WELL HISTORY REPORT

CHEVRON SOBC WM E. PINE CREEK YT O-78

CONFIDENTIAL

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CHEVRON SOBC WM E. PINE CREEK YT O-78

February 25, 1972

R. C. Richardson, P. Eng.
Manager, Territorial and Arctic
Development Task Force

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SECTION I - SUMMARY OF WELL DATA

(a) Well Name and Number

Chevron SOBC WM E. Pine Creek YT O-78

(b) Permittee, Licensee or Lessee

Western Minerals Limited

(c) Name of Operator

Chevron Standard Limited
400 Fifth Avenue S.W.
Calgary 1, Alberta

(d) Location

UWLR Lat. 66.96472°N
Long.137.98278°W

Unit O, Section 78, Grid 67° 00' - 137 - 45

(e) Coordinates

UWI - 3000786700137450

Latitude: 66° 57' 53" N; Longitude: 137° 58' 58" W

(f) Permit or Lease Number

Permit No. 3312

(g) Drilling Contractor

G. P. Drilling Ltd., Rotary Rig #15

(h) Drilling Authority

No. 553, issued November 3, 1971

(i) Classification

Wildcat

(j) Elevations

Ground elevation - 1261' : K.B. elevation - 1276.60'

(k) Spudded

15:15 hours, December 25, 1971

(l) Completed Drilling

14:00 hours, January 21, 1972

(m) T.D. and P.B.T.D.

T.D. - 3109' : P.B.T.D. - Surface

(n) Well Status

Dry and permanently abandoned

(o) Rig Release Date

12 :00 hours, January 26 , 1972

(p) Hole Sizes to Total Depth

30" Hole from surface to 85' K.B.
17-1/2" Hole from 85' K.B. to 824' K.B.
8-3/4" Hole from 824' K.B. to 3109' K.B.

(q) Casing

19" O.D. conductor pipe set at 84' K.B.
13-3/8" J-55 , 54.5# casing set at 819' K.B.

(r) Engineers and Geologists

Engineers - D. G. Lewis , P. Silvers, J. N. Veny
Geologist - P. G. Collier

SECTION II - GEOLOGICAL SUMMARY

a) Formation Tops

Formation	Depth Samples	Depth Logs	Elevation K.B. 1277'
Lower Cretaceous Shale Unit	Surface	Surface	
Albian Siltstone Unit	1785	1827	- 550
Johnson Creek Formation	2547	2547	-1270
Paleozoic Unconformity (Upper Devonian)	2552	2552	-1275
Imperial Formation	2552	2552	-1275

TOTAL DEPTH 3109'

b) Cored Intervals

Core No.	Interval	Formation	Recovery
1	2185' - 2245'	Albian Siltstone	60'
2	2345' - 2405'	Albian Siltstone	60'
3	2412' - 2472'	Albian Siltstone	60'
4	2473' - 2501'	Albian Siltstone	28'
5	2501' - 2536'	Albian Siltstone	35'
6	2536' - 2596'	Albian Siltstone, Johnson Creek, U. Devonian, Imperial	49'
7	2596' - 2603'	Imperial	7'
8	2603' - 2639'	Imperial	35.5'
9	2639' - 2648'	Imperial	9'

c) Core Description

Core #1 : 2184'-2244' Cut 60 Ft. Rec. 60 Ft.

Coring Times: minutes per foot (left to right)

2184 - 31, 18, 17, 17, 16, 17, 17, 19, 21, 16,
18, 18, 17, 19, 16, 18, 16, 19, 16, 17,
19, 15, 17, 16, 16, 18, 15, 17, 15, 19,
17, 16, 17, 17, 19, 19, 19, 19, 20, 17,
19, 19, 17, 19, 16, 18, 17, 17, 12, 14,
19, 17, 17, 18, 17, 19, 16, 17, 17, 16 - 2244

2184 - 2220: Siltstone, light and dark grey millimetre laminated; light grey coarse silt, < 5% sand grains, minor calcite cement; dark grey argillaceous, micromicaceous fine silt, minor anhydrite cement. Bedding horizontal, except for minor lensing; nodular pyrite common; small scale scour and fill structures 2212-2220. Tight. No shows.

