



Well Name: LIVINGSTON-KSU #1-26 Location: N/2 NE NE NE SEC. 26-16S-25W Region: Ness Co., KS Drilling Completed: May 26, 2015 **Licence Number: API:15-135-25870**

Scale 1:240 (5"=100') Imperial

Spud Date: May 17, 2015 Surface Coordinates: 157' FNL & 330' FWL **Bottom Hole**

Coordinates: Ground Elevation (ft): 2566' K.B. Elevation (ft): 2575' Total Depth (ft): 4605' Logged Interval (ft): 3800' T Formation: Mississippi To: RTD

Type of Drilling Fluid: Chemical Premix (Displaced)
Printed by MUD.LOG 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 (Co. Tools)

DP 4.5" XH (16.6#); DC 6-1/4" x 2-3/8" x 556', Kelly 40.30', Tool Joint 5.5"; Bit: JZ-HA20Q, 7-7/8", standard jets 15-15-15; rpm 80, WOB 35k; Kelly Bushing 9' above ground level; LeWayne "Lew" Tresner (tool pusher). **CASING:**

Set 8-5/8" casing at 254'

Continental EMSCO D-300, duplex, 6 x 14, 60-62 spm, Chemical, premix, earth pits, Mud Co., Service Mud, Inc., Jason Whiting.

CIRCULATION SYSTEM:

OPEN HOLE LOGS:

DN, DI (SP) (Run-1); ML (Run-2); No Sonic; 5" detail LTD-3600; 2" DI to suface casing; LogTech-Pioneer Wireline, Hays, KS, J. Hendrickson, Log total depth (4603') was two feet high to rotary total depth (4605').

