

Geological Report

Oxy USA, Inc.
Wilson "A" No. 416
1950' FNL, 1500' FWL
Sec. 9-T25S-R5E
Butler Co., Kansas
El Dorado Field

Contractor: Allen Drilling Co., Rig # 2.
Elevations: 1365' K.B., 1360' Gr.
Commenced: 12:15 AM April 13, 1993. Reached R.T.D. 2536' at
11:45 AM April 17, 1993.
Casing: Surface: 8 5/8" at 275' with 200 sacks cement, Class
A. Plug down at 4:30 PM April 13, 1993.
Production- 5 1/2" at 2535' with 385 sacks cement.
Samples: 10' wet and dry from 600' to 2340'; 5' wet and dry
from 2340' to 2536'.
Drilling Time: 1 foot drilling time from 600' to 2536'.
Total Depth: 2536' R.T.D., 2537' L.T.D.
Logging Program: Atlas Wireline- Dual Induction with Gamma Ray
and SP; Minilog with Caliper and Gamma Ray;
Compensated Density-Neutron with Minilog,
Gamma Ray and caliper.
Geologist: Herbert R. Johnson.

Log Tops

Admire	644	+721
White Cloud	894	+471
Topeka	1074	+291
Oread	1386	- 21
Heebner	1422	- 57
Toronto	1435	- 70
Lansing	1626	-333
Base Lansing	1823	-458
Kansas City	1969	-604
Base K.C.	2129	-764
Viola	2434	-1069
Simpson	2478	-1113
L.T.D.	2537	-1172
R.T.D.	2536	-1171

Sample Description

606-621 Sandstone, gray, very fine grained, poor porosity, NS.
621-625 Limestone, brownish gray, fine crystalline, dense.
625-644 Shale, gray.

Admire 644 +721

644-655 Sandstone, gray, tan, very fine grained, grading to
siltstone, poor porosity, spotted oil stain and fluores-
cence, trace free oil.

655-675 Shale, gray.

675-685 Siltstone, gray, argillaceous.

685-695 Shale, gray, reddish brown, pyritic.

695-725 Sandstone, gray, very fine grained, micaceous, firm,
poor porosity, NS.

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JUN 17 1993

CONSERVATION DIVISION
Wichita, Kansas

- 725-740 Limestone, brown, fine crystalline, fossiliferous, dense.
- 740-745 Shale, gray.
- 745-755 Limestone, white to tan, fine crystalline, dense.
- 755-762 Shale, dark gray.
- 760-768 Sandstone, gray, very fine grained, argillaceous, carbonaceous, poor porosity, NS.
- 768-782 Shale,
- 782-790 Limestone, brown, grayish brown, fine crystalline, dense.
- 790-794 Limestone, white, fine crystalline, fossiliferous, dense.
- 794-798 Shale.
- 798-806 Limestone, white, fine crystalline, dense.
- 806-813 Shale, green.
- 813-822 Limestone, tan, fine crystalline, dense.
- 822-838 Limestone, off white, cream, fine crystalline, dense; trace poor porosity, scattered fluorescence, trace free oil.
- 838-854 Limestone, white, cream, fine crystalline, dense.
- 854-864 Shale, gray.
- 864-867 Limestone, off white, dense.
- 867-882 Shale, gray.
- 882-888 Limestone, brown, fine crystalline, dense.
- 888-895 Shale, gray.

White Cloud 895 +470

- 895-908 Sandstone, gray, very fine grained, micaceous, silty, interlaminated shale, poor porosity, trace fluorescence, trace free oil.
- 908-911 Limestone, brownish gray, fine crystalline, marly, dense.
- 911-922 Shale, gray, interlaminated siltstone, trace sandstone, fine grained, fair porosity with stain and fluorescence.
- 922-932 Sandstone, light gray, very fine grained, friable, fair to good porosity, good odor, well saturated, good show free oil.
- 932-960 Siltstone, gray, argillaceous, dense.
- 960-974 Shale, gray.
- 974-988 Limestone, light gray, buff, mottled, dense.
- 988-1007 Shale, gray.
- 1007-1010 Limestone, fine crystalline, dense.
- 1010-1034 Shale, gray.
- 1034-1040 Shale, gray, silty grading to siltstone.
- 1040-1044 Sandstone, gray, very fine grained, silty, dense.
- 1044-1049 Limestone, brown, fine crystalline, dense.
- 1049-1072 Shale, gray, silty.