2220 - 2230: Siltstone, light and dark grey millimetre laminated; light grey coarse silt (70%) with 10% very fine sand grains, calcite and silica cements; dark grey fine silt (as above) 30%. Tight. No shows.

2230 - 2244: Siltstone, light and dark grey laminated as above, but several lenses of light grey sandy, siliceous coarse silt to 5 mm. and rarely to 10 mm. Stringers of poor porosity to 6% in coarse silts; poor to zero permeability; minor gas bleeding. 25% dark grey micromicaceous argillaceous fine silts, tight; trace pelecypod shell fragments.

Core #2 : 2345'-2405' Cut 60 Ft. Rec. 60 Ft.

Coring Times: minutes per foot (left to right)

2345 - 34, 24, 15, 16, 16, 16, 16, 18, 15, 16,
18, 16, 16, 16, 17, 15, 18, 16, 16, 17,
16, 16, 16, 18, 16, 17, 17, 16, 16, 16,
17, 18, 18, 21, 15, 16, 18, 18, 17, 18,
18, 16, 17, 18, 17, 19, 19, 20, 20, 20,
19, 20, 21, 19, 19, 22, 19, 20, 18, 20 - 2405

2345 - 2375: Siltstone, light and dark grey interlaminated. 60% light grey sandy coarse silt, sub-quartzose, siliceous with minor calcite cement; occurs in laminae and lenses to 5 mm., lenses show micro-cross-bedding and scour and fill structure at base. Traces of non-effective porosity. 40% dark grey very argillaceous silt, micaceous, anhydrite cement, pyrite laminae and small nodules; horizontal lamination throughout; trace of flow structures. Tight. No shows.

2375 - 2405: Siltstone, light and dark grey interlaminated 40% light grey sandy coarse silt (as above); occurs in laminae and lenses to 5 mm.; micro-cross-bedding in lenses. 60% dark grey very argillaceous silt (as above); horizontal lamination on millimetre scale, except where displaced by incipient siderite nodules to 3". Tight. No shows.

Drilled 2405-2412 with junk sub

Core #3 : 2412'-2472' Cut 60 Ft. Rec. 60 Ft.

Coring Times: minutes per foot (left to right)

2412 - 27, 16, 16, 14, 16, 15, 15, 15, 16, 12,
18, 17, 18, 15, 15, 14, 15, 14, 15, 17,
17, 17, 18, 18, 17, 19, 16, 11, 13, 16,
16, 15, 15, 15, 15, 17, 16, 15, 19, 21,
20, 17, 16, 16, 13, 20, 21, 19, 18, 18,
18, 16, 16, 19, 16, 17, 19, 15, 17, 16 - 2472

2412 - 2442: Siltstone and shale; light and dark grey millimetre interlaminated. 20-25% light grey coarse silt laminae and lenses to 5 mm., minor calcite cement. Tight. No shows. 75%-80% dark grey, micaceous, anhydritic, silty shale, slightly bituminous. Sideritic nodules to 2", displacing otherwise horizontal lamination. Small carbonaceous pelecypod fragments throughout; thin coquina at 26.3; occasional large vertical worm burrows and small horizontal worm casts. Tight. No shows.

2442 - 2472: Shale, dark grey to black, bituminous, silty and anhydritic. 10%-15% light grey siltstone laminae, as above. Pyritized pelecypod fragments common; pyritized coaly lens at 52.2; pyritic nodules with cellular texture common near base (?organic - sponge like). Occasional gastropods and worm trails. Tight. No shows.

Core #4 : 2473'-2501' (Jammed) Cut 28 Ft. Rec. 28 Ft.

Coring Times: minutes per foot (left to right)

2473 - 8, 17, 14, 12, 13, 13, 13, 13, 12, 12,
13, 14, 14, 15, 13, 12, 13, 12, 15, 14,
13, 14, 16, 16, 12, 15, 14, 14 - 2501

2473 - 2481: Shale, black, very bituminous, slightly silty, anhydritic; minor silt laminae. Generally massively bedded; faint horizontal lamination with 5° - 10° dips. Pyrite nodules with cellular texture common (?organic - sponge like); occasional worm trails. Tight. No shows.

2481 - 2482: Shale, black, as above; prominent vertical fractures lined with calcite. No shows.

2482 - 2485.2: Shale, black, as above but massively bedded (unfractured); pyritized, gastropod at 83.5.

