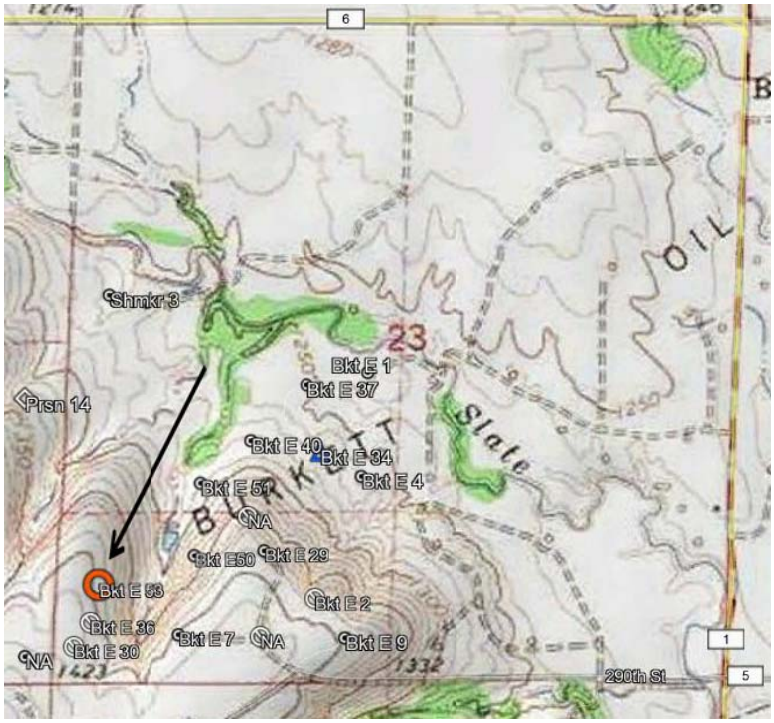
Geological Wellsite Report

By David Griffin, PG
GGR Inc.
Sept. 19, 2019

Well Info: Burkett E-53
S2 NW SW SW/4
732' fsl, 330' fwl
Section 23-T23S-R10E
Greenwood County, KS
API No. 15-073-24245-00-00

Datum: GL Elev 1399', Svy
RTD: 2419'
5.5" Long String Set



Operator: Cross Bar Energy, LLC
1700 N. Waterfront Pkwy
Bldg 300, Suite A
Wichita, Kansas, 67206
Contact: Andrew Brensing

Contractor: Three Rivers Exploration

Objective: Bartlesville SS

Drilling Notes:

Sept. 10, 2019, Spud Well
Sept. 10, 2019, Set 200' $8\frac{5}{8}$"
Sept. 11, 2019, Drill Under Surface, $7\frac{7}{8}$" PDC Bit
Sept. 14, 2019, 8 PM, at 2096', Begin Button Bit Trip
Sept. 15, 2019, Drill from 2096' to 2364', Button Bit
Sept. 16, 2019, Drill from 2364' to TD at 2419',
Open Hole Logged by Eli Wireline, Set 5.5" Pipe

Geological Supervision:

David Griffin, RG, GGR Inc. provided wellsite supervision from Sept. 14 thru Sept 16, 2019. Drilling was witnessed from 1900' to TD'. Gas detection was performed from 1900' to TD. Samples were collected and microscopically examined from 1900' to TD. Annular velocity of 115 to 120 ft/min was measured and used for lagging samples.

Geological Datums:

Cross Bar Energy, LLC *Burkett E-53* *S2 NW SW SW/4* *Sec. 23-T23S-R10E*					Structural Comparison Wells					
					Cross Bar Energy, LLC *Burkett E-51* *SE SE NW SW* *Sec. 23-23S-R10E*			*Cross Bar Energy, LLC* *Burkett E-50* *SE NE SW SW* *Sec. 23-23S-R10E*		
	Sample Tops GL Elev. 1399'		OH Log Tops GL Elev. 1399'		STRC OMP	OH Log Tops GL Elev. 1291'		STRC OMP	OH Log Tops GL Elev. 1346'	
Zones of Interest	**Depth**	**Subsea**	**Depth**	**Subsea**		**Depth**	**Subsea**		**Depth**	**Subsea**
Douglas SS Porosity	na		1180	+220	+8	1063	+228	+5	1121	+225
Base SS	na		1283	+116	+6	1169	+122	+9	1221	+125
Lansing Group	na		1298	+101	+4	1186	+105	+3	1242	+104
Kansas City Group	na		1570	-171	+4	1458	-167	+12	1505	-159
Base KC	na		1737	-338	-1	1630	-339	+1	1683	-337
Marmaton Group	1855	-456	1854	-455	+0	1746	-455	+6	1795	-449
Cherokee Group	2010	-611	2009	-610	-7	1908	-617	+6	1950	-604
Ardmore LS	2096	-697	2095	-696	-3	1990	-699	+8	2034	-688
Cattleman SS	2111	-712	2110	-711	-3	2005	-714	+5	2052	-706
Base SS	2122	-723	2122	-723	+2	2012	-721	+13	2056	-710
Bartlesville Zone Marker	2197	-798	2196	-797	-9	2097	-806	+7	2136	-790
Bartlesville SS	2244	-845	2243	-844	-7	2142	-851	+20	2170	-824
Bartlesville SS, Main Pay	2253	-854	2252	-853	-15	2159	-868	+19	2180	-834
Base SS	2279	-880	2279	-880	-13	2184	-893	+15	2211	-865
Pn Basal Cgl, (Erosional Miss.)	2372	-973	2372	-973		na			na	
Mississippian (Carbonate)	2389	-990	2386	-987		na			na	
Total Depth	2419	-1020	2418	-1019		2320	-1029		2190	-844

Bartlesville SS Pay Zone Description

2250'-2256', (2260' Sample), **Top of Pay Sand, Fair Potential, 20% SS,** light gray with scattered light brown, very fine grained sub-angular quartz, fair porosity (Φ), fair odor, fair residual oil stain, trace show of free oil (SFO) rinses from cuttings with water, 20% bright fluorescence (BF), strong gas kick of 1302 units; 50% SS, light gray, poor Φ, silty, no show; 30% Siltstone, very light gray and Shale, minor.

2256'-2260', (2265' Sample), **Good Pay Potential, 50% SS,** same as above, good odor, fair residual oil stain, slight SFO rinses from cuttings, good live oil breakout when crushed, 50% BF; falling gas readings; 50% Siltstone, very light gray and Shale, minor.

2260'-2264', (2270' Sample), **Very Good Pay Potential, 70% SS,** light grayish-brown, very fine to fine grained quartz, fair to good Φ, good odor, good oil stain, slight SFO rinses from samples, stained cuttings have good live oil breakout when crushed, gassy with strong gas kick reaching 1410 units, acid treatment breaks oil out of cuttings, moderately calcareous; 70% BF; SS, 10%, very light gray, very fine and silty, tite, no show; 20% Siltstone and shale, very light gray to gray.

2264'-2270', (2275' Sample), **Very Good Pay Potential, 80% SS,** light grayish brown, very fine to fine grained sub-angular quartz, fair to good Φ, very good odor, very good oil stain, fair SFO rinses from cuttings and when cuttings are crushed, gassy with strong gas kick reaching 1553 units, 80% BF; 20% Tite SS, Siltstone and Shale.

.

2270'-2275', (2280' Sample), **Very Good Pay Potential, 90% SS,** light grayish brown, very fine to fine with minor medium grained sub-angular quartz, fair to good Φ, good odor, very good oil stain, good SFO rinses from cuttings, gassy with strong gas kick of 2,000 units reaching instrument maximum, 90% BF; 10% Tite SS, Siltstone and Shale.

2275'-2281', (2285' Sample), **Good Pay Potential, 70% SS,** light grayish brown, very fine to fine grained sub-angular quartz, fair to good Φ, good odor, good oil stain, fair SFO, 70% BF; SS, 30%, very light gray, vf and silty, tite, no show; 30% Tite SS, Siltstone and Shale.

Other Oil Shows

Cattleman SS

2111'-2114', (2120' Sample), **No Pay Potential, 50% SS,** very light gray, very fine grained sub-angular quartz, poor to fair Φ, no odor, no show, no Flor.; 50% Shale, vari-col grays.

2114'-2118', (2125' Sample), **Marginal Pay Potential, 20% SS,** off white with scattered brown oil stain, very fine to medium grained sub-angular quartz, fair Φ, partly recrystallized quartz, good odor, good show of oil droplets, slight SFO rinses from cuttings, gas kick of 200 units; 60%, SS, very light gray, very fine to fine grained, silty, tite, no show; 20% Siltstone and Shale, very light gray to gray.

2118'-2124', (2130' Sample), **Marginal Pay Potential, 15% SS,** same as above, fair Φ, fair to good odor, good show of brown oil droplets, very slight SFO rinses from cuttings, good gas kick of 530 units; 50%, SS, very light gray, very fine to fine grained, silty, tite, no show; 35% Siltstone and Shale, very light gray to gray.

