

WELLSITE GEOLOGIST'S REPORT

VERNON C. SCHRAG
CONSULTANT GEOLOGIST



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

Well Name: RUDER UNIT #1-36
Location: SW SW NW SE Sec. 36-10s-24w
Licence Number: API: 15-065-23800
Spud Date: January 13, 2012
Surface Coordinates: 1430' FSL 2600 FEL

Region: Graham Co., KS
Drilling Completed: January 22, 2012

Bottom Hole Coordinates:	Vertical Hole
Ground Elevation (ft): 2355'	K.B. Elevation (ft): 2360'
Logged Interval (ft): 3350'	To: RTD Total Depth (ft): 4325'
Formation: Mississippi	
Type of Drilling Fluid: Chemical Premix (Displaced)	

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR:

Company: Murfin Drilling Co., Inc.
Address: 250 North Water
Suite 300
Wichita, KS 67202-1216

DRILLING CONTRACTOR:

Murfin Drilling Company, Rig #16

DP 4.5" XH (16.6#); DC 6.25" x 2.50" x 415.17', Kelly + Sub 41.75', Tool Joint 5.5" ; Bit: HTC GXZOC, 7-7/8", jets 16-16-18; Kelly Bushing 5' above ground level; Andy Dinkel (tool pusher).

SURFACE CASING:

Set 8-5/8" casing at 219' (23#)

CIRCULATION SYSTEM:

Pump: EMSCO D-375, duplex, 6 x 14, 2" rod, 62 spm, Chemical, premix, Morgan Mud, Inc., McCook, Nebraska, David Lines.

GAS DETECTION SYSTEM:

None.

DRILL STEM TEST #1:

Zone: Toronto: Test Interval: 3669-3700' (31' anchor); Blow: weak incr 1.75" IFP, weak surf RB, no blow 2nd open, weak surf blow after 15 min FFP, no RB; Time Periods: 30-60-30-60; Recovery: 2' mud w/show of oil (100% M); Pressures: HP: 1794-1787; SIP: 1017-951, FP: 18-21, 37-23; BHT: 103 F; dual packers, safety joint, no jars, 29' DC; Trilobite Testing, Inc., Hays, KS, Jeff Brown.

DRILL STEM TEST #2:

Zone: Lansing "B" & "D": Test Interval: 3727-3758 (31' anchor); Blow: BOB in 30 sec IFP, RB BOB in 12 min ISIP, BOB 1 min FFP, BOB RB 4.5 min FSIP w/GTS; Time Periods: 30-60-30-90; Recovery: 2457' TF (examined 2 stands & reversed out); 2331' GO (20% G, 80% O, 34 grav, 6.25 ppg), 126' MWGO (20% W, 20% M, 60% O, R_w 0.151 at 43 F, chlorides 85k); Pressures: HP: 1821-1779, SIP: 994-993, FP: 274-594, 615-798; BHT 117 F; dual packers, safety joint, no jars, 29' DC; Trilobite Testing, Inc., Hays, KS, Jeff Brown.

DRILL STEM TEST #3:

Zone: Lansing "E" & "F": Test Interval: 3769-3794' (25' anchor); Blow: BOB in 22 min IFP, no RB, BOB 28 min FFP, no RB; Time Periods: 30-60-60-90; Recovery: 262' TF, 63' MW w/oil spots (10% M, 90% W), 199' MW (15% M, 85% W, R_w 0.193 at 26.2 F, chlorides 112k), Pressures: HP: 1854-1815, SIP: 943-929; FP: 23-78, 81-162; BHT 114 F; dual packers, safety joint, no jars, 29' DC; Trilobite Testing, Inc., Hays, KS, Jeff Brown.

