4, GS 1/2, ph 10, Cl 400, Ca 220, Solids 3.5%, nitrates 140. BGG - 1 unit

5-31-77 (146) TD 9480' Circ & mix mud (22' in 5-1/2 hrs) Dolomite. Dev. 25-3/4° @ 9480'. Mud: Wt 9, Vis 40, WL 6.2, FC 2/32, PV 14, YP 9, GS 1/3, ph 10, Cl 500, Ca 240, Solids 5%, nitrates 130. BGG - 1 unit; trip gas 250 units; BGG - 5 units; gas to surface 85' after circ after trip.

6-1-77 (147) TD 9493' DST #4 (13' in 2 hrs) Dolomite & anhydrite. Dev. 24° @ 9490'. Mud: Wt 9, Vis 40, WL 6.2, PV 14, YP 9, GS 1/3, ph 10, Cl 600, Ca 240, Solids 5%, nitrates 120 ppm. DST #4 - 9440-9493' (53') PreFlow 6 min - gas to surface 6 min (minus) Shut in at 2400 hrs until daylight (See DST results). SLM 9495.66'; Board 9493', no correction

6-2-77 (148) TD 9493' circ gas out of mud. Mud: Wt 9, Vis 40, WL 6.5, PV 12, YP 7, GS 1/2, ph 10, Cl 600, Ca 280, Solids 5%, nitrates 120 ppm. Gas 4500 units for 35 min @ 8000', back to 15 units @

6-3-77 (149) Drlg 6-1/2" @ 9515' (27' in 7-1/2 hrs) Dolomite. Mud: Wt 9.0, Vis 39, WL 6.6, FC 2/32, PV 12, YP 7, GS 1/2, ph 10.0, Cl 500, Ca 260, Solids 5%, nitrates 120. BGG - 1 unit; had 5,900 units max while conditioning hole after the test. Start drlg @ 21:00 hrs 6-2-77. Losing some mud in hole. Seeping

6-4-77 (150) Drlg 6-1/2" @ 9578' (63' in 20 hrs) Siltstone & dolomite. Dev. 25° @ 9510', 24° @ 9540'. Mud: Wt 9.1, Vis 38, WL 7.2, PV 11, YP 2, GS 1/3, ph 10, Cl 500, Ca 160, Solids 5.7%, nitrates 120. BGG - 2 units. 9532-9542' drilling break, 8 units over BGG, C_1 2475 ppm C_2O. Losing mud: 75 bbls

6-5-77 (151) TD 9588' Tripping (10' in 3-1/2 hrs) Siltstone & dolomite. Dev. 27° @ 9574'. Mud: Wt 9.1, Vis 38, WL 7.2, FC 2/32, PV 11, YP 2, GS 1/3, ph 10, Cl 500, Ca 160, Solids 5.7%, nitrates 120. BGG - 2-3 units

6-6-77 (152) Drlg 6-1/2" @ 9711' (123' in 14 hrs) Shale, siltstone, dolomite & limestone. Dev. 24° @ 9665', 24° @ 9698'. Mud: Wt 9.1, Vis 38, WL 7.2, PV 11, YP 2, GS 0/1, ph 10.5, Cl 500, Ca 180, Solids 5.7%, nitrates 120. Circulate drilling breaks @ 9610', 9667', 9691'. BGG 2 units, 9628-9633' - 112 units over BGG; 9652-9662'- 100 units over BGG; 9680-9688' - 18 units pver BGG

6-7-77 (153) Drlg 6-1/2" @ 9790' (79' in 22 hrs) Dolomite, siltstone, limestone & shale. Dev. 23-1/2° @ 9757'. Mud: Wt 9.1, Vis 41+, WL 7.4, PV 13, YP 6, GS 1/4, ph 11, Cl 500, Ca 160, Solids 5.7%, nitrates 140. BGG - 2 units; connection & survey gas - 10 units over BGG

6-8-77 (154) TD 9812' logging (22' in 6 hrs) Dolomitic shale, limestone & siltstone. Dev. 23° @ 9808'. Mud: Wt 9.1, Vis 41, WL 7.4, PV 13, YP 6, GS 1/4, ph 11, Cl 500, Ca 160, Solids 5.7%, nitrates 140. SLM 9811.50'; Board 9812.02' - no correction. Ran Dual Laterolog-Gamma Ray-SP and BHC Sonic-GR from 9802-8142'. BGG - 2 units; short trip gas - 20 units

6-9-77 (155) TD 9812' (0) Circulating & conditioning mud. Mud: Wt 910, Vis 38, WL 7.2, FC 2/32, PV 10, YP 2, GS 0/1, ph 11, Cl 500, Ca 140, Solids 5.0%, Nitrates 110. BGG - 2 units; trip gas - 22 units

6-10-77 (156) TD 9812' (0) Tripping in hole to condition mud. Mud: Wt 9.0, Vis 39, WL 7.2, FC 2/32, PV 10, YP 2, GS 0/1, ph 11, Cl 500, Ca 140, Solids 5%, nitrates 110. BGG - 2 units

6-11-77 (157) TD 9812' (0) Tripping out. Mud: Wt 9.0, Vis 40, WL 7, FC 2/32, PV 13; YP 3, GS 0/1, ph 11.0, Cl 500, Ca 140, Solids 5%, nitrates 110. BGG - 2 units; trip gas 15 units; trip w/liner - 6 units. Ran 47 joints 5" casing (liner) C75 - 18#/ft. Cemented w/200 sx 50-50 pozmix Class G, 2% gel, 10% NaCl, 3/4% CFR2, 1/4# Flocele/sx. Plug down @ 03:30 am 11 June 1977. Top Hanger @ 7858'; bottom of liner 9809'; landing collar @ 9765'

6-12-77 (158) TD 9812' (0) Waiting on casing. 8 hrs milling on hanger & scraping casing

6-13-77 (159) TD 9812' (0) WOC. Ran 81 joints 7-5/8" casing, 29.70#/ft, L80-8 round. Cemented w/50sx Class G, 10% NaCl, 3/4% CFR2. Good returns. Bump plug w/400#, plug down @ 18:30 hrs 12 June 1977

6-14-77 (160) TD 9812' (0) Nippling up

6-15-77 (161) TD 9812' (0) Tripping out. Mud: Wt 9.2, Vis 45, WL 8.4, PV 16, YP 5, GS 2/4, ph 11, Cl 500, Ca 240, Solids 6.4%, nitrates 110. Tag cement @ 3515', plug @ 3526', collar @ 3527', bottom of tie back 3569', top 5" liner @ 7856'. Tested stack 5000 psi, Hydril 2500 psi, Kelly Cock 3000 psi - OK

6-16-77 (162) TD 9812' (0) Drilling landing collar. Mud: Wt 9.1, Vis 45, WL 8.8, PV 15, YP 9, GS 1/3, ph 11, Cl 500, Ca 160, Solids 5.7%, nitrates 110. Cement in liner @ 9750', plug @ 9762', landing collar @ 9764'

6-17-77 (163) TD 9812' (0) Waiting on Magnet. BGG - 2 units; trip gas 6000 units; C_1 692,000 ppm; C_2 trace. Pressure up to 1200 psi - held OK

6-18-77 (164) TD 9812' (0) Tripping out w/mill. Mud: Wt 9.1, Vis 40, WL 8.0, PV 13, YP 8, GS 0/2, ph 11, Cl 500, Ca 160, Solids 5.6%, nitrates 110. BGG - 2 units; trip gas (1) 7200 units (saturated) C_1 820,000 ppm (Methane), dropped to 200 units then saturated again. Trip gas (2) 7200 units (saturated) with 810,000 ppm, dropped to 240 units. Closed rams & pressured up to 2000 psi - held OK. 3-1/2" cement bond tool would not go, sinker bar wouldn't go. Hanging up @ 7875'

6-19-77 (165) TD 9812' (0) Work on drawworks. Ran Petrolog cement bond log & gamma ray. Top cement @ 8096', top liner @ 7856', 8096-9440' average 50% bonding, 9440-9680' average 90% bonding, 9680-TD average 50% bonding

6-20-77 (166) TD 9812' (0) Condition mud. Wt 9.4+, Vis 37, WL 8.4, FC 2/32, PV 11, YP 1, GS 0/1, ph 13, Cl 550, Ca 140, Solids 8%, nitrates 110. BGG - 28 units; trip gas 7200 units Hot wire. Prep to squeeze liner @ 7856'. Set EZ Drill Plug @ 9740'. Pressure annulus to 2000 psi; pressure drill plug & drill pipe to 4000 psi; pressure annulus to 4000 psi. Formation would not break. Released pressure. Drilled EZ drill plug - rotated on bottom w/10,000# WOB - no torque

6-21-77 (167) Drlg 4" @ 9835' (23' in 4 hrs) Limestone & dolomite. Mud: Wt 9.9+, Vis 42, WL 8.4, PV 17, YP 4, GS 0/4, ph 13, Cl 500, Ca 80, Solids 11.8%, nitrates 100. BGG - 3 units; trip gas 30 units. Drill out @ 0300 hours, 21 June 1977

6-22-77 (168) Drlg 4" @ 9930' (95' in 23-3/4 hrs) Dolomitic shale & limestone. Mud: Wt 10.1, Vis 48, WL 6.6, PV 24, YP 5, GS 1/4, ph 12.5, Cl 600, CA 120, Solids 13.3%, nitrates 110 ppm. BGG - 3 units; connection gas 5 units
<u>Note</u> - No deviation tool available for small drill pipe

6-23-77 (169) Drlg 4" @ 10,032' (102' in 23-3/4 hrs) Limestone & dolomite. Mud: Wt 10.1, Vis 40, WL 6.4, PV 20, YP 2, GS 0/2, ph 12.5, Cl 600, Ca 80, Solids 13.3%, nitrates 110. No H_2S

6-24-77 (170) TD 10,083' tripping in (51' in 13 hrs) Dolomite, limestone & siltstone. No deviation. Mud: Wt 10.1, Vis 42, WL 6.4, PV 18, YP 4, GS 1/2, ph 12, Cl 600, Ca 200, Solids 13.3%, nitrates 100. BGG - 2 units WO Bit 9000#

6-25-77 (171) Drlg 4" @ 10,119' (36' in 16-1/2 hrs) Lime & shale. Mud: Wt. 10.0+, Vis 41, WL 6.8, PV 18, YP 1, GS 1/1, ph 12, Cl 600, Ca 120, Solids 12.4%, nitrates 100. BGG - 2 units; trip gas 2 units over BGG

6-26-77 (172) Drlg 4" @ 10,141' (22' in 12 hrs) Shale, some free sulphur. Mud: Wt 10.0+, Vis 42, WL 6.8, PV 19, YP 3, GS 0/2, ph 12, Cl 600, Ca 100, Solids 12.4%, nitrates 100. BGG - 2 units; trip gas 112 units, C_1 49,300 ppm. Top Black Shale 10,097'

6-27-77 (173) Drlg 4" @ 10,167' (26' in 23-3/4 hrs) Dolomite, lime, tr chert. Mud: Wt 10.1+, Vis 47, WL 6.7, PV 22, YP 5, GS 2/7, ph 12.5, Cl 600, Ca 80, Solids 13.3%, nitrates 110. BGG - 2 units, no increase

6-28-77 (174) TD 10,179' Trip out (12' in 23-1/2 hrs) Lime, dolomite, shale, tr free sulphur. Mud: Wt 10.2, Vis 41, WL 6.4, PV 18, YP 5, GS 1/6, ph 12.5, Cl 500, Ca 90, Solids 13.8%, nitrates 100. BGG - 2 units

6-29-77 (175) Drlg 4" @ 10,192' (13' in 16 hrs) Limestone & dolomite. Mud: Wt 10.2, Vis 41, WL 8.0, FC 2/32, PV 17, YP 5, GS 1/6, ph 12, Cl 450, Ca 90, Solids 13.8%, nitrates 100. BGG - 2 units; trip gas 8 units over BGG

6-30-77 (176) Drlg 4" @ 10,213' (21' in 24 hrs) Lime, shale, dolomite & tr chert. Mud: Wt 10.1+, Vis 43, WL 6.6, PV 19, YP 5, GS 2/7, ph 12.5, Cl 500, Ca 90, Solids 13.1%, nitrates 100. BGG - 2 units, no increase

7-1-77 (177) Drlg 4" @ 10,220' (7' in 9 hrs) Shale, limestone & dolomite. Mud: Wt 10.1, Vis 46, WL 6.4, PV 20, YP 6, GS 1/8, ph 12.5, Cl 450, Ca 90, Solids 13.4%, nitrates 120. BGG - 2 units; trip gas 395 units @ 10,216'

7-2-77 (178) TD 10,232' Tripping (12' in 19-1/2 hrs) Limestone, dolomite & chert. Mud: Wt 10.3, Vis 47, WL 6.8, FC 2/32, PV 20, YP 9, GS 2/12, ph 12.5, Cl 450, Ca 90, Solids 13.4%, nitrates 120. BGG - 1 unit; increase 3 units over BGG @ 10,227-10,229'

7-3-77 (179) TD 10,240' Reaming core hole (8' in 7 hrs) Chert & dolomite. Mud: Wt 10.2, Vis 44, WL 6.4, PV 19, YP 6, GS 1/12, ph 12.5, Cl 400, Ca 80, Solids 13.8%, nitrates 120. BGG - 2 units; trip gas @ 10,232' - 280 units

7-4-77 (180) Coring 4" @ 10,249' (9' in 8 hrs) Chert, lime, dolomite & shale. Mud: Wt 10.2, Vis 44, WL 8.0, FC 2/32, PV 18, YP 9, GS 2/12, ph 12.5, Cl 400, Ca 80, Solids 13.8%, nitrates 110. BGG - 2 units; trip gas @ 10,240' - 120 units; trip gas @ 10,248' - 18 units

7-5-77 (181) Drlg 4" @ 10,256' (7' in 9-1/2 hrs) Black chert & black silicious dolomitic fractured shale. Mud: Wt 10.3, Vis 42, WL 8, FC 2/32, PV 18, YP 5, GS 1/10, ph 12.5, Cl 400, Ca 80, Solids 14.6%, nitrates 110. BGG - 2 units; trip gas @ 10,250' - 22 units

7-6-77 (182) Drlg 4" @ 10,276' (20' in 24 hrs) Black silicious dolomitic shale. Mud: Wt 10.4, Vis 50, WL 6.4, PV 24, YP 9, GS 1/10, ph 12.5, Cl 450, Ca 80, Solids 15.3%, nitrates 110. BGG - 2 units

7-7-77 (183) Drlg 4" @ 10,296' (20' in 24 hrs) Black shale, tr chert. Mud: Wt 10.3, Vis 43, WL 5.6, FC 2/32, PV 18, YP 8, GS 1/4, ph 12, Cl 500, Ca 80, Solids 14.6%, nitrates 110. BGG - 2 units

7-8-77 (184) TD 10,306' Tripping (10' in 16 hrs) Limestone, dolomite, chert, shale (very poor samples) Mud: Wt 10.3, Vis 45, WL 6.0, FC 2/32, PV 20, YP 7, GS 1/5, ph 12, Cl 500, Ca 80, Solids 14.6%, nitrates 105. BGG - 2 units, no increase

7-9-77 (185) Drlg 4" @ 10,358' (52' in 14 hrs) Black shale, black shaley limestone. Mud: Wt 10.2, Vis 41, WL 5.0, PV 16, YP 4, GS 1/3, ph 11.5, Cl 450, Ca 80, Solids 13.8%, nitrates 105. BGG - 2 units; trip gas @ 10,306' - 100 units. SLM 10,295.01'; Board 10,306.80' - corrected 11 feet

7-10-77 (186) TD 10,405' WO DST tools (47' in 8 hrs) Black phosphatic carbonaceous dolomitic-calcareous shale. Mud: Wt 10.2, Vis 46, WL 5.8, FC 2/32, PV 20, YP 9, GS 1/8, ph 12.5, Cl 600, Ca 80, Solids 13.8%, nitrates 110. BGG 2 units; 10,38 - 10 units over BGG; 10,39 - 13 units over BGG. SLM 10,407'; Board 10,405' - no correction

7-11-77 (187) TD 10,430' Circulating samples - WOO (25' in 4-1/2 hrs) Black calcareous phosphatic carbonaceous fractured shale. Mud: Wt 10.1, Vis 42, WL 7.2, PV 20, YP 4, GS 1/4, ph 12.5, Cl 600, Ca 40, Solids 13.3%, nitrates 105. BGG - 2 units; trip gas @ 10,405' - 6500 units, C_1 685,000, C_2 560, C_3 0; conn gas - 3 units; drlg poss 1 unit over BGG

7-12-77 (188) TD 10,470' DST No. 6 (40' in 7 hrs) Black carbonaceous phosphatic calcareous shale. Mud: Wt 10.1, Vis 42, WL 7.2, FC 2/32, PV 20, YP 4, GS 1/4, ph 12.5, Cl 600, Ca 40, Solids 13.3%, nitrates 105. BGG - 2 units; had 6 units over BGG while circulating at 10,442' after bottoms up

7-13-77 (189) Drlg 4" @ 10,516' (46' in 13-1/2 hrs) Black shale. Mud: Wt 10.1, Vis 41, WL 7.2, PV 15, YP 52, GS 1/3, ph 12.5, Cl 800, Ca 120, Solids 13.3%, nitrates 110. BGG - 2 units; trip gas @ 10,470' is 430 units in 78 minutes & second peak of 400 units in 103 minutes

7-14-77 (190) Drlg 4" @ 10,547' (31' in 11-1/2 hrs) Limestone & dolomite. Mud: Wt 10.1, Vis 41, WL 7.2, FC 2/32, PV 17, YP 2, GS 1/3, ph 12.5, Cl 700, Ca 120, Solids 13.3%, nitrates 110. BGG - 2 units; trip gas 20 units in 103 min; 4 units 118 min; conn gas 3 units @ 10,530'

7-15-77 (191) Drlg 4" @ 10,602' (55' in 24 hrs) Dolomite & limestone. Mud: Wt 10.1, Vis 42, WL 7.2, PV 16, YP 5, GS 1/5, ph 12.5, Cl 600, Ca 100, Solids 13.3%, nitrates 110. BGG - 2 units; conn gas 1 unit over BGG @ 10,593' & 2 units over BGG @ 10,565'. Lost 40 bbls of mud - still losing

7-16-77 (192) Drlg 4" @ 10,639' (36' in 23-1/2 hrs) Limestone & dolomite. Mud: Wt 10.1, Vis 45, WL 7.6, PV 19, YP 6, GS 1/6, ph 12.5, Cl 600, Ca 120, Solids 13.3%, nitrates 110. BGG - 2 units, no increase. Very poor samples

7-17-77 (193) Drlg 4" @ 10,673' (35' in 22 hrs) Dolomite, anhydrite & limestone Mud: Wt 10.1, Vis 46, WL 8.2, FC 2/32, PV 20, YP 3, GS 1/6, ph 13.0, Cl 600, Ca 120, Solids 13.3%, nitrates 105. BGG - 2 units; 5 units over BGG during rig repair

7-18-77 (194) Drlg 4" @ 10,732' (59' in 23-1/2 hrs) Anhydrite, limestone, dolomite & sandstone. Mud: Wt 10.1, Vis 42, WL 7.8, FC 2/32, PV 13, YP 1, GS 0/1, ph 13, Cl 600, Ca 80, Solids 12.4%, nitrates 100. BGG - 2 units

7-19-77 (195) TD 10,765' Tripping (33' in 23 hrs) Anhydrite, sand & trace of limestone. Mud: Wt 10.1, Vis 43, WL 8.0, PV 13, YP 3, GS 0/1, ph 13.0, Cl 600, Ca 160, Solids 12.4%, nitrates 100. BGG - 2 units

7-20-77 (196) Drlg 4" @ 10,800' (35' in 12-1/2 hrs) Sand, dolomite & limestone. Mud: Wt 10.1, Vis 42, WL 7.2, PV 18, YP 5, GS 0/1, ph 13.0, Cl 600, Ca 100, Solids 13.3%, nitrates 100. BGG - 2 units; trip gas 48 units over BGG

7-21-77 (198) Drlg 4" @ 10,848' (16' in 15 hrs) Lime, sand & shale. Mud: Wt 10.1, Vis 44, WL 6.6, PV 21, YP 6, GS 1/3, ph 13.0, Cl 600, Ca 160, Solids 13.3%, nitrates 100. BGG - 2 units; trip gas 6 units over BGG @ 10,842'

7-23-77 (199) Drlg 4" @ 10,878' (30' in 23 hrs) Dolomite, lime, anhydrite & sand. Mud: Wt 10.1, Vis 45, WL 6.2, PV 22, YP 4, GS 1/6, ph 13, Cl 600, Ca 100, Solids 13%, nitrates 100. BGG - 1 unit, no increase

7-24-77 (200) Drlg 4" @ 10,881' (3' in 12 hrs) Sand, lime & dolomite. Mud: Wt 10.1, Vis 43, WL 7.2, PV 18, YP 4, GS 1/6, ph 13.0, Cl 600, Ca 100, Solids 13.0%, nitrates 100. BGG - 1 unit; trip gas 18 units over BGG @ 10,878'

7-25-77 (201) TD 10,882', on DST #7 (1' in 1-1/2 hrs) Dolomite. Mud: Wt 10.1, Vis 43, WL 7.2, PV 18, YP 4, GS 1/6, ph 13.0, Cl 600, Ca 100, Solids 13.0%, nitrates 100. BGG - 1 unit. DST #7, 10,695-10,882' (187'). Packer failed (See DST results)

7-26-77 (202) TD 10,884', tripping in hole (2' in 3 hrs) Sand & lime. Mud: Wt 10.1, Vis 42, WL 7.4, PV 17, YP 4, GS 0/3, ph 13.0, Cl 600, Ca 100, Solids 13.0%, nitrates 105. BGG - 2 units; trip gas 24 units over BGG @ 10,882'

7-27-77 (203) Drlg 4" @ 10,902' (18' in 19-1/2 hrs) Dolomite, lime & sand. Mud: Wt 10.1, Vis 41, WL 8, PV 18, YP 1, GS 1/5, ph 12.5, Cl 600, Ca 120, Solids 13.0%, nitrates 105. BGG - 2 units; trip gas 11 units over BGG @ 10,884'

7-28-77 (204) TD 10,910', on DST #8 (8' in 11-1/2 hrs) Dolomite, lime, sand & anhydrite. Mud: Wt 10.1, Vis 41, WL 8.0, FC 2/32, PV 15, YP 4, GS 1/6, ph 12.5, Cl 600, Ca 80, Solids 13.0%, nitrates 105. BGG - 2 units, no increase

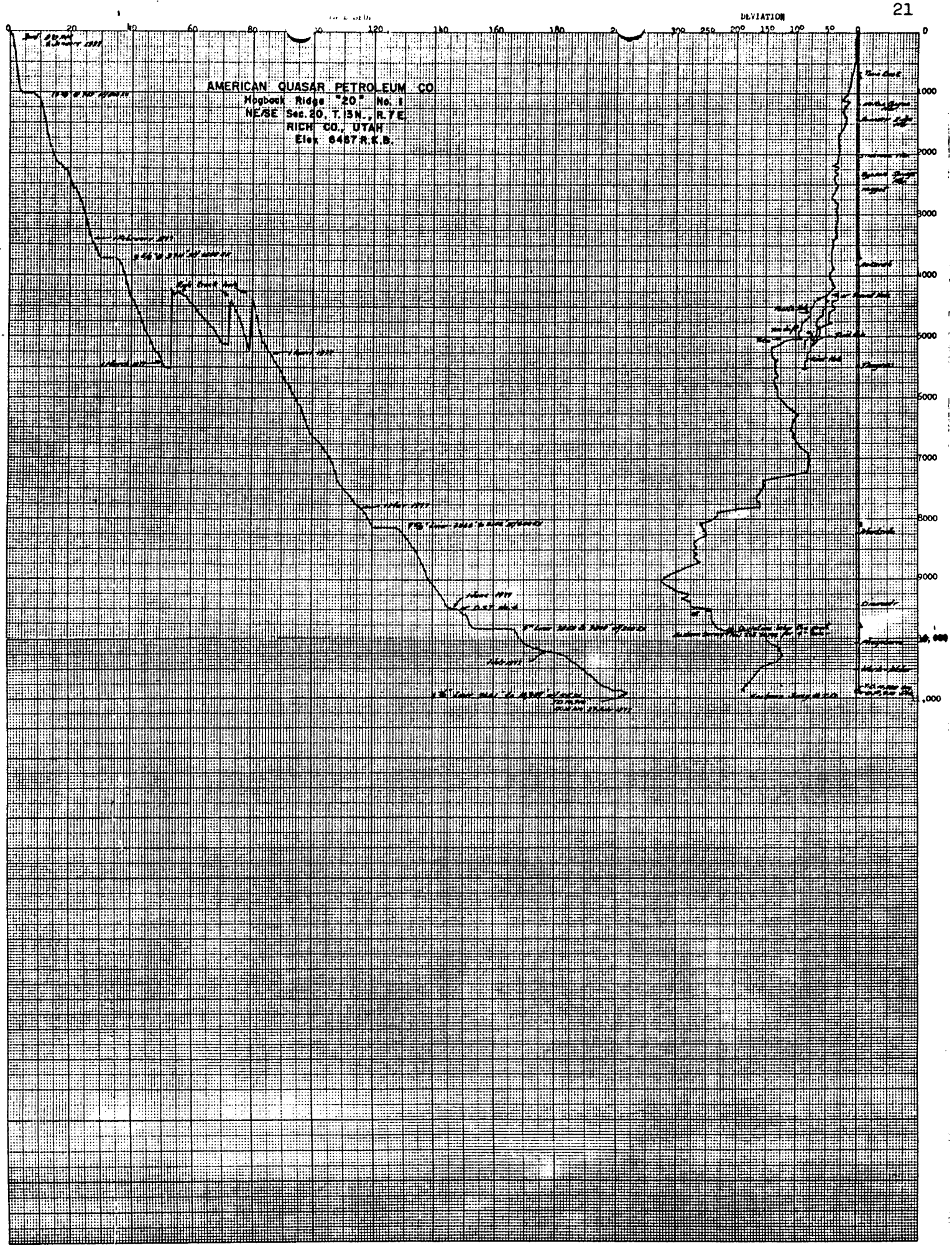
7-29-77 (205) TD 10,910', trip in hole after DST #9 (0') Mud: Wt 10.1, Vis 41, WL 8.0, PV 15, YP 4, GS 1/6, ph 12.5, Cl 600, Ca 80, Solids 13%, nitrates 105. DST #9, 10,848-10,910' (62') hole in drill pipe. Prep to condition hole for logs. Lost mud after test

7-30-77 (206) TD 10,910' (0') Waiting on Schlumberger tools. Mud: Wt 10.1, Vis 42, WL 8.8, FC 2/32, PV 16, YP 4, GS 1/4, ph 12.5, Cl 500, Ca 100, Solids 13.0%, nitrates. BGG - 2 units; trip gas 275 units over BGG; recirculation of trip gas - 26 units over BGG

7-31-77 (207) TD 10,910' (0') Running logs. Mud: Wt 10.2, Vis 42, WL 8.9, PV 20, YP 4, GS 1/5, ph 12.5, Cl 500, Ca 100, Solids 13%, nitrates 105. Had bridge @ 10,460'. Ran IES-SP (no good); Sonic-Gamma Ray. Running TDT-GR; prep to run caliper & GR/N. SLM 10,920.75'; Board 10,910' - no correction.

8-1-77 (208) TD 10,910' driller; 10,888' log (0') Circulating-conditioning hole. Mud: Wt 10.2, Vis 41, WL 8.2, PV 19, YP 1, GS 0/3, ph 12, Cl 500, Ca 80, Solids 13%, nitrates 100. Ran Caliper, Gamma Ray Neutron, Eastman survey 9800-10,886'; also ran 7700-8250' most logs

8-2-77 (209) TD 10,910' driller; 10,888' log. Cementing liner. Ran 40 joints 2-7/8" tubing liner (6-1/2#) 1246.05' set @ 10,907', top liner @ 9661' (148' overlap). Landing collar 10,875'; bottom of PBR 9681.00'. Cemented w/55 sx 50-50 pozmix, 3/4% CFR2, 2% gel, 10% NaCl. Plug down w/3200 psi @ 06:30 hrs


DEVIATION
AMERICAN QUASAR PETROLEUM CO
Hogback Ridge "20" No. 1
NE/SE Sec. 20, T. 13N., R. 7E.
RICH CO., UTAH
Elev. 6487 R.K.B.

HUGHES BIT RECORD

D IN U.S.A. — SHEET 1 OF 4

FIELD	STATE	X IF OFFSHORE	SECTION	TOWNSHIP	RANGE	OPERATOR	X (1)	FILE NUMBER
Rich	Wildcat	Utah		20	13N	7E	American Quasar Pet.	

CTOR	X(2)	RIG NO.	LOCATION	WELL NO.	SPUD 20:30	US	INTER	TOTAL DEPTH DATE	TOOL PUSHER
Loffland Bros. Co.		214	NE/SE Hogback Ridge "20"	1-20	1-5-77	1-14-77	2-9-77	7-28-77	Hammons Day-Akin-Long

GIVE SIZE & TYPE		O.D.	DRILL COL.	NO.	O.D.	I.D.	PUMPS	LINER	DRAWWORKS & POWER	FUEL	WATER
4 1/2"	1. X Hole Grade E 2. S 135	16 60 16 60			7"	H90	1. Emsco D700 2. Emsco D500	6"x16" 6"x16"	Unit Rig U-40 2 Cat. D398	Diesel	

N	AREA	STOCKPOINT NO.	DO NOT USE	STATE	ZONE	COUNTY	CONTRACTOR	OPERATOR	DATE	PURCHASER
									9E - Seal Effective	

IOT 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
		1	12 1/4"	Hughes	OSC3	14-14 14	XZ899	678	630	33 1/4	19	33 1/4	50	100	3/4°	1200			8.6	38	NC	6	6	1/8"		
		2	12 1/4	Smith	DTJ	13-13 13	418ER	1022	344	17 1/4	19.9	38.5	50	60	1 1/2°	1200			8.5	40	NC	4	2	I		Twin Rock 475
			17 1/2"	Security	Hole Opener		RR	768	720	17 1/2	41.4	67 3/4										4	4	I		
		3	12 1/4"	Hughes	OSC3A	14-14 15	KA686	1112	90	4	22.5	71 3/4	30	60	2 1/4	1200			8.6	37	NC	2	2	I		DST #1
		4	12 1/4	Smith	2JS	13-13 13	028FW	1846	734	62 3/4	11.7	134 1/4	20/30	60/90	2 3/4°	1250			9.0	33	12.6	3	S E	1/4"		
		5	12 1/4"	Hughes	OSC1G	14-14 15	AC942	2085	239	27 1/2	8.7	162.8	20/25	70/95	3°	1350			9.0	35	9.4	4	3	I		
		6	12 1/4"	Hughes	OWVJ	15-15 15	AF800	2185	100	19	5.3	181.0	15/25	80/100	3 3/4°	1300			9.0	34	9.8	5	2	I		
		7	12 1/4"	Security	DMNJ	16-16 18	619840	2280	95	23 1/4	4	204 1/4	25/35	72	3 1/2°	1250	64		8.9	38	10.4	5	2	7/8"		
		8	12 1/4"	Security	S86	18-18 15	488125	2592	312	32	9 3/4	236 1/4	20/35	66	3°	1200	64		9	37	10.2	3	S E	1/8"		
		9	12 1/4"	Smith	5JS	16-16 18	416FB	2719	127	17 1/4	7.3	253 1/4	35	46	4°	1300	64		8.9	33	10.0	4	S E	1/16"		
		10	12 1/4"	Hughes	J55	16-16 18	BM418	3006	287	31 1/4	9.2	284 3/4	35/40	46	NP	1350	64		8.8	33	10	5	S E	1/8"		
		11	12 1/4"	Smith	6JS	16-16 18	802EM	3414	408	47 1/2	8.6	332 1/2	40/50	46	3 3/4	1400	64		8.9	33	9.6	6	S E	1/4"		
		12	12 1/4"	Smith	6JS	18-18 16	052CL	3631	217	28 1/4	7.7	360 1/2	40/50	46	4°	1400	64		8.8	36	11.4	6	S E	1/4"		
		13	12 1/4"	Reed	S72J	18-18 16	312258	3716	85	11	7.7	371 1/2	40/50	46	4°	1400	64		8.9	39	11.0	7	S E	I		
		14	8 3/4"	Hughes	OWV	15-15 15	XP172	3714	3	15 1/2		387.0	10	46		1450			8.8	33	18.6	6	2	I		Reaming 9 5/8" Csg.
		15	8 3/4"	Smith	F9	15-15 15	615FJ	3815	101	19 3/4	5.1	406 3/4	20/30	46	4°	1600	64		8.7	32	19.8	4	S E	1/16"		
		16	8 3/4"	Smith	F3	12-12 11	863HH	4370	555	71 3/4	7.8	478 1/4	20/25	65	5 1/2°	1650	64		8.8	40	12.4	5	S E	3/16"		
		17	8 3/4"	Hughes	J33	12-12 11	WZ194	4591	221	43 1/4	5.1	521 3/4	25	65	5 1/2	1600	64		9.0	34	13.2	4	2	1/16"		
		18	8 3/4"	Smith	F4	11-11	971HL	4969	378	59 3/4	6.3	581.5	20	70	6 1/2	1600	66		8.9	33	17.6	5	S E	1/16"		
		19	8 3/4"	Smith	F4	11-11 10	993HL	5252	283	52 1/4	5.0	633 3/4	20/25	70	8°	1700			8.9	33	12.2	5	2	1/8"		Hole bridged @ 4220
		20	8 3/4"	Hughes	J44	10-10 11	BA580	5504	252	47 1/2	5.3	681 1/4	30/35	70	8 1/2°	1700/1400			8.9	33	10.4	—				3 Cones - Missing
		21	8 3/4	Hughes	OWVJ	18-18 18	A3924	Drill Fill		26 1/2		707 3/4	2/20	45/70		650			9.2	87	8.0	5	4	I		

5 H

BIT CONDITION CODE: RP – REPAIRED RR – RERUN

22

HUGHES BIT RECORD

IN U.S.A.

SHEET 2 OF 4

FILE NUMBER

FIELD	STATE	X IF OFFSHORE	SECTION	TOWNSHIP	RANGE	OPERATOR	X (1)
Rich	Wildcat	Utah		20	13N	7E	American Quasar Petroleum

CTOR	X(2)	RIG NO.	LOCATION	WELL NO.	SPUD	US	INTER	TOTAL DEPTH DATE	TOOL PUSHER
Loffland Bros.		214	NE/SE Hogback Ridge	"20"-1	1-5-77	1-14-77	2-9-77	7-28-77	Day-Akins-Long et al

S	GIVE SIZE & TYPE			DRILL COL.	NO.	O.D.	I.D.	PUMPS		LINER	DRAWWORKS & POWER	FUEL	WATER
	4½"	1. X Hole Grade E 2. S135	O.D. 16 60 O.D. 16 66			7"	H90		1. Emsco D700 2. Emsco D 500	5½"x16" 5½"x16"	Unit Rig U-40 Caterpillar D398		

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

NOT USE TYPE	NOT 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	B	G	OTHER	FORMATION CALL DATES REMARKS
		22	8¾"	Smith	L4H	16-16 16	266FW	Drill Fill	17	33¼	.51	741	5/20	45		800			9.2	101	5.4	4	3	I		
		23	8¾"	Hughes	J7	13-14 16	AC279	4343	51	27	1.89	768.0	25	48	3°	1200			9.0	70	5.2	5	2	I		
		24	8¾"	Smith	F2	12-12 12	725FW	4440	97	27	3.59	795.0	40	48	4°	1300			9.1	52	4.4	8	2	I		
		25	8¾"	Smith	F57	12-12 12	612EJ	4608	168	56¾	2.96	851¾	35/40	48	4°	1300			8.9	64	3.8	6	2	1/4"		
		26	8¾"	Smith	F5	12-12 12	879HP	4708	100	28¼	3.54	880.0	35/30	48	4½°	1300			8.8	66	3.0	3	2	I		
		27	8¾"	Smith	F5	12-12 12	699FP	4850	142	47½	2.99	921½	25/30	48	6°	1200			8.8	75	3.1	6	2	1/4"		
		28	8¾"	Hughes	J44	12-12 12	AC866	5124	274	71½	3.83	999.0	35	48	6½°	1200			8.9	67	2.8	2	3	I		
		29	8¾"	Smith	F3	12-12 12	060HJ	4666	381	73¾	5.17	1072	40/45	65	6¼°	1200			8.9	50	3.9	5	2	1/4"		Hole bridge @ 4280
		30	8¾"	Smith	F3	12-12 12	981HN	5222	556	78¾	7.06	1151½	45	65	8½°	1200			9.0	48	5.8	7	2	1/8"		Sqz. 300 SX
		31	8¾"	Smith	F4	12-12 12	994HN	5066	737	78	9.45	1229½	55	65	12°	1200	66		9.0	40	6	7	2	1/8"		Hole bridge @ 4329
		32	8¾"	Smith	F4	12-12 12	825HN	5237	171	33	5.18	1262½	20/30	65	14°	1200	66		9.0	47	6	4	2	I		SLM-18' Corr.
		33	8¾"	Reed	FP62	12-12 13	226928	5462	225	64¾	3.47	1327¼	20	72	13½°	1200	66		8.9	45	7.2	3	4	1/8"		
		34	8¾"	Smith	F4	12-12 12	075HS	5776	314	62¼	5.04	1389½	20	108	13½	1200	64		8.9	50	6	4	2	I		
		35	8¾"	Smith	F4	12-12 12	182HP	6129	405	81.0	5.0	1470½	15/20	108	11½	1300	65		9.1	50	6	2	2	I		SLM-52' Corr.-brok 4281 to 4511
		36	8¾"	Smith	F3	12-12 12	170HP	6644	515	91.0	5.66	1561½	15/20	108	10½	1300	65		9.0	51	5.8	3	2	I		
		37	8¾"	Smith	F3	12-12 12	925HN	6931	287	104	2.76	1665½	15/20	108	13°	1300	65		9.0	52	6	2	2	I		
		38	8¾"	Smith	F3	12-12 12	854HL	7441	510	90	5.67	1755½	20/35	72	15°	1300	65		8.9	50	5.8	2	2	I		
		39	8¾"	Smith	F2	12-12 12	785HA	7553	112	36¾	3.05	1792¼	15/20	72	16°	1350	65		8.9	50	5.4	8	4	I		
		40	8¾"	Smith	F4	12-12 12	790HZ	7813	260	86½	3.01	1878¾	15/18	72/108	16°	1350	65		8.7	50	5.8	4	2	I		
		41	8¾"	Smith	F3	12-12 12	335JJ	8142	329	76½	4.3	1955¼	15/18	108	24°	1350	62		8.9	50	5.0	2	2	I		
		42	6½"	Hughes	OWV	14-14 14	WR131	8193	51	15	3.4	1970¼	15	72	—	1350	60		8.9	38	8.8	5	5	I		Stuck-Ran 7⅝" Liner
		43	6½"	Hughes	J33	14-14 14	BE578	8310	217	34½	6.29	2004¾	15	72	26°	1350	64		8.8	38	9.0	4	5	I		

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BIT CONDITION CODE: RP – REPAIRED RR – RERUN

23

HUGHES BIT RECORD

IN U.S.A. — SHEET 3 OF 4 — FILE NUMBER

FIELD	STATE	X IF OFFSHORE	SECTION	TOWNSHIP	RANGE	OPERATOR	X (1)
Wildcat	Utah		20	13N	7E	American Quasar Petroleum	

CTOR	X(2)	RIG NO.	LOCATION	WELL NO.	SPUD	US	INTER	TOTAL DEPTH DATE	TOOL PUSHER
Loffland Bros.		214	NE/SE Hogback Ridge	"20"-1	1-5-77	1-14-77	2-9-77	7-28-77	Day; Akins; Lagg

GIVE SIZE & TYPE	DRILL COL.	PUMPS	LINER	DRAWWORKS & POWER	FUEL	WATER
1. 1E Grade E; 2. Changed D.P. & Collars; 3½"	NO. 13 30; O.D. 4¾"; I.D. w/3½" IF Box & Pins; @ 8142	1. Emsco-D700; 2. Emsco D-500	5½-5"X16; 5½-5"X16	Unit Rig U-40; Cat (2) D398		

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

IOT 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	6½"	Hughes	J33	14-14 14	BE287	8466	156	42½	3.67	204 11/4	15	72	27°	1350	64		8.9	36	8.2	2	2	I		
		45	6½"	Hughes	J33	14-14 14	BH272	8673	207	51¾	4.0	209 9/9	15	72	26½	1350	64		8.7	37	7.0	2	2	I		
		46	6½"	Christensen	MT52P	◇	JS25351	9014	341	51½	6.62	215 0½	8	700	32°	2150	61		8.8	38	7.4		◇	I		Dirnedrill
		47	6½"	Hughes	J33	12-12 12	BA547	9166	152	40	3.8	219 0½	10/12	108	30½	1500	62		8.8	42	6.8	4	5	I		"
		48	6½"	Christensen	MD331	◇.35	JS21748	9480	314	70½	4.45	226 1	12/15	108	27¾°	1800	63		8.8	36	6.4	Center out				9270 - Chai, BHA - Thi
		49	6½"	Christensen	MD331	◇.35	JS21952	9588	108	32½	3.32	229 3 1/2	12/15	72	26°	1800	63		9.2	38	7.2		"		"	Regular dri DST 44-9
		50	6½"	Hughes	J33	12-12 13	BE577	9812	224	42	5.33	233 5 1/2	10/12	108	23°	1300	63		9.1	41	7.4	2	2	I		
		51	6½"	Hughes	ONV	12-12 12	WR218	Drill Cement	44'	2½	17.6	233.8				1000										Run 5" Lin 7856-9809
		52	4"	Smith	T2	Reg.		Drill Cement	48'	2¾	17.45	234 0¾														Ran Acme Mill for Cones.
		53	4"	Christensen	MD331	◇.25	7529094	10,083	271	64½	4.20	240 5 1/4	9	80		2000	44		10.1	42	8.4	Flattened				
		54	4"	Christensen	MD331	◇.25	7529098	10,117	34	14½	2.34	241 9 3/4	9	80		2150	44		10.1	43	6.4	2	◇	I		
		55	4"	Smith	T-2	Reg.	M44364	10,128	11	7	1.57	242 6 3/4	10/12	60		2000	50		10.1	42	6.8	6	6	I		
		56	4"	Christensen	MD331	◇.25	7533155	10,179	51	53¼	0.96	248 0	8/10	100		2100	50		10.1	43	6.7					
		57	4"	Christensen	MD331	◇.25	7533153	10,216	39	46	0.85	252 6	6/8	100		2050	48		10.2	43	6.6	Center out				
		58	4"	ACC	Hognose	◇.25	13424	10,232	16	22½	0.71	254 8 1/2	9	120		1750	33		10.3	44	6.4					
		1	4"	Christensen	142333	◇.20	7533849	10,240	8	7	1.14	255 5 1/2	9	58		2100	33		10.3	44	6.4					Recovered 2 feet
		59	4"	Christensen	MD331	◇.25	7533774	10,248	8	10½	0.76	256 6	6/8	80		1700	33		10.3	44	8.0					
		2	4"	Christensen	MC20	◇.20	7534390	10,250	2'	1'	2.0	256 7	6	65		2100	33		10.3	44	8.0					
		60	4"	Christensen	MD331	◇.25	7534391	10,306	56	73½	0.76	260 1 1/2	8	100		2300	42		10.3	45	6.0	Polished				SLM 10,29 11' Uphole
		61	4"	ACC	Hognose	◇.25	13437	10,547	241	58½	4.12	269 9 7/10		70/80		2500			10.1	41	7.2	Ringed Center.				
		62	4"	Christensen	MD331	◇.25	7533472	10,765	218	116	1.88	281 5	8/10	80		2500			10.1	43	8.0	Polished				
		63	4"	Christensen	MD331	◇.25	7533471	10,842	77	48	1.60	286 3	8/10	80		2500			10.1	44	6.6	Polished				

5 H

BIT CONDITION CODE: RP – REPAIRED RR – RERUN

24

HUGHES BIT RECORD

IN U.S.A. — SHEET 4 OF 4

FILE NUMBER	FIELD	STATE	X IF OFFSHORE	SECTION	TOWNSHIP	RANGE	OPERATOR	X (1)
	Wildcat	Utah		20	13N	7E	American Quasar Petroleum Co.	

TOR	X(2)	RIG NO.	LOCATION	WELL NO.	SPUD	US	INTER	TOTAL DEPTH DATE	TOOL PUSHER
Loffland Bros.		214	NE/SE Hogback Ridge	"20"-1	1-5-77	1-14-77	2-9-77	28 July 1977	Day; Atkins; Long & Hammons

GIVE SIZE & TYPE		O.D.	DRILL COL.	NO.	O.D.	I.D.	PUMPS		LINER	DRAWWORKS & POWER	FUEL	WATER
2 7/8"	1. PAG 10 40#				3 1/8"	PAC.	1. Emsco D-700		4 1/2 x 16	Unit Rig U40	Diesel	
	2. 3 1/2 I.F. Grade E	4 1/2 30			20# N.H.		2. Emsco D 500		4 1/2 x 16	Caterpillar D398		

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

OT 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
		64	4"	Christensen	MD331	0.25	TS37844	10,878	37	26 1/2	1.4	28 89 1/2	8/10	80		2500	1		10.4	43	7.2	Polished				
		60 RR	4"	Christensen	MD331	0.25	TS34391 R.R.	10,882	3	12 1/2	0.24	29 02	8/12	56/80		2500			10.4	43	7.2	"				
		65	4"	Smith	T2	Reg.	M44442	10,884	2	3	0.66	29 05	6/8	54		1800			10.4	42	7.4	4 4 1/8"				
		66	4"	Christensen	MD331	0.25	TS38932	10,910	26	31	0.83	29 36	6/10	55/60		2300			10.4	41	8.0	Smooth				

5 H

BIT CONDITION CODE: RP – REPAIRED RR – RERUN

RIG

Derrick: Lee C. Moore 136'

Drawworks: Unit Rig U-40

Pumps:

Make	Liner	Stroke
#1 Emsco - D700	6" to 4-1/2"	16"
#2 Emsco - D500	6" to 4-1/2"	16"

Drawworks Power: 2 - Caterpillar D-398

Pump Power: Compound on No. 1 pump; Caterpillar 397 on No. 2 pump

Drill Pipe: To 8142' - 4-1/2" X Hole, 16.60 Grade E & 16.66 S 135
8142-9812' - 3-1/2" IF 13.30 Grade E
9812-T.D. - 2-7/8" PAG 10.40

Drill Collars: To 8142' - 7" H-90
8142-9812' - 4-3/4" 3-1/2 IF Box & Pens
9812-T.D. - 3-1/8" PAC 20#/ft

1 Mud Tank (750 bbls) w/2 Swaco Shale shakers & Brandt mud cleaner, Desander, Drilco degasser

Drillers: George Whittenburg
Dale Riley
Lyle Green
M. VanAusdall
R. Phelps

LOGGING UNIT

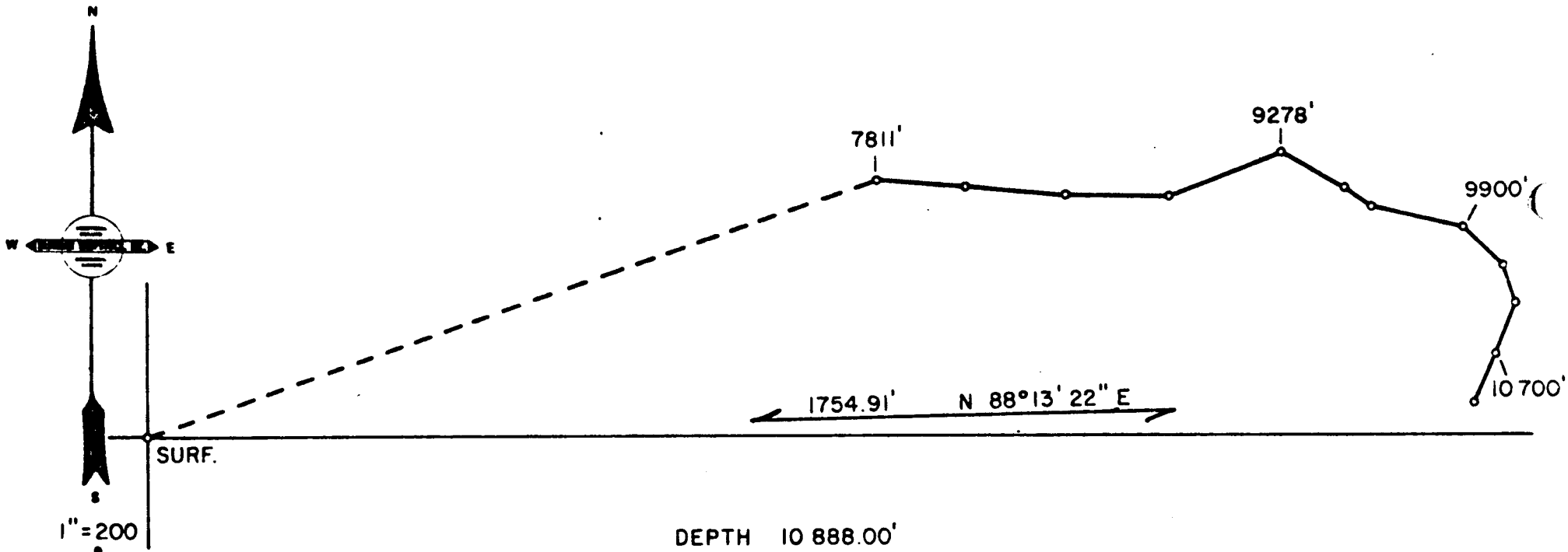
Unit and trailer from Rocky Mountain Geoengineering Company, Grand Junction, Colorado

Loggers: Larry Prendergast to 6200'
Jack Robison, 6200' to T.D.

The logging unit consisted of a hot wire gas detector (J-W Filament), chromatograph, and hydrogen sulphide detector (General Monitors). This unit was in operations 24 hours a day. The cuttings samples were caught by the drilling crews. Oilind Engineering, Casper, Wyoming, furnished H_2S (hand monitors & safety equipment) safety devices for the rig.

PLAN

EASTMAN WHIPSTOCK, INC.



