

**Ritchie Exploration, Inc.  
Ames P No.8  
915' FNL and 1825' FWL  
75' N and 155' W of S2 NE NW  
Sec 6 T18S R10W  
Rice County, Kansas**

Geological Report  
by

Macklin M. Armstrong, P.G.  
License Number 743

Scale 1:240 Imperial

Well Name:	Ames P No. 8	
Surface Location:	Sec 6 T18S R10W	
Bottom Location:	915' FNL and 1825' FWL	
API:	15-159-22731	
License Number:	4767	
Spud Date:	3/13/2013	Time: 3:15 PM
Region:	Rice County, Kansas	
Drilling Completed:	3/18/2013	Time: 4:32 PM
Surface Coordinates:		
Bottom Hole Coordinates:		
Ground Elevation:	1790.00ft	
K.B. Elevation:	1799.00ft	
Logged Interval:	2200.00ft	To: 3236.00ft
Total Depth:	3235.00ft	
Formation:	Arbuckle	
Drilling Fluid Type:	Chemical/Fresh Water Gel	

**OPERATOR**

Company:	Ritchie Exploration, Inc.	
Address:	8100 East 22nd Street North, No. 700 Wichita, Kansas 67278	
Contact Geologist:	Pete Fiorini	
Contact Phone Nbr:	316-691-9500	
Well Name:	Ames P No. 8	
Location:	Sec 6 T18S R10W	API: 15-159-22731
Pool:	Oil	Field: Bloomer
State:	Kansas	Country: USA

**SURFACE CO-ORDINATES**

Well Type: Vertical  
 Longitude: 98° 28' 26.469" Latitude: 38° 31' 09.590"  
 N/S Co-ord:  
 E/W Co-ord:

**CONTRACTOR**

Contractor: Southwind Drilling  
 Rig #: 2  
 Rig Type: mud rotary  
 Spud Date: 3/13/2013 Time: 3:15 PM  
 TD Date: 3/18/2013 Time: 4:32 PM  
 Rig Release: 3/19/2013 Time: 6:50 PM

**ELEVATIONS**

K.B. Elevation: 1799.00ft Ground Elevation: 1790.00ft  
 K.B. to Ground: 9.00ft

**NOTES**

Date	Depth at 7 am	Activity
3-13-13	MIRU	Spud at 3:15 pm
3-14-13	675	Drilling
3-15-13	2220	Drilling
3-16-13	2812	OB with DST No. 1
3-17-13	3022	TIH after DST No. 2
3-18-13	3218	CFS
3-19-13	3235	Logging
3-20-13	3235	Set 5 1/2"

Surface Casing: 8 5/8" 24# at 353'  
 Production Casing: 5 1/2" 15.5# at 3234'

Deviation: 354' - 1°, 2812' - 1 1/4°, 3235' - 1°

Bit Record:	Make	Size	Type	Depth In	Depth Out	Hours
	JZ	7 7/8"	HA20Q	353	3218	49 1/2
	Reed	7 7/8"	S52	3218	3235	1/2

**Drill Stem Tests:**

DST No. 1 2748 to 2812 Formation: Lecompton

30-45-45-60

Recovery: 87' Mud

IHP 1326 FHP 1290

IFP 32-46 FFP 46-57

ISIP 692 FSIP 664

Temp 95°

DST No. 2 2936 to 3022 Formation: Lansing A, C, D, E, and F zones

30-45-45-60

Recovery: 150' GIP

30' VSOCM (1%O, 99%M)

IHP 1507 FHP 1455

IFP 51-61 FFP 60-64

ISIP 251 FSIP 270

Temp 99°

DST No. 3 3015 to 3039 Formation: Lansing F and G zones

30-45-45-60

Recovery: 1225' GIP

98' OGCM (5%O, 20%G, 75%M)

62' OGMCW (5%O, 15%G, 32%M, 48%W - Chl 12,500 ppm)

IHP 1476 FHP 1442

IFP 26-58 FFP 58-95

IFP 20-30  
ISIP 388  
Temp 99°

IFP 38-95  
FSIP 382

DST No. 4 3076 to 3218 Formation: Lansing H, I, J, K, and L zones  
30-45-45-60  
Recovery: 150' Mud  
IHP 1534 FHP 1506  
IFP 23-57 FFP 59-96  
ISIP 418 FSIP 404  
Temp 96°