2485.2-2486.3: Shale, black, as above, with major 45° slickensided fracture at 85.2 and minor slickensides 85.5 - 86.3. Fractures calcite lined in part. No shows.

2486.3-2489: Shale, black, as above but unfractured; 2" non-displacive iron nodule 87.8.

2489-2489.7: Shale, black, as above, with slickensided fractures. No shows.

2489.7-2499: Shale, black, as above, massively bedded, unfractured. Abundant pyrite; disseminated, laminar and nodular; nodules have cellular texture as above. 12 mm. silt lamina at 90.9 with steep (20^{o}) dips above; abrupt changes of dip 88 - 91. Massive shale has conchoidal fracture.

2499 - 2501: Shale rubble, probably shale as above.

Core #5 : 2501'-2536' Cut 35 Ft. Rec. 35 Ft.

Coring Times: minutes per foot (left to right)

2501 - 25, 13, 17, 15, 15, 16, 15, 15, 16, 12,
14, 16, 16, 15, 15, 15, 19, 17, 17, 17,
18, 19, 16, 18, 15, 18, 17, 17, 18, 18,
17, 16, 15, 13, 13 - 2536

2501 - 2536: Shale, dark grey to black, bituminous, micaceous, anhydritic, pyritic. Massively bedded, no visible lamination. Occasional 2-5 mm. light grey quartz silt interbeds. Pelecypods common; rare pyritized wood fragments; ¼" ?organic nodules with pustules towards base - possibly coprolites. Large vertical pyritized worm burrows and occasional small horizontal worm tracks. Conchoidal fracture. No shows.

Core #6 : 2536'-2596' Cut 60 Ft. Rec. 60 Ft.

Coring Times: minutes per foot (left to right)

2536 - 17, 17, 12, 11, 13, 11, 13, 8, 13, 16,
14, 9, 5, 5, 4, 10, 13, 10, 14, 14,
11, 21, 15, 17, 14, 17, 16, 19, 17, 15,
17, 15, 16, 16, 15, 20, 16, 14, 13, 25,
18, 15, 22, 30, 27, 16, 34, 33, 22, 16,
32, 20, 34, 28, 24, 27, 31, 33, 29, 38 - 2596

2536 - 2547: Shale, dark grey to black, bituminous, micaceous, anhydritic, pyritic, becoming silty towards the base. Massively bedded. Large vertical pyritized worm burrows 45.5-45.9; small horizontal worm tracks; possible coprolites. Tight. No shows.

2547 - 2548: Shale, silty, grading down to Sandstone, very silty. Transitional. Tight. No shows.

2548-2551.6: Sandstone, medium grey-green, fine grained, very silty, slightly argillaceous. Est. 25% glauconite grains; abundant disseminated pyrite. Poor intergranular porosity to 12%; very poor to zero permeability. Trace spotty oil stain from small fractures.

2551.6-2552.6: Brecciated sandstone, white, coarse to very coarse grained, clean, well sorted, cherty. Tightly cemented with silica - quartzitic. Trace oil stain from small fractures.

2552.6-2560: Sandstone, medium grey, shaley and silty, light and dark chert grains, silica cemented. 20% shale interbeds, dark grey, silty, with small scale cross-bedding in silts. Interval tight. No shows.

2560 - 2562: Sandstone, light grey, light and dark chert dominant, medium to coarse grained; 10%-20% matrix silt; 20% silica cement - quartzitic. Tight. No shows.

2562 - 2569: Shale, dark grey, silty, finely cross-bedded and interbedded with 30% sandstone, medium grey, fine to coarse grained, shaley, silica cement, tight.

2569 - 2596: Sandstone, light grey, cherty, siliceous, 70%-80%; occurring in graded sequences 1 to 3 feet thick. Typical graded sequence consists of thin coarse sand, passing up into fine to medium sand, then into cross-bedded silts and silty shales. Contacts between graded units generally erosional. Sands are composed of approximately 60% light chert, 20% dark chert, 10% green chert and 10% lithic fragments (shale); grains subangular to subrounded; minor matrix silt and clay; 20%-30% silica cement. Vertical fractures and slickensides common 2580-2596; dolomite lined in part. Trace intergranular porosity at base - ineffective. Spotty stain at base.