DEPTH 10 888.00'
NORTH 54.42'
EAST 1754.07'

JOB NO. RM 877 - S 0156

GE NO. 1

MEASURED DEPTH FEET	DRIFT ANGLE D	M	DRIFT DIRECTION D	TRUE VERTICAL DEPTH FEET	RECTANGULAR COORDINATES FEET		DOG LEG SEVERITY DEG/100FT
7811.	20	0	S 88 E	7716.60	336.10 N	866.10 E	0.0
8198.	24	0	S 86 E	8078.34	328.52 N	1010.83 E	1.1
8258.	24	0	S 86 E	8130.15	326.81 N	1035.18 E	0.0
8318.	24	0	S 86 E	8184.96	325.11 N	1059.52 E	0.0
8378.	25	0	S 87 E	8239.56	323.59 N	1084.36 E	1.8
8438.	26	0	S 89 E	8293.71	322.69 N	1110.17 E	2.2
8498.	26	0	S 86 E	8347.64	321.54 N	1136.44 E	2.2
8558.	26	0	S 86 E	8401.56	319.71 N	1162.68 E	0.0
8618.	25	0	S 86 E	8455.71	317.91 N	1188.45 E	1.7
8678.	25	0	S 86 E	8510.09	316.16 N	1213.75 E	0.0
8738.	26	0	S 89 E	8564.24	315.01 N	1239.55 E	2.7
8798.	27	0	S 89 E	8617.93	314.54 N	1266.32 E	1.7
8858.	29	0	S 88 E	8670.91	313.80 N	1294.47 E	3.4
8918.	30	0	S 89 E	8723.13	313.03 N	1324.01 E	1.9
8978.	31	0	S 89 E	8774.82	312.50 N	1354.46 E	1.7
9038.	30	0	S 89 E	8826.52	311.97 N	1384.91 E	1.7
9098.	29	0	S 89 E	8878.73	311.45 N	1414.45 E	1.7
9158.	28	0	S 89 E	8931.46	310.95 N	1443.07 E	1.7
9218.	28	0	S 86 E	8984.44	309.72 N	1471.21 E	2.3
9278.	27	0	S 85 E	9037.66	307.55 N	1498.83 E	1.8
9338.	26	0	S 85 E	9091.38	305.28 N	1525.50 E	1.7
9398.	26	0	S 89 E	9145.27	303.84 N	1551.76 E	2.9
9438.	25	0	S 89 E	9181.38	303.54 N	1568.98 E	2.5
9458.	25	0	S 88 E	9199.50	303.32 N	1577.43 E	2.1
9478.	24	0	S 88 E	9217.70	303.03 N	1585.71 E	5.0
9498.	24	0	S 86 E	9235.96	302.60 N	1593.84 E	4.1
9518.	25	0	S 86 E	9254.16	302.02 N	1602.11 E	5.0
9538.	25	0	S 86 E	9272.29	301.43 N	1610.54 E	0.0
9548.	24	0	S 86 E	9281.38	301.14 N	1614.68 E	10.0
9558.	24	0	S 86 E	9290.52	300.86 N	1618.74 E	0.0
9568.	24	0	S 86 E	9299.65	300.58 N	1622.79 E	0.0
9578.	24	0	S 86 E	9308.78	300.29 N	1626.85 E	0.0
9700.	22	0	S 80 E	9421.07	294.49 N	1674.14 E	2.5
9850.	18	0	S 74 E	9562.00	282.95 N	1724.10 E	3.0
9900.	16	30	S 64 E	9609.74	277.65 N	1737.92 E	6.6
9950.	15	30	S 56 E	9657.80	270.76 N	1749.84 E	4.8
10000.	15	0	S 47 E	9706.04	262.58 N	1760.13 E	4.8
10100.	13	45	S 29 E	9802.91	243.10 N	1775.35 E	4.6
10150.	12	30	S 34 E	9851.60	233.42 N	1781.28 E	3.4
10200.	13	0	S 37 E	9900.36	224.44 N	1787.69 E	1.7
10250.	12	30	S 34 E	9949.13	215.46 N	1794.09 E	1.7
10300.	12	15	S 25 E	9997.96	206.14 N	1799.36 E	3.9
10350.	12	45	S 17 E	10046.78	196.04 N	1803.24 E	3.6
10400.	13	15	S 6 E	10095.50	185.04 N	1805.48 E	5.0
10450.	14	45	S 8 W	10144.01	172.98 N	1805.27 E	7.4
10500.	16	0	S 20 W	10192.21	160.14 N	1802.07 E	6.8
10550.	16	15	S 23 W	10240.25	147.22 N	1796.95 E	1.7
10600.	16	45	S 23 W	10288.18	134.14 N	1791.43 E	1.0
10650.	17	0	S 24 W	10336.03	120.84 N	1785.64 E	0.8
10700.	17	0	S 21 W	10383.84	107.33 N	1780.05 E	1.8
10750.	18	0	S 26 W	10431.53	93.55 N	1774.05 E	3.6
10800.	18	30	S 26 W	10479.01	79.47 N	1767.19 E	1.0
10850.	19	0	S 28 W	10526.36	65.15 N	1759.89 E	1.6
10888.	18	30	S 29 W	10562.34	54.42 N	1754.07 E	1.6

FINAL CLOSURE - DIRECTION: N 88 DEGS 13 MINS 22 SECS E
DISTANCE: 1754.91 FEET

DRILL STEM TESTS

DST #1, 1041-1112' (71') Twin Creek
Choke 1" x 9/16" Lynes Testers

Pre Flow 10 min; ISI 60 min; FF 60 min; FSI 120 min

Tool opened w/1/2" blow & died in 30 seconds
Final flow opened w/very faint bubble & died almost immediately

No gas to surface. Recovered 10' of drilling mud

Sampler recovery:
1000 cc drilling mud - Rm 11 @ 60° F
Pit Rm 9 @ 55° F

IHP	487 psi	FHP	472 psi
IFP	20-15 psi	FFP	20-15 psi
ISP	31 psi	FSIP	20 psi
BHT - broken			

DST #2, 2167-2280' (113') Twin Creek
Choke 1" x 9/16" Lynes Testers

Pre Flow 10 min; ISI 60 min; FF 90 min; FSI 150 min

Tool opened w/weak blow 1/2" increasing to 1" blow in bucket in 10 min
Final flow opened w/weak blow 1" water decreased to 1/2" @ 55 min, remained same for rest of test

Recovered 124' drilling mud, no gas recovery

Sampler recovery:
2550 cc mud - Rm 3.0 @ 60°
Pit Rm 2.8 @ 72°

IHP	1006 psi	FHP	980 psi
IFP	36-36 psi	FFP	42-63 psi
ISIP	858 psi	FSIP	858 psi
One clock stopped			
BHT 96° F			

DRILL STEM TESTS

DST #3, 2545-2592' (47') Nugget
Choke 1" x 9/16" Lynes Testers

Pre Flow 10 min; ISI 60 min; FF 90 min; FSI 120 min

Tool opened w/weak blow at surface of bucket
Tool opened on final flow w/immediate strong blow for 20 min; opened to pit 1/4" choke w/7 psi decreasing to 0 psi after 15 min. No pressure on gauge for 30 min. Shut in manifold 7" blow in bucket decreasing to 3" blow for 15 min; 5 min w/1/4" on surface of bucket.

No gas to surface. (Tool slipped downhole opening momentarily and closed during pre flow period - reason for no blow)
Recovery: 2300' water cut mud from drill pipe

Sampler recovery:
2700 cc water (See analysis)
Pit mud Rm 2.8 @ 62°

IHP	1193 psi	FHP	1193 psi
IFP	343 psi-(?)	FFP	177-1022 psi
ISIP	1022 psi	FSIP	1022 psi

BHT - failed Note: Lynes bottom hole thermometers seem to break frequently. They evidently are not properly protected. Lynes so advised

CL1-12A (REV. 1964)

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming

WATER ANALYSIS REPORT

OPERATOR American Quasar Petroleum Co.
WELL NO. No. 20-1 Hogback Ridge
FIELD Wildcat
COUNTY Rich
STATE Utah

DATE February 7, 1977 LAB NO. 22529
LOCATION NE SE 20-13N-7E
FORMATION Nugget
INTERVAL 2545-2592
SAMPLE FROM DST No. 3 (Sampler)

REMARKS & CONCLUSIONS:

Cations	mg/l	meq/l	Anions	mg/l	meq/l
Sodium	2027	88.16	Sulfate	5160	107.33
Potassium	34	0.87	Chloride	460	12.97
Lithium			Carbonate	-	
Calcium	440	21.96	Bicarbonate	159	2.61
Magnesium	145	11.92	Hydroxide		
Iron	-		Hydrogen sulfide	-	
Total Cations		122.91	Total Anions		122.91

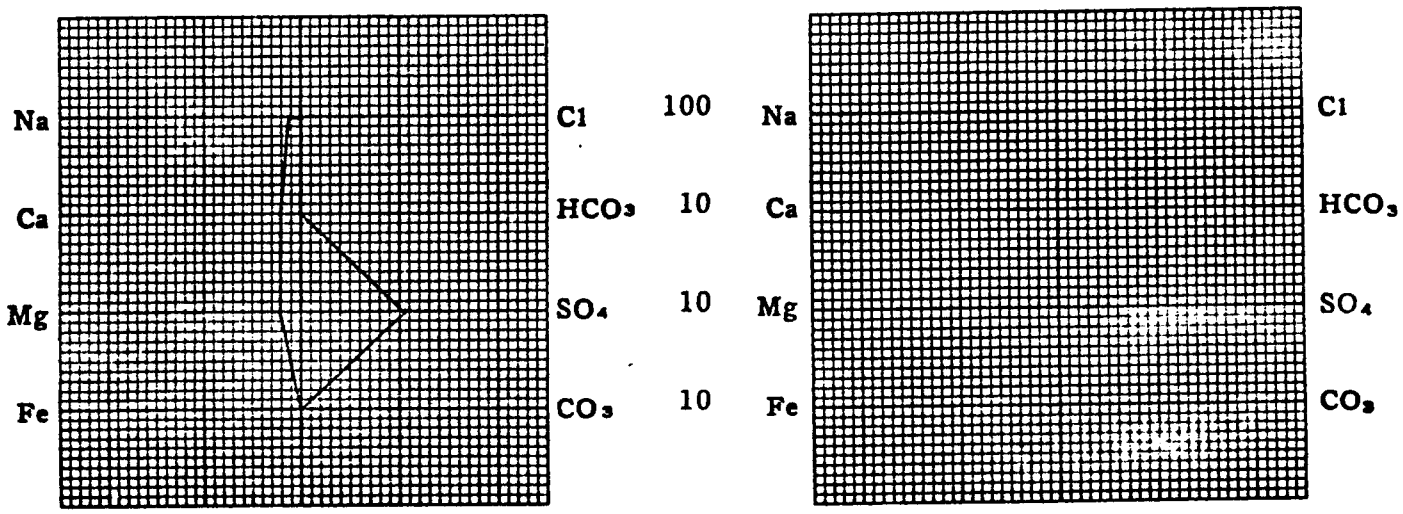
Total dissolved solids, mg/l 8344
NaCl equivalent, mg/l 5852
Observed pH 7.3

Specific resistance @ 68°F.:
Observed 1.27 ohm-meters
Calculated 1.12 ohm-meters

WATER ANALYSIS PATTERN

Sample above described

Scale
MEQ per Unit



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

DRILL STEM TESTS

DST #4, 9440-9493' (53') Dinwoody
Choke 3/4" x 3/4" Lynes Testers, Tester - W. Hockaday

Water cushion: 200' water plus 25 gal ammonia and 10 gal anti-corrosive

Pre Flow 6 min; ISI 325 min; FF 14 min; FSI 120 min
Tool opened @ 23:45 May 31, 1977

Pre Flow opened w/strong blow bottom of bucket (15"), 2 psi on gauge in 2 min; Gas to surface 6 min
Shut in w/1000 psi on 1/4" choke. Increase to 2000 psi in 14 min. Bled off 1000 psi gas in 52 min. 1,492 MCFGPD. SI till daylight because of pressure. Final flow - gas to surface 3 min, strong pressure to 1000 psi in 5 min (3/4" chokc); 1800 psi in 8 min (3/4" choke); 2000 psi in 10 min. Had to shut in because manifold pressure - immediate flow to 1-1/2" orifice was largest at 100 psi (pegged) w/restricted manifold pressures, 3/4" choke. Shut tool in 14 min because of lack of high pressure equipment.

Recovered 300' water cut drilling mud being 150' water and gas cut drilling mud, 150' water cut drilling mud

IHP	4494 psi	FHP	4469 psi
Pre Flow Press	1808 psi	FFP	2193 psi
ISIP	4199 psi/325 min	FSIP	4199 psi/2 hrs
BHT 161° F			

Sampler: No sampler pressure
Recovered water: Nitrates 120 ppm; Cl 600-800 ppm

CL1-12A (REV. 1964)

CHEMICAL & GEOLOGICAL LABORATORIES

P. O. Box 2794
Casper, Wyoming

WATER ANALYSIS REPORT

OPERATOR American Quasar Petroleum Co. DATE June 29, 1977 LAB NO. 23837-3
WELL NO. Hogback Ridge 20-1 LOCATION NE SE 20-13N-7E
FIELD Wildcat FORMATION
COUNTY Rich INTERVAL 9440-93
STATE Utah SAMPLE FROM DST No. 4 (Bottom)

REMARKS & CONCLUSIONS:
Very muddy water, high water-loss.
Dark colored filtrate.

Cations	mg/l	meq/l	Anions	mg/l	meq/l
Sodium	8877	386.14	Sulfate	15781	328.24
Potassium	149	3.81	Chloride	1400	39.48
Lithium			Carbonate	300	9.99
Calcium	327	16.32	Bicarbonate	1952	32.01
Magnesium	42	3.45	Hydroxide		
Iron	-		Hydrogen sulfide	-	
Total Cations		409.72	Total Anions		409.72

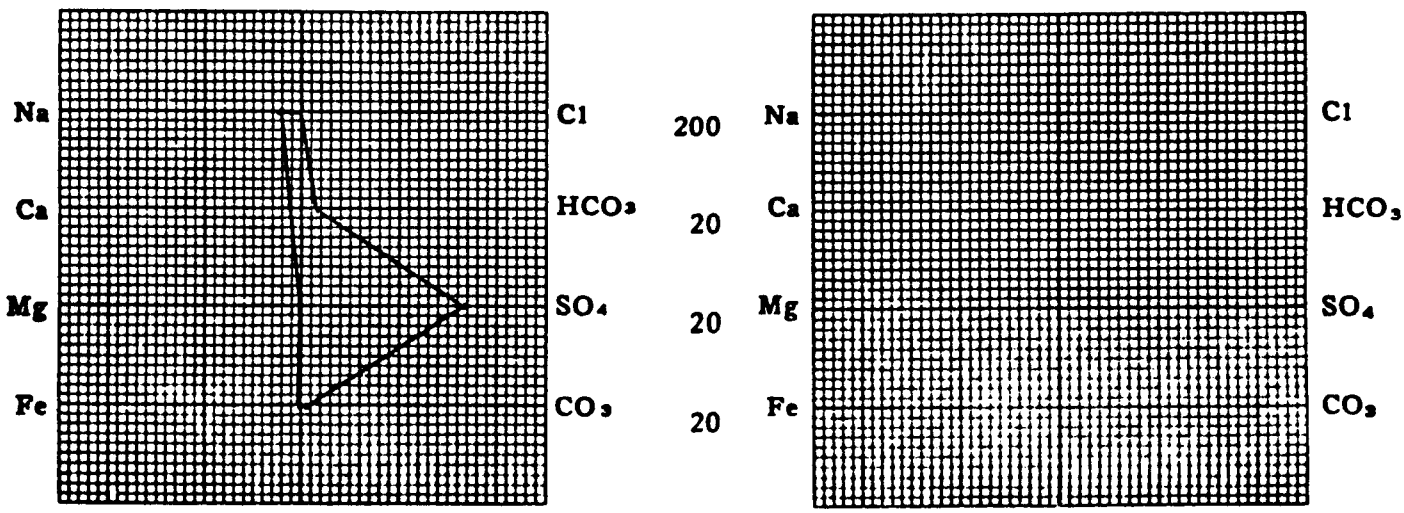
Total dissolved solids, mg/l 27837
NaCl equivalent, mg/l 19616
Observed pH 8.9

Specific resistance @ 68°F.:
Observed 0.35 ohm-meters
Calculated 0.34 ohm-meters

WATER ANALYSIS PATTERN

Sample above described

Scale
MEQ per Unit



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

Phone
522-1206 Area 303

LYNES, INC

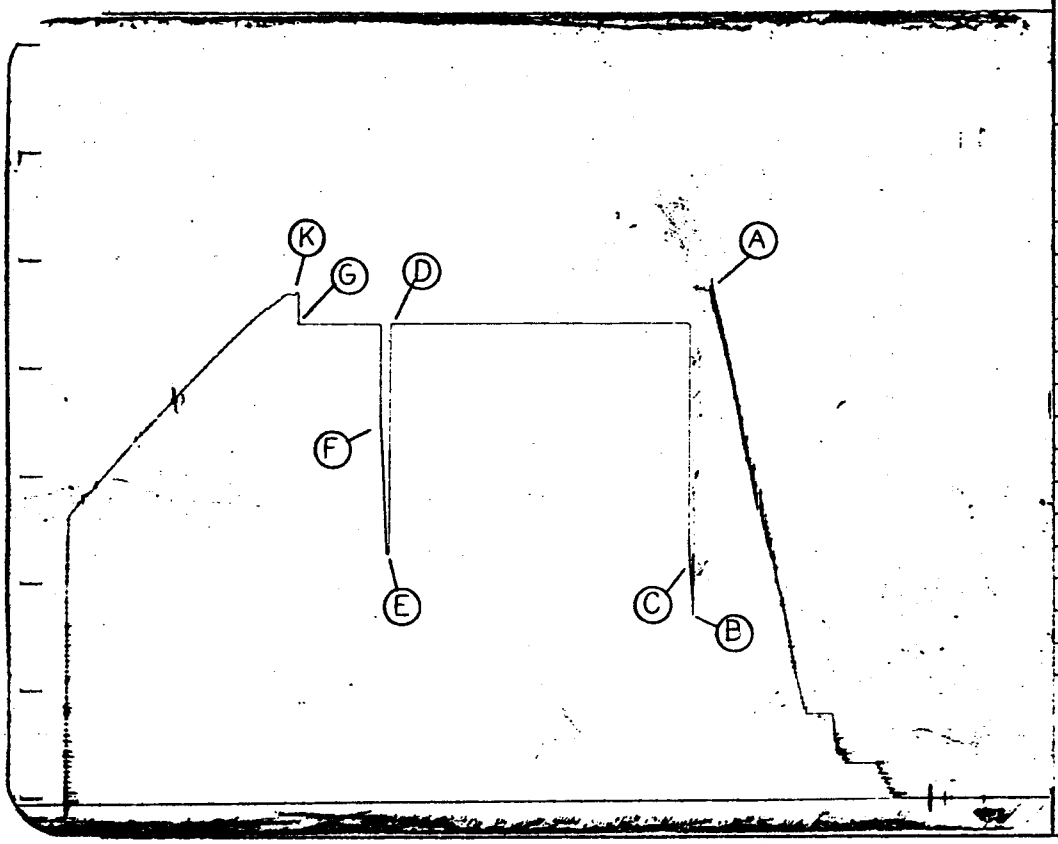
Box 712
Sterling, Colo. 80751

Operator American Quasar Petroleum Co. Address See Distribution

Well Name and No. Hogback Ridge #20-1 Ticket No. 7608 Date 6-1-77 DST No. 4 No. Final Copies 31

Contractor	Loffland Bros. Co.	Top Choke	--	Flow No. 1	6 Min.
Rig No.	214	Bottom Choke	3/4"	Shut-in No. 1	325 Min.
Spot	NE-SE	Size Hole	6½"	Flow No. 2	14 Min.
Sec.	20	Size Rat Hole	--	Shut-in No. 2	120 Min.
Twp.	13 N	Size & Wt. D. P.	3½" 13.30	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.	852'	Bottom Hole Temp.	161°F
State	Utah	Total Depth	9493'	Mud Weight	9.2
Elevation	6460' "K.B."	Interval Tested	9440-9493'	Gravity	--
Formation	Dinwoody	Type of Test	Bottom Hole Conventional	Viscosity	40

Tool opened @ 11:45 PM.



Inside Recorder

PRD Make Kuster AK-1
No. 7424 Cap. 6750 @ 9446'

Press		Corrected
Initial Hydrostatic	A	4483
Final Hydrostatic	K	4476
Initial Flow	B	1637
Final Initial Flow	C	2151
Initial Shut-in	D	4196
Second Initial Flow	E	2186
Second Final Flow	F	3350
Second Shut-in	G	4196
Third Initial Flow	H	--
Third Final Flow	I	--
Third Shut-in	J	--

Lynes Dist.: Rock Springs, Wy.
Our Tester: Wayne Hockday
Witnessed By: Walt Bowen

Did Well Flow – Gas Yes Oil No Water No

RECOVERY IN PIPE: 300' Total fluid (ran 210' of Ammonia water cushion)
150' Water cut drilling mud = 0.74 bbl.
150' Water cut & gas cut drilling mud = 0.74 bbl.
Top Sample: R.W. 0.65 @ 79°F = 8300 ppm. chl.
Middle " : R.W. 0.80 @ 70°F = 7500 ppm. chl.
Bottom " : R.W. 0.60 @ 78°F = 6500 ppm. chl.

REMARKS:
1st Flow- Tool opened with strong blow, increased to 2#, 15" underwater blow in 2 minutes. Gas to surface at beginning of initial shut-in.
2nd Flow- Tool opened with strong blow. Gas to surface in 3 minutes, see gas volume report.

Form 1

LYNES, INC.

Gas Volume Report

Operator American Quasar Petr. Lease & No. Hogback Ridge #20-1 DST No. 4

2nd Flow:

Min.	PSIG	Orifice Size	MCF/D	Min.	PSIG	Orifice Size	MCF/D
3	1600	¼ & ½"	12491.99				
4	1800	"	14039.00				
5	1800	"	14039.00				
6	1800	"	14039.00				
10	1800	"	14039.00				
11	2000	"	15886.00				
14	2000	"	15886.00				

Remarks:

LYNES, INC.

Fluid Sample Report

Date 6-1-77 Ticket No. 7608

Company American Quasar Petroleum Co.

Well Name & No. Hogback Ridge #20-1 DST No. 4

County Rich State Utah

Sampler No. -- Test Interval 9440-9493'

Pressure in Sampler 0 PSIG BHT 161 °F

Total Volume of Sampler: 2100 cc.

Total Volume of Sample: No fluid cc.

Oil: None cc.

Water: None cc.

Mud: None cc.

Gas: None cu. ft.

Other: None

Resistivity

Water: @ of Chloride Content ppm.

Mud Pit Sample 0.7 @ 78°F of Chloride Content 7500 ppm.

Gas/Oil Ratio Gravity °API @ °F

Where was sample drained Lynes Shop at Rock Springs, Wyoming.

Remarks: Rig Water - R.W. 10.0 @ 82°F = 450 ppm. chl.

No fluid or gas in sampler. O'rings were cut because of excessive pressure.

Form 5

LYNES, INC.

Operator American Quasar Petroleum Company Lease & No. Hogback Ridge #20-1 DST No. 4

Comments relative to the analysis of the pressure chart from DST #4, Interval: 9440-9493', which was run in the captioned well located in the NE SE Section 20, T13N-R7E, Rich County, Utah:

1. A maximum reservoir pressure of 4196 psi at the recorder depth of 9446 feet was recorded mechanically during both shut-in periods. This indicated maximum reservoir pressure converts to a subsurface pressure gradient of 0.444 psi/ft., which in turn is evidence of an essentially "normal" reservoir pressure for the depth of the test.

2. Because the maximum reservoir pressure was recorded mechanically, which eliminates the use of a Horner extrapolation plot, it is impossible to calculate numerical values for the various reservoir properties which are normally calculable by the analysis of shut-in pressure build-up curves which have not attained the maximum reservoir pressure during the shut-in periods. The character of the shut-in pressure build-up curves is indicative of the presence of excellent transmissibility and permeability of the formation within the tested interval. This is further substantiated by the magnitude of the flow rate (15,000 MCFPD), which occurred during both brief flow periods which were used in this test.

3. The character of the pressure record which was produced in this test also indicates that significant well-bore damage was present at the time of this formation test; however, in view of the volume-rate of production which occurred, the indicated well-bore damage is most probably due to the choke effect of the restrictions within the test tool rather than formation damage.

Roger L. Hoeger

Roger L. Hoeger
Consultant for Lynes, Inc.

Form 2

CHEMICAL & GEOLOGICAL LABORATORIES

P.O. Box 2794
Casper, Wyoming 82602

GAS ANALYSIS REPORT

Company American Quasar Petroleum Company Date June 7, 1977 Lab. No. 23838
Well No. Hogback Ridge 20-1 Location Sec. 20-13N-7E
Field Wildcat Formation
County Rich Depth 9440-9494
State Utah Sampling point DST No. 4
Line pressure ____ psig; Sample pressure 0 psig; Temperature ____ ° F; Container number Chem Lab
Remarks

Component	Mole % or Volume %	Gallons per MCF
Oxygen	0	
Nitrogen	3.58	
Carbon dioxide	1.08	
Hydrogen sulfide	*	
Methane	95.30	
Ethane	0.30	
Propane	0.01	0.003
Iso-butane	0	0
N-butane	0	0
Iso-pentane	0	0
N-pentane	0	0
Hexanes & higher	0	0
Total	100.00	0.003

GPM of pentanes & higher fraction	0
Gross btu/cu. ft. @60° F. & 14.7 psia (dry basis)	964
Specific gravity (calculated from analysis)	0.579
Specific gravity (measured)	0.577

Remarks: * H_2S = Negative to lead acetate paper.

Analysis corrected for 31.25% air contamination.

DRILL STEM TESTS

DST #5, 10,207-10,405' (198') Phosphoria
Choke 1/2" x 1/2" Halliburton, Tester - Jay Burnett

Cushion: 1000' ammonia water and 10 gal pipe film

Pre Flow 11 min; ISI 30 min; FF & FSI - None - operators orders, concern for possible H_2S
Reversed out recovery - mud and ammonia water no estimate
Space in tool contained dry gas - no H_2S detected

Tool opened w/weak blow - increased to strong blow in 3 min - to bottom of bucket in 2-1/2 min
Pressure increased to 180 psi in 10 min on 1/8" choke. Gas burned immediately when turned to pit on 1/4" choke

Bottom				Top			
IHP	5469	FHP	5426	IHP	5375	FHP	5312
IFP	780-746			IFP	733-690		
ISIP	4214			ISIP	4215		

BHT - Not in this tool

Pit mud: Rmf 1.2 @ 60°, 7,000 ppm Cl
Recovered mud: Rmf .64 @ 60°, 9,500 ppm Cl

FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface
Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water _____
cc. Mud _____
Tot. Liquid cc. _____
Gravity _____ ° API @ _____ °F.
Gas/Oil Ratio _____ cu. ft./bbl.

		RESISTIVITY		CHLORIDE CONTENT
Recovery Water		@	°F.	ppm
Recovery Mud	.80	@ 74	°F.	ppm
Recovery Mud Filtrate	.64	@ 68	°F.	9500 ppm
Mud Pit Sample	1.38	@ 76	°F.	ppm
Mud Pit Sample Filtrate	1.2	@ 68	°F.	7000 ppm

Mud Weight 10. vis 46 sec

Date 7-9-77 Ticket Number 839748
Kind of Job OPEN HOLE Halliburton District ROCK SPRINGS
Tester J. BURNETT Witness BIRL LYNCH
Drilling Contractor LOFFLAND BROTHERS DRILLING COMPANY DR

EQUIPMENT & HOLE DATA

Formation Tested Phosphoria
Elevation - Ft.
Net Productive Interval 198' Ft.
All Depths Measured From Kelly Bushing
Total Depth 10405' Ft.
Main Hole/Casing Size 4"
Drill Collar Length 320.5' I.D. 1.75"
Drill Pipe Length 2383.9'-.7474' I.D. 2.441"-2.602"
Packer Depth(s) 10204-10207' Ft.
Depth Tester Valve 10191' Ft.

Cushion TYPE Ammonia AMOUNT Water 1000' Ft. Depth Back Pres. Valve
Surface Choke Bubble hose Bottom Choke .44"

Recovered Feet of NO RECOVERY REPORTED
Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of

Remarks SEE PRODUCTION TEST DATA SHEET

Q-Questionable

TEMPERATURE	Gauge No. 1579		Gauge No. 425		Gauge No.		TIME	
	Depth: 10193' Ft.		Depth: 10402 Ft.		Depth: Ft.			
	24 Hour Clock		24 Hour Clock		Hour Clock		Tool Opened 13:25	A.M. P.M.
Est. 190 °F.	Blanked Off No		Blanked Off Yes		Blanked Off		Opened Bypass 14:06	A.M. P.M.
Actual °F.	Pressures		Pressures		Pressures			
	Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic	5375	5314	5469	5478				
First Period Flow Initial	733	789 Q	780	1059 Q			—	—
First Period Flow Final	690	631	746	711			11	8
First Period Closed in	4215	4203	4214	4229			30	33
Second Period Flow Initial							—	—
Second Period Flow Final								
Second Period Closed in								
Third Period Flow Initial							—	—
Third Period Flow Final								
Third Period Closed in								
Final Hydrostatic	5312	5307	5426	5417			—	—

Legal Location Sec.-Twp.-Rng. 20-13N-7E
Lease Name HOGBACK RIDGE
Well No. 20-1
Test No. 5
Tested Interval 10207-10405'
Field Area WILDCAT
County RICH
State UTAH
Lease Owner/Company Name AMERICAN QUASAR PETROLEUM COMPANY
Meas. From Tester Valve

FORM 181-R2—PRINTED IN U.S.A.

FORMATION TEST DATA

LITTLE'S 102548 SM 9/76

32

Casing perfs. _____ Bottom choke .44" Surf. temp 80 °F Ticket No. 839748
Gas gravity _____ Oil gravity _____ GOR _____
Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F
INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED _____

Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
1045					On location
7-10-77 0200					Picked up tools
					Waited on crossovers
1030					Made up tools, went in hole
1300					Rigged up surface equipment
1325	Bubble hose				Tester valve opened with a weak blow
1328	"				Strong blow
1335	"	160			Pressure increasing
					Gas to surface
1336	"	180			Closed dual
1406					Closed tester valve, pulled tools loose.
1410					Roated dual to reverse bad valve on rig
					Unable to gauge recovery
1830					Broke out tools
200					Released

FORM 102-RI—PRINTED IN U.S.A.

PRODUCTION TEST DATA

LITTLE'S 94672 5M 6/76

AMERICAN QUASAR PETROLEUM COMPANY
Lease Owner/Company Name

839748
Ticket Number

B.T. 1579 B.T. 425 B.T.

Depth 10193' Depth 10402' Depth

CLOCK: 3100-24 2263-24

	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.
	FIRST FLOW			FIRST FLOW					
-0	.000		789 Q	.000		1059 Q			
1	.0034		739	.0039		838			
2	.0068		726	.0078		803			
3	.0101		653	.0116		763			
4	.0135		634	.0155		715			
5	.0169		627	.0194		708			
6	.0203		627	.0233		711			
7	.0237		629	.0272		711			
8	.0270		631	.0310		711			
	1 minute intervals			1 minute intervals					
	Q-Questionable			Q-Questionable					
	FINAL CIP			FINAL CIP					
P-0	.000		631	.000		711			
1	.0033		UTR	.0033		UTR			
2	.0066		UTR	.0065		UTR			
3	.0099		1079	.0098		UTR			
4	.0132		2087	.0131		UTR			
5	.0165		2606	.0164		UTR			
6	.0198		3135	.0196		3602			
7	.0231		3592	.0229		3810			
8	.0264		3875	.0262		3946			
9	.0297		3930	.0294		3993			
10	.0330		3987	.0327		4037			
11	.0396		4042	.0393		4082			
12	.0462		4080	.0458		4113			
13	.0528		4108	.0523		4136			
14	.0594		4129	.0589		4154			
15	.0660		4143	.0654		4171			
16	.0726		4160	.0720		4183			
17	.0792		4178	.0785		4197			
18	.0858		4179	.0851		4206			
19	.0925		4188	.0916		4214			
20	.0991		4196	.0982		4221			
21	.1090		4203	.1080		4229			
		*			*				

*-First 10 intervals equal to 1 minute each; next 10 intervals equal to 2 minutes each; last interval equal to 3 minutes.
UTR-Unable to read

REMARKS:

SPECIAL PRESSURE DATA

CHEMICAL & GEOLOGICAL LABORATORIES

P.O. Box 2794
Casper, Wyoming 82602

JUL 21 1977

GAS ANALYSIS REPORT

Company American Quasar Petroleum Company Date July 20, 1977 Lab. No. 24311
Well No. 20-1 Hogback Ridge Location NE SE 20-13N-7E
Field Wildcat Formation
County Rich Depth 10207-10405
State Utah Sampling point DST No. 5
Line pressure 0 psig; Sample pressure 0 psig; Temperature ° F; Container number Theirs
Remarks

Component	Mole % or Volume %	Gallons per MCF
Oxygen	0	
Nitrogen	16.38	
Carbon dioxide	0.13	
Hydrogen sulfide	*	
Methane	82.40	
Ethane	0.67	
Propane	0.20	0.055
Iso-butane	0.09	0.029
N-butane	0.11	0.035
Iso-pentane	0.01	0.004
N-pentane	0	0
Hexanes & higher	0.01	0.005
Total	100.00	0.128

GPM of pentanes & higher fraction	0.009
Gross btu/cu. ft. @60° F. & 14.7 psia (dry basis)	857
Specific gravity (calculated from analysis)	0.631
Specific gravity (measured)	0.631

Remarks: * H_2S = Negative to lead acetate paper.

DRILL STEM TESTS

DST #6, 10,277-10,470' (193') Phosphoria
Choke .44 x 1/8" bubble hose valve Halliburton, Tester - Jay Burnett

Pre Flow 15 min; ISI 60 min; FF 50 min; FSI 60 min

Tool opened on pre flow with no blow; then very weak blow after 11 min. Tool opened during final flow with no blow
Recovered: 300' drilling mud with Rw .60 @ 78° at top of recovery and Rw .70 @ 78° F at top of tool
Pit mud - Rw .72 @ 68° F

* No sampler in tool for 4" hole

Top Bomb @ 10,263'		Bottom Bomb @ 10,467'
IHP	5243 psi	5469 psi
FHP	5243 psi	5469 psi
Pre Flow	129-151 psi	154-154 psi
FFP	151-151 psi	154-154 psi
ISIP	173 psi	193 psi
*FSIP	1443 psi	1443 psi

BHT 194° F

*Well shut in and into final build up before pressure suddenly jumped to 1400 psi. Halliburton people of opinion top packer may have given way and lower packer took over. Damage to upper packer. Three Halliburton testing personnel say this is a good test except the final shut in

Recovered mud: Chlorides 2600 ppm; Calcium 80 ppm; Nitrates 110 ppm
Analysis by: R. Fichte - Imco Services

FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface

Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water _____
cc. Mud _____
Tot. Liquid cc. _____

Gravity _____ ° API @ _____ °F.

Gas/Oil Ratio _____ cu. ft./bbl.

		RESISTIVITY		CHLORIDE CONTENT
Recovery Water	@	°F.		ppm
Recovery Mud	@	°F.		ppm
Recovery Mud Filtrate	@	°F.		ppm
Mud Pit Sample	.72 @	68	°F.	ppm
Mud Pit Sample Filtrate	.58 @	68	°F. 10,000	ppm

Mud Weight 10.1 vis 42 sec

Date 7-11-77 Ticket Number 839749

Kind of Job OPEN HOLE TEST Halliburton District ROCK SPRINGS

Tester J. BURNETT Witness BIRL LYNCH TH

Drilling Contractor LOFFLAND BROTHERS DRILLING COMPANY

EQUIPMENT & HOLE DATA

Formation Tested Phosphoria

Elevation _____ Ft.

Net Productive Interval 193' Ft.

All Depths Measured From Kelly Bushing

Total Depth 10470' Ft.

Main Hole/Casing Size 4"

Drill Collar Length 320.5' I.D. 1.75"

Drill Pipe Length 7539'-2384' I.D. 2602"-2.151"

Packer Depth(s) 10274' - 10277' Ft.

Depth Tester Valve 10261' Ft.

Cushion TYPE AMOUNT Ft. Depth Back Pres. Valve Surface Choke Bubble Hose Bottom Choke .44"

Recovered 300 Feet of mud.

Recovered Feet of Res. top of recovery - .60 @ 78°, RMF .52 @ 68° 12,000 ppm

Recovered Feet of Res. middle of recovery - .64 @ 78°, RFM .55 @ 68° 12,000 ppm

Recovered Feet of Res. bottom of recovery - .70 @ 78°, RFM .66 @ 68° 9,100 ppm

Recovered Feet of

Remarks See Production Test Data Sheet . . .

Final Closed In Pressure non-usable. . .

TEMPERATURE	Gauge No. 1579 Depth: 10263 Ft.		Gauge No. 425 Depth: 10467 Ft.		Gauge No. Depth: Ft.		TIME	
	24 Hour Clock		24 Hour Clock		Hour Clock		Tool Opened	A.M. P.M. 0515
Est. °F.	Blanked Off NO		Blanked Off YES		Blanked Off		Opened Bypass	A.M. P.M. 0820
Actual 194 °F.	Pressures		Pressures		Pressures			
	Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic	5243	5331	5469	5458				
First Period Flow Initial	129	112	154	235			—	—
First Period Flow Final	151	136	154	257			15	
First Period Closed in	173	185	197	309			60	
Second Period Flow Initial	151	147	154	272			—	—
Second Period Flow Final	151	151	154	276			50	
Second Period Closed in	-	-	-	-			60	
Third Period Flow Initial							—	—
Third Period Flow Final								
Third Period Closed in								
Final Hydrostatic	5243	5324	5469	5438			—	—

Legal Location Sec. - Twp. - Rng. 20 - 13N - 7E

Lease Name HOGBACK RIDGE

Well No. 20-1

Test No. 6

Tested Interval 10277' - 10470'

Field Area WILDCAT

Meas. From Tester Valve

County RICH

State UTAH

Lease Owner/Company Name AMERICAN QUASAR PETROLEUM COMPANY

Casing perfs. _____ Bottom choke .44" Surf. temp 80 °F Ticket No. 839749
Gas gravity _____ Oil gravity _____ GOR _____
Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F
INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED _____

Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
2200					On location.
2330					Picked up tools, went in hole.
7-12-77					
0430					Rigged up surface equipment.
0512					Set weight on tools.
0515	Bubble Hose				Tester valve opened with no blow.
0526	"				Weak blow.
0530					Closed tool.
0630	"				Opened tool with no blow.
0720					Closed tool.
0820					Closed tester valve.
					Pulled tools.
1100					Broke out tools.
1130					Waited on supervisor to help interpret
					charts.
1630					Released.

FORM 182-R1—PRINTED IN U.S.A.

PRODUCTION TEST DATA

LITTLE'S 96672 5M 6/74

DRILL STEM TESTS

DST #7, 10,695-10,882' (187') Wells-Weber

Opened 10" pre flow @ 05:15. Tool opened with weak blow - no packer seat. Pulled tool free and filled hole; re-set packer - attempted to open packer; pulled packer free; re-set packer - tool not open; pulled packer free - re-set packer and tool opened with weak blow and no packer seat. Pull out of hole. Ran 1000' cushion with ammonia and 10 gal filming agent. Double packers.

DST #8, 10,711-10,910' (199') Wells-Weber

Single packer. Ran 1000' water cushion with 25 gal ammonia, 10 gal filming agent. Packer failed(?). Hole in drill pipe. Recovered 8000' drilling mud and water cushion. Packer broken at base.

DST #9, 10,848-10,910' (62') Wells-Weber

Single packer. Used 51,500 CF nitrogen @ 4500 psi to pressure up tool to ease packer setting. Hole in drill pipe. Recovered 10,800' drilling mud. May have had packer failure. Packer in good shape. Mud dropped when pressure bled off.

ELECTRIC LOG SUMMARY

LOG TOPS

Formation	Electric Log Top	Datum	Sample Top
Top First Twin Creek (Jurassic)*	475	(+5992)	474
Second Twin Creek	653	(+5814)	653
Walton Canyon Member	1198	(+5269)	1202
Boundary Ridge Member	1420	(+5047)	1430
Rich Member	1673	(+4794)	
Sliderock Member	2005	(+4462)	1975
Gypsum Springs Member	2348	(+4119)	2350 (Drlg time)
Top Nugget (Jurassic)	2555	(+3912)	2541
Top Ankarah (Triassic)	3805	(+2662)	3806
Top Thaynes	5472	(+ 995)	5472
----------Sea Level----------	6467		
Top Woodside	8230	(-1763)	8206(?)
Top Dinwoody 663'	9429	(-2962)	9410
Top Phosphoria (Permian)	10,062	(-3595)	10,097
Base Rex Chert(?)	10,320	(-3853)	10,300
Top Wells-Weber (Pennsylvanian)	10,514	(-4047)	10,533
Total Depth	10,888 Log		10,910 Driller

*Top First Twin Creek appears to be slump block.

LOG CALCULATIONS

Generally no calculations were made at the well site due to the necessity of getting the logs to Salt Lake City as soon as possible to send them to the interested parties. Also a computorized log (coriband) was to be run from the log tapes making log calculations redundant.

LOG OPERATIONS

Log operations on the whole were relatively good. No special problems were encountered. The Gamma Ray-Neutron and IES slim hole tools did not give satisfactory logs on the last run. This was probably due to the slim hole sondes which seem to encounter more problems than the larger sondes. The engineer, Jack Walker, from Evanston seemed to run the smoothest operation again, as on the last well.

Some communications and logistical problems within the logging company caused late arrivals and slow start of logging operations.

CORE NO. 1 - 10,232-10,240' (8') Recovered approximately 32" of rubble - would be about 2' of core

2 pieces (matching) 2-1/2" Pred. dk.brn-blk op-sl hard transl chert w/fine phenocrysts & incl of gry-brn dse dolo. Some vertical & diagonal intermittent fractures healed with milky quartz w/some occ wh calcite fill along frac w/isolated f.microvugs lined w/calcite. No fluor

4 pieces (non-matching) 1/2 to 101/2" Chert - AA, some appears to be sdy-silty w/hairline fractures w/some wh calcite healing, pred silica healed

1 piece 2-3/4" Chert, dk.gry-gry.brn opaque, some milky mottling (may be associated w/fracturing) some inclusions and infill of dolo. Numerous milky qtz filled fractures - vertical & high angle in general. One intermittent open fracture (tight) healed at ends

1 piece 3-1/2" Chert - pred dk.brn-gry.brn, hard opaque-sl.transl. Many fractures. A lot of multidirectional intersecting & intermittent hairline fractures, pred healed w/qtz & some calcite & dolo. Some fine wh calcite & dolo incl. One fracture diagonal open (tight). No fluor

1 piece 1-1/2" x 2" Chert AA, sl dolo, tight, no shows

1 piece 2-1/2" x 1-1/2" Chert - dk.brn-dk.gry.brn, tight. Some wh calcite inclusions & frac fill. Pred milky qtz frac fill. No fluor. Many hairline high angle healed fractures

1 piece 2" x 1" Chert - AA, some wh calcite & dolomite inclusions, no fluor or porosity

1 piece 3" Chert in part AA & shale, blk, silic-"cherty" firm-hard, dolomitic, v.f.velvety, possibly phosphatic(?) w/some wh dolo filled fracs; most fracs filled w/milky qtz. Some interior filled w/calcite

1 piece 2-1/2" Chert - dk.brn-gry.brn, hard, opaque-sl transl, banded & laminated w/shale - blk, carb, firm, dolo (phosphatic?) AA; occ healed fracture

1 piece 2-1/2" Chert & shale - blk AA, banded - contacts not evident; seems to go from chert to silic "cherty" sh - AA. Chert dolo in part, some healed hairline fracs AA, no fluor

1 piece 1-1/4" Chert - dk.brn-blk, opaque w/wh calcite & dolo incl; abundant healed fracs; also some wh dolo & calcite healed macrofractures; no fluor or stain

1 piece 2-3/4" Pred chert AA, some blk shale ptgs and laminations - pred silic, hard; some near horizontal healed hairline fracs

2 pieces 3/4" One piece fractured (healed chert AA) other piece arg chert w/blk sh ptgs AA

1 piece Shale - blk, v.f.velvety, dolo, hard, silic w/arg chert incl

Core No. 1 - cont.

1 piece 1" Chert - dk.brn-blk, opaque AA; some healed hairline to fine fracs, dolo filled. Some blk sh ptgs & lams AA; no fluor

Last piece Chert AA, clear w/blk grains & specks & tan-buff xln dolo incl, mottled w/milky qtz frac fill. Bottom of core recovery

The core had no discernible odor, oil stain or fluorescence. Very isolated intermittent instances of porosity along fracture planes was noted, but permeability along these planes seems to be very low. The rubble condition of the core is a result of fracturing and may indicate a better development of porosity along these fractures.

CORE NO. 2 - 10,248-10,251' (3') Recovered 18" being

Top piece 2" Chert - dk.gry-brn-dk.brn-blk, opaque-transl, hard w/some wh dolo xln inclusions; some filled thin hairline-1/16" fractures filled w/milky qtz, trace wh dolomite & occ calcite. No fluor

3 pieces 1/2" to 2" x 1-1/2" Chert AA, more dolo, dense, grades to v.silic cherty dk.brn dolo; some wh milky qtz filled fractures AA, no fluor

1 piece 2-3/4" Chert - dk.brn-blk w/abundant fine phenocrysts of brn dse dolo; some high angle hairline fractures w/intermittent sl open fracs

1 piece 5/8" Chert AA, less dolo, some intermittent near vertical fractures, tr fracture porosity, probably v.poor permeability

1 piece 1-3/4" Chert AA, abundant vertical hairline fractures, healed in part; tr v.f open micro fracs, no fluor

1 piece 3" Chert AA w/bands & ptgs of blk velvety dolo, v.silic sh grades to arg chert; abundant vertical-diagonal filled-tight hairline to 1/32" fractures, crse fractures more calcite filled, finer fractures dolomite & qtz filled; some pyrite inclusions in shale

1 piece 2-1/2" Shale - blk, v.hard-velvety, carb in part, silic-v.silic, grades to carb arg chert; fractures pred filled-healed tight, occ tight but intermittent; one end w/waxy slickensides(?)

1 piece 1-1/4" Shale - blk-dk.brn, hard, silic, dolo AA; fractures pred healed vertical, milky qtz, dolo, calcite

1 piece 3-3/4" Shale - blk AA, carb, hard, silic, calc-dolo; fractured w/vertical-diagonal calcite, dolomite & milky qtz filled fractures, occ vug in fracture, no fluor; occ pyrite inclusions. No shows

13 pieces - 1/4" to 1-1/4" rubble Ten pieces blk shale AA; 3 pieces chert - blk, opaque, hard, sl dolo w/some wh filled fractures of calcite, qtz, dolo AA

The above core had no fluorescence, odor, or stain. Only minor amounts of intermittent tight fracture porosity with very questionable permeabilities were noted. The bit was badly grooved on the side indicating probable out of gauge hole.

Cores No. 1 & 2 were shipped to American Quasar Petroleum Co., Denver, Colorado

American Quasar Petroleum Co.
#1-20 Hogback Ridge
NE/SE Section 20, Township 13 North, Range 7 East
Rich County, Utah

SAMPLE DESCRIPTION

Abbreviations: AA - as above or ditto; tr - trace (5-10% of sample); SP - some pieces (less than 5%); sl - slight; dolo - dolomite or dolomitic; ls - limestone; sh - shale; sd - sand; anhy - anhydrite or anhydritic; ss - sandstone; sltstn - siltstone; mdstn - mudstone; 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; med - medium; crse - coarse; hd - hard; blky - blocky; flky- flakey; fiss - fissile; splint - splintery; gr - grain; xln - crystalline; microxln - microcrystalline; interxln - intercrystalline; min - mineral; incl - inclusions; s - sub; ang - angular; rdd - rounded; w - well; cmtd - cemented; dse - dense; wh - white; blk - black; gry - gray; grn - green; brn - brown; lt - light; dk - dark; poro - porosity; ppp - pin-point porosity; fluor - fluorescence; perm - permeability; vug - vugular; incr - increase or increasing; decr - decrease or decreasing; pred - predominantly; occ - occasional; S&P - salt & pepper; cgl - conglomerate

80-110	Marl - buff chalky-f.microxln, dse, sdy w/dull min fluor
110-140	Sh - red, yellow, pink, blky, smooth, earthy, sdy-silty, calc, grades in part to v.arg ss. Some tan ls nodules
140-200	Cgl, brn, gry, clear, blk, ang-s.ang grit-small pebbles of chert, quartzite, ss, ls,
200-260	70% ss - brick red, f-crse gr, ang-s.ang, p.srtd, firm, v.arg, calc, grades to sdy sh 20% sh - red, sdy, firm-blky, grades to ss 10% cgl, some ls fragments w/dull min fluor, no cut, some weathered quartzite fragments Some tan-buff litho sdy ls fragments w/dull min fluor
260-380	100% cgl - pred red grit-f.pebbles, arg, ang-rdd ss, ls, quartz, chert 290 - incr clear-milky s.ang-rdd qtz, pred grit-crse gr unconsol, frosted in part 290-320 - decr qtz-sd-grit, incr yellow, red quartzite, ls, chert, more coarse, pred ang-s.ang
380-470	90% cgl - AA 10% ls - gry w/tan tint in part, f.micro-cryptoxln, dse, some buff cryptoxln, sl sdy, dse w/dull min fluor, no cut 410-440 - incr ss, unconsol sd. Matrix prob red clay washes out, about 1/3 red arg tight ss, broken cgl & arg ss
470-500	80% ls - tannish gry, cryptoxln, dse 20% cgl - fragments - AA
500-560	70% ls - AA 30% cgl-unconsol sd - AA, some orange chert

560-620 80% ls - AA, tr+ yellow, cryptoxln dse (weathered)
20% cgl - AA

620-650 20% ls - gry-tan gry, cryptoxln, tr microxln, dse AA
80% cgl - grit-f.pebbles, pred ang-m.crse, s.ang-rdd qtz gr, unconsolidated, pebbles red, yellow, clear, brown, ss, qtzt, chert, ls

650-770 100% ls - lt.brn-tan gry, cryptoxln, dse. Tr wh calcite healed fractures & wh calcite frac fill
Tr cgl - AA
680-710 - ls AA, tr styolites, some pyrite incl
710-740 - ls, some pieces yellowish (along fracs), SP cgl - AA

770-800 70% ss - gry-grnish (glauc), gry-tan gry, f.gr, qtz, w.srtd, s.ang-s.rdd, w.cmtd, firm-hard, v.calc, grades to sdy ls
30% ls - AA, occ sdy in part, SP oolitic tan

800-830 100% ls - lt.brn-brn-gry brn, cryptoxln-dse, tr fracs healed & wh calcite - AA, some ls silty to sdy
Tr ss - AA

830-860 20% ss - AA & lt.gry, f.gr, calc
80% ls - AA, occ piece (uphole) w/min fluor

860-1010 100% ls - brn-lt.brn, cryptoxln, some f.microxln, dse, occ piece yellow ls - AA, SP sdy ls, occ piece wh calcite, some styolite faces, no cut
980-1010 - incr lt.brn-gry brn, f.microxln, dse

Circulate for surface casing @ 1022'. No circulating samples

1022-1050 100% ls - pred gry w/brn tint, crypto-f.microxln, dse, SP lt.brn cryptoxln, occ piece wh calcite frac fill & 1 piece buff-gry oolitic
Tr cement

1050-1112 100% ls - lt.brn, cryptoxln, v.dse, sl silic, hard, no fluor or stain; tr calcite healed fracs, tr brn silty sh ptgs & styolite interfaces, tr cement - AA
1080-1100 - ls AA, some wh calcite frac fill w/bright yellow min fluor, tr sl cut, dull yellow residual fluor, occ piece w/?? lt stain, occ grn tuff?, f.gr ss (slough) (see below)
1100-1112 - ls - AA, sl more gry tint, occ pyrite incl, some wh calcite w/min fluor AA; 1 piece w/?? v.lt.stain, lt.pale cut w/tr sl cut, 2 unit total gas incr.
Chromatograph - C_1 90 ppm incr; C_2 450-tr incr; C_3 tr

Evaluation: Minor gas shows - hot wire 2 unit increase & chromatograph methane & ethane. Minimal sample shows - sl drilling break, trace yellow fluorescence w/ tr slight cut w/no color to ring. Some free calcite, no other evidence of porosity. Possibly fracture porosity - rough drilling. Called Denver & received instructions to test. See DST #1 results

1112-1140 100% ls - gry.brn, f.microxln, appears v.sl.arg; tr free wh calcite & calcite healed fracs, no fluor

1140-1180	100% ls - lt.brn-gry.brn in part, cryptoxln, v.dse, tr wh-clear calcite healed fracs & free calcite, no fluor 1170 - ls - AA, incr buff xln-chalky, tr gry.tan oolitic-fragmental, some gry.brn mottled cryptoxln-v.dse, some pyrite incl
1180-1190	100% ls - becoming (60%) gry, cryptoxln, arg, dse w/some nodules, tr oolitic brn-tan ls
1290-1310	100% ls - decr gry arg AA, incr buff brn mottled, oolitic-fragmental, brn cryptoxln dse
1310-1330	70% ss-sltstn - gry-tan gry, f-v.f.-silt gr qtz, tight, w.cmtd, calc-v.calc, grades to sdy-silty ls 30% ls - gry-lt.brn.gry, sdy-silty, dse, no fluor or stain
1330-1350	100% ls - pred lt.brn w-gry tint, cryptoxln, dse; SP buff chalky, occ piece sdy dse, no fluor; occ wh xln calcite, occ pyrite incl
1350-1430	100% ls - pred gry-brn-buff mottled, f.micro-cryptoxln, v.oolitic, dse 1370-90 - sl darker brn-gry, v.oolitic, some wh calcite healed fracs, occ biotite 1390-1410 - decr oolites, pred brn cryptoxln, dse, sdy, some healed fracs 1410 - much oolitic, sdy- AA, some fragmental
1430-14150	30% sltstn-silty sh, red brn, tight, arg, calc w/some wh-pink gran-xln anhy 70% ls - gry-brn, f.micro-cryptoxln, dse, silty-shly in part, arg in part, dse, fragmental in part, oolitic in part SP anhy - wh, xln-gran, occ gypsum, clear Mud clabbered up by anhy
1450-1470	10% sltstn - red brn AA 90% ls - AA
1470-1490	80% sltstn - gry-tan gry, v.f.gr-silt, v.calc; some grn calc (tuffaceous? 10%), tight, no fluor or stain; SP red brn AA 20% ls - AA
1490-1510	30% sltstn - AA, some blk & red gr 70% ls - AA, lot of ls silty, grades to sltstn, occ piece anhy, wh AA, some gry arg, dse ls
1510-1530	20% sltstn - v.f.gr ss - tight, calc - AA 80% ls - AA, less silty
1530-1630	100% ls - brn-gry.brn, cryptoxln, some lt.gry chalky, sl silic, hard, arg in part, some free wh calcite & calcite healed fracs Tr sltstn - AA 1550 - abundant fracs, pred healed, pred brn cryptoxln v.dse, some dk.gry blk ptgs, SP sltstn - AA 1570-1630 - ls AA, samples v.coarse, catcher kept coarse cuttings & threw fines away. Some pieces crisscrossed w/hairline healed fracs, some free wh calcite frac fill

1630-1670 100% ls - brn-gry.brn, cryptoxln, v.dse, sl silic, hard, no fluor or stain; samples screened, much finer; some free wh calcite (frac fill?) & calcite healed fracs
Note: A gradual incr in gas from 1600 to 2 units (1 unit hot wire increase) decreased to 1/2 unit increase by 1685', maximum C_1 675 ppm

1670-1750 100% ls - brn gry, sl more gry, cryptoxln-v.f.microxln, v.dse, sl arg, firm-hard
1690 - decr arg, more gry.brn cryptoxln v.dse, sl silic, hard in part, tr gry chalky, decr wh calcite & healed fracs

1750-1850 100% ls - m.brn.gry, v.f.micro-cryptoxln, occ piece lt.gry chalky, SP wh calcite frac fill, arg, SP sltstn - AA, slough, occ piece buff brn mottled oolitic (slough), occ piece pyrite & pyrite incl, occ piece clear gypsum, tr edge poros, no stain or fluor, occ edge w/secondary calcite xls
1810-20 becoming more gry.brn, some clear-wh free calcite & as fill in healed fracs

1850-1900 100% ls - pred gry-gry.brn, v.f.micro-cryptoxln, v.dse, arg in part
Occ piece sltstn - red, arg, tight
1860 - some LCM w/v.dull fluor, occ pipe dope fluor
SP sltstn - gry-grn, tight, calc - AA (slough) & also SP(less than 1%) red sh & sltstn - AA
1 piece of cement w/gillsonite w/streaming cut, yellow fluor, streaming brn color in Trichlorethene. Some free white calcite & occ healed fracs

1900-1950 100% ls - gry-gry.brn, crypto-f.microxln, v.dse, cuttings v.fine, arg in part grades to v.calc sh; occ pieces oolitic & tr wh calcite AA, occ piece sltstn AA & gypsum - satin spar-clear xln

1950-2000 100% ls - pred gry, crypto-v.f.microxln, arg-v.arg, dse, grades in part to v.calc sh, some brn tinge, no fluor or stain

Circulate out drilling break 1979-1999', no apparent change in section. Logger got some cut from cement gilsonite, some mineral fluorescence in calcite frac fill.
Evaluation: No gas increase on gas detector, gray argillaceous limestone appears to be more brittle. No show. Reported to G. Keller, recommended to drill ahead.