DST No. 5 3211 to 3235 Formation: Arbuckle  
30-45-30-60  
Recovery: 150' GIP  
90' Oil (39° gravity)  
372' MGWCO (5%M, 20%G, 30%W, 45%O)  
434' MGO CW (5%M, 20%G, 25%O, 50%W)  
992' W (Chlor 30,000 ppm)  
IHP 1612 FHP 1540  
IFP 129-617 FFP 623-860  
ISIP 1048 FSIP 1049  
Temp 109°








Formation	Sample	E-Log	Datum	Well 1	Well 2	Well 3
Stotler	2274	2276	-477	+1	+2	+1
Tarkio	2336	2338	-539	+3	+6	-2
Howard	2482	2483	-684	0	+1	-5
Topeka	2565	2564	-767	-1	+3	-6
King Hill	2660	2662	-863	-1	+1	-6
Queen Hill	2738	2740	-941	-2	-1	-8
Heebner	2825	2824	-1025	-2	0	-8
Toronto	2841	2842	-1043	-1	+4	-9
Douglas	2850	2850	-1051	-1	+5	-6
Brown Lime	2935	2936	-1137	+1	+2	-4
Lansing	2949	2950	-1151	+1	+2	-2
Muncie Creek	3088	3092	-1293	-3	0	+2
Stark	3164	3165	-1366	-1	+1	+1
Hushpuckney	3198	3202	-1403	NL	+2	0
B/Kansas City	3223	3224	-1425	NL	NL	0
Arbuckle	3232	3234	-1435	NL	NL	+1
Total Depth	3235	3236	-1437			

Well 1: Ritcihe Exploration, Inc. Ames No. 3 N2 N2 NW Sec 6 T18SS R10W  
Well 2: Ritchie Exploration, Inc. Ames P No. 4 660' FNL and 330' FEL Sec 6 T18S R10W  
Well 3: Ritchie Exploration, Inc. Schlicht Trust No. 1 2305' FSL and 660' FEL Sec 6 T18S R10W

Pipe was set to further test the Arbuckle.

Respectfully submitted,  
Macklin M. Armstrong

### ROCK TYPES

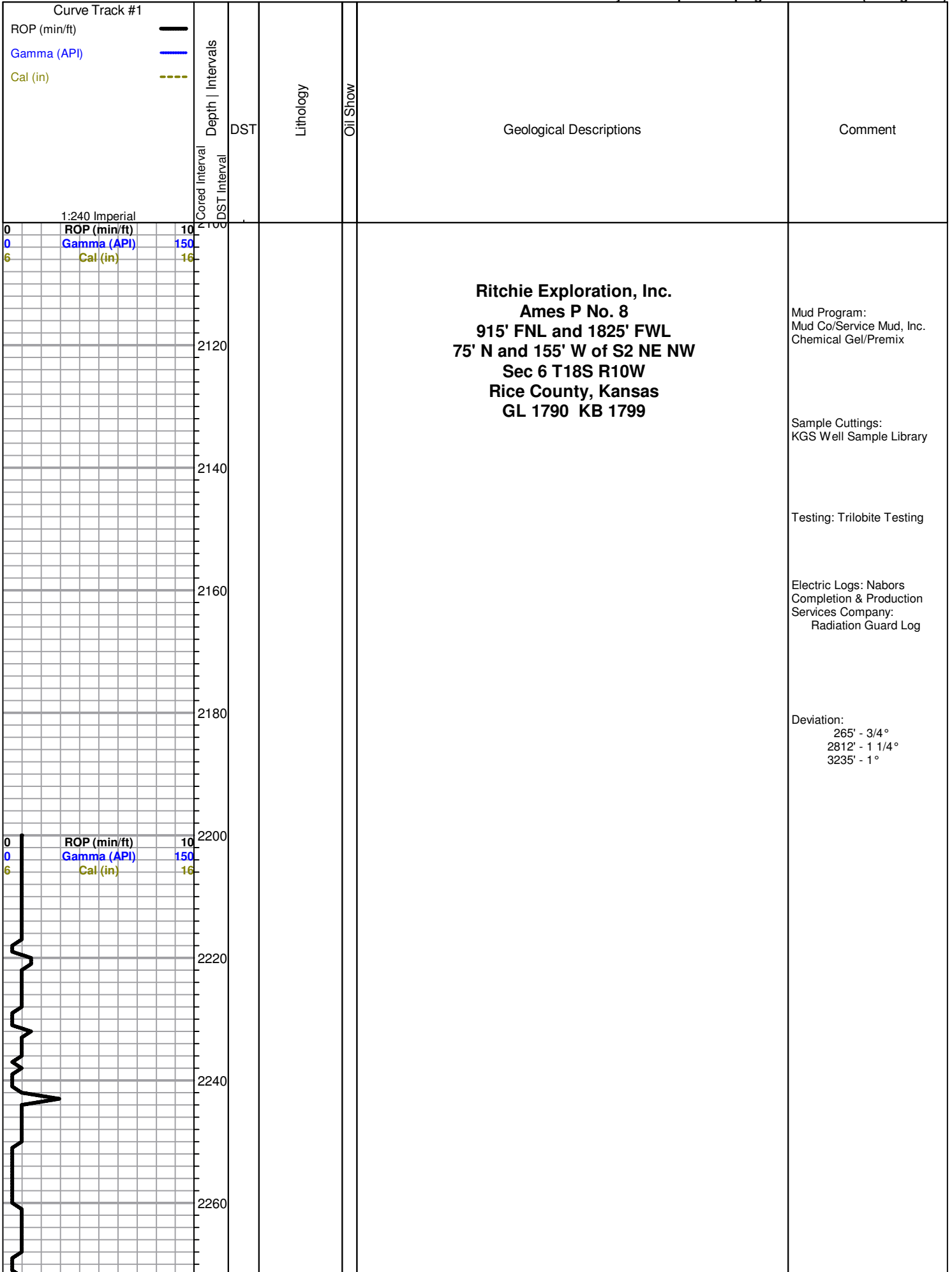
 Dolprim	 shale, grn	 Carbon Sh	 Siltst
 Lmst fw7>	 shale, gry	 Ss	

