

## GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

OPERATOR: Russell Oil, Inc. WELL NO.: #10  
 LEASE: Bollig N FIELD: WaKeeney  
 API: 15-195-22786 LOCATION: 570FN & 330FW  
 SEC.: 10 TWP.: 1S RING.: 23W  
 COUNTY: Trego STATE: Kansas

CONTRACTOR: Southwind Rig #6 CO. NO.: 6-22-2012  
 COMM.: 6-13-2012 LOG TD: 4022 TD  
 R/D: 4020 LOG TO: 4022 TD  
 SAMPLES SAVED FROM: 3200 TO: TD  
 DRILLING TIME SAVED FROM: 3200 TO: TD  
 GEO. LOG. SUPERVISION FROM: 3200 TO: TD  
 MUD UP: 3200 MUD TYPE: Chemical

Formations: Top Log Datum Sample Structural  
 Anhydrite 1756 (+521) 1753 (+5224) -9 Flat  
 B/Anhydrite 1798 (+479) 1795 (+482) -8 -1  
 Topeka 3268 (-99) 3263 (-986) -9 +11  
 Heebner 3490 (-123) 3483 (-1236) -9 +4  
 Toronto 3520 (-1243) 3518 (-1236) -9 +4  
 Lansing 3530 (-1253) 3522 (-1245) -9 +4  
 Muncie Creek 3654 (-1377) 3647 (-1370) -11 +0  
 B/KC 3754 (-1477) 3753 (-1476) -9 +6  
 Marmaton 3856 (-1579) 3853 (-1576) -5 NA  
 Arbuckie 3961 (-1684) 3959 (-1682) -6 NA  
 LTD 4022 (1745) 4020 (1743)

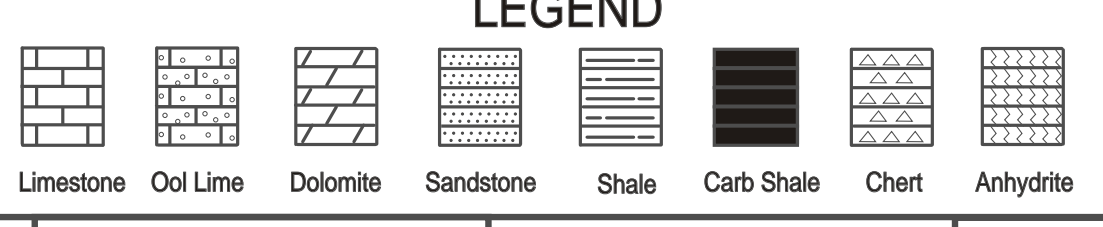
DF: 2269 KB: 2277  
 Measurements Are All From: KB  
 CASING RECORD

Surface 8 5/8" set at casing 263' w/60 SX  
 Production D&A  
 Casing

Dual Induction  
 Microlog  
 SURVEYS

REFERENCE WELLS FOR STRUCTURAL COMPARISON:  
 A. Shields Denison #2 NW SW NE Sec D1 S-23W Trego Co. KS  
 B. Shields McCall #1 SW NE NW Sec D1 S-23W Trego Co. KS