2002-2010 100% ls - gry, arg-v.arg AA, dse, occ piece wh calcite & chalky
Tr sh - gry, v.calc, blky-smooth

2010-2020 100% ls - AA, incr gry.brn-brn f.microxln
Tr sh - gry - AA

2020-2030 20% cgl - grit size orange, red, yellow, pink chert, weathered ls, quartzite, unconsol f-crse qtz gr (similar to the section about 653'. Some sd in cgl looks like reworked Nugget
80% ls - AA

Circulate @ 2030' - gas increase 6 units on Hot wire, no drilling break

15" sample 20% cgl - AA, grit of ss, qtzt, ls, sltstn
80% ls - AA, incr brn f.microxln dse, tr wh calcite & wh cryptoxln sl sdy ls (uphole type) w/bright pale min fluor, no cut or stain

30" sample Identical to 15" sample

Evaluation: Could find no fluorescence. Found one piece of sandstone w/? stain w/cut - could be pipe dope contamination on only one piece. Could be pipe separation or a hole in pipe or possible sample "trash" from pits or system w/minor show. Reported to G. Keller w/recommendation to drill ahead. Instructions to drill ahead.

2030-2110 100% ls - brn-gry.brn, f.micro-cryptoxln, dse-v.dse, silic in part, hard, tr+ free wh calcite, no fluor or stain
2030-2040 - tr cgl AA, breccia, chert, ss, weathered ls
2040 - SP cgl AA, occ healed frac in ls
2050-2060 - pred brn f.microxln silic, hd, v.dse ls, some lt.gry chalky
2060-2070 - decr silic ls, pred brn f.micro-cryptoxln, dse
2070-2090 - incr brn microxln silic, hd ls, some pyrite incl
2090 - decr silic ls, tr gry v.f.velvety, calc, blky sh
2100 - some brn silic hd cryptoxln, v.dse ls, tr gry sh

2110-2180 100% ls - tan-brn becoming more f.microxln, dse.
SP sh - gry, blky-smooth, calc, some pyrite incl
2120 - becoming more gry.brn-brn.gry, f.micro-cryptoxln, dse, occ piece wh calcite
2150-2160 - ls becoming more arg; SP gry sh, blky-smooth, calc, grades to arg ls
2160-2180 - less arg, more brn cryptoxln, dse; tr sh AA

2180-2200 100% ls - pred gry.brn-brn-lt.gry, f.gr, arg, sdy, dse; tr brn xln ls AA, occ oolitic, lot of pipe dope
2190 - more oolitic, some buff-brn-gry mottled; tr cgl AA, weathered qtzt, ls, ss etc

2200-2250 100% ls - brn-gry mottled, f.microxln, dse, fragmental, foss in part, sdy in part, oolitic in part, no fluor or stain, some LCM in sample
2210-2220 - ls pred buff-tan-brn sdy, some free wh calcite frac fill
2240 - becoming more fragmental, less sdy

2250-2270 100% sltstn-ss - lt.gry-gry, silt-v.f.gr qtz, fair srtd, w.cmtd, silic, dolo, firm-hard, tight, tr tan clay fill, tr wh calcite healed fracs
2260 - pred lt.gry f-v.f.gr

2270-2280 20% ls - brn, f.micro-cryptoxln, oolitic in part, sdy in part, grades to calc ss-dolo ss, dse
30% dolo - buff-tan, f.microxln, dse, sdy, grades to sltstn-ss; some pale yellow min fluor, dull, no cut
50% ss-sltstn - AA

2280-2300 90% ls - brn-buff mottled, fragmental, sl oolitic, occ grn glauc incl, sl chalky in part, some wh calcite frac fill, some pelletal & foss, sdy in part
10% dolo - AA

2300-2330 100% dolo - lt.tan-buff, f.microxln, sdy-v.sdy, calc in part
Tr ss-sltstn - AA
2310 - some lt.brn, incr tan, some grn glauc
2320-2330 - incr lt.tan-buff dolo; tr ls - brn f.microxln, dolo in part, dse, grades in part to dolo ls, pred sdy

2330-2340 50% ls - brn, f.microxln, buff gran sdy dolo, grades to dolo ls
30% dolo-ls - buff, f.gran-f.microxln-sl.f.gran, some gry pellets-nodules in lt.tan-buff
20% dolo - AA, sdy in part

2340-2360 60% dolo ls - pred buff lt.tan, sl.f.gran-xln, w/gry m-crse pellets AA, some wh calcite frac edge, oolitic in part; some min fluor, v.dull weak yellow, no cut, sl tr intergran poros
30% ls - AA
10% dolo - AA

Note: The above has very sl tr intergran porosity - some dull yellow fluor w/tr weak cut, no color to ring, doubt if porosity would give up fluid

2360-2380 100% dolo - tan, v.f.micro-cryptoxln, v.dse, tr pale lt.grn chalky, occ piece clear-wh xln calcite
SP red-brn tight arg sltstn-silty sh, blky

2380-2410 90% dolo ls - gry-pred brn-dk-lt.mottled, v.f.gran-f.xln w/some wh anhy incl; some dk.brn residual "dead" stain, no fluor, some weak cut, tr v.dull weak min fluor, tr leached & f.microvug poros; incr clear-wh calcite AA
10% dolo - AA
Occ piece red sltstn & sh - AA
2400 - tr dolo - gry, arg, dse, SP red arg, dse dolo

2410-2420 60% dolo-ls - AA, decr min fluor
20% dolo - pred gry, arg, v.arg, dse
Tr gypsum - clear selenite
20% ls - gry-brn, f.microxln-wh calcite - AA, SP red, arg grades to calc sh
SP sh - red, blky, calc

2420-2450 10% sh - brn.red, blky, earthy-v.f.velvety, calc
80% dolo ls - tan-buff-lt.gry w/grn tint, some red brn arg grades to sh; tr secondary calcite xls, tr vug poros
10% ls - tan-buff, grades to dolo ls
Occ clear gypsum lath & wh xln anhy
2440 - becoming more calc - more ls

2450-2460 70% sh - red, blky, v.f.velvety-smooth, sl.calc-dolo, firm
20% ls - buff, f.microxln, dse, sdy in part, dolo in part, some oolitic, some red arg, xln, dse
10% dolo - tan-gry, f.microxln, dse
Tr gypsum & anhy - AA

2460-2470 No sample

2470-2480
20% sh - red - AA
10% sh - gry, blky smooth, dolo
10% anhy - wh, xln-chalky (bit marked), tr gypsum
10% ss-sltstn, gry, calc, tight, firm
50% dolo - AA, gry-tan, anhy in part, dse, sdy-silty in part, some v.dull weak yellow min fluor, no cut

2480-2490
30% sh - red brn - AA
20% ls - AA, sdy-silty in part, some oolitic, SP calcite AA
10% sltstn-ss - AA
40% dolo - gry-brn, f.micro-cryptoxln, sdy, silty & arg in part
Tr anhy & SP gypsum AA

Note: Samples are a conglomeration of different type rocks. Probably thin bedded anhydrite and limestone and dolomite w/gypsum inclusions & frac fill

2490-2500
70% sh - red brn
10% gypsum - clear selenite
10% anhy - wh - AA
10% ls & dolo - AA

2500-2520
60% sh - red - AA
30% dolo - lt.brn-tan, f.microxln, v.f.sucrosic, sl.sucrosic, some blk residual stain, no fluor, tr weak cut
10% anhy - wh - AA
Tr clear gypsum AA & tr ls - tan cryptoxln, v.dse, hard

2520-2530
50% sh - red - AA
20% anhy - wh - AA, some as frac fill; tr+ gypsum AA
30% dolo - AA, calc in part

2530-2540
30% anhy-gypsum - AA (10%) anhy - AA
10% sh - red - AA
60% dolo - brn-lt.gry, f.microxln-sucrosic-cryptoxln; lt.gry, arg, dse, some silty in part, some v.dull weak yellow-brown min fluor in dse, some blk residual stain w/weak dull yellow cut, tr sl intergran & microvug poros
Tr ls - AA

2540-2550
10% sltstn - v.f.gr, tan, silt, dolo, tight, firm, hard, silic; tr red silic tight - Top Nugget(?)
10% sltstn - gry, arg, tight
10% sltstn - red, arg, tight
10% anhy - wh, xln-gran
60% dolo - tan-lt.brn AA, min fluor AA, some blk residual stain, weak cut, no gas, SP sl intergran-microvug poros, ?stain

2550-2560
80% ss - tan-lt.tan, v.f.gr-silt, qtz, s.ang, w.srtd, w.cmtd, sl dolo-dolo, hard, silic-v.silic, grades to sdy sltstn
Tr red arg sltstn, tight, no fluor w/some pyrite partings
10% sh - red, silty, calc
10% dolo - AA, some buff w/dull min fluor, no cut

2560-2570	90% ss-sltstn - AA, one piece red arg sltstn-ss in contact w/tan sltstn-ss, pred orthoquartzitic, no fluor or stain, v.tight w/some dk.gry-gr grains, some gypsum 10% sltstn - red, arg, tight Tr dolo - AA Note: some of above ss w/m-crse rdd frosted "floating" sd gr
2570-2580	20% sltstn - red - AA w/some rdd crse "floating" sd gr 80% ss-sltstn - AA, some m.gr rdd frosted unconsol sd gr, ss sl more crse - still f.gr, hard - AA
2580-2590	100% ss - lt.tan, f.gr, ang qtz, fair srtg, w.cmtd, sl dolo, gypsiferous in part, no fluor or stain, tr sl intergran poros, some flat surfaces (frac edges), pred hard, silic, glassy in part Tr red sh-sltstn - AA, some wh chalky sl dolo (bit flour), some free clear selenite-gypsum
Circulate gas increase (2 unit T.G.) 625 ppm C_1 @ 2579-80'	
15" & 30" circ spls	100% ss - AA, much in grain clusters, no fluor, poorly srtd, silic, hard, sl dolo, friable in part, tr sl-sl intergran poros, no fluor or stain, some m-crse s.rdd frosted sd gr, some orange feldspar gr SP red sh - AA Tr gypsum - clear, xln selenite
2592-2600	No sample
2600-2650	100% ss - AA, incr m-crse s.rdd-rdd frosted qtz sd gr, also gr clusters, prob in thin zones. No fluor or stain, tr sl-m intergran poros, SP w/blue min fluor (no cut) 2620 - lot of ss med-crse gr, s.ang-rdd, frosted in part, tr sl-sl intergran poros 2640 - decr med-crse gr, tr sl & tr med intergran poros in med gr ss, some quartz (orthoquartzite) masses, glassy in part
2650-2700	100% ss - wh-lt.gry-lt.tan, f.gr, w.srtd-poorly srtd, w.cmtd, sl dolo-silic, hard, to frosted m-crse qtz gr, hard, silic, w.cmtd w/ sl-m intergran poros, no fluor or stain, some pyrite incl Note: Ss gypsiferous in part, tight, some orange feldspar gr, occ grn glauc gr, much unconsol sd in samples, some pipe dope fluor 2670 - incr f.gr, tr sl intergran poros, no show, abundant m-crse rdd-s.rdd frosted qtz gr, unconsol sd, ss off wh (tan tint), some f-crse gr, p.srtd, hard-friable, sl dolo-v.silic, tight
2700-2850	100% ss - lt.gry-wh, f.gr, fair srtd, qtz, s.ang, sl dolo-silic, right, glassy to tr sl-m intergran poros, no fluor or stain, some med crse rdd frosted "gloating" qtz gr & zones of more crse gr, some pink & grn sd gr in ss, lot of m-crse, s.ang-rdd qtz gr, unconsol sd gr, SP wh chalky (bit flour) or amorphous anhy 2770 - pred f.gr, s.ang-s.rdd, tight, silic, hard w/some pink & grn gr, tr sl poros, no fluor or stain, some floating sd gr AA, decr unconsol 2800 - incr m-crse, s.rdd-rdd qtz gr in ss, also unconsol sd, poorly srtd, tr sl intergran poros, no stain or fluor

2700-2850 (cont)	2820 - tr sl-sl intergran poros, no shows 2830 - big incr crse s.rdd-rdd qtz frosted sd in ss & unconsol, conglomeratic, p.srtd, fair cmtd, tr sl poros 2840-50 - decr m-crse rdd sd & ss, incr buff-v.lt.tan, f.gr, s.ang, w.cmtd, silic, sl.dolo, some orange feldspar, grn glauc gr
2850-2870	100% ss - tan-pink-red-buff, f.gr, ang-s.ang, some dark gry-blk gr, fair-w.cmtd, fair-poor srtd, sl dolo, silic, hard, friable in part, m-crse, rdd-s.rdd frosted floating & gr clusters, no stain or fluor, tr sl-m intergran poros 2860 - sl-m intergran porosity, more pink AA, friable, poor-w.cmtd
2870-2880	100% ss - pred pink, f.gr, ang-s.ang qtz, w-poor srtd, p-w.cmtd, sl dolo, silic, glassy, hard, no fluor, sl-m intergran poros, no stain or fluor; some red, orange & grn-dk.gry gr, some med gr, some rdd frosted, some wh-pink chalky, sl dolo, bit flour(?) Tr anhy - wh, xln
2880-2930	100% ss - pred salmon red, f-crse gr, poorly srtd, w.cmtd, ang-rdd frosted, silic, sl dolo, friable to hard; tr sl, tr med intergran poros, no shows, orthoquartzitic in part 2900 - decr m-crse gr, pred salmon red f.gr, ang-s.ang, tr sl poros, no stain, some glassy orthoquartzitic, some wh-pink chalky bit flour
2930-3010	100% ss - pred salmon red, f.gr, s.ang qtz, fair srtg, w.cmtd; some dk.gry, red, orange gr, silic, hard, v.sl dolo, tr sl intergran poros, no stain or fluor 2930-40 - sl more friable, tr sl-sl intergran poros, occ poorly srtd w/m "floating" sd gr 2940 - incr m.frosted, s.rdd sd gr, tr sl poros 2960-70 - some buff f.gr s.arg, qtz, silic ss 2970-80 - pred salmon red ss AA, no shows, tr sl intergran poros, some m.rdd frosted qtz gr, glassy, v.tight in part
3010-3080	100% ss - salmon red, f.gr, ang-s.ang, AA, pred tight, some wh xln calcite incl, possibly frac fill, also free clear-wh xln calcite 3030-40 - abundant free calcite, also edge calcite, tr sl intergran poros 3040-50 - decr calcite 3050 - tr sl intergran poros, no stain or fluor 3060 - pred tight, some med-crse "floating" rdd frosted sd gr, some in thin zones, tr sl poros AA
3080-3150	100% ss - salmon red, f.gr, ang-s.ang, silic, hard, sl.dolo, occ calcite healed fracture, no stain or fluor, glassy in part, pred tight, tr sl poros - AA 3090 - lighter red-pink in part, some orange & red gr, some thin stringers & floating m-crse s.rdd-rdd frosted sd gr, pred tight, tr sl intergran poros
3150-3200	100% ss - AA, f-w.srtd, w.cmtd, hard, silic in part, tr sl intergran poros, no stain or fluor, pred tight 3180 - some crse rdd frosted gr clusters, tr sl intergran poros, no stain or fluor

3200-3250 100% ss - salmon red, f.gr, ang-s.ang, w-poorly srtd, w.cmtd, sl dolo-silic, hard w/occ med-crse rdd frosted qtz gr (floating), tight, tr sl intergran poros, no stain or fluor
3210 - some f-m.gr ang-s.ang AA, some blk grains AA, occ piece glassy (orthoquartzitic)
3230 - pred f.gr ss AA

3250-3300 100% ss - red - AA, pred f.gr, tight, ang-s.ang, w.cmtd, silic, sl dolo, tr sl intergran poros
3260 - incr m-crse rdd-s.rdd frosted sd gr (cgl)
3290 - decr m-crse sd gr

3300-3400 100% ss - salmon red, f.gr, s.ang, tight, firm-hard silic, some m gr, sl dolo, tr sl intergran poros, no show
3310 - incr m-crse frosted rdd clusters & grains
3320 - some glassy, silic, hard
3340 - decr m-crse gr, pred tight
3350 - pred salmon red, f.gr, ang-s.ang, w.cmtd, silic, hard, fair srtd, some stringers m.gr AA, tr sl intergran poros, no fluor or stain tr clear xln calcite, occ blk gr
3360 - sl incr med gr, ss pred f.gr, tight, occ piece clear gypsum (rdd) slough

3400-3500 100% ss - salmon red, f.gr qtz, s.ang, fair srtd, w.cmtd, silic-sl dolo, some dk.gry-blk gr, some glassy, occ piece clear gypsum, no fluor or stain, pred tight, some m.gr frosted s.ang-s.rdd, SP sl intergran poros
3410 - lot of unconsol m.gr, s.ang-s.rdd sd
3450 - sl lighter red-pink, pred tight, occ anhy edge, some isolated floating sd gr

3500-3600 100% ss - salmon red, f.gr, s.ang, tight, w.cmtd, fair-p srtd, silic, hard, sl dolo, some blk gr w/some m-crse s.rdd-rdd frosted qtz clusters-free "floating" sd gr, some buff-pink chalky (bit flour) Tr sl intergran poros, no fluor or stain
3530 - incr unconsol sd, some m-crse rdd-s.rdd frosted sd gr
3560 - becoming more tight, w.cmtd, hard, darker red, finer grained, tighter, hard, silic, silty in part, poor-w.srtd, some anhy-gyp frac fill & edges
3570 - occ piece wh calcite & calcite edge; some glassy ss, some m.gr rdd-s.rdd frosted AA

3600-3711 100% ss - salmon red, f.gr, ang-s.ang, w-poorly srtd, w.cmtd, silic, sl dolo, hard, tight, some blk gr, no fluor or stain, tr sl poros, some glassy orthoquartzitic
3630 - tight, hard, w.cmtd, silic
3640-50 - much hard silic glassy, tr pipe dope stain & fluor 3630-50
3650 - pred red, f.gr, tight, silic, hard; occ piece w/gypsum edge (selenite) frac fill
3660 - ss AA, tr sl intergran poros, no stain or fluor
3670 - slt darker red, more tight, occ m.rdd gr
3700 - samples much finer (bit worn out) some unconsol sd, ang-rdd, m-crse frosted gr. Circulating Sample - SS - AA, some silty, pred tight, w.cmtd, hard, silic, glassy in part

Circulate for electric logs and to run 9-5/8" intermediate casing
SLM 3711.48'; Board 3716.36' - correction 5' uphole

3710-3720	60% ss - salmon red (red orange), f-v.f.gr qtz, ang-s.ang, w.cmtd, sl dolo, some in floating gr, pred tight, silic, hard-firm 30% cement 10% glass - clear from casing shoe
3720-3730	80% ss - AA 20% cement Tr glass
3730-3800	100% ss-sd - salmon red (lt) AA, much unconsol, many m-crse rdd frosted unconsol gr. Samples very fine. Tr sl intergran poros, no shows 3740-50 Samples more coarse (fine gr w/floating m-crse rdd sd gr AA, tr sl poros; some dk.gry-blk gr, some buff-v.lt.orange chalky bit flour. Ss pred tight 3790 - incr m-crse rdd frosted "floating" sd gr, p.srtd, some qtz overgrowth, some glassy
3800-3810	60% sh - red brn (rust), smooth-sl earthy, blky firm, some sdy-silty 10% sltstn - red, arg, tight 20% ss - AA & some red arg p.srtd Tr sh - grn, blky smooth, firm, non calc
3810-3820	20% sh - red-brn - AA 80% ss - salmon red-orange, f.gr, tight, silic, hard; some m-crse rdd frosted gr AA, some clear free calcite, lot of f.gr unconsol sd Tr sltstn - grn.gry, tight, calc (tuffaceous?)
3820-3830	100% ss - red-salmon red, v.f-f.gr, firm-hard, silic, sl dolo, silty & arg in part, tight Tr sh - red - AA, tr red-brn xln arg siderite(?)
3830-3840	40% sh - red-brick red AA, v.arg, tight, sdy-silty in part, smooth-velvety blky 60% ss - red, some lt.gry f.gr & m.gr, tight - AA
3840-3850	60% sh - pred brick red, blky-flky, smooth-s.waxy, sdy-silty in part 10% sltstn - red, arg 30% ss - red-lt.gry - AA, tight, no fluor
3850-3860	90% sh - brick red-red brn, blky smooth firm, sl calc, sdy-silty in part 10% ss - red-gry, f.gr, tight, silic, hard SP sh - apple grn, blocky firm smooth
3860-3900	100% sh - red, pred brick red, smooth-blky-v.f.velvety, sl dolo, some xln dolo incl, firm-hard, some grn sh spots & incl, tr silty-sdy sh Tr dolo - red, arg, dse, brn f.microxln dse Occ piece wh xln calcite
3900-3920	10% ss-sltstn - red orange, arg-v.arg, tight, f.gr, ang, firm-hard grades to sdy silty sh Tr ls - red, f.microxln, arg, as incl & ptgs in sh 10% dolo - brn-red, f.microxln, arg, dse 80% sh - red - AA, some dolo & ls incl, sdy-silty in part, dolo in part, tr brn siderite(?) incl

3920-3930
20% ss - red brn, f.gr, tight, ang, some blk gr, silic, hard
80% sh - pred brick red-orange red - AA
Tr dolo & ls - AA, SP clear gypsum

3930-3940
10% ss - AA, red
90% sh - brick red, blky-smooth-earthy, firm-soft, dolo-calc
SP clear gypsum - AA

3940-3950
10% ss - AA, arg, tight
10% dolo - red-brn, f.microxln, dse
80% sh - red - AA, more sdy, tr wh calcite frac fill

3950-3970
100% sh - brick red, blky smooth-earthy, firm-hard, sdy-silty in part, tr clear calcite, wh dolo incl, some gyp incl

3970-3980
30% ss - brick red, arg-v.arg, tight, f.gr, ang-s.ang
70% sh - red - AA, more sdy
Tr dolo - AA

3980-3990
10% ss - AA
90% sh - AA
Tr dolo - AA

3990-4000
40% dolo - pred pink-red, cryptoxln, arg in part, dse, hard, no fluor or stain
60% sh - red - AA, more dolo, grades to dolo

4000-4020
70% dolo - AA, red pink-buff, f.micro-cryptoxln, dse, anhy in part
30% sh - AA
4010 - dolo gry-buff-red-pink, crypto-f.microxln, dse, SP gr xln dse, anhy in part; tr clear calcite xls; SP clear gyp-selenite, more arg

4020-4040
30% dolo - AA, some calc
70% sh - red, blky, smooth-f.velvety, firm, dolo-calc, some w/ dolo incl, some wh calcite lined edges
4030 - some apple grn incl in sh

4040-4060
50% dolo - AA, some tan, f.microxln dse
50% sh - AA, grades in part to arg dolo
Tr calcite, clear-wh, frac fill, some calcite-anhy frac fill

4060-4070
70% sh - AA, grades to arg dolo
30% dolo - AA
Tr ls-calcite - AA

4070-4100
80% sh - AA, silty in part
20% dolo - AA, some clear-milky calcite, xln, frac fill(?) AA

4100-4110
30% ss-sltstn - red, arg-v.arg, sl dolo, tight
70% sh - red brn-brick red, blky, fough, firm, sdy-silty, grades to ss-sltstn, sl dolo
Tr dolo - AA

4110-4120
10% ls - clear calcite, red, arg dse
20% dolo - AA
20% sltstn, red, arg, tight
50% sh - red - AA

4120-4130	30% ls - AA 10% dolo - AA 20% sltstn - red - AA 40% sh - AA
4130-4140	70% ls - gry-gry lavender, f.micro-cryptoxln, v.dse, firm-hard 30% sh - AA Tr sltstn - AA
4140-4150	20% sh - red AA & brn-gry.brn, flky-blky velvety 10% sltstn - AA 10% dolo - AA 60% ls - AA Note: Section appears to be reworked-weathered conglomeration of rock types
4150-4160	20% ls - lt.red brn-lt.maroon, f.microxln, arg in part 10% dolo - tan-lt.brn, f.microxln 70% sh - lt.maroon-brick red, blky firm, smooth-v.f.velvety, calc-sl dolo
4160-4170	30% ls - AA, incr buff xln dse 10% dolo - AA 70% sh - AA, more calc
4170-4180	80% ls - pred lt-v.lt.maroon, crypto-f.microxln, v.dse 20% sh - red - AA Tr dolo - AA
4180-4190	10% dolo - AA 90% sh - pred brick red, blky, platey, sl-non calc, firm; tr clear gypsum incl Tr ls - AA
4190-4200	90% sh, becoming lt.lavender-red mottled, calc-sl.calc, may be sl bent 10% ls - tan-red mottled, cryptoxln, v.dse
4200-4260	100% sh - pred lt.lavender-red mottled, smooth, blky, flky, calc, falls apart on rewetting Tr ls & gyp - AA 4220-30 - Some phlogopite assoc w/plant remains - looks like v.fine copper flakes (silt size) also some rust brn limonitic nodules 4230-40 - incr copper flake sh, fragile, blky, soft 4240 - decr copper sh
4260-4270	30% sd - clear m.crse, ang-s.ang, unconsol, some gr in sh, prob sd in sh matrix 70% sh - brick red-lavender, smooth, blky Tr ss - lavender-red, m.crse, arg-tight
4270-4280	10% sd-ss - AA 90% sh - red-lavender - AA SP ls & dolo - AA, dse (slough)
4280-4290	20% sltstn-ss - brick red (orange red), arg-v.arg, tight, non calc 80% sh - incr brick red silty-sdy-earthy, non calc & sh - AA

4290-4300	30% ss-sltstn - red, arg AA, no fluor or stain 70% sh - AA
4300-4310	10% ss - lt.gry-pink-buff, m-crse, ang-s.ang qtz gr, tight w/clay sh matrix, some calc, some red v.arg, tight, some limonitic ss, some unconsol crse ang sd gr 90% sh - brick red, blky firm, v.sdy-silty in part, grades to arg ss, & lavender sh AA (30%)
4310-4320	70% sh - AA, silty-sdy in part, about 2/3 red sh AA 30% ss - red, arg, tight, f-v.f.gr, silty, p.srtd, no shows
4320-4330	40% ss-sltstn - red, arg, tight, calc-sl.calc 60% sh - red-lavender AA, occ piece s.waxy apple grn sh
4330-4340	20% ss-sltstn - AA 80% sh - pred red, decr lavender & silty-sdy
4340-4350	60% ss-sltstn - red, arg, tight 40% sh - AA, some red wh splotchy smooth blky-s.waxy Tr ss-sltstn - tan-pale grn carried slough
4350-4370	70% ss-sltstn - red - AA, pred sltstn 30% sh - AA Some unconsol m-crse ang-rdd qtz gr 4360 - incr lavender flky-rough
4370-4390	50% sltstn-ss - red - AA 50% sh - red AA, lavender blky-flky rough
4390-4400	70% sltstn - red, arg, tight AA, tr ss, more arg, tight 30% sh - red-lavender - AA, more v.f.gr silty-f.gr arg, red ss w/some grn mica gr, also dk.gr w.cmtd, firm in part
4400-4410	20% sh - AA, red-lavender 20% ss - red, f-m.gr, ang-s.ang qtz, mica, arg, calc-dolo, tight; red v.arg, tight 60% sltstn - red, tight, arg, sdy, grades to ss
4410-4420	60% sh - pred lavender, crumbly smooth-rough, blky 40% ss-sltstn - AA, some m-crse clear s.ang-s.rdd qtz unconsol gr
4420-4440	30% sh - lavender-red - AA 70% ss - red-red brn, f-crse gr, ang-s.ang qtz, w.cmtd, p.srtd, some dk.gr, mica, calc, tight; some limonitic, some red arg sltstn cgl Tr calcite - wh-pink, xln
4440-4450	40% sh - red-lavender - AA 60% ss - AA, calc-tight Tr sltstn - AA
4450-4460	90% ss-sd - AA, dirty, v.tight, pred ang f-crse, w.cmtd, p.srtd 10% sh - AA
4460-4470	80% ss - pred clear m-crse, ang-s.ang, unconsol sd, some gr clusters w/calcite matrix 20% sh - AA

4470-4480 20% sh - AA
30% sd-ss - AA
50% ls - gry-wh, f.microxln-chalky, dse, wh-clear calcite, some may be sd matrix

4480-4490 70% sh - variegated (brn-red, grn, gry, lavender) blky, smooth-s. waxy-earthy, non-sl calc
10% sd-ss - AA
20% ls - AA
Tr dolo - buff, v.f.micro-cryptoxln, dse

4490-4500 80% sh - variegated AA, much gry.grn
10% sd-ss - AA
10% ls - AA
Tr dolo - AA

Note: Samples poor - very fine (much slough & mixing)

4500-4510 No sample

4510-4520 50% dolo - tan-brn, f.microxln, dse, calc in part
20% variegated sh - AA
30% ls - tan-buff-brn, f.xln, dse, grades to dolo ls

4520-4530 20% sh variegated - AA
50% ls - AA, some dk.brn, cryptoxln, v.dse, some wh calcite
30% dolo - AA

Note: Miserable samples, much mixing, very fine

4530-4540 60% variegated sh - AA
10% sltstn - pred red, arg, tight
20% ls - AA
10% dolo - AA

4540-4560 10% sltstn - red-brn, tight, v.arg
90% sh - pred brn, blky, f.velvety, silty, decr grn sh, some lavender AA, occ healed fracs (calcite & dolomite, tr ls & dolo AA)
4550 - sltstn-ss AA, sh silty in part

4560-4590 40% ss-sltstn, pred red brn, v.f-silt gr, hard, silic-tight, some red arg tight
60% sh - incr brick red, blky, smooth-velvety firm & incr silty-sdy
4570-80 - incr ss (tr) m.gr, ang, calc (slough?), some clear crse ang unconsol gr, pink f.gr, tight calc

4590-4600 60% sltstn- red-brn, f-v.f.gr, calc, tight, ang-s.ang, grades to sh - AA
40% sh - AA

4600-4610 70% ss-sltstn - AA
30% sh - variegated, flky-blky - AA

4610-4620 90% ss-sltstn - AA, tight, pred red-brn, calc
10% sh - variegated AA

4620-4630	30% ss - AA, becoming more arg in part 70% sh - pred red brn-brn, silty, grades to sltstn to blky, smooth-f.velvety, sl calc in part
4630-4650	10% sltstn - red-brn, tight, arg - AA 90% sh - pred brick red-brn - AA, silty in part, SP variegated sh - AA Tr ss - grn-lt.gry, f-silt, tight, ang-s.ang, sl calc 4640 - sltstn more arg, tight, some rdd surface slough

Note: Sample description from 4650-5410' by Tom Graham

4650-4660	70% sltstn - red-red-orange, sdy in part, arg in part, sl anhy 30% sh - brick to bright red - AA
4660-4670	60% sltstn - AA 40% sh - AA
4670-4690	100% sltstn - brick red, arg
4690-4700	40% sltstn - pale grn, calc, some pale grn grs, orange grs, sdy in part, tight, no fluor 60% sh & sltstn - red - AA
4700-4720	80% sltstn - pale red orange, some blk grs, anhy 20% sh - bright red
4720-4750	50% sltstn - red to pale red AA 50% sh - bright to brick red
4750-4800	75% sh - brick red, silty 25% sltstn - red to pale red, anhy in part
4800-4810	75% sltstn - brick red, arg 25% sh, bright to brick red
4810-4820	50% sltstn - AA 50% sh - AA
4820-4830	100% sh - brick red, v.silty, occ anhy
4830-4850	80% sh - brick red, less silty 20% sltstn - pale red to red
4850-4860	80% sltstn - red-red orange, arg, anhy in part 20% sh - brick red, silty
4860-4870	95% sh - red, smooth, v.little silt 5% sh - pale to apple grn, silty
4870-4880	70% sltstn - v.f.ss - wh to pale grn, some grn grs, red orange grs, calc, tight, no fluor 30% sh - red - AA

4880-4930	95% sh - red, smooth, v.little silt, tr clear gypsum in fracs, tr anhy on fracs 5% sltstn - pale grn AA
4930-4940	100% sltstn - pale red, sdy in part, sl.calc, arg, occ pale grn mottling, sl anhy, tight, no fluor, tr wh to pale grn sltstn, tr clear gypsum
4940-4950	50% sltstn - pale red AA, grading to v.f.ss, wh to pale grn to red orange, v.arg, calc, tight, no fluor 50% sh - brick red, smooth to silty

Trip @ 4969' - trip gas 2 units - all C_1

4950-5020	100% sh - red, soft, sl.calc, occ silty, tr wh calcite in fracs Tr purple sh w/some grn mottling Tr wh anhy
5020-5030	100% sh - red - AA, becoming silty
5030-5050	100% ss, lt.brn w/sl grn tint, v.fine, calc, some dark grs, hard, sl.qtztc, tight matrix, no fluor, occ pyritic
5050-5060	100% sh - brick red Some ss AA
5060-5070	100$ sltstn, gry-grn, calc, few blk grs Some red sh AA
5070-5080	100% sh - brick red, occ silty
5080-5100	100% sltstn - red to pale red, occ sdy, crse blk grs, tight, no fluor Tr dk red sh
5100-5120	30% ss - wh to salmon, v.f.gr, s.ang, calc, anhy in part, few blk grs, tight, no fluor 70% sh & sltstn, red, anhy in part
5120-5140	100% sh - red, silty in part, anhy in part
5140-5160	60% ss - pale red to buff, v.f.gr, s.ang to ang, calc, anhy in part, some wh calcite lined fracs, few blk grs, tight matrix, no fluor 40% sh & sltstn - AA, red
5160-5170	60% ss - AA, grading to sltstn, red, some blk gr 40% sh - red - AA
5170-5190	70% ss - pale red to buff, v.f to silty 20% sh - red, silty in part 10% sltstn - red
5190-5200	70% sltstn - red, occ sdy 30% ss & sh - AA

Note: Very poor samples

5200-5230 70% sh - red to brick red, silty in part, anhy in part
10% sh - lavender to purple
20% ss & sltstn - AA

5230-5240 60% sh - AA
10% sh - lavender to purple AA
30% sltstn - red-brn, some blk gr

5240-5250 60% sh, red, lavender & purple
30% sltstn - red-brn, occ sdy
10% ss - lt.brn buff to salmon, v.f.gr to silt, sl.calc, low poros, no fluor
Tr gry-grn sh, tr clear gypsum, tr pink to pale purple anhy

Trip gas @ 5252' - 5 units, all C_1

5250-5270 Trip samples - mixture of all the above

5270-5290 60% ss - pale buff to salmon, occ wh, mostly v.f.gr to silt, some f.gr, few blk grs, sl.calc except salmon, some poros in salmon, no fluor
40% sh & sltstn - AA

5290-5310 70% ss - lt.gry-brn, v.f.gr to silt, s.ang, sl.calc, blk matter between gr in some - has appearance of clay but is not evenly distributed (would be called dead oil stain by some), poros 10%, no fluor or cut
30% sh - red, silty, anhy

5310-5320 70% ss - buff to pale red, mostly v.f.gr, some silt, sl.calc, few blk gr, mostly low poros, no fluor
30% sh - red to brick red, silty in part

5320-5330 100% ss - AA, grading to sltstn, red, tight, no fluor

5330-5340 60% dolo - med gry-gry-brn, dse to cryptoxln, tight
40% sh & sltstn - AA

5340-5350 60% sltstn - pale buff to buff to pale red
20% sh - red to lavender
20% dolo - gry - AA
Tr gypsum

5350-5410 70% sltstn - red to red-brn
30% sh - red, lavender, tr gry-grn
Tr anhy - wh, sucrosic

Note: Following sample description by W. H. Dunlap

5410-5430 90% sltstn-ss - red brn, silty, v.f.gr, tight, sl dolo
10% sh - AA
5430 - more v.f-f.gr ss, tight, sl dolo, more brn

5430-5460 100% sltstn - v.f.gr silty ss - lt-m.gry w/grn tint, silic in part
Tr dolo - lt.gry, crypto-f.microxln, sdy, silty in part
5450 - becoming pred lt.gry, sl S&P, f-v.f.gr, tight, hard, silic, glassy in part & silty in part, dolo in part; some uphole "trash" & redbeds (10%)
5460-70 - incr red sh - slough

5470-5480 10% dolo - lt-m.gry, f.micro-cryptoxln, dse, firm, silty-sdy in part
20% sh - lavender-brick red, blky, smooth-earthy
70% sltstn - lt.gry-gry AA, some v.f.gr ss

5480-5490 10% sh - lavender-red AA & other uphole types
90% ss-sltstn - pred lt-m.gr, v.f.gr, sl dolo, tight, hard-firm, sl grn tint, sl tr(?) intergran poros, no stain or fluor
Tr dolo - AA

5490-5500 20% dolo - lt.gry-tan, m.gry, f.micro-cryptoxln, dse, sdy-silty in part, sl tr intergran poros, no fluor
80% sltstn-ss - AA, pred tight, dolo
Tr sh - AA, various types

Note: 5504' - twisted off - lost 3 cones in hole, fished cones out. Last sample about 10%+ uphole types, too much slough in hole. Had 18 units total gas 5501-04 on gas detector before twist off

25 February to 4 April 1977 - Hole sidetracked 4 times. Start samples @ 5410'

5410-5430 Corrected - SLM 5480 - Board 5411 - corrected 18', will check next trip
90% sltstn-ss - brn-red, f-sl.gr, tight, sl dolo-silic, firm-hard, arg in part, anhy in part, no shows
10% sh - red-red brn, blky, firm, silty-sdy, occ piece lavender, blky, soft, earthy, crumbly
Tr anhy - wh, xln; SP blk lignite mud additive

5430-5440 100% sltstn-ss - AA, incr tan-gry.brn, tight, f.gr-silt, dolo-silic, hard-firm, grades to silty dolo
Tr dolo - gry.brn-lt.gry, f.microxln, silty-sdy in part, no shows
Tr sh - red-red brn AA, SP brick red earthy
SP anhy - AA
SP blk lignite mud additive AA

5440-5450 70% ss-sltstn - AA, more anhy-arg
10% anhy - wh-red-gry, xln, arg in part
20% sh - red (rust)-red brn, blky, anhy in part, dolo in part, no shows

5450-5460 70% ss-sltstn - pred red-red brn, some gry, f.gr S&P, tight, dolo, no fluor
10% dolo - gry-tan, f.microxln-cryptoxln, dse, sdy-silty in part
20% sh - AA
Tr anhy - AA

5460-5470 100% sltstn - AA, incr gry.brn, tight, sl dolo, occ anhy filled fracs, arg in part
SP anhy, dolo & sh - AA

5470-5490 100% dolo - tan, cryptoxln-gry.brn-brn f.micro-cryptoxln, silic in part, sdy-silty in part, dse, some lt.gry-wh chert incl, tr anhy incl
Tr sltstn - brn, dolo - AA
SP sh - brick red earthy, lavender - slough?
Some dolo - tan-brn mottled

5490-5500 80% sltstn - gry, tight, silic-dolo, hard firm
20% dolo - AA
Some blk lignite mud additive

5500-5510 20% sltstn - AA
80% dolo - AA

5510-5520 20% sh - red-red brn, blky, smooth-silty-earthy, sl dolo in part, some lavender AA
10% dolo - AA
70% sltstn (20% red) & gry S&P, f-v.f.gr, w.srtd, w.cmtd, tight, dolo-silic, tr gry f.gr, tight, firm w.cmtd dolo, silty in part; no fluor; some crse ang clear qtz gr.

5520-5530 30% dolo - brn-gry, f.micro-cryptoxln, dse, sdy in part
70% sltstn - gry, some S&P, v.tight w.cmtd, firm-hard, silic-dolo, no fluor or stain
Tr red beds AA

5530-5540 20% dolo - AA, more sdy, more calc - dolo ls
80% sltstn - AA, more arg, sl darker gry
SP redbeds slough carried AA

5540-5550 40% dolo-dolo ls - gry-tan-buff, f.micro-cryptoxln-chalky, dse, silty in part
60% sltstn - AA, more calc, no fluor or stain

5550-5560 90% ls - buff-tan-lt.brn-lt.gry, f.micro-cryptoxln, dse, sl sdy-silty in part, chalky in part; tr filled fracs AA, dolo in part
10% sltstn - AA

5560-5570 30% ls - AA, some v.silty-v.f.sdy grades to silty ls
70% sltstn - gry, tight, w.cmtd, w.srtd, sdy in part, calc-silic, grades in part to silty ls; v.sl min(?) fluor

Note: Most samples carry tr blk lignite(?) mud additive & SP-tr red sh & sltstn

5570-5580 10% ls - AA
20% sltstn - AA
70% dolo - m-dk.gry, arg, silty, dse, grades to sltstn, some filled fracs

5580-5590 10% dolo - gry - AA, more calc
10% sltstn - AA, more calc
80% ls - buff-gry.brn, chalky-f.micro-cryptoxln, dse, some buff w/dk gry specks, some fossils(?)

5590-5600 60% ls - AA
40% dolo - dk-m.gry, v.arg silty, dse, some finely dissem pyrite
Tr red & lavender sh - uphole slough

5600-5610
20% ls - AA
20% sltstn - gry, tight, arg, dolo
60% dolo - AA, silty in part
1 calcite xl cluster & tr hairline filled frac
Much blk lignite mud additive

5610-5620
50% ls - buff-tan-lt.gry mottled, f.microxln-chalky, dse
30% dolo - AA, arg
20% sltstn - AA

5620-5630
70% sltstn-v.f.gr ss - lt-m.gry, v.f-silt gr, ang, w.cmtd, tight, calc-dolo-silic, firm-hard, tr pyrite
10% ls - AA
20% dolo - pred gry, silty, calc
Tr sh-sltstn - red-red brn-lavender (slough)
SP wh sparry calcite & filled fracs

5630-5640
20% ls - AA
40% dolo-ls - gry-dk.gry-gry.brn, arg, silty, dse
40% sltstn - AA

5640-5650
20% sh - red-lavender-red sltstn (redbeds) slough
20% ls - AA, grades to dolo ls
40% dolo ls - AA
20% sltstn - AA
Some calcite filled fracs; occ piece crse ang qtz (from redbeds uphole)

5650-5670
100% ls - buff-gry-gry.brn mottled, chalky-cryptoxln, dse, pred buff w/dark gry-blk v.f. specks, some fragmental, some v.dull(?) min fluor, v.sl.?? cut (from diesel in chalky ls)
Tr dolo ls, sltstn, redbeds AA
5710 - sl incr redbeds

5670-5680
90% ls-dolo ls - becoming more gry, silty, arg in part, tr fragmental, foss
10% dolo - gry, silty-arg, dse grades to dolo ls AA

5680-5690
100% dolo ls-ls - pred gry-gry.brn, v.f.microxln, silty in part, dse, sl arg in part, pyritic in part, tr healed fracs (calcite)
Tr sltstn - tight, gry, calc-dolo
Tr redbeds slough

5690-5700
90% ls - buff-lt.gry-gry.brn, f.microxln-chalky, dse, arg in part, silty in part, some w/gry arg incl
10% sltstn - AA, grades to dolo ls
Tr red & lavender sh - AA

5700-5710
100% ls - more buff w/dk.gry specks, chalky-f.microxln-sl.gran, dolo in part
SP sh - gry, blky, v.f.velvety, dolo, probably ptgs in ls

5710-5720
20% sh - m-dk.gry, blky, smooth-v.f.velvety, calc, grades to arg ls
80% ls - incr gry arg dse, grades to calc sh

Note: SLM 5724'-Board 5776' - Strapped out and in - .86' difference. Corrected 52' uphole. Second sample description from 5460' (last trip) corrected uphole 50' (Previous strap @ 5480' corrected 18' to 5462' because of board error - actually was 5411' (69' off) but not verified until this trip

5720-5740
30% ls - AA, some w/grn glauc incl
10% sh - gry - AA
70% dolo - calc - gry-gry.brn, f.microxln-arg-silty, dse
Tr red-lavender sh AA
Tr sltstn - gry, tight, calc, arg in part, prob as thin ptgs & stringers

5740-5750
40% ls - AA, some gry arg-f.microxln dse, dolo & silty in part, SP w/hairline calcite filled fracs, no shows
50% dolo & calc dolo - AA, no shows
10% red-lavender sh - AA, slough
Tr sltstn - AA

5750-5770
10% ls - AA, occ calcite filled fracs
20% sltstn - gry, tight, grades to silty dolo
70% dolo - m.gry, f.microxln, dse, silty in part, arg
SP redbeds slough

5770-5780
10% ls - AA, occ grn glauc incl in ls
90% dolo - AA, calc, arg, much silty, dse, grnish cast
Tr redbeds & sltstn - AA
Much blk lignite mud additive
5780 - pred m.gry w/grn tint, blky, arg-silty, dse dolo AA

5780-5800
20% sltstn - gry (grn tint), tight, firm, dolo-sl.calc, grades to v.silty dolo, arg
80% dolo - AA
Tr ls - AA
SP redbed slough

5800-5820
30% sltstn - AA
70% dolo - gry, dse, calc, silty, arg, grades to sltstn - AA
SP ls - AA

5820-5840
70% dolo - gry-grnish gry, blky, silty, arg in part, calc in part
30% sltstn - AA
Tr ls & redbeds AA
Note: Borderline arg silty dolo - dolo sltstn - silty dolo sh, gry, firm blocky, more calc at times

5840-5850
60% sltstn - AA, more calc
40% dolo-dolo ls - AA, arg, silty
Tr sh - gry, calc-dolo-silty, blky
Tr redbeds carried

5850-5860
30% ls - buff-gry, mottled, chalky-cryptoxln, dse
30% dolo - AA
40% sltstn - gry-grnish, dolo, tight, hard, some sltstn-dolo appears tuffaceous?