Core #7 : 2596'-2603.5' (Jammed) Cut 7.5 Ft. Rec. 7.0 Ft.

Coring Times: minutes per foot (left to right)

2596 - 27, 27, 36, 35, 32, 29, 26 - 2603.5

2596-2596.3: Sandstone, light grey, very fine grained, slightly silty, quartz and chert grains. Siliceous cement. Tight. No shows.

2596.3-2596.9: Lost Core, ground up by rotation before jamming. Trace shale, dark grey.

2596.9-2602.7: Siltstone, medium grey, cross-bedded 75%; shale, black 20% as interbeds; minor sand laminae at top. Interval consists of several graded units, coarse silt to shale.

Slump structures; steep (30^{o}) dips at top. Small vertical fractures and pinpoint vugs near top with trace oil stain.

2602.7-2603.5: Sandstone, light grey/white, clean, very cherty and siliceous, coarse to very coarse grained, pyritic. Grains are 80% white chert, angular to subangular. Wavy bedding with 10^{o} dips. Tight. Trace spotty oil stain.

Core #8 : 2603.5'-2639 Cut 35.5 Ft. Rec. 35.5 Ft.

Coring Times: minutes per foot (left to right)

2603.5 - 41, 42, 31, 38, 35, 38, 46, 30, 28, 39,
33, 38, 32, 31, 30, 31, 30, 31, 32, 29,
30, 32, 35, 30, 31, 36, 36, 29, 29, 28,
31, 35, 32, 37, 60, 41 - 2639

2603.5-2605.2: Sandstone, light grey/white, clean, very cherty and siliceous, medium to very coarse grained - mainly coarse; 30% siliceous cement - quartzitic; grains are 70% white chert, 20% dark chert, 5% green chert and 5% lithic fragments; subangular to angular. Tight. Trace spotty oil stain.

2605.2-2609.6: Interbedded silts, sands and shales; 20% sandstone, light, grey, fine grained, fairly well sorted, 60% quartz grains, 40% chert grains, subrounded. Tight. No shows.
50% siltstone, medium grey, coarse silt with shaley laminae, small scale cross-bedding, slump structures contort bedding; load casts into shales.
30% shale, black, carbonaceous, soft with conchoidal fracture. Occasional nodular and lenticular non-displacive iron concretions (non-sideritic).

2609.6-2639: Interbedded silts and shales, 50% siltstone, light to medium grey, coarse silt with shaley laminae, cross-bedded throughout. Approximately 1" silt and 1" shale interbeds. Gravity slumping abundant; load casts into shale. 50% shale, dark grey to black, carbonaceous, pyritic, with trace floating wood fragments. Numerous light brown laminar, lenticular and nodular non-displacive iron concretions (non-sideritic). Minor sandstone interbeds at base, very fine grained, tight. Sub-vertical fracturing extensive - 0.9-9.5, 27-29, accompanied by microfaulting. Fissures lined in part with euhedral quartz and ?limonite. No shows.

Core #9: 2639-2648' Cut 9 ft. Rec. 9 ft.

Coring Times: minutes per foot

2639 - 22, 29, 32, 31, 24, 24, 24, 23, 23, - 2648

2639-2641.2	Siltstone, light to medium grey, sandy, with 20% thin dark grey shale laminae. Abundant flow and slump, structures contort bedding; small scale cross-bedding. Low angle dips.
2641.2-2641.8	Sandstone, light grey, silty, very fine grained, moderately to well sorted, sub-quartzose with sub-rounded grains; 25% siliceous cement. Tight. No shows.
2641.8-2646.2	Siltstone, medium grey, sandy, with shale laminae. 20% shale interbeds, black, in ½" beds. Siltstone has sedimentary structures as in interval 2639-41.2. Dips generally 10°-20°.
2646.2-2648	Sandstone, light grey, very fine grained, moderately well sorted, subrounded grains; minor matrix silt; 25% siliceous cement. Grains 70% quartz, 30% chert. Tight. No shows.

d) Sample Description

110-170	Siltstone, medium brown-grey, argillaceous and calcareous, abundant glauconite nodules, slightly sandy in part. Minor shale, medium grey, silty, glauconitic.
170-820	Shale, medium grey, silty, slightly calcareous and glauconitic; sideritic ironstone nodules generally abundant; millimetre silt laminae; chips sub-fissile to fissile.
820-980	Shale, medium grey, silty, anhydritic; occasional ironstone nodules; chips sub-fissile to fissile. Minor sandstone, white, very fine to fine grained, quartzose, silica cemented and quartzitic; patchy poor intergranular porosity. No shows. (N.B.: sandstone could be cavings from interval 0-110; surface casing was set at 824'.)

