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WELL HISTORY REPORT

SECTION I - Summary of Well Data

- (a) Well Name and Number: Socony Mobil Western Minerals
Blackie #1 YT M-59
- (b) Permittee: Western Minerals Ltd.
- (c) Operator: Socony Mobil Oil of Canada, Ltd.
- (d) Location: Unit M Section 59
Grid N 66° 00'; W 137° 00'
Latitude 65° 58' 54.92"
Longitude 137° 11' 10.87"
- (f) Permit: 761
- (g) Drilling Contractor: Socony Mobil Oil of Canada, Ltd.
Rig #4 National 55 Dersel Rotary
- (h) Drilling Authority: 125; December ⁹ 1963
- (i) Classification: New Field Wildcat
- (j) Elevations: Ground 1828.7
K.B. 1844
- (k) Spudded: December 11, 1963
- (l) Completed Drilling: March 25, 1964
- (m) Total Depth: 6338 K.B.
Plugged Back Total Depth: 6200 K.B.
- (n) Well Status: Suspended

- (o) Rig Released: March 27, 1964
- (p) Hole Size: 24" to 75'
17 1/4" to 1102'
8 5/8" to 6256'
6 1/8" to 6338'
- (q) Casing: 18" - 0.250 lbs. Spiral Weld to 75 ft.
13 3/8" - 54.5 lbs./ft. J-55 Seamless to
1100 ft.
7" - 23 lbs./ft. J-55, N-80 Seamless
to 6256 ft.

SECTION II - Geological Summary

(a) Formation Tops	Sample Tops Elevation		E-log Tops Elevation	
	Depth	Sub-sea	Depth	Sub-sea
Cretaceous:				
Cody Creek				
Blackie Sand	345	+1499	341	+1503
Shale	640	+1204	642	+1202
Permo-Penn:				
Alder	1885	- 41	1885	- 41
Mississippian:				
Parkin Creek	6241	-4397	6250	-4406

(b) Cored Intervals

Core Number	From	To	Rec.	Formation
1	1960	1980	20'	Alder formation
2	2115	2130	15'	Alder formation
3	2132	2153.6	21.6'	Alder formation
4	2154	2194	39.5'	Alder formation
5	2357	2377	19.5'	Alder formation
6	2962	2972	9.8'	Alder formation
7	3900	3910	10'	Alder formation
8	5251	5259.5	7.1'	Alder formation
9	6240	6250	10'	Alder formation
10	6292	6322.6	30.6'	Parkin Creek formation
11	6322.6	6338	15'	Parkin Creek formation
Junk Basket Core #1	898.5	900	1.5'	Cretaceous Shale

(c) Core Descriptions

Diamond Core #1 Permo-Pennsylvanian Alder formation
1960 - 1980' Cut 20' Recovered 20' (100%)
Coring times 24, 26, 15, 13, 17, 15, 16, 17, 17, 15, 16, 15,
14, 16, 17, 20, 19, 18, 16, 15, minutes per foot.
1960 - 1980'
20' Siltstone, medium to dark grey, slightly calcareous,
slightly glauconitic, trace finely disseminated
pyrite, fucoidal dark markings, scattered small
brachiopod shells, ghost bedding, slightly wavy;
tight, no stain.

Diamond Core #2 Permo-Pennsylvanian Alder formation
2115 - 2130' Cut 15' Recovered 15' (100%)
Coring times 8, 11, 10, 9, 10, 10, 10, 15, 17, 15, 18, 18, 19,
18, 17, minutes per foot.
2115 - 2118.8'
3.8' Sandstone, medium grey, minor conglomeratic in part,
fine to very coarse grained, angular to subrounded
quartz grains with crystal faces in part, medium
grained to granule, round black chert pebbles with
minor varicoloured chert pebbles up to 1" in diameter
slightly calcareous in part, trace glauconite, minor
finely disseminated pyrite. Porosity excellent.

2118.8 - 2119.8'
1.0' Sandstone as above, coarser grained to granule
conglomerate; extremely rare shaly streaks. Porosity
excellent (sand is slightly to fairly friable). No
oil staining or fluorescence.

2119.8 - 2122.8'

3.0'

Sandstone as above with five approximately 1" pea-size conglomerate bands (no sharp contact sandstone to conglomerate), sandstone and conglomerate show horizontal bedding. Porosity is excellent.

2122.8 - 2124.4'

1.6'

Sandstone as above, slightly lower in very coarse grained fraction, porosity as above.

2124.4 - 2128.1'

3.7'

Sandstone, medium grey, minor conglomeratic in part, fine to coarse grained, angular to subrounded with medium grained to granule size rounded black chert grains; interbedded with very coarse grained to conglomeratic units. Porosity excellent, no oil staining or fluorescence.

2128.1 - 2129.2'

1.1'

Sandstone very fine grained, siliceous in part, occasional cross-bedding, part abundant pyrobitumen coating on bedding planes associated with abundant finely disseminated pyrite. Porosity very poor to good, poor fluorescence and cut.

2129.2 - 2129.5'

0.3'

Granule to pea-size chert conglomerate with very fine grained sandstone matrix, porosity poor to tight, fair fluorescence.

2129.5 - 2130'

0.5'

Sandstone very fine grained, cross-bedded as above, poor fluorescence and cut. Porosity tight to fair in part.

Diamond Core #3

Permo-Pennsylvanian Alder formation

2132 - 2153.6' Cut 21.6' Recovered 21.6' (100%)

Coring times

29, 25, 20, 33, 25, 17, 12, 11, 11, 14, 17, 18,
26, 22, 41, 33, 26, 30, 21, 22, 23, minutes per
foot.

2132 - 2136.7'

4.7'

Conglomerate, medium grey, medium grained to granule
in size, medium size fraction quartzose grains,
angular - subangular; coarse fraction, chert black,
subrounded to rounded; very minor varicoloured chert
pebbles; trace glauconite, in part abundant pyrite
matrix, rare - very minor anhydrite infill; porosity
very minor tight to very good (30%); poor cut.
Fluctuating amounts of matrix; decrease in medium
grained sandstone matrix gives decrease in porosity.

2136.7 - 2144.6'

7.9'

Sandstone, medium grey, medium to coarse grained,
slightly conglomeratic, subangular to subrounded,
cross-bedded; four conglomeratic bands. Porosity
good to excellent, poor fluorescence and cut.

2144.6 - 2146.3'

1.7'

Sandstone, light to medium grey, very fine grained
to minor fine grained, slightly siliceous in part,
trace glauconite and fine disseminated pyrite, two
2" bands conglomerate with very fine grained sand-
stone matrix, siliceous in part, very minor
anhydrite infill. Sandstone porosity good,
conglomerate porosity very poor to fair.

2146.3 - 2149.0'

2.7'

Sandstone very fine grained as above, with two 2" granule size conglomerate beds. Porosity poor to fair.

2149.0 - 2149.9'

0.9'

Granule conglomerate with two zones of 1/4" - 1" light coloured chert pebbles, subrounded to rounded, with anhydrite infill in part. Porosity very poor to minor good, very poor fluorescence and cut.

2149.9 - 2153'

3.1'

Sandstone, medium grey, medium grained to very fine as above, with one 0.3' zone of fine to granule conglomerate beds. Porosity poor to fair.

2153 - 2153.3'

0.3'

Conglomerate, varicoloured chert pebbles up to 1 1/2" with minor fine to coarse grained sandstone. Porosity tight to fair in part.

2153.3 - 2153.6'

0.3'

Sandstone medium grey, fine grained, slightly conglomeratic in part, tight to minor good porosity, rare very poor cut.

Diamond Core #4

Permo-Pennsylvanian Alder formation

2154 - 2194' Cut 40' Recovered 39.5' (99%)

Coring times

31, 35, 25, 24, 21, 20, 18, 22, 25, 18, 20, 22, 18, 22, 60, 55, 40, 37, 31, 30, 34, 45, 50, 35, 40, 68, 51, 53, 43, 39, 51, 61, 28, 52, 24, 51, 54, 67, 50, 44, minutes per foot.

2154 - 2161.4'

7.4'

Sandstone light to medium grey, very fine to medium grained, subangular to subrounded, trace glauconite, varicoloured quartz grains, chert grains (black, white, red); sandstone grading in part to very coarse grained to granule conglomerate at 2155.6. One pea-size conglomerate band present within section. Trace pyrite; porosity fair to good; no fluorescence or cut.

2161.4 - 2163.4'

2'

Sandstone as above, but very fine to fine grained, with few scattered chert pebbles, trace decomposed chert grains (Kaolinite?), porosity poor to good.

2163.4 - 2167.4'

4.0'

Sandstone very fine grained as above, with few tubes or burrows, becoming slightly calcareous at base, porosity very poor. Black shaly break at base of section with slickenside surface.