5860-5870
70% sltstn - AA, arg-v.arg, tight
30% dolo-calc dolo - v.silty - AA
Tr ls - AA

5870-5890
20% sh - gry, v.silty, dolo, blky, grades to sltstn & dolo
30% dolo - AA
30% sltstn - AA, calc-dolo
20% ls - buff-gry - AA

5890-5900
80% sltstn - m.gry w/grn tint in part, tight, arg, dolo, incr calc in part
20% sh - m.gry, blky smooth-silty, dolo, grades to sltstn
Tr dolo - AA
Tr ls - buff chalky, gry.brn dse, f.microxln
SP redbeds slough, much lignite in sample

5900-5910
10% ls - buff-lt.gry-gry.brn, chalky-f.microxln, dse
90% sltstn - m.gry w/grnish tint, tight, arg, calc, grades to silty sh, no fluor
Tr gry sh & dolo - AA

5910-5920
10% sh - gry - AA
90% sltstn - AA, more arg
Tr ls - AA

5920-5930
80% sh - gry, blky-flky-splintery, smooth-v.f.velvety, dolo, silty in part, grnish tint
10% sltstn - AA
10% redbeds slough - AA

5930-5940
100% sh - gry-grnish gry - AA
Tr sltstn, redbeds

5940-5950
40% ls - buff-gry mottled, chalky-f.microxln, dse, arg, some gry v.arg, dse
60% sh - AA, becoming more arg, silty & calc

5950-5960
60% ls - AA, grades to calc sh, no fluor
40% sh - AA w/ls fragments & incl

5960-5970
30% sh - AA, more silty
30% sltstn - gry, tight, arg, calc, grades to sh & ls
40% ls - AA

5970-5980
80% ls - pred gry, arg-v.arg, v.dse, no fluor
20% sh - gry - AA, more calc
Tr sltstn & redbeds slough

5980-6000
60% sh - gry - AA, more silty
40% ls - AA
5990-6000 - ls less arg, more buff-tan, sparry-f.micro-cryptoxln, dse

6000-6010
20% ls - AA
30% sh - gry, more silty
50% sltstn - gry, tight, calc-arg in part, no fluor or stain
Tr redbeds & blk lignite mud additive in most samples

6010-6020	20% ls - AA 30% sh - gry, v.silty, blky, v.f.velvety-smooth 50% sltstn - AA
6020-6030	30% ls - AA, gry, silty, arg, no fluor or show 10% sh - AA 60% sltstn - AA
6030-6040	40% ls - AA, v.silty-v.f.sdy in part Tr sh - AA, gry 60% sltstn - AA, more calc
6040-6050	80% ls - pred silty, grades to calc sltstn 20% sltstn - AA Tr gry sh - AA
6050-6060	80% sh - gry w/grn tint, olive, brn, lavender, blky-flky, smooth-v.f.velvety, calc-non calc (brn), big incr lavender (30%) Note: I do not think lavender is part of uphole slough we have been getting 20% sltstn - AA
6060-6080	100% sh - pred grn.gry, blky-splintery, smooth, silty in part, sl.calc-non calc, 10% lavender AA SP redbeds, ls & tr sltstn - AA
6080-6090	20% sltstn - gry-grn.gry, tight, arg, calc-dolo 70% sh - AA, sl incr lavender, more silty 10% ls - AA
6090-6100	80% ls - gry-gry.brn-buff-tan mottled, dse, firm, arg in part, chalky-f.micro-cryptoxln, silty in part, occ filled (calcite) fracs, no fluor or stain 20% sh - AA Tr sltstn - AA
6100-6110	No sample
6110-6130	90% sh - grnish gry, blky, smooth-v.f.velvety, sl.dolo-calc Tr ls - AA 10% sh - lavender, blky, smooth-earthy, calc Tr sh - red brick, blky smooth - slough
6130-6140	30% sh - lavender, flky-blky, non-sl.calc, smooth, sl earthy 70% sh - grn.gry, flky-splintery-blky, smooth-v.f.velvety, silty in part, calc-dolo in part
6140-6160	20% sh - lavender AA 80% sh - grn.gry - AA, no fluor or shows
6160-6170	20% sltstn - gry, tight, dolo-arg, no fluor 20% sh - lavender - AA 60% sh - grn.gry - AA, more silty SP ls AA, gry-tan, chalky-f.microxln, dse

6170-6180
50% sltstn - gry, tight, arg, more calc
20% ls - gry.brn, dse, silty, grades to sltstn
20% sh - pred grn.gry-gry, silty, blky
10% sh - lavender AA, much rdd (slough)
Note: After acid the sltstn appears more sh - v.f.gran appearance may be due to carbonate xls in sh

6180-6190
50% sltstn - AA
30% sh - gry-grn.gry - AA
20% ls - pred arg, silty - AA, dse
Tr sh - lavender - AA

6190-6200
No Sample - Start to lag samples

6200-6210
30% sltstn - AA, more arg
20% ls - gry, v.arg, dse
50% sh - pred gry-m.dk.gry, blky-flky, silty in part, sl.calc-calc w/tr pyrite; tr lavender sh - AA

6210-6230
20% sltstn - AA
80% sh - gry - AA, incr splintery, pyritic in part; tr lavender AA
Tr ls - AA
6220 - incr m.dk.gry, blky, more calc, silty in part

6230-6240
20% sltstn - AA, arg, tight, calc
70% sh - gry-m.dk.gry - AA
10% ls - gry, v.arg, silty, dse, grades to sh & sltstn

6240-6250
20% sltstn - AA
40% ls - gry-gry.brn, arg-silty-f.microxln, dse
40% sh - gry - AA, carry SP-tr lavender

6250-6260
60% ls - gry brn, dse, silty-v.silty, grades to sltstn
40% sltstn - gry.brn-dk.gry, calc-v.calc, arg in part
Tr gry sh & SP lavender - no fluor or show

6260-6270
50% ls - AA
50% sltstn - gry-gry.brn, calc, tight, firm
SP redbeds carried, pred lavender
Tr sh - gry, calc, blky, firm-v.f.velvety

6270-6290
60% ls - AA, pred buff-gry-gry.brn, f.microxln-chalky; gry-gry.brn f.micro-cryptoxln, arg-v.arg, silty in part, some wh sparry calcite, no fluor
30% sltstn - AA
10% sh - gry, silty, tight, calc

6290-6300
20% sh - lavender, blky-smooth, sl calc, some rdd pieces (slough?)
30% sltstn - AA
20% sh - gry - AA
30% ls - AA
Sample poor - mixed

6300-6310
80% sh - m.dk.gry-gry, blky-splintery, calc-v.calc, grades to ls, some calcite & ls incl, no fluor
10% ls - AA
10% sltstn - AA
Tr lavender sh - AA

6310-6320	60% sh - AA, silty in part, some ls incl 20% ls - AA 20% lavender sh - AA Tr sltstn - AA
6320-6330	30% ls - pred brn-tan, f.microxln; tr lt.brn cryptoxln, dse, arg in part, no fluor 70% sh - AA, sl-v.calc Tr sltstn & sh - lavender, rdd - AA
6330-6340	10% ls - AA, occ wh xln calcite frac fill? 90% sh - pred grnish gry, blky-splintery, smooth-f.velvety, sl-v.calc, silty in part; SP lavender AA
6340-6350	70% ls - AA, some sl v.f.gran (sl dolo?) 30% sh - AA, SP lavender sh AA
6350-6360	50% ls - AA, more arg 40% sh - gry - AA, grades to ls 10% sh - lavender - slough
6360-6370	80% ls - pred buff chalky - lt.gry-gry mottled, tan f.microxln, gry-wh cryptoxln, dse, silty in part, arg in part 20% sh - gry, calc - AA; SP sh - red-brn, red blky, lavender slough carried in most samples
6370-6380	90% ls - AA 10% sh - gry - AA
6380-6390	40% ls - AA 60% sh - gry w/grn tint AA, silty in part
6390-6400	70% ls - AA, some tan cryptoxln dse 40% sh - gry - AA
6400-6410	40% ls - AA, more silty-arg, dse 60% sh - grnish gry, blky firm, smooth-v.f.velvety, calc-dolo Tr lavender sh - carried, pred rdd slough
6410-6420	60% sh - gry-grn.gry - AA, tr pyrite 20% ls - AA 20% sh - lavender - AA
6420-6430	70% sh - gry - AA, grn tint, some splintery 20% ls - brn-tan-buff, f.microxln, dse 10% lavender sh - slough
6430-6450	30% ls - AA, tr wh calcite frac fill 70% sh - gry - AA, silty in part, calc-sl.calc; SP lavender sh 6440 - sh more calc, silty in part, grades to silty calc sh
6450-6460	40% ls - grn.gry, arg, silty in part 60% sh - grn.gry, firm, silty, calc - AA
6460-6470	80% ls - buff chalky, gry-brn mottled f.micro-cryptoxln w/dk.gry-blk specks & nodules, SP foss, no fluor 20% sh - gry - AA

6470-6480 30% ls - AA, becoming more arg
70% sh - gry-grn.gry - AA, silty, v.calc, firm in part

6480-6500 Tr ls - AA
100% sh - gry-grn.gry - AA, calc; tr lavender AA, incr

6500-6510 70% ls - pred gry-brn mottled, f.micro-cryptoxln, dse, arg in part, some dk.gry arg, no fluor or stain
30% sh - AA; SP lavender sh

6510-6520 90% sh - becoming more m.dk.gry, v.sl.grn tint w/SP hariline calcite frac fill, sl silty in part, sl tr carb incl (blk)
10% ls - AA

6520-6540 90% ls - buff-tan, chalky; gry-brn xln - AA, some fragmental, occ foss, no fluor or stain
10% sh - AA

6540-6550 20% sltstn - gry, v.f. silt, arg, calc, grades to silty sh
20% sh - gry - AA
60% ls - AA, silty in part, tr pyrite, no shows

6550-6560 60% sltstn - AA
20% sh - gry, silty, calc, blky-smooth-velvety, grades to sltstn & ls
20% ls - AA, no fluor

6560-6570 40% sltstn - AA - Sh-sltstn gradational
60% sh - gry - AA
Tr ls - AA

Note: Samples carry SP redbed slough

6570-6580 10% sltstn - AA
50% ls - buff-tan-gry, mottled in part, chalky-cryptoxln, dse, silty in part, tr f.gran pyrite, frag in part
40% sh - gry - AA, grades to arg ls

6580-6590 30% ls - AA, more silty, dse, no fluor
20% sh - gry - AA
50% sltstn - gry-dk.gry, tight, calc, arg, grades in part to silty ls; tr f.gran pyrite

6590-6600 40% ls - buff-gry, silty-v.silty, dse, v.f.sdy in part
60% sltstn - lt.gry-gry & v.f.gr sdy, calc, grades to v.silty ls, some ls fragments in sltstn

6600-6610 30% ls - AA, tr wh-buff calcite frac edges
70% sltstn - AA
Tr sh - AA

6610-6620 10% ls - buff-gry, silty, dse, occ piece wh sparry
30% sltstn - gry w/sl.grn tint, finer silt, arg, tight, calc
60% sh - gry-grn.gry tint, blky smooth-v.f.velvety, silty in part, calc, some ls fracs in sh & sltstn

6620-6630	20% ls - AA, occ foss 40% sltstn - AA, grades to silty sh 40% sh - AA
6630-6640	30% ls - pred buff-gry, silty, dse, no fluor 70% sltstn & v.f.gr ss - gry, firm, tight, silic-calc SP sh - AA, occ piece redbed slough
6640-6650	10% ls - AA, more silty, grades to sltstn 70% sltstn - finer grained 20% sh - gry w/grn tint
6650-6660	80% sltstn - AA, some calcite filled hairline fracs 10% ls - AA 10% sh - gry - AA, tr lavender sh carried
6660-6690	70% sltstn - AA, some m.dk.gry, hard, silic, calc 30% ls - buff-tan-lt.gry, silty, dse Tr sh - gry - AA, decr lavender sh (SP) 6680 - more calc, pred m.dk.gry, firm-hard, silic, calc, tight sltstn
6690-6720	90% sltstn - m.dk.gry-gry.brn, calc, tight, some filled hairline fracs 10% ls - AA SP sh - AA 6700 - pred gry.brn-brn.gry, v.tight, w.cmtd hard, silic, calc dolo-sltstn, tr f.gran pyrite
6720-6730	30% ls - some gry cryptoxln dse, pred tan-lt.gry silty AA, no fluor or stain 70% sltstn - AA, most of dk.gry silic w/fine pyrite
6730-6740	No sample
6740-6750	40% ls - AA 60% sltstn - AA
6750-6760	10% ls - AA 80% sltstn-ss - gry-tan-gry.brn, v.f.gr-silt, tight, calc, firm, silic, hard, no fluor 10% sh - gry-grn blky smooth, calc-sl.calc
6760-6780	20% ls - pred buff-lt.gry-tan, dse, silty-v.f.sdy 80% sltstn-ss - AA, more calc in part, no fluor SP sh - gry - AA, occ piece red-lavender sh slough Sltstn more lt.gry-buff in color, some hairline calcite filled fracs 6780 - incr lavender sh slough
6780-6790	30% ls - AA, pred silty-sdy 70% sltstn - AA, pred silic, hard, dolo-calc SP sh - gry - AA
6790-6800	30% ls - AA 70% sltstn - AA, incr dk.gry arg Tr sh - gry, hard, blky, silty

6800-6810 40% ls - pred buff-gry, dse, chalky-xln, silty-sdy-v.silty in part
60% sltstn - AA
Tr sh - AA, gry, silic, calc, hard, grades to sltstn

6810-6820 10% ls - AA
90% sltstn-v.f.gr ss - dk.gry-gry.brn, v.tight, v.calc-dolo, arg in part, no fluor
Sl incr (SP) lavender sh - rdd slough AA

6820-6830 20% ls - AA, no fluor
80% sltstn - AA, some exhibits v.thin lam bedding (like varves)
SP sh - gry - AA, rdd; carry SP redbeds & lavender sh

6830-6850 40% ls - AA
60% sltstn-v.f.gr ss - AA

Note: Section appears to be interbedded buff-lt.gry-gry silty limestones & dk.gry gry.brn, v.calc to dolomitic hard-firm tight siltstones and gradations of the above. The siltstone is silic and arg in part, possibly sl carbonaceous. Samples 6750 to 6850' have a white glazed (porcellain like) precipitate after acid - outer edges w/tr needle like xls of unknown mineral

6850-6860 30% ls - pred v.silty - AA
70% sltstn - AA, silic-calc-dolo sltstn-silty dolo
Tr sh - AA, gry; carry SP redbeds & lavender sh

6860-6880 20% ls - AA
80% sltstn - pred dk.gry-dk.gry brn, calc-dolo, tight, occ hairline calcite (wh) filled fracture, hard, silic in part, no fluor or stain
Samples carry tr blk lignite mud additive

6880-6890 30% ls - tan-lt.gry-gry, chalky-f.xln, silty-v.silty (dirty ls)
60% sltstn - AA, arg in part, tight, silic-calc to dolo in part
10% sh - lavender, blky smooth, rdd slough?

6890-6900 30% sh - lavender - AA
10% ls - AA
60% sltstn - dk.gry-dk.gry.brn, arg, tight - AA

6900-6920 Tr lavender sh - AA
40% ls - AA
60% sltstn - v.silty sh - AA
Tr sh - gry, firm-hard, calc, silty, blky, silic in part, grades to arg sltstn
6910-20 - 10% of sample lavender sh - AA

6920-6940 Tr sh - brick red, blky, earthy-smooth, non calc
30% ls - AA, some wh calcite filled hairline fracs
70% sltstn - AA, dolo in part - silty dolo
SP lavender sh - AA, slough

6940-6950 10% sh - gry-lavender, after trip sample
40% ls - AA, silty in part, dse; gry.brn crypto-v.f.microxln dse
50% sltstn - pred dk.gry brn, tight. w.cmtd, arg, calc-dolo, grades to silty arg dolo in part

6950-6960	20% sh - v.f gry.brn-dk.gry, blky, v.calc, grades to ls Tr sltstn - AA 80% ls - AA, no fluor
6960-6980	10% sh - pred gry-gry.brn - AA 90% ls - pred arg, dse AA, no fluor or stain Tr sltstn - AA
6980-7000	10% sh - dk.gry, blky velvety, calc-v.calc, grades to dk.gry arg, dse silty ls 90% ls - gry-brn, f.microxln, dse; dk.gry-gry.brn arg, silty, dse, no fluor or stain
7000-7010	100% ls - AA, pred lt.gry-tan-lt.brn, f.microxln-sl.chalky; gry.brn dse, tr wh calcite & filled hairline fracs, no fluor or stain
7010-7020	10% sh - dk.gry-blk, soft, friable, flky-blky, velvety, calc-v.calc, grades to ls 90% ls - AA
7020-7030	100% ls - AA, some dk.gry, arg, sl.silic, dse AA, no shows Tr sh - AA <u>Most samples carry tr blk lignite mud additive</u>
7030-7040	90% ls - AA, incr dk.gry-gry.brn arg, dse, no fluor 10% sh - dk.gry-blk, blky, velvety, calc, carb(?)
7040-7050	80% ls - AA 20% sh - dk.gry-blk, carb(?) - AA
7050-7080	100% ls - AA, some w/blk sh lams & ptgs, no fluor Tr sh - dk.gry-blk - AA 7060 - about 1/3 tan chalky - gry.brn cryptoxln dse 7070 - about 1/2 " " " " "
7080-7100	70% ls - pred dk.gry-blk, silty, dse, arg-v.arg, carb, grades to calc sh, some tan-gry.brn - AA 30% sh - dk.gry-blk, blky, velvety, calc-v.calc 5090 - more tan-brn chalky-xln AA Some hairline calcite filled fracs, no fluor
7100-7120	70% sh - blk - AA 30% ls - AA, tr wh calcite frac fill 7110 - ls pred blk, arg, carb, silty, no fluor
7120-7130	60% sh - blk - AA, calc-v.calc 40% ls - pred brn-blk, carb, arg, silty in part, dse
7130-7140	80% ls - pred gry.brn mottled, f.microxln-sl.chalky 20% sh - blk - AA, tr wh-pink calcite frac fill & edges, no fluor
7140-7160	40% ls - AA 60% sh - blk - AA 7140 - ls becoming v.arg, silty, carb, dse
7160-7170	70% ls - incr lt.gry.brn dse 30% sh - AA, more calc

7170-7180 50% ls - lt.gry.brn-gry.brn, chalky-xln, dse, arg in part; dk.gry-blk, firm-hard, arg, silty-carb, dse
50% sh - dk.gry-blk, firm, blky-velvety, calc, grades to shly ls, no fluor

7180-7200 30% ls - AA
70% sh - blk-dk.gry.brn - AA

Note: Interbedded dark gray-black calcareous shales and shaley limestones; appear to be carbonaceous, silty (fore reef?)

7200-7210 50% ls - AA
50% sh - dk.gry-blk AA, calc-v.calc

7210-7220 40% ls - AA, gry-gry.brn-lt.gry, some calcite filled fracs
60% sh - AA

7220-7230 70% ls - AA, pred v.dk.gry-blk, silty, v.arg, carb, dse
30% sh - blk - AA, no fluor

7230-7250 40% ls - AA, incr gry-brn, chalky-f.microxln, arg, dse, no fluor
60% sh - blk - AA, becoming more silty
7240 - some m.dk.gry, flky smooth, some gry.grn flky, s.waxy, sl. calc

7250-7260 60% sltstn - gry-m.gry, mottled, tight, calc, grades to silty ls, thin bedded in part, no fluor
30% ls - AA
10% sh - AA

7260-7270 40% sltstn - AA, grades to dk.gry-blk, arg, carb, tight, calc, no fluor or stain
10% ls - AA
50% sh - dk.gry-blk, blky-flky, ve.vety-grainy, silty in part, calc, firm

7270-7280 30% sltstn - AA, some lt.brn-lt.gry, v.calc
10% ls - AA
60% sh - dk.gry-blk AA

7280-7290 70% sltstn - AA, grades in part to silty ls
20% ls - lt.brn-gry, dse, v.silty, grades to sltstn
10% sh - AA, more silty, calc, no fluor

7290-7300 90% sltstn - pred lt.gry-lt.brn.gry-tan, tight, v.calc-calc, silic, firm-hard, no fluor
10% ls - pred tan-lt.gry, silty, dse, grades to sltstn
Tr sh - AA
Some wh calcite frac fill & healed calcite filled fracs

7300-7310 50% sltstn - AA
10% sh - apple grn, blky, smooth-s.waxy, calc, firm, glauc??
20% sh - dk.gry-blk, silty - AA
20% ls - lt.gry-gry.brn, dse, silty

7310-7320 30% sltstn - AA, more calc, grades to silty ls
10% sh - dk.gry-blk - AA, occ piece grn
60% ls - lt.gry.brn-buff mottled; gry.brn cryptoxln, dse, some hairline calcite healed fracs, no fluor

7320-7350	100% ls - buff-tan gry, f.microxln, sl chalky, silty in part, some dk gry.brn ptgs & incl, arg in part, dse, no fluor or stain, some wh-tan calcite frac fill Tr sltstn & sh - AA 7330 - incr gry-gry.brn arg dse f.micro-cryptoxln dse 7340 - decr arg, more cryptoxln, v.dse, SP w/healed fracs & frac fill AA
7350-7380	100% ls - buff-lt.gry chalky, gry-tan-gry.brn f.microxln-cryptoxln, arg-silty in part, dse, no fluor or stain; some buff-wh frac fill Tr sh - gry, blky smooth 7360 - incr gry.brn, arg, cryptoxln, dse 7370 - some gry-lt.brn.gry, v.calc sltstn (tr), v.silty ls, probably as thin ptgs and beds, pred silty-arg ls
7380-7390	60% sh - m.gry, flky-blky, smooth-v.f.velvety, dolo w/occ buff ls incl 10% sltstn - dk.gry, tight, calc 30% ls - AA
7390-7400	20% sh - gry- AA 80% ls - buff-gry-brn mottled, crypto-f.microxln, dse, tr silty, some wh-buff calcite frac fill & healed fracs SP sltstn
7400-7410	10% sltstn - gry-gry.brn, tight, calc, pyritic, silic in part 90% ls - buff-lt.gry, chalky & gry-gry.brn-gry mottled crypto-f.-m. microxln, dse w/some v.f pyrite grains disseminated, no fluor or stain, some filled fracs
7410-7430	100% ls - AA, incr buff-lt.gry-tan, some lt.gry-brn translucent opaque chert (calc) as incl in ls, probably as nodules, some wh calcite filled fracs and frac fill Tr sh - gry - AA 7420-30 - pred buff-lt.gry-lt.tan-gry mottled-speckled, crypto-v.f-m.microxln dse, v.poorly developed oolits(?), silty in part, fragmental in part SP ss - brick red, f.gr, tight, arg in part
7430-7440	20% sltstn - gry-brn, tight, w.cmtd, firm, calc-dolo, grades to silty ls 50% ls - pred gry-brn, silty, dse, becoming dolo 20% dolo - gry, dse, silty, hard 10% redbeds - red sh, sltstn, lavender sh - after trip "trash"
7440-7450	90% sltstn - gry, tight, w.cmtd, dolo-sl.calc, some brn orange coloration, silic, hard in part 10% ls - AA Tr dolo - silty - AA
7450-7460	50% sltstn-v.f.gr ss - AA, some red brn spots & incl, some wh chert incl 40% dolo - pred gry-gry.tan, dse, cryptoxln, silty in part, silic, hard in part, thin bedded w/sltstn 10% ls - AA, pred tan-gry chalky

7460-7470	80% sltstn - gry, tight-v.f.gr tight calc ss, w.cmtd, silic in part, sl S&P, no fluor or stain, tr calcite filled fracs 10% ls - gry-brn cryptoxln dse, silty-sdy 10% dolo - AA, pred silty-f.sdy
7470-7480	70% sltstn-ss AA, some wh transl chert incl, tight, pred calc, silic in part, tr frac fill 30% ls - tan-lt.gry, pred silty-sdy Note: Some of frac fill (calcite) has tan-brn coloration, some free calcite frac fill
7480-7500	80% sltstn - m-lt.gry, w.cmtd, hard, silic, calc, tight 20% ls - AA, no fluor Some wh xln calcite - sparry in part, frac fill
7500-7520	100% ls - pred buff-lt.brn-gry-gry.brn mottled crypto-f.microxln, silty in part, sl chalky in part, some wh xln calcite frac fill, some reddish brn ls incl in ls Tr sltstn - AA Samples carry SP redbed slough 7510 - less silty-sdy, incr chalky & wh calcite (free) frac fill(?)
7520-7530	80% ss - gry-gry.brn, tight, v.f-f.gr, ang, w.cmtd, w.srtd, firm-hard, silic, calc, grades in part to sdy-silty ls, some calcite healed fracs 20% ls - tan-gry, v.silty-f.sdy, some hairline calcite healed fracs, no fluor or stain
7530-7540	70% ls - AA, some tan-gry f.microxln, dse, occ pellets & poorly developed oolites(?) 30% sltstn-ss - AA, SP red brn arg, calc-dolo, tight
7540-7550	50% ls - AA, no fluor or stain 50% sltstn - pred gry, tight, some v.silic hard, some red-brn calc sltstn Sample poor - some mixing
7550-7560	100% sltstn-v.f.gr ss - red brn, tight, silic in part, arg in part, calc-dolo, no fluor; some gry - AA Tr sh - lavender, blky-smooth - after trip "trash" SP ls - AA
7560-7570	90% dolo - lt.gry-gry.tan, cryptoxln, v.dse, silic & silty in part, no fluor or stain 10% sltstn - red brn - AA Samples carry SP gry sltstn & redbeds & lavender sh - AA
7570-7580	20% dolo - AA 80% sltstn - red brn-gry mottled, w.cmtd, tight, dolo, calc in part
7580-7590	100% sltstn - pred gry-brn.gry, firm-hard, silic, tight, calc-dolo, w.cmtd, no fluor; some brn-red brn AA, some red brn incl in sltstn Tr ls & dolo - AA
7590-7600	90% ls - buff-tan-lt.gry, f.micro-cryptoxln, dse, some blk asphaltic stain, no fluor-v.sl.dull weak cut (?) 10% sltstn - AA, gry-red brn, some lavender sh slough

7600-7610 90% sltstn - v.f.gr ss - gry, tight, firm-hard, silic, calc, w.cmtd, no fluor or stain
10% ls - lt.gry silty, tan-gry.brn cryptoxln, dse, buff chalky, some calcite frac fill AA, no stain

7610-7620 40% ls - buff-gry, silty, tight & AA
60% sltstn-ss - AA, tr calcite healed fracture

7620-7630 80% ls - pred gry-brn, f.microxln-dse, firm, arg in part
20% sltstn - AA
SP red beds & lavender sh - AA, slough

7630-7640 20% ls - AA, pred buff-tan, f.micro-cryptoxln, dse, no shows
80% sh - blue gry, blky-flky, subfissile, smooth-v.sl.velvety, dolo, firm-v.firm

7640-7650 90% ls - tan, buff, gry, gry.brn, crypto-v.f.microxln, dse-v.dse, foss in part, no fluor, some wh calcite frac fill, some tan sparry calcite, silic in part
10% sh - gry - AA
Tr sltstn - AA

Note: Gel flake(?) and other fibers in samples w/blue fluor

7650-7670 100% ls - buff chalky, lt.gry-m.gry.tan mottled f.micro-cryptoxln, dse, silty in part, SP red brn xln dse
Tr sh - gry - AA
Some clear-wh xls & xln calcite frac fill

7670-7680 70% ls - AA, some gry, arg, dse
20% sh - gry, blky-splintery, firm, dolo, smooth-v.f.velvety
10% dolo - gry, dse-arg

7680-7690 80% ls - AA, more arg in part, no fluor
20% sh - gry - AA
SP dolo - AA
Poor sample

7690-7700 100% ls - buff-tan chalky, lt.gry-tan mottled buff f.micro-cryptoxln, dse, firm, some arg ptgs & styolites, tr wh-buff calcite frac fill & edges
SP gry sh AA, occ piece anhy - buff xln

7700-7740 100% ls - pred buff-lt.gry-tan, chalky-f.microxln, some dk.gry-gry.brn f.micro-cryptoxln dse, some wh calcite frac fill (could be crinoidal?) no fluor or stain, one free dk.gry oolite
7710-7720 No sample
7720-7730 - more gry-tan, f.micro-cryptoxln; SP sh - blk, waxy-smooth-blky, non calc w/ls incl

7740-7750 10% sh - gry, blky smooth-v.f.velvety, dolo, some calc
90% ls - AA, no shows

7750-7760 100% sh - gry, blky-splintery-flky, s.fissile-smooth-v.f.velvety, dolo
Tr ls - AA

7760-7770 70% sh - AA, incr calc
30% ls - pred gry-gry.brn, f.micro-cryptoxln, dse, some frac edges lined w/calcite

7770-7780 40% sh - AA
60% ls - AA

7780-7810 100% sh - steel gry, blky, smooth-sl.velvety, firm, some splint, calc-sl.calc, s.fissile-fissile
Tr ls - AA
7790 - pred sl.calc, SP ls AA, some lt.gry, soft, flky-blky (bent?) sh
7800 - sl more calc in part

7810-7830 10% ls - dk-m.gry, arg, dse, firm, grades to calc sh
90% sh - AA, more dk.gry, blky, firm, calc

7813' - Circulate out samples - for trip for new bit and run BHC Sonic-GR and Dipmeter. Circulating samples @ 7813' - pred shale AA, about 20% ls - AA, slough some redbeds

7830-7850 100% sh - pred gry, blky calc - AA
Tr ls - AA

7850-7870 90% sh - m.dk.gry, firm, blky, smooth-sl.f.velvety, calc-v.calc
10% ls - dk.gry.brn, f.microxln, arg, grades to calc sh.
Some gry tan chalky soft arg ls (bit flour?)

7870-7880 90% sh - pred dk.gry (appears blk when dry), blky, some splint, firm, calc-v.calc, occ pyrite, v.f-sl silty in part
10% ls - dk.gry-gry.brn, arg, dse, some gry cryptoxln dse, some wh calcite filled fracs in sh & ls
Most samples carry SP lavender blky sh - uphole slough since 4200'±

7880-7890 30% ls - AA, pred gry.brn, arg-v.arg, grades to calc sh
70% sh - dk.gry AA, sl silty in part, occ calcite healed hairline frac

7890-7910 10% ls - AA
90% sh - AA, some wh calcite frac edges, no fluor or stain
1 piece buff-lt.gry sdy, cherty dolo - uphole

7910-7930 Tr ls - AA
100% dk-m.gry-gry.brn, blky, firm-v.firm, smooth-sl.velvety, calc, sh grades to arg ls, has brnish color under acid, some sparry gry calcite & wh calcite frac fill & filled fracs or ptgs

7930-7950 100% sh - pred dk.gry-gry.brn, blky-splintery, s.fissile-fissile, firm, calc-sl.calc, smooth
Tr ls - AA, no fluor or stain

7950-7960 30% ls - gry-gry.brn, dse, arg-v.arg, grades to calc sh, no fluor or stain or poros
70% sh - gry.brn-dk.gry-blk, blky, f.velvety, silty in part, calc-v.calc, some wh calcite frac fill & hairline filled fracs

7960-7970	10% sh - lavender, blky, smooth, earthy, bentonitic (swells when wet) s.waxy in part (slough) 90% sh - dk.gry-blk - AA Tr ls & wh calcite - AA
7970-7980	10% ls - gry-gry.brn, dse, arg, firm 90% sh - AA Tr red & lavender sh slough
7980-8010	100% sh - dk.gry-blk, blky, velvety, calc, carb(?), flky (mica?) Tr ls, calcite & lavender & red sh - AA 7990-8010 - becoming more blk grainy-flakey, carb sh, may be micaceous, silty in part, some fine gran pyrite in some sh - 10% redbeds slough AA
8010-8020	100% sh - pred blk, firm, grainy-blky, velvety, carb, calc Tr ls - AA, pred wh calcite frac fill and/or ptgs, appears silty SP sh - lavender & red AA, decr
8020-8030	50% sh - blk - AA, more calc 40% ls - gry-brn, f.microxln-arg, dse 10% sh - lavender AA, some crse rdd qtz sd gr w/sh
8030-8040	60% ls - lt.tan, brn, gry.brn, dk.gry mottled, f.microxln-chalky, arg, dse, some calcite frac fill, no fluor 40% sh - dk.gry-blk, v.calc in part AA SP lavender sh - AA, carried
8040-8050	70% ls - AA, some fragmental foss(?) 30% sh - blk - AA Limestone & shale interbedded, some ls w/thin lams of arg material - varves?
8050-8080	60% ls - AA, incr wh calcite frac fill, some sparry 40% sh - dk.gry-blk - AA, silty in part, calc Carry tr lavender sh & red beds, rdd, from uphole (slough)
8080-8100	70% ls - AA, much laminated w/arg ls - calc dk.gry sh, no fluor or stain, sl.silic in part 30% sh - dk.gry-blk
8100-8110	90% ls - buff, tan, gry, gry.brn mottled, f.micro-cryptoxln, dse, arg in part, some f.arg & sh ptgs & lams 10% sh - dk.gry-blk - AA
8110-8120	80% ls - AA 20% sh - gry-blk - AA, fissile, blky
8120-8138	40% ls - AA 60% sh - dk.gry-blk AA, some pyrite incl

Trip for new bit @ 8142' - caught sample before started out - 6' in hole stuck pipe @ 416304170'. Top drill collars at 4150' - Ran Petrolog Free Point Indicator, backed off @ 4140' Ran Dual Laterolog-SP @ TD 8129'. Set 7-5/8" liner from 3563-8142' w/600 sx. Drilled out from under liner w/6½" bit. No oil in mud below liner.

8142-8160	No sample. Sample catcher did not catch. Big change in lithology in this interval
8160-8170	90% ls - buff-lt.gry-tan-gry, f.micro-cryptoxln, mottled in part, chalky in part, dse, some blk, arg, carb. No shows 10% sh - dk.gry-blk, blky, calc, grades to blk arg ls Lot of metal fragments from bit, possibly liner, blk mud additive, plastic pipe lining, some lavender uphole shale from mud system, shoe fragments
8170-8210	100% ls - AA, some dk.gry arg Tr sh - blk-dk.gry - AA 8180 - decr dk.gry arg dse ls, SP sh, some blue-yellow fluor in samples from plastic pipe lining & rust inhibitor 8190 - pred lt.gry-tan-buff, more chalky, some sparry, some has dse anhy appearance but ls 8200 - more gry, f.microxln-arg dse
8210-8220	90% ls - AA becoming silty-v.f.sdy, dse, grades to calc sltstn 10% sltstn - gry-dk.gry, tight, arg, calc-dolo Tr dolo - dk.gry-gry.brn, arg-silty, dse
8220-8240	60% sltstn - gry-gry.tan, sl S&P, tight-v.tight, w.cmtd, firm-f.friable, calc-v.calc, grades to silty ls 40% ls - pred silty, no fluor or stain
8240-8250	90% sltstn - AA, tight, dolo-silic, firm 10% ls - AA
8250-8260	70% ls - buff-gry, chalky-cryptoxln, dse, silty in part, grades to sltstn 30% sltstn - AA, micaceous in part
8260-8270	20% ls - AA, incr silty 80% sltstn - gry-lt.gry, sl S&P, tight, w.cmtd, calc, sl.silic, firm-hard, occ piece of milky transl chert (incl)
8270-8280	10% ls - AA, grades to v.calc sltstn 90% sltstn - AA, some more calc
8280-8290	20% ls - AA, pred silty, dse, firm 80% sltstn - v.f.gr ss - AA
8290-8300	10% dolo - tan-lt.gry, cryptoxln, dse, firm, silty in part 10% ls - buff-gry - AA, becoming dolo ls, grades to calc dolo 80% sltstn - AA, pred v.tight, silic, firm-hard, dolo
8300-8310	70% ls - buff-gry, cryptoxln-arg, dse 20% sltstn-ss - AA 10% sh - red brn, blky, smooth, non-calc Very poor sample - after trip, lot of pipe dope
8310-8320	70% sh - reddish brn, blky smooth-non.calc, some copper colored mica 20% sltstn - reddish brn, arg, tight, anhy in part 10% sltstn - gry - AA

8320-8330	20% sh - red brn - AA 30% dolo - brn-red brn, crypto-f.microxln, dse, silty in part, anhy? in part 50% sltstn - red brn, grades to sh and arg silty ls Most samples carry blk lignite from mud Tr ls - AA
8330-8340	30% sltstn - incr gry, tight, dolo, grades to dolo 70% dolo - incr gry, dse, silty firm Tr sh & ls - AA
8340-8350	60% sltstn - AA, pred gry, tight, dolo, grades to silty dolo 40% dolo - gry, silty dse SP ls & sh - AA
8350-8370	90% sltstn - gry, tight, w.cmtd, dolo-calc, firm 10% dolo - gry, silty, tight, firm, arg Tr ls - gry, silty Carry SP redbeds - slough, some bit flour
8370-8380	70% sltstn - incr (1/3) red, arg, tight 30% sh - red brn, blky-flky, smooth-velvety, silty in part, some copper flky micaceous(?), v.sl dolo-dolo
8380-8390	70% sh - pred red brn - AA 30% sltstn - pred red brn - AA
8390-8400	10% ls - gry-tan, silty, arg, chalky in part, some bit flour, dse 90% sltstn - gry, tight, w.cmtd, sl.arg, calc-dolo, sl silic 10% red Tr dolo & red sh - AA
8400-8420	100% sltstn - gry, tight, dolo, w.cmtd, some calc ptgs & incl, silic in part, arg in part 8410 - sltstn AA, some reddish brn incl & ptgs, some more tan-brn dolo sltstn-silty dolo ptgs, some tan-red brn chalky dolo ls
8420-8430	20% dolo ls - tan-red brn, chalky, dse, silty in part, anhy(?) in part, tr dolo fracture edge 80% sltstn - AA, pred gry
8430-8450	10% dolo-ls - AA 90% sltstn - gry - AA, no fluor or stain 8440-50 - pred gry v.f.sltstn, tight, silic, dolo, firm-hard, SP sltstn red, arg, tight
8450-8460	100% sltstn - 1/3 AA, 2/3 red brn-pink, tight, sl.calc-calc, arg in part, mica in part; some dk.gry-blk gr Tr sh - red brn, blky, rough, sl.dolo, firm
8460-8480	20% sh - red brn, blky, silty, sl.calc-calc, grades to arg sltstn, some as thin ptgs in sltstn 80% sltstn - red brn, tight, w.cmtd, arg, sl.calc-calc, grades to silty sh
8480-8490	100% sltstn - AA, some grades to v.f.gr ang, w.cmtd, calc-silic, firm-friable tight ss w/some blk-dk.gr grs, may be graded ptgs in sltstn, no fluor Tr sh - red brn - AA

8490-8510 90% sh - red brn, blky smooth-v.f.velvety, silty in part, non-sl calc, sl anhy in part
10% sltstn - AA
8500 - sl more silty, pred calc

8510-8520 No sample

8520-8540 50% sltstn - red brn-red (rust), tight, arg, anhy in part, grades to silty sh, no fluor or stain
50% sh - red brn, sl.calc-calc, blky-flky, smooth-silty rough, gradational sltstn-sh thin bedded(?)

8540-8550 30% sltstn - AA, calc
70% sh - AA, less silty & calc

8550-8560 60% sltstn - AA, red brn, calc, arg, anhy in part
40% sh - red brn - AA

8560-8580 40% sltstn - AA, anhy in part
60% sh - red brn - AA
Samples carry some gry-grn.gry uphole types sltstn (slough)

8580-8610 20% sltstn - AA, more arg
80% sh - AA, some sltstn ptgs
8600 - incr clear mica LCM in samples, no lost circulation, hole seeping some

8610-8620 No sample

8620-8630 20% sltstn - AA, red brn-orange, tight, arg, sl calc
80% sh - red brn-brn - AA, less calc

8630-8640 100% sltstn - pred lt-m.gry, tight, w.cmtd, firm, sl dolo-hard silic, v.sl.anhy in part
Tr sh - red brn - AA
SP red brn sltstn AA

8640-8650 50% sltstn - AA, firm texture, grades to v.f.silty sh dolo
40% sh - gry, silty, flky-blky, dolo
10% dolo - gry, silty, arg, dse

8650-8660 30% sltstn - gry - AA
70% sh - gry, silty, dolo - AA
SP redbeds & tr dolo - AA

8660-8670 90% sltstn - v.f.gr ss - gry S&P-tan-red brn mottled-spotty, dolo-silic, arg in part, no fluor or stain
10% dolo-dolo ls - buff-orange spotty-mottled, chalky, silty, may be bit flour in part

8670-8700 100% sltstn-v.f.gr ss - AA, mottled w/red, calc, tight, w.cmtd
Tr dolo-dolo ls - AA
SP red sh slough, some ang clear qtz from mica LCM

Samples very fine - drilling with Diamond bit & Dynadrill

8700-8710 30% sh - pink-brick red, blky-flky-smooth-f.velvety, firm, pink soft fragile
70% sltstn - AA, firm, silic

8710-8720 20% sh - pink-red - AA & brn
80% sltstn-v.f.gr ss - AA

8720-8730 70% sh - pred pink brn-red brn, v.smooth, blky (rdd cuttings), calc-sl.calc, anhy in part
30% sltstn - AA
Lot of mica and ang clear crse qtz in sample from LCM

8730-8800 100% sh - pred brick red-red brn, blky smooth, some gry.brn rough-curled w/smeared appearance, may be burned by high speed (700 RPM) of Dynadrill, calc-sl.calc, anhy
Tr sltstn - gry-red mottled AA
8740 - decr sltstn to SP, sh calc-sl.calc, pred rust red color
8770 - decr sltstn to occ piece
All samples mostly mica off shaker

8800-8900 100% sh - pred red brn-terra cotta, smooth blky, v.soft, fragile in part, v.calc-sl.calc, occ piece sltstn & ls slough

Note: Red sh laminated color variations - curled, smeared appearance from diamond bit and high speed of Dynadrill. Cuttings very soft - fall apart, some gry.brn rough firm burned? sh looks like freshly dug clay. Samples not too good - a lot of mica LCM & clear ang m-crse unconsol qtz from mica LCM
8820-30 - less calc, acid leach indicates calc material in v.f. fragments in sh
8880 - incr shale that has been burned, more firm

8900-9010 100% sh - AA, about 2/3 red brn-gry.brn; 1/3 red, v.soft, fragile smooth, rdd, v.calc sh?; gouged look
8920 - less calc, 20% calc, rest sl.calc, becoming pred rough gouged, smeared appearance, calc in part; rock structure has been altered by high RPM & diamond bit, much mica LCM in samples
8950 - sh baked-altered AA, tr sltstn - red, tight w.cmtd, calc; sh calc-v.calc in part, mica & ang crse clear qtz from LCM
8980 - sh more rough, blky
8990 - 1 piece op wh chert, may be from mica, occ piece clear anhy
9000-9010 - incr mica LCM, occ anhy, tr sltstn - lt.red, tight, calc, w.cmtd

9014 Trip - return to conventional drilling w/J33 bit - lay down Dynadrill assembly

9010-9030 10% sltstn - lt.red-pink, tight, calc, arg in part
90% sh - brick red, blky-flky, smooth-sl.silty, firm, sl.calc, some clear-wh xln anhy incl, some grades to arg sltstn
SP anhy - wh-clear xln as incl in sh - poss as frac fill, occ clear calcite frac fill?

9030-9050 30% sltstn - lt.red-brick red, tight, arg, calc
70% sh - AA, more silty in part; SP anhy - AA

9050-9060 40% sltstn - AA, red, tight, arg, calc
60% sh - AA
Tr anhy - AA

9060-9070 30% sltstn - AA
70% sh - AA, tr anhy - AA

9070-9100	20% sltstn - red - AA 80% sh - red - AA, tr anhy - AA 9080 - incr calc, sparry calcite incl, calc gran clear anhy, much of sh silty
9100-9110	30% sltstn - AA 70% sh - AA Tr anhy & calcite - AA
9110-9120	30% sltstn - AA 60% sh - AA 10% anhy - AA
9120-9130	40% anhy - gry-tan-red-clear, arg in part, dolo, silty 60% sh - red blky-flky, smooth, anhy in part, dolo Tr sltstn - AA
9130-9140	30% anhy - AA 70% sh - AA, some anhy healed fracs
9140-9150	10% anhy - AA 90% sh - pred rust-brick red, smooth-v.f.velvety, blky-flky, dolo-calc, silty
9150-9160	60% anhy - pred "dirty" arg-silty 40% sh - AA
9160-9170	20% anhy - AA 80% sh - red - AA SP dolo - gry, cryptoxln & ls - gry-tan, cryptoxln dse After trip sample
9170-9190	10% anhy - AA 90% sh - pred brick red-red brn, sl lavender tint, anhy-v.anhy in part, calc, firm, blky-smooth-v.f.velvety Tr ls & dolo - AA Note: Anhy as inclusions, fine ptgs & laminations in shale, also anhydritic sh
9190-9200	80% sh - AA, anhy in part Tr anhy - AA 20% sltstn - red, arg, tight, dolo-anhy, grades to silty anhy calc-dolo sh
9210-9240	60% sh - red - AA, silty in part 40% sltstn - red, calc-dolo, tight, anhy in part, arg
9240-9250	80% sh - red - AA 20% sltstn - red - AA
9250-9260	No sample
9260-9280	40% sltstn - red, tight, calc-dolo, anhy, arg, grades to silty sh 60% sh - red - AA Lot of mica from wall cake in samples - after trip sample

9280-9300
20% sltstn - red - AA
80% sh - red - AA, less silty
SP sltstn - gry, hard, tight, silic, dolo
Decrease in mica & crse ang clear qtz

9300-9310
30% sltstn - red brn - AA, grades to silty sh
70% sh - red brn-terra cotta - AA, SP w/wh-clear anhy ptgs or v.thin lams - sh & sltstn dolo

9310-9320
10% anhy - wh-clear, gran-xln, prob as thin lams & ptgs, poss frac fill, calc in part
30% sltstn - AA
60% sh - AA

9320-9350
10% anhy - AA, calc in part
20% sltstn - red brn - AA
70% sh - red brn - AA

9330-9350
40% sltstn - AA
60% sh - AA
Tr anhy - AA
Samples fine from diamond bit

9350-9360
60% sltstn - red brn, tight, w.cmtd, anhy-dolo-calc, arg
40% sh - red brn - AA, more silty
Tr anhy - AA

9360-9390
20% anhy - red-clear, gran-xln, arg-silty in part
20% sltstn-sh - AA
60% sh - red brn-brick red, blky-smooth, silty, anhy, calc-dolo

9390-9400
10% anhy - AA
10% sltstn - AA
80% sh - pred silty - AA

9400-9410
10% anhy - AA
20% sltstn - AA
70% sh - AA

9410-9420
20% dolo - lt.gry-tan, f.micro-cryptoxln, dse, arg in part
10% sh - gry.grn, smooth, flky, dolo, grades to dolo
Tr sltstn & anhy - AA, lot of mica LCM
70% sh - red - AA

9420-9440
20% dolo - AA
10% sh - grn.gry - AA
60% sh - red, blky, smooth-silty, dolo-calc
10% sltstn - red, tight, arg, calc - AA
SP anhy - AA

9440-9450
80% dolo - gry-tan-brn mottled, f.micro-cryptoxln, dse, calc in part, w/some ls incl, tr oolitic, anhy in part, no fluor or stain, tr frac or large vug poros
20% sh - red - AA
Tr sltstn & SP anhy & gry.grn sh - AA
Some wh anhy filled fracs

9450-9470 100% dolo - buff-lt.gry-gry, some tan, mottled, f.micro-cryptoxln, dse, foss in part, some oolites (m.gry), anhy in part, some clear-wh anhy filled fracs, occ styolite, no fluor, some secondary anhy xls along edge
9460-70 - dolo AA, more tan-buff, decr oolites, some free clear anhy xls; SP red beds slough; no fluor, tr edge(?) poros-secondary anhy

9470 Trip Sample 90% dolo - AA, no shows
10% sh - red - AA

Back on bottom after trip - 85" from start
Circulation - Trip gas 250 units, Hot wire C_1 11,250 ppm; C_2 450 ppm; C_3 375 ppm (1.3% methane) Mud foaming & heading - bypassed shaker - overflow nipple - turned through manifold - closed rams. Circulating samples v.poor - shaker bypassed & brief period of use samples - AA with lot of trip trash. Received orders through drilling department to drill 10 more feet.

9490' - Circulate 20" to 100"
100% dolo - AA, becoming silty, still dse, no fluor or stain
Tr red sh & sltstn - AA
60" sl more silty, some dolo w/red brn arg incl

Received word to drill ahead 50' or until evening to come out of hole for test. Called G. Keller - recommended that we test now. Received word to shut down for test @ 9493'. Circulate samples for DST No. 4, 9440-9493'

Circulating samples in 3' interval - 9490-9493'
100% dolo - gry-gry tan, f.microxln, dse, anhy, silty in part, tr? edge (fracture) poros, no fluor or stain, calc in part
Tr sh - redbeds - slough from above
SP ls - gry, f.microxln, dse
Some edges red, arg, as if along thin sh ptgs
Some spotty red arg, SP gry tight dolo sltstn

Evaluation: No show in samples (fluor or stain or cut). Some evidence of fracture and vugular porosity. Samples very fine from diamond bit - difficult to tell about porosity other than it is present. No gas show while drilling, only after trip. Pred methane. Recommend a test, predicted recovery - dry gas. DST #4, see results

9493-9510 90% dolo - buff-tan-lt.gry, f.micro-cryptoxln, dse, f.gran, anhy in part, no fluor or stain, sl silty in part, SP edge? poros
10% sh - red, blky smooth-silty, dolo (slough)
Some fluor but appears associated w/pipe dope contact. SP gry.grn smooth flky-splint (glauc?) sh w/some f.pyrite disseminated

9510-9520 90% dolo - AA
10% redbeds - AA
SP sh w/slickensides & also some gr-grn sh AA w/pyrite
About 1/2 of sample mica & crse clear ang qtz from mica LCM - very poor sample

9520-9530 40% sltstn - gry-gry.tan, tight, w.cmtd, dolo, grades to v.f.gr dolo ss & silty dolo, no shows
60% dolo - gry, cryptoxln-silty, dse, sl gran (sucrosic), some brn to red brn pellets ls, some wh-clear xln dolo frac fell
Occ piece wh transl chert

9530-9540 20% sltstn - v.f.gr ss - AA, no fluor or stain
80% dolo - AA w/tr glauc
SP redbeds & LCM carried - AA

9540-9550 90% dolo - lt.gry-tan gry, f.microxln-f.microgran (sucrosic), dse, silty in part, grades to dolo sltstn, occ pyrite incl, some wh dolo frac fill, scattered f.microvug poros, no stain
10% sltstn - AA, may be silty dolo

9550-9570 30% sltstn - gry-lt.gry-tan gry, tight, dolo, w.cmtd, firm AA, grades to silty dolo
70% dolo - AA, some wh frac fill, looks like sltstn wet but w/xl face dolo appearance dry
9560 - pred mica & crse ang clear qtz from LCM

Note: Much of dolo f.microxln-f.microgran w/tr sl interxln-f.microvug poros, some secondary wh dolo along frac edges, no fluor or atin. Some thin dolo-sltstn ptgs & lams, some grades to silty dolo-dolo sltstn. Some brn-red brn concentric pellets - ls AA??

9570-9580 40% dolo - AA, SP microvug, tr wh buff xln dolo frac fill
60% sltstn - silic in part, firm-hard, dolo, tight

9580-9590 70% sh - lt.gry-lt.grnish gry, blky, dolo, smooth, pyr in part, has cryptoxln-amorphous appearance but will not dissolve in concentrated HCl - crystallization after acid does not indicate anhy
20% sltstn - AA
10% dolo - AA

9590-9600 90% sh - lt.gry-lt.grnish gry - AA
10% sltstn - AA
Tr dolo - AA

9600-9610 30% sltstn - lt.gry-tan, dolo, grades to silty dolo
60% sh - grnish gry, flky-blky, smooth-dolo
10% ls - buff-tan, chalky-f.xln, dse (thin ptgs?)

9610-9620 20% sltstn - gry-grnish gry, dolo, tight
60% sh - gry-grn.gry - AA, pred blky-smooth, f.velvety, dolo, grades to dolo
10% dolo - gry, arg
Tr ls - AA

9620-9630 10% sltstn - AA
90% sh - AA, smooth, looks like cryptoxln carbonate, firm-hard, dolo
Tr ls - AA

9630-9640 20% ls - buff tan, f.microxln, some gry dse, silty dolo ls
30% sltstn - gry-gry.grn, tight, dolo-calc, glauc in part
50% sh - AA, more silty, dolo-calc in part
Some wh dolo frac fill, not much evidence of poros, no fluor or stain

9640-9650 30% ls - AA
60% sltstn - AA, grades to silty dolo
10% sh - AA
Tr dolo - gry, dse, f.microxln, calc; wh frac fill

9650-9660 20% ls - AA, some wh calcite frac fill
70% sltstn - gry, tight, w.cmtd, firm-hard, dolo, some grn glauc
10% sh - AA

Circulate out drilling breaks @ 9667' from 9628-9633' & 9652-9662'. Lot of torque w/breaks, probably fractured zones. Gas (methane) from both zones - see log

20" circ 10% ls - AA
80% sltstn - AA, v.tight, w.cmtd, dolo, grades to v.f.gr ss, silic in part, occ dk gr, no fluor or stain
10% sh - gry - AA

40" - 60" Tr ls - AA, some xln calcite along frac edge
80% sltstn - AA, v.f.gr, tight, silty dolo ss
20% sh - gry, smooth, flky-blky, silty in part, dolo, brittle, firm to hard
Tr dolo - gry-tan, silty, grades to sltstn

60" - 80" 30% sh - gry - AA
70% sltstn - AA
Tr ls & dolo - AA

80" - 100" 20% sh - gry, smooth, blky, dolo
80% sltstn - AA, has sl grn tint in part from glauc?
Tr ls & dolo

Evaluation: Very good drilling break both zones w/much torque. Some secondary calcite & dolomite in samples along probable fracture edges (samples fine) No fluor or stain. Recorded 112 units gas H.W. (all methane) top zone and 100 units gas H.W. (all methane) lower zone, 9652-62'. Called Denver not to test, predicted recovery - dry gas. Resume drilling.

9660-9670 60% sltstn - v.f.gr ss - gry w/grn tint, tight, w.cmtd, firm-hard, dolo, silic in part, calc in part, tr edge poros, no fluor or stain
30% ls - lt.gry-buff, f.microxln-xln, frac fill, silty in part, some secondary calcite frac fill, dse, no fluor
10% sh - gry w/grn tint in part, blky-smooth, dolo
Sltstn glauconitic in part - grn

9670-9680 40% sltstn - AA
40% ls - AA
20% sh - AA

9680-9690 50% ls - AA & buff-tan, f.microxln-chalky dse, no fluor
30% sltstn - AA
20% sh - gry - AA

9691 - Circulate out drilling break 9680-9688'. Received word from Mr. Sindelar w/drilling department to circulate all breaks for safety plus usual reasons.