980 - 1785: Shale, medium grey to grey-brown, anhydritic; numerous millimetre silty laminae, minor ironstone nodules. Trace waxy green silty shale interbeds. Chips mainly sub-fissile.

1785 - 1860: Siltstone, light and medium grey-brown, variably calcareous and anhydritic. Slightly porous coarse quartz siltstone (light grey-brown) interbedded with fine siltstone (medium grey-brown), argillaceous. No shows.

1860 - 1900: Sandstone, light grey to white, very fine grained, silty, calcite and anhydrite cements; glauconitic; sub-quartzose with 25% dark grains; subrounded grains, fairly well sorted. Poor intergranular porosity to 12%. No shows. Minor argillaceous siltstone interbeds.

1900 - 2020: Siltstone and shale, millimetre laminated, light and medium grey-brown striped. Silts (70%) are quartzose, locally to very fine sand grain size, with calcite, silica and anhydrite cements; poor stringers of porosity to 10%. Shales 30% are silty and micromicaceous. No shows.

2020 - 2090: Siltstone and shale, millimetre laminated, light and medium grey-brown striped. Silts (as above) 60%; shales (as above) 40%. Numerous sideritic concretions. Tight. No shows.

2090 - 2150: Siltstone and shale, millimetre laminated, light and medium grey-brown striped. Silts (as above) 70%; shales (as above) 30%. Iron concretions not abundant. Tight. No shows.

2150 - 2184: Siltstone, light grey-brown, sandy; anhydrite and calcite cements; poor porosity in stringers of grey-white coarse silt to very fine sand. 20% shale laminae as above. Trace gas bleeding from silt chips.

2184 - 2244: Core No. 1 Rec. 60' (See core descriptions)

2244-- 2345: Siltstone, light and medium grey brown millimetre laminated. 30% light grey sandy coarse silt, quartzose, silica anhydrite and calcite cements; minor poor porosity with gas bleeding from chips. 70% dark grey very argillaceous, micaceous and anhydritic fine silts. Tight

2345 - 2405: Core No. 2 Rec. 60' (See core descriptions)

2405 - 2412: No samples (drilled while fishing)

2412 - 2472: Core No. 3 Rec. 60' (See core descriptions)

2472 - 2473: No sample (drilled while reaming)

2473 - 2501: Core No. 4 Rec. 28' (See core descriptions)

2501 - 2536: Core No. 5 Rec. 35' (See core descriptions)

2536 - 2596: Core No. 6 Rec. 60' (See core descriptions)

2596 - 2603.5: Core No. 7 Rec. 7' (See core descriptions)

2603.5 - 2639: Core No. 8 Rec. 35.5' (See core descriptions)

2639 - 2648: Core No. 9 Rec. 9' (See core descriptions)

2648 - 2670: Shale, medium grey, silty, dolomitic; 20% light grey quartz silt interbeds, sandy and siliceous.

2670 - 2730: Interbedded sand, silt and shale, 30% sandstone, light grey-brown, fine grained, cherty, siliceous, tight; 30% siltstone, medium grey, sandy; 40% shale, dark grey, dolomitic. No shows.

2730
~~2370~~ - 2740: Shale, medium to dark grey, dolomitic, poorly to non-fissile.

2740 - 2820: Interbedded sand, silt and shale, 50% sandstone, light grey-brown, very fine to coarse grained, cherty, siliceous, locally dolomitic. Grains are 70% light chert, 20% dark chert, 10% green chert; subangular to angular. Tight. Minor gas bleeding from chips. 30% siltstone, medium grey-brown, sandy, locally bituminous, silica and dolomite cements. 20% shale, medium grey, silty and dolomitic.

2820 - 2880: Shale, medium to dark grey, bituminous, micromicaceous, poorly to sub-fissile. 20% shaley silt laminae. Tight. No shows.

