WELLSITE GEOLOGIST'S REPORT

VERNON C. SCHRAUB
CONSULTANT GEOLOGIST

Scale 1:240 (5"x100') Imperial

Well Name: Dutoit #1-32
Location: SE NW NW NW SEC. 32-18s-30w
Licence Number: API: 15-101-22473
Spud Date: December 16, 2013
Surface Coordinates: 642' FNL & 638' FWL
X= 1379899, Y= 657100
Bottom Hole Coordinates:
Ground Elevation (ft): 2892' **K.B. Elevation (ft):** 2899'
Logged Interval (ft): 2800' To: ft TD **Total Depth (ft):** 4614'
Formation: DA4 Mississippi
Type of Drilling Fluid: Chemical Premix (Displaced)

Region: Lane Co., KS
Drilling Completed: January 4, 2013

Printed by MUDLOG from Wellsight Systems 1-800-447-1534 www.Wellsight.com

OPERATOR:

Company: Larson Engineering Inc.
Address: 562 West State Road 4
Olmitz, KS 67564-8561

DRILLING CONTRACTOR:

H. D. Drilling, LLC, Rig #3 (Company Tools)

DP 4.5" XH (16.64); DC 6.25" x 2.25" x 560', Kelly 40.30', Tool Joint 5.5"; Bit: JZ-HA20-Q, 7-7/8", jets 15-15-15, standard nozzels; rpm 80, WOB 35k; Kelly Bushing 7' above ground level; LeWayne "Lew" Tresner (tool pusher).

CASING:

Set 8-5/8" casing at 273'

CIRCULATION SYSTEM:

Continental EMSCO D-300, duplex, 6 x 14, 60-62 spm, Chemical, premix, displaced 3410 to 3422'; earth pits, Morgan Mud, Inc., Cade Lines.

OPEN HOLE LOGS:

DN, DI (SP) (Run-1); ML (Run-2); No Sonic; 5" detail LTD-3800; 2" DI to surface casing; LogTech-Pioneer Wireline, Hays, KS, Jerrod Long. Log total depth (4614') was equal to rotary total depth (4614').

DRILL STEM TEST #1:

LKC "H-Zone": Interval: 4126-4150 (24): Misrun due to stirriking a bridge at about 900-1200' with tool. HP: 871-687; Triloble Testing, Inc., Scott City, KS, Comelio "Cornbog" Landa III.

DRILL STEM TEST #2:

LKC "H-Zone": Interval: 4126-4150 (24): Blow: weak 1/4" IFP, no RB, weak surf blow FFP, no RB; Times: 5-15-15-30; Recovery: 5' mud w/oil spots; Pressures: HP: 2103-2090; SIP: 796-858; FP: 20-21, 21-23; BHT: 107 F; Triloble Testing, Inc., Scott City, KS, Samuel Esparza.

DRILL STEM TEST #3:

LKC "J-zone": Interval: 4200-4212 (12): Blow: weak inc to 5" IFP, weak surf RB ISIP, BOB 13 min FFP; 3/4" RB FSIP; Times: 5-15-15-30; Recovery: 20' GIP, 220' TF, 45' GO (15%G, 85%O, grav 31), 60' GOWCM (10%G, 20%O, 30%W, 40%M, Rw 0.273 at 30 F, chlorides: Pressures: HP: 2124-2055, SIP: 742-734, FP: 19-61, 64-115; BHT: 122 F; Triloble Testing, Inc., Scott City, KS, Samuel Esparza.

DRILL STEM TEST #4:

LKC "K-zone": Interval: 4230-4242 (12): Blow: weak inc 1/4" IFP, surf RB, weak inc 6.5" FFP, surf RB; Times: 5-15-15-30; Recovery: 220' TF oil spots; 90' gas in pipe; Grindouts: 40' WCM (20%W, 70%M), 150' MW (90%W, 10%M, Rw 0.234 at 42 F, chlorides 62k); Pressures: HP: 2137-2048, SIP: 593-595, FP: 18-55, 62-112; BHT: 126 F; Triloble Testing, Inc., Scott City, KS, Samuel Esparza.

DRILL STEM TEST #5

Pleasanton: Interval: 4310-4315 (15): Blow: weak inc= 1" IFP, no RB, weak inc= 1-3/4" FFP, no RB; Times: 5-15-15-30; Recovery: 10' mud w/oil spots; Pressures: HP: 2132-2064, SIP: 804-789, FP: 16-22, 23-38; BHT: 116 F; Triloble Testing, Inc., Scott City, KS, Samuel Esparza.

