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Geological Report

MAR 22 2004

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Grauberger #3-27-16-25

2220' FWL, 465' FNL (N38° 38.025', W94° 37.812')

Section 27-T16S-R25E

Miami Co., Kansas

API #15-121-27799

Elevation: 990 GL (est. form Topo. Map)

Drilling Contractor: Susie Glaze (dba Glaze Drilling Co.), (KS Lic. #5885)

Spud: 12/30/2003

Surface: 11 1/4" bore hole, set 20' of 8 5/8" csg. cmt'd with 6 sx

Production bore hole: 7 7/8"

Rotary Total Depth: 500' on 1/02/04

Drilling fluid: Air & Mist

E-Log Total Depth: ----

Production Csg.: 5 1/2" used 15.50#/ft at 354.50', cmt'd w/ 73 sx 2% gel

<u>Formation</u>	<u>Driller Log Tops</u>	<u>Datum</u>
Stark Shale	71	919
Hushpuckney Shale	100	890
Base Kansas City	120	870
"Upper" Knobtown Sand	No Call	----
"Middle" Knobtown Sand	No Call	----
"Lower" Knobtown Sand	No Call	----
Carbonaceous Zone in Tacket Fm.	No Call	----
"Big Lake" Sand	236	754
South Mound Zone	286	704
Hepler (Wayside) Sand	No Call	----
"Upper" Mulberry Zone	No Call	----
Mulberry Zone	No Call	----
Weiser Sand	No Call	----
Myrick Station	351	639
Anna Shale (Lexington Coal Zone)	355	635
Peru Sand	No call	----
Summit Shale Zone	398	592
Mulky Coal/Shale Zone	422	568
"Upper" Squirrel Sand Zone	No Call	----
"Middle" Squirrel Sand Zone	No Call (Not separated from "Lower")	----
"Lower" Squirrel Sand	449	541
Bevier Zone	No Call	----
Verdigris (Ardmore)	492	498
Croweburg Zone	496	494
Rotary Total Depth	500	490
E-Log Total Depth	----	----

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Major Zones of Interest (Depths based Driller's Log measurements.)

Note: Some basic abbreviations used in the following report.

T = Total gas readings in units
BG = Background gas in units
CH = Chromatograph readings in units
CG = Connection gas in units
GT = Open flow gas test
TGA = Total Gas Analyzer

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** Set up gas detector and equipment. "Zeroed" TGA & CH, attenuators set on x4. T = 42.4 & CH = 55.2

50' BG, T = 42.4 & CH = 48.8

66' BG, T = 42.4 & CH = 44.8

Stark Shale 71-75. Shale, dark to very dark grays, black, mostly blocky cuttings, pyritic in part, trace gritty textured, very-very weak to questionable shows of free gas. Had a 28.8 gas unit increase, no open flow, and no water.

75' BG, T = 43.2 & CH = 44.8

82' BG, T = 68.8 & CH = 43.2

88' BG, T = 48.8 & CH = 41.6

92' BG, T = 50 & CH = 41.2

95' BG, T = 50.8 & CH = 40.8

99' BG, T = 51.6 & CH = 41.2

Hushpuckney Shale 100-104. Shale, black, mostly blocky cuttings, gritty textured in part, no shows of free gas. Shale, dull olive greens and green-grays. Had a small increase of 15.6 units, still no open flow, and no water.

102' BG, T = 67.2 & CH = 40.4

103' BG, T = 57.6 & CH = 41.2

107' BG, T = 54.0 & CH = 40.4

110' BG, T = 52.4 & CH = 40.0

116' BG, T = 52.8 & CH = 40.0. CH auto cycled and read 184.4, (144.4 over BG) methane only.