Circ 20" 30% ls - AA
30% sh - AA
40% sltstn - AA

40" 20% ls - AA
20% sh - AA
60% sltstn - AA, no fluor or stain

60" 20% ls - AA
40% sltstn - AA
40% sh - pred gry w/grn tint, blky, dolo

80" 30% ls - gry, f.microxln; tan-buff f.microxln, dse, no fluor or stain, some chalky
30% sltstn - AA
40% sh - gry w/grn tint - AA

100" 40% ls - pred buff-tan, f.microxln-chalky, dse, no shows
20% sltstn - AA, tight, w.cmtd, dolo
40% sh - gry - AA

120" 50% ls - AA
30% sh - AA
20% sltstn - AA

Evaluation: Fair drilling break from 9680-88', no fluor or stain in samples. 16 unit hot wire gas increase over background, some evidence of fracturing, gas all methane. Dry gas. Resume drilling

9690-9700 20% red beds - sh & sltstn slough
10% ls - AA
20% sh - AA
50% sltstn - AA
Hole cleaned after circulating, much hole slough in this sample

9700-9710 20% ls - AA
80% sltstn - gry, tight, w.cmtd, calc-dolo, no shows
Tr dolo & sh - AA

9710-9720 40% sh - brn, blky smooth-v.f.velvety, sl dolo
40% sh - gry w/grn tint - AA
20% sltstn - AA
Tr ls - pred calcite frac fill

9720-9730 10% sh - brn - AA
20% sh - gry - AA
60% sltstn - AA, tight, pred dolo
10% ls - incr tan-buff cryptoxln dse

9730-9740 30% ls - pred buff, cryptoxln-chalky
40% sltstn - gry w/grn tint - AA
30% sh - gry w/grn tint - AA, silty in part
SP brn & red sh slough AA, carried

9740-9750 10% ls - AA
60% sh - gry - AA
30% sltstn - AA, no fluor or stain

9750-9760 10% ls - AA
90% sh - pred gry w/grn tint, blky-flky, smooth-v.f.velvety, dolo, dilty in part, occ pyrite
Tr sltstn - AA
Tr red & brn sh slough AA

9760-9770
10% ls - AA
60% sltstn - gry w/grn tint, tight, w.cmtd, dolo, pyritic in part
30% sh - gry - AA, more silty
Tr sh - red-brn - AA

9770-9780
30% ls - pred buff-tan AA, silty in part
70% sltstn - AA, dolo-calc, arg in part
Sh - tr gry - AA

9780-9790
10% ls - wh-tan, f.microxln-xln, calcite frac fill & edges
20% sltstn - gry- AA, more arg
70% sh - gry w/grn tint, blky-flky, calc-dolo, silty in part
Tr dolo - gry-tan, silty, dse

9790-9800
20% ls - AA
60% sh - gry - AA, pred silty, grades to arg siltstone, no fluor or stain
20% sltstn- gry - AA, arg

9800-9810
10% ls - AA, SP calcite - AA
20% dolo - tan-lt.gry-gry, arg, silty, grades to dolo sltstn
20% sh - AA w/grn tint
50% sltstn - gry-grn.gry, tight, silic & dolo, firm-hard
Note: Rock in sample borderline sh & sltstn, silic & dolo

TD 9812' Circulating for logs & 5" liner - catch 20" circ spls after bottoms up

20"
20% ls - AA
30% sh - AA, carry tr red sh
40% sltstn - AA
10% dolo - AA

40"
10% ls - AA
50% sh - AA
40% sltstn - AA, some gry.grn, tight, dolo, firm-hard, silic in part
10% dolo - AA, some wh xln

60"
30% ls - buff-gry, f.xln, dse
20% sltstn - AA
50% sh - AA
Tr dolo - AA

80"
20% ls - AA
30% sltstn - AA
50% sh - AA, SP red-red brn sh slough

Ran DLL-SP-GR; BHC Sonic-GR-Caliper, CNL-FDC, Gamma Ray-Caliper, Dipmeter Caliper 8142-9802' Set 5" liner from 9809-7856' w/200 sx cement. Drill out from under liner 20 June 1977

9810-9820
Very poor sample - pred clear crse gr ang qtz from Mica LCM, Mica, pipe scale, lignite from mud
10% sltstn - gry, tight, dolo
10% dolo - gry, dse, f.xln, arg & silty in part
10% ls - gry-tan-buff, crypto-f.microxln, dse, wh calcite frac fill

9820-9830 Pred brn-gry cement
Tr lt.gry dse f.microxln dse calc dolo-dolo ls
Tr pipe scale & LCM - AA

9830-9840 30% ls - lt.tan-lt.gry, f.micro-cryptoxln-chalky, dse, no fluor or stain
70% cement - AA

9840-9850 10% sh - gry, flky, smooth, dolo
80% ls - lt.gry-lt.tan AA, arg in part, tr slty
10% cement - AA
Note: For the amount of time circulating prior to drilling, it is curious that all of the above debris is present - some cement w/ fluor - looks like pipe dope

9850-9860 30% sh - AA
40% ls - AA, grades in part to dolo ls
30% dolo - gry, arg, dse, grades to sh

9860-9870 60% sh - gry, flky-blky, smooth, dolo-calc
30% ls - AA, arg in part
10% dolo - AA
Tr sltstn - lt.gry, tight, arg, dolo

9870-9900 40% sh - AA, f. pyr in part
20% dolo - grades to sh
40% ls - AA
Tr sltstn - AA, SP grn, dolo, tight

9900-9910 20% sh - gry - AA
60% dolo - tan-gry, f.micro-cryptoxln, dse
20% ls - tan-buff, f.microxln, dse

9910-9920 60% sh - AA, calc-dolo, grades to ls & dolo
30% dolo - AA, occ wh dolo frac fill
10% ls - AA, occ piece wh calcite frac fill

9920-9930 40% sh - AA, gry
20% dolo - AA
40% ls - AA, no fluor

9930-9950 80% ls - pred tan-gry, crypto-v.f.microxln, dse, sl.arg in part, some pink cast, no fluor or stain, grades to calc sh in part, occ wh calcite
20% sh - gry, flky-blky, smooth, calc-dolo, firm, tr pyrite
Tr dolo -gry-tan, f.xln, dse, arg in part
9940 - occ piece ls sl pyritic

9950-9960 70% ls - AA, no shows
20% dolo - gry, arg, dse
10% sh - gry AA, grades to arg dolo

9960-9970 30% ls - AA
10% dolo - AA
60% sh - gry, smooth, flky-blky, dolo

Note: Much mica LCM in most samples - have put none in mud since before running liner - last sample full of it (??). No one has explanation for LCM

9970-9980 50% ls - AA, chalky in part, arg in part, pred tan-gry, crypto-f.microxln, dse
50% sh - gry - AA, some grades to arg ls & dolo sh-arg dolo

9980-9990 60% sh - gry - AA
20% ls - AA, becoming dolo in part
20% dolo - gry, arg, dse

9990-10,000 30% sh - AA
20% dolo - AA & tan v.f.gran, calc, grades to dolo ls
50% ls - AA, some w/gry arg incl, dolo, f.microgran, in part, dse, no fluor or stain

10,000-10,010 30% ls - AA, silty in part, some dk.gry arg incl, poss carb?
30% dolo-ls-AA, tan-gry, sl gran
10% sh - gry - AA
20% sltstn - lt.gry, tight, w.cmtd, dolo

10,010-10,020 20% ls - AA
30% dolo-ls - AA, silty in part, grades to sltstn
Tr dolo - tan-gry, v.f.gran, calc, grades to dolo ls - AA
Tr sh - AA
50% sltstn - AA

10,020-10,030 10% sh - gry- AA
30% sltstn - gry, firm, tight, dolo
30% ls - AA
30% dolo-ls - AA
Tr dolo - AA

10,030-10,040 40% ls - AA, pred tan-buff, xln-dse, some wh calcite
10% sh - gry - AA
10% sltstn - AA
40% dolo-ls - AA
Tr dolo - AA

10,040-10,050 50% ls - AA, silty in part, dolo in part, some secondary calcite frac fill, no shows
20% sltstn - AA, calc-dolo, tight
Tr sh - AA
30% dolo ls - AA, calc dolo, silty in part

10,050-10,060 20% ls - AA, pred lt.gry-gry.tan, cryptoxln, dse
40% dolo - lt.gry-tan gry, calc, silty, grades to sltstn, f.gran in part
40% sltstn - lt.gry-tan, tight, w.cmtd, dolo-v.dolo-calc
Tr sh - AA

10,060-10,070 20% ls - AA
60% dolo - dolo ls - AA, silty in part w/some gry arg ptgs
20% sltstn - AA
Tr sh - AA

10,070-10,080 20% sh - gry, glky-blky, dolo, smooth
40% ls - AA, occ wh calcite, silic in part
40% dolo ls - AA, arg & silty in part

10,080-10,090 30% ls - AA, some gry, arg
20%sh - red-brn-lav (var) smooth, flky-blky-calc in part, some red calc sltstn, tight
SP free sulphur
20% sh - gry - AA, some blk carb calc w/wh calcite frac fill
30% dolo-ls - AA
Abundant Nut-Plug & mica LCM - after trip (10,083') sample

10,090-10,100 20% ls - blk, carb, dse w/some thin hairline calcite & anhy filled fracs
10% sh - var - AA
20% dolo-ls - AA
50% sh - blk, flky-blky-smooth, calc in part, carb

10,100-10,110 50% ls - blk-gry, cryptoxln, dse, some wh calcite frac fill
Tr dolo-ls - AA, SP yellow free sulphur
SP chert - gry-milky transl-opaque, calc
Tr red beds - AA, carried
50% sh - blk, flky, smooth-blky, calc, pyritic in part

10,110-10,120 40% ls - AA, incr gry dse
40% dolo ls - gry, cryptoxln, dse, arg in part, sl silic in part
20% sh - AA
Tr chert - AA

Note: Install sluice box to catch samples - compare samples, circulate out, waiting on bit @ 10,128'

10,125 Sluice box
80% sh - blk, carb, flky-blky, f.velvety, calc, some v.calc
20% ls - gry, cryptoxln, wh calcite - AA
Tr dolo, red beds, chert - AA

10,125 & 10,128 Shaker
90% sh - blk - AA
10% ls - AA, some calcite frac edges
SP chert - AA

10,128-10,130 After trip sample
80% sh - blk - AA
10% red beds - AA
10% ls - AA
Tr dolo, SP free sulphur, occ piece chert - AA
Tr cement, pipe scal, LCM

Note: Drilling supervisor L. Almond says can't use sluice box - puts too much solids in mud

10,130-10,140 20% ls - AA
Tr dolo - AA
80% sh - AA, blk, calc
Tr "trip trash" - AA

10,140-10,150 10% sh - gry, flky-blky
50% sh - blk - AA
30% ls - gry, arg, dse
10% dolo-ls - gry, arg, dse
Occ piece chert, some yellow free sulphur
Poor sample

10,150-10,160
10% sh - blk - AA
30% ls - gry-tan, xln, dse
20% sh-sltstn, red-lav. various types (slough?)
10% sh - gry-grn.gry, flky, smooth, dolo
30% dolo-dolo ls - gry, f.microxln, dse
Tr chert - blk opaque-milky-transl, calc in part
Occ piece free sulphur & some LCM

10,160-10,170
50% sh - blk, soft, carb, calc, flky-blky, v.f.velvety (think this may be drilled??)
10% ls - AA, some dk.brn-blk carb
20% dolo-dolo ls - AA
Tr sh - gry - AA
20% red beds - AA
Tr cement & tr chert - AA

Note: Samples very fine-fine; penetration rate a little better from 10,160-170, grinding up most of samples

10,170-10,180
20% sh - blk - AA, tr gry sh - AA
30% red beds
20% ls - AA, tr brn cryptoxln silic
30% dolo - AA
Tr chert - AA
Tr ss - gry, tight, w.cmtd, f.gr
Lot of clear crse ang qtz gr from mica LCM
Tr sltstn - gry-tan, tight, w.cmtd, dolo-calc

These samples are so poor they are hopeless. It is drilling 77-175 min/ft and milling and grinding everything to powder at that penetration rate. Also trip @ 10,179' w/"trip trash"

10,180-10,190
10% sh-sltstn-red beds
30% chert - gry-brn, opaque-transl, calc in part
40% ls - gry-brn, cryptoxln, v.dse, hd, silic-"cherty"
20% dolo-dolo ls - AA, some gry dolo sh, some wh calcite & dolo frac fill along edges & healed fracs
Samples fine-very fine

10,190-10,200
20% red beds - AA
10% chert - AA
10% sltstn - gry, tight, sl dolo, silic, hd
20% dolo - gry-gry.brn, f.gran, dse, silic in part
20% ls - AA
20% sh - gry-blk - AA
Abundant cement w/v.dull fluor in part - samples very poor.
Recovery very slight, no improvement using bucket in possum belly - bit grinding them up

10,200-10,210
30% ls - lt.gry, f.microxln, blk-dk.brn cryptoxln, silic, hard, dse
20% sh - dk.gry-blk, hd, silic, blky, calc, carb in part, phosphatic
30% dolo - gry, cryptoxln, arg-silic, firm-hd, dse
Tr red bed - slough
20% chert - med.dk.gry-blk, op, some transl, hd, calc in part
Some wh xln calcite & dolomite frac fill. Samples carry some LCM & lignite from mud; also some clear ang crse qtz gr from mica LCM, some metal shavings. Very slow drilling & fine cuttings

10,214-10,220	Trip @ 10,214 30% ls - AA 40% dolo-dolo ls AA, gry, f.microxln, arg in part, silic in part, dse 10% chert - AA, occ milky transl 10% sh - gry-blk - AA 10% sh - brick red-red brn, blky AA (slough) Abundant metal shavings & shards, tr cement AA
10,220-10,230	40% ls - AA 30% dolo - AA 10% sh - AA 20% chert - gry-blk, milky, mottled in part Tr red beds AA
10,230-10,232	Trip sample - to run core barrel 30% ls - AA 30% dolo - AA 10% sh - AA 30% chert - AA Tr sh - red orange (brick), v.f.velvety, non calc
10,232-10,240	Core No. 1 - Recovered 2' - See core descriptions
10,240-10,248	Trip sample 50% chert - blk-dk.gry-brn-gry, op-transl, hd, sl dolo in part 10% ls - buff-tan-gry-wh, f.microxln-xln calcite 10% red beds - slough (recirculated) 30% dolo - gry-wh-brn, f.microxln-dse, silic-cherty in part Tr sh - gry-blk, flky-blky, silic in part, dolo in part, firm-hd No shows
10,248-10,250	Core No. 2 - See core descriptions
10,248-10,250	Trip sample - core out 30% chert - AA 20% ls - AA, tr wh calcite frac fill 40% dolo - AA, silic in part Tr red beds - AA 10% sh - blk, flky-blky, silic, dolo-calc, firm-hd Bottoms up @ 10,250' - after trip for Core No. 2 30% chert - blk-dk.gry-lt.gry, op-transl 40% sh - dk.gry-blk - AA 20% dolo - AA 10% ls - AA, some frac fill AA Tr red beds - AA - Sample fair-poor
10,250-10,260	20% ls - AA 20% chert - AA, pred gry-blk,mottled, transl in part 20% sh - blk-dk.gry - AA 20% "Red beds" - brick red-red brn-lavender sh; some red brn sltstn-ss, tight 20% dolo - gry - AA
10,260-10,270	10% chert - AA 40% sh - blk-gry - AA 10% red beds - slough? - various types 20% ls - AA 20% dolo - AA Samples poor - mixed

10,270-10,280
10% chert - AA
20% sh - blk - AA
20% sh - red-brn AA, tr ss-sltstn - red-brn
30% ls - AA
20% dolo - AA
Very poor samples - much slough, recirculated cuttings from mud system and slow-very slow drilling w/diamond bit. Cuttings fine and very mixed

10,280-10,290
30% ls - gry-brn-dk.gry-blk, f.microxln, arg, dse, silic in part hd, grades to clk calc sh, some rdd pelletal surfaces
10% sh - blk, blky, carb, calc, phosphatic
10% chert - gry-dk.gry.brn, op-transl, calc in part
40% red beds - AA
10% dolo - AA
Tr sltstn-ss - gry, tight, calc-dolo; tr sh - gry, smooth, blky, rdd slough

10,290-10,300
40% ls - decr dk.gry-blk
30% red beds - sh-sltstn - AA
Tr chert & dk.gry sh AA
30% dolo - gry, f.microxln, dse, arg in part, grades to dolo sh

SLM 10,295.01 - Board 10,306.80 - 11' correction

10,295-10,300
Very poor sample - about same as above, sl incr blk carb blky f.velvety calc sh

10,300-10,320
20% ls - dk.gry-blk, arg, carb, dse, f.microxln, some wh calcite & dolo frac fill & edges
50% sh - dk.gry-blk, firm, blky, velvety, silty-v.silty, calc-dolo, grades to arg sltstn, phosphatic
30% sltstn - dk-m.gry w/blk matrix, arg pred-dolo, tight, w.cmtd, no fluor
SP chert - dk.gry-gry, op-sl.transl

10,320-10,330
30% ls - AA
Tr chert - AA
20% sltstn - AA
50% sh - dk.gry-blk AA, poss phosphatic(?), firm, more carb, some pyritic

10,330-10,350
40% ls - AA, more carb, grades to sh
60% sh - dk.gry-blk AA, some non-silty, blk, velvety, flky, calc; sh more calc & carb
Sample good but fine. Occ piece red beds carried, carb for the most part, phosphatic
10340-350 - incr phosphatic shale - much more leaching of phosphate by acid w/recrystallization

Note: Samples since trip much improved - very little slough & mixing. Trace of wh calcite-dolo frac fill &edges, no fluor. Improved samples due to increased P.R. Tried catching samples from gallon bucket in "possum belly" - no recovery - putting finer mesh (150) on shakers.

10,350-10,360	80% sh - dk.gry-pred blk, flky-blky, smooth-velvety, calc-silty in part, occ nodular-oolitic, tr fish scales(?), phosphatic-carbonaceous, no fluor or stain, occ pyrite 20% ls - dk.gry, arg, dse, silty in part, some wh milky-clear calcite frac fill, occ calcite filled hairline frac
10,360-10,370	80% sh - dk.gry-blk AA, v.phosphatic-carb 20% ls - AA, some fine blk pellets, occ calcite - AA
10,370-10,380	90% sh - AA, occ free yellow sulphur nodule 10% ls - AA
10,380-10,390	10% sltstn - dk.gry, tight, arg, calc, phosphatic, w/cmtd, grades to silty sh 80% sh - dk.gry-blk, more nodular, phosphatic 10% ls - AA
10,390-10,400	80% sh - AA, decr silty, less phosphatic 20% ls - AA, incr wh milky calcite frac fill & frac edges Tr sltstn - AA
10,400-10,405	80% sh - AA, pred blk, carb, blky, silty in part 20% ls & calcite - AA Tr sltstn - AA
10,405'	Circulate for DST No. 5 (see results) <u>Evaluation</u>: Minor show of gas on hot wire detector, 10-13 units over BGG, pred methane. May get some gas on test
10,405'	Circulate 60" 80% sh - blk, phosphatic, calc, silty in part AA 20% ls - AA, no fluor or stain
10,405-10,410	30% ls - gry-brn, f.microxln, wh calcite frac fill, dse 10% dolo - gry-brn, f.microxln, dse, arg 10% redbeds - slough "trip trash" 50% sh - blk-v.dk.gry, blky-flky, smooth-velvety, calc in part, phosphatic, carbonaceous SP chert - tr milky qtz - wh, transl
10,410-10,430	70% sh - blk - AA, phosphatic, sl dolo 20% ls - AA Tr dolo - AA 10% redbeds - slough AA (recirculated)
10,430-10,440	80% sh - blk AA, phosphatic, sl dolo 20% ls - AA Tr redbeds & recirculated trash
10,440-10,460	90% sh - blk, carb, calc-v.calc, dolo AA 10% ls - AA, blk, arg, carb in part, grades to sh Tr redbeds slough AA SP dolo - gry, f.microxln, dse 10,450 - more calc

10,460-10,470 80% sh - AA
20% ls - pred dk.gry, arg, dse, carb, phosphatic, grades to sh
Some wh xln calcite frac fill; SP redbeds AA

Circulate out @ 10,470' for DST No. 6 - See DST results
10,470 Circulate 60" - same as above

10,470-10,500 80% sh - blk - AA, carb
20% ls - AA, pred arg, carb, some calcite

Note: Most of samples fine-very fine w/some redbed slough & SP dolomite, gry, arg, dse; occ piece gry-blk chert, transl-op, slough; occ healed hairline frac

10,500-10,510 60% sh - blk AA, more calc, grades to arg ls
40% ls - pred dk.brn-gry, dse, arg, firm; some wh xln calcite, some frac fill, occ piece gry dse dolo
SP anhy - wh-cream, cryptoxln

10,510-10,520 30% ls - brn-gry.brn, f.microxln, arg, silty in part, calcite AA, some gry AA, dolo in part
SP dolo - AA
70% sh - blk, carb, phosphatic-calc, dse AA
Tr sh-sltstn "redbeds" slough - incr

10,520-10,530 40% ls - AA, much milky-lt.gry dse, cryptoxln-calcite (m-crse gr size)
60% sh - blk - AA
Tr dolo-anhy - AA

10,530-10,535 (In drill off) 20% sh - blk - AA, decr phosphatic
30% "redbeds" - orange, brick red, red brn, lavender sh & some red sltstn
50% ls - AA, incr gry-gry.brn-lt.brn, f.microxln-sl.sucrosic, dse, dolo in part; tr anhy & dolo - AA (Samples very fine)

10,535-10,540 60% ls - incr brn-buff sucrosic, dolo, grades to dolo
10% dolo
30% redbeds
Tr blk sh, anhy, gry calc tight sltstn

10,540-10,550 20% redbeds - AA
40% ls - grades to dolo ls to calc dolo
20% dolo - gry-tan, dse, silty in part
20% sltstn - lt.gry-tan, tight, dolo-calc

10,550-10,560 20% ls, buff-lt.gry, f.microxln, dse, dolo in part, some wh calcite frac fill
80% dolo - buff-lt.gry-tan-brn, f.microxln, dse-sl.gran-f.gran, calc in part, w/some v.f.blk residual stain, no cut or fluor, not evident under 9x, is evident under 18x; some gry w/blk is silic, v.f.sdy dolo
SP redbed slough

10,560-10,570 10% ls - AA
90% dolo - decr blk staining, incr brn-tan mottled, f.microxln-f.gran, calc in part, dse, tr sl interxln poros, no fluor or stain, f-m.ang sdy, silic in part AA

10,570-10,580 10% ls - buff-lt.tan, f.microxln, milky-clear calcite
90% dolo - tan-buff-lt.brn, mottled, becoming more f.microxln, dse, f.microgran in part, dse, tr sl interxln poros, no fluor or cut, decr sdy

10,580-10,590 20% ls - AA
80% dolo - pred buff-lt.tan, f.microxln, dse, no fluor or cut, occ piece w/tr sl interxln poros

Note: 10,560-10,600 after acid contain some soft brn clay? residue - samples in this interval good but fine in general w/no shows, no fluor

10,590-10,600 10% ls - AA
90% dolo - lt.tan, f.micro-cryptoxln, dse, no fluor, much mica
LCM in samples, lost 40 bbls mud into formation

10,600-10,610 40% dolo - AA, anhy in part, dse, sl sdy in part
20% ls - pred buff-wh, f.microxln-cryptoxln, dse, calcite, some dk.gry, arg dse
40% sd - unconsol clear ant qtz, m.gr-s.rdd to m.f.gr barites from mud, tr redbeds, poss v.f.gr anhy?-wh
Much mica-nut plug LCM, samples v.poor - much mixing, recirculating

10,610-10,620 70% sd - pred clear ang crse qtz, from mica?
20% dolo - AA
10% ls - AA
Tr sh - dk.gry-blk, blky-velvety, carb, sl calc, prob uphole types
Very poor sample

10,620-10,630 40% sd - AA
30% ls - pred milky-lt.gry AA, some dk.gry, arg
20% dolo - gry, dse, arg in part, f.microxln, tr f.gran
10% sd - v.f.gr of barite, anhy, qtz, redbeds
Tr sd - brn-gry, f-m.gr, tight, w.cmtd, dolo, occ piece nodular, rdd sulphur, yellow, powdery, occ piece wh dolo tuff sh??, some gry chert
Very poor sample

10,630-10,640 10% sd - clear, ang crse qtz, from LCM?
40% dolo - AA, SP tan, silic, dse, some carb, sdy in part, no fluor
30% ls - AA
20% sh - blk-dk.gry AA, carb, phosphatic (slough?)
Tr anhy - clear-wh, gran-v.thin crusts
Very poor sample

10,640-10,650 10% sd - clear - AA
30% dolo - AA
30% ls - AA
20% redbeds, mica, bariet, etc, slough-recirculated samples
10% anhy - clear, gran, sl dolo
Very poor sample

10,650-10,660 30% anhy - AA, looks like ss, but anhy
30% ls - AA
20% dolo - AA
10% sh - dk.gry-blk, calc-dolo, blky smooth
10% ss - gry-gry.brn, f.gr, ang, w.cmtd, dolo-anhy
Tr redbeds - AA

10,660-10,670
10% ls - AA
40% dolo - gry-brn-buff, anhy, dse in part, grades to dolo anhy
40% anhy - AA, more sdy, some m.rdd gr
10% ss - gry, v.anhy, grades to sdy anhy
Tr sh - blk & redbeds

10,670-10,680
30% ls - gry, f.micro-cryptoxln; buff-wh calcite
30% dolo - AA
30% anhy - AA
10% ss - AA
Tr redbeds - AA

10,680-10,690
60% anhy - AA, clear w/gran ss appearance, sdy in part, no fluor or stain
20% ls - AA
10% dolo - AA
10% sd - AA & f-m.gr rdd-s.ang unconsol
Most samples carry a trace of clear angular crse qtz from mica LCM

10,690-10,700
No sample

Note: Samples fine mixed & recirculated in part. Sandy anhydrite grades to anhydritic sandstone - think a large part of ss & sds are washing through shaker screens. Cannot catch sample in possum belly and drilling department will not let me use sluice box

10,700-10,720
20% dolo - lt.gry-gry-brn, f.microxln, dse, anhy in part
10% ls - AA
70% anhy - clear-wh, gran (looks like ss but mashed up - too soft)
sl dolo in part, no fluor
Tr sh - blk, blky, calc
Sample carry tr redbeds & clear wh-crse ang qtz & abundant mica from LCM
10,710-720 - abundant clear ang qtz AA, about 30% of sample

10,720-10,730
10% dolo - AA
30% ls - buff-lt.gry, cryptoxln, dse, no fluor
40% anhy - AA
20% sd - gry-wh, clear, f-m.gr, ang-s.rdd, unconsol
Tr blk sh - AA
Sample poor - most of cutting m-crse gr size, v.fine

10,730-10,740
%4 dolo
30% ls - AA
50% anhy - AA, sdy in part
20% sd - AA
Tr blk sh - AA

10,740-10,760
10% dolo - gry, arg, dse; dk.gry, arg, dse
10% sh - dk.gry-blk, blky, velvety
20% ls - AA
20% sd & ss - brn-gry, f-m.gr anhy-calc, tight, w.cmtd, no fluor or stain
40% anhy - AA, some brn-red brn, arg, silty in part

10,760-10,770	20% dolo - gry-gry.brn, dse, f.microxln, sdy 10% ls - AA 20% anhy - AA 50% ss - gry-dk.gry, f-m.gr, ang-s.rdd, w.cmtd, tight, anhy-dolo, arg, poorly sorted Carry tr sh - blk-gry - AA After trip sample - trip @ 10,765'
10,770-10,780	10% dolo - AA 10% ls - AA 10% anhy - AA 70% ss - AA, some blk matrix - may be carb Samples carry tr redbeds & blk sh - AA - slough
10,780-10,800	Tr dolo - AA 10% ls - AA 30% anhy - AA 60% ss - AA & unconsol f-m.gr sd, no fluor or stain 10,790 - all of sd unconsol - samples poor-v.poor, much mixing & recirculation
10,800-10,810	10% ls - AA 30% anhy - wh xln, brn & red brn 10% dolo - tan, cryptoxln, dse, no fluor 50% ss - AA, much gry, tight, f-m.gr, ang w.cmtd-s.ang qtz, dolo-v.dolo; some wh calcite dolo healed fracs, some unconsol sd AA, no fluor or stain
10,810-10,820	10% ls - AA, incr clear-wh xln calcite 10% dolo - AA 30% anhy - AA 50% sd - pred f-m.unconsol sd AA
10,820-10,830	30% ls - pred wh-milky calcite AA 20% anhy - wh clear, red brn xln Tr dolo - AA 50% sd - some red brn anhy ss, tight, no fluor Poor samples
10,830-10,840	50% ls - wh-buff, f.micro-cryptoxln, dse 10% dolo - tan, crypto-f.microxln, dse 10% anhy - AA 30% sd - AA, unconsol Tr sh - dk.gry-gry.brn, blky, sl.calc
10,840-10,850	20% ss - pred tan-lt.gry, tight, w.cmtd, dolo, grades to sdy dolo 60% dolo - tan, f.micro-cryptoxln, dse, some sl gran (sucrosic), anhy & sdy in part, no shows, some grades to dolo ss, grades to calc-dolo ls 20% ls - AA, dolo ls in part
10,850-10,865 (5' spls to 10,880)	90% dolo - tan-lt.gry.tan, cryptoxln-sl.f.gran (sucrosic), anhy in part, calc in part; some blk f residual stain & styolites, pred dse, occ sdy, tr calcite-dolo frac? fill, no fluor or stain, sdy dolo silic, hd 10% ls - AA Tr ss & sd - AA 10,850-855 - sl more anhy, less sdy

10,865-10,875	80% dolo - AA Tr ls - AA 20% ss - lt.gry-gry.tan, f.ang-s.rdd qtz gr, tight, w.cmtd, anhy in part, dolo, grades to sdy dolo w/no stain, fluor, tr ?? frac fill - AA
10,875-10,880	20% dolo - AA 30% ls - pred buff-wh calcite - AA 50% ss - AA & f-m. s.ang-rdd qtz unconsol sd Tr sh - dk.gry-blk, blky, tr red beds & misc "trip trash" Trip @ 10,879
10,822	Trip sample for DST No. 7 (packers failed) - drilled very slowly - milled up formation 30% ls - AA 10% dolo - AA 60% sd - AA, tr ss
10,882-10,890	20% sh - blk, phosphoria typs slough 30% ls - AA 10% dolo - AA 40% ss & sd - AA Very poor samples
10,890-10,900	10% ss - AA 50% dolo - buff-gry.tan, cryptoxln, anhy in part, dse, no fluor or stain 40% ls - AA, pred buff cryptoxln, dse Tr sh - AA Tr anhy - wh-clear, xln
10,900-10,910	30% dolo - AA, no shows 30% ls - AA 30% ss-sd - pred unconsol 10% anhy - AA, Much mixing & recirculating - very poor sample

Sample disposition: 1 dry cut was delivered to American Stratigraphic Co., Casper, Wyoming; 1 dry cut was sent to Utah Geological Survey, Salt Lake City, Utah. Unwashed sack samples were delivered to Gulf Energy Co., Casper, Wyoming

Phone
522-1206 Area 303

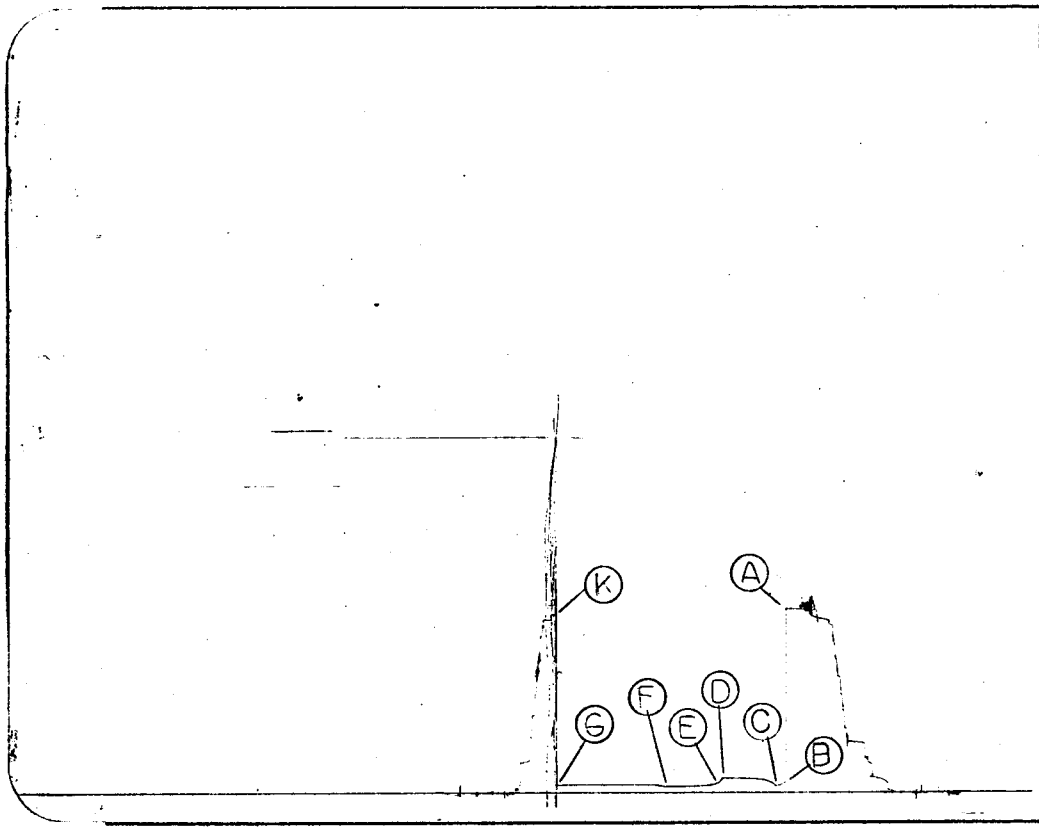
LYNES, INC.

Box 712
Sterling, Colo. 80751

Operator: American Quasar Petroleum Co.
Address: See Distribution
Well Name and No.: Hogback Ridge #20-1
Ticket No. 3922
Date 1-15-77
No. Final Copies 30

Contractor	Loffland Bros. Co.	Top Choke	1"	Flow No. 1	10 Min.
Rig No.	214	Bottom Choke	9/16"	Shut-in No. 1	60 Min.
Spot	NE-SE	Size Hole	12¼"	Flow No. 2	60 Min.
Sec.	20	Size Rat Hole	--	Shut-in No. 2	120 Min.
Twp.	13 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 3/4"		
County	Rich	Length of D. C.	270'		
State	Utah	Total Depth	1112'	Bottom Hole Temp.	--
Elevation	--	Interval Tested	1041-1112'	Mud Weight	8.3
Formation	Twin Creek	Type of Test	Bottom Hole Conventional	Gravity	--
				Viscosity	37

Tool opened @ 1:20 AM.



Inside Recorder

PRD Make Kuster AK-1
No. 4152 Cap. 2100 @ 1126'

Press		Corrected
Initial Hydrostatic	A	491
Final Hydrostatic	K	481
Initial Flow	B	26
Final Initial Flow	C	18
Initial Shut-in	D	39
Second Initial Flow	E	25
Second Final Flow	F	16
Second Shut-in	G	21
Third Initial Flow	H	--
Third Final Flow	I	--
Third Shut-in	J	--

Lynes Dist.: Rock Springs, Wy.
Our Tester: Claude Womack
Witnessed By: Mr. Greenhow

Did Well Flow – Gas No Oil No Water No

RECOVERY IN PIPE: 10' Mud = 0.07 bbl. R.W. 11.0 @ 60°F = 550 ppm. chl.

1st Flow - Tool opened with a weak ½" underwater blow. Died in 30 seconds and remained thru flow period.

2nd Flow - Tool opened with faint surface bubbles. Died immediately and remained thru flow period.

REMARKS:

RECEIVED
JAN 24 1977
DIVISION OF OIL, GAS, & MINING

Form 1

LYNES, INC.

Operator American Quasar Petroleum Co. Lease & No. Hogback Ridge #20-1 DST No. 1

Recorder No. 4152 @ 1126'

FIRST SHUT IN PRESSURE:

TIME(MIN) PHI	(T"PHI /PHI	PSIG
0.0	0.0000	18
6.0	2.6667	27
12.0	1.8333	33
18.0	1.5556	36
24.0	1.4167	37
30.0	1.3333	38
36.0	1.2778	38
42.0	1.2381	38
48.0	1.2083	39
54.0	1.1852	39
60.0	1.1667	39

EXTRAPLN OF FIRST SHUT IN : 40.5

SECOND SHUT IN PRESSURE:

TIME(MIN) PHI	(T"PHI) /PHI	PSIG
0.0	0.0000	16
12.0	6.8333	20
24.0	3.9167	21
36.0	2.9444	21
48.0	2.4583	21
60.0	2.1667	21
72.0	1.9722	21
84.0	1.8333	21
96.0	1.7292	21
108.0	1.6481	21
120.0	1.5833	21

EXTRAPLN OF SECOND SHUT IN : 21.0 M : 0.2

Extrapolations of reservoir pressures should be used as indicators only.

Form 2

LYNES, INC.

Fluid Sample Report

Date 1-15-77 Ticket No. 3922

Company American Quasar Petroleum Co.

Well Name & No. Hogback Ridge #20-1 DST No. 1

County Rich State Utah

Sampler No. 17 Test Interval 1041-1112'

Pressure in Sampler 0 PSIG BHT -- °F

Total Volume of Sampler: 2100 cc.

Total Volume of Sample: 1000 cc.

Oil: None cc.

Water: None cc.

Mud: 1000 cc.

Gas: None cu. ft.

Other: None

Resistivity

Water: @ of Chloride Content ppm.

Mud Pit Sample 9.0 @ 55°F of Chloride Content 750 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 Hogback Ridge Well No. 20-1

Original & 1 copy: American Quasar Petroleum Co., 330 Pacific Western Life Bldg., Casper, Wyoming 82601 Attn: John Sindelar

1 copy: American Quasar Petroleum Co., 707 United Bank Tower, Denver, Colorado 80202 Attn: Clare Gregg

3 copies: American Quasar Petroleum Co., 2500 First National Bank Bldg., Ft. Worth, Texas 76102 Attn: Bill Bogert

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

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2 copies: U.S.G.S., 8426 Federal Bldg., Salt Lake City, Utah 84138

3 copies: Patrick Petroleum Corp., 744 W. Michigan Ave., Jackson, MI 49204 Attn: John Orr

Phone
522-1206 Area 303

LYNES, INC.

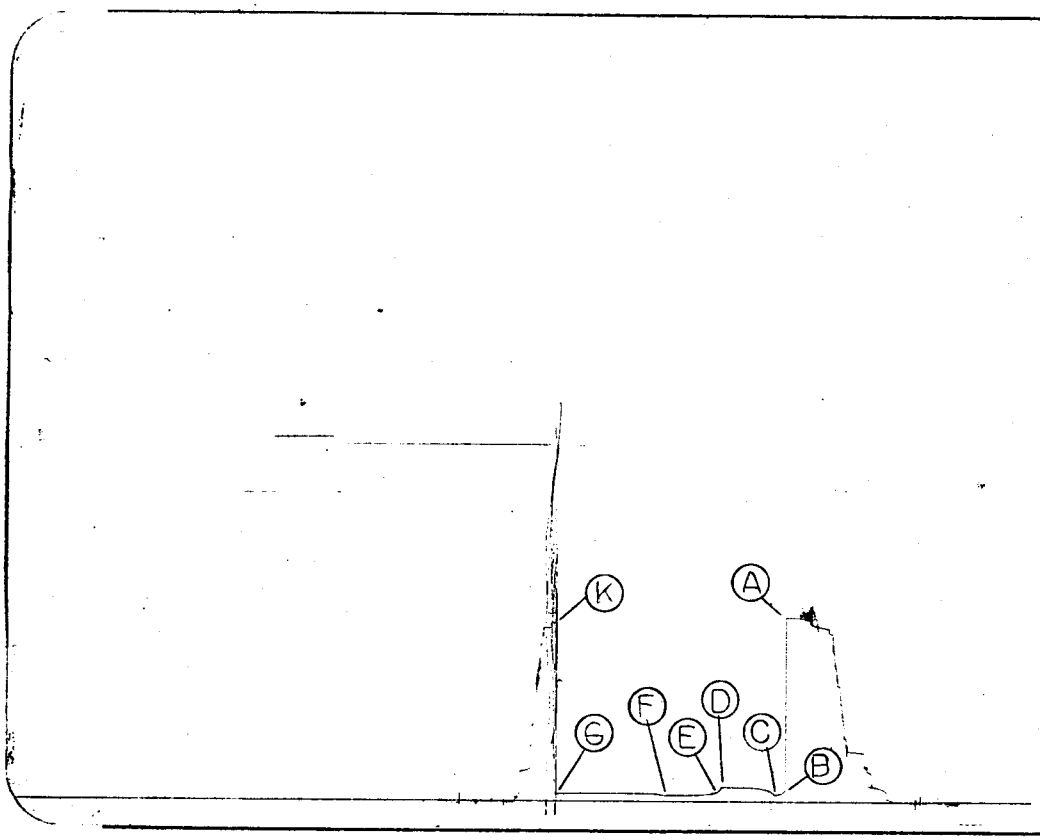
Box 712
Sterling, Colo. 80751

Operator: American Quasar Petroleum Co.
Address: See Distribution
Well Name and No.: Hogback Ridge #20-1
Ticket No.: 3922
Date: 1-15-77
DST No.: 1
No. Final Copies: 30

Contractor	Loffland Bros. Co.	Top Choke	1"
Rig No.	214	Bottom Choke	9/16"
Spot	NE-SE	Size Hole	12¼"
Sec.	20	Size Rat Hole	--
Twp.	13 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.	270'
State	Utah	Total Depth	1112'
Elevation	--	Interval Tested	1041-1112'
Formation	Twin Creek	Type of Test	Bottom Hole Conventional

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.	--	
Mud Weight	8.3	
Gravity	--	
Viscosity	37	

Tool opened @ 1:20 AM.



Inside Recorder

PRD Make Kuster AK-1
No. 4152 Cap. 2100 @ 1126'

Press		Corrected
Initial Hydrostatic	A	491
Final Hydrostatic	K	481
Initial Flow	B	26
Final Initial Flow	C	18
Initial Shut-in	D	39
Second Initial Flow	E	25
Second Final Flow	F	16
Second Shut-in	G	21
Third Initial Flow	H	--
Third Final Flow	I	--
Third Shut-in	J	--

Lynes Dist.: Rock Springs, Wy.
Our Tester: Claude Womack
Witnessed By: Mr. Greenhow

Did Well Flow – Gas No Oil No Water No

RECOVERY IN PIPE: 10' Mud = 0.07 bbl. R.W. 11.0 @ 60°F = 550 ppm. chl.

1st Flow - Tool opened with a weak ½" underwater blow. Died in 30 seconds and remained thru flow period.

2nd Flow - Tool opened with faint surface bubbles. Died immediately and remained thru flow period.

REMARKS:

Form 1

LYNES, INC.

Operator American Quasar Petroleum Co. Lease & No. Hogback Ridge #20-1 DST No. 1

Recorder No. 4152 @ 1126'

FIRST SHUT IN PRESSURE:

TIME(MIN) PHI	(T"PHI /PHI	PSIG
0.0	0.0000	18
6.0	2.6667	27
12.0	1.8333	33
18.0	1.5556	36
24.0	1.4167	37
30.0	1.3333	38
36.0	1.2778	38
42.0	1.2381	38
48.0	1.2083	39
54.0	1.1852	39
60.0	1.1667	39

EXTRAPLN OF FIRST SHUT IN : 40.5

SECOND SHUT IN PRESSURE:

TIME(MIN) PHI	(T"PHI) /PHI	PSIG
0.0	0.0000	16
12.0	6.8333	20
24.0	3.9167	21
36.0	2.9444	21
48.0	2.4583	21
60.0	2.1667	21
72.0	1.9722	21
84.0	1.8333	21
96.0	1.7292	21
108.0	1.6481	21
120.0	1.5833	21

EXTRAPLN OF SECOND SHUT IN : 21.0 M : 0.2

Extrapolations of reservoir pressures should be used as indicators only.

Form 2

LYNES, INC.

Fluid Sample Report

Date 1-15-77 Ticket No. 3922

Company American Quasar Petroleum Co.

Well Name & No. Hogback Ridge #20-1 DST No. 1

County Rich State Utah

Sampler No. 17 Test Interval 1041-1112'

Pressure in Sampler 0 PSIG BHT -- °F

Total Volume of Sampler: 2100 cc.

Total Volume of Sample: 1000 cc.

Oil: None cc.

Water: None cc.

Mud: 1000 cc.

Gas: None cu. ft.

Other: None

Resistivity

Water: @ of Chloride Content ppm.

Mud Pit Sample 9.0 @ 55°F of Chloride Content 750 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 Hogback Ridge Well No. 20-1

Original & 1 copy: American Quasar Petroleum Co., 330 Pacific Western Life Bldg., Casper, Wyoming 82601 Attn: John Sindelar

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3 copies: Patrick Petroleum Corp., 744 W. Michigan Ave., Jackson, MI 49204 Attn: John Orr

CIRCULATE TO:
DIRECTOR
PETROLEUM ENGINEER
MINE COORDINATOR
ADMINISTRATIVE ASSISTANT
ALL
RETURN TO Kathy K
FOR FILING

CONFIDENTIAL:

January 27, 1977

Memo to File:

Re: American Quasar Petroleum Co.
Hogback Ridge #20-1
Sec. 20, T. 13 N, R. 7 E
Rich County, Utah

As of the 15th of January 1977, Loffland Drilling Company's Rig #214 was on the location and drilling ahead at 1,112'.

The rig was given a safety inspection and only a few minor discrepancies were noted.

PATRICK L. DRISCOLL
CHIEF PETROLEUM ENGINEER

PLD/tlb

cc: U.S. Geological Survey

Phone
522-1206 Area 303

LYNES, INC.

Box 712
Sterling, Colo. 80751

Confidential

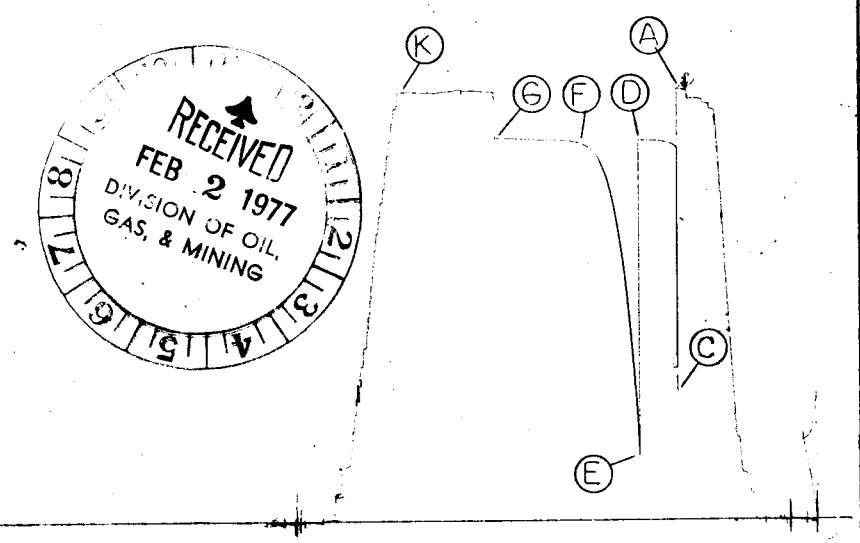
Contractor	Loffland Bros. Co.	Top Choke	1"	Flow No. 1	3 Min.
Rig No.	214	Bottom Choke	9/16"	Shut-in No. 1	60 Min.
Spot	NE-SE	Size Hole	12¼"	Flow No. 2	90 Min.
Sec.	20	Size Rat Hole	--	Shut-in No. 2	120 Min.
Twp.	13 N	Size & Wt. D. P.	4½" 16.60	Flow No. 3	-- Min.
Rng.	7 E	Size Wt. Pipe	--	Shut-in No. 3	-- Min.
Field	Wildcat	I. D. of D. C.	2 3/4"		
County	Rich	Length of D. C.	313'	Bottom Hole Temp.	--
State	Utah	Total Depth	2592'	Mud Weight	9.0
Elevation	--	Interval Tested	2545-2592'	Gravity	--
Formation	Nugget	Type of Test	Bottom Hole Conventional	Viscosity	40

Tool opened @ 3:10 PM.

Inside Recorder

PRD Make Kuster AK-1
No. 4152 Cap. 2100 @ 2524'

Press		Corrected
Initial Hydrostatic	A	1168
Final Hydrostatic	K	1161
Initial Flow	B	--
Final Initial Flow	C	347
Initial Shut-in	D	1026
Second Initial Flow	E	177
Second Final Flow	F	1019
Second Shut-in	G	1032
Third Initial Flow	H	--
Third Final Flow	I	--
Third Shut-in	J	--



RECEIVED
FEB 2 1977
DIVISION OF OIL, GAS, & MINING

Lynes Dist.: Rock Springs, WY.
Our Tester: J.L. Samoy
Witnessed By: Bert Greenhow

Operator American Quasar Petroleum Co.
Address See Distribution
Well Name and Number Wagon Wheel #20-1
Ticket No. 2255
Date 1-26-77
No. Final Copies 30

Did Well Flow – Gas No Oil No Water No

RECOVERY IN PIPE: 2300' Water cut mud = 30.50 bbl.

1st Flow - Tool opened with a weak blow and remained thru flow period.

2nd Flow - Tool opened with a strong blow, decreased to a 7" underwater blow in 70 minutes and to a ¼" underwater blow in 90 minutes.

REMARKS: ---

Form 1

LYNES, INC.

Operator American Quasar Petroleum Co. Lease & No. Hogback Ridge #20-1 DST No. 3

Recorder No. 4152 @ 2524'

FIRST SHUT IN PRESSURE:

TIM(MIN). PHI	(" PHI) / PHI	PSIG
0.0	0.0000	347
6.0	1.5000	1013
12.0	1.2500	1017
18.0	1.1667	1020
24.0	1.1250	1021
30.0	1.1000	1022
36.0	1.0833	1023
42.0	1.0714	1024
48.0	1.0625	1025
54.0	1.0556	1026
60.0	1.0500	1026

EXTRAPLN OF FIRST SHUT IN : 1030.3

SECOND SHUT IN PRESSURE:

TIME(MIN) PHI	(T"PHI) /PHI	PSIG
0.0	0.0000	1019
12.0	8.7500	1023
24.0	4.8750	1025
36.0	3.5833	1026
48.0	2.9375	1027
60.0	2.5500	1028
72.0	2.2917	1029
84.0	2.1071	1030
96.0	1.9688	1031
108.0	1.8611	1032
120.0	1.7750	1032

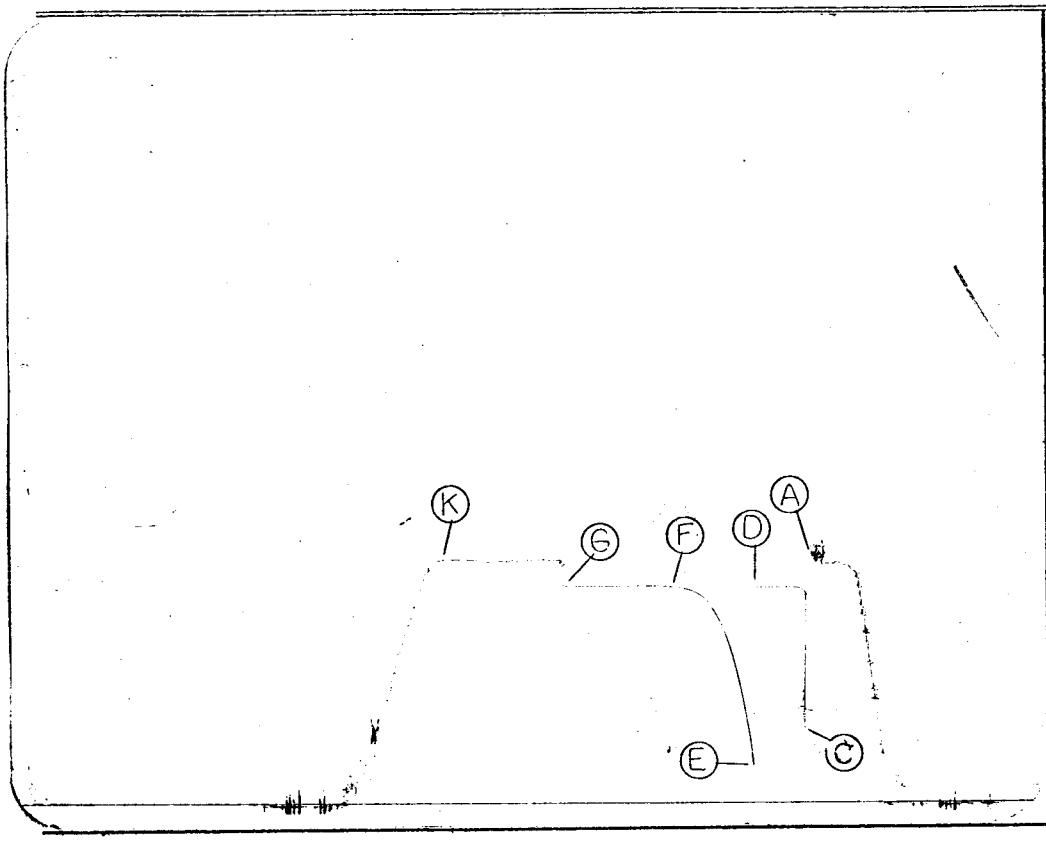
EXTRAPLN OF SECOND SHUT IN : 1038.0 M : 23.9

Extrapolations of reservoir pressures should be used as indicators only.

Form 2

LYNES, INC.

Operator American Quasar Petroleum Co. Lease & No. Hogback Ridge #20-1 DST No. 3



Inside Recorder

PRD Make Kuster AK-1

No. 3697 Cap. 3700 @ 2529'

Press		Corrected
Initial Hydrostatic	A	1174
Final Hydrostatic	K	1160
Initial Flow	B	--
Final Initial Flow	C	348
Initial Shut-in	D	1026
Second Initial Flow	E	184
Second Final Flow	F	1027
Second Shut-in	G	1033
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 1-26-77 Ticket No. 2255

Company American Quasar Petroleum Co.

Well Name & No. Hogback Ridge #20-1 DST No. 3

County Rich State Utah

Sampler No. 14 Test Interval 2545-2592'

Pressure in Sampler 0 PSIG BHT -- °F

Total Volume of Sampler: 2750 cc.

Total Volume of Sample: 2700 cc.

Oil: None cc.

Water: 2700 cc.

Mud: None cc.

Gas: None cu. ft.

Other: None

Resistivity

Water: @ of Chloride Content ppm.

Mud Pit Sample 2.8 @ 62°F of Chloride Content 2250 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 Hogback Ridge Well No. 20-1

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3 copies: Patrick Petroleum Corp., 744 W. Michigan Ave., Jackson, MI 49204 Attn: John Orr

Phone
522-1206 Area 303

LYNES, INC.

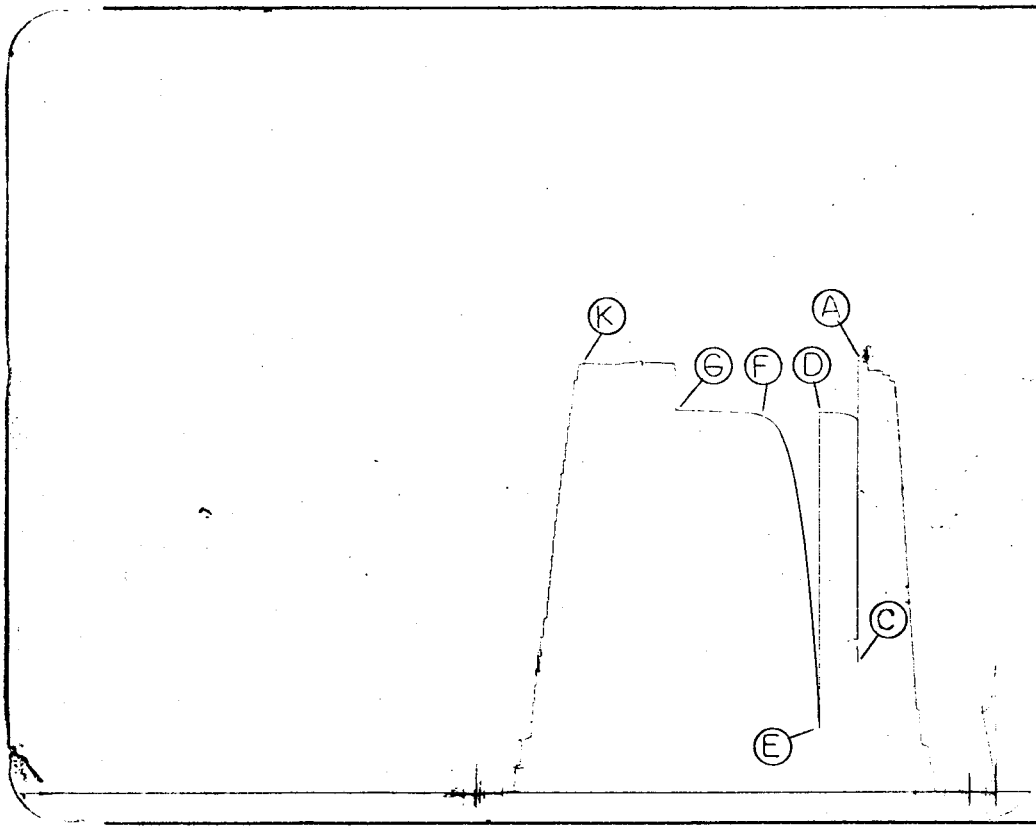
Box 712
Sterling, Colo. 80751

Operator American Quasar Petroleum Co.
Address See Distribution
Well Name and No. Hogback Ridge #20-1
Ticket No. 2255
Date 1-26-77
DST No.
No. Final Copies 30

Contractor	Loffland Bros. Co.	Top Choke	1"
Rig No.	214	Bottom Choke	9/16"
Spot	NE-SE	Size Hole	12¼"
Sec.	20	Size Rat Hole	--
Twp.	13 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.	313'
State	Utah	Total Depth	2592'
Elevation	--	Interval Tested	2545-2592'
Formation	Nugget	Type of Test	Bottom Hole Conventional

Flow No. 1	3	Min.
Shut-in No. 1	60	Min.
Flow No. 2	90	Min.
Shut-in No. 2	120	Min.
Flow No. 3	--	Min.
Shut-in No. 3	--	Min.
Bottom Hole Temp.	--	
Mud Weight	9.0	
Gravity	--	
Viscosity	40	

Tool opened @ 3:10 PM.



