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GEOLOGICAL REPORT

Tobin #1A-3
4900' FSL & 2970' FEL Sec. 3-T15S-R24E
Johnson County, Kansas
API NO: 15-091-22863-0001
1053 G.L. Topo.

3-15-24E

OPERATOR:	Osborn Energy L.L.C. #32294
CONTRACTOR:	Rig 6 Drilling Company
COMMENCED:	July 22, 1998
COMPLETED:	August 3, 1998
SURFACE CASING:	8 5/8" casing @ 20' with 6 sacks cement.
PRODUCTION CASING:	4 1/2" casing @ 1242' with 217 sacks portland A cement, 2% CaCL, 2% gel, 2% flo-seal, 3% gil.
SAMPLE DEPTHS:	10' samples were examined from 100' to 1480' R.T.D.
DRILLING TIME:	1' drilling time kept from 100' to 1480' R.T.D.
GAS DETECTOR:	Analytical Logging gas chromatograph and hot wire system.
ELECTRIC LOGS:	Log-Tech Dual Induction Log and Neutron/Density Porosity Log

FORMATION TOPS

	Sample	**Log**
Muncie Creek	174 (+879)	176 (+877)
Stark Shale	247 (+806)	248 (+805)

Formation Tops continued	Sample	Log
Hushpuckney Shale	269 (+784)	274 (+779)
Base Kansas City	290 (+763)	294 (+759)
Knobstown Sand	334 (+719)	337 (+716)
Big Lake Sand	392 (+661)	395 (+658)
South Mound	432 (+621)	434 (+619)
Mulberry Zone	482 (+571)	485 (+568)
Lexington Coal	521 (+532)	524 (+529)
Summit Coal Zone	558 (+495)	561 (+492)
Mulky Coal Zone	578 (+475)	582 (+471)
Bevier Coal Zone	663 (+370)	667 (+386)
Croweburg Shale	Absent	
Croweburg Coal Zone	680 (+373)	683 (+370)
Flemming Coal Zone	Absent	
Mineral Coal Zone	705 (+348)	708 (+345)
Scammon Coal Zone	720 (+333)	722 (+331)
Tebo Coal Zone	Absent	
Weir/Pittsburg Coal Zone	Absent	
Stuart Coal Zone	Absent	
Drywood Coal Zone	828 (+225)	831 (+222)
Rowe Coal Zone	848 (+205)	854 (+199)
Neutral Coal Zone	Absent	
Mississippian	969 (+84)	965 (+88)
"B-K" Zone	1247 (-194)	1248 (-195)
Northview Shale	1356 (-303)	1362 (-309)
Viola	1397 (-344)	1400 (-347)
Simpson Sand	1448 (-395)	1446 (-393)
Total Depth	1480 (-427)	1465 (-412)

SAMPLE DESCRIPTIONS

(Depths are drilling time measurements)

Muncie Creek 174' to 176'. This zone was cored from 172' to 178'. Results as follows:

Core #1

172' to 173.9'. Shale, gray, slightly silty.

173.9' to 175.4'. Shale, black, slightly carbonaceous, laminated in part, slight show free gas. 28 unit gas increase chromatograph and 15 unit gas increase hot wire.

175.4' to 176.8'. Shale, gray to dark gray, hard, pyrite, slightly laminated.

176.8' to 178'. Shale, gray, waxy, silty, sticky.

Core was canned from 173.5' to 176' for gas desorption test.

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Stark Shale 247' to 250'. Shale, black, carbonaceous, poor to fair show of gas. 124 unit gas increase hot wire and 53 unit gas increase chromatograph.

Hushpuckney Shale 269' to 272'. Shale, black, carbonaceous, very gassy. 94 unit gas increase chromatograph and 35 unit gas increase hot wire. Sample was bagged with no visible expansion.

Hertha Limestone 272' to 290'. Top 4' of this zone was cored from 272' to 276'. Results as follows:

Core #2

272' to 273'. Limestone, light gray, fine crystalline, fossiliferous, dense, no shows.
273' to 273.8'. Limestone, gray to light gray, fine crystalline, fossiliferous, shaley, no shows.
273.8' to 274'. Shale, dark gray, fossiliferous.
274' to 274.5'. Limestone, gray to light gray, fine crystalline, fossiliferous, shaley, no shows. With shale layer 1/2" thick 2" in.
274.5' to 274.8'. Shale, dark gray.
274.8' to 276'. Limestone, light gray to light brown, fine crystalline, dense, fossiliferous, chalky, no shows.

Base Kansas City (Cleveland Sand) 290' to 296'. Sandstone, light green, fine grain quartz clusters, some shaley, no shows, no visible porosity. 18 unit gas increase hot wire and 42 unit gas increase chromatograph.

Knobstown Sand 334' to 350'. Sandstone, dark gray to gray, fine grain quartz clusters, shaley, very hard, no shows, no visible porosity.

Note: There was a slow steady increase in background gas from approximately 320' to 420' where the hot wire increased from 25 units to 50 units gas and the chromatograph increased from 40 units to 100 units gas.

Mulberry Coal Zone 489' to 492'. Shale, green, gray, dark gray, trace black, no show free gas. 42 unit gas increase hot wire and 81 unit gas increase chromatograph.

Lexington Coal Zone 521' to 524'. This zone was cored from 519' to 527'. Results as follows:

Core #3

519' to 520.3'. Limestone, light brown to brown, fine crystalline, fossiliferous, dense, no shows, no visible porosity.
520.3' to 521'. Shale, black, slightly carbonaceous, slight show free gas.
521' to 522.5'. Shale, black carbonaceous, fair show free gas.
522.5' to 523.3'. Coal, good show free gas. 96 unit gas increase chromatograph and 60 unit gas increase hot wire while coring. 124 unit gas increase chromatograph and 40 unit gas increase hot wire while reaming.
523.3' to 523.5'. Shale, gray, green sticky
523.5' to 525.1'. Shale, gray to green, mottled, grades to laminated, silty.

