

GEOLOGIST'S REPORT
DRILLING TIME AND SAMPLE LOG

COMPANY **SHAKESPEARE OIL CO.**
 LEASE **BEAMS 1-9**

FIELD **Widdall**
 LOCATION **469 FNL, 2020 FWL**
 SEC **9 T15SP 6S R0E 38W**

COUNTY **Sibley STATE Kansas**

CONTRACTOR **Duke Drilling Rig #2**
 SPUD **10-13-16 COMP**
 RTD **LTD**

MUD UP **3800'** TYPE MUD **Chemical**
 SAMPLES SAVED FROM **4000'** to RTD
 DRILLING TIME KEPT FROM **4000'** to RTD

SAMPLES EXAMINED FROM **4000'** to RTD
 GEOLOGICAL SUPERVISION FROM **4000'** to RTD
 GEOLOGIST ON WELL **Tim Priest**

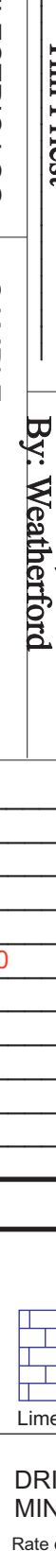
FORMATION TOPS **ELECTRIC LOG** SAMPLE
 Anhydrite
 Heebner Shale
 LaSalle
 Stark
 BKC
 Fort Scott
 Morrow Shale
 Mississippian

ELEVATIONS
 KG 3513'
 DF _____
 GL 3505'

CASINGS
 CONDUCTION **N/A**
 SURFACE **8-5/8" @ 380'**
 PRODUCTION _____

Measurements Are All From **KB**

ELECTRICAL SURVEYS
 CND/DSP/P.E.
 Micro Sonic
 By: Weatherford

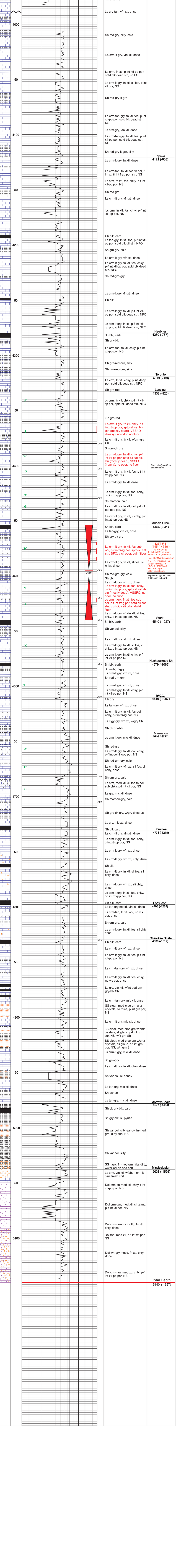
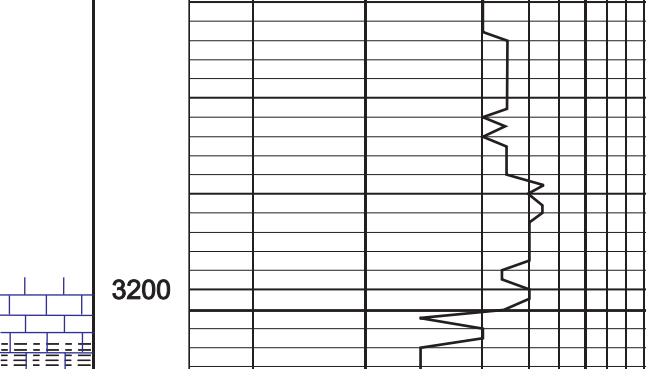