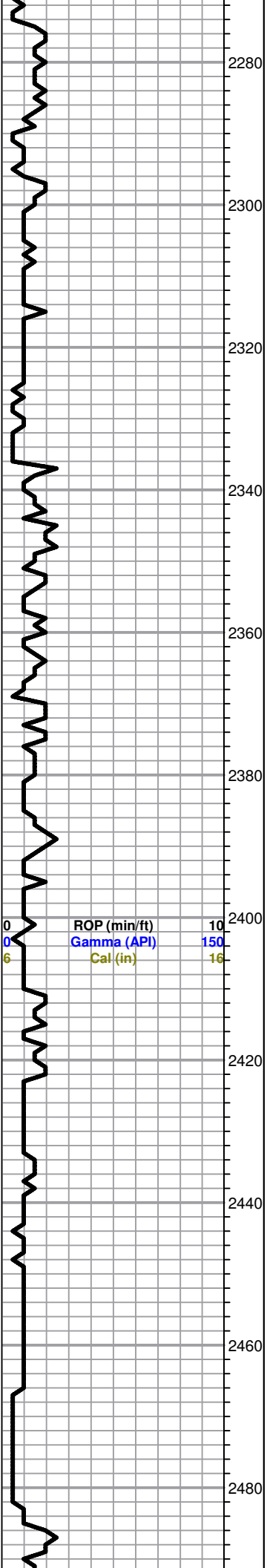
### ACCESSORIES

<b>MINERAL</b>	<b>FOSSIL</b>	<b>STRINGER</b>	<b>TEXTURE</b>
▲ Chert, dark	F Fossils < 20%	••• Sandstone	C Chalky
P Pyrite	⊕ Oolite	••• Siltstone	
△ Chert White	⊕ Oomoldic		
Mc Mica	⊕ Fussilind		