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525.1' to 527'. Shale, gray to dark gray, very silty.
Core was canned from 520' to 523.5' for gas desorption test.

Summit Coal Zone 558' to 561'. Shale, dark gray, black, carbonaceous, scattered pyrite, some coal, fair to good show free gas. 78 unit gas increase hot wire and 148 unit gas increase chromatograph.

Mulky Coal Zone 578' to 581'. Shale, gray, green dark gray, some black, no shows.

Bevier Coal Zone 663' to 665'. This zone was cored from 658' to 674.5'. Results as follows:

Core #4

658' to 661'. Shale, black, some carbonaceous, poor show free gas.
661' to 662.5'. Shale, black carbonaceous, fair show free gas.
662.5' to 663.2'. Coal, good show free gas. 56 unit gas increase hot wire and 133 unit gas increase chromatograph.
663.2' to 664'. Shale, gray, with carbonaceous material, no shows.
664' to 664.6'. Shale, gray to green, sticky, hard.
664.6' to 665.1'. Limestone, brown to light gray, fine crystalline, dense, fossiliferous, no shows.
665.1' to 667'. Shale, gray to green, sticky.
667' to 674.5'. Not recovered - Lost.

The core from 658' to 664' was canned for gas desorption test.

Croweburg Coal Zone 680' to 682'. Shale, gray, green, red, some sticky, waxy in part, slightly silty, some black carbonaceous, coal. 130 unit gas increase chromatograph and 56 unit gas increase hot wire.

Mineral Coal Zone 705' to 708'. This zone was cored from 704' to 710'. Results as follows.

Core #5

704' to 705.2'. Shale, black, some carbonaceous, slight show free gas.
705.2' to 706.3'. Coal, fractured, good show free gas. 115 unit gas increase chromatograph and 57 unit gas increase hot wire while coring. 75 unit gas increase chromatograph and 62 unit gas increase hot wire while reaming.
706.3' to 707'. Shale, black carbonaceous, abundant pyrite, fair show free gas.
707' to 708.5'. Shale, gray to dark gray, with carbonaceous material, slightly silty.
708.5' to 710'. Shale, gray, silty, hard.

The core from 704' to 707' was canned for gas desorption test.

Scammon Coal Zone 720' to 724'. This zone was cored from 716' to 726'. Results as follows:

Core #6

716' to 717.2'. Shale, gray, green, dark gray, waxy.

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717.2' to 717.6'. Shale, gray, fossiliferous, calcareous.
717.6' to 718.6'. Shale, dark gray, fossiliferous.
718.6' to 718.8'. Shale, dark gray, very fossiliferous.
718.8' to 719.3'. Shale, black, fossiliferous, slightly carbonaceous, slight show free gas.
719.3' to 720.1'. Shale, black, carbonaceous, laminated, show free gas.
720.1' to 722.6'. Coal, fossiliferous, pyrite, good show free gas. 205 unit gas increase chromatograph and 75 unit gas increase hot wire while coring. 185 unit gas increase chromatograph and 75 unit gas increase hot wire while reaming.
722.6' to 724'. Shale, gray, green, sticky, with junk in hole from fish.
724' to 726'. Not recovered. Lost everything after connection.

The core from 717' to 722.8' was canned for desorption test.

Tebo and Weir/Pittsburg Coal Zones "absent". These intervals were cored from 734' to 751'. Results as follows:

Core #7

734' to 740.6'. Shale, gray to dark gray, silty.
740.6' to 741.5'. Shale, gray, thinly laminated with sandstone.
741.5' to 744.9'. Shale, gray, very silty.
744.9' to 745.3'. Sandstone, light gray, fine grained quartz, shaley, no shows.
745.3' to 745.9'. Shale, gray to dark gray, waxy, silty.
745.9' to 746.7'. Shale, gray to dark gray, laminated with 1/2" to 2" streaks of sandstone.
746.7' to 747.3'. Shale, dark gray, gray, green, waxy.

Bartlesville Sandstone 747' to 751'. Top 4' of Bartlesville Sandstone included in bottom of this core.
747.3' to 749.6'. Sandstone, light gray, fine grain quartz, some shaley in part, no shows.
749.6' to 749.9'. Shale, gray, green, waxy.
749.9' to 751'. Sandstone, gray to light gray, fine grain quartz, fair to good intergranular porosity, with scattered carbonaceous material.

Drywood Coal Zone 828' to 830'. Shale, dark gray, gray, green, black, trace carbonaceous, trace coal. 43 unit gas increase chromatograph and 15 unit gas increase hot wire.

Rowe Coal Zone 848' to 850'. Shale, gray, dark gray, some black carbonaceous, no show free gas.

Neutral Coal Zone "absent".

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WELL SUMMARY

During the drilling of this hole the drilling contractor experienced numerous mechanical problems. Most of these problems were associated with the mud pump. This resulted in some questions as to the validity of the cuttings as representative of formation over scattered intervals. While coming out of the hole for core #4 (658') junk was dropped in the hole. The contractor was fishing 3 days before the fish was recovered.

With the numerous shows of free gas in the black carbonaceous shales and coal beds and the lack of any shows in the Mississippian, Viola or Simpson, the decision was made to run 4 1/2" casing to a depth of 1242' and cement to surface. Further evaluation, through perforations, of all zones with shows of free gas is recommended before abandonment.

Respectfully Submitted,

Bill Stout

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Petroleum Geologist