Schlumberger

Final Well Report

Well: MIP 3H

Field: WV Monongalia County (NAD 83)

Rig: PATTERSON #254

Schlumberger,Default

Prepared For

Client: NORTHEAST NATURAL ENERGY LLC

Report Prepared By:	Ivan Kolar	Date:	14-Sep-2015
Quality Check By:		Date:	14-Sep-2015
Approved By:	Ziad Akkaoui	Date:	14-Sep-2015

Schlumberger

September 14, 2015

Northeast Natural Energy LLC

Re: Client	Northeast Natural Energy LLC
Well	MIP 3H
Rig	Patterson 254
County	Monongalia, WV
Job #	15NEB1137

Please find enclosed a copy of the End of Well Report (EOWR) provided by our Directional Drilling Services from 08/28/2015 through 08/30/2015. This report consists of color planned vs. actual well drawings, proposed and actual surveys, daily drilling reports, BHAs, and a Pathfinder office support personnel sheet for the above referenced well.

Should your office require further information, please feel free to contact your sales representative, Matthew Shannon or myself.

Sincerely,

Ivan Kolar
Schlumberger Drilling Engineer
4600 Barry Court, Suite 200
Canonsburg, PA 15317
Phone 1 724 820 3349

Northeast Natural

Borehole:	Well:	Field:	Structure:
Original Borehole	MIP 3H	WV Monongalia County (NAD 83)	Patterson 254

Gravity & Magnetic Parameters

Model:	HDGM 2015	Dip:	66.856°	Date:	26-Aug-2015
MagDec:	-9.546°	FS:	52528.66nT	Gravity FS:	999.345mgn (9.80665 Based)

Surface Location NAD83 West Virginia State Plane, Northern Zone, US Feet

Lat:	N 39 36 6.42	Northing:	401656.6ftUS	Grid Conv:	-0.3037°
Lon:	W 79 58 34.04	Easting:	1834344.9ftUS	Scale Fact:	0.99994083

Miscellaneous

Slot:	MIP 3H	TVD Ref:	KB(1082ft above MSL)
Plan:	MIP 3H Gyro+MWD 0ft to update		

Surface Location

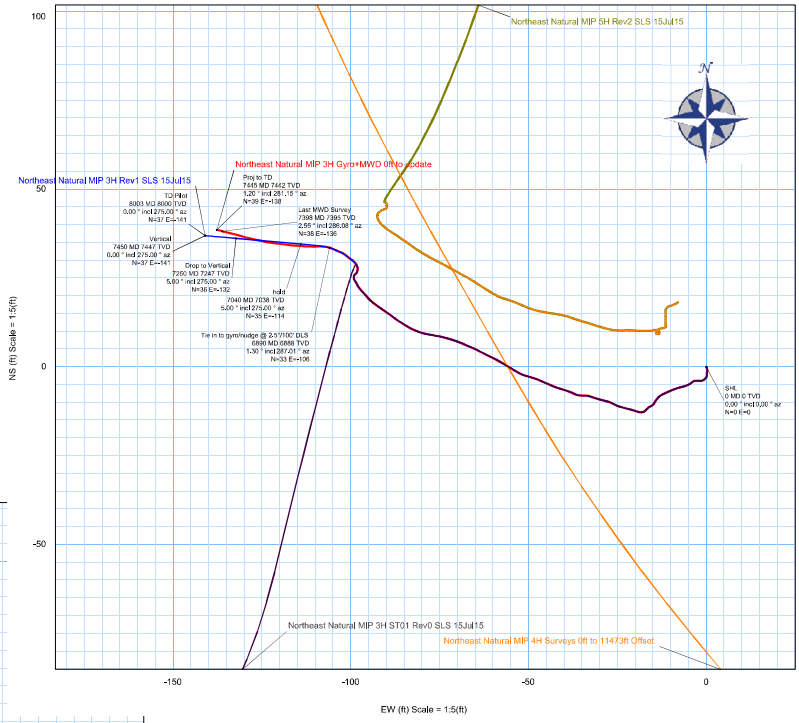
Northing: 401656.6 Easting: 1834344.9 Latitude: N 39 36 6.42 Longitude: W 79 58 34.04 VSec Azimuth: 284.661