REMARKS

Respectfully Submitted,
 Tim Priest
 Petroleum Geologist

API #15-181-21421-00-00

LEGEND



DEPTH	LITHOLOGY	DRILLING TIME IN MINUTES PER FOOT	SAMPLE DESCRIPTION	REMARKS
3200	Anhydrite			Anhydrite 3164(+349)
3202	Base/ Anhydrite			3202(+311)
3200-4000	Shale		Sh gry, silty Ls gry-tan, vfn xtl, dnse Sh red-gry, silty, calc Ls crm-lt gry, vfn xtl, dnse Ls crm, fn xtl, p int xtl-pp por, sptd blk dead stn, no FO Ls crm-lt gry, fn xtl, sil fos, p int xtl por, NS Sh red-gry-lt grn Ls crm-tan-gry, fn xtl, fos, p int xtl-pp por, sptd blk dead stn, NS Ls crm-gry, vfn xtl, dnse Ls crm-tan-gry, fn xtl, fos, p int xtl-pp por, sptd blk dead stn, NS Sh red-gry-lt grn, silty	
4000-4121	Shale		Ls crm-lt gry, fn xtl, dnse Ls crm-tan, fn xtl, fos-fn col, f int xtl & int frag por, stn, NS Ls crm, fn xtl, fos, chky, p-f int xtl-pp por, NS Sh red-grn Ls crm-lt gry, vfn xtl, dnse Ls crm, fn xtl, fos, chky, p-f int xtl-pp por, NS Sh blk, carb Ls tan-gry, fn xtl, fos, p-f int xtl-pp por, sptd blk gll stn, NFO Sh grn-gry, calc Ls crm-lt gry, vfn xtl, dnse Ls crm-lt gry, fn xtl, fos, chky, p-f int xtl-pp por, sptd blk dead stn, NFO Sh red-grn-gry Ls crm-lt gry, vfn xtl, dnse Sh blk Ls crm-lt gry, fn xtl, p-f int xtl-pp por, sptd blk dead stn, NFO Ls crm-lt gry, fn xtl, p-f int xtl-pp por, sptd blk dead stn, NFO	Topeka 4121 (-608)
4121-4280	Shale		Sh blk, carb Sh gry-blk Ls crm-tan, fn xtl, chky, p-f int xtl-pp por, NS Sh grn-red-brn, silty Sh grn-red-brn, silty	Heebner 4280 (-767)
4280-4319	Shale		Ls crm, fn xtl, chky, p int xtl-pp por, sptd blk dead stn, NFO Sh grn-red	Toronto 4319 (-806)
4319-4333	Shale		Ls crm, fn xtl, chky, p-f int xtl-pp por, sptd blk dead stn, NFO Sh grn-red Ls crm-lt gry, fn xtl, chky, p-f int xtl-pp por, sptd-sli sat blk stn (mostly dead), VSSFO (heavy), no odor, no fluor Ls crm-lt gry, fn xtl, w/grn-gry Sh Sh gry-dk gry Ls crm-lt gry, fn xtl, chky, p-f int xtl-pp por, sptd-sli sat blk stn (mostly dead), VSSFO (heavy), no odor, no fluor Ls crm-lt gry, fn xtl, fos, chky, p-f int xtl-pp por, NS Sh maroon, calc Ls crm-lt gry, fn xtl, ool, p-f int ool-ool por, NS Ls crm-lt gry, fn xtl, v chky, p-f int xtl-pp por, NS	Lansing 4333 (-820)
4333-4454	Shale		Sh blk, carb Ls tan-gry, vfn xtl, dnse Sh gry-dk gry Ls crm-lt gry, fn xtl, fos-sub ool, p-f int frag por, sptd-sli sat stn, SFO, v sli odor, dull-f fluor Ls crm-lt gry, fn xtl, sil fos, sli chky, dnse Sh red-grn-gry, calc Sh blk Ls crm-lt gry, vfn xtl, dnse Ls crm-lt gry, fn xtl, fos, chky, p-f int xtl-pp por, sptd-sli sat stn (mostly dead), VSSFO, no odor, no fluor Ls crm-lt gry, fn xtl, fos-sub ool, p-f int frag por, sptd-sli sat stn, SSFO, v sli odor, dull-f fluor Ls crm-lt gry, vfn-fn xtl, sil fos, chky, p int xtl-pp por, NS	Muncie Creek 4454 (-941)
4454-4540	Shale		Sh blk, carb Sh var col, silty Ls crm-lt gry, vfn xtl, dnse Ls crm-lt gry, fn xtl, sil fos, v chky, p int xtl-pp por, NS Ls crm-lt gry, fn xtl, chky, p-f int xtl-pp por, NS	Stark 4540 (-1027)