2167.4 - 2169.3'

1.9'

Sandstone, light grey, black, speckled, very coarse grained, black chert grains, subangular to rounded, tightly cemented with coarse crystalline calcite. Excellent original porosity infilled with secondary calcite.

2169.3 - 2175.6'

6.3'

Shale black, fissile; constituents are very fine silt grains, slightly calcareous, minor pyrite in warty clusters, few calcite lenses; contact of sandstone and shale at 30° deviation from core axis.

Very minor brachiopod fragments, very minor hydrocarbon residue in fractures. This residue shows excellent fluorescence and cut.

2175.6 - 2181'

5.4'

Sandstone light grey, speckled, medium grained, very calcareous, varicoloured chert and quartz grains, subrounded with tight fractures bleeding oil in part, petroliferous odour and hydrocarbon staining on surfaces. One hydrocarbon rich fracture follows Spirophyton whorl. Tight, good brown run in chlorothene with excellent fluorescence and cut. Gradational contact with shale above is of ball and socket type (stylolites).

2181 - 2186.7'

5.7'

Sandstone as above, in part conglomeratic with black, white and reddish pebbles. One small fracture bleeding oil slightly. Tight.

2186.7 - 2191.5'

4.8'

Sandstone as above grading to rudaceous limestone in part.

2191.5 - 2193.5'

2'

Sandstone, very fine to fine grained, remainder as above; no fluorescence or cut, horizontal fracture (old bedding planes?). No porosity.

Diamond Core #5 Permo-Pennsylvanian Alder formation
2357 - 2377' Recovered 19.5'

Coring times 60, 63, 60, 20, 7, 9, 10, 15, 20, 47, 43, 50, 67,
85, 55, 25, 45, 40, 60, 33, minutes per foot.

2357 - 2358.5'
1.5' Sandstone, light grey, fine grained, minor very
fine to medium grained; calcareous, scattered
pyrite, glauconite, minor varicoloured chert
grains, with few thin streaks of medium to very
coarse chert grains, round. Crystalline calcite
cement and fine grained sandstone matrix, tight.
Core: dry.

2358.5 - 2360.1'
1.6' As above slightly less calcite cement. Tight
to very poor porosity. Core: wet.

2360.1 - 2363.0'
2.9' Sandstone medium grey, mainly chert and quartz,
coarse grained, minor medium grained, subrounded
to rounded, scattered pyrite and glauconite.
Porosity excellent, fluorescence excellent, minor
live oil staining, light brown to yellow.

2363.0 - 2366.0'
3.0' Conglomerate, medium grey, granule to small
pebble, minor calcite cement, scattered pyrite
and glauconite, minor anhydrite infill. Porosity
good to excellent. Light oil present. Core: wet.

2366.0 - 2366.5'
0.5' As above but increased calcite cement. Tight
to rare very poor porosity. Core: slightly wet.

2366.5 - 2371.2'

4.7

Interbedded very fine grained sandstone as above and conglomerate as above, light grey (sandstone as above 2357 - 2358.5) complete crystalline calcite cement. Tight, fluorescence from calcite, slight cut. Core: dry.

2371.2 - 2376.5'

5.3'

2371.2 - 2374.9 mainly sandstone with minor conglomerate.

2374.9 - 2376.5 conglomerate, medium grey, with sandstone fine to coarse grained, scattered granule to pebbles to chert, black, brown, grey, light grey, rare pea-size and up; pyrite and glauconite, trace fluorescence, cut. Porosity very good to excellent. Core: wet. Conglomerate medium grey, pyritic and glauconitic, very minor anhydrite infill, Core: slightly oily but all wet. Porosity excellent to good.

Diamond Core #6

Permo-Pennsylvanian Alder formation

2962 - 2972' Recovered 9.8 (98%)

Coring times

31, 38, 36, 38, 37, 42, 40, 44, 41, 36, minutes per foot.

2962 - 2972'

10'

Shale black, very minor silty, only rarely slightly calcareous. Shale grades into siltstone streaks; very minor pyritized spicules? and spines; extremely rare small crinoid stems; very few brachiopods, large and flattened. Shale massive.

At 2970 3/4" elongated irregular shaped very calcareous inclusion.

Diamond Core #7

Permo-Pennsylvanian Alder formation

3900 - 3910' Recovered 10.0' (100%)

Coring times

55, 53, 42, 42, 38, 35, 38, 37, 38, 42, minutes per foot.

3900 - 3910'

10'

Siltstone grading to shale, medium to dark grey. Imperfect horizontal bedding and cleavage.

Slightly calcareous, micromicaceous, glauconitic.

Patches of pyrite. Tight. At 3910, 0.1" cracks infilled by white calcite.

At 3902.2, 3905 and 3908.4, fossils.

Diamond Core #8

Permo-Pennsylvanian Alder formation.

5251 - 5259.5' Recovered 7.1' (83%)

Coring times

70, 75, 65, 55, 38, 44, 62, 55, minutes per foot.

5251 - 5259.5'

7.1'

Siltstone, medium to dark grey, highly calcareous, minor almost vertical hairline fractures filled with calcite; 5255 - 5257 less calcareous, slightly argillaceous rock gives in part poor fluorescent cut, one brachiopod cast. Tight, massive. Rock, on etching, shows to be a very fine silt ooze with abundant microscopic spines and rods, few Ostracods and shell fragments. Spines and rods pyritized in part.

Diamond Core #9

Permo-Pennsylvanian Alder formation

6240 - 6250' Cut 10' Recovered 10'

Coring times

43, 72, 37, 33, 38, 23, 24, 22, 23, 30,
minutes per foot.

6240 - 6250'

1'

Sandstone, fine to medium grained, calcareous
in part, tight; interbedded with shale black,
non-calcareous.

9'

Shale as above, with minor thin interbeds of
sandstone as above.

Diamond Core #10

Mississippian Parkin Creek formation

6292 - 6322.6' Recovered 30.6'

Coring times

20, 21, 19, 21, 24, 17, 15, 20, 22, 20, 20,
20, 19, 21, 21, 21, 19, 23, 21, 20, 22, 20,
18, 23, 17, 20, 20, 19, 20, 17, 13.5, minutes
per foot.

6292 - 6322.6'

30.6'

Shale, black, non-calcareous, carbonaceous?
and tarry in part, fractures along bedding
planes are 13° from horizontal, a second set
runs vertical; in part almost conchoidal
fractures; few small brachs (orbiculoidea)
and one large brach, rare irregular lenses
and pods of calcareous rock; one-quarter of
core is completely broken up into rubble.

Diamond Core #11

Mississippian Parkin Creek formation

6322.6 - 6338' Recovered 15'

Coring times

15, 22, 18, 18, 20, 16, 14, 17, 16, 18, 17,
17, 17, 14, 15, 17, minutes per foot.

6322.6 - 6338'

15'

Shale, black, non-calcareous, carbonaceous?
and tarry in part, fractures along bedding
planes are 13° from horizontal, a second set
runs vertical; in part almost conchoidal
fractures; few small brachs (orbiculoidea)
and one large brach, rare irregular lenses
and pods of calcareous rock; one-quarter of
core is completely broken up into rubble.

Junk Basket Core #1

Cretaceous New formation

898.5 - 900' Cut 1.5' Recovered 1' (67%)

898.5 - 900'

1.0'

Sandstone medium grey, salt and pepper, very fine
grained to pebble size, conglomeratic, poorly sorted,
angular to subrounded in part, granule to pea-sized,
black chert pebbles, minor varicoloured chert;
sand fraction quartzose with minor chert grains,
glauconitic, silt matrix, very minor dolomite;
essentially tight, rare, fair intergranular porosity,
pore spaces pyrobitumen coated in part, good cut.

(d) Sample Description

0' - 20'	Shale dark grey, micromicaceous. Minor siltstone.
20' - 40'	As above, with rare very fine grained, salt and pepper sandstone.
40' - 60'	Shale, minor sandstone and siltstone as above, trace of coal.
60' - 100'	Shale, minor siltstone, rare sandstone as above.
100' - 120'	As above with sandstone, salt and pepper, very fine to medium grained, subangular to subrounded, well sorted, quartzose, trace of poor porosity, no oil staining.
120' - 140'	No sample.
140' - 160'	Mainly shale, trace of siltstone and sandstone as above, trace of coal, <u>glauconite</u> and pyrite.
160' - 180'	Shale and siltstone as above, with increase in sandstone as above.
180' - 220'	Shale, siltstone and sandstone, salt and pepper, very fine grained, subangular to subrounded, well sorted, slightly calcareous, tight; trace of coal and ironstone
220' - 300'	Shale, siltstone, minor sandstone as above; with trace of ironstone, <u>glauconite</u> and pyrite.
300' - 330'	As above, with minor coal.

