ROBERT C. LEWELLYN
petroleum geologist

(316) 744-2567

P. O. Box 2608
Wichita, Kansas 67201

12-22-12W
15-185-22559

GEOLOGICAL REPORT

RICHARD E. SMITH OIL PROPERTIES
No. A-1 Willinger
SE SE NE Section 12-22S-12W
Stafford County, Kansas

SPUDDED:	December 02, 1988
DRILLING COMPLETED:	December 09, 1988
DRILLING CONTRACTOR:	Duke Drilling Co., Inc.
SURFACE CASING:	8 5/8" @ 303/KBM
ELECTRIC LOGS:	Wire Tech RAG, CDL, II Ind.
ELEVATIONS:	1788 KB 1785 DF 1783 GL

FORMATION TOPS: (Electric Log)

Anhydrite	534	(+1254)
Base Anhydrite	553	(+1235)
Howard	2672	(- 884)
Severy	2726	(- 938)
Topeka	2767	(- 979)
Heebner Shale	3066	(-1278)
Toronto Limestone	3083	(-1295)
Douglas Shale	3098	(-1310)
Brown Limestone	3198	(-1410)
Lansing-Kansas City Group	3223	(-1435)
Base Kansas City	3489	(-1701)
Viola	3499	(-1711)
Simpson Shale	3549	(-1761)
Simpson Sand	3550	(-1762)
Simpson Sand	3576	(-1788)
Log Total Depth	3621	(-1833)
ROTARY TOTAL DEPTH	3625	(-1837)

Samples were examined from 2600 feet to Rotary Total Depth, and all zones having shows of sufficient quality for evaluation were drill stem tested. Following is a description of zones of interest, shows, drill stem tests, etc.

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HOWARD ZONES:

2674-2677 Limestone, buff, some tan, finely crystalline and chalky, scattered very poor intercrystalline and vugular porosity, no show of oil.

2681-2683 Limestone, buff to tan, finely crystalline and chalky, scattered poor vugular and intercrystalline porosity, no show of oil.

2700-2702 & 2705-2707 Limestone, buff, some tan, some cream chalky, finely crystalline and slightly fossiliferous, scattered poor interfossil and intercrystalline porosity, no show of oil.

TOPEKA ZONES:

2767-3066 The Topeka section consists of cream to buff, chalky and finely crystalline limestones, interbedded with thin layers of shale. Portions of the limestones are partly fossiliferous and numerous sections of poor to fair intercrystalline, interfossil, pinpoint and vugular porosity are present within the Topeka interval. No shows of oil were observed in the Topeka, and none of the porosity zones carried more than six ohms of resistivity, thus calculating non-productive on the Electric log.

TORONTO ZONES:

3083-3098 Limestone, cream to buff, finely crystalline and chalky, partly fossiliferous, scattered poor intercrystalline porosity, no show of oil.

DOUGLAS ZONES:

3098-3223 The Douglas section consisted of gray to greenish gray shales. Thin sections of the Stranger sand were present just below the Brown lime at 3203-3207 and 3213-3217. The sand had just a trace of very poor light spotted stain with no free oil and no odor. No other sand sections were present in the Douglas interval.

LANSING-KANSAS CITY ZONES:

3223-3243 A zone Limestone, cream to buff, finely crystalline and slightly fossiliferous, partly chalky, scattered very poor intercrystalline porosity, no show of oil.

3245-3259 B zone Limestone, buff, some tan, dense to finely crystalline, some slightly fossiliferous, zone mostly tight, no show of oil.

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3260-3263 C zone — Limestone, cream to buff, chalky and finely crystalline, mostly tight with trace of very poor intercrystalline porostiy, no show of oil.

3265-3268 D zone — Limestone, cream to buff, finely crystalline, slightly fossiliferous, fair vugular and intercrystalline porosity, fair spotted stain, fair to good show of gassy free oil, faint odor.

3286-3290 E zone — Limestone, buff, finely crystalline and slightly fossiliferous, scattered poor to fair intercrystalline porosity, scattered poor to fair spotted stain, slight show of free oil, questionable odor.

3293-3302 F zone — Limestone, cream to buff, dense to finely crystalline, partly fossiliferous, fair vugular and intercrystalline porosity, some interfossil porosity, fair to good spotted stain, fair to good show of gassy free oil, faint to fair odor.

Note: In comparing Electric log measurements with drilling time measurements, it appears that depths on all drill stem tests should be corrected downhole four feet to correlate with electric log measurements.