2880 - 2930: Interbedded sandstone and shale, 50% sandstone, light brown, cherty, shaley, silica cemented, very fine to fine grained. Grains are 50% light chert, 40% dark chert and 10% green chert; subangular; poorly sorted. Tight. Trace gas bleeding from chips. 50% shale, medium to dark grey, bituminous, silty, micaceous.

2930 - 3020: Interbedded sandstone, silt and shale, 60% siltstone, medium grey, very sandy, bituminous in part, sub-quartzose, anhydritic and siliceous. Tight. Minor gas bleeding from chips. 20% sandstone, light to medium brown, very fine grained, subequal quartz and chert component grains, subangular; fairly well sorted. Tight. 20% shale, dark grey, bituminous.

3020 - 3035: Shale, dark grey, bituminous, sub-fissile. 40% sandy silt interbeds, medium grey.

3035 - 3045: Conglomerate and conglomeratic sandstone, light grey/white, cherty, siliceous; chert pebbles in medium to coarse sand matrix; 60% light chert grains, 30% grey-green chert and 10% dark chert; angular. Poor porosity in medium grained sand matrix to 6%. No shows.

3045 - 3109: Interbedded sandstone, silt and shale, 30% sandstone, light grey-brown, very fine to fine grained, cherty and siliceous. Tight. No shows. 30% siltstone, medium grey, sandy. Tight. Minor gas bleeding from coarse silt chips. 40% shale, dark grey to black, bituminous and dolomitic, poorly fissile.

TOTAL DEPTH 3109'.

e) Paleontological Determination

The distribution of most dinoflagellate species found in samples from Cores 1 to 6 is shown on the attached table. A few long ranging pollen and spores species were also found but these are not discussed here.

All microfloras belong to the Upper part of the Gardodinium eisenacki zone as shown by the common occurrence of Microdinium opacum and the presence in many samples of Broomea jaegeri, Muderongia mewhaei, M. sp. A, Tenua hystrix and Cleistosphaeridium multispinosum. This section is considered to be Lower to Middle Albian in age but it is possible that it may be as old as Aptian or Late Barremian.
Gardodinium eisenacki is common in most samples and is very abundant

in many of the lower samples. Operculites sp. occurs occasionally throughout and there is no evidence that any of the section is as old as the Operculites subzone.

Evidence from E. Pine O-78, E. Porcupine I-13 and Shaeffer Ck. O-22, suggests that it may be possible to further subdivide the Gardodinium eisenacki zone by the occurrence of Microdinium opacum in the upper part of the zone. However, as Microdinium opacum is usually not abundant and none of these wells has a complete section through the Gardodinium eisenacki zone a definite subdivision is not considered feasible at present.

All samples examined contain abundant structured tissue material (woody and cuticular fragments). Only minor amounts of amorphous material were found.

The spore colour is approximately 2-5. The palynomorphs and tissue in all samples are generally strongly corroded.

SECTION III - ENGINEERING SUMMARY

(a) Report of Drillstem Tests

DST #1: 2500' - 2521' : Straddle, conventional test
Zone: Johnson Creek
Times: Preflow 5 mins. - VO 60 mins.
ISI 60 mins. - FSI 90 mins.
Weak air blow on preflow. Weak air blow on VO decreasing and dying in 12 minutes.
Recovered: 280' of fluids, 30' of drilling mud and 250' of mud cut water.
Pressures:

IHP	1211	FHP	1216
ISIP	1217	FSIP	1216
IFP	18	FFP	154

Remarks: BHT 98°F
Test satisfactory
Note: Service company test report in back folder.

(b) Casing Record

Conductor Pipe

23' of 23" OD 3/16" wall insulated conductor pipe with 3/4" OD cooling coils, on top of 43' of 19" OD 3/16" wall set at 65' below ground or 77' K.B.
Conductor pipe cemented with a total of 172 sax of "coldset" permafrost cement.

Surface Casing

Ran 25 joints (803.09') of 13-3/8", 54.5#, K-55, 8rd, new, seamless, ST&C, Rge 2 casing landed at 819.47' K.B.

Cemented casing with 840 sax Class I cement plus 3% $CaCl_2$. Cement in place at 7:30 hours December 31, 1971. Circulated approximately 160 sax of excess cement.

No intermediate or production casing strings were run.