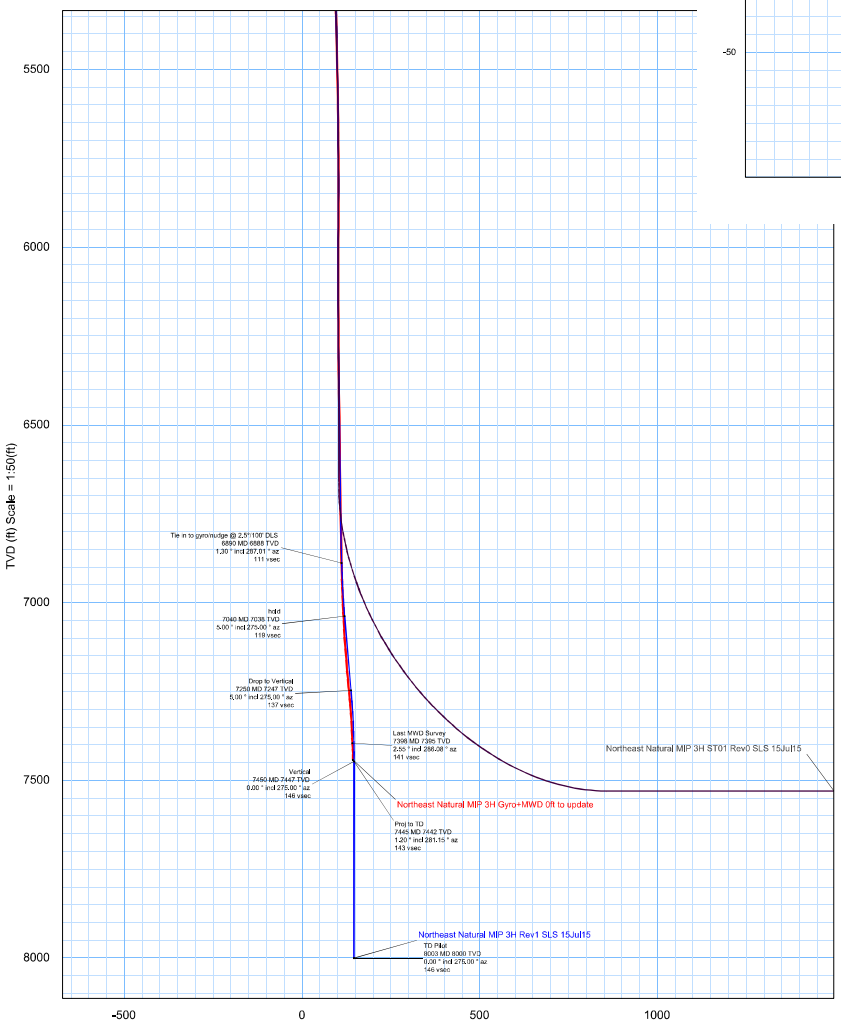
Target Description			Grid Coord						Local Coord	
Target Name	Shape	Dimension	Latitude	Longitude	Northing	Easting	TVD	VSec	N(+)/S(-)	E(+)/W(-)
MIP 3H West Hardline	Polyline	N/A	N 39 36 6.42	W 79 58 34.04	401656.60	1834344.90	1082.00	0.00	0.00	0.00
MIP 3H East Hardline	Polyline	N/A	N 39 36 6.42	W 79 58 34.04	401656.60	1834344.90	1082.00	0.00	0.00	0.00
MIP 3H BHL Hard line	Polyline	N/A	N 39 36 6.42	W 79 58 34.04	401656.60	1834344.90	1082.00	0.00	0.00	0.00
MIP 3H KOP	Point	N/A	N 39 36 3.65	W 79 58 36.15	401375.60	1833943.80	6006.00	317.75	-277.82	-401.13
MIP 3H TP	Point	N/A	N 39 36 7.54	W 79 58 42.84	401773.20	1833557.30	7534.00	694.77	116.61	-987.64
MIP 3H BHL	Point	N/A	N 39 36 56.15	W 79 59 29.02	408711.00	1830069.70	7534.00	5415.60	5054.71	-4275.46

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Last MWD Survey	7398.00	2.55	286.08	7395.45	141.44	38.14	-136.22	2.08
Proj to TD	7445.00	1.20	281.15	7442.42	142.97	38.62	-137.71	2.89

PART	Seq.	Survey Tool/ Survey Tool Code	Vendor/Tool	Hole Size (in)	Casing Size (in)	MD From (ft)	MD To (ft)	Survey Frequency (ft)	EOU Size (Semi Major) (ft)	EOU Size (Semi Minor) (ft)	Comments/ Contingency
1	1	SLB_NSG+MSHOT-Depth Only		17.5	13.375	0	24	Act Stns	0.73	0.73	
1	2	SLB_NSG+MSHOT		17.5	13.375	24	530	Act Stns	1.87	1.34	
1	3	SLB_NSG+MSHOT		12.25	9.625	530	1770	Act Stns	5.24	2.98	
1	4	SLB_NSG+MSHOT		8.75	5.5	1770	6890	Act Stns	15.18	3.41	
1	5	SLB_MWD-STD		8.75	5.5	6890	7398	Act Stns	15.22	3.53	
1	6	SLB_BLIND+TREND		8.75	5.5	7398	7445	Act Stns	15.62	5.2	





- Northeast Natural MIP 3H Gyro+MWD 0ft to update
- Northeast Natural MIP 3H Rev1 SLS 15Jul15
- Northeast Natural MIP 4H Surveys 0ft to 7727ft Offset
- Northeast Natural MIP 5H Rev2 SLS 15Jul15
- Northeast Natural MIP 4H Surveys 0ft to 11473ft Offset
- Northeast Natural MIP 5H Gyro+MWD 0ft to update
- Northeast Natural MIP 6H Surveys 0ft to 10189ft Offset
- Northeast Natural MIP 3H ST01 Rev0 SLS 15Jul15
- Northeast Natural MIP SW Rev0 SLS 23Jun15
- MIP 3H TP
- MIP 3H KOP
- MIP 3H West Hardline
- MIP 3H East Hardline
- MIP 3H BHL Hard line
- MIP 3H BHL

Grid
Mag True

Grid North
Tot Corr (M->G -9.242°)
Mag Dec (-9.546°)
Grid Conv (-0.304°)

CONTROLLED

Plan ref	Northeast Natural MIP 3H Gyro+MWD 0ft to update
Drawing ref	
Copy number	of 3
Date	31-Aug-2015
Drawn By	S. Shannon
Copy number	for

Schlumberger

Northeast Natural MIP 3H Survey 0ft to 7445ft MD

(Def Survey)