- 330' - 350' Sandstone, light grey to salt and pepper, very fine grained, subangular to subrounded, fairly well sorted, slightly glauconitic, trace of porosity and poor oil stain.
- 350' - 400' Mainly sandstone as above, trace porosity, no oil staining; minor siltstone, glauconite, pyrite, bitumen and chert.
- 400' - 450' Shale silty, black to dark tan, grading to argillaceous siltstone.
- 450' - 470' Sandstone salt and pepper to light grey, very fine grained, subangular to subrounded, well sorted, trace poor porosity, no oil staining; with siltstone and shale as above.
- 470' - 480' Shale and siltstone as above.
- 480' - 520' Sandstone as above, poor porosity, poor to fair oil staining; with shale and siltstone as above.
- 520' - 530' As above, trace porous sand, no staining, trace chert and glauconite.
- 530' - 600' Shale dark grey, micromicaceous, silty, minor siltstone coal and ironstone.
- 600' - 610' Shale and siltstone as above; minor sandstone, light grey to salt and pepper, very fine grained, well sorted, trace poor porosity and poor oil staining.
- 610' - 620' Shale and siltstone as above; sandstone as above, no oil staining.

- 620' - 640' Shale and siltstone as above; sandstone as above, trace poor porosity, trace of fair oil staining.
- 640' - 860' Shale black to dark grey, micromicaceous, rare siltstone
- 860' - 870' Shale as above with chert fragments, varicoloured; trace of siltstone buff.
- 870' - 910' Sandstone conglomeratic, very fine to coarse grained, subangular to subrounded, silty matrix, slightly siliceous, cherty glauconitic, scattered poor porosity no oil staining.
- 910' - 940' Sandstone as above, very fine to medium grained, glauconitic, scattered poor porosity, no oil staining.
- 940' - 1000' Siltstone argillaceous, pyritic, glauconitic, trace of sandstone, very fine grained, trace porosity, no oil staining; minor chert and coal.
- 1000' - 1170' Siltstone argillaceous in part, occasionally dolomitic and calcareous; common pyrite, ironstone and glauconite
- 1170' - 1180' Siltstone as above, trace of green waxy shale, trace of sandstone very fine to fine grained, cherty, tight; minor glauconite and pyrite.
- 1180 - 1260' Siltstone as above glauconitic; minor black shale stringers, pyritic.
- 1260' - 1368' Siltstone as above, grading to sandstone, medium to dark grey, very fine grained, argillaceous, angular to subangular, silty, tight, trace of coal, glauconite and pyrite.

- 1368' - 1389' No samples
- 1389' - 1400' Siltstone, grey grading to shale, grey.
- 1400' - 1440' Shale and siltstone as above with dolomitic concretions.
- 1440' - 1560' Shale and siltstone as above, with occasional chert pebbles.
- 1560' - 1575' Sandstone grey, very fine grained, silty, argillaceous tight; with trace sandstone conglomeratic, poorly sorted, cherty, tight. Very rare sandstone, quartzose, with intermittent porosity and oil staining. Common glauconite and pyrite.
- 1575' - 1740' Shale, silty, pyritic
- 1740' - 1760' Shale and siltstone grey to dark grey, glauconitic, trace Bentonitic shale.
- 1760' - 1810' Shale dark grey to black, slightly silty, minor Bentonitic shale, occasional chert pebble.
- 1810' - 1885' Shale, silty to sandy, glauconitic, pyritic.
- 1885' - 1905' Shale as above with sandstone grey, very fine grained to minor coarse grained, glauconitic tight. Trace chert pebbles. *more chance of finding glauconite in these samples than glauconite!*
- 1905' - 1960' Siltstone grading to sandstone, grey to light grey, calcareous, occasional shell fragments, tight. Rare fractures in sandstone, partially infilled with calcite and pyrite, trace porosity and oil staining.

- 1960' - 2060' Siltstone, slightly calcareous, tight.
- 2060' - 2080' Sandstone very fine grained, tight.
- 2080' - 2106' Siltstone as above.
- 2106' - 2113' Limestone interbedded with sandstone, conglomeratic, cherty, tight.
- 2113' - 2130' Sandstone conglomeratic, cherty, mainly good porosity, rare Bitumen and fluorescence.
- 2130' - 2158' Sandstone, grading from fair to medium to coarse, conglomeratic, cherty, in part pyritic, minor glauconite, in part slightly calcareous, minor chert pebbles up to 1" in diameter, mainly fair to good porosity, no stain, some fluorescence and cut.
- 2158' - 2194' Limestone interbedded with minor sandstone with some chert pebbles, trace bituminous residue, tight.
- 2194' - 2297' Siltstone and sandstone interbedded, in most part slightly calcareous, minor shale, tight.
- 2297' - 2310' Interbedded siltstone, shale, very minor sand, brown to grey, glauconitic, slightly pyritic, few chert pebbles. Tight.
- 2310' - 2320' Sandstone, grading to limestone, brown to grey, glauconitic to pyritic, brachiopod fragments. Tight.

- 2320' - 2330' Sand, light grey, very limy, trace chert pebbles, trace calcite filled fractures. Tight.
- 2330' - 2350' Interbedded shale, and siltstone, medium brown to dark, slightly calcareous, glauconite and pyrite. Tight.
- 2350' - 2440' Sandstone 70% and chert pebble conglomerate 30%; light grey, very fine grained, to granule, with minor pebbles up to one inch; calcareous in part, minor anhydrite infill, minor cross-bedding; pyrite and glauconite. Minor oil stain, good to excellent porosity.
- 2440' - 2450' Interbedded shale and siltstone, medium grey, slightly calcareous, tight.
- 2450' - 2470' Sandstone, light grey salt and pepper, conglomeratic in part with crystalline calcite cement, tight.
- 2470' - 2650' Sand and chert pebbles conglomerate; light to medium grey, very fine grained to pea-sized pebble, minor anhydrite infill, very minor siliceous cement, pyritic and glauconitic in part. Trace black shale. Fair to excellent porosity.
2470 - 2510' oil stain.
- 2650' - 2720' Interbedded siltstone and shale, medium grey to black, calcareous in part, minor shell fragments, pyritic in part. Trace very fine grained sandstone rare chert pebble; tight.

- 2720' - 2770' Siltstone and shale as above with minor interbedded sandstone, medium to light grey, very fine to rare coarse grained, varicoloured chert grains, pyrite, glauconite, brachiopod fragments and trace crinoid stems. Trace dead oil stain on fractures? Porosity tight to rare good.
- 2770' - 2920' Siltstone and shale interbedded medium to dark grey, calcareous, pyritic and glauconitic with very minor brachiopod fragments, trace black shale.
- 2920' - 2930' Sandstone grading to sandy limestone; medium to light grey salt and pepper, very fine grained, pyritic, very minor brachiopod and coral fragments, tight.
- 2930' - 3160' Shale and siltstone interbedded, medium to dark grey, calcareous in part, trace crinoid stems, brachiopod fragments; pyritic, tight.
- 3160' - 3170' Siltstone grading to silty limestone, medium to light grey, trace chalky, trace glauconitic, tight.
- 3170' - 3310' Siltstone medium to light grey, calcareous, glauconitic, pyritic, scattered brachiopod shells. Minor shale.
- 3310' - 3360' Siltstone as above, minor very fine sand grains, scattered crinoids and spicules, trace bitumen, tight.

- 3360' - 3760' Siltstone light grey to grey, calcareous, very slightly arenaceous, very fine sand grains, pyritic, glauconitic in part, occasional clear calcite crystals, scattered brachiopod fragments 3360 to 3440.
- 3760' - 3980' Siltstone (50%) light grey to grey interbedded with shale (50%) grey to dark grey, pyritic, glauconitic, slightly calcareous, minor calcite crystals, occasional ostracods.
- 3980' - 4010' Shale black to grey, micromicaceous, silty, glauconitic, slightly calcareous, interbedded with limestone grey, silty; with thin calcite veins, tight.
- 4010' - 4060' Shale as above grading to siltstone grey to dark grey, slightly calcareous, glauconitic, clear calcite crystals.
- 4060' - 4080' Shale and siltstone as above, interbedded with limestone grey to light grey, silty; with spicules.
- 4080' - 4180' Shale and siltstone as above, glauconitic, pyritic, minor ironstone in bottom 40 feet of section, thin calcite veins.
- 4180' - 4230' Shale black to grey, mainly non-calcareous, silty in part, bituminous with dolomite brown medium to coarsely crystalline, tight. Siltstone grey to dark grey, limy.