### OTHER SYMBOLS

DST





2280  
2300  
2320  
2340  
2360  
2380  
2400  
2420  
2440  
2460  
2480

0 ROP (min/ft) 10  
0 Gamma (API) 150  
6 Cal (in) 16

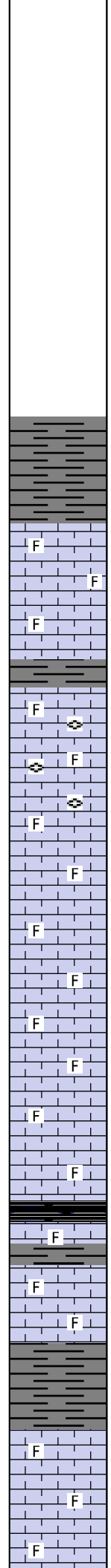
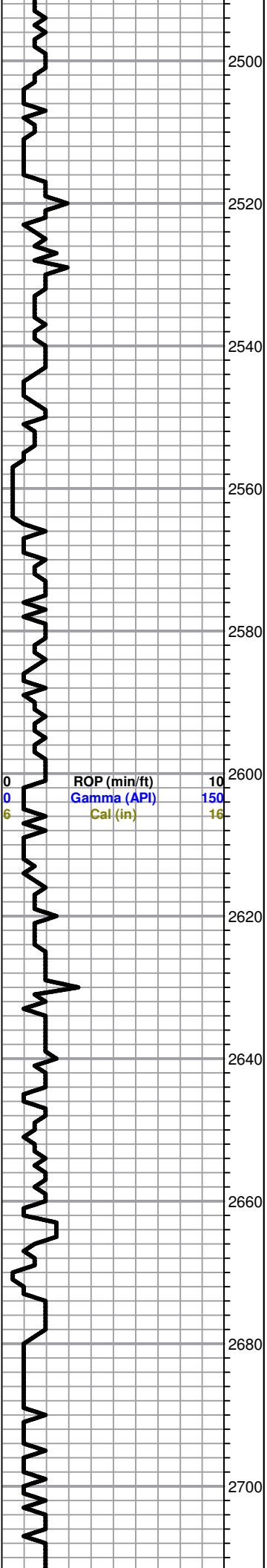


-----Stotler 2274 -475-----

-----Tarkio 2336 -537-----

-----Howard 2482 -683-----

All formation tops on this geo log have been correlated back to the electric log



Sh-gry

-----**Topeka 2565 -766**-----

Ls-lt gry/crm fxln mhd fos no por

Ls-AA

Sh-gry

Ls-gry/crm/tan fxln mhd/dns fos sm free fus no por

Ls-gry/crm f/mxln mhd fos sm free fus fr inter xln por nsfo

Ls-AA

Ls-gry/tan/crm fxln mhd/dns fos no por

Ls-AA

Ls-crm/tan/lt gry f/mxln mhd/dns sl fos no por

Ls-AA

Ls-crm/tan f/mxln mhd/dns sl fos no por

-----**King Hill 2660 -861**-----

Sh-blk carb

Ls-crm/tan/lt gry fxln dns sl fos no por

Sh-gry

Ls-crm/tan/lt gry fxln mhd/dns sl fos no por

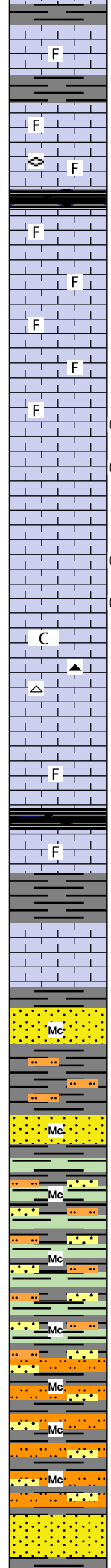
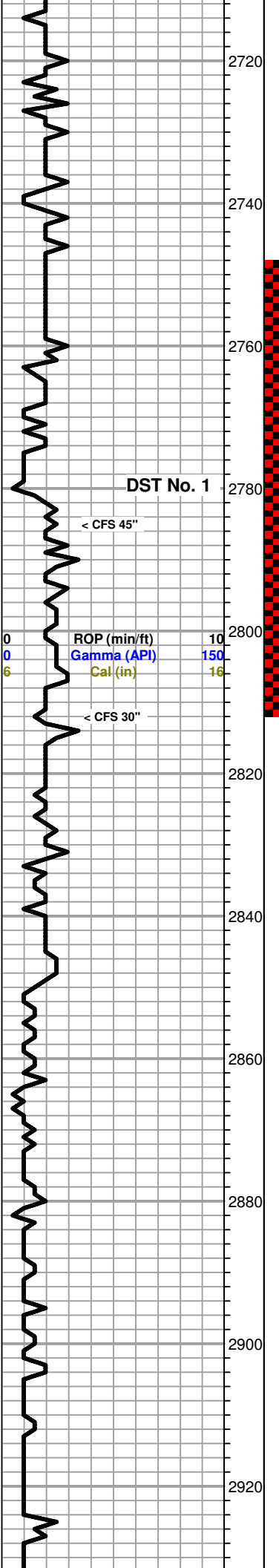
Sh-gry