Report Date:	August 31, 2015 - 10:42 AM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Northeast Natural	**Vertical Section Azimuth:**	284.661 ° (Grid North)
Field:	WV Monongalia County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Northeast Natural MIP Pad / MIP 3H	**TVD Reference Datum:**	KB
Well:	MIP 3H	**TVD Reference Elevation:**	1082.000 ft above MSL
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	1058.000 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	-9.546 °
Survey Name:	Northeast Natural MIP 3H Gyro+MWD 0ft to update	**Total Gravity Field Strength:**	999.3447mgn (9.80665 Based)
Survey Date:	July 15, 2015	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	30.049 ° / 161.386 ft / 3.686 / 0.022	**Total Magnetic Field Strength:**	52528.660 nT
Coordinate Reference System:	NAD83 West Virginia State Plane, Northern Zone, US Feet	**Magnetic Dip Angle:**	66.856 °
Location Lat / Long:	N 39° 36' 6.42007", W 79° 58' 34.04266"	**Declination Date:**	August 26, 2015
Location Grid N/E Y/X:	N 401656.600 ftUS, E 1834344.900 ftUS	**Magnetic Declination Model:**	HDGM 2015
CRS Grid Convergence Angle:	-0.3037 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99994083	**Grid Convergence Used:**	-0.3037 °
Version / Patch:	2.7.1043.0	**Total Corr Mag North->Grid North:**	-9.2427 °
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")	Directional Difficulty Index
SHL	0.00	0.00	0.00	0.00	-1082.00	0.00	0.00	0.00	N/A	N/A	N/A	401656.60	1834344.90	N 39 36 6.42	W 79 58 34.04	0.00
	112.00	0.42	156.90	112.00	-970.00	-0.25	-0.38	0.16	0.38	0.38	0.00	401656.22	1834345.06	N 39 36 6.42	W 79 58 34.04	0.00
	212.00	0.63	185.61	211.99	-870.01	-0.56	-1.26	0.25	0.33	0.21	28.71	401655.34	1834345.15	N 39 36 6.41	W 79 58 34.04	0.00
	312.00	0.69	182.45	311.99	-770.01	-0.78	-2.41	0.17	0.07	0.06	-3.16	401654.19	1834345.07	N 39 36 6.40	W 79 58 34.04	0.31
	412.00	0.88	231.58	411.98	-670.02	-0.44	-3.49	-0.46	0.68	0.19	49.13	401653.11	1834344.44	N 39 36 6.39	W 79 58 34.05	0.75
	512.00	0.28	276.25	511.97	-570.03	0.26	-3.94	-1.30	0.71	-0.60	44.67	401652.66	1834343.60	N 39 36 6.38	W 79 58 34.06	1.02
	612.00	0.29	271.92	611.97	-470.03	0.75	-3.90	-1.80	0.02	0.01	-4.33	401652.70	1834343.10	N 39 36 6.38	W 79 58 34.07	1.07
	712.00	0.44	270.09	711.97	-370.03	1.37	-3.90	-2.43	0.15	0.15	-1.83	401652.70	1834342.47	N 39 36 6.38	W 79 58 34.07	1.14
	812.00	0.45	262.83	811.97	-270.03	2.10	-3.94	-3.21	0.06	0.01	-7.26	401652.66	1834341.69	N 39 36 6.38	W 79 58 34.08	1.21
	912.00	0.41	227.92	911.97	-170.03	2.66	-4.23	-3.86	0.26	-0.04	-34.91	401652.37	1834341.04	N 39 36 6.38	W 79 58 34.09	1.30
	1012.00	0.63	235.53	1011.96	-70.04	3.22	-4.78	-4.58	0.23	0.22	7.61	401651.82	1834340.32	N 39 36 6.37	W 79 58 34.10	1.38
	1112.00	0.82	250.18	1111.95	29.95	4.17	-5.34	-5.71	0.26	0.19	14.65	401651.26	1834339.19	N 39 36 6.37	W 79 58 34.12	1.48
	1212.00	0.94	258.21	1211.94	129.94	5.49	-5.75	-7.18	0.17	0.12	8.03	401650.85	1834337.72	N 39 36 6.36	W 79 58 34.13	1.57
	1312.00	1.08	248.39	1311.93	229.93	6.99	-6.26	-8.86	0.22	0.14	-9.82	401650.34	1834336.04	N 39 36 6.36	W 79 58 34.16	1.66
	1412.00	1.12	246.63	1411.91	329.91	8.52	-7.00	-10.64	0.05	0.04	-1.76	401649.60	1834334.27	N 39 36 6.35	W 79 58 34.18	1.73
	1512.00	1.14	243.23	1511.89	429.89	10.03	-7.83	-12.42	0.07	0.02	-3.40	401648.77	1834332.48	N 39 36 6.34	W 79 58 34.20	1.79
	1612.00	1.12	216.81	1611.87	529.87	11.15	-9.06	-13.89	0.52	-0.02	-26.42	401647.54	1834331.01	N 39 36 6.33	W 79 58 34.22	1.90
	1712.00	0.67	208.16	1711.86	629.86	11.65	-10.36	-14.76	0.47	-0.45	-8.65	401646.24	1834330.14	N 39 36 6.32	W 79 58 34.23	1.98
	1812.00	0.72	248.96	1811.85	729.85	12.30	-11.10	-15.62	0.49	0.05	40.80	401645.50	1834329.28	N 39 36 6.31	W 79 58 34.24	2.04