- 4230' - 4350' Shale as above, silty in part, fissile, non-calcareous to slightly calcareous, pyritic, ironstone, rare brown dolomitic silty stringers, minor brachiopod fragments.
- 4350' - 4360' Shale as above siltstone grey to light grey, limestone grey, silty, pyritic, clear calcite crystals, brachiopods.
- 4360' - 4400' Shale and siltstone as above, trace dolomitic silt stringers, minor limestone and dolomite stringers brown, tight.
- 4400' - 4420' Shale black to grey, fissile, bituminous, silty in part grading to siltstone, grey, pyritic, calcite crystals, ironstone.
- 4420' - 4460' Shale grading to siltstone as above.
- 4460' - 4480' Shale and siltstone as above, pyritic, calcite crystals occasional dolomitic and limy silt stringers.
- 4480' - 4550' Shale and siltstone as above, minor limestone, silty, pyritic.
- 4550' - 4620' Shale silty as above with shale black fissile bituminous common calcite, and dolomite crystals, rare oil staining in association with dolomite crystals no porosity.

- 4620' - 4760' Shale black, fissile, bituminous with shale grey silty, blocky, rarely calcareous, common calcareous and dolomitic silty stringers, calcite crystals, dolomite crystals, pyritic.
- 4760' - 4800' Shale grey to black, silty in part pyritic, calcite and dolomite crystals, tight.
- 4800' - 4810' Shale grey to black, silty in part, pyritic, calcite crystals, tight.
- 4810' - 4900' Shale grey, silty with stringers of dolomite and limestone tan to dark brown and stringers of more calcareous siltstone. Pyritic with clear calcite crystals.
- 4900' - 4930' Siltstone brown, calcareous with shale grey, silty, stringers of limestone, pyritic.
- 4930' - 5000' Siltstone brown, calcareous, becoming limestone, silty glauconitic and pyritic in part, clear calcite crystals
- 5000' - 5030' Siltstone and shale medium grey, slightly calcareous, occasional crinoid and brachiopod fragments, pyritic, secondary calcite.
- 5030' - 5130' Shale, silty in part, pyritic, clear calcite, from 5080 to 5100, limestone stringers.
- 5130' - 5150' Shale as above, with stringers of white sandstone, calcareous, fine to coarse grained, subangular to subround, poor to medium sorting, no porosity.

- 5150' - 5170' Sandstone, light grey, calcareous, silty to very fine grained with minor chert granules, sub-angular to sub-round, poor to medium sorting, trace brown oil stain and cut.
- 5170' - 5190' Sandstone as above with siltstone dark grey, argillaceous, calcareous and shale grey to black.
- 5190' - 5200' Shale as above with limestone, medium grey to brown, silty becoming siltstone limy.
- 5200' - 5220' Shale grey with siltstone dark grey, shaly, calcareous.
- 5220' - 5250' Siltstone light buff, calcareous, grading to limestone silty.
- 5250' - 5260' Siltstone calcareous, siliceous in part.
- 5260' - 5300' Siltstone as above with shale dark grey to black, pyritic.
- 5300' - 5320' Limestone silty, cream brown, pyritic, sandy in part, with shale as above.
- 5320' - 5350' Siltstone calcareous, brown to dark grey, slightly cherty, pyritic, with shale dark grey to black.
- 5350' - 5360' Siltstone light grey brown to dark grey, calcareous, dolomitic in part, slightly cherty, rarely sandy.
- 5360' - 5380' Siltstone brown medium grey, calcareous pyritic.
- 5380' - 5390' Shale black bituminous, silty.

- 5390' - 5400' Shale as above with stringers of silty limestone, pyritic.
- 5400' - 5430' Siltstone light grey to dark grey, calcareous, minor fractures, calcite crystals, tight, with shale dark grey to black, bituminous in part. Sandy in part.
- 5430' - 5450' Shale as above, siltstone as above, minor sand grains.
- 5450' - 5530' Siltstone light to dark grey, calcareous, grading to limestone, silty to earthy, trace dead oil staining, minor bioclastic limestone stringers, pyritic, glauconitic, in part. Fossils include crinoids and corallgal fragments.
- 5530' - 5580' Sandstone, white to light grey, salt and pepper, calcareous, fine to medium grained, minor coarse grained subangular to rounded, siliceous, cherty, pyritic, tight; with siltstone and shale as above.
- 5580' - 5610' Siltstone light grey to dark grey, calcareous, sandy in part, tight; with minor sandstone as above. Minor fractures, infilled with white calcite.
- 5610' - 5620' Sandstone light to medium grey, salt and pepper, argillaceous in part, pyritic, cherty, tight.
- 5620' - 5630' Shale dark grey to black, silty.

- 5630' - 5700' Limestone, light grey to brown, silty, arenaceous, argillaceous, bioclastic in part, crinoids, shell fragments, with siltstone and shale as above, pyritic, glauconitic, minor chert beds; trace sandstone, salt and pepper to white, very fine to medium grained, calcareous, tight.
- 5700' - 5740' Shale grading to siltstone, grey to black, calcareous, pyritic, with limestone as above, chert beds, minor fractures, tight.
- 5740' - 5800' Shale grey to black, waxy in part, grading to siltstone grey, calcareous, rare sandstone as above. Section is fractured, petroliferous odour, tight. Minor fossils, crinoids, coralgal fragments.
- 5800' - 5830' Shale and siltstone as above, with sandstone, calcareous, salt and pepper, very fine to coarse grained, cherty, pyritic, calcite crystals, rare fracture and intergranular porosity, trace poor oil staining. Rare crinoids.
- 5830' - 5890' Shale medium to dark grey, calcareous, grading to siltstone, pyritic, calcareous, minor bitumen, trace of sandstone as above, tight, rare fracture and intergranular porosity.
- 5890' - 5920' Shale black to grey, with siltstone as above. Sandstone, salt and pepper, calcareous, cherty, tight.
- 5920' - 5930' Shale grey to black.

- 5930' - 5960' Sandstone white to light grey, salt and pepper, very calcareous, very fine to coarse grained; grading to limestone, arenaceous with very abundant brown to smoky bedded chert, rare fracture porosity, very rare poor oil staining, section is essentially tight.
- 5960' - 5980' Shale black with siltstone calcareous in part, chert and minor sandstone.
- 5980' - 5990' Sandstone white salt and pepper, limy, fine to medium grained, angular to sub-round, poor to medium sorting, slightly siliceous and calcareous.
- 5990' - 6010' Shale black, calcareous siltstone to sandstone fine grained, cream to dark grey, grading to limestone with brown chert.
- 6010' - 6030' As above, with limestone sucrosic chalky and silty, minor fracture porosity.
- 6030' - 6050' Shale medium to dark grey with minor sandstone, white salt and pepper, fine to medium grained.
- 6050' - 6120' Limestone cream, silty, minor sandstone with chert medium to dark brown. *See log 244*
- 6120' - 6130' Siltstone to shale, black, siliceous, minor calcareous sandstone.
- 6130' - 6150' As above with sandstone, dirty white to black, argillaceous, angular to sub-round, medium to poor sorting.
- 6150' - 6160' Shale black with siltstone dark grey with sandstone and chert as above.

- 6160' - 6170' Shale black as above with sandstone, white salt and pepper, fine to medium grain, sub-angular to round poorly sorted, with minor chert.
- 6170' - 6180' As above with minor siltstone.
- 6180' - 6190' Shale black, silty, with minor sandstone very fine grained, pyrobituminous.
- 6190' - 6200' Shale black, with sandstone as above, fine to coarse grained.
- 6200' - 6210' Sandstone, brown-white, salt and pepper, fine to medium grained with siltstone, calcareous, cherty.
- 6210' - 6230' Shale black, with sandstone very fine grained, slightly glauconitic and pyritic, with minor chert.
- 6230' - 6241' Sandstone very fine to medium grained, with interbedded thin black shales.
- 6241' - 6251' Shale black, sandy in part with thin minor sandstone.
- 6251' - 6289' Shale black, non-calcareous.
- 6289' - 6323' Shale black, non-calcareous, fractured and broken fossiliferous.
- 6323' - 6338' Shale black non-calcareous fractured and broken, fossiliferous.

SECTION III - Engineering Summary

(a) Report of Drill Stem Tests.

No.	Date	From	To	Formation
1	1-18-64	2102	2132	Alder
2	1-19-64	2132	2154	Alder
3	1-22-64	2154	2195	Alder
4	1-26-64	2350	2378	Alder
5	1-27-64	2460	2490 (Misrun)	Alder
6	1-28-64	2460	2490 (Misrun)	Alder
7	1-28-64	2458	2490	Alder
8	3- 5-64	5810	5850	Alder
9	3-26-64	6218	6338	Parkin Creek

(b) Casing Record

Casing Size (inches)	Weight	Amount	Set At	Cement (sax)	Method
18	.250 wall	75'	75'	84 ^{+4%} cal ₁₂	Displace
13 3/8	54.5 #/ft	1105'	1100'	850 ^{+2%} cal ₁₂	Double Plug
7	23 #/ft	6250'	6256'	600	Double Plug

Table #1

Page 1

SOCONY MOBIL OIL OF CANADA, LTD.