DRILL STEM TEST #4:

Zone: Kans. City "H", "I": Test Interval: 3831-3880 (49' anchor); Blow: weak incr 3.5" IFP, surf RB, weak incr 3" FFP, surf RB incr 3/4"; Time Periods: 30-60-60-90; Recovery: 60' TF, 5' OCWM (10% O, 30% W, 60% M), 55' MW w/scum oil (50% M, 50% W, R_w 0.38 at 35.4 F, chlorides 38k); Pressures: HP: 1929-1902, SIP: 1159-1121; FP: 37-51, 55-63; BHT: 107 F; dual packers, safety joint, no jars, 29' DC; Trilobite Testing, Inc., Hays, KS, Jeff Brown.

DRILL STEM TEST #5:

Zone: Kans. City "J": Test Interval: 3875-3899 (24' anchor); Blow: BOB 12 min IFP, 6" RB, BOB 30 min FFP, 1.5" RB died in 45 min; Time Periods: 30-60-60-90; Recovery: 724' GIP, 194' TF, 116' GO (25% G, 75% O, 31 Grav), 78' HOCGM (20% G, 35% O, 45% M); Pressures: HP: 1945-1898, SIP: 1213-1217; FP: 24-48, 58-92; BHT: 113 F; dual packers, safety joint, no jars, 29' DC; Trilobite Testing, Inc., Hays, KS, Jeff Brown.

DRILL STEM TEST #6:

Zone: Kans. City "K": Test Interval: 3897-3915 (18' anchor); Blow: BOB 3 min IFP, 4" RB, BOB 4.5 min FFP, 4" RB; Time Periods: 30-60-60-90; Recovery: 1033' TF; 46' GO (5% G, 95% O, 30 Grav); 126' SOCWM (5% O, 30% W, 65% M); 861' MW w/scum of oil (10% M, 90% W); Pressures: HP: 1952-1893; SIP: 1119-1068; FP: 58-250, 264-494; BHT: 119 F; dual packers, safety joint, no jars, 29' DC; Trilobite Testing, Inc., Hays, KS, Jeff Brown.

OPEN HOLE LOGS:

DN, DI (SP) (Run-1); ML/Sonic (Run-2); 5" detail LTD-3300; 2" DI to surface casing; LogTech-Pioneer Wireline, Hays, KS, B. Becker, Log total depth (4327') was two feet low to rotary total depth (4325').

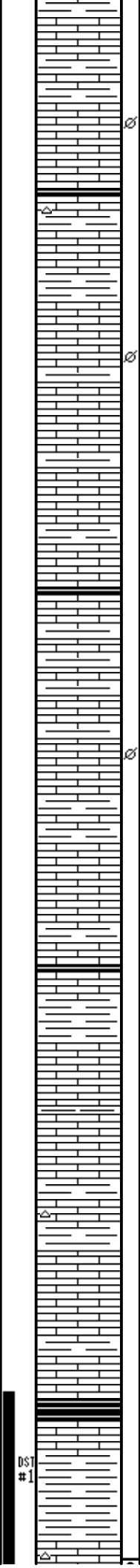
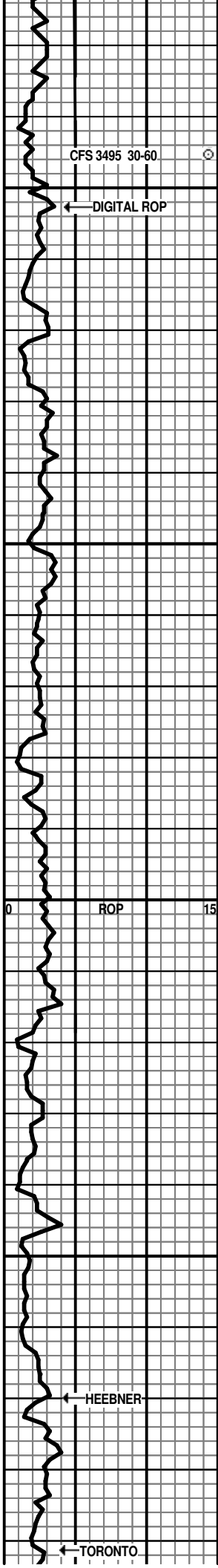
COMPLETION:

Oil Well.

