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GEOLOGICAL WELL REPORT

CROWN PETROLEUM LLC

#1 CHERYL LYNN

APPROX. C N/2 NW/4 SECTION 21, TOWNSHIP 7 NORTH, RANGE 53 WEST

LOGAN COUNTY, COLORADO

Wildcat - West Atwood Area



WELL DATA

LOCATION: 470 feet from the North line and 1,320 feet from the West line, approximate Center of the N/2 NW/4 of Section 21, Township 7 North, Range 53 West, Logan County, Colorado.

ELEVATION: 4,036 ground.
4,046 kelly bushing (*Depth datum).

SPUD DATE: 3:30 P.M., February 9, 1997.

COMPLETION DATE: 7:00 P.m., February 13, 1997 (Rig released).

CASING RECORD: Ran 7 joints of new 8 5/8" surface casing, 24#, totalling 310'. Set at 318 K. B. Cemented with 184 sacks of Neat cement, 3% CaCl plus 1/4 lb./sack Floseal.

TOTAL DEPTH: 4777 T. D. Driller.
4780 T. D. Logger.

DEEPEST FORMATION PENETRATED: Lower "J" Sand (?).

HOLE SIZE: 12 1/4" down to 325.
7 7/8" from 325 to 4780 T. D.

LOGS: Ran PSI Dual Induction Guard Log with Gamma Ray log, running a 5" detail on a logarithmic scale from 4780 T. D. up to 3600 above the Niobrara, with a repeat from T. D. up to 4576 above the "D" Sand on a linear scale. Another repeat was run from T. D. up to 4576 above the "D" Sand on a 5" detail scale on a logarithmic scale.

Then Compensated Density Log with Gamma Ray Log and Caliper Log were run on a 5" detail on a linear scale from T. D. up to 3600 above the Niobrara, with a repeat from T. D. up to 4580 above the "D" Sand.

Logging Engineer: John Patterson, Brighton, Colorado.

CORES: (None).

DRILL STEM TESTS: (None).

SAMPLE DISPOSITION: Samples were not saved.

DRILLING TIME RECORDS: Original copy of Geograph 1' drilling time records in Denver office of G. A. Nelson.



WELL DATA (Continued)

PLUGGING RECORD:

40 sacks at 4707 in upper "J" Sand.
40 sacks at 342 below base of surface pipe.
10 sacks in top of surface pipe.
Cut off casing 4' below ground level.

CONTRACTOR AND RIG
EQUIPMENT:

Ashby Drilling Company, Denver, Colorado.
Pusher - Gary Young.
4 1/2" drill pipe, 16.60#, Grade E.
6 1/4" tool joint, XH thread.
Mud pump #1, Emsco 600, with 15" stroke.
Trailer for geologist.

LOG FORMATION TOPS

All depths are from 4780 K. B.

<u>FORMATION TOPS</u>	<u>DEPTH</u>	<u>DATUM</u>
UPPER CRETACEOUS		
PIERRE SHALE	655	
NIOBRARA LIME	3777	
FORT HAYS LIME	4102	
CODELL SAND	4146	
CARLILE SHALE	4150	
GREENHORN LIME	4338	
GRANEROS SHALE	4343	
BENTONITE	4496	
BASE OF BENTONITE	4498	



LOG FORMATION TOPS (Continued)

LOWER CRETACEOUS	4498	
"D" SAND	4592	-546
BASE OF "D" SANDS	4614	
"J" SAND	4682	-636
TOTAL DEPTH - DRILLER	4777	
TOTAL DEPTH - LOGGER	4780	

SAMPLE LITHOLOGIC DESCRIPTION

Following sample depths have been corrected for lag first. Then sample lithology is matched to drilling time breaks wherever possible. Finally, all sample lithology matches log lithology.

All shows are underlined with a solid line. Possible shows are underlined with a dashed line.

All depths are from 4780 K. B.

DEPTH

LITHOLOGY

(All samples are examined when wet.)
(10' samples follow.)

4592 (-546)	TOP OF "D" SANDS ("D" Sand top marked by a slow down in drilling time from 2"/ft. above 4592 "D" top to 4"/ft. below 4592). (Samples up in less than 50" at 4595).
4592-93	<u>Traces</u> (3 pieces) light gray sand, no show, very fine, well-sorted, part with white clayfill, porous, friable, no fluorescence. (Drills at 3"/ft.)
4593-96	White siltstone, no show, no fluorescence, no visible porosity, soft, noncalcareous, few tiny black spots.
4596-98	Shale.
4598-4604	Abundant white sand, no show, no fluorescence, very fine, well-sorted, fair visible porosity, friable, noncalcareous.

4604-06
4606-14

Shale.
(Drills at 5"/ft.) Same sand as above, part tight with no visible porosity; few scattered dark gray grains, salt and pepper; no show, no fluorescence.
Abundant dull brown ironstone, siderite, cherty, hard, dense.