DRILL STEM TEST #6

Marmaton: Interval: 4329-4380 (51): Blow: weak incr 1/8" IFP, weak surf RB, BOB 7 min FFP, no RB; Times: 5-15-20-60; Recovery: 5'W TF; Grindouts: 10'W (50%W, 50%M), 60'MW (90%W, 20%M, Rw 0.261 at 43 F, chlorides 42k); Pressures: HP: 2126-2037, SIP: 1054-866, FP: 44-121, 120-260; BHT: 127 F; Triloble Testing, Inc., Scott City, KS, Samuel Esparza.

DRILL STEM TEST #7

Altamont: Interval: 4378-4395 (17): Blow: weak incr 8" IFP, weak surf RB, BOB 9 min FFP, weak surf RB; Times: 5-15-15-30; Recovery: 340' TF; Grindouts: 90' SOCWM (5%O, 35%W, 60%M) & 250' MW (90%W, 10%M, Rw 0.258 at 33 F, chlorides 60k); Pressures: HP: 2141-2121, SIP: 873-762, FP: 32-91, 96-166; BHT: 130 F; Triloble Testing, Inc., Scott City, KS, Samuel Esparza.

DRILL STEM TEST #8

Pawnee thru Cherokee: Interval: 4432-4570 (138): Blow: weak 1/4" IFP, no RB, weak surf FFP, no RB; Times: 5-15-15-30; Recovery: 10'OIL (100%O, no show); Pressures: HP: 2136-2093, SIP: 1005-902, FP: 19-23, 27-35; BHT: 114 F; Triloble Testing, Inc., Scott City, KS, Samuel Esparza.

ROP (min/ft) | Flow | Tan | DST | Lithology | Sample Depth | Geological Descriptions | Total Gas | TG (units) | Fifty | Ow

2800

2800 LS: 9 grayish brown; vf-stat; dense to chalky in part; no visible porosity; N.S.

LS: white to 9 grayish brown; mic-vf stat; soft chalk; poor porosity; N.S.

LS: 9 brown; vf-stat; rough textured; dense; soft chalk; pyritic; poor porosity; N.S.

LS: 9 brown; vf-stat; dense to sl chalky in part; no visible porosity; N.S.

LS: 9 med grayish brown; mic-vf stat; chalky to argil; rough; poor porosity; N.S.

LS: med grayish brown w/scattered dk gray grains; mic-vf stat; mostly dense; rough; N.S.

LS: grayish brown; vf-stat; chalky to dense; trc fos visible porosity; N.S.

2900

HEEBNER 3907 (-1008)
Dominant fauna:
Shale: black; trace 3020.

Shale: gray, green; silty in part; marly;

LS: white to 9 brown; mic-vf stat; dense to chalky; trc spag chert; poor porosity; N.S., good mp SHS.

LS: as above.

LANSING 3947 (-1048)

LS: 9 brown; vf-stat; dense to chalky oolitic; blocky to rough; tight in oil porosity; N.S. starts 3960, incr 3970.

LS: 9 brown; vf-stat; dense; blocky; oolitic; minor opaq chert; no visible porosity; N.S.

Shale: gray;

LS: 9 brown; vf-stat; dense oolitic & soft chalk; minor opaq chert; tight inf oil porosity; N.S.

Shale: grays

LS: 9 brown; vf-stat; dense to chalky; oolitic in part; trc opaq chert; v-poor porosity; only dull fluor; N.S.

LS: as above;

Shale: gray, greenish gray; trc marroon;

LS: white to 9 brown; mic-vf stat; v-chalky oolitic; poor inf oil porosity; N.S. or fluor; 4040 30 s 60 min.

LS: white, 9 brown; mic-vf stat; chalky; poorly expressed oolite, poor osmotic porosity; N.S.

LS: 9 red brown; vf-stat; chalky to dense; poor porosity; N.S.

LS: 9 med brown; vf-stat; dense; sil fos; poor porosity; N.S.

LS: as above;

LS: white, 9 gray; vf-stat; oolitic - osmotic; poor porosity; N.S.

LS: white, 9 gray; vf-stat; dense to chalky; poor osp porosity; N.S.