### LEGEND



DEPTH	DRILLING TIME IN MINUTES PER FOOT Rate of penetration increases 5" 10" 15" 20"	SAMPLE DESCRIPTIONS	REMARKS
1750		cbnh <b>Anhydrite</b>	EL 1756 (+521)
3200		conn <b>B/Anhydrite</b> LS, crm fn xln sil Fossil pr interpart poro NSNO Sh. gry. green, maroon	EL 1798 (+479)
3300		cbnh <b>Topeka</b> LS, crm-gry fn xln sil Fossil pr interpart poro dense NSNO Sh. dk gry LS, crm-gry fn xln sil Fossil pr interpart poro blocky NSNO Sh. dk gry & red LS, crm-gry fn xln sil Fossil pr interpart poro blocky NSNO LS, crm-tan fn xln sil Fossil pr interpart poro blocky NSNO LS, crm-wht fn xln sil Fossil pr interpart poro NSNO LS, crm-tan fn xln sil Fossil pr interpart poro dense NSNO Sh. blk carbonaceous LS, crm-tan-brwn fn xln fossil subchalky pr interpart poro NSFO; no odor LS, crm fn xln Fossil sil oolitic dolomitic pr-fr interpart poro barren NSFO; no odor LS, crm fn xln Fossil oolitic pr-fr interpart poro dense NSNO Sh. gry. green, maroon LS, crm-tan-brwn fn xln fossil subchalky pr interpart poro NSFO; no odor LS, crm fn xln pr interpart poro NSNO sil wht chalk; sc pieces white chert Sh. blk carbonaceous Sh. gry. green, maroon Sh. AA	EL 3268 (-99)
3400		cbnh <b>Heebner</b> Sh. blk carbonaceous Sh. gry. green, maroon Sh. AA	EL 3490 (-123)
3500		conn <b>Toronto</b> Sh. AA	EL 3520 (-1243)
3530		conn <b>Lansing</b> LS, crm fn xln sil Fossil pr interpart poro blocky NSNO	EL 3530 (-1253)
3600		conn <b>"B"</b> LS, crm-wht fn xln sil Fossil pr visible poro blocky NSNO Sh. lt gry & green LS, crm-wht fn xln oil pr interpart poro overall light; few pieces lt brwn spty stn; VSSFO; sil odor Sh. lt gry & maroon conn <b>"C"</b> LS, crm fn xln sil Fossil predom. dense 1-2 pieces v. lt. brwn spty edge stn; NSFO; no odor LS, AA Sh. blk carbonaceous; gry conn <b>"E"</b> LS, crm fn xln Fossil dense pr visible poro 1-2 pieces Trac vug poro; brwn spty stn around vugs; NSFO; no odor Sh. gry & green conn <b>"F"</b> LS, crm fn xln dolomitic pr-fr interpart poro friable; med brwn sat stn; S-FSFO; gas on brk; incl in 2" & 6" circ samples; fr odor conn <b>"G"</b> LS, crm fn xln dolomitic pr-fr interpart poro lt med brwn sat stn; FSFO; abun active gas bubbles on brk; sil-fr odor conn <b>"H"</b> LS, crm fn xln pr visible poro dense NSNO sc pieces wht chert Sh. blk carbonaceous Sh. gry. green, maroon conn <b>"I"</b> LS, crm fn xln Fossil & oil pr Fossilcast poro appears chalky 1-3 pieces v. lt. brwn spty stn; NSFO; no odor Sh. gry & green conn <b>"J"</b> LS, crm fn xln dolomitic pr-fr pinpoint poro lt brwn sat stn; S-FSFO; fr odor conn <b>"K"</b> Sh. gry. green, maroon conn <b>"L"</b> Sh. gry. green, maroon conn <b>B/KC</b> LS, crm-wht fn xln sil Fossil pr interpart poro NSNO LS, crm-wht fn xln sil Fossil pr visible poro NSNO Sh. gry. green, maroon LS, wht-gry fn xln pr visible poro; few pieces poss sdy NSNO Sh. gry & maroon conn <b>"M"</b> LS, wht fn xln pr visible poro dense NSNO Sh. dk gry, red conn <b>"N"</b> LS, wht-pink fn xln angular few pieces Fossil pr-fr interpart poro NSNO; med brwn sat stn; SSFO; no odor conn <b>Marmaton</b> Sh. dk gry, red LS, wht fn xln dense angular sm sil crv; rare pieces poss; lt brwn edge stn NSFO; no odor; abun pieces orange chert LS, wht fn xln pr interpart poro NSNO; med brwn spty stn; VSSFO; no odor; abun pieces wht, orange, and tan chert conn <b>"O"</b> LS, crm-wht