Inside Recorder

PRD Make Kuster AK-1
No. 4152 Cap. 2100 @ 2524'

Press		Corrected
Initial Hydrostatic	A	1168
Final Hydrostatic	K	1161
Initial Flow	B	--
Final Initial Flow	C	347
Initial Shut-in	D	1026
Second Initial Flow	E	177
Second Final Flow	F	1019
Second Shut-in	G	1032
Third Initial Flow	H	--
Third Final Flow	I	--
Third Shut-in	J	--

Lynes Dist.: Rock Springs, WY.
Our Tester: J.L. Samoy
Witnessed By: Bert Greenhow

Did Well Flow – Gas No Oil No Water No

RECOVERY IN PIPE: 2300' Water cut mud = 30.50 bbl.

1st Flow - Tool opened with a weak blow and remained thru flow period.

2nd Flow - Tool opened with a strong blow, decreased to a 7" underwater blow in 70 minutes and to a ¼" underwater blow in 90 minutes.

REMARKS: ---

Form 1

LYNES, INC.

Operator American Quasar Petroleum Co. Lease & No. Hogback Ridge #20-1 DST No. 3

Recorder No. 4152 @ 2524'

FIRST SHUT IN PRESSURE:

TIM(MIN) PHI	(" PHI) / PHI	PSIG
0.0	0.0000	347
6.0	1.5000	1013
12.0	1.2500	1017
18.0	1.1667	1020
24.0	1.1250	1021
30.0	1.1000	1022
36.0	1.0833	1023
42.0	1.0714	1024
48.0	1.0625	1025
54.0	1.0556	1026
60.0	1.0500	1026

EXTRAPLN OF FIRST SHUT IN : 1030.3

SECOND SHUT IN PRESSURE:

TIME(MIN) PHI	(T"PHI) /PHI	PSIG
0.0	0.0000	1019
12.0	8.7500	1023
24.0	4.8750	1025
36.0	3.5833	1026
48.0	2.9375	1027
60.0	2.5500	1028
72.0	2.2917	1029
84.0	2.1071	1030
96.0	1.9688	1031
108.0	1.8611	1032
120.0	1.7750	1032

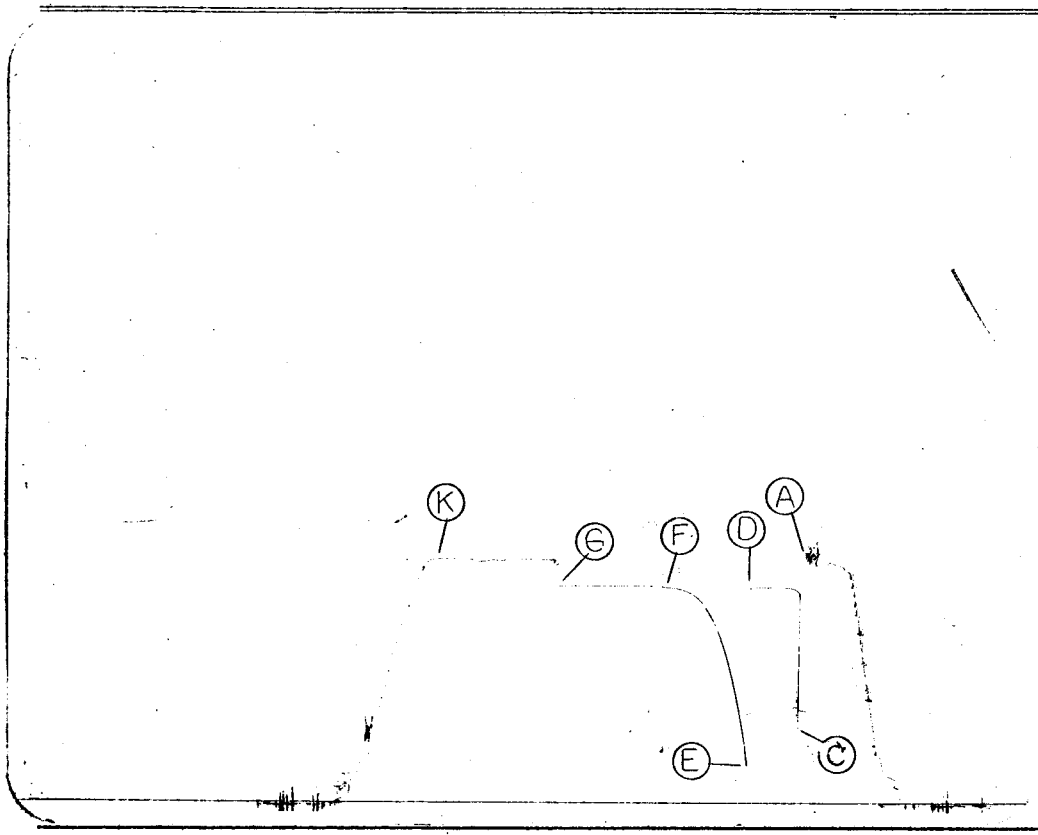
EXTRAPLN OF SECOND SHUT IN : 1038.0 M : 23.9

Extrapolations of reservoir pressures should be used as indicators only.

Form 2

LYNES, INC.

Operator American Quasar Petroleum Co. Lease & No. Hogback Ridge #20-1 DST No. 3



Inside Recorder

PRD Make Kuster AK-1

No. 3697 Cap. 3700 @ 2529'

Press		Corrected
Initial Hydrostatic	A	1174
Final Hydrostatic	K	1160
Initial Flow	B	--
Final Initial Flow	C	348
Initial Shut-in	D	1026
Second Initial Flow	E	184
Second Final Flow	F	1027
Second Shut-in	G	1033
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 1-26-77 Ticket No. 2255

Company American Quasar Petroleum Co.

Well Name & No. Hogback Ridge #20-1 DST No. 3

County Rich State Utah

Sampler No. 14 Test Interval 2545-2592'

Pressure in Sampler 0 PSIG BHT -- °F

Total Volume of Sampler: 2750 cc.

Total Volume of Sample: 2700 cc.

Oil: None cc.

Water: 2700 cc.

Mud: None cc.

Gas: None cu. ft.

Other: None

Resistivity

Water: @ of Chloride Content ppm.

Mud Pit Sample 2.8 @ 62°F of Chloride Content 2250 ppm.

Gas/Oil Ratio Gravity °API @ °F

Where was sample drained On location.

Remarks:

Form 5

LYNES, INC.

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Operator American Quasar Petroleum Co. Lease Hogback Ridge Well No. 20-1

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Confidential

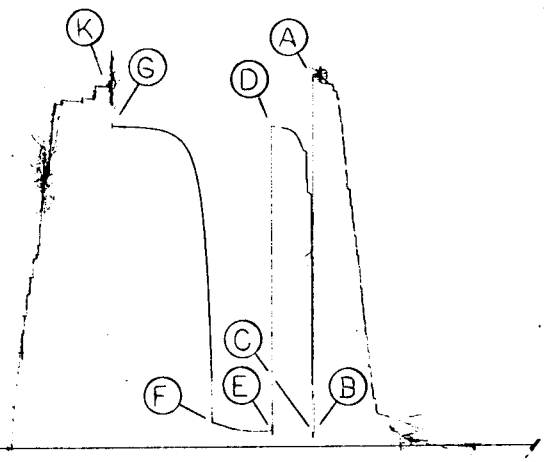
Phone
522-1206 Area 303

LYNES, INC.

Box 712
Sterling, Colo. 80751

Contractor	Loffland Bros. Co.	Top Choke	1"	Flow No. 1	10 Min.
Rig No.	214	Bottom Choke	9/16"	Shut-in No. 1	60 Min.
Spot	NE-SE	Size Hole	12¼"	Flow No. 2	90 Min.
Sec.	20	Size Rat Hole	--	Shut-in No. 2	150 Min.
Twp.	13 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 3/4"		
County	Rich	Length of D. C.	228'	Bottom Hole Temp.	96°F
State	Utah	Total Depth	2280'	Mud Weight	8.8
Elevation	--	Interval Tested	2167-2280'	Gravity	--
Formation	Twin Creek	Type of Test	Bottom Hole Conventional	Viscosity	34

Tool opened @ 1:41 AM.



Inside Recorder

PRD Make Kuster AK-1
No. 4152 Cap. 2100 @ 2162'

Press		Corrected
Initial Hydrostatic	A	999
Final Hydrostatic	K	972
Initial Flow	B	38
Final Initial Flow	C	24
Initial Shut-in	D	860
Second Initial Flow	E	44
Second Final Flow	F	65
Second Shut-in	G	862
Third Initial Flow	H	--
Third Final Flow	I	--
Third Shut-in	J	--

Lynes Dist.: Rock Springs, WY.
Our Tester: Perry Eker
Witnessed By: Burt Greenhow

Operator: American Quasar Petroleum Co.
Address: See Distribution
Well Name and No.: Hogback Ridge #20-1
Ticket No.: 3828
Date: 1-24-77
No. Final Copies: 30

Did Well Flow – Gas No Oil No Water No

RECOVERY IN PIPE: 124' Drilling mud = 0.91 bbl.

1st Flow - Tool opened with a weak ½" underwater blow, increased to a 1" underwater blow at end of flow period.

2nd Flow - Tool opened with a weak 1" underwater blow, decreased to a ½" underwater blow in 55 minutes and remained thru flow period.

REMARKS: ---

Form 1

LYNES, INC.

Operator American Quasar Petroleum Co. Lease & No. Hogback Ridge #20-1 DST No. 2

Recorder No. 4152 @ 2162'

FIRST SHUT IN PRESSURE:

TIME(MIN) PHI	(T"PHI) /PHI	PSIG
0.0	0.0000	24
6.0	2.6667	713
12.0	1.8333	800
18.0	1.5556	825
24.0	1.4167	840
30.0	1.3333	849
36.0	1.2778	853
42.0	1.2381	855
48.0	1.2083	857
54.0	1.1852	859
60.0	1.1667	860

EXTRAPLN OF FIRST SHUT IN : 872.3

SECOND SHUT IN PRESSURE:

TIME(MIN) PHI	(T"PHI) /PHI	PSIG
0.0	0.0000	65
15.0	7.6667	656
30.0	4.3333	778
45.0	3.2222	821
60.0	2.6667	841
75.0	2.3333	850
90.0	2.1111	855
105.0	1.9524	859
120.0	1.8333	860
135.0	1.7407	861
150.0	1.6667	862

EXTRAPLN OF SECOND SHUT IN : 874.4 M : 56.1

Extrapolations of reservoir pressures should be used as indicators only.

Form 2

LYNES, INC.

Fluid Sample Report

Date 1-24-77 Ticket No. 3828

Company American Quasar Petroleum Co.

Well Name & No. Hogback Ridge #20-1 DST No. 2

County Rich State Utah

Sampler No. 13 Test Interval 2167-2280'

Pressure in Sampler 0 PSIG BHT 96 °F

Total Volume of Sampler: 2750 cc.

Total Volume of Sample: 2550 cc.

Oil: None cc.

Water: None cc.

Mud: 2550 cc.

Gas: None cu. ft.

Other: None

Resistivity

Water: @ of Chloride Content ppm.

Mud Pit Sample 2.8 @ 72°F of Chloride Content 1800 ppm.

Gas/Oil Ratio Gravity °API @ °F

Where was sample drained On location.

Remarks: Rig Water - R.W. 3.0 @ 60°F = 2200 ppm. chl.

Form 5

LYNES, INC.

DISTRIBUTION OF FINAL DST REPORTS

Operator American Quasar Petroleum Co. Lease Hogback Ridge Well No. 20-1

Original & 1 copy: American Quasar Petroleum Co., 330 Pacific Western Life Bldg., Casper, Wyoming 82601 Attn: John Sindelar

1 copy: American Quasar Petroleum Co., 707 United Bank Tower, Denver, Colorado 80202 Attn: Clare Gregg

3 copies: American Quasar Petroleum Co., 2500 First National Bank Bldg., Ft. Worth, Texas 76102 Attn: Bill Bogert

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

2 copies: Energy Reserves Group, Box 1407, Denver, Colorado 80202 Attn: Rich Sandlin

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

2 copies: Louisiana Land & Exploration Co., 1500 Denver Club Bldg., Denver, Colorado 80202 Attn: Jim Anderson

3 copies: W.R. Grace, 2925 LBJ Freeway, Dallas, Texas 75234 Attn: Lee Boice

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3 copies: Cities Services Oil Co., 900 Colorado State Bank Bldg., Denver, Colorado 80202 Attn: R.L. Colby

3 copies: Ram Petroleum Co., Box 90, 401 Bay St., Toronto, Ontario M5H214

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

2 copies: U.S.G.S., 8426 Federal Bldg., Salt Lake City, Utah 84138

3 copies: Patrick Petroleum Corp., 744 W. Michigan Ave., Jackson, MI 49204 Attn: John Orr

Phone
522-1206 Area 303

LYNES, INC.

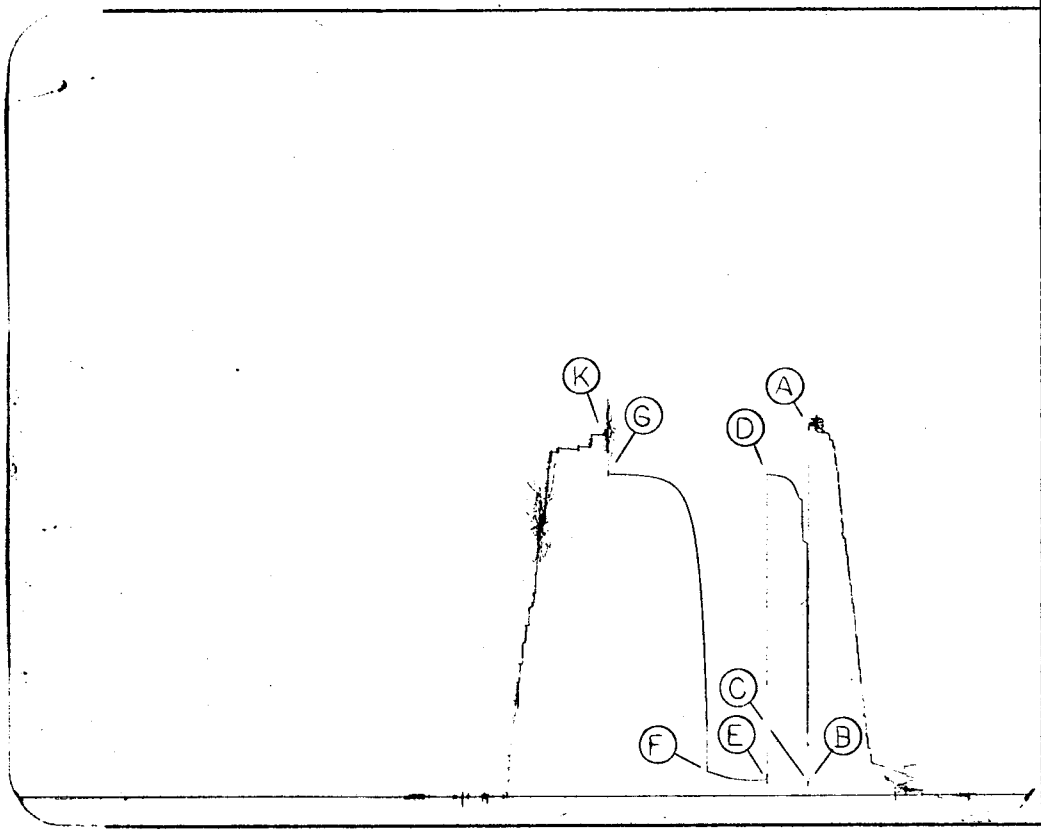
Box 712
Sterling, Colo. 80751

Contractor	Loffland Bros. Co.	Top Choke	1"
Rig No.	214	Bottom Choke	9/16"
Spot	NE-SE	Size Hole	12¼"
Sec.	20	Size Rat Hole	--
Twp.	13 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.	228'
State	Utah	Total Depth	2280'
Elevation	--	Interval Tested	2167-2280'
Formation	Twin Creek	Type of Test	Bottom Hole Conventional

Flow No. 1	10	Min.
Shut-in No. 1	60	Min.
Flow No. 2	90	Min.
Shut-in No. 2	150	Min.
Flow No. 3	--	Min.
Shut-in No. 3	--	Min.

Bottom Hole Temp.	96°F
Mud Weight	8.8
Gravity	--
Viscosity	34

Tool opened @ 1:41 AM.



Inside Recorder

PRD Make Kuster AK-1
No. 4152 Cap. 2100 @ 2162'

Press		Corrected
Initial Hydrostatic	A	999
Final Hydrostatic	K	972
Initial Flow	B	38
Final Initial Flow	C	24
Initial Shut-in	D	860
Second Initial Flow	E	44
Second Final Flow	F	65
Second Shut-in	G	862
Third Initial Flow	H	--
Third Final Flow	I	--
Third Shut-in	J	--

Lynes Dist.: Rock Springs, WY.
Our Tester: Perry Eker
Witnessed By: Burt Greenhow

Operator: American Quasar Petroleum Co.
Address: See Distribution
Well Name and No.: Hogback Ridge #20-1
Ticket No.: 3828
Date: 1-24-77
DST No.:
No. Final Copies: 30

Did Well Flow – Gas No Oil No Water No

RECOVERY IN PIPE: 124' Drilling mud = 0.91 bbl.

1st Flow - Tool opened with a weak ½" underwater blow, increased to a 1" underwater blow at end of flow period.

2nd Flow - Tool opened with a weak 1" underwater blow, decreased to a ½" underwater blow in 55 minutes and remained thru flow period.

REMARKS: ---

Form 1

LYNES, INC.

Operator American Quasar Petroleum Co. Lease & No. Hogback Ridge #20-1 DST No. 2

Recorder No. 4152 @ 2162'

FIRST SHUT IN PRESSURE:

TIME(MIN) PHI	(T"PHI) /PHI	PSIG
0.0	0.0000	24
6.0	2.6667	713
12.0	1.8333	800
18.0	1.5556	825
24.0	1.4167	840
30.0	1.3333	849
36.0	1.2778	853
42.0	1.2381	855
48.0	1.2083	857
54.0	1.1852	859
60.0	1.1667	860

EXTRAPLN OF FIRST SHUT IN : 872.3

SECOND SHUT IN PRESSURE:

TIME(MIN) PHI	(T"PHI) /PHI	PSIG
0.0	0.0000	65
15.0	7.6667	656
30.0	4.3333	778
45.0	3.2222	821
60.0	2.6667	841
75.0	2.3333	850
90.0	2.1111	855
105.0	1.9524	859
120.0	1.8333	860
135.0	1.7407	861
150.0	1.6667	862

EXTRAPLN OF SECOND SHUT IN : 874.4 M : 56.1

Extrapolations of reservoir pressures should be used as indicators only.

Form 2

LYNES, INC.

Fluid Sample Report

Date 1-24-77 Ticket No. 3828

Company American Quasar Petroleum Co.

Well Name & No. Hogback Ridge #20-1 DST No. 2

County Rich State Utah

Sampler No. 13 Test Interval 2167-2280'

Pressure in Sampler 0 PSIG BHT 96 °F

Total Volume of Sampler: 2750 cc.

Total Volume of Sample: 2550 cc.

Oil: None cc.

Water: None cc.

Mud: 2550 cc.

Gas: None cu. ft.

Other: None

Resistivity

Water: @ of Chloride Content ppm.

Mud Pit Sample 2.8 @ 72°F of Chloride Content 1800 ppm.

Gas/Oil Ratio Gravity °API @ °F

Where was sample drained On location.

Remarks: Rig Water - R.W. 3.0 @ 60°F = 2200 ppm. chl.

Form 5

LYNES, INC.

DISTRIBUTION OF FINAL DST REPORTS

Operator American Quasar Petroleum Co. Lease Hogback Ridge Well No. 20-1

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3 copies: W.R. Grace, 2925 LBJ Freeway, Dallas, Texas 75234 Attn: Lee Boice

1 copy: Patrick Petroleum Corporation, 1655 Colorado National Bank Bldg., Denver, Colorado 80202 Attn: Jim Nance

3 copies: Cities Services Oil Co., 900 Colorado State Bank Bldg., Denver, Colorado 80202 Attn: R.L. Colby

3 copies: Ram Petroleum Co., Box 90, 401 Bay St., Toronto, Ontario M5H214

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

2 copies: U.S.G.S., 8426 Federal Bldg., Salt Lake City, Utah 84138

3 copies: Patrick Petroleum Corp., 744 W. Michigan Ave., Jackson, MI 49204 Attn: John Orr

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 Hogback Ridge "20" No. 1

Operator American Quasar Petroleum Co.

Address 707 United Bank Bldg., 1700 Broadway Denver, Colo. 80202

Contractor ~~Noble Drlg. Co.~~ Loffland Bros. 214

Address [redacted]

Location NE 1/4, SE 1/4, Sec. 20; T. 13 N; R. 7 E; Rich County

Water Sands:

Depth: From-	To-	Volume: Flow Rate or Head-	Quality: Fresh or salty-
D.S.T. No. 3			
1. 2545	2592		Fresh
2.			
3.			
4.			
5.			

(continue on reverse side if necessary)

Formation Tops:
Nugget ? 2541 Spl.

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.

See reverse side for results of D.S.T.

D.S.T. No. 3 2545 to 2592' (47') Choke 9/16" x 1"

Pre Flow 10 min.; ISI 60 min. Final Flow 90 min.; Final Shut In 120 min.

Pre Flow: Tool opened with weak Blow - 1/4" (Water) flow in bucket

Final Flow: Opened with good ~~S~~trong blow immediately for 20 min. Opened choke manifold on 1/4" choke with 7 psi decreasing to 0 psi in 15 min. (35 min). No pressure on gauge for 30 min. Shut in choke manifold ~~for~~ - Blow into water in bucket rest of test - 7" water decr. to 3" of water in 15 min. Last 5 min 1/4" water blow in bucket.

Recovered: Est. 2300' Water Cut Drlg. Mud (Reversed out)

Sampler: Pressure 0 psi Recovered 2700 cc Water

Recovered Water: Rw. ~~[illegible]~~ 707 Cl ~~from Sampler.~~ ~~[illegible]~~

Pit Mud: 2.8 @ 62°F. Cl

Pressures:

	IHP 1193 psi	—	FHP 1193 psi
Pre Flow	IFP 343 psi	—	FFP * see below
Final Flow	IFP 177 psi	—	FFP 1022 psi
	ISIP 1022 psi/60 min.		FSIP 1022 psi/2 hrs.

BHT - Thermometer broke

* No pre flow FFP - ~~tool~~ tool slipped down hole opened momentarily then closed only got IFP on pre-flow.

Testing Company: Lynes Inc., Rock Springs, Wyo.

" Technician: Jim Samor

Water sample to be delivered to Div. Oil & Gas Office.

William H. Dunlap
Consulting Geologist
Suite 209 Energy Bldg.
231 North Center Phone 234-1953
Casper, Wyoming 82601

3

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

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 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)
Hogback Ridge Sec. 20 NE SE	13N	7E	20-1							Spudded 1-5-77 Ran & cmtd. 22" cond. pipe. Ran & cmtd. 13 3/8" Surf. csg. CS-749' DST #1 1041/1112' DST #2 2167/2280' DST #3 2545/2592' Drlg @ 3410'

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.*

CIRCULATE TO:
DIRECTOR
PETROLEUM ENGINEER
MINE COORDINATOR
ADMINISTRATIVE ASSISTANT
ALL
RETURN TO Kathy FOR FILING

CONFIDENTIAL:

March 29, 1977

Memo to File:

Re: American Quasar Petroleum Company
Hogback Ridge 20-1
NE SE, Section 20,
Township 13 N., Range 7 E.
Rich County, Utah

As of the 24th of March 1977, this well was at a total depth of 5100'. This was the third attempt to get back to the previously drilled depth of 5504'.

Hole problems and mechanical problems resulted in the hole being lost from 5000' on. It was noted that just prior to loosing the original hole, excellent shows had been encountered.

PATRICK L. DRISCOLL
CHIEF PETROLEUM ENGINEER

/tlb

cc: U.S. Geological Survey

4

Form DOGC-4

RECEIVED MAY 3 1977 DIVISION OF 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. _____
Federal Lease No. _____
Indian Lease No. _____
Fee & Pat. FEE

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: March, 1977.

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)
Hogback Ridge Sec. 20 NE SE	13N	7E	20-1							Drlg @ 5295'

CONFIDENTIAL

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.*

4

Form DOGC-4

RECEIVED APR 7 1977 DIVISION OF 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. _____
Federal Lease No. _____
Indian Lease No. _____
Fee & Pat. FEE

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 A. H. Hurley
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, cause; date and result of test for gasoline content of gas)
Hogback Ridge Sec. 20 NE SE	13N	7E	20-1							Drlg @ 5504' Ran DIL, Comp. Sonic & Dipmeter Ran & cmtd. 9 5/8" csg. CS-3711'

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

CONFIDENTIAL

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: April, 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)
Hogback Ridge Sec. 20 NE SE	13N	7E	20-1							Drlg. @ 7785'

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

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: May, 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, cause; date and result of test for gasoline content of gas)
Hogback Ridge Sec. 20 NE SE	13N	7E	20-1							Drlg. @ 9493' Ran Dual Laterolog Ran & cmtd 7 5/8" csg. Shoe 8142' Top LIner 3563'

CONFIDENTIAL

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

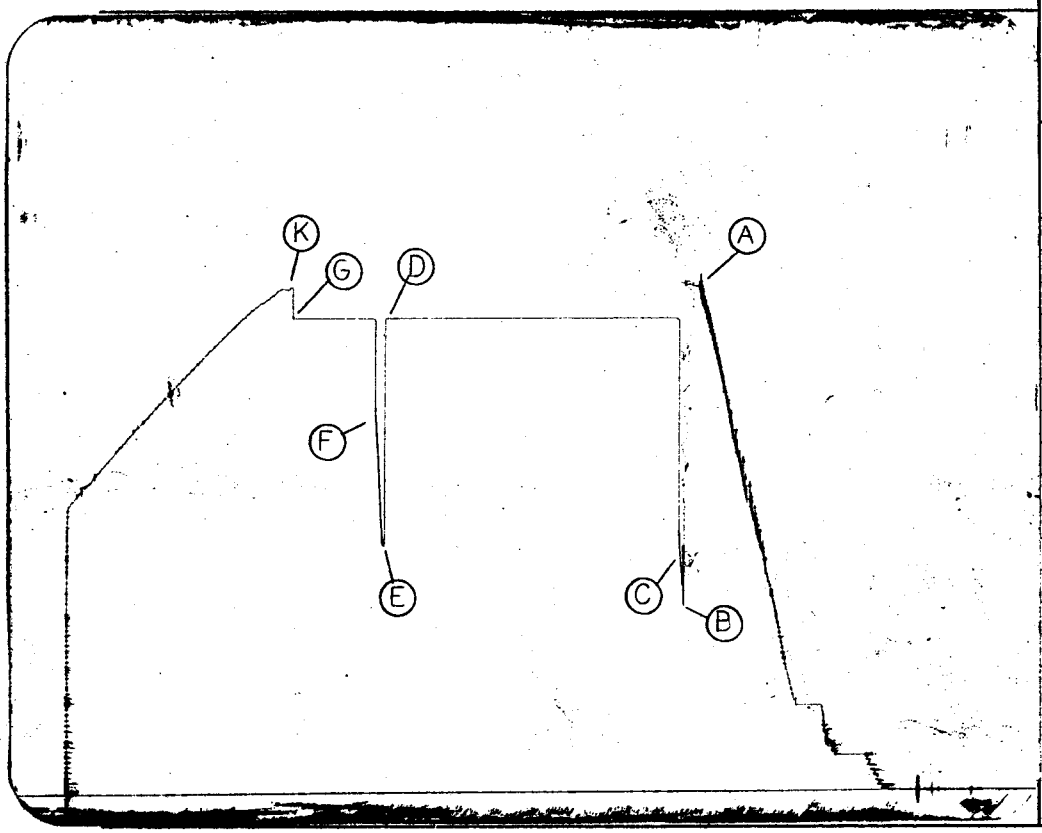
CONFIDENTIAL

Contractor	Loffland Bros. Co.	Top Choke	--
Rig No.	214	Bottom Choke	3/4"
Spot	NE-SE	Size Hole	6½"
Sec.	20	Size Rat Hole	--
Twp.	13 N	Size & Wt. D. P.	3½" 13.30
Rng.	7 E	Size Wt. Pipe	--
Field	Wildcat	I. D. of D. C.	2¼"
County	Rich	Length of D. C.	852'
State	Utah	Total Depth	9493'
Elevation	6460' "K.B."	Interval Tested	9440-9493'
Formation	Dinwoody	Type of Test	Bottom Hole Conventional

Flow No. 1	6	Min.
Shut-in No. 1	325	Min.
Flow No. 2	14	Min.
Shut-in No. 2	120	Min.
Flow No. 3	--	Min.
Shut-in No. 3	--	Min.

Bottom Hole Temp. 161°F
Mud Weight 9.2
Gravity --
Viscosity 40

Tool opened @ 11:45 PM.



Inside Recorder

PRD Make Kuster AK-1
No. 7424 Cap. 6750 @ 9446'

Press		Corrected
Initial Hydrostatic	A	4483
Final Hydrostatic	K	4476
Initial Flow	B	1637
Final Initial Flow	C	2151
Initial Shut-in	D	4196
Second Initial Flow	E	2186
Second Final Flow	F	3350
Second Shut-in	G	4196
Third Initial Flow	H	--
Third Final Flow	I	--
Third Shut-in	J	--

Lynes Dist.: Rock Springs, Wy.
Our Tester: Wayne Hockday
Witnessed By: Walt Bowen

Operator American Quasar Petroleum Co.
Address See Distribution
Well Name and No. Hogback Ridge #20-1
Ticket No. 7608
Date 6-1-77
DST No. 4
No. Final Copies 31

Did Well Flow — Gas Yes Oil No Water No

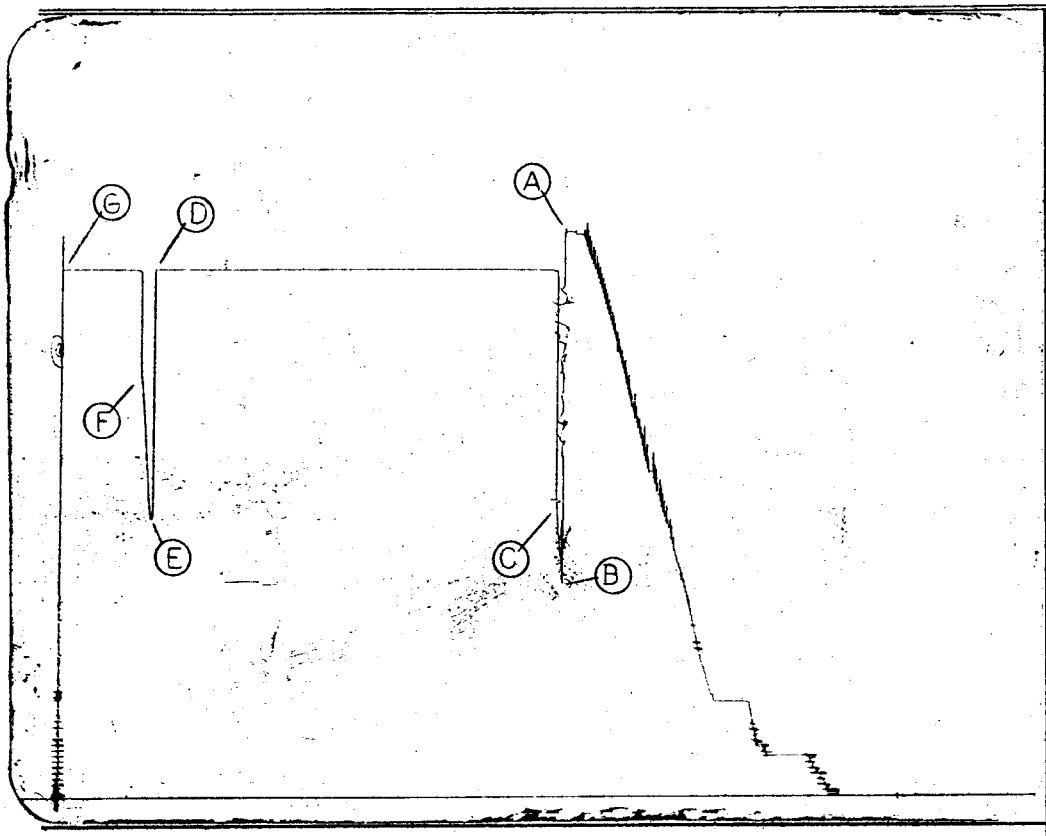
RECOVERY IN PIPE: 300' Total fluid (ran 210' of Ammonia water cushion)
150' Water cut drilling mud = 0.74 bbl.
150' Water cut & gas cut drilling mud = 0.74 bbl.
Top Sample: R.W. 0.65 @ 79°F = 8300 ppm. chl.
Middle " : R.W. 0.80 @ 70°F = 7500 ppm. chl.
Bottom " : R.W. 0.60 @ 78°F = 6500 ppm. chl.

REMARKS: 1st Flow- Tool opened with strong blow, increased to 2#, 15" underwater blow in 2 minutes. Gas to surface at beginning of initial shut-in.
2nd Flow- Tool opened with strong blow. Gas to surface in 3 minutes, see gas volume report.

Form 1

LYNES, INC.

Operator American Quasar Petr. Co. Lease & No. Hogback Ridge #20-1 DST No. 4



PRD Make Inside Recorder Kuster AK-1
No. 5563 Cap. 6100 @ 9451'

Press		Corrected
Initial Hydrostatic	A	4499
Final Hydrostatic	K	*
Initial Flow	B	1696
Final Initial Flow	C	2362
Initial Shut-in	D	4199
Second Initial Flow	E	2218
Second Final Flow	F	3351
Second Shut-in	G	4199
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.

Gas Volume Report

Operator American Quasar Petr. Lease & No. Hogback Ridge #20-1 DST No. 4

2nd Flow:

Min.	PSIG	Orifice Size	MCF/D	Min.	PSIG	Orifice Size	MCF/D
3	1600	¼ & ½"	12491.99				
4	1800	"	14039.00				
5	1800	"	14039.00				
6	1800	"	14039.00				
10	1800	"	14039.00				
11	2000	"	15886.00				
14	2000	"	15886.00				

Remarks:

Form 4

LYNES, INC.

Fluid Sample Report

Date 6-1-77 Ticket No. 7608

Company American Quasar Petroleum Co.

Well Name & No. Hogback Ridge #20-1 DST No. 4

County Rich State Utah

Sampler No. -- Test Interval 9440-9493'

Pressure in Sampler 0 PSIG BHT 161 °F

Total Volume of Sampler: 2100 cc.

Total Volume of Sample: No fluid cc.

Oil: None cc.

Water: None cc.

Mud: None cc.

Gas: None cu. ft.

Other: None

Resistivity

Water: @ of Chloride Content ppm.

Mud Pit Sample 0.7 @ 78°F of Chloride Content 7500 ppm.

Gas/Oil Ratio Gravity °API @ °F

Where was sample drained Lynes Shop at Rock Springs, Wyoming.

Remarks: Rig Water - R.W. 10.0 @ 82°F = 450 ppm. chl.

No fluid or gas in sampler. O'rings were cut because of excessive pressure.

Form 5

LYNES, INC.

Operator American Quasar Petroleum Company Lease & No. Hogback Ridge #20-1 DST No. 4

Comments relative to the analysis of the pressure chart from DST #4, Interval: 9440-9493', which was run in the captioned well located in the NE SE Section 20, T13N-R7E, Rich County, Utah:

1. A maximum reservoir pressure of 4196 psi at the recorder depth of 9446 feet was recorded mechanically during both shut-in periods. This indicated maximum reservoir pressure converts to a subsurface pressure gradient of 0.444 psi/ft., which in turn is evidence of an essentially "normal" reservoir pressure for the depth of the test.

2. Because the maximum reservoir pressure was recorded mechanically, which eliminates the use of a Horner extrapolation plot, it is impossible to calculate numerical values for the various reservoir properties which are normally calculable by the analysis of shut-in pressure build-up curves which have not attained the maximum reservoir pressure during the shut-in periods. The character of the shut-in pressure build-up curves is indicative of the presence of excellent transmissibility and permeability of the formation within the tested interval. This is further substantiated by the magnitude of the flow rate (15,000 MCFPD), which occurred during both brief flow periods which were used in this test.

3. The character of the pressure record which was produced in this test also indicates that significant well-bore damage was present at the time of this formation test; however, in view of the volume-rate of production which occurred, the indicated well-bore damage is most probably due to the choke effect of the restrictions within the test tool rather than formation damage.

Roger L. Hoeger

Roger L. Hoeger
Consultant for Lynes, Inc.

Form 2

LYNES, INC.

Operator American Quasar Petr. Co. Lease & No. Hogback Ridge #20-1 DST No. 4

Recorder No. 7424 @ 9446'

Initial Shut-in

0	min.	2151	psig.
32.5	"	4184	"
65.0	"	4188	"
97.5	"	4191	"
130.0	"	4194	"
162.5	"	4195	"
195.0	"	4196	"
227.5	"	4196	"
260.0	"	4196	"
292.5	"	4196	"
325.0	"	4196	"

Final Shut-in

0	min.	3350	psig.
12	"	4193	"
24	"	4194	"
36	"	4195	"
48	"	4196	"
60	"	4196	"
72	"	4196	"
84	"	4196	"
96	"	4196	"
108	"	4196	"
120	"	4196	"

Form 2

LYNES, INC.

DISTRIBUTION OF FINAL DST REPORTS

Operator American Quasar Petroleum Co. Lease Hogback Ridge Well No. 20-1

Original & 1 copy: American Quasar Petroleum Co., 330 Pacific Western Life Bldg., Casper, Wyoming 82601 Attn: John Sindelar

1 copy: American Quasar Petroleum Co., 707 United Bank Tower, Denver, Colorado 80202 Attn: Clare Gregg

3 copies: American Quasar Petroleum Co., 2500 First National Bank Bldg., Ft. Worth, Texas 76102 Attn: Bill Bogert

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

2 copies: Energy Reserves Group, Box 1407, Denver, Colorado 80202 Attn: Rich Sandlin

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

2 copies: Louisiana Land & Exploration Co., 1500 Denver Club Bldg., Denver, Colorado 80202 Attn: Jim Anderson

3 copies: W.R. Grace, 2925 LBJ Freeway, Dallas, Texas 75234 Attn: Lee Boice

1 copy: Patrick Petroleum Corporation, 1655 Colorado National Bank Bldg., Denver, Colorado 80202 Attn: Jim Nance

3 copies: Cities Services Oil Co., 900 Colorado State Bank Bldg., Denver, Colorado 80202 Attn: R.L. Colby

3 copies: Ram Petroleum Co., Box 90, 401 Bay St., Toronto, Ontario M5H214

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

2 copies: U.S.G.S., 8426 Federal Bldg., Salt Lake City, Utah 84138

3 copies: Patrick Petroleum Corp., 744 W. Michigan Ave., Jackson, MI 49204 Attn: John Orr

1 copy: W.H. Dunlap, General Delivery, Randolph, Utah, 84604

CIRCULATE TO:

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

RETURN TO Kathy O.
FOR FILING

June 28, 1977

Memo To File:

Re: American Quasar Oil Company
Hogback Ridge 20-1
NE SE Sec. 20, T. 13 N., R 7 E.
Rich County, Utah

CONFIDENTIAL . . . . . .

This apparent gas discovery well is currently being drilled by Loffland Drilling Company's rig #214 for American Quasar. The gas section is now behind a cemented intermediate string and drilling ahead has commenced (present total depth is 10,063 feet). The rig was checked for safety devices relative to Hydrogen Sulphide Gas. (There is a good chance that this might be encountered in the Phosphoria Formation of the Permian Age).

The rig has a windsock located in a easily spotted position and numerous hanging flags where the wind direction is easily noted. The area is marked by a "primary crew gathering spot" located opposite the prevailing wind area.

The blowout preventors have been changed out to a design more compatible for hazardous gas, and the manifo ld system is now equipped with automatic sensing, choking, and shut-down devices in case the crew has to vacate the rig.

Fully charged oxygen bottles are located all throughout the rig, the grounds, and the trailer areas. Various hose outlets branch out from the oxygen areas. Also, there are air compressors located in fringe areas around the drill site and these are complete with air masks. On the rig floor and in the drillers doghouse are a total of six (6) uncrated and handy Scott-self contained "Air-Pak" units.

Several alarm systems composed of flashing lights, horns, and whistles are located throughout the entire area. These systems are connected to the gas sensing and logging unit, and there is a large "environmental" unit located between the righ and the trailers. As a night precaution, yard lights have been installed for complete illumination of the general area.

All in all, the safety precautions are to be considered adequate.

PATRICK L. DRISCOLL
CHIEF PETROLEUM ENGINEER

PLD/ksw

4

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

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: June, 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 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)
Hogback Ridge Sec. 20 NE SE	13N	7E	20-1							Drlg @ 10,220' DST #4 9440/9493' Ran logs Ran 5" liner Top of Liner 7858' Btm of Liner 9809' Ran & cmtd 7 5/8" csg. CS-3569

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.*

AMERICAN QUASAR PETROLEUM CO.
OF NEW MEXICO
707 UNITED BANK TOWER, 1700 BROADWAY, DENVER, COLORADO 80290, U.S.A.
TELEPHONE (303) 861-8437

June 30, 1977

CONFIDENTIAL

RECEIVED
JUL 7 1977

Division of Oil and Gas
Conservation
1588 West North Temple
Salt Lake City, UT 84116

Attn: Mr. Pat Driscoll

Gentlemen:

Pursuant to our telephone conversation this morning concerning Quasar's Hogback Ridge #20-1 test well, please find the enclosed plat showing the initial surface location of the hole and the deviation movement showing the location of the Dinwoody indicated pay zone. The deviation and bottom hole location is calculated from all data available to date including drilling records, dip meters, etc. Any of this data not already furnished you is available on your request.

Please advise if you have any questions on this matter. In the meantime, we will keep you posted on subsequent developments. The platted bottom hole location actually figures on the top of the Dinwoody indicated pay zone encountered at a depth of 9,440'. As you know, we set a liner across this zone and are drilling today at a depth of 10,213' in the Phosphoria.

Sincerely yours,

James H. Dickson

James H. Dickson
Division Manager

JHD/ls
Encl.

FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface

Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water _____
cc. Mud _____
Tot. Liquid cc. _____

Gravity _____ ° API @ _____ °F.

Gas/Oil Ratio _____ cu. ft./bbl.

	RESISTIVITY			CHLORIDE CONTENT
Recovery Water		@	°F.	ppm
Recovery Mud	.80	@ 74	°F.	ppm
Recovery Mud Filtrate	.64	@ 68	°F.	9500 ppm
Mud Pit Sample	1.38	@ 76	°F.	ppm
Mud Pit Sample Filtrate	1.2	@ 68	°F.	7000 ppm

Mud Weight 10. vis 46 sec

Date 7-9-77 Ticket Number 839748

Kind of Job OPEN HOLE Halliburton District ROCK SPRINGS

Tester J. BURNETT Witness BIRL LYNCH

Drilling Contractor LOFFLAND BROTHERS DRILLING COMPANY DR

EQUIPMENT & HOLE DATA

Formation Tested Phosphoria

Elevation - Ft.

Net Productive Interval 198' Ft.

All Depths Measured From Kelly Bushing

Total Depth 10405' Ft.

Main Hole/Casing Size 4"

Drill Collar Length 320.5' I.D. 1.75"

Drill Pipe Length 2383.9'-7474' I.D. 2.441"-2.602"

Packer Depth(s) 10204-10207' Ft.

Depth Tester Valve 10191' Ft.

Cushion TYPE Ammonia AMOUNT Water 1000' Ft. Depth Back Pres. Valve

Surface Choke Bubble hose Bottom Choke .44"

Recovered Feet of NO RECOVERY REPORTED

Recovered Feet of

Recovered Feet of

Recovered Feet of

Recovered Feet of

Meas. From Tester Valve

Remarks SEE PRODUCTION TEST DATA SHEET

Q-Questionable

TEMPERATURE	Gauge No. 1579		Gauge No. 425		Gauge No.		TIME	
	Depth: 10193' Ft.		Depth: 10402 Ft.		Depth: Ft.			
	24 Hour Clock		24 Hour Clock		Hour Clock		Tool Opened 13:25 A.M. P.M.	
Est. 190 °F.	Blanked Off No		Blanked Off Yes		Blanked Off			
Actual °F.	Pressures		Pressures		Pressures		Opened Bypass 14:06 A.M. P.M.	
	Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic	5375	5314	5469	5478				
First Period Flow Initial	733	789 Q	780	1059 Q			—	—
First Period Flow Final	690	631	746	711			11	8
First Period Closed in	4215	4203	4214	4229			30	33
Second Period Flow Initial							—	—
Second Period Flow Final								
Second Period Closed in								
Third Period Flow Initial							—	—
Third Period Flow Final								
Third Period Closed in								
Final Hydrostatic	5312	5307	5426	5417			—	—

Legal Location Sec. - Twp. - Rng. 20-13N-7E

Lease Name HOGBACK RIDGE

Well No. 20-1

Test No. 5

Tested Interval 10207-10405'

Field Area WILDCAT

County RICH

State UTAH

Lease Owner/Company Name AMERICAN QUASAR PETROLEUM COMPANY

FORM 181-R2—PRINTED IN U.S.A.

FORMATION TEST DATA

LITTLE'S 102548 5M 9/76

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Casing perfs. _____ Bottom choke .44" Surf. temp 80 °F Ticket No. 839748
Gas gravity _____ Oil gravity _____ GOR _____
Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F
INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED _____

Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
1045					On location
7-10-77 0200					Picked up tools
					Waited on crossovers
1030					Made up tools, went in hole
1300					Rigged up surface equipment
1325	Bubble hose				Tester valve opened with a weak blow
1328	"				Strong blow
1335	"	160			Pressure increasing
					Gas to surface
1336	"	180			Closed dual
1406					Closed tester valve, pulled tools loose.
1410					Roated dual to reverse bad valve on rig
					Unable to gauge recovery
1830					Broke out tools
200					Released

FORM 192-R1—PRINTED IN U.S.A.

PRODUCTION TEST DATA

LITTLE'S 96672 5M 6/75

AMERICAN QUASAR PETROLEUM COMPANY
Lease Owner/Company Name

839748
Ticket Number

B.T. 1579 B.T. 425 B.T.

Depth 10193' Depth 10402' Depth

CLOCK: 3100-24 2263-24

	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.
	FIRST FLOW			FIRST FLOW					
P-0	.000		789 Q	.000		1059 Q			
1	.0034		739	.0039		838			
2	.0068		726	.0078		803			
3	.0101		653	.0116		763			
4	.0135		634	.0155		715			
5	.0169		627	.0194		708			
6	.0203		627	.0233		711			
7	.0237		629	.0272		711			
8	.0270		631	.0310		711			
	1 minute intervals			1 minute intervals					
	Q-Questionable			Q-Questionable					
	FINAL CIP			FINAL CIP					
P-0	.000		631	.000		711			
1	.0033		UTR	.0033		UTR			
2	.0066		UTR	.0065		UTR			
3	.0099		1079	.0098		UTR			
4	.0132		2087	.0131		UTR			
5	.0165		2606	.0164		UTR			
6	.0198		3135	.0196		3602			
7	.0231		3592	.0229		3810			
8	.0264		3875	.0262		3946			
9	.0297		3930	.0294		3993			
10	.0330		3987	.0327		4037			
11	.0396		4042	.0393		4082			
12	.0462		4080	.0458		4113			
13	.0528		4108	.0523		4136			
14	.0594		4129	.0589		4154			
15	.0660		4143	.0654		4171			
16	.0726		4160	.0720		4183			
17	.0792		4178	.0785		4197			
18	.0858		4179	.0851		4206			
19	.0925		4188	.0916		4214			
20	.0991		4196	.0982		4221			
21	.1090		4203	.1080		4229			
		*			*				

*-First 10 intervals equal to 1 minute each; next 10 intervals equal to 2 minutes each; last interval equal to 3 minutes.
UTR-Unable to read

REMARKS:

SPECIAL PRESSURE DATA

TICKET NO. 839748

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Reversing Sub	3.5"	2.602"	7474' Drill Pipe	
Water Cushion Valve				
Drill Pipe	2 7/8"	2.441"	2383.9'	
Drill Collars	3 1/8"		320.5'	
Handling Sub & Choke Assembly	3 1/8"	1 1/4"	1.0' Change over	
Dual CIP Valve	3.03'	.44"	5.50'	
Dual CIP Sampler	3 1/16"	1.0"	1.17' Change over	
Hydro-Spring Tester	3.03 "	.50"	4.40'	10191'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	3.00"	1.6"	4.63'	10193'
Hydraulic Jar	3.03"	.50"	2.75'	
VR Safety Joint	3.03 "	.50"	2.66'	
Pressure Equalizing Crossover	3.0"	1.0"	.34' Change over	
Packer Assembly	3.0"	.50"	2.72'	10204'
Distributor				
Packer Assembly	3.0"	.50"	2.72'	10207'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
	3 1/8"	1 3/16"	.69' Change over	
	3 1/8"	1.75"	173.89' Drill collars	
Packer Assembly				
	3 1/8"	1.0"	1.25' Change over	
Distributor				
	3 1/8"	1.0"	1.0' Change over	
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	2.81"	1.25"	16.0'	
	3.00"	1.25"	.63' Change over	
Blanked-Off B.T. Running Case	3.03"	2.31"	4.07'	10402'
				10405'
Total Depth				

FORM 187-R1—PRINTED IN U.S.A.

EQUIPMENT DATA

LITTLE'S 96676 75C 8/74

FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface
Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water _____
cc. Mud _____
Tot. Liquid cc. _____
Gravity _____ ° API @ _____ °F.
Gas/Oil Ratio _____ cu. ft./bbl.

	RESISTIVITY			CHLORIDE CONTENT
Recovery Water		@	°F.	ppm
Recovery Mud		@	°F.	ppm
Recovery Mud Filtrate		@	°F.	ppm
Mud Pit Sample	.72	@ 68	°F.	ppm
Mud Pit Sample Filtrate	.58	@ 68	°F.	10,000 ppm

Mud Weight 10.1 vis 42 sec

Date 7-11-77 Ticket Number 839749
Kind of Job OPEN HOLE TEST Halliburton District ROCK SPRINGS
Tester J. BURNETT Witness BIRL LYNCH TH
Drilling Contractor LOFFLAND BROTHERS DRILLING COMPANY

EQUIPMENT & HOLE DATA

Formation Tested Phosphoria
Elevation _____ Ft.
Net Productive Interval 193' Ft.
All Depths Measured From Kelly Bushing
Total Depth 10470' Ft.
Main Hole/Casing Size 4"
Drill Collar Length 320.5' I.D. 1.75"
Drill Pipe Length 7539'-2384' I.D. 2602"-2.151"
Packer Depth(s) 10274' - 10277' Ft.
Depth Tester Valve 10261' Ft.

Cushion TYPE AMOUNT Ft. Depth Back Pres. Valve Surface Choke Bubble Hose Bottom Choke .44"

Recovered 300 Feet of mud.
Recovered Feet of Res. top of recovery - .60 @ 78°, RMF .52 @ 68° 12,000 ppm
Recovered Feet of Res. middle of recovery - .64 @ 78°, RFM .55 @ 68° 12,000 ppm
Recovered Feet of Res. bottom of recovery - .70 @ 78°, RFM .66 @ 68° 9,100 ppm
Recovered Feet of

Remarks See Production Test Data Sheet . . .
Final Closed In Pressure non-usable. . .