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120' CG = 158.4

123' BG, T = 66.0 & CH = 39.6

128' BG, T = 56.4 & CH = 38.4

136' BG, T = 50.8 & CH = 39.2

140' BG, T = 49.6 & CH = 38.8

140' CG = 189.2

148' BG, T = 56.4 & CH = 39.6

158' BG, T = 56.8 & CH = 39.6

160' CG = 162.0

169' BG, T = 64.0 & CH = 40.0 (Slight gas unit increase due to carbonaceous material found in the silty-sandy lamina within the upper part of the "Lower" Knobtown.) Noted only for the record.

177' BG, T = 54.8 & CH = 41.2

180' BG, T = 54.0 & CH = 40.0

180' CG = 154.4

184' BG, T = 67.6 & CH = 41.6

188' BG, T = 60.8 & CH = 42.0

193' BG, T = 57.2 & CH = 42.4. CH auto cycled and read 101.6 (59.2 over BG) units of methane only.

198' BG, T = 54.8 & CH = 41.2

200' CG = 194.4

205' BG, T = 64.4 & CH = 45.2

211' BG, T = 58.0 & CH = 44.0

217' BG, T = 56.0 & CH = 44.0

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218' BG, T = 55.6 & CH = 43.6

220' CG = 150.0

226' BG, T = 63.6 & CH = 47.2

230' BG, T = 59.6 & CH = 47.6

235' BG, T = 58.4 & CH = 47.2

“Big Lake” Sand 236-245. Silt/sandstone, very light-pale green with tan tint, silt size to fine grain, angular, poorly sorted, well consolidated, rather dense for the most part, trace semi firm where silty to shaly, poor with trace fair porosity, scattered very poor fluorescence, weak “oily” odor, no show of free oil – only a rainbow sheen, very-very weak trace show of free gas. Sand becomes light gray with some “salt and pepper”, less silty, fine to medium grained and micaceous with depth. Total open flow for the sand was 22 MCF. See gas test at 260’.

238' BG, T = 59.2 & CH = 47.2

240' BG started climbing and peaked at T = 451.2 units, while circulating averaged 430.8 units.

** 240' GT, open flowed 16 MCF, no noticeable water.

240', shut down for New Year's Day.

1/02/04. Blew hole down. Re-set T & CH. Set attenuation on x8. T = 558.4 & CH = 278.2, both were slowly falling. Started drilling at 9:11 A.M.

243' BG, T = 407.2 & CH = 225.6

247' BG, T = 516.8 & CH = 218.4

250' BG, T = 527.2 (increase due to drilling the rest of the “Big Lake”) & CH = 216.0

258' BG, T = 514.4 & CH = 212.0

260' BG, T = 511.2 & CH = 214.4 (CH auto cycled while T = 506.4 and read 3096.0 units of methane only)

** 260' GT, open flowed 22 MCF (6 MCF increase, had drilled the rest of the “Big Lake” Sand noted above, still no water.)

260' CG = 1434.4 (Circulate awhile to let CG circulate through system before drilling ahead)

262' BG, T = 536 (still carrying some CG) & CH = 217.6

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265' BG, T = 513.6 & CH = 252.0

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269' BG, T = 500.8 & CH = 201.6

276' BG, T = 487.2 & CH = 207.2 (CH auto cycled and read 2992.0 units of methane only)

280' BG, T = 477.6 & CH = 182.4

280' CG = 1431.2

283' BG, T = 484.0 & CH = 174.4

284' CH auto cycled and read 2894.4 units of methane only

South Mound 286-287. Shale, black, mostly blocky cuttings, "peppered" with abundant micro pyrite crystals, very-very weak to questionable shows of free gas, trace very dark gray, gritty textured, slightly carbonaceous, shale with no show. Believe the South Mound is more likely to be closer to 3 feet thick, not 1 foot as noted by the driller.

289' T started climbing, peaked at 300' with 1455.2 units or a 971.2 unit "gas kick"

** 300' GT, open flowed 150 MCF (128 MCF increase), no noticeable water.

300' CG = 1457.6. Manual cycled CH, (T at 1394.4), read 11,680 units of methane only

Note: In the 300-310 sample bag, 2-3% of the drill cuttings consisted of coal, of which most were "floaters", but none of the coal exhibited shows of free gas and no increase in gas units was noted.