4540-4579	Shale		Sh blk, carb Ls tan-gry motld, vfn xtl, dnse Ls crm-lt gry, fn xtl, ool, no vis por, dnse Ls grn-gry, calc Ls crm-lt gry, fn xtl, fos, sli chty dnse	Hushpuckney Sh 4579 (-1066)
4579-4610	Shale		Sh gry Ls tan-gry, vfn xtl, dnse Ls crm-lt gry, fn xtl, fos-ool, chky, p-f int frag por, NS Ls lt gy-gry, vfn xtl, w/gry Sh Sh dk gry-blk	B.K.C. 4610 (-1097)
4610-4644	Shale		Ls crm-lt gry, mic xtl, dnse Sh red-gry Ls crm-lt gry, fn xtl, ool, chky, p-f int ool & ooc por, NS Sh red-grn-gry, calc Ls crm-lt gry, vfn xtl, sil fos, sli chky, dnse Sh grn-gry, calc Ls crm, med xtl, sil fos-fn ool, sub chky, p-f int xtl por, NS Ls gry, mic xtl, dnse Sh maroon-gry, calc Sh gry-dk gry, w/gry dnse Ls Ls gry, mic xtl, dnse	Marmaton 4644 (-1131)
4644-4731	Shale		Sh blk carb Ls crm-lt gry, vfn xtl, dnse Ls crm-lt gry, fn xtl, fos, chky, p int xtl-pp por, NS Ls crm-lt gry, vfn xtl, dnse Sh blk Ls crm-lt gry, fn xtl, sil fos, sli chty, dnse Ls crm-lt gry, vfn xtl, sli chty, dnse Ls crm-lt gry, fn xtl, sil fos, chky, p-f int xtl-pp por, NS Sh blk, carb	Pawnee 4731 (-1218)
4731-4786	Shale		Ls tan-gry motld, vfn xtl, dnse Ls crm-lt gry, fn xtl, ool, no vis por, dnse Ls grn-gry, calc Ls crm-lt gry, fn xtl, fos, sli chty dnse	Fort Scott 4786 (-1285)
4786-4830	Shale		Sh blk, carb Ls crm-lt gry, vfn xtl, dnse Ls crm-lt gry, fn xtl, fos, p-f int xtl-pp por, NS Ls crm-tan-gry, vfn xtl, dnse Ls crm-lt gry, fn xtl, fos, chky, no vis por, dnse Ls gry, vfn xtl, w/int bed gm-gry-blk Sh Ls crm-tan-gry, mic xtl, dnse SS clear, med-crse gm w/rtz crystals, sli glauc, p-f int grn por, NS, wlt gm Sh SS clear, med-crse gm w/rtz crystals, sli glauc, p-f int grn por, NS, wlt gm Sh Ls crm-lt gry, mic xtl, dnse Sh grn-gry Sh crm-lt gry, fn xtl, chky, dnse Sh var col, sli sandy Ls tan-gry, mic xtl, dnse Sh var col	Cherokee Shale 4830 (-1317)
4830-4977	Shale		Sh dk gry-blk, carb Sh gry-blk, sli pyritic Sh var col, silty-sandy, fn-med gm, dirty, fria, NS Sh var col, silty	Morrow Shale 4977 (-1484)
4977-5038	Shale		SS lt gry, fn-med gm, fria, dirty, w/var col sh and chrt Ls crm, vfn xtl, w/abun crm-lt pink fresh chrt Dol crm, fn-med xtl, chky, f int xtl-pp por, NS Dol crm-tan, med xtl, sli glauc, p-f int xtl por, NS Dol crm-tan-gry motld, fn xtl, chty, dnse Dol tan, med xtl, p-f int xtl por, NS Dol wh-gry motld, fn xtl, chty, dnse Dol crm-tan, med xtl, chty, p-f int xtl-pp por, NS	Mississippian 5038 (-1525)
5038-5140	Shale		Ls crm, vfn xtl, w/abun crm-lt pink fresh chrt Dol crm, fn-med xtl, chky, f int xtl-pp por, NS Dol crm-tan, med xtl, sli glauc, p-f int xtl por, NS Dol crm-tan-gry motld, fn xtl, chty, dnse Dol tan, med xtl, p-f int xtl por, NS Dol wh-gry motld, fn xtl, chty, dnse Dol crm-tan, med xtl, chty, p-f int xtl-pp por, NS	Total Depth 5140' (-1627)