	1912.00	0.70	221.83	1911.84	829.84	13.09	-11.78	-16.61	0.33	-0.02	-27.13	401644.82	1834328.29	N 39 36 6.30	W 79 58 34.25	2.10
	2012.00	0.45	231.01	2011.84	929.84	13.60	-12.49	-17.32	0.27	-0.25	9.18	401644.12	1834327.58	N 39 36 6.30	W 79 58 34.26	2.13
	2112.00	0.39	257.87	2111.84	1029.84	14.14	-12.80	-17.96	0.20	-0.06	26.86	401643.80	1834326.94	N 39 36 6.29	W 79 58 34.27	2.16
	2212.00	0.38	279.40	2211.83	1129.83	14.77	-12.82	-18.62	0.14	-0.01	21.53	401643.78	1834326.28	N 39 36 6.29	W 79 58 34.28	2.18
	2312.00	0.83	288.12	2311.83	1229.83	15.82	-12.54	-19.64	0.46	0.45	8.72	401644.06	1834325.26	N 39 36 6.30	W 79 58 34.29	2.23
	2412.00	1.12	285.37	2411.81	1329.81	17.52	-12.06	-21.27	0.29	0.29	-2.75	401644.54	1834323.63	N 39 36 6.30	W 79 58 34.31	2.28
	2512.00	0.95	283.79	2511.80	1429.80	19.33	-11.60	-23.02	0.17	-0.17	-1.58	401645.00	1834321.88	N 39 36 6.30	W 79 58 34.34	2.32
	2612.00	0.94	287.25	2611.78	1529.78	20.98	-11.16	-24.61	0.06	-0.01	3.46	401645.44	1834320.30	N 39 36 6.31	W 79 58 34.36	2.35
	2712.00	1.09	300.82	2711.77	1629.77	22.71	-10.43	-26.21	0.28	0.15	13.57	401646.17	1834318.70	N 39 36 6.32	W 79 58 34.38	2.39
	2812.00	1.20	282.59	2811.75	1729.75	24.67	-9.71	-28.04	0.38	0.11	-18.23	401646.89	1834316.86	N 39 36 6.32	W 79 58 34.40	2.43
	2912.00	1.33	286.36	2911.72	1829.72	26.88	-9.16	-30.18	0.15	0.13	3.77	401647.44	1834314.72	N 39 36 6.33	W 79 58 34.43	2.47
	3012.00	1.39	289.94	3011.70	1929.70	29.25	-8.42	-32.43	0.10	0.06	3.58	401648.18	1834312.47	N 39 36 6.34	W 79 58 34.46	2.50
	3112.00	1.47	266.38	3111.66	2029.66	31.67	-8.09	-34.85	0.59	0.08	-23.56	401648.51	1834310.05	N 39 36 6.34	W 79 58 34.49	2.56
	3212.00	1.31	297.88	3211.64	2129.64	34.00	-7.63	-37.14	0.77	-0.16	31.50	401648.97	1834307.76	N 39 36 6.34	W 79 58 34.52	2.62
	3312.00	1.57	286.93	3311.61	2229.61	36.48	-6.70	-39.47	0.38	0.26	-10.95	401649.90	1834305.44	N 39 36 6.35	W 79 58 34.55	2.66
	3412.00	1.22	288.22	3411.58	2329.58	38.92	-5.97	-41.79	0.35	-0.35	1.29	401650.63	1834303.12	N 39 36 6.36	W 79 58 34.58	2.70
	3512.00	1.43	294.24	3511.55	2429.55	41.21	-5.12	-43.94	0.25	0.21	6.02	401651.48	1834300.97	N 39 36 6.37	W 79 58 34.60	2.73
	3612.00	1.63	293.51	3611.51	2529.51	43.84	-4.04	-46.38	0.20	0.20	-0.73	401652.56	1834298.53	N 39 36 6.38	W 79 58 34.63	2.76
	3712.00	1.30	286.90	3711.48	2629.48	46.38	-3.15	-48.77	0.37	-0.33	-6.61	401653.45	1834296.14	N 39 36 6.39	W 79 58 34.67	2.79
	3812.00	1.26	285.87	3811.46	2729.46	48.62	-2.51	-50.91	0.05	-0.04	-1.03	401654.09	1834293.99	N 39 36 6.39	W 79 58 34.69	2.81
	3912.00	1.45	299.91	3911.43	2829.43	50.94	-1.58	-53.06	0.38	0.19	14.04	401655.02	1834291.84	N 39 36 6.40	W 79 58 34.72	2.84
	4012.00	1.62	301.18	4011.39	2929.39	53.51	-0.22	-55.37	0.17	0.17	1.27	401656.38	1834289.53	N 39 36 6.41	W 79 58 34.75	2.87
	4112.00	1.35	301.72	4111.36	3029.36	55.99	1.13	-57.58	0.27	-0.27	0.54	401657.73	1834287.32	N 39 36 6.43	W 79 58 34.78	2.90
	4212.00	1.83	295.88	4211.32	3129.32	58.69	2.45	-60.02	0.51	0.48	-5.84	401659.05	1834284.88	N 39 36 6.44	W 79 58 34.81	2.93
	4312.00	1.81	297.96	4311.27	3229.27	61.79	3.88	-62.85	0.07	-0.02	2.08	401660.48	1834282.05	N 39 36 6.46	W 79 58 34.85	2.95
	4412.00	1.87	293.98	4411.22	3329.22	64.94	5.29	-65.74	0.14	0.06	-3.98	401661.89	1834279.17	N 39 36 6.47	W 79 58 34.88	2.98
	4512.00	1.95	292.56	4511.16	3429.16	68.23	6.60	-68.80	0.09	0.08	-1.42	401663.20	1834276.10	N 39 36 6.48	W 79 58 34.92	3.00
	4612.00	1.96	286.72	4611.10	3529.10	71.63	7.75	-72.01	0.20	0.01	-5.84	401664.35	1834272.90	N 39 36 6.49	W 79 58 34.96	3.02
	4712.00	1.69	281.17	4711.05	3629.05	74.81	8.53	-75.09	0.32	-0.27	-5.55	401665.13	1834269.81	N 39 36 6.50	W 79 58 35.00	3.05
	4812.00	1.84	279.39	4811.01	3729.01	77.88	9.07	-78.12	0.16	0.15	-1.78	401665.67	1834266.78	N 39 36 6.51	W 79 58 35.04	3.07