7AM DAILY ACTIVITY:

01/13: MIRT, SPUD
 01/14: 470' Drilling
 01/15: 2440' Drilling, dev 1/2 at 2353'
 01/16: 3115' Drilling, Call 10:19 am
 01/17: 3700' DST #1
 01/18: 3758' DST #2
 01/19: 3793' DST #3
 01/20: 3899' DST #5
 01/21: 3915' DST #6
 01/22: 4325 RTD @ 6:12 am, Released 1:55 pm

<p align="center">ROP ROP (min/ft) ———</p>		<p align="center">DST</p>	<p align="center">Lithology</p>	<p align="center"><small>Porosity and Shows</small></p>	<p align="center">Depth</p>	<p align="center">Geological Descriptions</p>	<p align="center">Total Gas</p>
					<p align="center">3350</p> <p>Shale & Silst: calc; phosphatic; LS: even lt-brown; mic-vf xtal; with much white, soft chalk; v-tight int xtal porosity; no shows; 3370.</p> <p>LS: med-brown w/ dark gray spots & streaks; vf-xtal; chalky to argill in part; no visible porosity; no shows; 3390.</p> <p>LS: med-brown; vf-xtal; dense; trc crinoids, fusulinids; no visible porosity; no shows;</p> <p align="center">3400</p> <p>Shale: dk gray, trace 3410.</p> <p>Shale: gray, greenish gray; calcareous;</p> <p>LS: med brown, grayish brown; vf-xtal; fusulinids, shell frags; no visible porosity; no shows; 3430.</p> <p>LS: grayish-brown, dk gray streaks & spots; fos as above; shaley; poor apparent porosity; no shows;</p> <p>Shale: gray, greenish-gray;</p> <p align="center">3450</p> <p>Shale/Siltst: marly, soft, sticky; silty in part; greenish, gray; 3460.</p> <p>TOPEKA 3452 (-1092) LS: lt-med brown; mic-vf xtal; chalky in part; fusulinids; poor apparent porosity; no shows; 3470.</p> <p>LS: as above; also grayish-brown, shaley; fos;</p>	<p align="center">GEO ON LOC ABOUT 3330.</p> <p align="center">MORGAN MUD: 3390: 01/16-4pm: VIS 73, WT 8.6, WL 6.0, CHL 800, pH: 11.5, LCM trace.</p>	



LS: brown, grayish-brn; mic-vf xtal; shell frags; dense; no visible porosity; no shows;

LS: lt-brown; vf-xtal; finely oolitic in part; fos-frag; chalky in part; tight int xtal & scattered vug porosity; no shows;

3500
 LS: med-brn, grayish-brn, some w/dk gray spots; mic-vf xtal; trc black chert & sh; soft chalk; no visible porosity; no shows; 3510.
 LS: med brown w/scattered dk gray specks; vf-xtal; fos-frag; fusulinids; shell frags; various chert; soft chalk; tight int xtal porosity; no shows;

3550
 LS: med brown; vf-xtal; chalky in part; rough; trc coarse calcites; oolitic & fos-frag in part; fair inter grain porosity; no shows; 3540.
 LS: med-brown; vf-xtal; dense; sli fos; no visible porosity; no shows;

LS: lt brown w/scattered med-dk gray spots & streaks; shaley; fos; soft chalk; poor apparent porosity; no shows;

LS: as above, trc chert;

LS: med-brown w/dk gray, rounded grains; vf-xtal; marly; no visible porosity; no shows;

LS: as above;

LS: med-brown; vf-f xtal; scattered fine vug & pin point porosity; tight int xtal porosity; no shows; 3690.

LS: med-brown; vf-xtal; dense; poor apparent porosity; no shows;

3600
 LS: lt-md brown; vf-xtal; sli cherty; chalky in part; no visible porosity; no shows;

Shale: green; 3620.