MUNCIE CREEK 4127 (-1228)
Shale: black; carbon; few chips 4140.
LS: med-dk grayish brown; vf-stat; fos in part; sparsely oolitic; dense; no visible porosity; N.S.
LS: 9 med grayish brown; vf-stat; oolitic in part; trc coarse calcite; frt fine vug porosity w/dab dry stain, dull fluor, no visible oil; 4150, 4155-30m.

LS: 9 brown; mic-vf stat; dense to chalky in part; no visible porosity; N.S.

Shale: gray; pyritic;
LS: med brown; vf-stat; dense; rough; poor porosity; N.S.

LS: white to 9 gray; mic-vf stat; dense to chalky; oolitic in part; rough; poor porosity; N.S.

LS: white to 9 gray; mic-vf stat; dense to chalky; oolitic in part; rough; poor porosity; 4160, 4165-30m.

LS: 9 brown, 9 gray; vf-stat; coarse osmotic; osmotic trc spotted dry stain, sil show oil; 80% barren, 4210-30 min.

LS: as above but N.S.

LS: 9 gray to brown; vf-stat; dense; pelsty; chalky in part; no visible porosity; N.S.

STARK SH 4230 (-1321)
Shale: black; carbon; trace 4240.
LS: 9 brown; vf-stat; dense, blocky; N.S.
LS: 9 brown; vf-stat; trc regular porosity w/spotted stain & fluor; no visible oil; 4250-30m; soft, white chalk 50 min.

LS: white to 9 brown; mic-vf stat; chalky to dense; no visible porosity; N.S.

LS: as above w/trace gray to brown, opaq chert; N.S.

HUSHPUCKNEY 4270 (-1371)
Shale: black; trace 4270-80 min.
LS: med-dk grayish brown; vf-stat; dense, blocky; sil fos; no visible porosity; N.S.
LS: 9 med brown; vf-stat; sil fos-frag; trc oolitic; sil chalky; slight inf granular porosity; no fluor; N.S.

LS: 9 med gray & brown; vf-stat; dense to chalky in part; trc spag chert; no visible porosity; N.S.

LS: 9 med grayish brown; vf-stat; dense; no visible porosity; N.S.

LS: 9 med grayish brown; vf-stat; dense; chalky; pyritic; scattered vug porosity; spotted fluor & dry stain; crush sh show unfavorable oil; trc gilsonite stains; 4380, dead 30 min.

LS: 9 brown; vf-stat; few fine drusy vugs w/spotted dry stain & speckled fluor; no visible oil; 4385-30 min.

LS: off white to 9 grayish brown; mic-vf stat; dense to chalky in part; no visible porosity; N.S.

LS: 9 gray; vf-stat; dense to chalky; trace maroon sh contact; no visible porosity; N.S.

LS: off white to 9 grayish-brown; vf-stat; dense to chalky; no visible porosity; N.S.

LS: med brown; vf-stat; dense to sil chalky; no visible porosity; N.S.

LS: dk gray, trace black, carbon; 4450.

PAWNEE 4434 (-1533)

LS: 9 gray; mic-vf stat; dense to chalky in part; trace few drusy vugular porosity, spotted to even fluor; v-v spotted stain, no visible oil; 4460, trc/ 4470.

Shale: black; carbon; few chips 4470.
LS: wht to 9 brown; vf-stat; poorly expressed oolitic; trc coarse vug porosity w/spotted 9 brn stain & fluor; no visible oil; 4480.
LS: 9 gray; vf-stat; white - gray, opaq chert; N.S.

FT SCOTT 4481 (-1582)
LS: 9 med brown; vf-stat; dense; sol darker; trc-mainly, to spotted dry stain; trc vug w/spotted fluor & 1 stain, no visible oil; 4500.

LS: as above w/minimal fluor & N.S.

LS: med-dk grayish brown; vf-stat; dark oolitic; poor porosity; N.S.

CHEROKEE SH 4507 (-1608)
Shale: black; carbon;

LS: 9 gray; vf-stat; dense to chalky; trace vf oolitic porosity w/dull brown dry stain & fluor; no visible oil; 4530.

LS: 9 brown, vf-stat; fluted coral, some barren, trc w/dark spotted oil stain, no fluor; v-sl show oil; also scattered vug w/spotted dry stain; 4560, 4570-30 min.