fn xln pr interpart poro NSNO rare pieces orange and tan chert Sh. maroon & gry silty sdy Sh. AA conn <b>"P"</b> LS, tan-crm fn xln pr interpart poro NSNO sc pieces wht chert Sh. maroon & gry silty sdy Sh. AA conn <b>"Q"</b> Sh. dk gry; sm weathered kelly green; 1-2 pieces poss; yellow dolomitic LS conn <b>Arbuckie</b> Sh. gry & weathered kelly green few SS clusters med graind barren; friable clusters well sorted Dolo. wht-gry fn xln pr intxin poro NSNO conn <b>"R"</b> Dolo. crm-tan med xln fr intxin poro subrhombic barren NSNO Dolo. crm-tan fn med xln pr intxin poro barren NSNO sc wht chert Dolo. wht-pink fn med xln pr intxin poro barren sm rx w/sdy matrix NSNO Dolo. wht fn med xln pr fr intxin poro subrhombic barren NSNO conn <b>"S"</b> Dolo. wht-gry fn med xln pr fr intxin poro barren NSNO sc pieces tan chert	DST #1 1st Op: BOB 13' Weak Blowback; Died 21 minutes 2nd Op: BOB 19' No Blowback Rec: 248' MW (80%W, 20%M) 124' WM w/oil spots (25%W, 75%M) 18' VSOCWM (230, 93W, 90%M) 390' Total Fluid IFP: 34-97#/30' ISIP: 760#/30' FFP: 11195#/45' FSIP: 750#/45' Chlor: 44,000 ppm
3654		conn <b>Muncie Crk</b> LS, crm fn xln pr visible poro dense NSNO sc pieces wht chert Sh. blk carbonaceous	EL 3654 (-1377)
3700		conn <b>"T"</b> Sh. gry & green conn <b>"U"</b> Sh. gry. green, maroon conn <b>"V"</b> Sh. gry. green, maroon conn <b>"W"</b> LS, crm fn xln sil Fossil dense angular pr interpart poro few pieces dk brwn edge stn in angular pieces; NSFO; no odor Sh. v. dk gry conn <b>"X"</b> LS, crm-wht fn xln sil Fossil msty dense and chalky; pr interpart poro few pieces dk blk dolomitic dead edge stn; NSFO; no odor Sh. blk carbonaceous; dk gry, maroon conn <b>"Y"</b> LS, crm fn xln Fossil & oil pr interpart poro sm pieces dk brwn spty stn; sm heavy oil on brk; sil gassy odor Sh. gry. green, maroon, purple	Pipe Strap at 3618' 2.54 Board Short DST #2: 1st Op: BOB 24' Weak Blowback 2nd Op: BOB 21' Weak Blowback Rec: 20' GIP 5' Gassy Oil - Grav 36 124' MW w/scum oil (90%W, 10%M) 107' WM w/scum oil (10%W, 90%M) 236' Total Fluid IFP: 26-85#/30' ISIP: 827#/30' FFP: 76-130#/45' FSIP: 50,000 ppm
3800		conn <b>"Z"</b> LS, crm-wht fn xln sil Fossil pr interpart poro NSNO LS, crm-wht fn xln sil Fossil pr visible poro NSNO Sh. gry. green, maroon LS, wht-gry fn xln pr visible poro; few pieces poss sdy NSNO Sh. gry & maroon conn <b>"AA"</b> LS, wht fn xln pr visible poro dense NSNO Sh. dk gry, red conn <b>"AB"</b> LS, wht-pink fn xln angular few pieces Fossil pr-fr interpart poro NSNO; med brwn sat stn; SSFO; no odor conn <b>"AC"</b> Sh. dk gry, red conn <b>"AD"</b> LS, wht fn xln dense angular sm sil crv; rare pieces poss; lt brwn edge stn NSFO; no odor; abun pieces orange chert LS, wht fn xln pr interpart poro NSNO; med brwn spty stn; VSSFO; no odor; abun pieces wht, orange, and tan chert conn <b>"AE"</b> LS, crm-wht fn xln pr interpart poro NSNO rare pieces orange and tan chert Sh. maroon & gry silty sdy Sh. AA conn <b>"AF"</b> LS, tan-crm fn xln pr interpart poro NSNO sc pieces wht chert Sh. maroon & gry silty sdy Sh. AA conn <b>"AG"</b> Sh. dk gry; sm weathered kelly green; 1-2 pieces poss; yellow dolomitic LS conn <b>"AH"</b> Sh. gry & weathered kelly green few SS clusters med graind barren; friable clusters well sorted Dolo. wht-gry fn xln pr intxin poro NSNO conn <b>"AI"</b> Dolo. crm-tan