LS: lt-md brown; vf-xtal; fusulinids; mostly dense; trc chert; sli chalky; poor apparent porosity; no shows; 3630.

LS: as above; trc shells;

LS: lt-brown; vf-xtal; much lt-brown, opa, fos chert; minor soft chalk; no vis por; N.S. 3660.

3650
 LS: lt-brown; mic-vf xtal; much soft chalk; trc fos-moldic porosity; no shows;

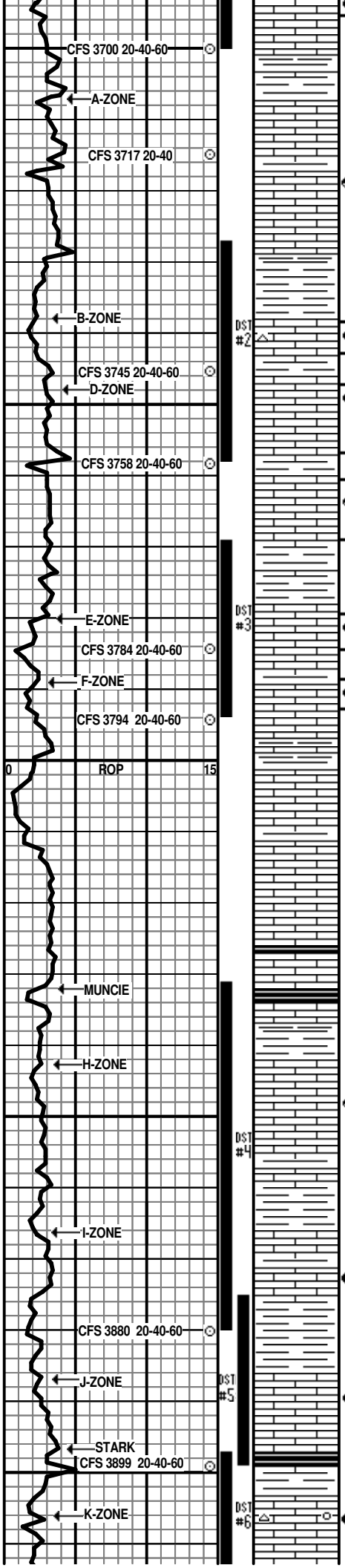
HEEBNER 3670 (-1310)
 Shale: black; carbon; 3680, 3690.
 LS: med-brown; vf-xtal; dense; trc chert; no visible porosity; no shows; 3690.
 Shale: mostly green, lesser gray; marly in part; trc 3690, incr3700.

TORONTO 3691 (-1331)
 LS: lt-brn; vf-xtal; much semi-opaq chert; fine-med

SHORT TRIP 15 STANDS WAS UNEVENTFUL.

DST #1: 3669-3700: WEAK BLOW, DIED FFP;
 30-60-30-60; 2' MUD; SIP: 1017-951; FP: 18-21, 37-23.

MORGAN MUD: 3700 WHILE TESTING: 01/17- 2pm; VIS 54, WT 9.1, WL 6.0, CHL 1200, pH 11.5, LCM trace.



3700
3750
3800
3850
3900

grains; trc coarse fos grains; poor- fair int grain & fine vug por; dk brn to blk spotted stn, w/sli show oil; no odor; spotted stain dry; 3700 20, 40 min.

LANSING 3707 (-1347)
 LS: med grayish-brown, becoming lt-brn to white down in; vf-xtal; finely granular, oolitic in part; sli fos; mostly dense; minor soft chalk; poor apparent porosity; no shows;
 LS: lt-brn, off-white; mic-vf xtal; dense; smooth; most no poros or show; 1 chip capillary poros w/dk brn-blk pin pt stain & slow bleed oil; 3730.