	4912.00	1.90	291.08	4910.95	3828.95	81.12	9.93	-81.25	0.39	0.06	11.69	401666.53	1834263.65	N 39 36 6.51	W 79 58 35.08	3.10
	5012.00	2.30	301.03	5010.89	3928.89	84.70	11.56	-84.52	0.54	0.40	9.95	401668.16	1834260.38	N 39 36 6.53	W 79 58 35.12	3.13
	5112.00	2.25	306.39	5110.81	4028.81	88.44	13.76	-87.82	0.22	-0.05	5.36	401670.36	1834257.09	N 39 36 6.55	W 79 58 35.17	3.16
	5212.00	1.88	304.40	5210.74	4128.74	91.81	15.85	-90.75	0.38	-0.37	-1.99	401672.45	1834254.15	N 39 36 6.57	W 79 58 35.20	3.19
	5312.00	1.49	305.76	5310.70	4228.70	94.57	17.54	-93.16	0.39	-0.39	1.36	401674.14	1834251.74	N 39 36 6.59	W 79 58 35.23	3.21
	5412.00	1.57	317.94	5410.66	4328.66	96.93	19.32	-95.14	0.33	0.08	12.18	401675.92	1834249.77	N 39 36 6.61	W 79 58 35.26	3.23
	5512.00	1.42	317.22	5510.63	4428.63	99.12	21.24	-96.89	0.15	-0.15	-0.72	401677.84	1834248.01	N 39 36 6.62	W 79 58 35.28	3.24
	5612.00	1.12	333.06	5610.60	4528.60	100.81	23.02	-98.18	0.46	-0.30	15.84	401679.62	1834246.73	N 39 36 6.64	W 79 58 35.30	3.26
	5712.00	0.52	323.22	5710.59	4628.59	101.81	24.26	-98.89	0.61	-0.60	-9.84	401680.86	1834246.01	N 39 36 6.65	W 79 58 35.31	3.29
	5812.00	0.72	2.11	5810.59	4728.59	102.30	25.25	-99.14	0.45	0.20	38.89	401681.85	1834245.76	N 39 36 6.66	W 79 58 35.31	3.30
	5912.00	0.51	60.49	5910.58	4828.58	102.12	26.10	-98.73	0.63	-0.21	58.38	401682.69	1834246.17	N 39 36 6.67	W 79 58 35.31	3.32
	6012.00	0.32	13.28	6010.58	4928.58	101.81	26.59	-98.28	0.38	-0.19	-47.21	401683.19	1834246.63	N 39 36 6.68	W 79 58 35.30	3.33
	6112.00	0.27	14.02	6110.58	5028.58	101.82	27.09	-98.16	0.05	-0.05	0.74	401683.69	1834246.75	N 39 36 6.68	W 79 58 35.30	3.34
	6212.00	0.52	357.71	6210.58	5128.58	101.95	27.77	-98.12	0.27	0.25	-16.31	401684.37	1834246.79	N 39 36 6.69	W 79 58 35.30	3.34
	6312.00	0.79	329.34	6310.57	5228.57	102.58	28.82	-98.49	0.41	0.27	-28.37	401685.41	1834246.42	N 39 36 6.70	W 79 58 35.30	3.36
	6412.00	1.05	305.37	6410.56	5328.56	103.92	29.94	-99.59	0.46	0.26	-23.97	401686.54	1834245.32	N 39 36 6.71	W 79 58 35.32	3.37
	6512.00	0.66	309.59	6510.55	5428.55	105.30	30.84	-100.78	0.39	-0.39	4.22	401687.44	1834244.13	N 39 36 6.72	W 79 58 35.33	3.39
	6612.00	0.76	307.88	6610.54	5528.54	106.43	31.61	-101.75	0.10	0.10	-1.71	401688.21	1834243.16	N 39 36 6.73	W 79 58 35.34	3.39
	6712.00	0.73	288.99	6710.53	5628.53	107.68	32.23	-102.87	0.25	-0.03	-18.89	401688.82	1834242.03	N 39 36 6.73	W 79 58 35.36	3.40
	6812.00	1.18	295.18	6810.52	5728.52	109.33	32.87	-104.41	0.46	0.45	6.19	401689.47	1834240.50	N 39 36 6.74	W 79 58 35.38	3.42
	6890.00	1.30	287.01	6888.50	5806.50	111.00	33.47	-105.98	0.27	0.15	-10.47	401690.07	1834238.93	N 39 36 6.75	W 79 58 35.40	3.43
	6911.00	1.14	289.50	6909.49	5827.49	111.45	33.61	-106.40	0.80	-0.76	11.86	401690.21	1834238.50	N 39 36 6.75	W 79 58 35.40	3.43
	7005.00	2.37	267.49	7003.45	5921.45	114.24	33.84	-109.23	1.47	1.31	-23.41	401690.44	1834235.68	N 39 36 6.75	W 79 58 35.44	3.47
	7099.00	3.87	274.48	7097.31	6015.31	119.21	34.00	-114.33	1.64	1.60	7.44	401690.60	1834230.58	N 39 36 6.75	W 79 58 35.51	3.52
	7194.00	4.92	277.43	7192.03	6110.03	126.41	34.78	-121.57	1.13	1.11	3.11	401691.38	1834223.34	N 39 36 6.76	W 79 58 35.60	3.56
	7239.00	5.45	281.76	7236.84	6154.84	130.46	35.46	-125.57	1.46	1.18	9.62	401692.06	1834219.33	N 39 36 6.76	W 79 58 35.65	3.58
	7288.00	4.48	285.77	7285.66	6203.66	134.70	36.46	-129.69	2.10	-1.98	8.18	401693.06	1834215.21	N 39 36 6.77	W 79 58 35.70	3.61
	7383.00	2.81	282.40	7380.46	6298.46	140.73	37.97	-135.54	1.77	-1.76	-3.55	401694.56	1834209.37	N 39 36 6.79	W 79 58 35.78	3.65
Last MWD Survey	7398.00	2.55	286.08	7395.45	6313.45	141.44	38.14	-136.22	2.08	-1.73	24.53	401694.74	1834208.69	N 39 36 6.79	W 79 58 35.79	3.66
Proj to TD	7445.00	1.20	281.15	7442.42	6360.42	142.97	38.52	-137.71	2.89	-2.87	-10.49	401695.12	1834207.20	N 39 36 6.79	W 79 58 35.80	3.69