(c) Bit Record

See attached Bit Record sheet.

(d) Mud Report

Surface Hole

The 17-1/2" surface hole was drilled from 84' K.B. to 824' using stable foam as the drilling fluid. At 824' the hole was filled with a water gel mud. The following materials were used on surface hole:

Sulfotex Sal	3.5 drums
Aluminium Stearate	2 boxes
Magcogel	40 sax
Rapidril	15 sax

Main Hole

The main hole was drilled using a gel, water Rapidril system from 824' K.B. to 3109' T.D. The following materials were used on the main hole:

Magcogel	167 sax
Rapidril	37 sax
Caustic Soda	6 sax
CMC	2 sax

(e) Deviation Record

73 - 1	370 - 1-1/4	651 - 1-1/2	1298 - 2°
112 - 7/8	400 - 1-1/4	680 - 1-1/2	1394 - 1-3/4
140 - 7/8	433 - 1-1/8	710 - 1-1/4	1710 - 2-3/4
170 - 1/2	460 - 1-1/4	740 - 1-1/8	1869 - 2-1/2
230 - 1	490 - 1-1/4	775 - 1-1/4	1965 - 2°
275 - 1-1/8	525 - 1-1/4	820 - 1-1/4	2184 - 1-1/8
306 - 1-1/4	559 - 1-1/2	844 - 1-1/2	2450 - 1
340 - 1-1/2	620 - 1-1/4	980 - 1-1/2	3007 - 1-3/4
			3090 - 1

(f) Abandonment Plugs

Plug #1 (3109'-2885') 130 sax construction cement.
Plug #2 (2600'-2500') 60 sax construction cement plus 3% $CaCl_2$. Felt @ 2491'
Plug #3 (869'-769') 90 sax construction cement plus 3% $CaCl_2$. " " 720'
Surface plug 5 sax construction cement.

(g) Lost Circulation Zones

When mudding up at 824' on the 17-1/2" surface hole, circulation was lost in the Eagle Plain Formation. Approximately 500 bbls. of mud was lost. After letting the hole heal for 6 hours the circulation was regained.

No other zone of lost circulation was encountered throughout the remainder of the hole.

(h) Report of Blowouts

No kicks or blowouts.

A formation pressure breakdown test was run prior to running Plug #3 (869'-769') across the surface casing shoe at 819' K.B. The formation broke down at 400 psi and started to feed at 1/2 bbl. per minute with pressure increasing to 450 psi in 2 minutes. Instantaneous standing pressure at 450 psi remaining steady after 5 minutes. Mud weight was 9.3#/gal. and the viscosity was 50 sec./qt.

SECTION IV - LOGS

The following Schlumberger logs were run on January 21-22, 1972.

Dual Induction Laterolog (3109' - 819')
B.H.C. Sonic/Gamma Ray/Caliper (3102 - 0')
Formation Density (Compensated) (3104-1540')

Ran Century Geophysical velocity survey on January 22, 1972.

SECTION V - ANALYSIS

(a) Core Analysis

Core analysis enclosed in back folder.

(b) Water Analysis

Water analysis enclosed in back folder.

(c) Gas Analysis

No gas analysis.

(d) Oil Analysis

No oil analysis.

SECTION VI - COMPLETION SUMMARY

(a) Tubing Record

No tubing run.

(b) Perforation Record

No perforations.

(c) Cementation Record

Abandonment Plug #1 (3109' - 2885')
Cemented with 130 sax of construction cement. Cement in place at 24:00 hours January 24, 1972.

Abandonment Plug #2 (2600' - 2500')
Cemented with 60 sax of construction cement plus 3% $CaCl_2$.
Cement in place at 1:10 hours January 25, 1972.
Felt Plug #2 at 2491' at 10:30 hours January 25, 1972.

Abandonment Plug #3 (869' - 769')
Cemented with 90 sax construction cement plus 3% $CaCl_2$.
Cement in place at 12:25 hours January 25, 1972.
Felt Plug #3 at 720' at 00:25 hours January 26, 1972.

Surface Plug - cut off casing at original ground elevation and cemented top of casing with 5 sax of cement. Welded on casing plate and well identifier sign.

(d) Acidization and Fracturing Record

No acidization or fracturing operations.

(e) Back Pressure and Production Tests

No back pressure or production tests.