Summary:

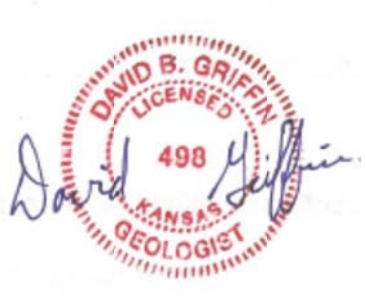
The Cattleman SS had fair to good shows of live brown oil droplets in two porosity streaks from 2111' to 2124', however, it lacks obvious pay zone quality.

The top of the Bartlesville SS was encountered at 2244', a fair oil stain was present from 2244' to 2253', however, it lacked free oil. The porous main pay zone was encountered from 2253' to 2279', with fair to very good oil stain and trace to good shows of light gravity free brown oil. Very strong sustained gas readings reaching 2,000 units were observed. The BV SS is 13' higher in structure than Burkett E-51 and 19' lower than Burkett E-50. The characteristic of the BV pay sand is somewhat similar to that in Burkett E-51.

Saltwater percentages of the Bartlesville main pay sand were evaluated using open hole log data using a spreadsheet format, (modified from Pfeffer, KGS). Pay zone cutoffs of 12% porosity, 60% SW and an Rw of 0.06 were selected in the calculations, (actual cutoffs may be slightly different). Pay zone was flagged from 2253' to 2278.5' with SW ranging from 38% to 60%. Volumetric analysis indicates that approximately 86,579 stock tank barrels of oil are in place based on 7.5 acre spacing. The spreadsheet is attached for reference.

Recommendations:
Based on the favorable oil and gas shows and SW calculation in the Bartlesville SS, the operator set and cemented 5.5" production casing. It is recommended that perforations be placed in the main pay sand from 2253' to 2277' (GL) and treated similarly as in the successful offsetting producers. The cased hole log should be correlated to the open hole for final selection of perforations.

Respectfully Submitted,



David Griffin, PG
GGR (Griffin Geological Resources), Inc.
Lawrence, Kansas

Attachments: Sample Log, SW and STOOIP Spreadsheet

Cross Bar Energy, LLC

Burkett E-53, S2 NW SW SW/4, Sec 23-T23S-R10E

%SW and STOOIP Estimations, BV SS

By David Griffin, PG

Model = Archie

PARAMETERS	
X	
Y	
A	1
M	1.8
N	2
RW	0.06
CTHK	30.5
AVPHI	0.14
FTOIL	1.56
PAYFEET	21.5
Oil In Place	86,579 Barrels (Apx)
7.5 Acre Spacing	
P	
Q	
R	
DMIN	
DMAX	
KB	
TD	
BHT	
ST	
RMF	
RMFT	

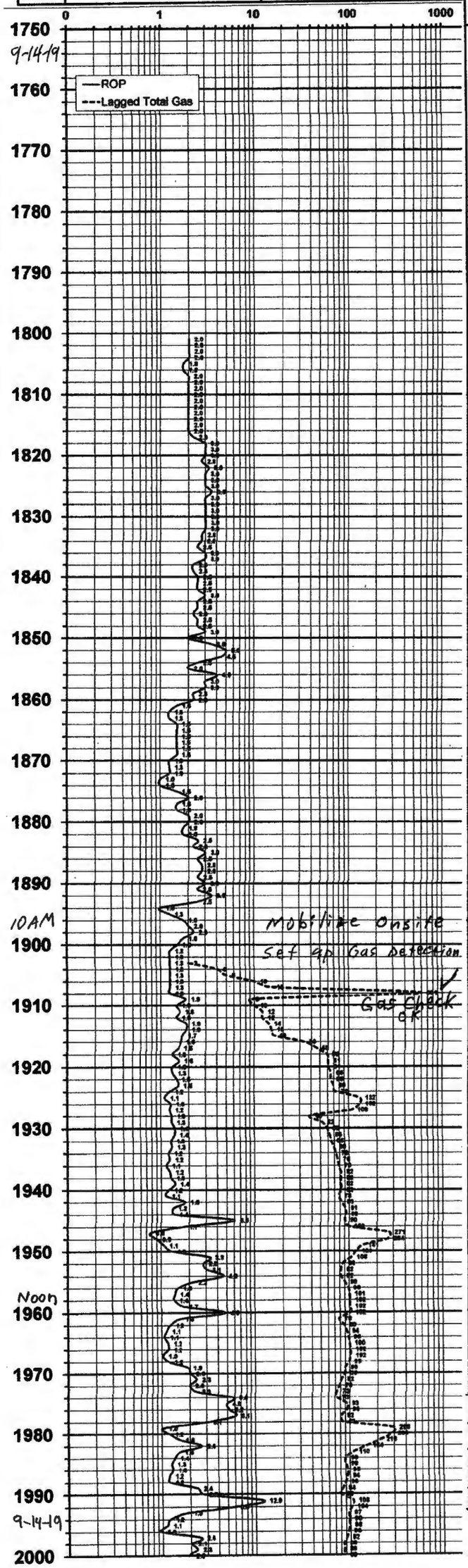
CUT-OFFS	
PHICUT	0.12
SWCUT	0.6
VSHCUT	0.78
BVWCUT	0.2