Shale: gray, green; w/SHSI: white, green; N.S., 4576-60 min.

EROS MISS. 4571 (-1672)
LS: 9 brown, cream; vf-stat; oolitic in part; dense to chalky in part; includes much various sh, prob erosional? N.S.

LS: 9 brown; mic-vf stat; dense to chalky; sil granular; shaley; N.S.

LS: as above; very shaley;

ROTARY TOTAL DEPTH 4614 (-1715)

Bit Record

No.	Size	Type	In	Out	Footage	Hours
1	7-7/8	JZ-HA20-Q	273	4614	4341	84.5

SHUT DOWN FOR CHRISTMAS 12/23/12 TO 12/27/12 AFTER DRILLING TO 2800'; DRILLED 1 HR AFTER DIFFICULT, DRILL AHEAD ABOUT 3 PM.

AMVORTE 2184 (-705)
BLAIRMT 2356 (-457)

Bit Record

No.	Size	Type	In	Out	Footage	Hours

SHUT DOWN TO STANDARD IT 4114 CIRC 15 MIN BEFORE & 30 MIN AFTER.

DST #1: 3-ZONE: 4126-4150: MISSRUN; NET SPRING AMOUNT 100'.

DST #2: H-ZONE: 4126-4150: WEAK BLOW; 5-15-15-30; 5' MUD; SIP: 796-858; FP: 20-21, 21-23.

DST #3: J-ZONE: 4200-4212: WEAK BLOW; 5-15-15-30; 20' GIP, 220' TF, 45' GO (15%G, 85%O, grav 31), 60' GOWCM (10%G, 20%O, 30%W, 40%M, Rw 0.273 at 30 F, chlorides: Pressures: HP: 2124-2055, SIP: 742-734, FP: 19-61, 64-115; BHT: 122 F; Triloble Testing, Inc., Scott City, KS, Samuel Esparza.

DST #4: K-ZONE: 4230-4242: WEAK BLOW; 5-15-15-30; 220' TF OIL SPOTS; 90' GAS IN PIPE; GRINDOUTS: 40' WCM (20%W, 70%M), 150' MW (90%W, 10%M, Rw 0.234 at 42 F, chlorides 62k); PRESSURES: HP: 2137-2048, SIP: 593-595, FP: 18-55, 62-112; BHT: 126 F; Triloble Testing, Inc., Scott City, KS, Samuel Esparza.

DST #5: PLEASANTON: 4310-4315: WEAK BLOW; 5-15-15-30; 10' MUD; SIP: 804-789; FP: 16-22, 23-38; BHT: 116 F; Triloble Testing, Inc., Scott City, KS, Samuel Esparza.

DST #6: MARMATON: 4329-4380: WEAK BLOW; 5-15-20-60; 5'W TF; GRINDOUTS: 10'W (50%W, 50%M), 60'MW (90%W, 20%M, Rw 0.261 at 43 F, chlorides 42k); PRESSURES: HP: 2126-2037; SIP: 1054-866; FP: 44-121, 120-260; BHT: 127 F; Triloble Testing, Inc., Scott City, KS, Samuel Esparza.

DST #7: ALTAMONT: 4378-4395: WEAK BLOW; 5-15-15-30; 340' TF; GRINDOUTS: 90' SOCWM (5%O, 35%W, 60%M) & 250' MW (90%W, 10%M, Rw 0.258 at 33 F, chlorides 60k); PRESSURES: HP: 2141-2121; SIP: 873-762; FP: 32-91, 96-166; BHT: 130 F; Triloble Testing, Inc., Scott City, KS, Samuel Esparza.

DST #8: PAWNEE THRU CHEROKEE: 4432-4570: WEAK BLOW; 5-15-15-30; 10'OIL (100%O, NO SHOW); PRESSURES: HP: 2136-2093; SIP: 1005-902; FP: 19-23, 27-35; BHT: 114 F; Triloble Testing, Inc., Scott City, KS, Samuel Esparza.

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DST #8: PAWNEE THRU CHEROKEE: 4432-4570: WEAK BLOW; 5-15-15-30; 10'OIL (100%O, NO SHOW); PRESSURES: HP: 2136-2093; SIP: 1005-902; FP: 19-23, 27-35; BHT: 114 F; Triloble Testing, Inc., Scott City, KS, Samuel Esparza.