DST No. 1 3252-3299 — 30-45-60-45; weak blow, building to strong blow on both flow periods; recovered 135 feet of gas in pipe, 105 feet of very slightly to slightly oil and gas cut mud; ISIP 1094# FSIP 1036# IFP 58-58# FFP 70-82#.

3312-3318 G zone — Limestone, cream to buff, finely crystalline and chalky, mostly tight, some scattered oolitic with isolated oolicasts, no show of oil.

3058-3065 H zone — Limestone, buff, some tan, some gray, finely crystalline and partly fossiliferous, partly oolitic, scattered poor to fair ooliticastic and interfossil porosity, scattered gilsonite, no show of oil. As is typical of many oolicastic zones, zone calculates 19-20% porosity and 15-18% water saturation, but samles indicate the zone to be non-productive.

3374-3389 I zone — Limestone, buff to tan, dense to finely crystalline, zone is mostly tight with trace of very poor intercrystalline porosity, no show of oil.

3399-3405 J zone — Limestone, cream to buff, finely crystalline and oolitic, fair ooliticastic porosity in this zone and in upper section at 3392-3394, scattered gilsonite, no show of oil.

3420-3426 K zone — Limestone, cream, finely crystalline and oolitic, scattered fair interoolitic and intercrystalline porosity, fair spotted stain, slight to fair show of

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free oil, faint to fair odor, trace of vugular porosity with show of oil as above.

3466-3471 L zone — Limestone, buff, some tan, dense to finely crystalline, scattered poor to fair intercrystalline porosity with poor to fair spotted stain, some dense fragments with stain on possible fracture faces, trace of free oil, faint odor.

3472-3489 M zone — Limestone, cream to buff, dense to finely crystalline, scattered fair intercrystalline and vugular porosity, poor spotted stain, slight show of free oil, questionable odor.

DST No. 2 3410-3483 — 30-30-30-30; weak blow, died in 15 minutes; recovered 20 feet of mud with spots of oil on top; ISIP 105# FSIP 94# IFP 82-82# FFP 82-82#.

VIOLA ZONES:

3499-3516 — Chert, white to cream, mostly fresh, no visible porosity, considerable scattered gilsonite, rare trace of poor spotted live oil stain, no free oil, no odor.

3516-3549 — Chert, white to cream, mostly fresh, some tripolitic with very poor weathered vugular porosity, much scattered gilsonite, trace of poor scattered live oil stain, no free oil, no odor.

SIMPSON ZONES:

3550-3554 — Sand, dolomitic, fine to medium grained, fairly well cemented, subround to subangular, fairly well sorted, poor to fair porosity, poor to fair spotted stain, trace of free oil, faint questionable odor.

3576-3582 — Sand, slightly dolomitic, medium grained, subangular, fairly well cemented to friable, fairly well sorted, fair porosity, good show of gassy free oil, fair to good spotted stain, faint odor to no odor.

DST No. 3 3518-3608 — 30-45-60-60; strong blow throughout test, gas to surface in 75 minutes; recovered 1160 feet of clean gassy oil, no water; ISIP 1151# FSIP 1059# IFP 105-235# FFP 282-424#

3582-3625 — Shale, green to greenish gray, drab.

3625 — ROTARY TOTAL DEPTH

RECOMMENDATIONS:

After drilling to a depth of 3625 (-1837) the Arbuckle dolomite had not been reached, so it was decided to suspend drilling at this point.

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It is recommended that the Simpson sand be perforated from 3577 to 3580, and treated as necessary to facilitate production.

After depletion of the above sand, the Simpson sand at 3550 should be perforated from 3550-3552 and evaluated for possible production.

Drill Stem test No. 3 covered the lower portion of the Viola, which exhibits some very high porosity readings on the log. It is possible that some of the fluid recovery from DST No. 3 came from the Viola, but I consider this highly unlikely. Nothing on the test charts indicates fluid flow from more than one zone; the oil is too high gravity to be Viola oil; even though the oil is black, contrary to some observations, Simpson oil is black in much of Kansas, as opposed to the green or straw colored oil found further South. The Viola has a history of being non-permeable in this area. If the Viola is perforated, treatment would be effective only if the Viola will give up at least a few gallons of fluid per hour; otherwise, acid or fracture treatment has not normally resulted in commercial production from the Viola in this area.

Prior to abandonment of this well, the following Lansing-Kansas City zones should be perforated and evaluated for production with acid treatment:

F zone	Perforate 3295-3302
E zone	Perforate 3287-3289
D zone	Perforate ~~3276-3279~~ & 3266-3269

Respectfully submitted

Robert C. Lewellyn
Petroleum Geologist

RCL:cd