Topeka 1072 +293

- 1072-1090 Limestone, cream to gray, fine crystalline, dense, NS.
- 1090-1110 Limestone, off white, buff, fine crystalline, dense.
- 1110-1127 Shale, gray, silty.
- 1127-1138 Limestone, cream, tan, grayish brown, fine crystalline, poor porosity, scattered fluorescence, trace stain.
- 1138-1164 Shale, gray.
- 1164-1168 Limestone, tan, fine crystalline, poor porosity, trace fluorescence.
- 1172-1178 Limestone, tan, grayish brown, fine crystalline, dense, trace scattered fluorescence.

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1180-1190 Limestone, buff, fine crystalline, dense.
1190-1200 Shale, gray.
1200-1210 Limestone, tan, fine crystalline, dense.
1210-1221 Shale, gray, silty.
1221-1235 Limestone, gray, fine crystalline, fossiliferous,
mottled, dense, NS.
1235-1242 Shale, gray.
1242-1254 Limestone, dense.
1254-1266 Shale, gray.
1266-1275 Limestone, off white, light tan, dense, NS.
1275-1278 Shale, black, carbonaceous.
1278-1282 Limestone, off white to brown, dense.
1282-1304 Limestone, off white, fine crystalline, dense.
1304-1320 Limestone, white, buff, fine crystalline, chalky, poor
porosity, NS.
1320-1326 Sandstone, gray, very fine grained, micaceous, NS.
1326-1384 Shale, gray, silty.

Oread 1384 -19

1384-1421 Limestone, off white, cream, partly chalky, dense.

Heebner 1421 -56

1421-1424 Shale, black, carbonaceous.
1424-1427 Limestone, grayish brown, fine crystalline, dense.
1427-1433 Shale, dark gray, black.

Toronto 1433 -68

1433-1450 Limestone, off white, buff, fine crystalline, partly
chalky, dense.
1450-1466 Shale, gray, partly silty.
1466-1476 Sandstone, white to light gray, very fine grained,
micaceous, poor porosity, NS.
1476-1478 Limestone, buff, fine crystalline, dense.
1478-1500 Shale, gray with interlaminated siltstone and brownish
limestone.
1500-1525 Interbedded gray siltstone and very fine grained sand-
stone, poor porosity, NS.
1525-1535 Sandstone, white, very fine grained, micaceous, carb-
onaceous, poor porosity, fair fluorescence, spotted
stain, faint odor, trace free oil.
1535-1593 Shale, gray, silty, interlaminated siltstone.
1593-1598 Limestone, tan, sub-sucrosic, dense, NS.
1598-1620 Sandstone, gray, very fine grained, poor porosity, NS.
1620-1627 Shale, light greenish gray.
1627-1632 Limestone, tan, fine crystalline, dense, NS.
1632-1695 Shale, gray, silty.

Lansing 1695 -330

1695-1705 Limestone, white to cream, fine crystalline, chalky,
dense, trace fluorescence.
1705-1724 Limestone, white, gray, tan, buff, mottled, fine
crystalline, partly chalky, dense.
1724-1733 Limestone, tan, fine crystalline, dense, trace fluores-
cence; 5% Chert, white to buff.
1733-1740 Limestone, cream, fine crystalline, chalky, fair to

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- good porosity, light stain, fluorescence, fair odor, trace free oil, poor to good saturation.
- 1740-1750 Limestone, light buff, fine crystalline, poor porosity, trace stain and fluorescence.
- 1750-1756 Limestone, white to cream, light buff, fine crystalline chalky, fair to good porosity, spotted light stain, poor saturation, faint odor, fluorescence, trace free oil.
- 1756-1810 Limestone, cream to buff, fine crystalline, fossiliferous, dense, trace fluorescence; trace Chert, white to buff.
- 1810-1830 Limestone, gray to buff, fine crystalline, dense.

Base Lansing 1830 -465

1830-1966 Shale, gray.

Kansas City 1966 -601

- 1966-1974 Limestone, brown, grayish brown, fine crystalline, dense, NS.
- 1974-1982 Limestone, off white to buff, fine crystalline, chalky, dense, trace fluorescence.
- 1982-1988 Limestone, white to cream, fine crystalline, partly chalky, poor to fair porosity, light stain, fair odor, fluorescence.
- 1993-2014 Limestone, white to cream, fine crystalline, fair porosity, light spotted stain, fluorescence, fair to good odor, trace free oil.
- 2014-2020 Limestone, off white to buff, fine crystalline, dense.
- 2020-2036 Limestone, buff, fine crystalline, chalky, poor porosity, NS.
- 2036-2072 Limestone, white to buff, fine crystalline, chalky, NS.
- 2072-2074 Shale, black, carbonaceous.
- 2074-2094 Limestone, white, fine crystalline, very chalky, poor porosity, NS.
- 2094-2096 Shale, black, carbonaceous.
- 2096-2103 Limestone, light tan, brown, fine crystalline, dense.
- 2105-2114 Limestone, off white, fine crystalline, partly sandy, dense, NS.
- 2114-2120 Shale, gray.
- 2120-2126 Limestone, brown, fine crystalline, oolitic, clastic, dense, NS.