DRILL STEM TEST #1: Upper Ft. Scott: Interval: 4400-4430 (30'): Blow: weak, surface IFP, no RB, no blow 2nd open; 5-15-15-30; Recovery: 1' mud; HP: 2216-2185; SIP: 31-28; FP: 23-25, 26-25; BHT: 117 F; Trilobite Testing, Inc., Scott City, KS, Bradley "Walt" Walter.													
DRILL STEM TEST #2: Lower Ft. Scott: Interval: 4432-4447 (15'): Blow: weak incr. to 1/2" IFP, no RB, surface blow FFP, no RB; Times: 5-15-30-60: Recovery: 20' mud w/oil spots; HP: 2191-2132; SIP: 603-648; FP: 12-16, 17-22; BHT: 116 F; Trilobite Testing, Inc., Scott City, KS, Bradley "Walt" Walter.													
DRILL STEM TEST #3: Mississippi Dolomite: Interval: 4484-4535 (51'): Blow: weak incr. to 1-1/2" IFP, no RB, weak incr to 1-1/2" in 10 min and 5" in 30 min FFP, no RB; Times: 5-15-30-60: Recovery: 100' GIP, 140' TF: Grindout: 70' gassy oil (15%G, 85%O, grav 39), 70' HOCM (10%G, 40%O, 50%M), no water; HP: 2242-2185; SIP: 871-874; FP: 18-36, 41-73; BHT: 123 F; Trilobite Testing, Inc., Scott City, KS, Bradley "Walt" Walter.													
ROP ROP (min/ft) Five Ten	Lithology Perceity and Show		Geological Descriptions	Fi	G (un ifty ne	iits)	T	otal	Gas	1	<u>-</u>	_	- -
D ROP 115				0				Hot-	Wire		=		100
	3800		LS: It-md grayish brown; vf-xtal; dense; no visible porosity; N.S., with dk gray, sli fos shale;										
			LS: It brown; vf-xtal; sli chalky; rought textured; finely fos-fragmental; tight int frag porosity; N.S., 3840. LS: It-md grayish brown; some soft, white chalk; poor porosity; N.S.										
	3850		LS: It grayish brown; mic-vf xtal; v-chalky in part; sli fos-frag.; poor porosity; N.S.										
			LS: as above; LS: md-dk grayish brown; vf-xtal; dense; shaley in part; no visible porosity; N.S.										
Hb			LS: as above; HEEBNER 3884 (-1309) Shale: black; carbon; only few chips 3900. LS: dense; indistinct;										
→ TOR	3300	2900	Shale: green, gray; marly; 3910. LS: off-white; mic-vf xtal; chalky; even dull mineral fluor distinct from that above; trc pin-pt porosity;										
LAN			N.S., 3920. LS: as above but includes white, opaq. chert; 3930. LANSING 3921 (-1346) LS: off-white to It gray-brn; vf-xtal; oolitic to	-VIS 4	17, WT	9.0, F	IL 8.8						
			oomoldic; poor-fair oomoldic porosity; N.S., 3940. LS: grayish brown; vf-xtal; white to gray, opaq. cherts; no visible porosity; N.S. Shale: gray, green;										
	3950	Cac	LS: It-md grayish brown; vf-xtal; dense; no visible porosity; N.S. Shale: gray, green; LS: It grayish brown; vf-xtal; chalky in part; sli cherty;										
			no visible porosity; N.S. LS: It brown; vf-xtal; sli chalky; trc chert; v-poor pin-pt porosity; N.S.										
			LS: It grayish brown; vf-xtal; chalky to dense; no										
0 ROP 15	0004	4000	visible porosity; N.S. LS: It brown; mic-vf xtal; chalky in part; sli granular; poor int gran porosity; N.S.	0				Hot-	Wire				100
G-Zone			LS: md-dk grayish brown; vf-xtal; dense; no visible porosity; N.S. LS: md-dk brown; vf-xtal; oolitic~oomoldic; med-coarse oomoldic porosity; N.S., 4060.										
	4050		LS: as above;										
			LS: It brown to off-white; mic-vf xtal; dense to chalky; poor porosity; N.S. LS: as above with opaq. cherts;										
MUNCIE.			Shale: dk gray, green; LS: It-md brown; vf-xtal; dense; no visible porosity; N.S. Shales: gray, green;										
	4100		LS: It grayish brown; vf-xtal; tight int xtal porosity; N.S.										
			LS: It brown; vf-xtal; minor chalk; mostly dense; no visible porosity; N.S. LS: It brown, some dk grayish brown; vf-xtal; dense;										
			no visible porosity; N.S. LS: as above; w/minor gray, green shales;										
-STARK	4150	4130	LS: It gray to brown; vf-xtal; med oolitic to oomoldic; poor-fair oomoldic porosity; N.S., 4170.										
			Shale: dk gray, trace black; 4180. LS: It-md grayish brown; vf-xtal; no visible porosity; N.S. LS: It-md grayish brown; mic-vf xtal; chalky; poor										
HUSH			porosity; N.S. LS: as above with much opaq. chert; 4200. HUSHPUCKNEY 4196 (-1621) Shale: mostly dk-gray, less black; washes 4210 gray;										