Ls-crm/tl gry f/mxln mhd sl fos fr inter xln por nsfo

Ls-AA

Ls-crm/lt tan/lt gry fxln mhd sl fos no por

Mud Data at 2677'  
 6:30 pm 3-15-13  
 Wt 8.7  
 Vis 46  
 WL 8.8  
 pH 11.5  
 Chl 3500  
 Sol 2.7%  
 YP 11  
 LCM 1#



Sh-gry  
Ls-crm/tan/lt gry fxln mhd sl fos no por

Sh-gry  
Ls-crm/tan/lt gry mxln to sl blkly mhd fos fr inter xln por nsfo

Ls-crm/tan/ltgry f/mxln mhd fos sm free fus no por

-----**Queen Hill 2738 -939**-----

Sh-blk carb  
Ls-crm/tan/lt gry f/mxln mhd sl fos no por

Ls-AA  
Ls-crm/lt gry fxln mhd/dns sl fos no por

Ls-crm/lt gry f/mxln mhd sl fos trc inter xln por nsfo

Ls-tan/lt gry fxln mhd sl fos no por

① Ls-crm/lt gry fxln mhd mostly barren with few pcs Ls-crm fxln mhd fr foscast por fr cut ssfo on brk

② Ls-crm fxln mhd fr vug/foscast por brn/blk sct stn gd cut fsfo on brk

Ls-crm/lt gry fxln dns no por

③ Ls-AA with few pcs Ls-crm/lt gry f/mxln fr vug/foscast por gd cut fsfo on brk

④ Ls-AA

Ls-gry/tan fxln mhd/dns sl clkly no por sm Cht-fsh spt brn and wt opaqa to semi trans and Cht-gry wt fsh opaqa