Base Kansas City 2126 -761

- 2126-2150 Shale, gray.
- 2150-2190 Siltstone, white, gray, micaceous, dense.
- 2190-2203 Shale, gray.

Checkerboard 2203 -838

- 2203-2214 Limestone, white, tan, grayish brown, fine crystalline, dense.
- 2214-2251 Shale, light grayish green, partly silty.

Altamont 2251 -886

- 2251-2258 Limestone, off white, buff, fine crystalline, dense.
- 2258-2260 Shale, black, carbonaceous.
- 2260-2282 Shale, greenish gray, gray, pyritic.

Ft. Scott 2282 -917

- 2282-2310 Limestone, off white to cream, fine crystalline, dense.
- 2310-2314 Shale, black, carbonaceous.
- 2314-2330 Limestone, off white, tan, gray, fine crystalline, dense.

Cherokee 2330 -965

- 2330-2333 Shale, black, carbonaceous.
- 2333-2334 Limestone, gray, fine crystalline, dense.
- 2334-2336 Shale, black, carbonaceous.
- 2336-2367 Shale, light green, reddish brown.
- 2367-2371 Limestone, grayish brown, dense.
- 2371-2392 Shale, black, dark gray, silty.
- 2392-2399 Limestone, off white, tan, brown, fine crystalline, dense.
- 2399-2401 Shale, black, carbonaceous.
- 2401-2434 Shale, light green.

Viola 2434 -1069

- 2434-2438 Dolomite, tan to brown, fine crystalline, sucrosic, poor porosity, bright yellow fluorescence, well stained good odor, fair show free oil; trace Chert, white to gray.
- 2438-2450 Dolomite, tan to brown, fine crystalline, sucrosic, fair porosity, well stained, good odor, good show free oil, bright fluorescence; trace Chert, white.
- 2450-2460 Dolomite, tan, fine crystalline, sucrosic, fair to good porosity, light to well stained, mostly well stained, bright fluorescence, good odor, fair show free oil.

Circulated for samples 15 minutes at 2471'.

- 2460-2471 Dolomite, gray, fine crystalline, dense; 5% vugular with fair to good porosity, stain and fluorescence, trace free oil.
- 2471-2480 Dolomite, gray to brown, fine crystalline, vugular, 20% fair to good porosity with stain and fluorescence, good show free oil.

Simpson 2480 -1115

- 2480-2482 Sandstone, white, very fine to fine grained, well rounded quartz grains, well cemented with dolomite, poor porosity, NS.
- 2482-2488 Sandstone, white, very fine grained, pyritic, dense, NS.
- 2488-2490 Quartzite, white, so siliceous grains indistinguishable.
- 2490-2493 Sandstone, white, very fine to fine grained, pyritic, dense, trace fluorescence.
- 2493-2496 Sandstone, white to tan, fine grained, well rounded quartz, very pyritic, friable, good porosity, well stained, yellow fluorescence, fair show free oil.

Circulated for samples 60 minutes at 2496'.

Strapped drill pipe at 2496 as follows:

Strap	2528.80'
Board	2527.38
Strap long	1.42'

D.S.T. No. 1 2484-2496' 15-30-30-60

Initial Flow Per.: Weak blow building to fair (1" to 5" blow).

Final Flow Per.: Fair blow building to strong
blow in 20 min. (6" to bottom
of bucket).

Recovered 80' water cut mud (40% water, 60% mud),
120' muddy water (85% water, 15% mud).

Chlorides: 13000 PPM.

IHMP 1236 psi, IFP 31-41 psi, ICIP 520 psi, FFP 62-93
psi, FCIP 520 psi, FHMP 1215 psi.

BHT 110 degrees F.

2496-2500 Sandstone, white to tan, fine to medium grained, fri-
able, very pyritic, light to well stained, bright
fluorescence, fair show free oil.

2500-2504 Shale, light green.

2504-2510 Sandstone, tan, white, fine grained, slightly pyritic,
poor to fair porosity, trace good, light to well stain-
ed, fluorescence, fair show free oil.

2510-2514 Siltstone, light gray, off white, glauconitic, pyri-
tic, dense.

2514-2520 Shale, gray, partly sandy, pyritic.

2520-2526 Sandstone, gray, very fine to medium grained, silty,
dolomitic cement, pyritic, dense, NS.

2526-2528 Shale, light green.

2528-2536 Siltstone, gray; Sandstone, gray, very fine to medium
grained, partly glauconitic, very pyritic, dense.
R.T.D.2536' reached 11:45 AM April 17, 1993.