BIT RECORD

Well SOCONY MOBIL WESTERN MINERAL
BLACKHAWK 4T-A-5A

Date Spudded 12 Noon DEC 11/64

Area YUKON

Date Completed

UNDER SHOE

DATE	BIT No.	BIT SIZE	TYPE	SERIAL No.	JET SIZE	DEPTH		FOOT AGE	TIME HRS.	ACCUMLATED DRILLING TIME	ACCUMLATED REAMING TIME	CONDITION	REMARKS
						FROM	TO						
REFID	1	8 3/8	YHWG	EH3303	Conv	1368	1552	184	9 1/2				
REFID	2	8 3/8	YHWG	EN3302	Conv	1552	1814	262	11				
REFID	3	8 3/8	YHWG	E73104	Conv	1814	1912	98	7 3/4				
SEC	4	8 3/8	MHL	330569	Conv	1912	1960	48	4				
KOEBEL	6 1/2		◇	19515		1960	1980	20	5 1/2				
SEC	5	8 3/8	MHL	1770	Conv	1960	2011	31	4 3/4			REAMED 20' in	3 1/2 hours
REFID	6	8 3/8	YHWG	E73104	Conv	2011	2069	58	14 1/4				
HTC	7	8 3/8	RG7-X	95399	Conv	2069	2115	46	10				
KOEBEL	6 1/2		◇	19515	Conv	2115	2130	15	4 3/4				
SEC	8	8 3/8	MHL	330569	Conv	2115	2132	17	1 1/2			REAMED 20 ft.	
KOEBEL	6 1/2		◇	19515		2132	2153	21	8 3/4				
SEC	9	8 3/8	MHL	656837	Conv	2153	2154	1	1/4			REAMED 21 ft.	
KOEBEL	6 1/2		◇	19515		2154	2194	40	23 3/4				
HTC	10	8 3/8	WTR	38409	Conv	2154	2195	41	8 1/2			REAMED 40 FT.	
HCTPR	9RR	8 3/8	RG7XT	95399	Conv	2195	2283	134	24 3/4				
REFID	11	8 3/8	YHWG	E11384	Conv	2283	2357	74	15 1/2				
KOEBEL	6 1/2		◇	19515		2357	2377	20	14 1/2				
SEC	12	8 3/8	H7	702009	Conv	2357	2378	1				REAMED 20 FT.	
HTC	13	8 3/8	RG7XT	95399	JET	2378	2490	112	19 1/2				
REFID	14	8 3/8	YHWG	E14386	Conv	CIRC	TO	TEST					
HTC	15	8 3/8	RG7	61363	JET	2490	2660	170	24 3/4				
HTC	16	8 3/8	RG7XT	82100	JET	2660	2742	82	23 1/2				
HTC	17	8 3/8	RG7XT	95396	JET	2742	2919	177	31 1/2				
REFID	18	8 3/8	YHWG	E14386	Conv	2919	2962	43	12 1/2				
KOEBEL	19	6 1/2	◇	19515		2962	2972	10	6 1/2				
REFID	20	8 3/8	YHWG	E14386	Conv	2962	2988	16	4 1/2			REAMED 10 FT.	
HTC	21	8 3/8	PRC-1	82101	Conv	2988	3051	63	14 1/2				

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SOCONY MOBIL OIL OF CANADA, LTD.

BIT RECORD

Well Blackie #1 Date Spudded Dec 11/63
 Area Eagle plains Date Completed _____

DATE	BIT No.	BIT SIZE	TYPE	SERIAL No.	JET SIZE	DEPTH		FOOT AGE	TIME HRS.	ACCUMLATED DRILLING TIME	ACCUMLATED REAMING TIME	CONDITION T B C	REMARKS
						FROM	TO						
2-5-64	22	8 5/8	SOC	702010	Com	3051	3143	92	9 1/4	244 1/4		2 2 1	
2-5-64	23	8 5/8	W7	72957	Com	3143	3168	25	7	251 1/4		4 3 1	
2-6-64	24	8 5/8	YCC	RBEN3995		3168	3224	56	18 1/4	269 1/2		1 3 1	
2-7-64	25	8 5/8	H7	702008	Com	3224	3362	138	16 1/2	286		2 3 1	
2-8-64	26	8 5/8	H7	656891	Com	3362	3523	161	19	305		2 3 1	
2-9-64	27	8 5/8	YM	115324	Com	3523	3600	77	8	313		2 3 1	
2-10-64	28	8 5/8	H7	702011	Com	3600	3780	180	21	334		2 4 1	
2-11-64	29	8 5/8	H7	702012	Com	3780	3900	120	15 1/4	349 1/4		3 2 1	
11-64	7	6 1/8	◇	19515		3900	3910	10	7 1/4			900d	
2-12-64	30	8 5/8	OWC	19786	Com	3910	3962	52	7 3/4	357		2 2 1	Reamed 10'
2-12-64	31	8 5/8	W7	67152	Com	3962	4058	96	14 1/4	372		4 4 1	
2-13-64	32	8 5/8	H7	702013	Com	4058	4140	82	15 3/4	387 3/4		4 4 1	
2-15-64	33	8 5/8	W7	75232	Com	4058	4262	122	29 3/4	407 1/2		2 2 1	
2-16-64	34	8 5/8	OWC	25962	Com	4262	4461	199	20 3/4	428 1/4		2 3 1	
2-17-64	35	8 5/8	OWC	96955	Com	4461	4684	233	21	449 1/4		3 4 1	
2-18-64	36	8 5/8	W7	69480	Com	4684	4892	208	21 3/4	471		3 4 1	
2-19-64	37	8 5/8	W7	41387	Com	4892	5004	112	21 1/2	492 1/2		4 4 1	
2-21-64	38	8 5/8	W7	96387	Com	5004	5148	144	22 3/4	515 1/4		4 4 1	
2-22-64	39	8 5/8	H7	743618	Com	5148	5172	28	8	523 1/4		3 1 1	
2-21-64	40	8 5/8	RC7XS	35271	3/4	5172	5178	6	2 1/2	525 3/4		1 1 1	
2-23-64	41	8 5/8	H7	734297	Com	5178	5261	73	18 3/4	544 1/2		3 1 1	
2-23-64	8	6 1/8	◇	19515		5261	5259	8	9 1/2			900d	
2-24-64	42	8 5/8	YHWB	E24360	Com	5259	5270	11	5	549 1/2		2 4 0	Reamed 8'
2-25-64	43	8 5/8	YH	E24357	Com	5270	5335	65	19 1/2	569		4 3 1	
2-26-64	44	8 5/8	YH	E24354	Com	5335	5398	63	19 3/4	588 3/4		3 3 1	
2-27-64	45	8 5/8	YH	E14494	Com	5398	5476	78	19 1/4	608		3 3 1	
2-28-64	46	8 5/8	H7	743924	Com	5476	5567	91	20 1/4	628 1/4		3 3 1	

TABLE 2

DRILLING MUD REPORT

The mud used on this hole was a normal gel-fresh water system with rheological properties controlled with caustic and Quebracho derivation. Fluid loss was controlled with Driscose and gels.

The materials consumed or expended in the drilling of this well were:

Aquagel (Bentonite)	134,600 lbs
Bartes (Weight Material)	45,000 lbs
Benex (Viscosity Control)	80 lbs
Carbonox (Flocculation Control)	1,000 lbs
Caustic Soda (Ph Control)	5,600 lbs
Cellex (Water Loss Control)	1,200 lbs
Dextrid (Viscosity Control)	4,000 lbs
Fibertex (Plugging Agent)	6,000 lbs
Q Broxin (Viscosity Control)	6,600 lbs

TABLE #3

DEVIATION RECORDS

DEPTH	DEGREE	DEPTH	DEGREE
30	1°	1430	1 1/8°
60	1°	1880	1°
90	1°	2069	1 1/8°
150	1°	2283	7/8°
190	1 1/4°	2630	1 1/8°
220	1 1/4°	2742	7/8°
250	1 1/8°	2962	1 1/4°
285	M.R.	3143	1 3/4°
315	1 1/8°	3363	1 7/8°
347	M.R.	3523	2°
378	1°	3780	2 1/8°
415	1°	3962	2 1/8°
446	1°	4058	1 3/4°
478	1°	4262	1 3/4°
505	1°	4684	2 1/4°
530	1 1/2°	5004	2°
600	1°	5148	1 3/4°
630	1 1/4°	5251	1 3/4°
695	1 1/8°	5398	1 1/2°
937	1°	5567	1 1/2°
1000	1°	5783	1 3/4°
1060	1 1/4°	5924	1 1/2°
1121	1°	6036	2°
1246	1°	6196	2°
1306	1°	6250	1 3/4°
1402	1 1/4°		

(f) Abandonment Plugs

(Suspended Gas Well)

Plug #1 6338 to 6200 with 40 sacks cement plus 4% gel to cover
from Total Depth to 50 feet above casing shoe.