303' CH auto cycled and read 11,155.2 units of methane only. T was at 1344.8.

306' BG, T = 1346.4 & CH = 234.4

309' BG, T = 1347.2 & CH = 218.4

314' BG, T = 1339.2 & CH = 211.2

317' BG, T = 1336.0 & CH = 208.0

320' BG, T = 1328.8 & CH = 203.2

320' CG = 1450.4

324' BG, T = 1306.0 & CH = 188.8

325' CH auto cycled and read 10,744.0 units of methane only.

Mulberry Coal Zone. No carbonaceous material was found in the drilling cuttings where this zone generally develops.

329' BG, T = 1301.6 & CH = 204.8

333' BG, T = 1301.6 & CH = 193.6

340' BG, T = 1284.8 & CH = 184.8

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Note: At 340' shut down from 10:25 to 12:00 due to some question concerning the Mineral Lease. Back to drilling after getting straighten out. Open flow gas tested and was still flowing 150 MCF. Gas had accumulated in well bore and gas units peaked at 1459.2 units.

343' BG, T = 1296.6 & CH = 260.0

346' BG, T = 1254.4 & CH = 240.8

353' BG, T = 1190.4 & CH = 219.2

Myrick Station Limestone. 351-355. Limestone, mottled medium tans to dark browns, very fine to coarse crystalline, trace dolomitic, very poor intercrystalline porosity, poor crystalline porosity where dolomitic, argillaceous and fossiliferous in part, no odor, no fluorescence, questionable stain, and no increase in gas units.

356' BG, T = 1188.0 & CH = 219.2

Anna Shale (Lexington Coal Zone) 355-357. Shale, very dark gray, black, mostly blocky cuttings, pyritic, and contained no shows of free gas. Coal and "coaly shale", fair percentage were "floaters", pyritic in part, a few scattered very weak to questionable shows of free gas from the "coaly shale". Driller recorded only two feet, believe closer to 3 feet. There is a "dirty" grayish-tan, silty-shaly, poorly developed sandstone located below the Lexington, which is the Peru. Did not contain any hydrocarbon shows, noted for the record only.

357' BG started climbing, peaked at 1442.4 or an increase of 255.2 unit increase.

** 360' GT, open flowed 231 MCF (81 MCF increase) no apparent water.

360' CH auto cycled while CG was rising, read 18,464.0 units of methane only, (T was at 780.8 units when cycled)

360' CG 1194.4

366' BG, T = 1207.2 & CH = 246.4

369' BG, T = 1205.6 & CH = 233.6

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377' CH auto cycled, read 16,600.0 units of methane only

380' BG, T = 1196.0 & CH = 233.6

380' CG = 1190.4

385' BG, T = 1185.6 & CH = 236.8

390' BG, T = 1192.8 & CH = 201.6

392' BG, T = 1192.8 & CH = 201.6

393' BG, T = 1192.0 & CH = 212.8

398' BG, T = 1193.6 & CH = 203.2

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Summit Shale Zone. 398-400. Shale, black, angular to blocky cuttings, trace pyritic, contained no show of free gas, and no significant increase in gas units. Black shale is closer to 3.5 feet thick, but does not merit further testing.

400' GT, no increase in gas units, so did not run an "open flow gas test" on Summit.

400' CG = 1142.4

404' BG, T = 1164.0 & CH = 203.4

406' BG, T = 1179.2 & CH = 184.8

409' CH auto cycled and read 16,984.0 units of methane only.