TEMPERATURE	Gauge No. 1579 Depth: 10263 Ft.	Gauge No. 425 Depth: 10467 Ft.	Gauge No. Depth: Ft.	TIME
	24 Hour Clock	24 Hour Clock	Hour Clock	Tool Opened 0515 A.M. P.M.
Est. °F.	Blanked Off NO	Blanked Off YES	Blanked Off	
Actual 194 °F.	Pressures	Pressures	Pressures	Opened Bypass 0820 A.M. P.M.

		Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic		5243	5331	5469	5458				
First Period Flow	Initial	129	112	154	235			—	—
	Final	151	136	154	257			15	
	Closed in	173	185	197	309			60	
Second Period Flow	Initial	151	147	154	272			—	—
	Final	151	151	154	276			50	
	Closed in	-	-	-	-			60	
Third Period Flow	Initial							—	—
	Final								
	Closed in								
Final Hydrostatic		5243	5324	5469	5438			—	—

Legal Location Sec. - Twp. - Rng.: 20 - 13N - 7E
Lease Name: HOGBACK RIDGE
Well No.: 20-1
Test No.: 6
Field Area: WILDCAT
Tested Interval: 10277' - 10470'
Meas. From Tester Valve
County: RICH
Lease Owner/Company Name: AMERICAN QUASAR PETROLEUM COMPANY
State: UTAH

FORM 181-R2—PRINTED IN U.S.A.

FORMATION TEST DATA

LITTLE'S 102548 5M 9/76

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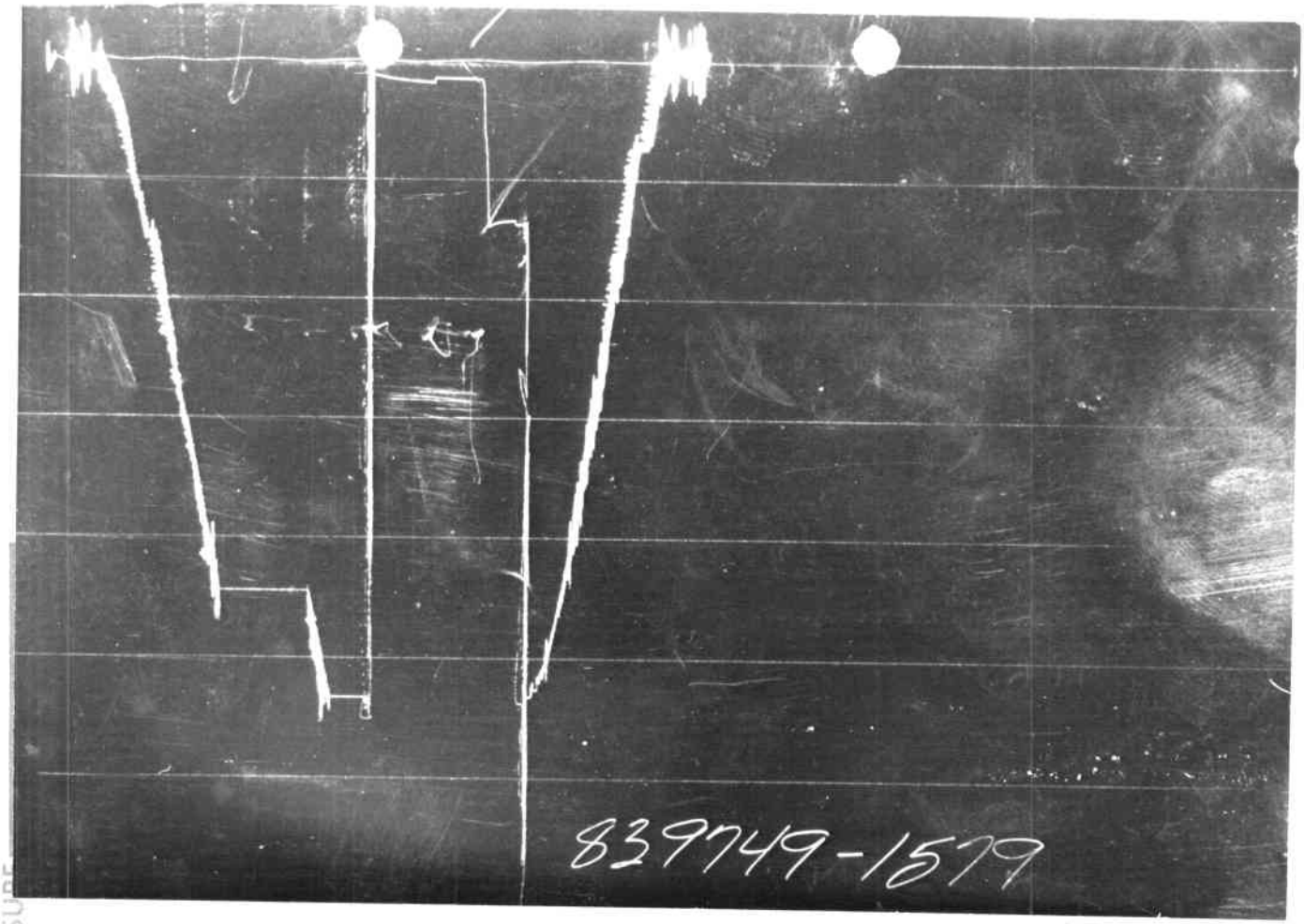
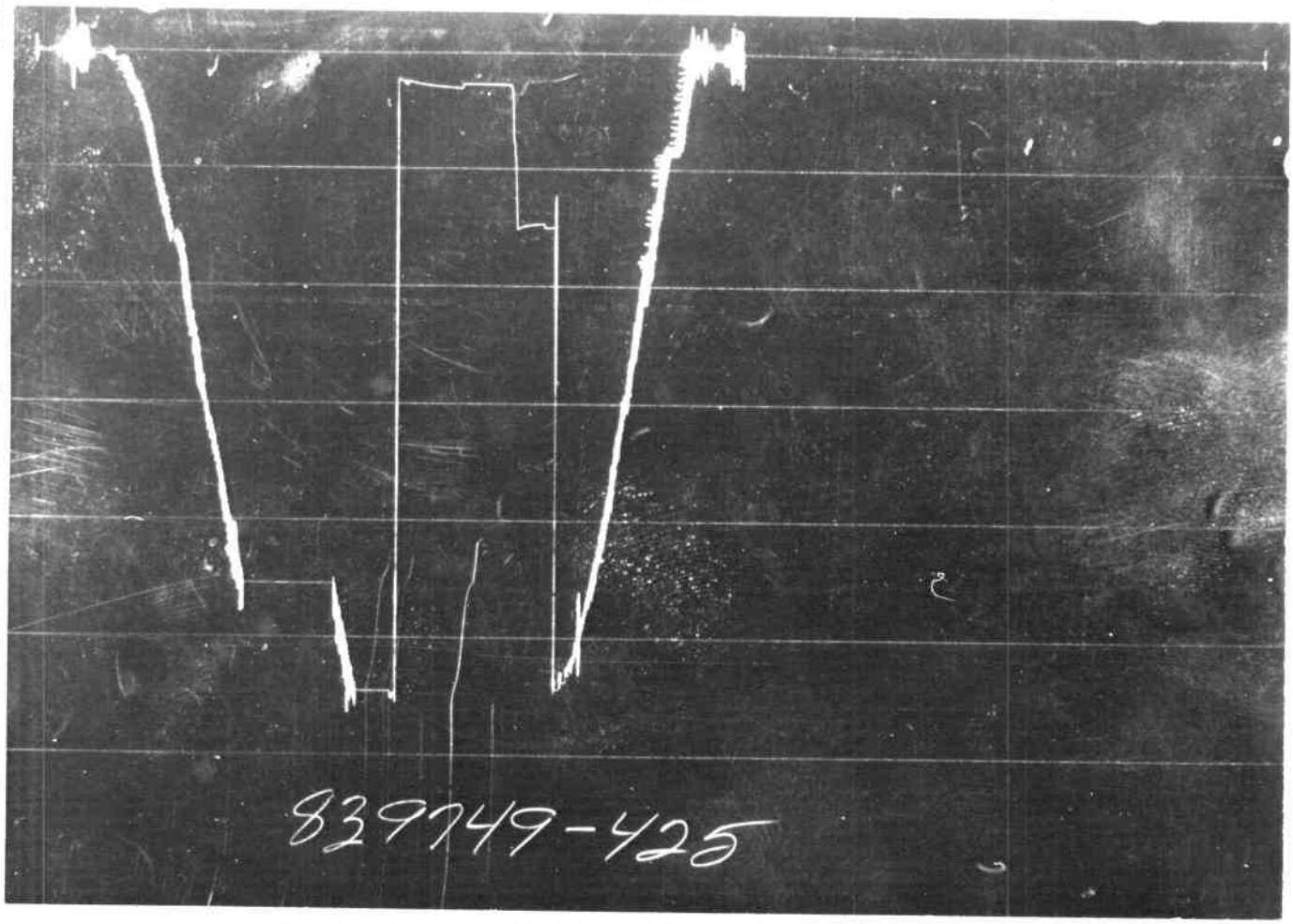


TIME

PRESSURE



Each Horizontal Line Equal to 1000 p.s.i.

Casing perfs. _____ Bottom choke .44" Surf. temp 80 °F Ticket No. 839749
Gas gravity _____ Oil gravity _____ GOR _____
Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F
INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED _____

Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
2200					On location.
2330					Picked up tools, went in hole.
7-12-77					
0430					Rigged up surface equipment.
0512					Set weight on tools.
0515	Bubble Hose				Tester valve opened with no blow.
0526	"				Weak blow.
0530					Closed tool.
0630	"				Opened tool with no blow.
0720					Closed tool.
0820					Closed tester valve.
					Pulled tools.
1100					Broke out tools.
1130					Waited on supervisor to help interpret
					charts.
1630					Released.

FORM 182-R1—PRINTED IN U.S.A.

PRODUCTION TEST DATA

LITTLE'S 96672 5M 8/74

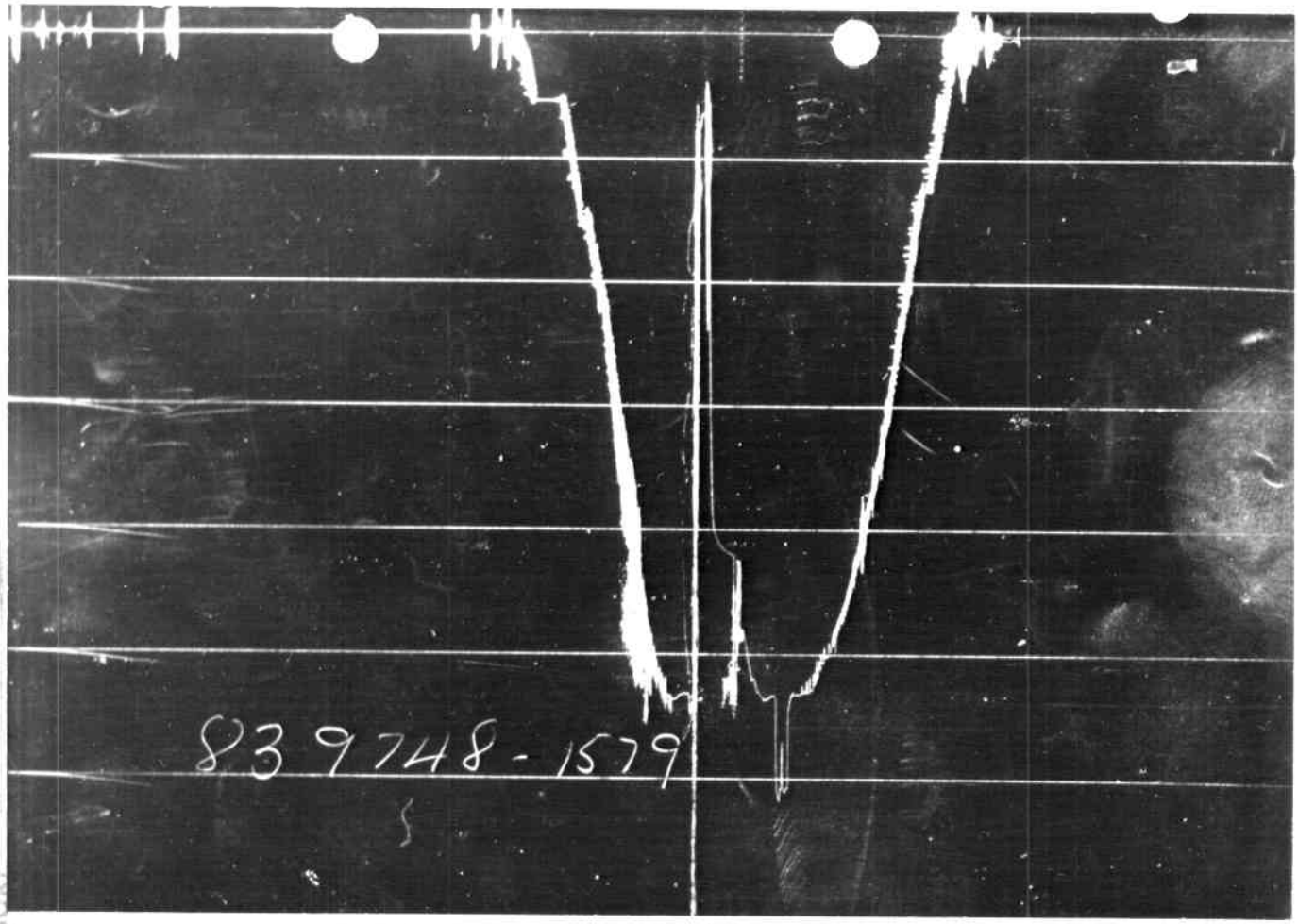
TICKET NO. 839749

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Reversing Sub				
Water Cushion Valve				
Drill Pipe	3.50"-2 7/8"	2.602"-2.151"	7539'-2384'	
Drill Collars	3 1/8"	1.75"	320.5'	
~~Handling Sub & Choke Assembly~~ X OVER	3 1/16"	1"	1.17'	
Dual CIP Valve	3.03"	.44"	5.50'	
Dual CIP Sampler				
Hydro-Spring Tester	3.03"	.50"	4.40'	10261'
X OVER	3 1/8"	1 1/4"	1'	
Multiple CIP Sampler				
Extension Joint				
AP Running Case	3"	1.60"	4.63'	10263'
Hydraulic Jar	3.03"	.50"	2.75'	
VR Safety Joint	3.03"	.50"	2.66'	
~~Pressure Equalizing Crossover~~	3"	1"	.34'	
Packer Assembly #2 Slim Hole 3 1/4	3"	.50"	2.72'	10274'
Distributor				
Packer Assembly #2 Slim Hose 3 1/4	3"	.50"	2.72'	10277'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
~~Packer Assembly~~ X. OVER	3 1/8"	1 13/16"	.69'	
~~Distributor~~ Drill Collars	3 1/8"	1.75"	173.89'	
X OVER	3 1/8"	1"	1.25'	
Packer Assembly				
X OVER	3 1/8"	1"	1'	
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	2.81"	1.25"	11'	
X OVER	3"	1.25"	.65'	
Blanked-Off B.T. Running Case	3.03"	2.31"	4.07'	10467'
Total Depth				10470'

FORM 187-R1—PRINTED IN U.S.A.

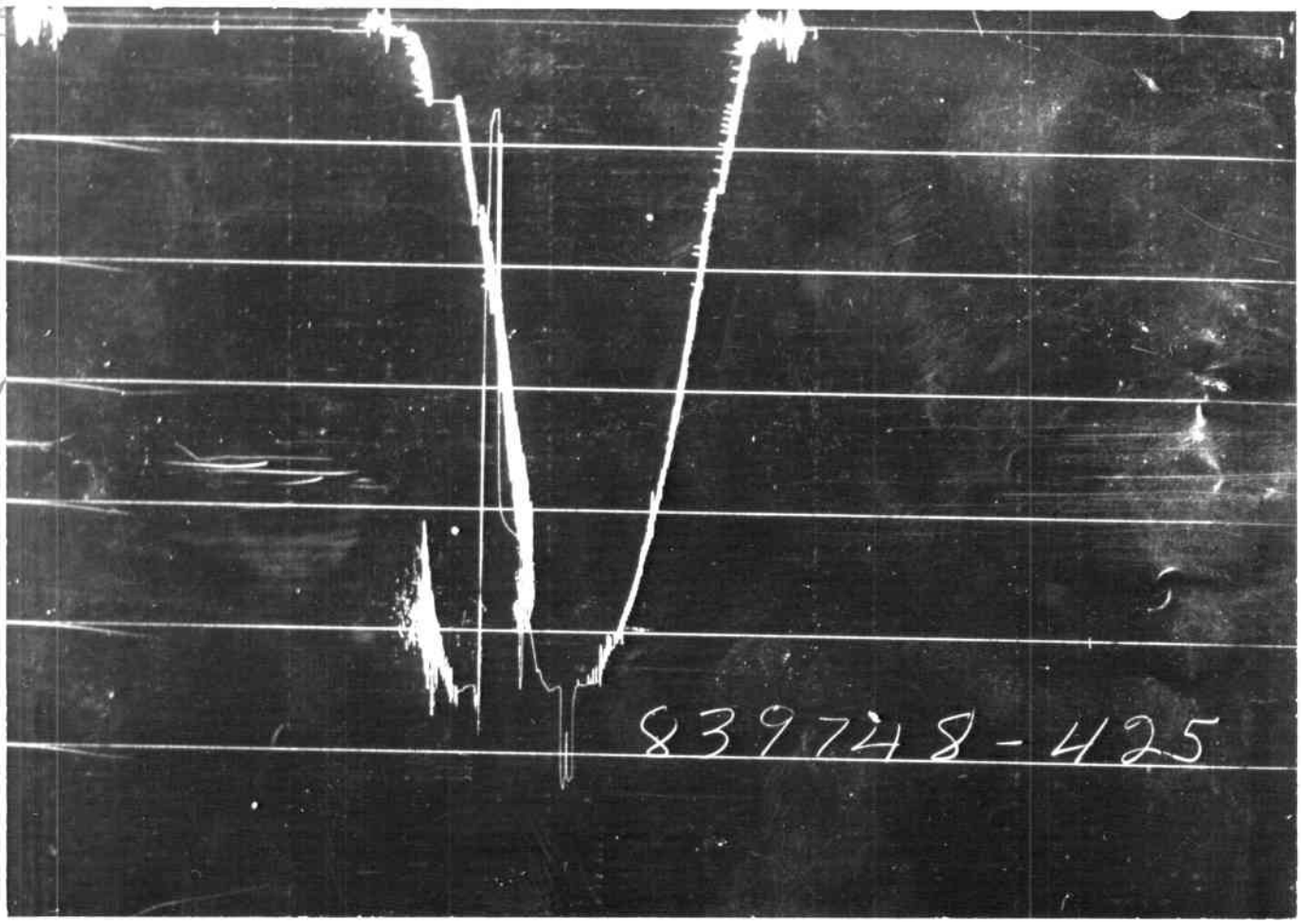
EQUIPMENT DATA

LITTLE'S 96676 75C 8/71



PRESSURE

TIME



Each Horizontal Line Equal to 1000 p.s.i.

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

P

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: July, 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 [illegible]
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)
Hogback Ridge Sec. 20 NE SE	13N	7E	20-1							Drlg @ 10,910'. Core #1 10232/10240' Core #2 10248/10250' DST #5 10207/10405' DST #6 10277/10470 DST #7 10695/10882' DST #8 10711/10910' DST #9 10848/10910' Ran Logs

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.*

HOGBACK RIDGE #20-1

American Quasar Petroleu
NE SE Sec. 20, 13N, 7E
Rich Co., Utah

HOGBACK RIDGE #20-1
Rich Co.,Utah

8/10/77 217 days - PBTD 10,875'. Drlg. cmt. retainer @ 9651'. MW 10.1; vis 48; WL 9.6; pH 11.0. Finished POH w/DP & stinger. WIH w/mill #6 (4" Tri-State FB). Drld. cmt. stringers from 7858' to 9625' & moderately soft cmt. from 9625' to retainer @ 9651'. Now drlg. retainer. Drlg. wt 2000#; RPM 50.

HOGBACK RIDGE #20-1
Rich Co.,Utah

8/11/77 218 days - (Drop from Drilling Report.)

HOGBACK RIDGE #20-1
Rich Co., Utah

8/11/77 PBTD 10,875'. Milled out 757' cmt stringers & 26' solid cmt w/mill #6 (4" FB). Milled on cmt retainer w/no progress. POH. Ran mill #7. Drld cmt retainer & 10' hard cmt. Press tested liner top to 1500 psi (w/10.0 ppg mud in hole) for 20 min; no leakage

RECEIVED
AUG 15 1977
OIL, GAS, & MINING

HOGBACK RIDGE #20-1
American Quasar Petroleum
NE SE Sec. 20, 13N, 7E
Rich Co., Utah

RECEIVED
AUG 25 1977
DIVISION OF OIL, GAS, & MINING

HOGBACK RIDGE #20-1
Rich Co., Utah

8/11/77 PBTD 10,875'. Milled out 757' cmt stringers & 26' solid cmt w/mill #6 (4" FB). Milled on cmt retainer w/no progress. POH. Ran mill #7. Drld cmt retainer & 10' hard cmt. Press tested liner top to 1500 psi (w/10.0 ppg mud in hole) for 20 min; no leakage

HOGBACK RIDGE 20-1
Rich Co., Utah

8/12/77 POH w/4" mill. WIH w/2¼" mill. Cleaned out liner to 10,875'. POH. LD tools & DP & currently prep to PU tbg.

HOGBACK RIDGE 20-1
Rich County, Utah

8/13/77 Fin LD DP. Ran Brown seal ass'y on 297 jts 2 7/8" 8.7# C75 PH6 tbg. Now displacing mud w/KCl wtr. Prep to perf.

8/14/77 Displaced 10.0 ppg mud w/2% KCl wtr. Spaced out, installed tbg hanger. ND BOP; installed tree. Layed flowline. RU Petrolog. Ran GR-CCL to 10,855'. GR hot spot-10,060-10,526'. Ran CBL (3 misruns); cut 500' w.l. Ran CBL. Bond good except 10,180-500'. Cmt top 9858' (5" shoe-9812') RD Petrolog. RU Nowsco coiled tbg unit.

8/15/77 POH. LD tbg. WIH w/Nowsco 1" coiled tbg, jetted nitrogen. Blew well dry to 10.855': solid bottom. POH. RD Nowsco. RU Petrolog. WIH w/perf gun to 10,857'; too high to perf. POH. RD Petrolog. Loaded tbg w/2% KCl wtr. ND tree. Pulled out of PBR, started out of hole. Could not stand pipe in derrick; stds too long. WO laydown machine 5 hrs. Now POH & LD tbg.

HOGBACK RIDGE #20-1
Rich Co., Utah

8/16/77 Displaced KCl wtr from tbg w/nitrogen to 8500'. Relanded Brown seal ass'y in PBR. Press tested tbg & liner to 2000 psi. Bled press off tbg. Installed tree. RU Petrolog. Perf Wells formation from 10,810-857' w/1 9/16" tbg gun 1 spf. Opened well to pit w/no press & no flow. Now prep to break dn perfs w/KCl wtr.

HOGBACK #20-1
Rich Co., Utah

8/17/77 RU Western Co. Loaded hole w/Spearhead acid (15% hydrochloric & 5% flouric). Broke dn formation @ 6400 psi & 5 BPM. Acidized Wells perfs 10,810-10,857' w/2000 gals Spearhead acid. Flushed w/54 bbls 2% KCl wtr. Max press-7000 psi; aver press-6700; aver rate-3.5 BPM; ISIP-4650; 15 min SIP-1900 psi; 30 min SIP-1200 psi. Total load to rec-103 bbls. RU Nowsco. Ran 1" continuous tbg to 10,857'. Blew well dry w/nitrogen; rec 65 BLW. SD 1 hr; blew well dry w/nitrogen; rec 20 BLW. SD 1 hr; blew well dry w/nitrogen w/no rec. POH & RD Nowsco. Now prep to set wireline BP. CIWSDFN

HOGBACK RIDGE 20-1
Rich Co., Utah

8/18/77 RU GO. WIH w/1.903" GO CIBP. BP stuck in tbg @ 7000'. Attempted to work BP loose 3 hrs w/o success. Attempted to pump by BP w/2000 psi. Plug appeared to be set. Fired setting charge & sheared out of plug. POH. RD GO. Cleaned mud pits. Released Loffland Rig #214 @ 12 midnite 8/17/77.

HOGBACK RIDGE 20-1
Rich Co., Utah

8/19/77 RDRT.

HOGBACK RIDGE 20-1
Rich Co., Utah

8/20-21-22/77 RDRT.

HOGBACK RIDGE 20-1
Rich Co., Utah

8/23/77 WOCT.

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

CONFIDENTIAL

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

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, 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)
Hogback Ridge Sec. 20 NE SE	13N	7E	20-1							TD 10,910' PBTD 10,875' Ran 2 7/8" tbg. TS-10,907' Ran logs Pfd 10810/857' (Wells) Acdz pfs 10810/857' (Wells) Rlsd drlg rig 8-17-77 RU Comp. Rig 8-25-77 Pfd 10655/705' (Weber)

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.*

RECEIVED
SEP 9 1977
DIVISION OF OIL, GAS, & MINING

HOGBACK RIDGE #20-1
American Quasar Petroleum
NE SE Sec. 20, 13N, 7E
Rich Co., Utah

HOGBACK RIDGE 20-1
Rich Co., Utah

8/25/77 RU Maddox Well Service. Removed tree. Installed BOP's & had H_2S school.

HOGBACK #20-1
Rich Co., Utah

8/26/77 POH w/2 7/8" tbg & packer. Rec sinker bar @ 2250' (lodged in tbg w/ball sealers) & GO CIBP @ 7000'.

HOGBACK RIDGE 20-1
Rich Co., Utah

8/27/77 RU GO. WVH w/2 7/8" CIBP. Set BP @ 10,760'. Setting tool would not shear from BP. Pulled out of rope socket. Rec GO wireline. Left setting tool, collar locator, & sinker bar on plug.

RD GO. CIWSDFN.

8/28/77 WO DOTCO fishing tool. Pressd BP to 2500 psi. Plug held OK. DOTCO tools arrived late. CIWSDFN

8/29/77 WIH w/2¼" x 1 7/16" o/shot, jars & bumper subs. Engaged fish @ 10,752'. Sheared tool off BP. POH & LD setting tool, collar locator & sinker bar. CIWSDFN.

HOGBACK RIDGE 20-1
Rich Co., Utah

8/30/77 RU GO. Perfd Wells formation 10,655-705' w/2" tbg gun 1 spf. RD GO. WIH w/Brown seal ass'y on 10 stds 2 7/8" tbg. Power takeoff on Maddux rig broke dn. CIWSDFN.

HOGBACK RIDGE #20-1
Rich Co., Utah

8/31/77 SD 24 hrs. Made repairs to power takeoff. Found broken main jackshaft bearing. Jackshaft & bearing sent to Casper for repairs. Rig will be dn at least until Sat.

HOGBACK RIDGE #20-1
Rich Co., Utah

9/1/77 SD 24 hrs for rig repairs.

HOGBACK RIDGE #20-1
Rich Co., Utah

9/2/77 SD 24 hrs for rig repairs.

HOGBACK RIDGE #20-1
Rich Co., Utah

9/3-4/77 SD for rig repairs.

9/5/77 Fin rig repairs. WIH & landed seal ass'y in PBR. RU Western Co. Pressd annulus to 1000 psi. Attempted to pmp into Weber perfs from 10,655-705' w/7500 psi. Perfs would not take fluid. CIWSDFN.

9/6/77 Installed tree saver. Attempted to pmp into Weber perfs w/ 12,200 psi. Formation would not take fluid. RD Western Co. CIWSDFN

HOGBACK RIDGE 20-1
Rich Co., Utah

9/7/77 RU GO International. Reperfd Weber from 10,655-705' 1 spf w/1 9/16" hollow carrier gun. RU Western Co. Broke dn perfs w/ KCl wtr @ 11,000 psi. Broke to 8400 psi. Pmpd in 7 bbls @ 3½ BPM & 9600 psi. ISIP-4400. Acidized w/1500 gals 15% HCl + 5% HF w/35 ball sealers @ 5 BPM & 6000 psi. Max treating press-7000 psi. Aver press-6200 psi; 5 min SIP-3800 psi; 10 min SIP-3700 psi; 15 min SIP-3400 psi. Total load 97 bbls. Swabbed 5 hrs to 7500'; rec 80 BLW; 64 BLW left to rec.

FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface

Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water _____
cc. Mud _____
Tot. Liquid cc. _____

Gravity _____ ° API @ _____ °F.

Gas/Oil Ratio _____ cu. ft./bbl.

		RESISTIVITY		CHLORIDE CONTENT
Recovery Water	@	°F.		ppm
Recovery Mud	@	°F.		ppm
Recovery Mud Filtrate	@	°F.		ppm
Mud Pit Sample	@	°F.		ppm
Mud Pit Sample Filtrate	@	°F.		ppm

Mud Weight _____ vis _____ sec

Date	7-28-77	Ticket Number	069357-B
Kind of Job	OPEN HOLE	Halliburton District	GILLETTE
Tester	MR. HAYES	Witness	MR. ALMOND
Drilling Contractor	LOFFLAND BROTHERS DRILLING COMPANY #214		

EQUIPMENT & HOLE DATA

Formation Tested _____
Elevation _____ Ft.
Net Productive Interval 62' Ft.
All Depths Measured From Kelly Bushing
Total Depth 10910' Ft.
Main Hole/Casing Size 4"
Drill Collar Length 556' I.D. -
Drill Pipe Length 2780' - 7494' I.D. 2.441" - 2.764"
Packer Depth(s) 10848' Ft.
Depth Tester Valve 10836' Ft.

Cushion TYPE	AMOUNT	Ft.	Depth Back Pres. Valve	Surface Choke	Bottom Choke
	None			-	

Recovered _____ Feet of _____
Recovered _____ Feet of _____
Recovered _____ Feet of _____
Recovered _____ Feet of _____
Recovered _____ Feet of _____

Remarks MISRUN....

TEMPERATURE	Gauge No. 5593		Gauge No. 5592		Gauge No.		TIME	
	Depth: 10840' Ft.		Depth: 10906' Ft.		Depth: Ft.			
	24 Hour Clock		24 Hour Clock		Hour Clock		Tool Opened	A.M. P.M.
Est. 200 °F.	Blanked Off -		Blanked Off -		Blanked Off			
Actual °F.	Pressures		Pressures		Pressures		Opened Bypass	A.M. P.M.
	Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic		5599		5618				
First Period Flow Initial							—	—
First Period Flow Final								
First Period Closed in								
Second Period Flow Initial							—	—
Second Period Flow Final								
Second Period Closed in								
Third Period Flow Initial							—	—
Third Period Flow Final								
Third Period Closed in								
Final Hydrostatic		5553-Clock stopped		5592			—	—

Legal Location Sec. - Twp. - Rng. 20 - 13N - 7E
Field Area WILDCAT
County RICH
State TEXAS
Lease Name HOGBACK RIDGE
Well No. 20-1
Test No. 10 a
Tested Interval 10848' - 10910'
Lease Owner/Company Name AMERICAN QUASAR PETROLEUM COMPANY
Min. From Tester Valve

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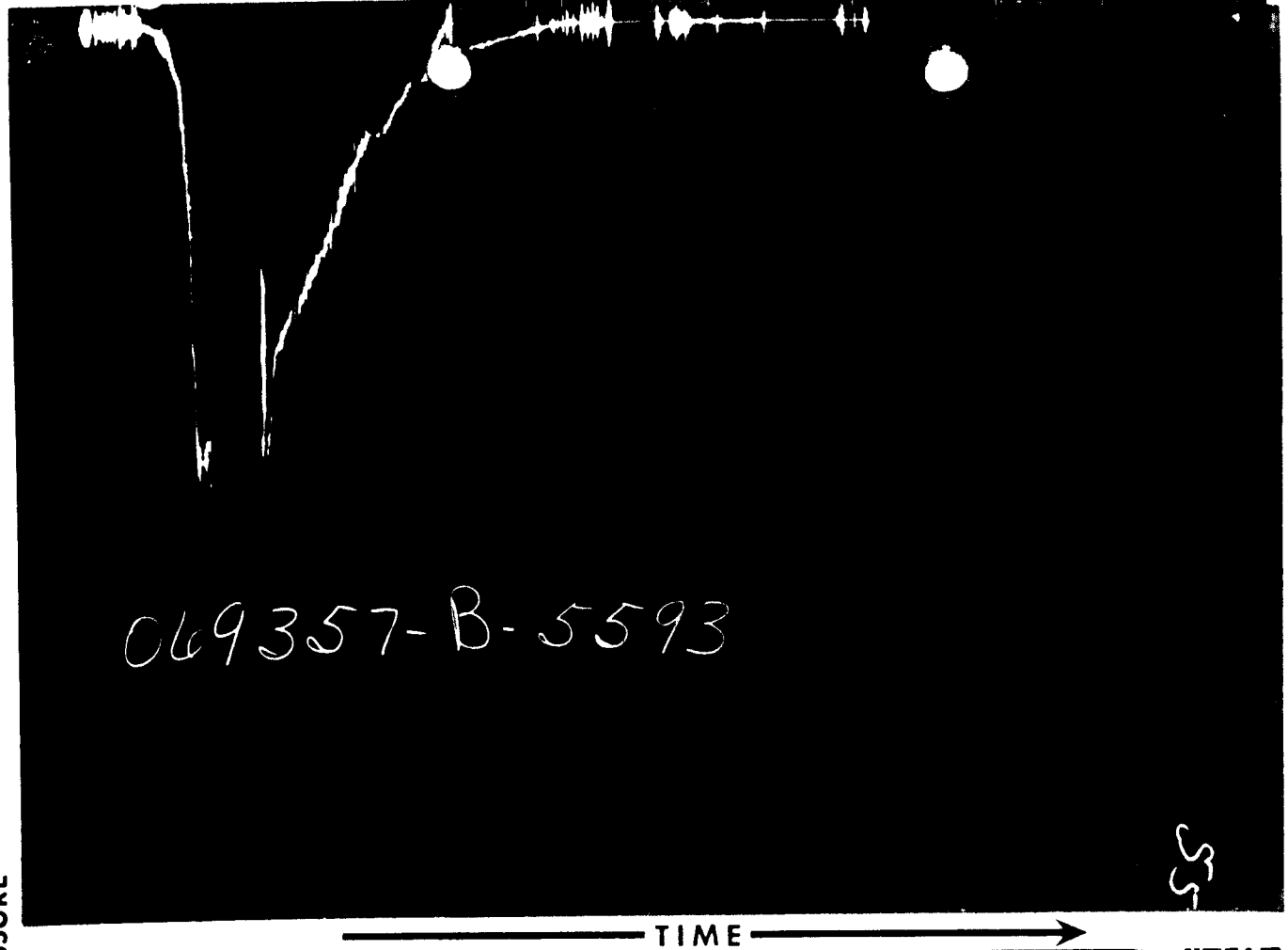
FORMATION TEST DATA

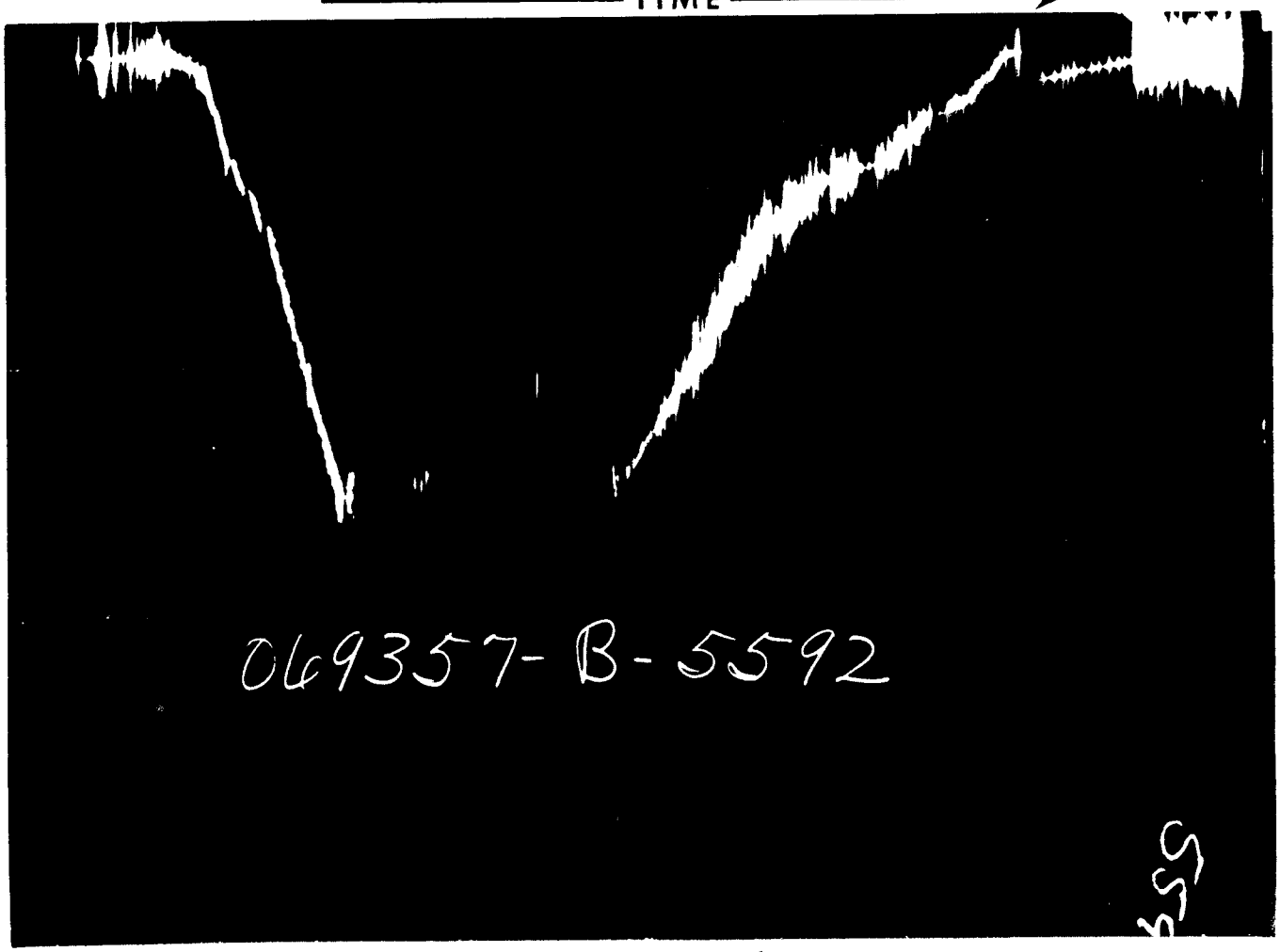
LITTLE'S 103548 5M 9/76

6



PRESSURE

TIME



Each Horizontal Line Equal to 1000 p.s.i.

TICKET NO. 069357-B

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Reversing Sub	4.12"	2.12"	1'	
Water Cushion Valve				
Drill Pipe	2 7/8"-3½"	2.441"-2.764"	2780' - 7494'	
Drill Collars	2 3/8"	-	556'	
Handling Sub & Choke Assembly				
Dual CIP Valve	3.03"	.44"	5.5'	10830'
Dual CIP Sampler				
Hydro-Spring Tester	3.03"	.50"	4.36'	10836'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	3.03"	1.6"	4.70'	10840'
Hydraulic Jar	3.03"	.50"	2.75'	
VR Safety Joint	3.03"	.50"	2.82'	
Pressure Equalizing Crossover				
Packer Assembly	3"	.50"	2.72'	10848'
Distributor				
Packer Assembly				
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
XO	3.03"	1.25"	1'	
XO	3.03"	1.25"	1'	
XO	3.03"	1.25"	1'	
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars	2 3/8"	-	28.31'	
Flush Joint Anchor	2.81"	1.25"	17'	
Blanked-Off B.T. Running Case	3.03"	2.31"	4'	10906'
Total Depth				10910'

EQUIPMENT DATA

FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface
Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water _____
cc. Mud _____
Tot. Liquid cc. _____
Gravity _____ ° API @ _____ °F.
Gas/Oil Ratio _____ cu. ft./bbl.

	RESISTIVITY		CHLORIDE CONTENT
Recovery Water	@	°F.	ppm
Recovery Mud	@	°F.	ppm
Recovery Mud Filtrate	@	°F.	ppm
Mud Pit Sample	@	°F.	ppm
Mud Pit Sample Filtrate	@	°F.	ppm

Mud Weight _____ vis _____ sec

Date 7-28-77 Ticket Number 069357-A
Kind of Job OPEN HOLE Halliburton District GILLETTE
Tester MR. HAYES Witness MR. ALMOND
Drilling Contractor LOFFLAND BROTHERS DRILLING COMPANY #214

EQUIPMENT & HOLE DATA

Formation Tested _____
Elevation _____ Ft.
Net Productive Interval 199' Ft.
All Depths Measured From Kelly Bushing
Total Depth 10910' Ft.
Main Hole/Casing Size 4"
Drill Collar Length 556' I.D. ??
Drill Pipe Length 2780'-7494' I.D. 2.441" - 2.764"
Packer Depth(s) 10711' Ft.
Depth Tester Valve 10700' Ft.

Cushion TYPE Water AMOUNT 1000 Ft. Depth Back Pres. Valve _____ Surface Choke - Bottom Choke _____

Recovered 1770 Feet of Drilling mud
Recovered 1000 Feet of Water cushion
Recovered _____ Feet of
Recovered _____ Feet of
Recovered _____ Feet of

Meas. From Tester Valve

Remarks MISRUN...SEE PRODUCTION TEST DATA SHEET.

TEMPERATURE	Gauge No. 5593 Depth: 10702' Ft.	Gauge No. 5592 Depth: 10906' Ft.	Gauge No. Depth: Ft.	TIME
Calc.	? Hour Clock	? Hour Clock	Hour Clock	Tool Opened 0530 A.M. P.M.
Est. 190 °F.	Blanked Off -	Blanked Off -	Blanked Off	Opened A.M. Bypass P.M.
Actual °F.	Pressures	Pressures	Pressures	

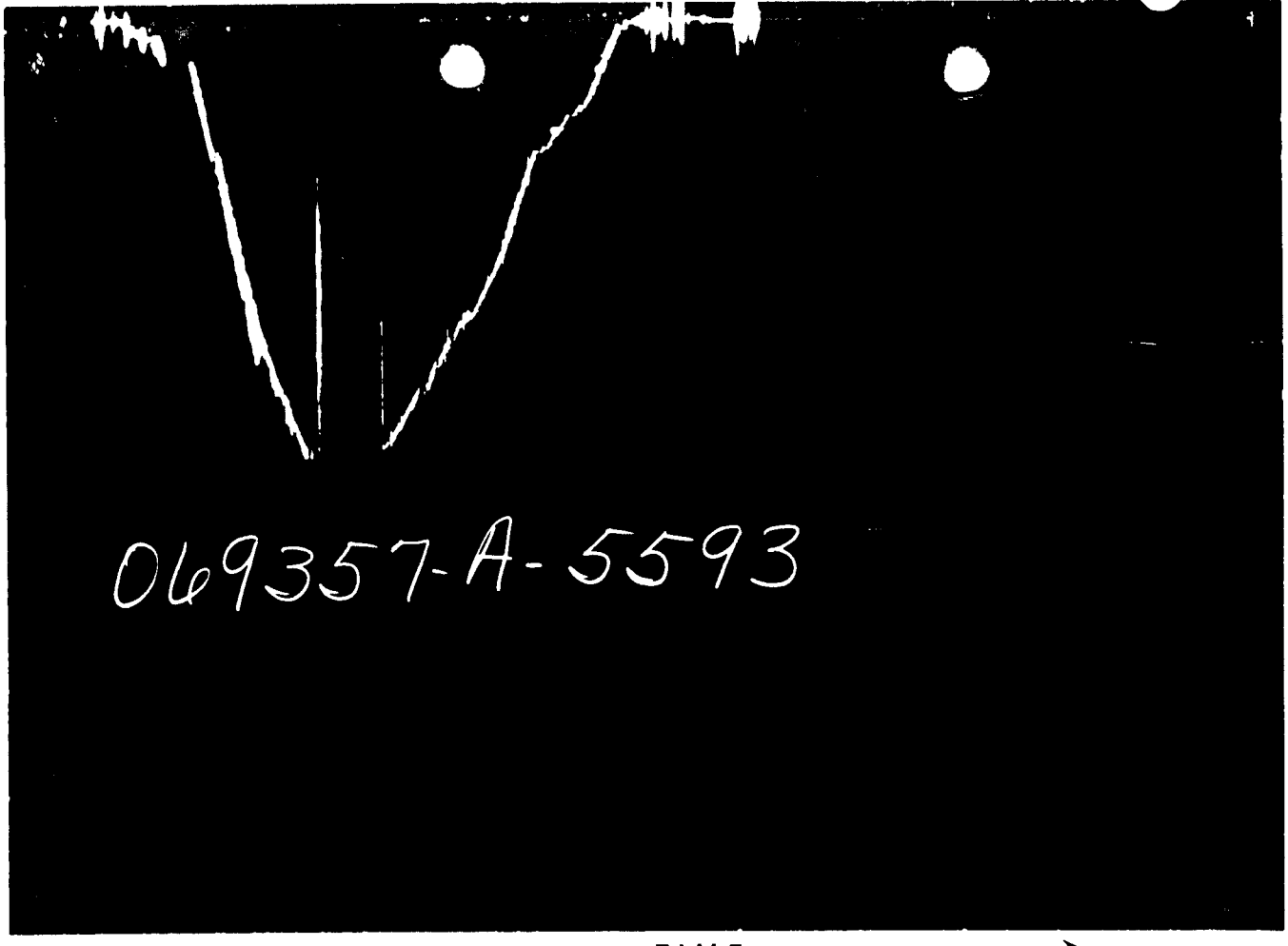
		Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic			5513		5615				
First Period Flow	Initial		2429		2552			—	—
	Final		3909		4020			?	
	Closed in								
Second Period Flow	Initial							—	—
	Final								
	Closed in								
Third Period Flow	Initial							—	—
	Final								
	Closed in								
Final Hydrostatic			5510		5609			—	—

Legal Location Sec. - Twp. - Rng. 20 - 13N - 7E
Lease Name HOGBACK RIDGE
Well No. 20-1
Test No. 8
Tested Interval 10711' - 10910'
Lease Owner/Company Name AMERICAN QUASAR PETROLEUM COMPANY
Field Area WILDCAT
County RICH
State UTAH

FORM 181-R2—PRINTED IN U.S.A.

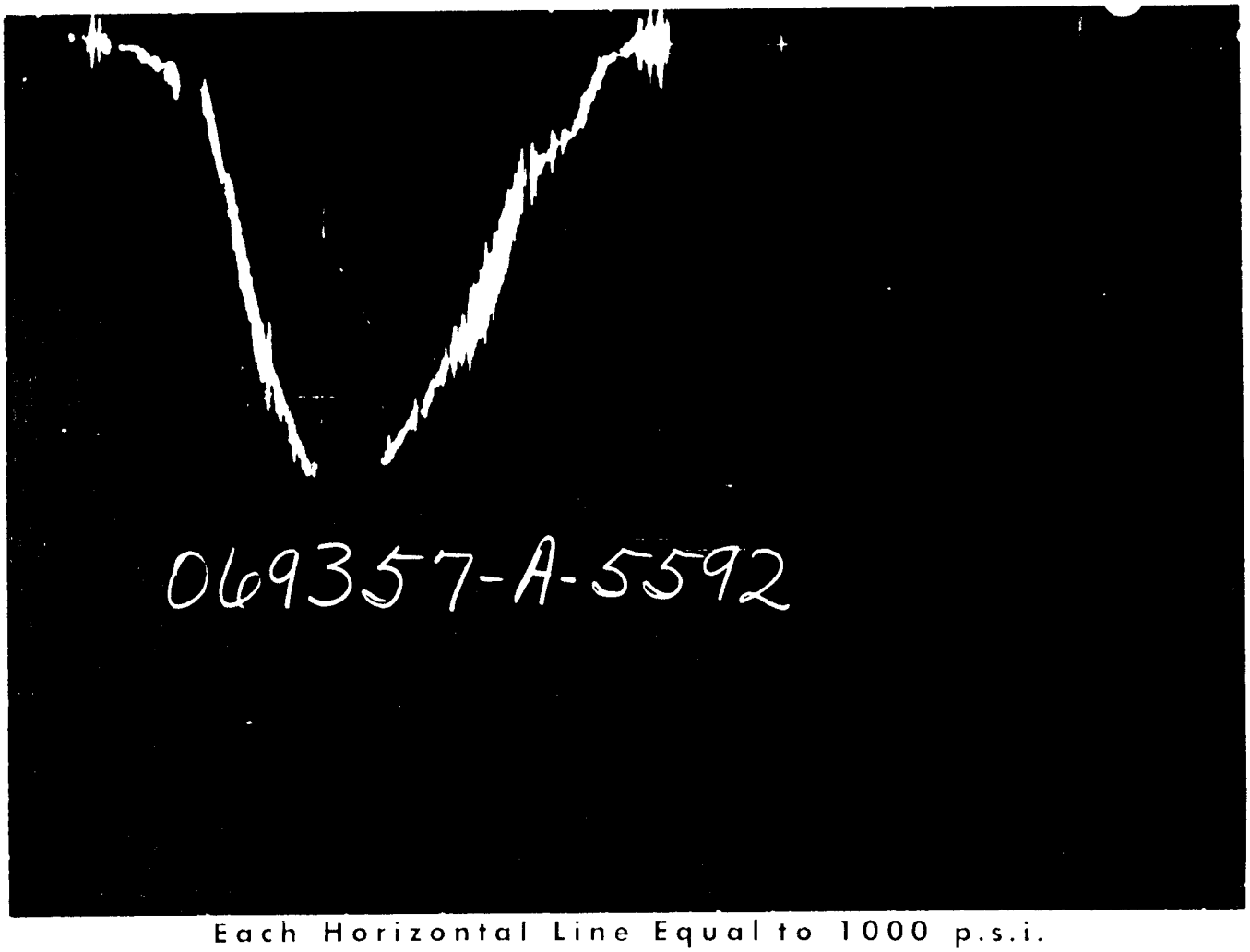
FORMATION TEST DATA

LITTLE'S 102546 5M 9/76



PRESSURE

TIME



Each Horizontal Line Equal to 1000 p.s.i.

069357- A

Casing perfs____ Bottom choke____ Surf. temp____ °F Ticket No.____

Gas gravity____ Oil gravity____ GOR____

Spec. gravity____ Chlorides____ ppm Res.____ @ ____ °F

INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED____

Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
0530					Opened tool. Packer would not seat.
					Found hole in drill pipe on trip out

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PRODUCTION TEST DATA

LITTLE'S 96672 SM 6/74

6

TICKET NO. 069357-A

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Reversing Sub	4.12"	2.12"	1'	
Water Cushion Valve				
Drill Pipe	2 7/8"-3½"	2.441"-2.764"	2780' - 7494'	
Drill Collars	2 3/8"	-	556'	
Handling Sub & Choke Assembly				
Dual CIP Valve	3.03"	.44"	5.5'	
Dual CIP Sampler				
Hydro-Spring Tester	3.03"	.50"	4.36'	10700'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	3.03"	1.6"	4.7'	10702'
Hydraulic Jar	3.03"	.50"	2.75'	
VR Safety Joint	3.03"	.50"	2.82'	
Pressure Equalizing Crossover				
Packer Assembly	3"	.50"	2.72'	10711'
Distributor				
Packer Assembly				
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
XO	3.03"	1.25"	1'	
XO	3.03"	1.25"	1'	
XO	3.03"	1.75"	1'	
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars	2 3/8"	-	177'	
Flush Joint Anchor	2.81"	1.25"	11'	
Blanked-Off B.T. Running Case	3.03"	2.31"	4'	10906'
Total Depth				10910'

FORM 187-R1—PRINTED IN U.S.A.

EQUIPMENT DATA

LITTLE'S 96676 75C 6/74

6

	O. D.	I. D.	LENGTH	DEPTH
Reversing Sub	3 1/4	1 1/4	1.16	
~~Water Cushion Valve~~				
Drill Pipe	3 1/2	2.7	1012.23	
Drill Collars	3 1/8	1 1/2	3.34	
X-over 3 1/2 PAC B to 2 3/8 F-P	3 1/8	1 1/4	1.25	
~~Handling Sub & Choke Assembly~~	3"	7/8	1.00	
Dual CIP Valve	3"	.44	5.66	1061.55
~~Dual CIP Sampler~~				
Hydro-Spring Tester	3"	.50	4.40	1067.24
~~Multiple CIP Sampler~~				
~~Extension Joint~~				
AP Running Case	3"	1.60	4.72	1067.8
Hydraulic Jar	3"	.50	3.20	
VR Safety Joint	3"	.50	3.00	
~~Pressure Equalizing Crossover~~				
Packer Assembly No-2-Slim Hole	3 1/4	.50	2.97	1069.03
~~Distributor~~				
Packer Assembly No-2 Slim Hole	3 1/4	.50	3.08	1069.76
~~Flush Joint Anchor~~				
~~Pressure Equalizing Tube~~				
~~Blanked-Off B.T.~~ Running Case				
~~Drill Collars~~	3 1/8	1.50	149.69	
~~Anchor Pipe Safety Joint~~				
~~Packer Assembly~~ X-over 2 7/8 FFC-B - 2 3/8 R-P	3 1/8	1 1/4	1.16	
~~Distributor~~ X-over 2 3/8 R-P B - 2 7/8 FUEP	3 1/8	1"	1.04	
~~Packer Assembly~~ X-over 2 7/8 FUEB 2 3/8 IFP	3"	1 3/8	.50	
~~Anchor Pipe Safety Joint~~				
~~Side Wall Anchor~~				
~~Drill Collars~~				
Flush Joint Anchor	2 7/8	1.25	29.00	
Blanked-Off B.T. Running Case	3"	2.31	5.00	1087.8
Total Depth				1088.2

Howco Tools 67.08

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EQUIPMENT DATA

LITTLE'S 02066 3/73

FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface
Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water _____
cc. Mud _____
Tot. Liquid cc. _____
Gravity _____ ° API @ _____ °F.
Gas/Oil Ratio _____ cu. ft./bbl.