(g) Lost Circulation Zones

Nil

(h) Report of Blowouts

Nil

SECTION IV - Logs

Run No.	Date	Type of Log	From	To
1	3-16-64	Microlog Caliper	6258	1103
1	3-16-64	Sonic Gamma Ray	6250	1103
1	3-16-64	Induction Electric log	6257	1103
1	3-25-64	Gamma Ray	6336	6250
			1100	& Surface
1	3-18-64	Velocity Survey	6250	872

SECTION V - Analysis

(a) Core Analysis

Lab No.	From	To	Source	Remarks
F 1794	2115	2130	Core #2	Full Diameter
F 1794	2132	2154	Core #3	Core Study
F 1794	2154	2194	Core #4	
F 1794	2357	2377	Core # 6 ⁵	

NOTE: No Core Analysis carried out on Core Numbers.

- 1 1960 - 1980
- 6 2962 - 2972
- 7 3900 - 3910
- 8 5251 - 5259.5
- 9 6240 - 6250
- 10 6292 - 6322
- 11 6322 - 6338

(b) Water Analysis

Lab No.	Sample	From	To	Source	Remarks
F 1809-1	#3	2350	2378	D.S.T. #4	Sample taken 100' above tool.
F 1809-2	#3	2458	2490	D.S.T. #7	Sample taken 250' above tool.

(c) Gas Analysis

Lab No.	Sample	From	To	Source	Remarks
E 23101	#2	2132	2154	D.S.T. #2	Gas Analysis shows 98.47% by Volume Methane: Minor Nitrogen,

Carbon Dioxide, Ethane
Propane & Isobutane.

NO GAS ANALYSIS on Gas blow from D.S.T. #9 6218-6338. Gas blow died.

(d) Oil Analysis

Nil

SECTION VI - Completion Summary

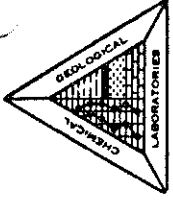
7" Casing set at 6256' with 600 Sack of Cement, well is suspended,
no other completion record applicable.

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

Operator **Secony Mobil Oil of Canada, Limited** Well No. **Secony Mobil N.M. Blackie #1** Lab. No. **FL794** Date **Received: February 3, 1964**

Sample Number	Midpoint of Sample in Ft.	Representative of Feet	Footage Rep.	Permeability md.		K'	% Porosity	Porosity Feet	Description
				Vertical	K _H				
32	2142.8	2142.3-2144.7	1.4	49.	70.	63.	14.6	20.44	CSS-Cg I
33	2145.3	2144.7-2145.8	1.1	4.4	10.	10.	15.2	16.72	fSS I
34	2146.3	2145.8-2147.0	1.2	20.	26.	25.	15.9	19.08	fSS I
35	2147.7	2147.0-2148.0	1.0	9.7	13.	12.	15.3	15.30	fSS-Cg I
36	2148.6	2148.0-2149.4	1.4	3.2	13.	12.	14.1	19.74	fSS-Cg I
37	2149.9	2149.4-2150.3	0.9	17.	29.	29.	11.8	10.62	Cg I
38	2150.8	2150.3-2151.4	1.1	45.	74.	73.	15.4	16.94	CSS-Cg I
39	2151.8	2151.4-2152.3	0.9	45.	43.	42.	14.5	13.05	fSS I Py
40	2153.0	2152.3-2153.5	1.2	6.2	21.	19.	14.3	17.16	fSS I Py
41	2153.7	2153.5-2153.8	0.3	24.	60.	58.	11.1	3.33	Cg I
42	2153.9	2153.8-2154.0	0.2	36.	56.	53.	16.1	3.22	fSS I
Core Number 4									
		2154 [*] - 2194 [*]							Alder Formation
43	2154.4	2154.0-2155.0	1.0	14.	28.	28.	15.5	15.50	f-CSS I
44	2155.5	2155.0-2156.0	1.0	6.1	29.	23.	14.2	14.20	f-CSS I
45	2156.6	2156.0-2157.0	1.0	17.	64.	40.	15.6	15.60	CSS I
46	2157.3	2157.0-2157.8	0.8	8.6	32.	30.	13.5	10.80	CSS I Py
47	2158.1	2157.8-2158.8	1.0	6.4	39.	35.	14.4	14.40	CSS I Py
48	2159.1	2158.8-2159.5	0.7	2.2	17.	16.	15.0	10.50	CSS I Py
49	2160.0	2159.5-2160.5	1.0	16.	21.	19.	14.5	14.50	CSS I
50	2161.0	2160.5-2161.7	1.2	9.2	9.9	9.4	14.4	17.28	CSS I
51	2162.0	2161.7-2162.5	0.8	13.	8.8	8.8	14.9	11.92	fSS I Py
52	2163.0	2162.5-2163.5	1.0	5.0	6.2	5.3	14.8	14.80	fSS I Py
53	2164.1	2163.5-2164.5	1.0	7.9	7.6	7.3	14.8	14.80	fSS I Py
54	2165.0	2164.5-2165.4	0.9	3.6	6.5	5.4	14.6	13.14	fSS I Py
55	2166.0	2165.4-2166.4	1.0	0.61	3.4	3.4	14.0	14.00	fSS I Py
56	2167.0	2166.4-2167.3	0.9	0.93	3.2	2.9	15.2	13.68	fSS I Py
57	2167.6	2167.3-2167.8	0.5	<0.01	<0.01	<0.01	2.3	1.15	Cg
No Sample		2167.8-2193.5	25.7	---	---	---	---	---	Sh D
Core Number 5									
		2357 [*] - 2377 [*]							Alder Formation
58	2357.4	2357.0-2358.0	1.0	0.99	0.94	0.14	10.2	10.20	fSS I Py
59	2358.6	2358.0-2359.0	1.0	0.53	0.31	0.28	9.7	9.70	fSS I Py
60	2359.4	2359.0-2360.1	1.1	2.4	8.0	7.0	12.9	14.19	fSS-Cg I
61	2360.7	2360.1-2361.1	1.0	92.	661.	650.	19.9	19.90	Cg I
62	2361.7	2361.1-2362.2	1.1	20.	146.	137.	17.4	19.14	Cg I

CHEMICAL & GEOLOGICAL LABORATORIES LTD.



Operator Socony Mobil Oil of Canada, Ltd. 2115° To 2194°
 Well No. Socony Mobil W.M. Blackie #1 YT Interval Cored 2357° To 2377°
 Lab. No. F1794 --- Formation New and Alder Formation
 Coring Fluid ---
 Elevation ---

Comments Prior to analysis the samples were cleaned for 48 hours in a solvent extractor and dried at 210°F. for

12 hours.

No unusual characteristics were noted during the analyses of this core in the porosity-permeability

relationship.

After discussion with a representative of Socony Mobil Oil regarding core fluid saturations, it was

decided to drop this portion of the analyses since the core had been exposed to the atmosphere for several days before arrival at the laboratory.

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

EDMONTON, ALBERTA

FULL DIAMETER CORE STUDY

PHONES: 25624
42562

OPERATOR: Secony Mobil Oil of Canada, Ltd. FIELD (Wildcat) Yukon, N.W.T. WELL NO. Secony Mobil N.M. Blackie #1 YF M-59
 LOCATION: Alder FORMATION DATE RECEIVED: February 3, 1964 LAB NO. F1794
 Core #3 2132'-2154' DEPTH #4 2154'-2194' DATE RECEIVED: February 3, 1964

Footage of Alder formation cored	82.0'	No. of representative samples selected for analysis	59.
FEET OF CORE:			
Received at laboratory for analysis	81.0'	Compared (to tested samples)	-----
Not accounted for	1.0'	Dense sections not represented	25.7'
Represented by samples	55.3'	Badly fractured sections not represented	-----

SUMMARY OF REPRESENTED SECTIONS:

Weighted average porosity	13.1 %	(1) $\frac{\text{represented}}{\text{received}} = \frac{55.3}{81.0}$	(2) $\frac{\text{represented}}{\text{cored}} = \frac{55.3}{82.0}$
Weighted average K_H permeability on 54.5 feet	61. md.	Maximum porosity	19.9 %
Weighted average K_H permeability on 54.5 feet	56. md.	Minimum porosity	1.1 %
Weighted average vertical permeability	20. md.	Maximum K_H permeability	661. md.
Weighted average maximum permeability	61. md.	Minimum K_H permeability	< 0.01 md.
Porosity Feet	724.20	Maximum vertical permeability	92. md.
	10.0 md. or greater	Minimum vertical permeability	< 0.01 md.
	between 1.0 and 9.9 md. inclusive		less than 1.0 md.