Ls-crm/tan fxln dns no por

Ls-AA

Ls-crm/tan/lt gry f/mxln dns sl fos no por

-----**Heebner 2825 -1026**-----

Sh-blk carb  
Ls-crm/tan/lt gry f/mxln mhd sl fos no por

Sh-gry/dk gry

-----**Toronto 2841 -1042**-----

Ls-tan/crm/lt gry fxln dns no por

-----**Douglas 2850 -1051**-----

Ss-lt grn/lt gry f/mxrn sub ang to sub rnd sl fri to tite cement sl mica

Sh-gry grn sm Silt gry grn vfgrn mica

Ss-gry/grn fgrn sub ang to sub rnd sl fri to tite cement sl mica

Sh-gry/gry grn with sm Silt-gry grn and Ss-AA

Sh-AA with sm Silt and Ss-AA

Sh-AA with sm Silt and Ss-AA

Sh-AA with sm Silt and Ss-AA

Silt-gry vfgrn mica with sm Ss and Sh-gry/dk gry sl silty

Silt-AA with sm Ss and Sh-AA

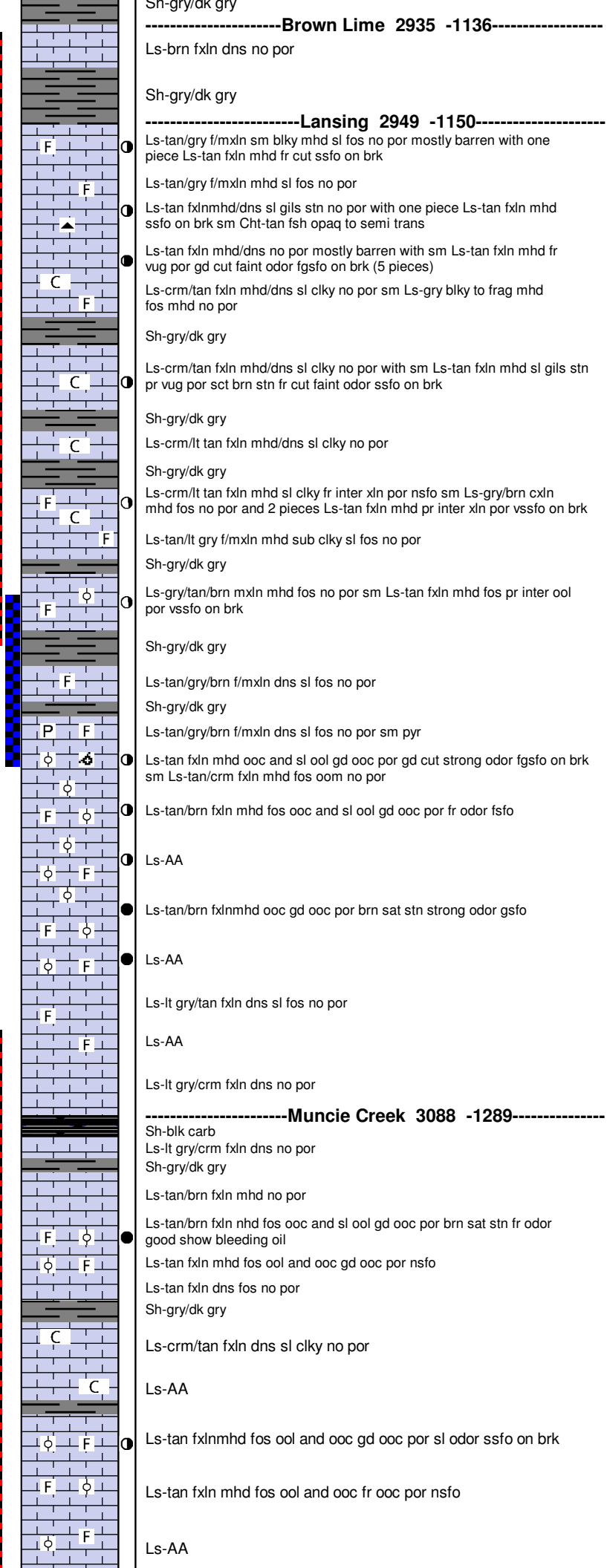
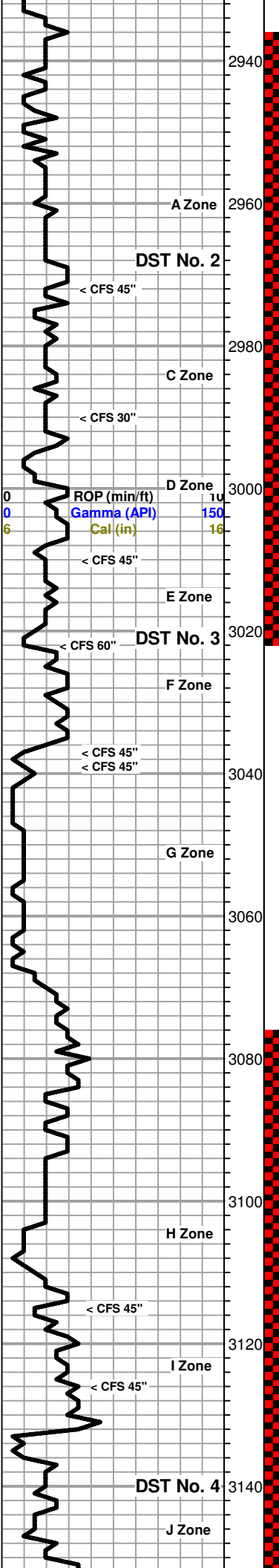
Silt-AA with sm Ss and Sh-AA

Ss-gry fgrn sub ang to sub rnd sl fri to tite cement

DST No. 1  
2748 to 2812  
30-45-45-60  
1st Open: Weak 1 1/2" blow  
2nd Open: Weak sur blow  
Recovery: 87' Mud  
IHP 1326      FFP 1290  
IFP 32-46      FFP 46-57  
ISIP 692      FSIP 664  
Temp 95°

Pulled 16 stand short trip at 2812', then Cir for Test 45"

Mud Data at 2812'  
12:10 pm 3-16-13  
Wt 8.9  
Vis 53  
WL 8  
pH 11.5  
Chl 5200  
Sol 4%  
YP 12  
LCM 1#



-----**Brown Lime 2935 -1136**-----

Sh-gry/dk gry

Ls-brn fxl n dns no por

Sh-gry/dk gry

-----**Lansing 2949 -1150**-----

Ls-tan gry f/mxln sm blk y mhd sl fos no por mostly barren with one piece Ls-tan fxl n mhd fr cut ssfo on brk

Ls-tan gry f/mxln mhd sl fos no por

Ls-tan fxl n mhd/dns sl gils stn no por with one piece Ls-tan fxl n mhd ssfo on brk sm Cht-tan fsh opa q to semi trans

Ls-tan fxl n mhd/dns no por mostly barren with sm Ls-tan fxl n mhd fr vug por gd cut faint odor fgsfo on brk (5 pieces)