	RESISTIVITY		CHLORIDE CONTENT
Recovery Water	@ °F.		ppm
Recovery Mud	@ °F.		ppm
Recovery Mud Filtrate	@ °F.		ppm
Mud Pit Sample	@ °F.		ppm
Mud Pit Sample Filtrate	@ °F.		ppm

Mud Weight 10.1 vis 43 cp

Date 7-25-77 Ticket Number 207445
Kind of Job D.S.T. 7 Halliburton District Rock Springs
Tester J. Hagopian Witness Lewis Almond
Drilling Contractor Loffland Rig 214

EQUIPMENT & HOLE DATA

Formation Tested Wiberg
Elevation KB 6495' - GL 6460' Ft.
Net Productive Interval 189' Ft.
All Depths Measured From KB.
Total Depth 10,882' Ft.
Main Hole/Casing Size 4"
Drill Collar Length 536' I.D. 1 1/8
Drill Pipe Length 10129 I.D. 2.7
Packer Depth(s) 10695 & 10692 Ft.
Depth Tester Valve 10674 Ft.

Cushion TYPE H_2O AMOUNT 1000' Ft. Depth Back Pres. Valve Surface Choke 1/8 Bottom Choke .44

Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of

MISRUN

RECEIVED SEP 12 1977 CASPER, WYOMING

Remarks 22:30 RIH w/ 3" test Tools - 0515 Tool open w/weak blow - No pkr seat 0525 Pull Tools loose - Fill hole 0535 attemp to Open Tool - 0540 Pull pkr loose - 0548 set pkr - Tool not open - 0612 set pkr - Tool open 0614 - w/weak blow - No pkr Seat POH 0615

TEMPERATURE	Gauge No. 5372	Gauge No. 5373	Gauge No.	TIME	
	Depth: Ft.	Depth: Ft.	Depth: Ft.		
	24-9654 Hour Clock	24-16953 Hour Clock	Hour Clock	Tool	A.M.
Est. 200 °F.	Blanked Off INSTRUMENT	Blanked Off	Blanked Off	Opened	P.M.
				Opened	A.M.
Actual °F.	Pressures	Pressures	Pressures	Bypass	P.M.

		Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic									
Period	Flow Initial								
	Flow Final								
	Closed in								
Period	Flow Initial								
	Flow Final								
	Closed in								
Period	Flow Initial								
	Flow Final								
	Closed in								
Final Hydrostatic									

MISRUN

Legal Location Sec. - Twp. - Rge. Hogsback Ridge
Lease Name
Well No. 20-1
Test No. 7
Field Area Wildcat
Meas. From Tester Valve
Tested Interval 10,695 to 10,882 189'
County Rich
State Utah
Lease Owner/Company Name American Quasar Pet. Co.

over

Urban Serie

FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface

Recovery: Cu. Ft. Gas _____

cc. Oil _____

cc. Water _____

cc. Mud _____

Tot. Liquid cc. _____

Gravity _____ ° API @ _____ °F.

Gas/Oil Ratio _____ cu. ft./bbl.

	RESISTIVITY			CHLORIDE CONTENT
Recovery Water	@	°F.		ppm
Recovery Mud	@	°F.		ppm
Recovery Mud Filtrate	@	°F.		ppm
Mud Pit Sample	@	°F.		ppm
Mud Pit Sample Filtrate	@	°F.		ppm

Mud Weight 10.1 vis 43 cp

Date 7-25-77 Ticket Number 207445

Kind of Job D.S.T. 7 Halliburton District Rock Springs

Tester J. Haggard Witness Lewis Almond

Drilling Contractor Loffland Rig 214

EQUIPMENT & HOLE DATA

Formation Tested Weber

Elevation KB 6475' - GL 6460' Ft.

Net Productive Interval 189' Ft.

All Depths Measured From KB.

Total Depth 10,882" Ft.

Main Hole/Casing Size 4"

Drill Collar Length 536" I.D. 1 1/8

Drill Pipe Length 10129 I.D. 2.7

Packer Depth(s) 10695 & 10692 Ft.

Depth Tester Valve 10674 Ft.

Cushion TYPE H2O AMOUNT 1000' Ft. Depth Back Pres. Valve

Surface Choice 1/8 Bottom Choice .44

Recovered Feet of

Recovered Feet of

Recovered Feet of

Recovered Feet of

Recovered Feet of

Mag. From Tester Valve

Remarks 23:30 RIH w/ 3" test Tools - 0515 Tool open w/weak blow - No pkr seat 0525 Pull Tools loose - Fill hole 0535 attemp to open Tool - 0540 Pull pkr loose - 0548 set pkr - Tool not open - 0612 set pkr - Tool open 0614 - w/weak blow - No pkr seat P.OH 0615

TEMPERATURE	Gauge No. 5372	Gauge No. 5373	Gauge No.	TIME	
	Depth: Ft.	Depth: Ft.	Depth: Ft.		
	24-9654 Hour Clock	24-16953 Hour Clock	Hour Clock	Tool	A.M.
Est. 200 °F.	Blanked Off INSTRUMENT	Blanked Off	Blanked Off	Opened	P.M.
				Opened	A.M.
Actual °F.	Pressures	Pressures	Pressures	Bypass	P.M.

		Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic									
Period	Flow Initial								
	Flow Final								
	Closed in								
Period	Flow Initial								
	Flow Final								
	Closed in								
Period	Flow Initial								
	Flow Final								
	Closed in								
Final Hydrostatic									

MISRUN

RECEIVED SEP 16 1977 DIVISION OF OIL & GAS & MINING

RECEIVED SEP 19 1977 CASPER, WYOMING

Legal Location Sec.-Twp.-Rng. 20-13N-7E

Lease Name Hogback Ridge Well No. 20-1 Test No. 7

Field Area Wildcat Tested Interval 10,695 to 10,882 1887'

County Rich Lease Owner/Company Name American Quasar Pet. Co.

State Utah

FORMATION TEST DATA

JBM 1946R1—PRINTED IN U.S.A. LITTLE'S 92966 3/73

over

	O. D.	I. D.	LENGTH	DEPTH
Reversing Sub	3 1/4	1 1/2	1.16	
~~Water Cushion Valve~~				
Drill Pipe	3 1/2	2.7 1/2	1012.9223	
Drill Collars	3 1/8	1 1/2	336	
X-over 3 1/2 PAC B to 2 7/8 F-P	3 1/8	1 1/4	1.25	
~~Handling Sub & Choke Assembly~~ X-over 2 7/8 Pin to 2 7/8 FUEP	3"	7/8	1.00	
Dual CIP Valve	3"	.44	5.66	1066.955
~~Dual CIP Sampler~~				
Hydro-Spring Tester	3"	.50	4.40	1067.4.24
~~Multiple CIP Sampler~~				
~~Extension Joint~~				
AP Running Case	3"	1.60	4.72	10.678
Hydraulic Jar	3"	.50	3.20	
VR Safety Joint	3"	.50	3.00	
~~Pressure Equalizing Crossover~~				
Packer Assembly No-2-Slim Hole	3 1/4	.50	297	1069.2.03
~~Distributor~~				
Packer Assembly No-2 Slim Hole	3 1/4	.50	3.08	10,694.76
~~Flush Joint Anchor~~				
~~Pressure Equalizing Tube~~				
~~Blanked-Off B.T.~~ Running Case				
~~Drill Collars~~	3 1/8	1.50	149.69	
~~Anchor Pipe Safety Joint~~				
~~Packer Assembly~~ X-over 2 7/8 FPC-B - 2 3/8 R-P	3 1/8	1 1/4	1.16	
~~Distributor~~ X-over 2 3/8 R-P B - 2 7/8 FUEP	3 1/8	1"	1.04	
~~Packer Assembly~~ X-over 2 7/8 FUEB 2 3/8 IFP	3"	1 3/8	.50	
~~Anchor Pipe Safety Joint~~				
~~Side Wall Anchor~~				
~~Drill Collars~~				
Flush Joint Anchor	2 7/8	1.25	29.00	
Blanked-Off B.T. Running Case	3"	2.31	5.00	10.878
Total Depth				10.882

Howco Tools 67.08

FORM 1946R1—PRINTED IN U.S.A.

EQUIPMENT DATA

LITTLE'S 92906 3/73

HOGBACK RIDGE #20-1
American Quasar Petroleum
NE SE Sec. 20, 3N 2E
Rich Co., Utah

CONFIDENTIAL

RECEIVED SEP 21 1977 DIVISION OF OIL, GAS, & MINING

HOGBACK RIDGE 20-1
Rich Co., Utah

9/10/77 RU GO. Ran & set 2.16" drillable BP @ 10,640'. Perfd Weber formation 10,522-606' w/1 9/16" tbg gun 1 spf. RD GO. WIH w/Brown seal ass'y on 127 stds 2 7/8" tbg. CIWSDFN.

9/11/77 FIH w/tbg & pkr. Unable to get pkr below 9798'. Set & tested pkr @ 9788'. Installed tree. Swabbed 1½ hrs to 6000'; rec 25 bbls KCl wtr. CIWSDFN

9/12/77 SDFS.

HOGBACK RIDGE 20-1
Rich Co., Utah

9/13/77 SITP-0. RU Western. Broke formation @ 4100 psi 3 BPM. Acidized Weber perfs 10,522-606' w/1500 gals Spearhead acid (15% HCl & 5% Fl) w/60 ball sealers spaced evenly thruout. Max press-4800 psi; aver press-4700; aver rate-3 BPM; ISIP-2700; 5 min SIP-300; 10 min SIP-vacuum. Total load-140 bbls. RD Western. FL-1400'. Swabbed 3 hrs; rec 85 BLW & well kicked off flowing. Flowed 4 hrs to pit making approx 10 bbls foamy sulfur wtr per hr w/small amount of gas. FTP-0. CIWSDFN.

HOGBACK RIDGE 20-1
Rich Co., Utah

9/14/77 Opened well @ 8 AM 9/13/77. Flowed 10 hrs to test tank. Prod 175 bbls foamy black sulfur wtr w/small amount of gas. Caught wtr & gas samples. Total rec since acid job-325 bbls which is 185 bbls overload. CIWSDFN. Prep to set BP & perf Phosphoria (10,070-80', 10,088-98', 10,115-25', & 10,144-234').

HOGBACK RIDGE 20-1
Rich Co., Utah

9/15/77 RU GO. Ran & set 2.16" drillable BP thru tbg @ 10,480'. Perfd Phosphoria formation 10,070-80', 10,088-98', 10,115-25' & 10,144-234' w/ 1 9/16" tbg gun 1 spf. CIWSDFN.

HOGBACK RIDGE #20-1
Rich Co., Utah

9/16/77 SITP-0. RU Western. Broke formation @ 2500 psi & established pump-in-rate @ 6 BPM @ 5000 psi w/KCl wtr. Acidized w/5000 gals 15% HCl + 5% HF w/90 ball sealers. Initial acidizing press of 5300 broke to 4000 psi; had some ball action. Max press-5300 psi; aver press-4200; 6 BPM thruout. ISIP-1825; 5 min SIP-1300; 10 min SIP-900; 15 min SIP-600; on vacuum in 30 min. Total load-226 bbls. Swabbed 1½ hrs from 900'; well kicked off flowing to pit. Turned well to test separator in 1½ hrs. Flowed well 5 hrs on 24/64" ck; FTP-2000 psi; max rate-6 mmcfd. Closed well in @ 7 PM due to increasing H_2S concentration.

HOGBACK RIDGE #20-1
Rich Co., Utah

9/17/77 SITP-3475. RU Howco. Pmpd 55 gals Safegaurd 5000 + 5 bbls KCl wtr dn tbg. RD Howco. Left well SI 2 hrs. Opened well to test @ 11 AM 9/16/77. Flowed 3 hrs on 28/64" ck ARO 8622 mcfd; FTP-1850; then flowed 9 hrs on ½" ck ARO 9436 mcfd; FTP-1550. Upon SI SITP built from 1550 to 3300 in 5 min, into 3475 in 25 min. Gas gravity-0.625 w/200 ppm H_2S.

9/18/77 SITP-3475. Opened well @ 9 AM 9/17/77. Flowed well 22 hrs on ½" ck. Well stabilized @ 9900 mcfd; FTP-1575. Gas sample caught 1:30 PM 9/17/77 mol %'s are as follows: CO_2-0.49; N_2-15.23; C_1-83.84; C_2-0.42; C_3-0.014; ic_4-0.002; nc_4-trace; c_4+-0.004. H_2S content-0.019%; calc sp gr-0.624; BTU dry-854; BTU wet-840.

9/19/77 @ 8 AM 9/18/77 well flowing stable on ½" ck @ 9900 mcfd, FTP-1575. RU Otis. CIW @ 8 AM 9/18/77. Ran Otis BHP bomb to 10,240'. Opened well & stabilized on ½" ck @ 9967 mcfd, FIP-1600 psi. CIW for 24 hr BHP buildup @ 11:30 AM 9/18/77

AMERICAN QUASAR PETROLEUM CO.
OF NEW MEXICO

707 UNITED BANK TOWER, 1700 BROADWAY, DENVER, COLORADO 80290, U.S.A.
TELEPHONE (303) 861-8437

CIRCULATE TO:
DIRECTOR
PETROLEUM ENGINEER
MINE COORDINATOR
ADMINISTRATIVE ASSISTANT
ALL
RETURN TO
FOR FILING

September 21, 1977

Loffland Brothers Co.
Box 2849
Tulsa, Oklahoma 74101

Attn: Bob Gifford

Gentlemen:

Subject: Hogback Ridge #20-1

In order to close our account for the above mentioned well, we would appreciate your forwarding your check in the amount of $2.95, representing the unused portion of our prepayment, to:

American Quasar Petroleum Company
2500 Fort Worth Nat'l Bank Bldg.
Fort Worth, Texas 76102

Attn: Dick Reams

It has been a pleasure working with you.

Very truly yours,

Mary Marson

Mary Marson

MM:ld

cc; Dick Reams

RECEIVED
SEP 22 1977
DIVISION OF OIL, GAS, & MINING

CIRCULATE TO:

DIRECTOR
PETROLEUM ENGINEER
MINE COORDINATOR
ADMINISTRATIVE ASSISTANT
ALL
RETURN Kathy Webb
FOR FILING

September 23, 1977

Memo To File:

Re: American Quasar Petroleum Co.
Hogback Ridge 20-1, NE SE
Sec. 20, T. 13N, R. 7E
Rich County, Utah

This well flowed at a stabilized Gas Rate from the Phosphoria Formation (164') on ½" choke at a rate of 9900 MCF/D and 1575 psig flowing tubing pressure.

Gas Constituency is:

CO_2	0.49%
N_2	15.23%
H_2S	0.019%
C_1	83,84
C_2	0.42
C_3	0.014
iC_4	0.002
n C_4	0.004
BTU	854

PATRICK L. DRISCOLL
CHIEF PETROLEUM ENGINEER

PLD/ko

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

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 77.

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, Jr.
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)
Hogback Ridge Sec. 20 NE SE	13N	7E	20-1							Pfd 10655/705' (Weber) Acdz pfs 10655/705' Pfd 10522/606' (Weber) Acdz pfs 10522/606' (Weber) Pfd 10070/80' 10088/98; 10115/25' 10144/234' (Phosphoria) Acdz pfs 10070/80' 10088/98' 10115/25' 10144/234' Ran 2 7/8" tbg TS-7858' Ran logs Pfd 9620/30' 9593/9608' (Dinwoody) Pfd 9468/9473' 9490/9505 9526/9536' 9554/9564' (Dinwoody)
								Plan to change tbg from 2 7/8" to 3½"		

Gas Sold
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.*

HOGBACK RIDGE #20-1
American Quasar Petroleum
NE SE Sec. 20, 13N, 7E
Rich Co., Utah

CONFIDENTIAL

RECEIVED OCT 4 1977 DIVISION OF OIL, GAS, & MINING

HOGBACK RIDGE 20-1
Rich Co., Utah

9/20/77 CORRECTION TO 9/19/77 report. BHP bomb was @ 10,300'. Well SI 24 hrs. Pulled BHP bomb @ 12 noon 9/19/77. Press was still building. Reran BHP bomb to 10,300' for additional 24 hr SI.

HOGBACK RIDGE #20-1
Rich Co., Utah

9/21/77 SI 5 hrs for buildup. POH w/Otis BHP bomb. Killed well w/55 bbls 2% KCl wtr treated w/Safegaurd 5000. ND tree; NU BOP. Began pulling tbg. CIWSDFN

HOGBACK RIDGE #20-1
Rich Co., Utah

9/22/77 SITP-400; SICP-500. Fin pulling 2 7/8" tbg & Brown seal ass'y. Ran & set Baker Model "B" RBP @ 9657'. Pressd BP to 2500 psi. CIWSDFN

HOGBACK RIDGE 20-1
Rich Co., Utah

9/23/77 SITP-0; SICP-0. POH w/2 7/8" tbg & setting tool. SD 5 hrs WO new elevator. LD setting tool. Now GIH w/Brown seal ass'y on 2 7/8" tbg. CIWSDFN

HOGBACK RIDGE #20-1
Rich Co., Utah

9/24/77 SITP-0; SICP-0. FIH w/tbg & Brown seal ass'y. Landed tbg in 5" PBR @ 7858'. Pressd annulus to 2500 psi, tbg & liner to 3500 psi. ND BOP's; NU tree. Swabbed 2 7/8" tbg to 4000'. Prep to perf Dinwoody.

9/25/77 SITP-0; SICP-0. RU GO. WIH w/perf gun to shoot Dinwoody interval 9651-56'. Gun stopped @ 9636'; unable to work gun lower. POH. Ran GR-CCL log from 9636-7700'. Had good corr. w/Upper Dinwoody intervals but unable to run log past 9636'. Perfd Dinwoody intervals 9620-30' & 9598-9608' w/2" tbg gun 1 spf. RD GO. SITP-2300 psi. Flowed load wtr to pit ½ hr. CIWSDFN.

9/26/77 Hooked up flow lines. SITP-3200 psi. Opened well to pit on 24/64" ck @ 10 AM 9/25/77. Turned thru test separator @ 11 AM. Put well on 32/64" ck @ 2 PM. Flowed 13 hrs on ½" ck @ max rate of 10,847 mcfd; FTP-1725 psi. Gas gravity-0.626; no show H_2S. CIW @ 3 AM 9/26/77. Will perf Upper Dinwoody interval today.

HOGBACK RIDGE 20-1
Rich Co., Utah

9/27/77 RU GO. Perfd Dinwoody formation 9468-9473', 9490-9505', 9526-9536', & 9554-9564' w/2" tbg gun 2 spf. SITP after perfing-3420 psi (dead wt tester). Opened well @ 6 PM 9/26/77 on 1/2" ck. Flowed well 6 hrs @ stablized rate of 11.030 mmcfd; FTP-1918 psi; then 3/4" ck for 30 min @ max rate of 13.443 mmcfd; @ final rate of 12.357 mmcfd w/final FTP-900 psi & decreasing. Put well back on ½" ck for 5½ hrs @ stablized rate of 11.280 mmcfd; FTP-1900 psi. CWI @ 6 AM 9/27/77. Press built to 3420 psi @ 6:30 AM. Gas sp gr-0.626; no H_2S. Flowing temp approx 83°F.

HOGBACK RIDGE #20-1
Rich Co., Utah

9/28/77 SI 24 hrs WO 3½" completion equipment. SITP this AM-3420 psi. Plan to change out 2 7/8" tbg to 3½" tbg & tree for additional testing of Dinwoody perfs.

HOGBACK RIDGE 20-1
Rich Co., Utah

9/29/77 RU Western Co. Pumped 80 bbls 2% KCl wtr dn tbg. Still had 200 psi SITP which would not bleed off. Mixed KCl to bring wtr wt up to 9#/gal. CIWSDFN

HOGBACK RIDGE #20-1
Rich Co., Utah

9/30/77 SITP-200 psi. Pumped 70 bbls 9# KCl wtr down tbg & killed well. Removed tree; Installed BOP; pulled Brown seal ass'y from PBR. Displaced hole w/9# KCl wtr. POH w/140 jts 2 7/8" tbg. CIWSDFN.

CHROMATOGRAPHIC ANALYSIS REPORT

Run Number	6222
Date of Run	10-7-77

SAMPLE DATA

METER STATION NO:				
MAIN LINE NO.:		DESCRIPTION:		
FIELD:	WELL NO: American Quazar Hogsback Ridge 20-1	LOCATION: Sec. 20 T 13N. R. 7E	FORMATION: Dimmoddy	
CYLINDER NO: Hoke	CYL. PRESS., PSIG 840	LINE PRESS., PSIG 840	ATM. TEMP. 44 °F	F. G. TEMP.: 36 °F
SECURED BY: Macdonald	MONTH: 10 / DAY: 6	HOUR: 12:25 pm / YEAR: 1977	VOLUME, MCF/D @ 14.73 PSIA & 60°F.: 15,760	

REMARKS:

Tubing press 3212# During test

ANALYSIS

	MOLE (%)	G.P.M.	LIQUID (%)
Hydrogen-Sulfide			
Helium	0.46		
Carbon-Dioxide	0.33		
Nitrogen	15.50		
Methane	82.74		
Ethane	0.94		
Propane	0.01	0.003	24.35
Iso-Butane	Trace	---	---
N-Butane	Trace	---	---
Iso-Pentane	---	---	---
N-Pentane	---	---	---
Hexanes	0.01	0.004	35.65
Heptanes & Higher	0.01	0.005	40.00
Total	100.00	0.012	100.00

HEATING VALUE
B.T.U./CU. FT. 32 IN. HG., 60°F., DRY

Calculated 841

Observed 842

SPECIFIC GRAVITY

Calculated 0.625

Observed 0.622

COPIES TO:

ANALYST: D.C.M.

APPROVED:

ADDITIONAL REMARKS AND DATA

C-10375

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

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 77.

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)
Hogback Ridge										
Sec. 20										
NE SE	13N	7E	20-1							Well SI WO pipeline connection

CONFIDENTIAL

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-3

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

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

CORRECTED REPORT

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

RECEIVED MAR 28 1978 OIL, GAS, & MINING

CONFIDENTIAL

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

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: ~~1980~~ 1890' FSL & ~~660~~ 1712' FEL (NE SE)
At top prod. interval reported below: 910' FWL & 2283' FSL Sec. 21
At total depth: 1094' FWL & 2034' FSL Sec. 21

5. LEASE DESIGNATION AND SERIAL NO.: FEE
6. IF INDIAN, ALLOTTEE OR TRIBE NAME:
7. UNIT AGREEMENT NAME:
8. FARM OR LEASE NAME: Hogback Ridge
9. WELL NO.: 20-1
10. FIELD AND POOL, OR WILDCAT: Wildcat
11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec. 20-13N-7E
12. COUNTY OR PARISH: Rich
13. STATE: Utah

14. PERMIT NO.: 43-033-30003
DATE ISSUED: 12-10-76

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (Ready to prod.)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
1-5-77	7-27-77	10-12-77	6453' GR	---

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
10,910'	9634'	----	→	0-TD	-----

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*
9468/473, 9490/505', 9526/536', 9554/564' (Dinwoody)
9598/608', 9620/630' (Dinwoody)

25. WAS DIRECTIONAL SURVEY MADE: Yes

26. TYPE ELECTRIC AND OTHER LOGS RUN: See attached

27. WAS WELL CORED: yes

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

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13 3/8"	48#	749'	17½"	800 sx	None
9 5/8"	40#	3711'	12½"	1400 sx	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)
7 5/8"	3563	8142	600	---
5"	7856	9809	200	---

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
3½	7858	PBR @ 7858

31. PERFORATION RECORD (Interval, size and number)

Tie Back-7 5/8"	3569	surf	50
2 7/8"	9661	10907'	55

See attached

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

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
See attached	

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing or shut-in)
10-11-77	Flowing	SI

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO
10-11-77	3	3/4"	→	--	2802.625	----	-----

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)
2832	0	→	---	22,421	--	----

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.): Waiting on pipe line connection

TEST WITNESSED BY: Kelton Mann

35. LIST OF ATTACHMENTS

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

SIGNED R F Reuter TITLE Division Engineer DATE 10-14-77

*(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.
SEE ATTACHED			

38. GEOLOGIC MARKERS

NAME	TOP MEAS. DEPTH	TOP TRUE VERT. DEPTH
1st Twin Creek	475	
2nd Twin Creek	653	
Walton Canyon	1198	
Boundary Ridge	1420	
Rich	1673	
Sliderock	2005	
Gypsum Springs	2348	
Nugget	2555	
Ankareh	3805	
Thaynes	5472	
Woodside	8230	
Dinwoody	9429	
Phosphoria	10062	
Wells-Weber	10514	

ORAL APPROVAL TO PLUG AND ABANDON WELL

Operator American Quasar Petrleum Representative John Works

Well No. Hogback Ridge #1 Location SE ¼ NW ¼ Section 20 Township 13N. Range 7E

County Rich Field Hogback State Utah

Unit Name and Required Depth _____ Base of fresh water sands _____

T.D. 10,910' Size hole and Fill per sack ____" ____' and Top _____ Mud Weight #/gal. ____' ____

PBTD 9,634'

Casing Size	Set At	Top of Cement	To Be Pulled
13 3/8"	749'	surface	
9 5/8"	3711'	surface	
7 5/8"	8142'		
5"	7856	9809'	

Formation	Top	Base	Shows

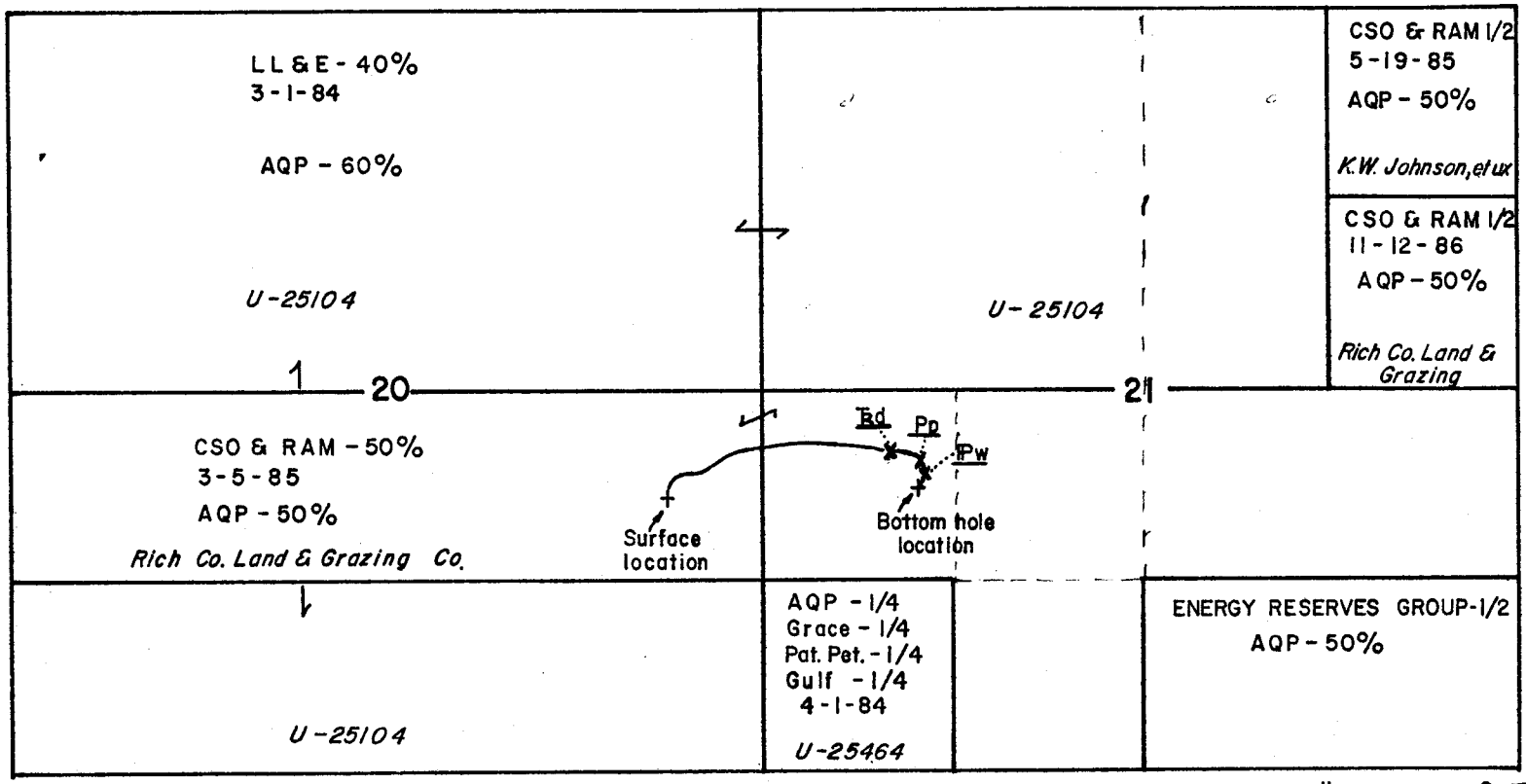
Plugging Requirements

From	To	Sacks Cement
1. Squeeze entire Dinwoody interval w/cement & LCM.		
2. Set CIBP at 9400'(±)		
3. 7600'	7500' (@ liner top)	as necessary
4. 100' plug @ shoe of 9 5/8" casing		
5. Plug @ surface w/marker. Fill annulus areas @ surface if necessary.		

REMARKS

DST's, lost circulation zones, water zones, etc., Weber formation was perforated, tested & plugged back during original completion. Perforated, tested & plugged off Phosphoria formation. Perforated Dinwoody 9468' - 9630' for production. Subsequently squeezed Dinwoody perfs. to produce Phosphoria. Presently equiped with packer & latch in plug w/sand above Phosphoria.

Approved by R. J. Firth Date 10-12-82 Time _____ a.m. p.m.



Map scale: 4" = 1 mile

Confidential

Surface location: 672.5' fel, 3390' fnl, sec. 20

Bottom hole location: 1081' fel, 3336' fnl, sec. 21
md 10,888' tvd 10,562'

Dinwoody top (Ꞧd): 897' fel, 3087' fnl, sec. 21
md 9440' tvd 9183

Phosphoria top (Pp): 1101' fel, 3145' fnl, sec. 21
md 10,090' tvd 9793'

Wells top (ℙw): 1127' fel, 3235' fnl, sec. 21
md 10,520' tvd 10,211'

American Quasar

Hogback Ridge 20-1

T 13 N - R 7 E

RICH COUNTY, UTAH

Aug. 3, 1977

ATTACHMENT
COMPLETION REPORT-HOGBACK RIDGE 20-1

26. DIL, Comp. Sonic & Dipmeter, Dual Laterolog, BHC, CFD, Dipmenter, Petrolog CBL, IES, Sonic GR, TDT, GR Neutron, GR-CCL, CBL.

31. Pfd 10,810/857' (Weber) w/1 9/16" tbg gun 1 spf.

Pfd 10,655/705' (Weber) w/2" tbg gun 1 spf.
Repfd 10,655/705' (Weber) w/1 9/16" hollow carrier gun 1 spf.

Pfd 10,522/606' (Weber) w/1 9/16" tbg gun 1 spf.

Pfd 10,070/080'
10,088/098'
10,115/125'
10,144/234' (Phosphoria) w/1 9/16" tbg gun 1 spf.

Pfd 9620/630'
9598/608' (Dinwoody) w/2" tbg gun 1 spf

Pfd 9468/9473'
9490/9505'
9526/9536'
9554/9564' (Dinwoody) w/2" tbg gun 2 spf

32. Acdz pfs 10,810/857' (Weber) w/2000 gals Spearhead acid, flushed w/54 bbls 2% KCl wtr.

Acdzd pfs 10,655/705' (Weber) w/1500 gals 15% HCl + 5% HF w/35 ball sealers @ 5 BPM & 6000 psi.

Acdzd pfs 10,522/606' (Weber) w/1500 gals Spearhead acid (15% HCl & 5% FL) w/60 ball sealers spaced evenly thruout.

Acdzd pfs 10,070/080', 10,088/098', 10,115/125', 10,144/234' (Phosphoria) w/5000 gals 15% HCl + 5% HF w/90 ball sealers.

Acdzd pfs 9468/473', 9490/505', 9526/536', 9554/564', 9598/608', 9620/630' (Dinwoody) w/10,000 gals Spearhead acid & 1500# benzoic acid flakes in 4 stages, flushed w/140 bbls 3% KCl wtr.

37. DST #1 1041/1112' (Twin Creek) TO 10" w/very wk blow, declining to faint blow in 30 sec's, SI 60", TO 60" w/faint blow, SI 120" rec 10' drlg mud, IHP-487, IFP-20/15, ISIP-31, FFP-15/15, FSIP-20, FHP-472.

DST #2 2167/2280' (Twin Creek) TO 10" w/wk blow, SI 60", TO 90" w/wk blow remaining wk thruout test, SI 150"; rec 124' drlg mud, NS; IHP-1006, IFP-36/36, ISIP-858, FFP-42/63, FSIP-658, FHP-980

DST #3 2545/2592' (Nugget) TO 10" w/wk blow, SI 60", TO 90" w/wk blow, incr to med-strong blow in 7", SI 120"; rec 2300 M/C/W, NS; IHP-1193, IFP-343, ISIP-1022, FFP-177/1022, FSIP-1022, FHP-1193

DST #4 9440/9493' (Dinwoody) w/200' ammonia WC & 10 gals Kote, TO 6" w/immed strong blow incr @ alarming rate, SI 325", TO 14" had 1800# on 1½" ck in 8", 2000# on 1¼" ck in 14", SI 120" due to capacity of surf equip; rec 300' W&G/C/drlg mud, IHP-4483, IFP-1637/2151, ISIP-4196, FFP-2186/3350, FSIP-4196, FHP-4470

DST #5 10207/10405' (Phosphoria) w/1000' ammonia WC; TO 11" w/initial wk blow incr to very strong, had max flow rate on 180 psi on ¼" ck in 11", SI 30", rec dry gas, IHP-5375, IFP-733/690, FSIP-4215, FHP-5312.

DST #6 10277/10470' (Phosphoria) TO 11" w/very faint blow, SI 60", TO 45" w/no blow; rec 300' drlg mud, NS; IFP-5243, IFP-129/151, ISIP-173, FFP-151/151, FSIP-1443, FHP-5243

DST #7 10695/10882' (Wells-Weber) Misrun

DST #8 10711/10910' (Wells-Weber) Misrun

DST #9 10848/10910' (Wells-Weber) Misrun

Core #1 10232/10240' (Phosphoria) rec 2' blk chert w/fractured sh inclusions

Core #2 10248/10250' (Phosphoria) rec 18" chert & sh

MOUNTAIN FUEL SUPPLY COMPANY

180 EAST FIRST SOUTH · P. O. BOX 11368 · SALT LAKE CITY, UTAH 84139 · PHONE (801) 534-5237

W. S. "WALLY" OLSON
DIRECTOR
GAS PURCHASES AND LIQUID SALES

January 5, 1978

Mr. Cleon B. Feight
Director
Oil and Gas Conservation Commission
1588 West North Temple
Salt Lake City, Utah 84116

Dear Jack:

In accordance with our telephone conversation, I am enclosing a copy of the gas analysis obtained from the Hogsback Ridge 20-1 Well which indicates in excess of 16% inerts of which 15 1/2% is nitrogen.

I am unable to locate an analysis on the Phosphoria; however, indications are that, along with the inert problem, we are also faced with an H2S content. If I run across a copy of it, I will also forward that to you.

Best Regards,

Wally

WSO/bb

Enclosure

RECEIVED
AUG 6 1979
DIVISION
GAS, & MIN

HOGBACK RIDGE #20-1
American Quasar Petroleum
NE SE Sec. 20, 13N, 7E
Rich County, Utah

HOGBACK RIDGE #20-1
Rich Co., Utah

10/26/78 Opened well to line @ 11:30 AM 10-25-78 @ approx 6 MMCFD on 18/64" ck. NWPL informs that due to pipeline accident well will be shut in 10-26-78.

HOGBACK RIDGE #20-1
Rich Co., Utah

10/29/78 Opened well to PL @ 10:00 AM 10/28/78 w/FTP 3210 psi on 18/64" chk. Producing 7 MMCFD.

HOGBACK RIDGE #20-1
Rich Co., Utah

11/7/78 Well flwg @ 7 mmcfd on 18/64" choke w/3200 psi FTP. Opened to rate of 13 mmcfd @ 3 pm 11-6-78. Cum prod to date: 270.7 mmcf.

HOGBACK RIDGE 20-1
Rich Co., Utah

11/9/78 Opened to 16 MMCFD @ approx 3 PM 11-8-78. Flowing w/ 2975 psi FTP on 31/64" ck.

HOGBACK RIDGE 20-1
Rich Co., Utah

11/15/78 Flowing @ 18 MMCFD on 34/64" ck; FTP-2820 psi.

HOGBACK RIDGE #20-1
Rich Co., Utah

11/20/78 Flowing @ approx 18 MMCFD on 34/64" ck w/2820 psi FTP.

HOGBACK RIDGE 20-1
Rich Co., Utah

11/21/78 Approx cumulative prod as of midnite 11-16-78: 441 MMCF.

HOGBACK RIDGE 20-1
Rich Co., Utah

11/27/78 Prod 13.5 MMCFD w/2900 psi FTP on 32/64" ck. Approx cum prod thru 11-23-78-549 MMCF. Shut in from 1 AM 11-23-78 to 10 AM 11-26-78; 81 hr SITP-3230 psi.

HOGBACK #20-1
Rich Co., Utah

11/29/78 Flowing on 35/64" ck w/2750 psi FTP; prod 18.64 MMCFD, 8 BW.

HOGBACK RIDGE #20-1
Rich Co., Utah

12/7/78 Prod @ 17 MMCFD on 35/64" ck, 2900 psi FTP. Approx cum prod thru 12-3-78: 680 MMCF.

HOGBACK RIDGE 20-1
Rich Co., Utah

12/8/78 SI 12/7/78 due to pipeline capacity. Approx cum prod to date: 734 MMCF.

12/9/78 DROP FROM DAILY REPORT.

HOGBACK RIDGE #20-1
Rich Co., Utah

3/24/79 Dead wt tbg-2534; dead wt csg-484.

HOGBACK RIDGE 20-1
Rich County, Utah

6/12/79 - Put on production Friday, 6/8/79 at 2 MMCFPD.

HOGBACK RIDGE 20-1
Rich County, Utah

6/20/79 - Northwest pipeline shut well in 12 noon 6/19/79.

HOGBACK 20-1
Rich County, Utah

7/20/79 - Opened well up at 11 AM, 7/19/79 at 5 million cu ft rate. 2560 psi FTP.

HOGBACK 20-1
Rich County, Utah

8/3/79 - Well SI at 3 PM 8/2/79 due to "low demand" by Northwest Pipeline.

HOGBACK RIDGE #20-1
American Quasar Petroleum
NE SE Sec. 20, 13N, 7E
Rich County, Utah

HOGBACK RIDGE 20-1
Rich Co., Utah

10/8-9-10/77 Well SI pending results of BHP survey.

HOGBACK RIDGE 20-1
Rich Co., Utah

10/11/77 Well SI. Will RU Otis today to rerun potential test w/ BHP bomb.

HOGBACK RIDGE #20-1
Rich Co., Utah

10/12/77 RU Otis. Ran tandem BHP bombs to 9450' w/gradient stops on way in hole. Bombs on bottom @ 12:50 AM 10/11/77. SITP (dead wt tester) 3395 psi. Opened well on 10/64" ck @ 12:55 AM. Flowed well 3 hrs @ final rate of 2.867 MMCFD; FTP stable @ 3392 psi. SWI 3 hrs. SITP-3397 psi. Opened well @ 6:55 PM on 21/64" ck; flowed well 3 hrs @ final rate of 10.381 MMCFD: FTP 3316 psi. CWI 3 hrs. SITP-3400 psi. Opened well @ 12:55 PM on 27/64" ck. Flowed well 3 hrs @ final rate of 15.627 MMCFD: FTP stable @ 3200 psi. SWI @ 3:55 AM 10/12/77. SITP-3400 psi in 2 min. Pulled Otis BHP bombs.

HOGBACK RIDGE #20-1
Rich Co., Utah

10/13/77 Well closed in & padlocked. Released Otis equipment. Now WO pipe line connection. DROP FROM REPORT

HOGBACK RIDGE #20-1
Rich Co., Utah

10/17/77 Dinwoody perfs 9468-9630'. Flowed well 3 hrs on 3/4" ck at stabilized rate of 22.4 mmcfd; FTP-2832 psi. CWI. SITP static @ 3401 psi in 1 hr. FINAL REPORT

HOGBACK RIDGE 20-1
Rich Co., Utah

8/23/78 Opened to sales @ 5:30 PM 8/22/78. 1st hr flowed @ 16 MMCFD. Reduced to 13 MMCFD after 1 hr due to problem w/ sales line dehydration unit. @ 9:30 PM flowing @ 13 MMCFD on 24/64" ck; FTP-3250 psi.

HOGBACK RIDGE 20-1
Rich Co., Utah

8/24/78 Continued to flow @ 13 MMCFD until 5 PM. SI 20 min to change out dump valve on prod unit. Opened well @ 8 MMCFD on 19/64" ck w/3300 FTP. SICP-1800 psi. Bled csg to 0. Continuing to flow and test.

HOGBACK RIDGE 20-1
Rich Co., Utah

8/25/78 Cont'd to flow on drawdn test @ approx 8 MMCFD on 19/64" ck w/3320 psi FTP.

HOGBACK RIDGE 20-1
Rich Co., Utah

8/26-27-28/78 Continuing to flow on drawdown test. Plan to SI for buildup on Sept 4. DROP FROM REPORT PENDING FURTHER ACTIVITY.

HOGBACK RIDGE 20-1
Rich Co., Utah

10/5/78 SITP-3440; CP-840 psi. Opened well @ 12:30 PM 10/4/78. Stabilized flow @ 3:05 PM, 8.06 MMCFD on 20/64" ck; FTP-3250, CP-890 psi. One of 3 Northwest Pipeline dehydrators is out of service. Anticipate repairs on 10/5/78.

HOGBACK RIDGE 20-1
Rich Co., Utah

10/11/78 Incrsd flow rate to 13 MMCFD on Monday, 10/9/78.

HOGBACK RIDGE 20-1
Rich Co., Utah

10/16/78 SWI @ 11:40 PM 10/11/78 due to pipeline tie-ins.

HOGBACK RIDGE 20-1
Rich Co., Utah

10/19/78 Ran gradient stops & BHP survey. CIWSDFN.

DEPTH	PRESS
surface	3322
8000'	3952
8500'	3989
9000'	4019
9200'	4033
9400'	4049
9632'	4059

HOGBACK RIDGE #20-1
American Quasar Petroleum
NE SE Sec. 20, 13N, 7E
Rich Co., Utah

CONF[illegible]IAL

HOGBACK RIDGE 20-1
Rich Co., Utah

10/1/77 Fin POH & LD 2 7/8" PH 6 tbg & seal ass'y. PU rams & tools. Ran Brown seal ass'y on 100 jts 3½" 9.3# N80 EUE tbg. CIWSDFN

10/2/77 Landed in 5' PBR @ 7858', Pressd backside to 2500 psi. Made 1 swab run & well kicked off. Flowed 3 hrs on ½" ck ARO 11.201 mmcfd; FTP-1430. Flowed 4 hrs on 40/64" ck ARO 12.245 mmcfd; FTP-1430 psi. Flowed 7 hrs on ½" ck ARO 11.614 mmcfd; FTP-770. Will continue to flow & test

10/3/77 Flowed 8½ hrs on ½" ck ARO 11.754 mmcfd; FTP-1814. Collected 3 gas samples; on site H_2S test-.01 grains per 100 cuft. CIW @ 3:30 PM 10/2/77 for press buildup. Press built up in 5 min to 3250 psi; 10 min-3400; 15 min-3401; 30 min-3401. SITP this AM-3404 psi.

HOGBACK RIDGE #20-1
Rich Co., Utah

10/4/77 7 AM SITP-3404 psi. RU Western Co. Acidized Dinwoody perfs 9468-473', 9490-505', 9526-536', 9554-564', 9598-608' & 9620-630' w/10,000 gals Spearhead acid & 1500# benzoic acid flakes in 4 stages. Flushed w/140 bbls 3% KCl wtr; max treating press-6400 psi; aver press-4500 psi; aver rate-17 BPM; ISIP-200 psi; 10 min SIP-150 psi. Total load-380 bbls. Flowed to pit 1 hr; rec 120 BLW. Turned well thru separator @ 12:30 PM 10/3/77. Flowed well 16 hrs on various cks. Last 3 hrs well stabilized on 25/64" ck ARO 14.046 mmcfd; FTP-3170. This is max rate w/current surface equipment & meter run. Plan to run BHP buildup survey today & install larger separator & meter run equipment. CIWSDFN

HOGBACK RIDGE #20-1
Rich Co., Utah

10/5/77 Flowed well 2 hrs on 25/64" ck ARO 14.149 mmcfd; FTP-3170. Flowed 8 hrs on 18/64" ck ARO 7.8 mmcfd. CWI @ 5 PM 10/4/77. Press built to 3402 psi in 10 min. SITP this AM-3402 psi. Prep to run Otis BHP bomb & flow test.

HOGBACK RIDGE 20-1
Rich Co., Utah

10/6/77 RU Otis. Ran BHP bomb to 9633'. Flowed well 4 hrs ARO 1.702 mmcfd; FTP-3398 psi. SI 3½ hrs for buildup. SITP-3401. Flowed well 5 hrs ARO 8.626 mmcfd; FTP-3325 psi. Now SI for buildup.

HOGBACK RIDGE #20-1
Rich Co., Utah

10/7/77 Left well SI 4½ hrs for buildup; SITP-3404 psi. POH w/ BHP bomb. RD Otis. Opened well @ 11:30 AM 10/6/77. Flowed 3½ hrs on 26/64" ck @ stabilized rate of 16.1 mmcfd; FTP-3145 psi. CIW for 1 hr. SITP-3401 psi in 10 min. Flowed 3 hrs on 1" ck @ stabilized rate of 22.4 mmcfd; FTP-2832 psi. CIW @ 7 PM; SITP built to 3401 in 1 hr. Left well SI overnite

HOGBACK RIDGE 20-1
Rich Co., Utah

10/8-9-10/77 Well SI pending results of BHP survey.

HOGBACK RIDGE 20-1
Rich Co., Utah

10/11/77 Well SI. Will RU Otis today to rerun potential test w/ BHP bomb.

HOGBACK RIDGE #20-1
Rich Co., Utah

10/12/77 RU Otis. Ran tandem BHP bombs to 9450' w/gradient stops on way in hole. Bombs on bottom @ 12:50 AM 10/11/77. SITP (dead wt tester) 3395 psi. Opened well on 10/64" ck @ 12:55 AM. Flowed well 3 hrs @ final rate of 2.867 MMCFD; FTP stable @ 3392 psi. SWI 3 hrs. SITP-3397 psi. Opened well @ 6:55 PM on 21/64" ck; flowed well 3 hrs @ final rate of 10.381 MMCFD: FTP 3316 psi. CWI 3 hrs. SITP-3400 psi. Opened well @ 12:55 PM on 27/64" ck. Flowed well 3 hrs @ final rate of 15.627 MMCFD: FTP stable @ 3200 psi. SWI @ 3:55 AM 10/12/77. SITP-3400 psi in 2 min. Pulled Otis BHP bombs.

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.)

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: Hogback Ridge

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

9. WELL NO.: 20-1

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 1980' FSL, 660' FEL, Sec. 20, T13N-R7E (NESE)

10. FIELD AND POOL, OR WILDCAT:

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 20, T13N-R7E

14. PERMIT NO.:

15. ELEVATIONS (Show whether DF, RT, GR, etc.): KB 6467

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)			[ ]
(Other) Recomplete in Phosphoria			[XX]	(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

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

Squeeze Dinwoody perfs and recomplete in Phosphoria.

See attached procedure and schematic.

RECEIVED
MAR 23 1981
DIVISION OF OIL, GAS & MINING

APPROVED BY THE DIVISION OF OIL, GAS, AND MINING
DATE: 3-27-81
BY: M. J. Minder

Per J. Feight instruction BP maybe removed and Phosphoria produced providing no comingling takes place.

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

SIGNED: [signature] TITLE: Division Operations Manager DATE: 3/19/81

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

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.)

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

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

3. ADDRESS OF OPERATOR: 707 United Bank Tower

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 1980' FSL & 660' FEL, Sec. 20-T13N-R7E (NE/SE)

5. LEASE DESIGNATION AND SERIAL NO.: FEE

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: Hogback Ridge

9. WELL NO.: 20-1

10. FIELD AND POOL, OR WILDCAT:

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 20-T13N-R7E

14. PERMIT NO.:

15. ELEVATIONS (Show whether DF, RT, GR, etc.): KB 6467

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*	[XX]	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.)*

Intend to plug and abandon well as follows (as per verbal approval of Ron Firth - 10-12-82)

1. Squeeze 30 sx cement thru perfs from 9468 - 9630'
2. Set CIBP @ 9200'±
3. Set 20 sx cement on CIBP
4. Set 20 sx cement @ 7600-7500'
5. Set 20 sx cement @ 3760-3660'
6. Set 20 sx cement @ 800-700'
7. Set 20 sx cement @ surface
8. Install dry-hole marker and rehabilitate location

RECEIVED
OCT 18 1982
DIVISION OF
OIL, GAS & MINING

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

SIGNED John F. Weaks TITLE Division Drilling Engineer DATE 10-14-82

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

APPROVED BY THE STATE OF UTAH DIVISION OF OIL, GAS, AND MINING
DATE: 10/19/82
BY: [signature]

*See Instructions on Reverse Side

Form OGC-1b

SUBMIT IN DUPLICATE*
(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: Hogback Ridge

9. WELL NO.: 20-1

10. FIELD AND POOL, OR WILDCAT:

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 20, T13N-R7E

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

2. NAME OF OPERATOR: American Quasar Petroleum Co.

3. ADDRESS OF OPERATOR: 707 United Bank Tower #707 Denver, Colorado 80290

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 1980' FSL, 660' FEL, Sec. 20, T13N-R7E(NE SE)

14. PERMIT NO.: 43-033-30003

15. ELEVATIONS (Show whether DF, RT, GR, etc.): KB 6467

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*	[XX]	SHOOTING OR ACIDIZING	[ ]	ABANDONMENT*	[XX]
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.)*

MIR 8/26/82, killed well, pulled tbg, set plug in pkr @9638', re-perf'd Dinwoody 9468-9630', ran tbg, acdz w/10,000 gals 28% KCl w/50 gals HAI-75 & 500# benzoic flakes, displ w/105 BW, swabbed, no fluid. Attempted to inject gas for Mountain Fuel storage, would not accept gas. Pulled tbg.
Set the following cemt plugs:

9400-9630, 30 sx Class G
9135' CIBP, 20 sx on top of BP
7600-7450, 20 sx
3760-3660, 20 sx
800-700, 20 sx
Surface plug and dry hole marker.

Will reclaim location when gas plant has been removed.

Verbal approval to P&A received from Ron Firth, Utah Division of Oil, Gas and Mining 10/12/82.

APPROVED BY THE STATE OF UTAH DIVISION OF OIL, GAS, AND MINING
DATE: 10/25/82
BY: [signature]

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

SIGNED James T. Brown TITLE Division Production Manager DATE 10/19/82 PH

(This space for Federal or State office use)

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

*See Instructions on Reverse Side

Received
10/23/86
by Carol Revell

American Quasar Pet.
% Max Simms
Lander, Wyo.

Below is a release Signed By The President of Rich Co Land & Grazing. For Restoring the 20-1 Hogback well Location Sec 20 13 No 7E Rich Co Ut.

President Reed Groll and Director in R C L & G Dallas Johnson have approved my work on the 20-1 Well Location Keith Johnson

The location Has been regraded and seeded with Grass seed, The Main ed area is fenced for a Protection to get the grass established.

Rich Co Land & Grazing Owners of the Site accept as final The Work Done.

Oct. 18, 1986 B. Reed Groll

L. Dallas Johnson Director

Total Cost $ 8,000.00
Keith Johnson
Ketown Utah 84038