CORE WITH MAXIMUM PERMEABILITY:

Footage	39.3'	%	7.9'	8.1'
Weighted average porosity	14.6 %	%	13.5 %	5.4 %
Weighted average K_H permeability on 38.5 feet	85. md.	md.	6.3 md.	0.24 md.
Weighted average vertical permeability	27. md.	md.	4.2 md.	0.30 md.
Porosity feet	573.37		106.93	43.90

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

EDMONTON, ALBERTA

FULL DIAMETER CORE STUDY

PHONES: 25624
42562

OPERATOR Secondary Mobil Oil of Canada, Ltd., FIELD (Wildcat) Yukon, N.M.T. WELL NO. Secondary Mobil W.M., Blackie #1 YT
 DEPTHS 2115' - 2130' DATE RECEIVED: February 3, 1964 LAB NO. F1794
 LOCATION New FORMATION New

Footage of New formation cored	15.0'	No. of representative samples selected for analysis	18.
FEET OF CORE:			
Received at laboratory for analysis	15.0'	Compared (to tested samples)	---
Represented by samples	13.3'	Dense sections not represented	1.7'
		Badly fractured sections not represented	---
SUMMARY OF REPRESENTED SECTIONS:			
Weighted average porosity	15.9 %	Maximum porosity	18.1 %
Weighted average K_H permeability	95. md.	Minimum porosity	11.2 %
Weighted average K' permeability	88. md.	Maximum K_H permeability	279. md.
Weighted average vertical permeability	30. md.	Minimum K_H permeability	12. md.
Weighted average maximum permeability	---	Maximum vertical permeability	123. md.
Porosity Feet	210.82	Minimum vertical permeability	1.0 md.
CORE WITH MAXIMUM PERMEABILITY:			
	10.0 md. or greater	between 1.0 and 9.9 md. inclusive	less than 1.0 md.

Footage	13.3'	---	---
Weighted average porosity	15.9 %	---	%
Weighted average K_H permeability	95. md.	---	md.
Weighted average vertical permeability	30. md.	---	md.
Porosity feet	210.82	---	---

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

Operator **Socoay Mobil Oil of Canada, Limited** Well No. **Socoay Mobil M.M. Blackie #1 XT** Lab. No. **F1794** Date **Received: February 3, 1954**

Sample Number	Midpoint of Sample in Ft.	Representative of Feet	Footage Rep.	Permeability md.		K'	% Porosity	Porosity Feet	Description
				Vertical	K _H				
Core Number 2									
	2115° - 2130'		Cored 15.0 Feet				Received in lab.	15.0 Feet	New Formation
1	2115.5	2115.0-2115.7	0.7	1.0	55.	52.	15.4	10.78	Cg
2	2116.0	2115.7-2116.4	0.7	123.	199.	177.	16.8	11.76	f-CSS HF I
3	2116.8	2116.4-2117.1	0.7	49.	279.	257.	16.7	11.69	CSS I
4	2117.6	2117.1-2118.0	0.9	1.0	12.	11.	12.5	11.25	f-MSS I
5	2119.5	2118.0-2119.0	1.0	8.8	147.	128.	17.2	17.20	f-MSS I
6	2119.8	2119.0-2119.8	0.8	18.	168.	160.	15.5	12.40	fSS-Cg I
7	2120.3	2119.8-2120.6	0.8	18.	116.	113.	16.5	13.20	CSS I
8	2120.9	2120.6-2121.3	0.7	50.	181.	155.	16.3	11.41	fSS-Cg I
9	2121.6	2121.3-2122.4	1.1	50.	88.	85.	17.6	19.36	CSS I
10	2122.7	2122.4-2122.9	0.5	49.	67.	67.	16.3	8.15	fSS-Cg I
11	2123.2	2122.9-2124.0	1.1	27.	56.	56.	16.4	18.04	CSS I Py
12	2124.3	2124.0-2124.7	0.7	53.	74.	64.	18.1	12.67	CSS I
13	2125.0	2124.7-2125.4	0.7	30.	50.	48.	16.7	11.69	fSS I
14	2125.6	2125.4-2125.8	0.4	8.7	28.	28.	14.2	5.68	fSS-Cg I
15	2126.2	2125.8-2126.4	0.6	7.2	59.	56.	17.0	10.20	f-CSS I
16	2127.0	2126.4-2127.4	1.0	16.	27.	25.	11.9	11.90	Cg I
17	2127.7	2127.4-2128.0	0.6	23.	38.	37.	16.8	10.08	fSS I Py
No Sample	2129.3	2128.0-2129.2	1.2	---	---	---	---	---	S11 D
No Sample	2129.5	2129.2-2129.5	0.3	4.3	22.	19.	11.2	3.36	Cg I
No Sample	2130.0	2129.5-2130.0	0.5	---	---	---	---	---	S11 D
Core Number 3									
	2132° - 2154'		Cored 22.0 Feet				Received in lab.	22.0 Feet	Alder Formation
19	2132.9	2132.0-2133.1	1.1	14.	61.	60.	11.7	12.87	Cg I
20	2133.6	2133.1-2133.9	0.8	0.89	0.71	0.63	9.5	7.60	Cg I
21	2134.2	2133.9-2134.4	0.5	72.	172.	170.	13.1	6.55	Cg I
22	2134.8	2134.4-2135.0	0.6	75.	171.	160.	17.2	10.32	CSS-Cg I
23	2135.4	2135.0-2135.7	0.7	57.	141.	134.	15.3	10.71	CSS-Cg I
24	2136.1	2135.7-2136.7	1.0	48.	189.	189.	12.6	12.60	CSS-Cg I
25	2137.1	2136.7-2137.5	0.8	71.	197.	181.	16.0	12.80	CSS-Cg I
26	2138.0	2137.5-2138.5	1.0	97.	181.	96.	15.5	15.50	CSS-Cg I
27	2139.1	2138.5-2139.6	1.1	8.9	168.	147.	16.0	17.60	CSS-Cg I
28	2140.1	2139.6-2140.6	1.0	65.	91.	89.	15.4	15.40	CSS I
29	2141.2	2140.6-2141.6	1.0	23.	34.	31.	15.1	15.10	CSS I
30	2142.2	2141.6-2142.6	1.0	16.	34.	34.	15.2	15.20	CSS I
31	2142.9	2142.6-2142.3	0.7	30.	63.	58.	15.8	11.06	CSS I

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

Operator **Secony Mobil Oil of Canada Limited** Well No. **Socony Mobil M.M. Blackie #1** Lab. No. **F1794** Date Received: **February 3, 1964**

Sample No.	Midpoint of Sample in Ft.	Representative of Feet	Footage Rep.	Vertical	Permeability md. K_H	K'	% Porosity	Porosity Feet	Description
63	2362.6	2362.2-2363.0	0.8	32.	202.	171.	14.1	11.28	Cg I
64	2363.7	2363.0-2364.0	1.0	13.	32.	28.	12.0	12.00	Cg I
65	2364.5	2364.0-2365.0	1.0	21.	111.	109.	13.9	13.90	Cg I
66	2365.5	2365.0-2365.8	0.8	28.	(a)	(a)	15.8	12.64	Cg I HF
67	2366.1	2365.8-2366.6	0.8	2.3	3.5	3.1	6.3	5.04	Cg I
68	2367.1	2366.6-2367.7	1.1	0.10	0.02	0.02	2.8	3.08	Cg
69	2368.0	2367.7-2368.4	0.7	<0.01	<0.01	<0.01	2.0	1.40	Cg
70	2369.0	2368.4-2369.2	0.8	<0.01	<0.01	<0.01	1.1	0.88	S11 Py
71	2370.1	2369.2-2370.5	1.3	0.03	0.04	0.03	4.7	6.11	S11-Cg Py
72	2370.9	2370.5-2371.4	0.9	0.03	0.07	0.06	4.2	3.78	Cg
73	2372.0	2371.4-2372.3	0.9	7.4	11.	10.	12.3	11.07	fSS-Cg I
74	2372.9	2372.3-2373.5	1.2	33.	70.	64.	16.0	19.20	fSS-Cg I
75	2374.3	2373.5-2374.8	1.3	7.6	27.	25.	12.8	16.64	fSS-Cg I
76	2375.2	2374.8-2375.8	1.0	10.	106.	64.	10.4	10.40	Cg I
77	2376.2	2375.8-2376.5	0.7	14.	86.	84.	12.1	8.47	Cg I

CORE DESCRIPTION SYMBOLS

- Cg Conglomerate
- f-CSS Fine-Coarse Sandstone
- HF Horizontal Fracture
- I Intergranular
- CSS Coarse Sandstone
- f-MSS Fine-Medium Sandstone
- fSS-Cg Fine Sandstone - Conglomerate
- Py Pyrites
- fSS Fine Sandstone
- S11 Siltstone
- D Dense
- CSS-Cg Coarse Sandstone - Conglomerate
- Sh Shale
- S11-Cg Siltstone - Conglomerate
- (a) Unsuitable for test
- K_H Maximum Horizontal Permeability measured.
- K' Taken 90° to K_H.