Colors: ON

STOOIP=

Stock tank original oil in place

ZN	DEPTH	THK	RT	PHI	RWA	RO	MA	SW	BVW	VSH	PAY	BOI
1	2250	0.5	6.11	15.9%	0.22	1.64	2.52	51.7%	0.082	0.789	0	1.05
2	2250.5	0.5	6.11	15.4%	0.21	1.74	2.47	53.3%	0.082	0.823	0	1.05
3	2251	0.5	6.2	14.9%	0.20	1.85	2.43	54.6%	0.081	0.860	0	1.05
4	2251.5	0.5	6.39	14.5%	0.20	1.93	2.42	55.0%	0.080	0.862	0	1.05
5	2252	0.5	6.65	14.3%	0.20	2.00	2.42	54.9%	0.078	0.798	0	1.05
6	2252.5	0.5	6.88	14.0%	0.20	2.07	2.41	54.8%	0.077	0.706	0.03	1.05
7	2253	0.5	7.04	13.8%	0.20	2.13	2.40	55.0%	0.076	0.644	0.03	1.05
8	2253.5	0.5	7.16	13.6%	0.20	2.18	2.40	55.2%	0.075	0.594	0.03	1.05
9	2254	0.5	7.26	13.6%	0.20	2.17	2.41	54.7%	0.074	0.532	0.03	1.05
10	2254.5	0.5	7.37	14.1%	0.22	2.05	2.45	52.7%	0.074	0.503	0.03	1.05
11	2255	0.5	7.48	14.8%	0.24	1.88	2.52	50.1%	0.074	0.515	0.04	1.05
12	2255.5	0.5	7.54	15.1%	0.25	1.81	2.55	49.0%	0.074	0.530	0.04	1.05
13	2256	0.5	7.49	14.5%	0.23	1.94	2.50	50.8%	0.074	0.560	0.04	1.05
14	2256.5	0.5	7.4	13.4%	0.20	2.22	2.40	54.8%	0.074	0.624	0.03	1.05
15	2257	0.5	7.34	12.6%	0.18	2.51	2.32	58.5%	0.073	0.712	0.03	1.05
16	2257.5	0.5	7.27	12.5%	0.17	2.53	2.31	59.0%	0.074	0.806	0	1.05
17	2258	0.5	7.24	13.4%	0.19	2.25	2.38	55.7%	0.074	0.883	0	1.05
18	2258.5	0.5	7.23	14.5%	0.22	1.93	2.49	51.7%	0.075	0.919	0	1.05
19	2259	0.5	7.24	15.4%	0.25	1.74	2.56	49.0%	0.076	0.880	0	1.05
20	2259.5	0.5	7.25	15.5%	0.25	1.71	2.58	48.6%	0.076	0.768	0.04	1.05
21	2260	0.5	7.26	15.0%	0.24	1.83	2.53	50.2%	0.075	0.685	0.04	1.05
22	2260.5	0.5	7.21	14.1%	0.21	2.04	2.44	53.2%	0.075	0.692	0.03	1.05
23	2261	0.5	7.15	13.3%	0.19	2.26	2.37	56.3%	0.075	0.716	0.03	1.05
24	2261.5	0.5	7.05	13.0%	0.18	2.35	2.34	57.7%	0.075	0.708	0.03	1.05
25	2262	0.5	6.94	13.4%	0.19	2.24	2.36	56.8%	0.076	0.699	0.03	1.05
26	2262.5	0.5	6.85	14.0%	0.20	2.07	2.41	55.0%	0.077	0.686	0.03	1.05
27	2263	0.5	6.8	14.3%	0.21	1.98	2.44	53.9%	0.077	0.675	0.03	1.05
28	2263.5	0.5	6.77	14.2%	0.20	2.01	2.42	54.4%	0.077	0.693	0.03	1.05
29	2264	0.5	6.78	13.9%	0.19	2.10	2.39	55.7%	0.077	0.707	0.03	1.05
30	2264.5	0.5	6.8	13.7%	0.19	2.16	2.38	56.4%	0.077	0.684	0.03	1.05
31	2265	0.5	6.81	13.7%	0.19	2.14	2.38	56.1%	0.077	0.640	0.03	1.05
32	2265.5	0.5	6.76	13.9%	0.19	2.09	2.39	55.6%	0.077	0.604	0.03	1.05