4614

BASE OF 'D' SANDS

4682 (-636)

TOP OF 'J' SANDS

4682-86

(Circulated 30" sample at 4692). (Top 10' of "J" drill faster than above: at 2"/ft.) Sandstone, white, no show, no fluorescence, very fine to fine, fair grain size sorting, part tight, cemented, poor visible porosity, noncalcareous; few black carbonaceous shale planes.

4686-92

(Circulated 45" sample at 4692). Traces (5) sandstone, white, no show, no fluorescence, very fine; excellent sorting, good visible porosity, friable, trace white, clay.
(Circulated 60" sample at 4692). Same sand as above, no show, no fluorescence, very fine, some fine grained; some white clayfill in part, noncalcareous; tight in very fine to some porosity in fine grained.

4692-96

Sandstone, light gray, no show, no fluorescence, very fine, excellent sorting, tight, traces white clayfill, noncalcareous, poor visible porosity.

4696-4703

(5" to 10"/ft.) Traces clean sand, light gray, no show, sugary, very fine, well-sorted, excellent visible porosity, no fluorescence, clear grains, noncalcareous.

4703-13

(Drills at 3" to 4"/ft.) Same clean, sugary sand, no show, light gray, no fluorescence, friable, very fine, well-sorted; trace (1) sand, fine, well-cemented, snow white.
Shale on log.

4713-20

4720-25

(Some 9"/ft.) Loose sand grains, very fine to fine, clear, subangular to subround; traces white sand, very well-cemented, no visible porosity.

4725-30

(5"/ft.) Shaly siltstone, light gray, tannish light gray, no show, no visible porosity, soft to slightly soft to slightly hard.

4730-32

4732-40

Shale.
(Drills at 1/2" to 2"/ft.) All loose sand grains, very fine to fine to few medium, clear to translucent, subround to few round.

4740-46

(Drills at 6"/ft.) Traces sandstone (6), one piece with bright yellow fluorescence, very fine, well-sorted, creamish light gray, friable; part highly clayfilled; in trichloroethylene cut in spot plate there is a very faint yellowish light gray ring in hole after 2 hours.



4746-80 T. D. Sandstone, snow white, highly clayfilled, no visible porosity, no show, no fluorescence, friable, sugary, very fine, well-sorted grain size.
Same as above, becoming tight, no show.
(Not in samples due to not circulating nonprospective zone at T. D.)

4780 TOTAL DEPTH - LOGGER

(4777 TOTAL DEPTH - DRILLER)

Samples examined and described on location by G. Allan Nelson, Consultant, Denver.



HOLE DEVIATION SURVEYS

<u>DEPTH</u>	<u>DEVIATION</u>	<u>FORMATION</u>
324	1/4 degree	Pierre Shale
958	1/4	"
1519	1/2	"
1986	3/4	"
2544	1	"
3521	1	"
3608	1 1/4	"
4528	1 1/4	Graneros

BIT RECORD

12 1/4" bit from surface to 325. All bits below 325 to T. D. are 7 7/8".

<u>BIT NO.</u>	<u>MAKE</u>	<u>TYPE</u>	<u>FROM</u>	<u>TO</u>	<u>FEET</u>	<u>HOURS</u>	<u>FORMATION AT BASE OF RUN</u>
1A	Hughes	ATJ1	0	324	324	3	Pierre
1	WMC	11-F	324	4528	4204	28 1/4	Graneros
2	Security	S82F	4528	4777	249	12 1/4	"J" Sand
						43 1/2	



MUD RECORD

Mud furnished by Quality Drilling Fluids, Greeley, Colorado. Mud engineers, Fred Rothauge and Richard Ingmire.

Polymer-Gel mud.

<u>DEPTH</u>	<u>FORMATION</u>	<u>Sapp</u>	<u>Viscosity</u>	<u>Weight</u>	<u>1771</u>	<u>Gel</u>
895-2650		Sapp				
4528-4688			38-39	9.2-9.3		
4688-4777					2	50

Above "D" Sand (4592) add:

	<u>Caustic</u>	<u>SP101</u>	<u>Nitrate</u>	<u>Gel</u>	<u>Celoflake</u>
	1	4	4	(40 vis.)	10

	<u>Viscosity</u>	<u>Weight</u>	<u>pH</u>	<u>W.L.</u>
4555 (4592 "D" Sand)	38	9.1	9.0	6.4
4780 T. D. (Logging)	68	9.3	9.0	6.4

DRILLING PROGRESS SUMMARY

Depths as of 8:00 A.M. each day.

<u>DATE</u>	<u>NO. OF DAYS</u>	<u>DEPTH</u>	<u>FORMATION AT P.D.</u>	<u>FOOTAGE MADE LAST 24 HOURS</u>	<u>ACTIVITY</u>
2-9-97	-	1052	Pierre	1052	-
10	1 (-)	3974	Niobrara	2922	Drilling.
11	2	4698	"J" Sand	724	"
12	3	4777 T.D.	"	79	Laying down drill pipe.

Respectfully submitted,

G. Allan Nelson

G. Allan Nelson
Wyoming Professional Geologist No. PG-1723
February 25, 1997