NB. K_H and K' are transverse permeability measurements on full diameter samples.

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Calgary

WATER ANALYSIS REPORT

Field (Wildcat), Yukon, N.W.T. Well No. S.M. W.M. Blackie #1 YT-N-59
 Operator Socony Mobil Oil of Canada, Ltd. Date Received February 13, 1964
 Formation _____ Depths 2350' - 2378'
 Other pertinent data D.S.T. #4. Sample #3. 100 feet above tool.

Date Sampled: Not Known Lab. No. F1809-1

PARTS PER MILLION (MILLIGRAMS PER LITER)

Na + K	Ca	Mg	Fe	SO ₄	Cl	CO ₂	HCO ₃	OH	H ₂ S
1,423	10	1		Trace	111	182	3,250		

MILLIGRAM EQUIVALENTS

61.91	0.50	0.08			3.13	6.06	53.30		
-------	------	------	--	--	------	------	-------	--	--

MILLIGRAM EQUIVALENTS IN PERCENT

49.54	0.40	0.06			2.50	4.85	42.65		
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Total Solids in Parts per Million

By evaporation	3,916
After ignition	2,988
Calculated	3,328
Specific Gravity	1.001
Observed pH	8.1
Resistivity	2.18 ohm meters @ 68° F.

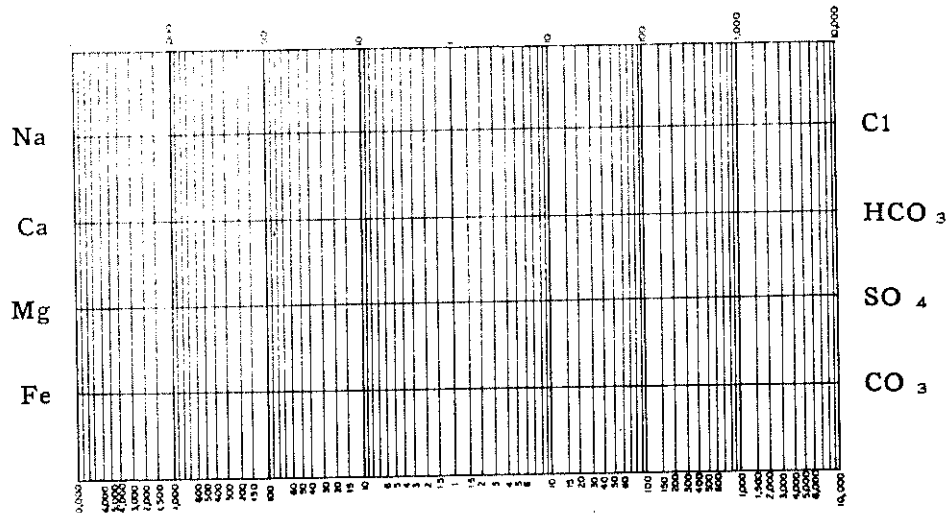
Properties of Reaction in Percent

Primary salinity	5.00
Secondary salinity	---
Primary alkalinity	94.08
Secondary alkalinity	0.92
Chloride salinity	100.00
Sulfate salinity	---

Remarks and conclusions

Water is too dilute for a representative graph pattern. Sample appears to be filtrate contaminated.

LOGARITHMIC PATTERN MEQ per unit



CHEMICAL & GEOLOGICAL LABORATORIES LTD.

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WATER ANALYSIS REPORT

Field (Wildcat), Yukon, N.W.T. Well No. S.M. W.M. Blackie #1 YT-M-59
 Operator Socony Mobil Oil of Canada, Ltd. Date Received February 13, 1964
 Formation _____ Depths 2458' - 2490'
 Other pertinent data D.S.T. #7, Sample #3, 250 feet above tool.

Date Sampled: Not Known Lab. No. F1809-2

PARTS PER MILLION (MILLIGRAMS PER LITER)

Na & K	Ca	Mg	Fe	SO ₄	Cl	CO ₂	HCO ₃	OH	H ₂ S
1,515	16	4		46	116	266	3,290		

MILLIGRAM EQUIVALENTS

65.92	0.80	0.33		0.96	3.27	8.86	53.96		
-------	------	------	--	------	------	------	-------	--	--

MILLIGRAM EQUIVALENTS IN PERCENT

49.16	0.60	0.24		0.72	2.44	6.61	40.23		
-------	------	------	--	------	------	------	-------	--	--

Total Solids in Parts per Million

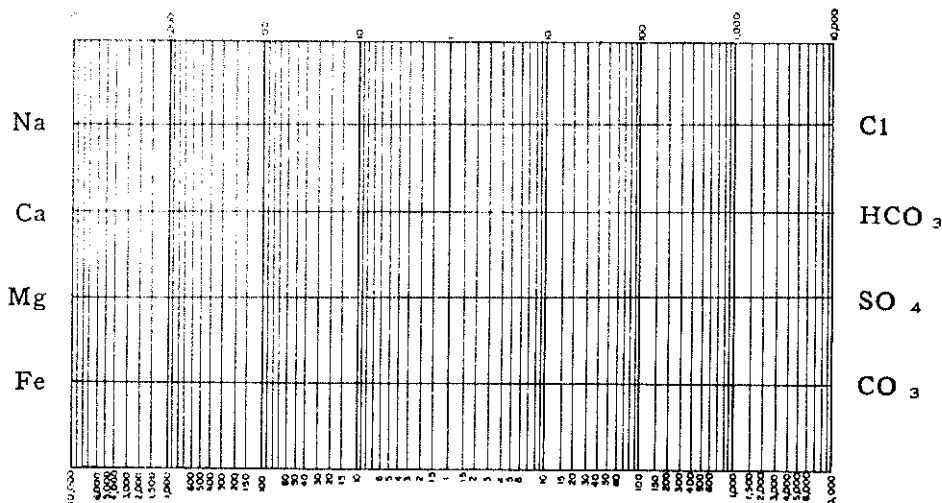
By evaporation 4,682
 After ignition 3,346
 Calculated 3,583
 Specific Gravity 1.001
 Observed pH 8.1
 Resistivity 2.06 ohm meters @ 68° F.

Properties of Reaction in Percent

Primary salinity 6.32
 Secondary salinity ---
 Primary alkalinity 92.00
 Secondary alkalinity 1.68
 Chloride salinity 77.22
 Sulfate salinity 22.78

Remarks and conclusions Water is too dilute for a representative graph pattern.
Sample appears to be filtrate contaminated.

LOGARITHMIC PATTERN MEQ per unit



CHEMICAL & GEOLOGICAL LABORATORIES LTD.

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428 - 35 Ave. N.E.

Edmonton, Alberta
Calgary, Alberta

Phones: GA 2-5624 - GA 4-2562
Phones: CR 7-6149 - CR 7-0305

GAS ANALYSIS REPORT

FIELD OPERATOR **Socony Mobil Oil Of Canada Limited** WELL NO. LOCATION
 FORMATION DEPTHS LAB. NO. **E23101**
 DATE SAMPLED **Not Known** REPORTED **March 9, 1964**
 REMARKS **Sample #2.**

ORSAT ANALYSIS

CHROMATOGRAPH

ORSAT ANALYSIS		CHROMATOGRAPH		
	% by Volume		G.P.M. in	
		% by Volume	U.S. Gal. @ 60° F. & 14.696 PSI	Imp. Gal. @ 60° F. & 14.65 PSI
Oxygen	_____	Oxygen	0	
Nitrogen	_____	Nitrogen	0.68	
Carbon dioxide	_____	Carbon dioxide	0.76	
Hydrogen sulfide	_____	Hydrogen sulfide	0	
Total hydrocarbons	_____	Methane	98.47	
		Ethane	0.01	
		Propane	0.07	0.019
		Isobutane +	0.01	0.003
		N-butane		
		Isopentane		
		N-pentane		
		Hexanes		
Average "n"	_____			
		TOTAL	100.00	0.022 0.019

HYDROGEN SULFIDE
(by Tutwiler Method)

G.P.M.

Grains of hydrogen sulfide per 100 cu. ft. of gas at 60° F. and

14.7 lbs. per sq. in. _____

14.65 lbs. per sq. in. _____

Percentage of Hydrogen sulfide N11

Actual pentanes +	_____
Calculated at 12 lbs.	_____
Calculated at 15 lbs.	_____
Calculated at 22 lbs.	_____
Calculated at 26 lbs.	_____

GROSS B.T.U.

Vapor pressure (calculated) of actual pentanes + _____

60°F. and 14.7 p.s.i.a. 997.

60°F. and 14.65 p.s.i.a. 994.

Specific Gravity Calculated 0.565
 Specific Gravity by Weight 0.567

Remarks and Conclusions: **The container arrived with a pressure of 7 psig.. All figures have been corrected for 0.18% air contamination.**