33	2266	0.5	6.73	14.0%	0.20	2.06	2.40	55.3%	0.078	0.606	0.03	1.05
34	2266.5	0.5	6.75	14.2%	0.20	2.00	2.42	54.5%	0.078	0.642	0.03	1.05
35	2267	0.5	6.8	14.8%	0.22	1.88	2.47	52.6%	0.078	0.678	0.04	1.05
36	2267.5	0.5	6.83	15.2%	0.23	1.79	2.51	51.1%	0.078	0.689	0.04	1.05
37	2268	0.5	6.88	14.6%	0.22	1.91	2.46	52.8%	0.077	0.691	0.03	1.05
38	2268.5	0.5	6.9	12.9%	0.17	2.40	2.32	59.0%	0.076	0.711	0.03	1.05
39	2269	0.5	6.88	10.6%	0.12	3.39	2.12	70.2%	0.075	0.737	0	1.05
40	2269.5	0.5	6.92	8.8%	0.09	4.74	1.96	82.7%	0.073	0.751	0	1.05
41	2270	0.5	6.99	8.1%	0.08	5.55	1.89	89.1%	0.072	0.749	0	1.05
42	2270.5	0.5	7.1	8.4%	0.08	5.19	1.93	85.5%	0.072	0.737	0	1.05
43	2271	0.5	7.31	9.7%	0.11	4.04	2.05	74.3%	0.072	0.711	0	1.05
44	2271.5	0.5	7.61	11.5%	0.15	2.95	2.24	62.3%	0.072	0.686	0	1.05
45	2272	0.5	7.94	13.5%	0.22	2.20	2.44	52.6%	0.071	0.682	0.03	1.05
46	2272.5	0.5	8.28	15.3%	0.28	1.77	2.62	46.2%	0.071	0.670	0.04	1.05
47	2273	0.5	8.48	16.0%	0.31	1.62	2.70	43.8%	0.070	0.646	0.04	1.05
48	2273.5	0.5	8.57	15.8%	0.31	1.66	2.69	44.0%	0.070	0.640	0.04	1.05
49	2274	0.5	8.72	15.5%	0.30	1.72	2.67	44.4%	0.069	0.620	0.04	1.05
50	2274.5	0.5	8.8	15.7%	0.31	1.69	2.69	43.8%	0.069	0.606	0.04	1.05
51	2275	0.5	8.78	16.5%	0.34	1.53	2.77	41.8%	0.069	0.662	0.05	1.05
52	2275.5	0.5	8.7	17.7%	0.39	1.35	2.88	39.4%	0.070	0.726	0.05	1.05
53	2276	0.5	8.55	18.5%	0.41	1.25	2.94	38.2%	0.071	0.714	0.06	1.05
54	2276.5	0.5	8.31	18.4%	0.40	1.26	2.92	38.9%	0.072	0.708	0.06	1.05
55	2277	0.5	8.13	17.6%	0.36	1.37	2.83	41.0%	0.072	0.752	0.05	1.05
56	2277.5	0.5	7.97	16.3%	0.30	1.58	2.69	44.4%	0.072	0.738	0.05	1.05
57	2278	0.5	7.78	14.6%	0.24	1.91	2.53	49.6%	0.072	0.644	0.04	1.05
58	2278.5	0.5	7.49	12.9%	0.19	2.38	2.36	56.3%	0.073	0.585	0.03	1.05
59	2279	0.5	7.07	11.4%	0.14	2.97	2.20	64.9%	0.074	0.625	0	1.05
60	2279.5	0.5	6.53	9.8%	0.10	3.96	2.02	77.9%	0.076	0.713	0	1.05
61	2280	0.5	6.01	8.3%	0.07	5.26	1.85	93.6%	0.078	0.790	0	1.05



Well: Burkett E-53	**Pg.** 1 of 3
Location: S2 NW SW SW/4, 732' fsl, 330' fwl, Sec. 23-T23S-R10E, GW Co.	**Datum/Elev.** 1399 GL
Sample Descriptions (Lagged)	**Tops/Remarks**

Operator: Cross Bar Energy, LLC
Drlg Contr: Three Rivers Exploration
API No.: 15-073-24245-00-00