Survey Type: Non-Def Survey

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")	Directional Difficulty Index
		1	0.000	24.000	Act Stns	17.500	13.375	SLB_NSG+MSHOT-Depth Only		Original Borehole / Northeast Natural MIP 3H Gyro+MWD 0ft to update						
		1	24.000	530.000	Act Stns	17.500	13.375	SLB_NSG+MSHOT		Original Borehole / Northeast Natural MIP 3H Gyro+MWD 0ft to						
		1	530.000	1770.000	Act Stns	12.250	9.625	SLB_NSG+MSHOT		Original Borehole / Northeast Natural MIP 3H Gyro+MWD 0ft to						
		1	1770.000	6890.000	Act Stns	8.750	5.500	SLB_NSG+MSHOT		Original Borehole / Northeast Natural MIP 3H Gyro+MWD 0ft to						
		1	6890.000	7398.000	Act Stns	8.750	5.500	SLB_MWD-STD		Original Borehole / Northeast Natural MIP 3H Gyro+MWD 0ft to						
		1	7398.000	7445.000	Act Stns	8.750	5.500	SLB_BLIND+TREND		Original Borehole / Northeast Natural MIP 3H Gyro+MWD 0ft to						

Job Number:	15NEB1137	**Well County:**	Monongalia
Company Name:	NORTHEAST NATURAL ENERGY LLC	**Well Field:**	WV Monongalia County (NAD 83)
Rig Name:	PATTERSON #254	**Well Country:**	UNITED STATES
Well Name:	MIP 3H	**Lead DD:**	Perry, John
Well Location:	Lat: 39.601667, Long: -79.9761	**Co. Man:**	
Well State:	WV		

UOM: DEN: lbm/galUS ● DEP: ft ● DIA: in ● FLO: galUS/min ● INC: deg ● MAS: klbm ● PRE: psi ● TEM: degF ● TOR: kft.lbf ● VOL: galUS ● DLS: deg/100ft ● CON: ppm ● CON_

BHA # 1 on Run # 1 - BHA Summary Information

TIME IN - OUT		Rotary Hours	5.58	Start Depth	6935	RPM Range	Flow Rate
Start Time	End Time	Total Circu. Hours	18.00	End Depth	7445	50-60	354-495
28-Aug-15	30-Aug-15	Slide Hours	5.58	Percent Rotary	76.67%	TVD Depth In	TVD Depth Out
@ 13:30	@ 10:00	Below Rotary Hour	44.50	Percent Slide	23.33%	6,934.00	7,442.42

				Incl.		Azimuth	
Total Drilled	510.00	Avg. Total ROP	45.67				
Total Rotary Drilled	391.00	Avg. Rotary ROP	70.03	IN	OUT	IN	OUT
Total Drilled Sliding	119.00	Avg. Slide ROP	21.31	1.3	1.2	287.01	281.15

SPP	1,300-2,130	wt. SOW	134-134	PUW	144-145	RSW	140-140	Rea. POOH	Section Total Depth

Bit Data

Smith-SLB	8.75" MDSiZ 616 - B					
Bit Type	PDC					
TFA	.782					
JETS	12	12	12	14	14	
	14					
Bit Coding	IADC #	M616				

IR	OR	DL	LOC	BS	G	ODL
0	0	NO	A	X	I	NOTD

Bit Drop	1157 PSI @ 354 GPM

Motor Data

NOV 7/8 5.0 0.29RPG FXD 1.50°					
Model	Rental MTR	Pad OD			
MFG	NATIONAL	Stator / Rot	7:8		
Bend	1.50	Motor Diff	100		
Bit to Bend	4.00	Output	0.29		
NB Stab		Rotor Jet			

Sensor Offsets			
D&I	90.43	GAMMA	36.79
Gamma Ray	93.46		
D&I	45.11		

Mud Data

Type	Water Base			BHT	111
WT	12.2	Gas		Solids	21.5
Vis	45	Sand		T	88
PV	18	PH	8.8	Chlor	133,000
YP	17	WL		Oil%	

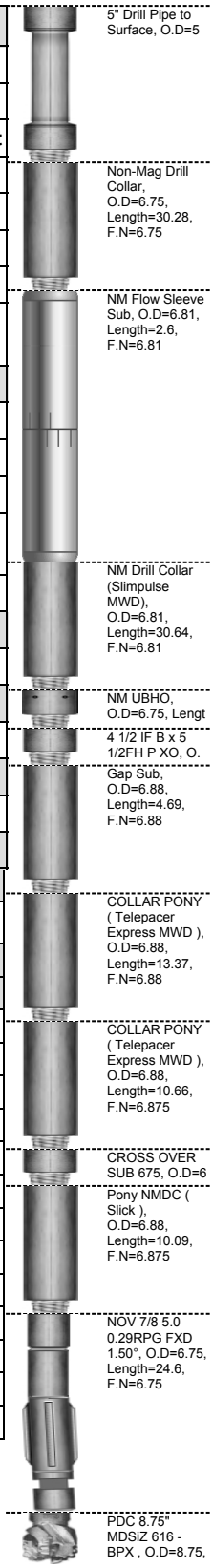
PUMPS	PUMP1	PUMP2
NAME		
Model		
Type	Triplex	Triplex
Liner	5.5	5.5
Stroke	12	12
Output	3.52	3.52

Comments

RIH and drill nudge and then back to vertical in order to create separation from nearby wells. POOH to pick up core assembly.