Shale: most green, less gray, yellowish; blocky;

B-zone: LS: lt brn; vf-xtal; med-crs granular; much granular, brn-orange-red, oxidized chert; looks detrital; fair int grain & fine vug por; med brn stain, looks washed; v-sli show oil; dull fluor; no odor; nice spotted stain dry; 20m

D-zone: LS: lt-brn; vf-xtal; scattered med vug por w/druse; spotted med brn stain wet & dry; sli show oil; faint odor 3758-20 min, no od 40m

LS: white; mic-vf xtal; occasional fine vug w/ spotted stain; trc coarse ool w/fair int ool por & stain; mostly no vis porosity or show;

E-zone: LS: white; mic xtal; chalky; finely granular, sli oolitic; fragile; rough textured due to fine vug porosity; spotted med brn stain; sli show oil; faint odor; dull yel fluor; many chips 40 min. spotted-sat stain dry;

F-zone: LS: white; mic-xtal; chalky; finely granular; rough textured; fine vug porosity; spotted brn stain wet & dry; faint odor, 20 min; dull-trc bright fluor; trc fluor free oil; 40 min;

LS: white, lt brown; mic-vf xtal; dense to soft chalk; minor white chert; poor visible porosity; no shows;

LS: white, lt brown; mic-vf xtal; dense; platey; no visible porosity; no shows;

LS: as above;

LS: lt-gray, lt-grayish-brn; mic-xtal; dense; platey; no vis porosity; no show; 3840.

MUNCIE CREEK 3832 (-1472)
 Shale: black; carbon; 3850.
 LS: med-dk brown, lt brn mottled, w/trc dk gray spots; vf-xtal; dense; no visible porosity; no show; 3850.

LS: lt-brown; vf-xtal; sli ool, fos-frag; fine vug porosity; looks tight; med brn spotted stain; questionable oil show; no odor; no fluor;

LS: lt- med brn, mottled; vf-xtal; dense; no visible porosity; no shows;

Shale: green, gray, maroon

LS: lt-brn; vf-xtal; fine vug w/med brn stain; no oil show; no odor;

LS: lt brown; vf-xtal; fine-med oolite; trc fos- frag; fine vug porosity; looks tight; med brn stain; trc capillary bleeding oil; no odor; dull fluor; 20 min;

Shale: gray, maroon, marly; 3899 washes red.

J-Zone: LS: lt brown-gray; mic-vf xtal; fine-med vug porosity; spotted dk brn stain, 1 chip sat black stain w/speckled bright fluor; very sli show oil; no odor; starts 3899, decr 20 min.

STARK SH 3897 (-1537)

K-Zone: LS: lt brown; vf xtal; med-crs grain suptd oolites in relief w/blue-orange oolitic chert; fair int ool por, trc med vug w/ speckled bright fluor & sli bleed; trc dnse lime w/ rough edge & sat black stain & sli bleed which looks like fracture; scattered micro-drone

DST #2: 3727-3758: BOB 30 SEC, GTS FSIP; 30-60-30-90; 2457' OIL; SIP: 994-993, FP: 274- 594, 615-798.

MORGAN MUD: 3458': 01/18-1pm: VIS 53, WT 9.1, WL 6.0, CHL 1200, pH 11.5, LCM trace.

DST #3: 3769-3794: BOB 22 MIN; 30-60-60-90; 262' MW, SIP: 943-929, FP: 23-78, 81-162.