med xln fr intxin poro subrhombic barren NSNO Dolo. crm-tan fn med xln pr intxin poro barren NSNO sc wht chert Dolo. wht-pink fn med xln pr intxin poro barren sm rx w/sdy matrix NSNO Dolo. wht fn med xln pr fr intxin poro subrhombic barren NSNO conn <b>"AJ"</b> Dolo. wht-gry fn med xln pr fr intxin poro barren NSNO sc pieces tan chert	DST #3: 1st Op: Weak Sfc; Died 28' No Blowback 2nd Op: No Blow; Flush No Help No Blowback Rec: 1 Mud IFP: 29-27#/30' ISIP: 29#/30' FFP: 25-22#/30' FSIP: 23#/30'
3856		conn <b>"AK"</b> LS, wht fn xln pr visible poro dense NSNO Sh. dk gry, red conn <b>"AL"</b> LS, wht-pink fn xln angular few pieces Fossil pr-fr interpart poro NSNO; med brwn sat stn; SSFO; no odor conn <b>"AM"</b> Sh. dk gry, red conn <b>"AN"</b> LS, wht fn xln dense angular sm sil crv; rare pieces poss; lt brwn edge stn NSFO; no odor; abun pieces orange chert LS, wht fn xln pr interpart poro NSNO; med brwn spty stn; VSSFO; no odor; abun pieces wht, orange, and tan chert conn <b>"AO"</b> LS, crm-wht fn xln pr interpart poro NSNO rare pieces orange and tan chert Sh. maroon & gry silty sdy Sh. AA conn <b>"AP"</b> LS, tan-crm fn xln pr interpart poro NSNO sc pieces wht chert Sh. maroon & gry silty sdy Sh. AA conn <b>"AQ"</b> Sh. dk gry; sm weathered kelly green; 1-2 pieces poss; yellow dolomitic LS conn <b>"AR"</b> Sh. gry & weathered kelly green few SS clusters med graind barren; friable clusters well sorted Dolo. wht-gry fn xln pr intxin poro NSNO conn <b>"AS"</b> Dolo. crm-tan med xln fr intxin poro subrhombic barren NSNO Dolo. crm-tan fn med xln pr intxin poro barren NSNO sc wht chert Dolo. wht-pink fn med xln pr intxin poro barren sm rx w/sdy matrix NSNO Dolo. wht fn med xln pr fr intxin poro subrhombic barren NSNO conn <b>"AT"</b> Dolo. wht-gry fn med xln pr fr intxin poro barren NSNO sc pieces tan chert	DST #4: 1st Op: Weak Sfc; Died 3' No Blowback 2nd Op: No Blow; Flush; No Help No Blowback Rec: 1 Mud IFP: 26-24#/30' ISIP: 24#/30' FFP: 27-27#/30' FSIP: 28#/30'
3961		conn <b>"AU"</b> LS, wht fn xln dense angular sm sil crv; rare pieces poss; lt brwn edge stn NSFO; no odor; abun pieces orange chert LS, wht fn xln pr interpart poro NSNO; med brwn spty stn; VSSFO; no odor; abun pieces wht, orange, and tan chert conn <b>"AV"</b> LS, crm-wht fn xln pr interpart poro NSNO rare pieces orange and tan chert Sh. maroon & gry silty sdy Sh. AA conn <b>"AW"</b> LS, tan-crm fn xln pr interpart poro NSNO sc pieces wht chert Sh. maroon & gry silty sdy Sh. AA conn <b>"AX"</b> Sh. dk gry; sm weathered kelly green; 1-2 pieces poss; yellow dolomitic LS conn <b>"AY"</b> Sh. gry & weathered kelly green few SS clusters med graind barren; friable clusters well sorted Dolo. wht-gry fn xln pr intxin poro NSNO conn <b>"AZ"</b> Dolo. crm-tan med xln fr intxin poro subrhombic barren NSNO Dolo. crm-tan fn med xln pr intxin poro barren NSNO sc wht chert Dolo. wht-pink fn med xln pr intxin poro barren sm rx w/sdy matrix NSNO Dolo. wht fn med xln pr fr intxin poro subrhombic barren NSNO conn <b>"BA"</b> Dolo. wht-gry fn med xln pr fr intxin poro barren NSNO sc pieces tan chert	EL 3961 (-1684)

ELEVATION: 2277 KB

OPERATOR: Russell Oil, Inc. LOCATION: 570FN & 330FW  
 LEASE: Bollig N WELL NO.: #10 SEC.: 10 TWP.: 1S RING.: 23W  
 API: 15-195-22786 FIELD: WaKeeney COUNTY: Trego STATE: Kansas