BHA Detail

#	Description	Serial #	I.D	O.D	Length	Sum	Top Conn
1	PDC 8.75" MDSiZ 616 - BPX	JG6481		8.75	0.8	0.8	4 1/2 in REG PIN
2	NOV 7/8 5.0 0.29RPG FXD 1.50°	700-36-017		6.75	24.6	25.4	4 1/2 in IF BOX
3	Pony NMDC (Slick)	DR21346	2.88	6.88	10.09	35.49	4 1/2 in IF BOX
4	CROSS OVER SUB 675	Y67X0018A	2.81	6.88	2.69	38.18	5 1/2 in FH BOX
5	COLLAR PONY (Telepacer Express MWD)	Y67V060	3	6.88	10.66	48.84	5 1/2 in FH BOX
6	COLLAR PONY (Telepacer Express MWD)	Y67V122	3	6.88	13.37	62.21	5 1/2 in FH BOX
7	Gap Sub	Y67G0070	3	6.88	4.69	66.9	5 1/2 in FH BOX
8	4 1/2 IF B x 5 1/2FH P XO	D67X562	3.5	6.88	2.62	69.52	4 1/2 in IF BOX
9	NM UBHO	675U304	2.88	6.75	3.9	73.42	5 1/2 in IF BOX
10	NM Drill Collar (Slimpulse MWD)	DR21630	2.81	6.81	30.64	104.06	4 1/2 in IF BOX
11	NM Flow Sleeve Sub	DR20901	2.75	6.81	2.6	106.66	4 1/2 in IF BOX
12	Non-Mag Drill Collar	DR24142	2.88	6.75	30.28	136.94	4 1/2 in IF BOX
13	5" Drill Pipe to Surface	RIG	4.28	5	0	136.94	4 1/2 in IF BOX



Job Number:	15NEB1137	**Well County:**	Monongalia
Company Name:	NORTHEAST NATURAL ENERGY LLC	**Well Field:**	WV Monongalia County (NAD 83)
Rig Name:	PATTERSON #254	**Well Country:**	UNITED STATES
Well Name:	MIP 3H	**Lead DD:**	Perry, John
Well Location:	Lat: 39.601667, Long: -79.9761	**Co. Man:**	
Well State:	WV		

UOM: DEN: lbm/galUS ● DEP: ft ● DIA: in ● FLO: galUS/min ● INC: deg ● MAS: klbm ● PRE: psi ● TEM: degF ● TOR: kft.lbf ● VOL: galUS ● DLS: deg/100ft ● CON: ppm ● CON_

Daily Report for Thursday, August, 27 2015

From: Aug-26-2015 00:00 To: Aug-27-2015 00:00

DRILLING SUMMARY

Start Depth	0	**Rotary Hours**	
End Depth	0	**Total Circu. Hours**	
Total Drilled		**Avg. Total ROP**	
Total Rotary Drilled		**Avg. Rotary ROP**	
Total Sliding Drilled		**Avg. Slide ROP**	
Slide Hours		**Percent Rotary**	
Below Rotary Hrs		**Percent Slide**	

DRILLING PARAMETERS

WOB Rot		**PU**		**Slack Off**	
WOB Slid		**SPP**		**Flow Rate**	
RAB		**SPM**			

MUD DATA

Type				**PV**		**SOLID**	
Weight		**Gas**		**YP**		**BHT°**	
Viscosity		**Sand**		**PH**		**Flow T°**	
Chlorides		**WL**				**Oil%**	

PERSONNEL

Directional Company	
Company Man	
MLWD	Olson, Aaron J
MLWD	Hamrick, Anthony Joseph
DD - Cell Manager	Perry, John
DD	Sagne, Babacar

Incl. In	1.3	**Azm. In**	287.01	**Incl. Out**	1.2	**Azm. Out**	281.15

Max Inclination: 5.4500913

CASING

Size	Set Depth
9.625	1,800

DAILY COST

Daily Cost:

Cumulative Cost:

Signature:

BHA & COMMENTS

Arrive on location: Rig up DD MWD

FORECAST NEXT 24

NU test BOP, PU BHA1

DD JOURNAL

Date	Start	End	Hours	Start	End	Activity	Comment
26-Aug-15	00:00	00:00	24	0	0	Standby	Arrive on location

Run Statistics Calculated from DD Journal

Job Number:	15NEB1137	**Well County:**	Monongalia
Company Name:	NORTHEAST NATURAL ENERGY LLC	**Well Field:**	WV Monongalia County (NAD 83)
Rig Name:	PATTERSON #254	**Well Country:**	UNITED STATES
Well Name:	MIP 3H	**Lead DD:**	Perry, John
Well Location:	Lat: 39.601667, Long: -79.9761	**Co. Man:**	
Well State:	WV		

UOM: DEN: lbm/galUS ● DEP: ft ● DIA: in ● FLO: galUS/min ● INC: deg ● MAS: klbm ● PRE: psi ● TEM: degF ● TOR: kft.lbf ● VOL: galUS ● DLS: deg/100ft ● CON: ppm ● CON_