MORGAN MUD: 3880: WHILE CIRC; 01/19- 3pm; VIS 54, WT 9.1, WL 5.6, CHL 1200, pH 11.0, LCM trace, OIL 0.1%

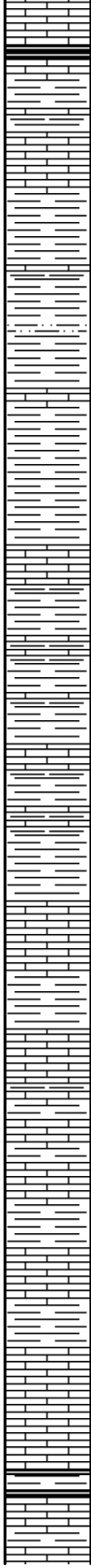
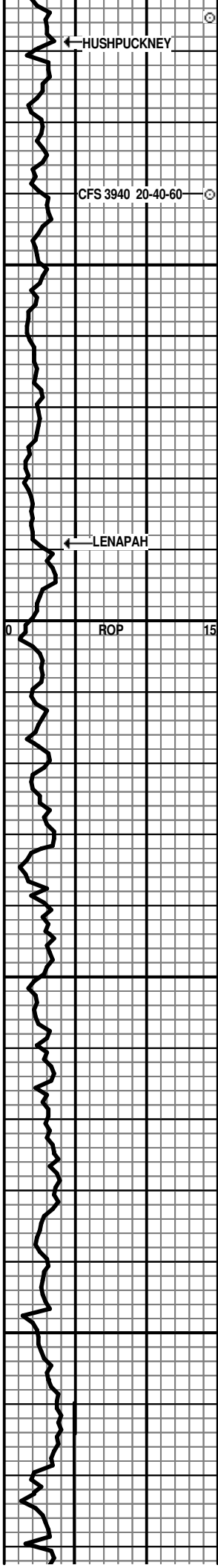
PULLED TIGHT, SHORT TRIP 15 STANDS

DST #4: 3831-3880: WEAK INCR BLOW; 30-60-60-90; 5' OCWM, 55' MW W/SCUM OIL; SIP: 1159-1121; FP: 37-51, 55-63

MORGAN MUD WHILE TESTING: 3899: 01/20- 2pm: VIS 52, WT 9.2, WL 6.0, CHL 1600, pH 11.0, LCM trace, OIL 0.1%

DST #5: 3875-3899: BOB 12 MIN; 30-60-60-90, 724' GIP, 116' GO, 78' OCM, SIP: 1213-1217; FP: 24-48, 58-92.

DST #6: 3897-3915: BOB 3 MIN; 30-60-60-90; 46' GO, 126' SOCWM, 861' MW; SIP: 1119-1068, FP: 58-250, 264-494;



black free oil; no odor; trc 3915, incr 20 min;

Shale: dk-gray, black; 3930.
 LS: med grayish-brn; vf-xtal; dense;

Shale: green, gray, maroon
 L-Zone: LS: med-dk brown w/minor green & maroon portions & shale contacts; vf-xtal; dense; scattered orange-red inclusions; no vis por, no show 20 min; LS: lt-brn, lt gray, off-white; mic-xtal; chalky; dull fluor; no show; 40 min;

3950 Shale: mostly green, gray; some maroon; silty, limy in part;

LS: white-lt gray; mic-vf xtal; dense; platey; sli chalky; finely gran in part; trc shells, nacreum; no visible porosity or show; 3990.

Shale: green, maroon, gray, dk gray; chalky & argill lime;

MARMATON 3989 (-1629)
 LS: lt-gray, lt brown; mic-vf xtal; dense to sli chalky; scattered fine orange-red inclusions; no visible porosity; no shows; 4010, 1020.

4000 Shale: gray, green, maroon; with much dense to shaley lime;

LS: lt-gray to brown; vf-xtal; dense to sli chalky; fine orange-red inclusions; no visible porosity; no shows.

LS: as above, much shale;

Shale: green, gray, maroon;

LS: lt-gray, lt brown w/vari-color fine-coarse grains; no visible porosity; no shows; 4050.