0 ROP 15	4200		LS: It grayish brown; vf-xtal; dense; no visible porosity; N.S., floods 4230.	0				Hot-	Wire				100
			Shale: med to dk gray; Shale: gray; marly; LS: It gray; vf-xtal; dense; no visible porosity; N.S.										
	4250	4530	Shale: green w/trace black; mottled in part; 4250.										
MARM			Shale: dk gray; 4270. Shale: gray, maroon; marly; MARMATON 4264 (-1689) LS: gray; vf-xtal; mostly dense but appears somewhat argillaceous; no visible porosity; N.S.										
MARM 'A'	F		Shale: gray; LS: It-md gray; vf-xtal; dense; no visible porosity; N.S. LS: It gray; vf-xtal; chalky in part; trace poorly defined coral; mineral fluor; no visible por.; N.S., 4300.										
	4	4500	LS: It brown to gray; vf-xtal; dense, blocky; no visible porosity; N.S. LS: It-md grayish brown; vf-xtal; dense to chalky in										
			LS: It-md grayish brown; vf-xtal; dense to chalky in part; with some greenish calc. sh.; no visible porosity; N.S. LS: as above but w/incr calc. sh. and minor marl; N.S.										
PAW			LS: shaley/marly; no visible porosity; N.S. Shale: green, gray, less dk gray to black; PAWNEE 4344 (-1769) LS: lt-md grayish brown; vf-xtal; dense to chalky;										
	4350	4330	somewhat argillaceous; no visible porosity; N.S. LS: It brown to gray; vf-xtal; dense; N.S., w/grayish shales;										
			LS: md-dk grayish brown; vf-xtal; shaley; no visible porosity; N.S.	-VIS	51, WT	9.3, F	IL 7.6-						
SHORT TRIP — DSTI #1:	4400		Trip samples.				CONN			RT TR	IP 15 S	TANE	DS, _
-LABETTE			Shale: dk gray; probably slough in part? Shale: black: carbon.: 4430. FT. SCOTT 4421 (-1847)	BLO		5-15-		T. SC	тто		00-443		WK -
	•		LS: dk brown; vf-xtal; tough; few chips coarse vug por.; spttd yel fluor; trc clear oil; lt brn lime below w/fine vug, fluor, trc clear oil; only sli dry stain & fluor; no odor; 5-10% of 30, 60 min. LS: lt-gray; mic-vf xtal; sli fos-frag; tough matrix w/ fine vug porosity; spotted fluor 10-20% of 30 min.; sli	BLO		15-15	5-30-6				32-444 SIP: 60		
- CHER 4447 O	4450	4430	show md-brn oil; no odor; only sli dry stain & fluor; 4447-30,60 min. CHEROKEE SH 4447 (-1872) LS: It brown; vf-xtal; dense; no visible porosity; N.S. Shale: green, gray; 4470.				FIL 7.6						
			LS: It brown; vf-xtal; scattered fine vug porosity; spotted stain & fluor.; no visible oil; 1-2 chips/tray; 4470. Shale: green, gray;										
- DS11 #3:	•		LS: It brown; vf-xtal; sli fos; scattered fine vug por., spotted stain & fluor; trace 4480, 4490. Shale: green, minor gray; mottled in part; sli- silty;										
	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	4200	Cong: green to maroon shale, various oxidized chert; N.S. Cong: oxidized chert & maroon, marly shale; N.S., thru to 4526 sample.										
- LT-BRN DOL			LIME CONGLOMERATE 4513 (-1938) Cong: oxidized chert, lime, coarse quartz; fine vug & int-gran porosity; spotted fluor & stain, SSO; trc dolomite; 4226-30 min. MISS DOL 4529 (-1954) Dol: It brown; vf-xtal, sucrosic in part; tough;	BLO	DW, 5	" FF	P; 5-	15-30)-60;	100'	5: WK GIP, 7 36, 41	70' M	1O, 🖠
4535 O	7 7 F •		Dol: It brown; vf-xtal, sucrosic in part; tough; fine-med vug porosity; spotted to even fluor; fair show dk brown oil; 50% of 4535-30, 60 min. Dol: as above: continued sucrosic w/dk brown, spotted to sat. dry stain & fluor; F.S.O.; 4547- 30,60 min.	-VIS !	57, WT	9.4, F	IL 8.0						
	4550		Dol: as above: continued fluor & S.O.; 30-50% of 4555, 4560, 4570. LS: It-brown; vf-xtal; dense; sli fos (coral); no visible										

LS: It-brown; vf-xtal; dense; sli fos (coral); no visible porosity; N.S., minor It-green & maroon sh.; decreasing shows as above 4580.

Dol: white: vf-xtal; appears chalky but still delayed acid react.; v-tight int xtal porosity; trc sli spotted stain & vf-vug porosity; (decr. shows as above are probably float ?) 4590, 4600;

Dol: white as above: v-tight int xtal porosity; N.S. (much decrease in shows which are probably float); 4605, 4605-30, 60 min.

ROTARY TOTAL DEPTH 4605 (-2030)

Hot-Wire

PIONEER WIRELINE SERVICES LTD 4603.

100

RTD 5:57 pm 05/26/2015