Ls-frm/tan fxl n mhd/dns sl clk y no por sm Ls-gry blk y to frag mhd fos mhd no por

Sh-gry/dk gry

Ls-frm/tan fxl n mhd/dns sl clk y no por with sm Ls-tan fxl n mhd sl gils stn pr vug por sct brn stn fr cut faint odor ssfo on brk

Sh-gry/dk gry

Ls-frm/lt tan fxl n mhd/dns sl clk y no por

Sh-gry/dk gry

Ls-frm/lt tan fxl n mhd sl clk fr inter xln por nsfo sm Ls-gry/brn cxln mhd fos no por and 2 pieces Ls-tan fxl n mhd pr inter xln por vssfo on brk

Ls-tan/lt gry f/mxln mhd sub clk y sl fos no por

Sh-gry/dk gry

Ls-gry/tan/brn mxln mhd fos no por sm Ls-tan fxl n mhd fos pr inter ool por vssfo on brk

Sh-gry/dk gry

Ls-tan gry/brn f/mxln dns sl fos no por

Sh-gry/dk gry

Ls-tan gry/brn f/mxln dns sl fos no por sm pyr

Ls-tan fxl n mhd ooc and sl ool gd ooc por gd cut strong odor fgsfo on brk sm Ls-tan/crm fxl n mhd fos oom no por

Ls-tan/brn fxl n mhd fos ooc and sl ool gd ooc por fr odor fsfo

Ls-AA

Ls-tan/brn fxl n mhd ooc gd ooc por brn sat stn strong odor gsfo

Ls-AA

Ls-lt gry/tan fxl n dns sl fos no por

Ls-AA

Ls-lt gry/crm fxl n dns no por

-----**Muncie Creek 3088 -1289**-----

Sh-blk carb

Ls-lt gry/crm fxl n dns no por

Sh-gry/dk gry

Ls-tan/brn fxl n mhd no por

Ls-tan/brn fxl n mhd fos ooc and sl ool gd ooc por brn sat stn fr odor good show bleeding oil

Ls-tan fxl n mhd fos ool and ooc gd ooc por nsfo

Ls-tan fxl n dns fos no por

Sh-gry/dk gry

Ls-frm/tan fxl n dns sl clk y no por

Ls-AA

Ls-tan fxl n mhd fos ool and ooc gd ooc por sl odor ssfo on brk

Ls-tan fxl n mhd fos ool and ooc fr ooc por nsfo

Ls-AA

DST No. 2  
2936 to 3022  
30-45-45-60  
1st Open: Fair blow, built to 9'  
2nd Open: BOB in 30 sec  
Recovery: 150' GIP  
30' VSOCM (1%O, 99%M)  
IHP 1507 FFP 1455  
IFP 51-61 FFP 60-64  
ISIP 251 FSIP 270  
Temp 99°