4050 LS: lt-gray; mic-vf xtal; shaley; orange-red chert & inclusions; various sh; no shows;

LS & Shale as above;

LS: lt-grayish brn; mic-vf xtal; mostly dense; sli chalky in part; scattered orange-red chert; minor sh; no visible porosity; no shows;

LS: lt-grayish brn; mic-vf xtal; dense; scattered orange-red chert; trc glauc; no visible poros; no shows;

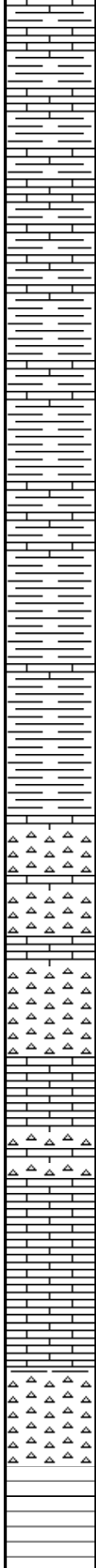
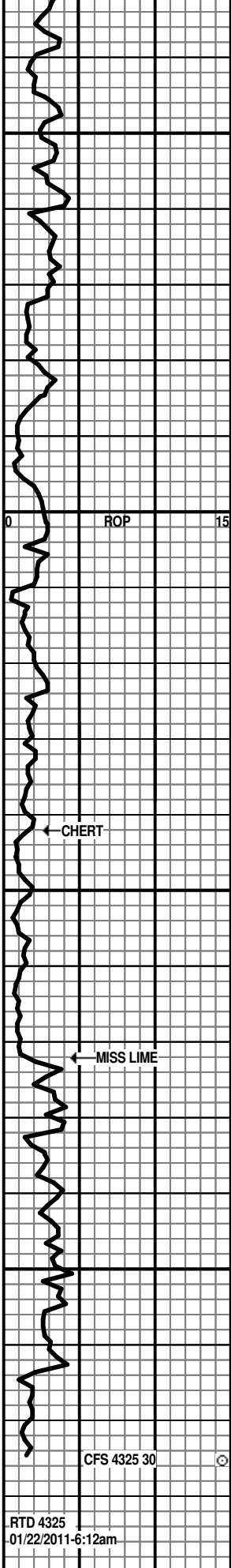
4100 LS: lt-brown; vf-xtal; dense; orange-red chert; minor green sh; no visible porosity; no shows;

LS: lt-med brown; mic-vf-xtal; dense; orange red chert; minor green sh, brown calc sh; trc glauc; no visible porosity; no shows;

CHEROKEE 4119 (-1759)
 Shale: gray, dk gray, green;

LS: grayish brown; vf-xtal; dense; no visible porosity; no shows; with maroon, green shales;

MORGAN MUD: 4029: 01/21-5pm: VIS 69, WT 9.1, WL 6.0, CHL 1800, pH 10.5; LCM 2#, OIL 0.1%.



4150

LS: grayish-brown; mic-vf xtal; mostly dense; sli granular in part; no visible porosity; no shows;

LS: as above;

Shale: maroon, gray, green; argill lime; 4180.

Shale & Lime as above;

Shale: maroon; marly; soft; sticky; samples 4210 to 4250 wash red;

4200

Shale: gray, green, maroon, mottled; minor chalky & argill lime;

Shale: gray, green, maroon, mottled; minor vari-color chert, chalky & argill lime;

Shale, chert & lime as above;

MISSISSIPPI 4242 (-1882)

Chert: mostly white, some yellowish; mostly fresh, sharp, angular; limey; trc glauc; no visible porosity; no shows; starts 4370, floods 4380.

4250

Chert: as above;

LS: med-dark brown; vf-xtal; dense; v-tight int xtal porosity at best; no shows; starts 4290.

LS: lt-med grayish-brown; vf-xtal; dense; trc crinoids; no visible porosity; no shows;

4300

LS: med brown, grayish brown; vf-xtal; dense; no visible porosity; no shows;

Chert: white; fresh; sharp; angular; chalky; no visible porosity; no shows;

ROTARY TOTAL DEPTH 4325 (-1965)

PULLED TIGHT, 15 STAND SHORT TRIP & 75 MIN CIRC BEFORE TOH FOR LOGS.

LOG-TECH LTD 4327