7 7/8" PDC Bit, 6 Blade

Lenapah LS

Marmaton Grp
1855 (-456)
using ROP
1854 (-455)
OH Log

Altamont LS
start 10' smpls

sh, Bk
LS, off-wh, to tn-gy, vf-fxln, prϕ
sh, gy, silty w/ sltst interbeds

sh & sltst, AA

coal
sh & sltst, lt gy

ss, vlt gy, vf grn, prϕ, NS
LS, dk-vdgy, fxl, min bk (organics?)
sh, bk?
LS, lt tn to o-wh, lt gy, vf-fxln, prϕ

Pawnee LS

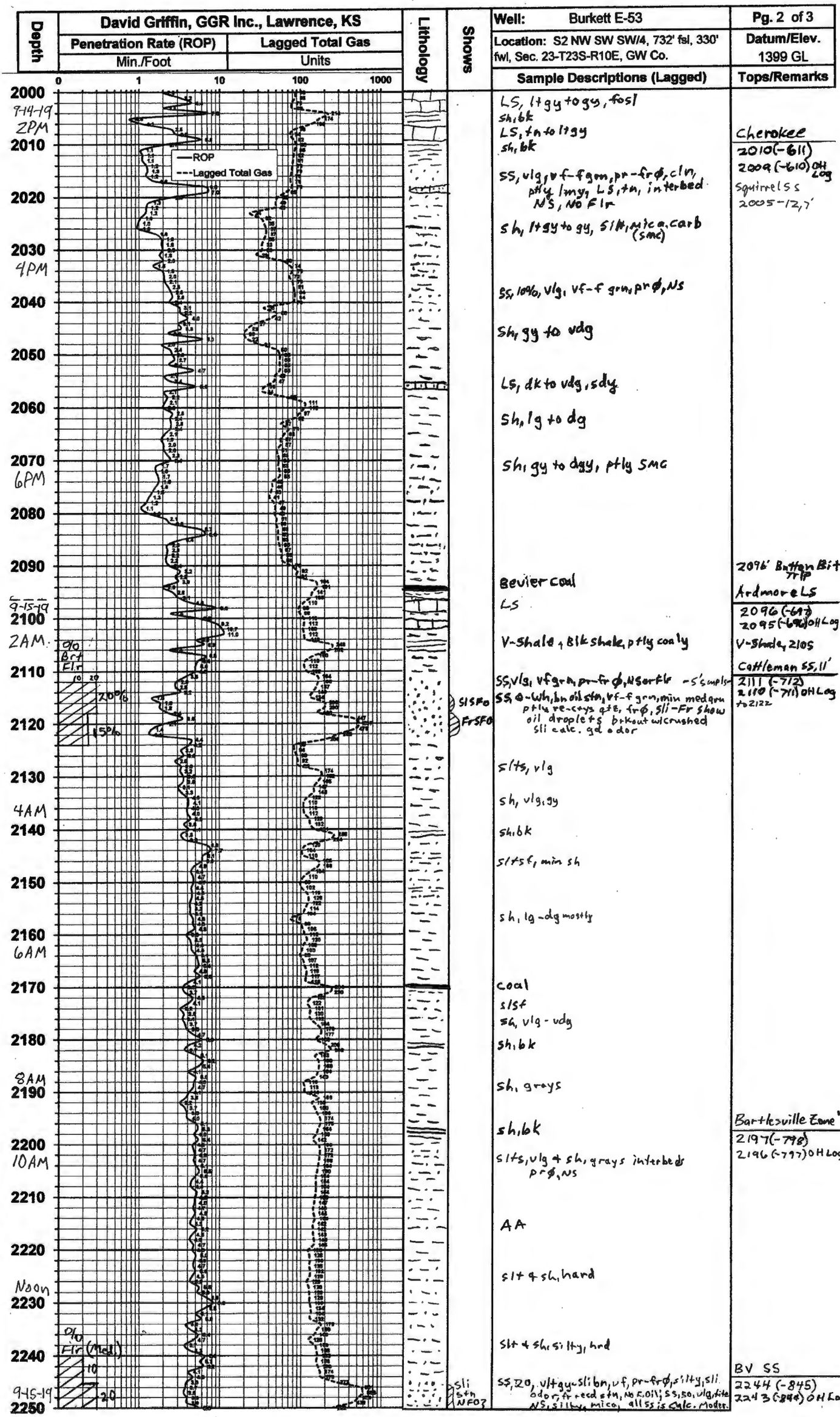
LS
sh, vari-col

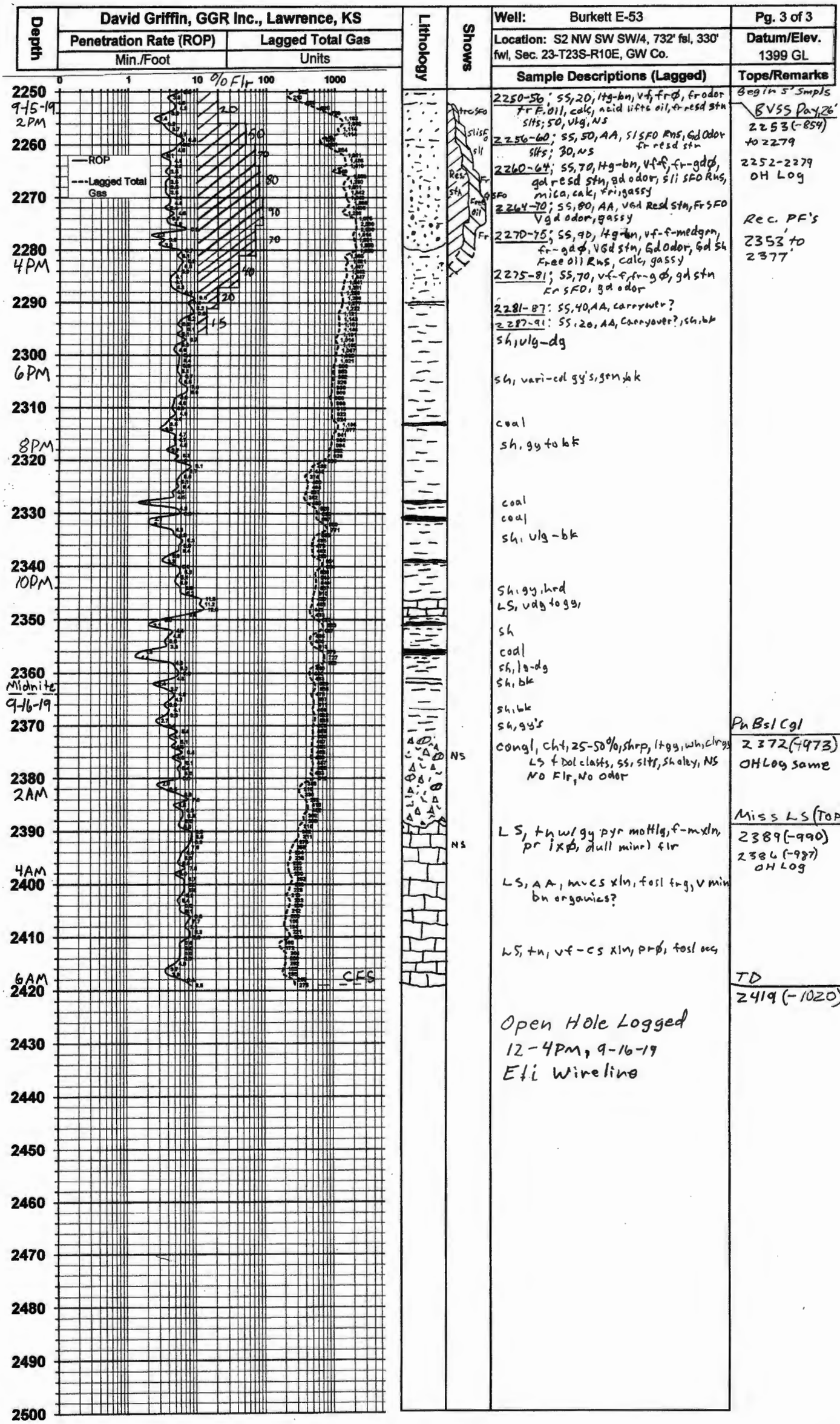
LS
sh, bk

sh, lg-dg, pt ly slty

LS, lt gy, gy, fxln, fosl

sh, grays


David Griffin, GGR Inc., Lawrence, KS
Penetration Rate (ROP)
Min./Foot
Lagged Total Gas
Units
Depth
Lithology
Shows
Well: Burkett E-53
Location: S2 NW SW SW/4, 732' fsl, 330' fwl, Sec. 23-T23S-R10E, GW Co.
Sample Descriptions (Lagged)
Pg. 2 of 3
Datum/Elev. 1399 GL
Tops/Remarks
0
1
10
100
1000
2000
2010
2020
2030
2040
2050
2060
2070
2080
2090
2100
2110
2120
2130
2140
2150
2160
2170
2180
2190
2200
2210
2220
2230
2240
2250
9-14-19
2PM
4PM
6PM
9-15-19
2AM
4AM
6AM
8AM
10AM
Noon
9-15-19
ROP
Lagged Total Gas
% Brt Flr
20%
15%
% Flr (Mcf)
LS, ltgy to gy, fosl
sh, bk
LS, tn to ltgy
sh, bk
SS, vlg, vf-fgrn, pr-frϕ, clr, ptly lmy, LS, tn, interbed NS, NO Flr