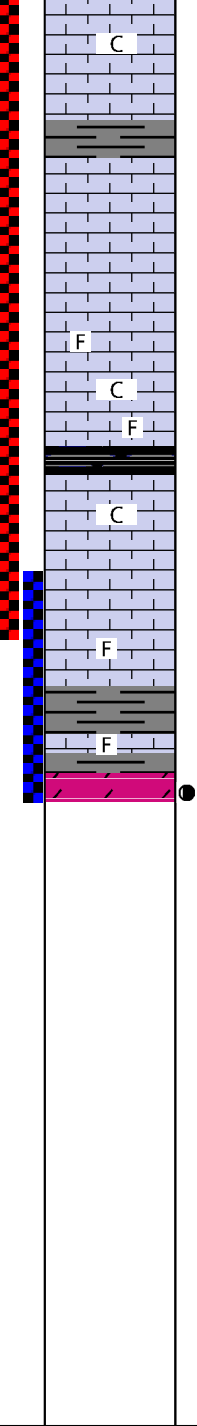
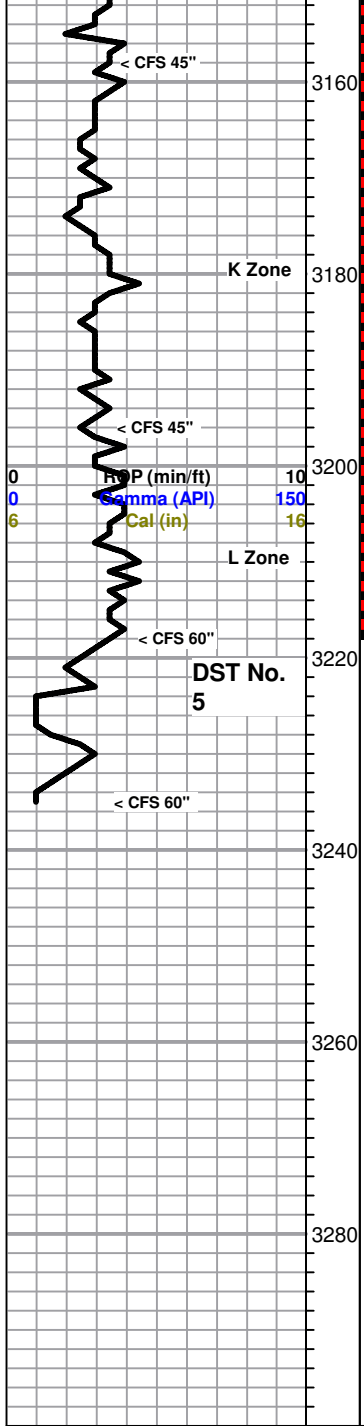
DST No. 3  
3015 to 3039  
30-45-45-60  
1st Open: BOB in 5 min  
2nd Open: BOB in 2 min  
Recovery: 1225' GIP  
98' OGCM (5%O, 20%G 75%M)  
62' OGMCW (5%O, 15%G 32%M, 48%W Chl 12,500 ppm)  
IHP 1476 FFP 1442  
IFP 26-58 FFP 58-95  
ISIP 388 FSIP 382  
Temp 99°

Pipe strap at 3022'  
1.63' long

Mud Data at 3039'  
11:00 am 3-17-13  
Wt 9.1  
Vis 47  
WL 8.4  
pH 10.5  
Chl 7200  
Sol 5.3%  
YP 11  
LCM 1/2#

DST No. 4  
3076 to 3218  
30-45-45-60  
1st Open: Weak blow, built to 3 1/2"  
2nd Open: Weak blow, built to 1 1/2"  
Recovery: 150' Mud  
IHP 1534 FFP 1506  
IFP 23-57 FFP 59-96  
ISIP 418 FSIP 404  
Temp 96°





Ls-crm/lt tan/lt gry fxln dns sl clky no por  
 -----**Stark 3164 -1365**-----  
 Sh-gry/dk gry  
 Ls-lt gry/tan fxln mhd/dns no por  
 Ls-lt gry/tan fxln dns no por  
 Ls-lt gry/crm fxln dns no por sm Ls-lt gry fxln mhd fos no por  
 Ls-AA with sm Ls-wt fxln soft clky no por  
 -----**Hushpuckney 3198 -1399**-----  
 Sh-blk carb  
 Ls-crm/lt gry fxln dns sl clky no por  
 Ls-lt gry/tan fxln dns no por  
 Ls-AA  
 Ls-lt gry/crm fxln/mhd sl fos no por  
 -----**B/Kansas City 3223 -1424**-----  
 Sh-gry/dk gry  
 Ls-tan/lt gry fxln sl fos no por  
 -----**Arbuckle 3232 -1433**-----  
 Dolo-wt vcgrn fr inter gran por brn sct stn fr fluor fr cut fr odor fgsfo  
 -----**RTD 3235 -1436**-----

Finished Drilling at 4:32 pm on 3-18-13.  
 Going into hole for DST No. 5 at 6 pm on 3-18-13.  
 Finished Logging on 9:05 am on 3-19-13.

DST No. 5  
 3211 to 3235  
 30-45-30-60  
 1st Open: BOB in 90 sec  
 2nd Open: BOB in 2"  
 Recovery: 150' GIP  
 90' Oil (39° gravity)  
 372' MGWCO (5%M, 20%G  
 30%W, 45%M)  
 434' MGOCW (5%M, 20%G  
 25%O, 50%W)  
 992' W (Chlor 30,000 ppm)  
 IHP 1612 FFP 1540  
 IFP 129-617 FFP 623-860  
 ISIP 617 FSIP 860  
 Temp 109°

Mud Data at 3218'  
 10:25 am 3-18-13  
 Wt 9.3  
 Vis 47  
 WL 8.8  
 pH 10  
 Chl 7200  
 Sol 6.7%  
 YP 10  
 LCM 1/2#