416' BG, T = 1137.6

419' BG, T = 1173.6 & CH = 260.0

420' CG = 904.0 (questionable why dropping)

421' BG, T = 1068.0 & CH = 362.4

Mulky Shale/ Coal Zone. 422-429. Shale, black, mostly blocky cuttings, pyritic, dense/hard, no show of free gas. Coal and "coaly shale", pyritic in part, a small percentage of the coal were "floaters", no shows of free gas were observed, had a small increase of 55.2 units over background. Including the coal and coaly shale, believe the Mulky to be closer to 5.5 +/- feet thick. Based on the lack of gas shows from the cuttings, no significant increase in gas units, no open flow, and no increase in water, this zone does not merit further testing.

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422' BG, T = 1100.8 & CH = 347.2

423', CH auto cycled and read 18,136 units of methane gas only.

424' BG, T = 1141.6 & CH = 292.8

428' BG, T = 1156.0 & CH = 300.8

430' BG, T = 1145.6 & CH = 256.0

"Upper" Squirrel Sand Zone. Not developed, only a "dirty" gray-green and very-very light / pale green siltstone is present, micaceous, pyritic, and calcareous in part.

433' BG, T = 1124.0 & CH = 210.4

438' BG, T = 1119.2 & CH = 209.6

439' BG, T 1124.8 & CH = 202.4

** 440' GT, no open flow and no apparent water.

440' CG = 904.0

443' BG, T = 1048.8 & CH = 272.0

447' BG, T = 1092 & CH = 224.0

449' BG, T = 1103.2 & CH = 212.8

Squirrel Sand. 449-488. Sandstone, tan, very fine-to-fine grain, angular, poorly sorted, friable, fair to good porosity, micaceous, grades to a light gray with tan cast to tan with grayish cast, very fine to medium grain, very angular to angular, poorly sorted, poor to moderately consolidated, very friable for the most part, good to excellent intergranular porosity, carbonaceous and micaceous in most, no shows, no significant increase in gas units, no open flow, large increase in water noted. "Middle" and "Lower" not separated.

451' CH auto cycled, read 18,184 units of methane only

458' BG, T = 1124.8 & CH = 208.8

460' CH auto cycled, read 18,128.0 units of methane only

460' CG = 904.0

468' BG, T = 1075.2 & CH = 301.6

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471' BG, T = 1098.4 & CH = 272.0

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478' BG, T = 1117.6 & CH = 209.6

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Bevier Coal Zone. No Call. Sample bag 480-490 contained traces of coal, "coaly shale", and light grayish-green shale with carbonaceous fragments in part, trace pyritic, trace coarse grain pyrite chunks, no shows of gas were observed.

483' BG, T = 1025.6 & CH = 318.4 (?)

490' BG, T = 1083.2 & CH = 209.6

491' BG, T = 1083.2 & CH = 209.6

494' BG, T = 1093.6 & CH = 188.8

495' BG, T = 1101.6 & CH = 177.6

496' CH auto cycled, read 16152.0

Croweburg Coal/Shale Zone. The top of the zone is at 496 (base of the Verdigris/Ardmore Limestone). Drilled to a total depth of 500 feet. No carbonaceous material was found in the four feet drilled. Generally, the "coal" is found between 8 to 12 feet below the base of the Verdigris/Ardmore Limestone, so was not drilled.

498' BG, T = 1096.8 & CH = 262.4

500' GT, open flowing 231 MCF, no change.

Brief Summary:

Stark	No open flow, no water
Hushpuckney	No open flow, no water
"Big Lake" Sand	22 MCF, no water
South Mound	128 MCF, no water
Mulberry(s)	No open flow, no water
Lexington	81 MCF, "no apparent water"
Summit	No open flow, no water
Mulky	No open flow, no water
<u>Squirrel Sand</u>	<u>No open flow, "lots of water"</u>
Total	231 MCF

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** Structural comparison of the subject well using the Top of the Lexington Zone:

Grauberger #3-27
638

Weitman #1-21
603

Williams #1
620

End Report
Rex R. Ashlock
06 December 2004

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