sh, ltgy to gy, slft, micaceous carb (smc)
SS, 10%, vlg, vf-f grn, prϕ, NS
sh, gy to vdg
LS, dk to vdg, sdy
sh, lg to dg
sh, gy to dgy, ptly smc
Bevier coal
LS
V-Shale, Blk shale, ptly coaly
SS, vlg, vfgrn, pr-frϕ, NSorFlr -5' smpls
SS, ⊙-wh, bn oil stn, vf-f grn, min med grn ptly re-crys qtz, frϕ, sli-Fr show oil droplets brkout w/crushed sli calc. gd odor
slts, vlg
sh, vlg, gy
sh, bk
slt+sh, min sh
sh, lg-dg mostly
coal
slsf
sh, vlg-vdg
sh, bk
sh, greys
sh, bk
slts, vlg + sh, greys interbeds prϕ, NS
AA
slt + sh, hard
slt + sh, silty, hrd
SS, 20%, vltgy-sli bn, vf, pr-frϕ, silty, sli odor, fr reed stn, No F. Oil; SS, 50%, vlg, slty NS, silty, mica, all SS is Calc. Modrt.
SlSFO
FrSFO
sli stn NFO
Cherokee
2010 (-611)
2009 (-610) OH Log
Squirrel SS
2005-12,7'
2096' Button Bit TTP
Ardmore LS
2096 (-697)
2095 (-696) OH Log
V-Shale, 2105
Cattleman SS, 11'
2111 (-712)
2110 (-711) OH Log
to 2122
Bartlesville Zone 'X'
2197 (-798)
2196 (-797) OH Log
BV SS
2244 (-845)
2243 (-844) OH Log



Well: Burkett E-53 | **Pg. 3 of 3**

Location: S2 NW SW SW/4, 732' fsl, 330' fwl, Sec. 23-T23S-R10E, GW Co. | **Datum/Elev.** 1399 GL

Sample Descriptions (Lagged) | **Tops/Remarks**

Begin 5' Smpls

2250-56' SS, 20, ltg-bn, vf, fr ϕ, fr odor Fr F. Oil, calc, acid lifts oil, fr resd stn slts; 50, vlg, NS

2256-60': SS, 50, AA, SI SFO Rns, Gd Odor fr resd stn slts; 30, NS

2260-64': SS, 70, ltg-bn, v-f-f, fr-gd ϕ, gd resd stn, gd odor; sli SFO Rns, mica, calc, fri, gassy

2264-70': SS, 80, AA, VGd Resd Stn, Fr SFO Vgd odor, gassy

2270-75': SS, 90, ltg-bn, vf-f-med gr, fr-gd ϕ, VGd stn, Gd Odor, Gd Sh Free Oil Rns, calc, gassy

2275-81': SS, 70, vf-f, fr-g ϕ, gd stn Fr SFO, gd odor

2281-87': SS, 40, AA, carryover?

2287-91': SS, 20, AA, Carryover?, sh, bk sh, vlg-dg

sh, vari-col gy's, grn/bk

coal

sh, gy to bk

coal

coal

sh, vlg-bk

sh, gy, hrd

LS, vdg to gy,

sh

coal

sh, lg-dg

sh, bk

sh, bk

sh, gy's

congl, cht, 25-50%, shrp, ltgy, wh, clrgy LS & Dol clasts, SS, slty, sh oley, NS NO Flr, No odor

LS, tn w/ gy pyr mottlg, f-mxln, pr ixϕ, dull minrl flr

LS, AA, mvcs xln, fosl frg, V min bn organics?

LS, tn, vf-cs xln, prϕ, fosl occ,

Open Hole Logged
12-4PM, 9-16-19
Eli Wireline

Begin 5' Smpls
BVSS Pay 26'
2253 (-854)
to 2279
2252-2279
OH Log

Rec. PF's
2353' to
2377'

Pn Bsl Cgl
2372 (-973)
OH Log same

Miss LS (Top)
2389 (-990)
2386 (-987)
OH Log

TD
2419 (-1020)