Daily Report for Friday, August, 28 2015

From: Aug-27-2015 00:00 To: Aug-28-2015 00:00

DRILLING SUMMARY

Start Depth	0	**Rotary Hours**	
End Depth	0	**Total Circu. Hours**	
Total Drilled		**Avg. Total ROP**	
Total Rotary Drilled		**Avg. Rotary ROP**	
Total Sliding Drilled		**Avg. Slide ROP**	
Slide Hours		**Percent Rotary**	
Below Rotary Hrs		**Percent Slide**	

DRILLING PARAMETERS

WOB Rot		**PU**		**Slack Off**	
WOB Slid		**SPP**		**Flow Rate**	
RAB		**SPM**			

MUD DATA

Type				**PV**		**SOLID**	
Weight		**Gas**		**YP**		**BHT°**	
Viscosity		**Sand**		**PH**		**Flow T°**	
Chlorides		**WL**				**Oil%**	

PERSONNEL

Directional Company	
Company Man	
DD	Sagne, Babacar
DD - Cell Manager	Perry, John
MLWD	Hamrick, Anthony Joseph
MLWD	Olson, Aaron J

Incl. In	1.3	**Azm. In**	287.01	**Incl. Out**	1.2	**Azm. Out**	281.15

Max Inclination: 5.4500913

CASING

Size	Set Depth
9.625	1,800

DAILY COST

Daily Cost:

Cumulative Cost:

Signature:

BHA & COMMENTS

Arrive on location: Rig up DD MWD

FORECAST NEXT 24

NU test BOP, PU BHA1

DD JOURNAL

Date	Start	End	Hours	Start	End	Activity	Comment
27-Aug-15	00:00	00:00	24	0	0	Standby	NU test BOP, Install flowline

Run Statistics Calculated from DD Journal

Job Number:	15NEB1137	**Well County:**	Monongalia
Company Name:	NORTHEAST NATURAL ENERGY LLC	**Well Field:**	WV Monongalia County (NAD 83)
Rig Name:	PATTERSON #254	**Well Country:**	UNITED STATES
Well Name:	MIP 3H	**Lead DD:**	Perry, John
Well Location:	Lat: 39.601667, Long: -79.9761	**Co. Man:**	
Well State:	WV		

UOM: DEN: lbm/galUS ● DEP: ft ● DIA: in ● FLO: galUS/min ● INC: deg ● MAS: klbm ● PRE: psi ● TEM: degF ● TOR: kft.lbf ● VOL: galUS ● DLS: deg/100ft ● CON: ppm ● CON_

Daily Report for Saturday, August, 29 2015

From: Aug-28-2015 00:00 To: Aug-29-2015 00:00

DRILLING SUMMARY

Start Depth	0	**Rotary Hours**	0.00
End Depth	0	**Total Circu. Hours**	0.25
Total Drilled	0	**Avg. Total ROP**	
Total Rotary Drilled	0	**Avg. Rotary ROP**	
Total Sliding Drilled	0	**Avg. Slide ROP**	
Slide Hours	0.00	**Percent Rotary**	
Below Rotary Hrs	10.50	**Percent Slide**	

DRILLING PARAMETERS

WOB Rot		**PU**		**Slack Off**	
WOB Slid		**SPP**		**Flow Rate**	
RAB		**SPM**			

MUD DATA

Type	Water Base			**PV**		**SOLID**	
Weight	12.50	**Gas**		**YP**		**BHT°**	
Viscosity		**Sand**		**PH**		**Flow T°**	
Chlorides		**WL**				**Oil%**	

PERSONNEL

Directional Company	
Company Man	
MLWD	Olson, Aaron J
MLWD	Hamrick, Anthony Joseph
DD - Cell Manager	Perry, John
DD	Sagne, Babacar

Incl. In	1.3	**Azm. In**	287.01	**Incl. Out**	1.2	**Azm. Out**	281.15

Max Inclination: 5.4500913

CASING

Size	Set Depth
9.625	1,800

DAILY COST

Daily Cost:

Cumulative Cost:

Signature:

BHA & COMMENTS

RIG UP, TBRT, MU/PU BHA, SHT, AND RIH

FORECAST NEXT 24

Continue to RIH, and start drilling Pilot to TD.

DD JOURNAL

Date	Start	End	Hours	Start	End	Activity	Comment
28-Aug-15	00:00	13:30	13.5	0	0	Standby	While Rig Repair
28-Aug-15	13:30	15:30	2	0	0	Pick Up BHA	Pick Up BHA 1
28-Aug-15	15:30	16:45	1.25	0	0	Other – Inhole	Rig repairs
28-Aug-15	16:45	21:30	4.75	0	2000	TIH	TIH to 2000'
28-Aug-15	21:30	22:30	1	2000	2000	Other – Inhole	Fill pipe
28-Aug-15	22:30	22:55	0.42	2000	2000	Other – Inhole	Reboot pason / stand down for gas leak
28-Aug-15	22:55	23:10	0.25	2000	2000	Circulating	Test MWD tools
28-Aug-15	23:10	00:00	0.83	2000	2691	TIH	

Run Statistics Calculated from DD Journal

Job Number:	15NEB1137	**Well County:**	Monongalia
Company Name:	NORTHEAST NATURAL ENERGY LLC	**Well Field:**	WV Monongalia County (NAD 83)
Rig Name:	PATTERSON #254	**Well Country:**	UNITED STATES
Well Name:	MIP 3H	**Lead DD:**	Perry, John
Well Location:	Lat: 39.601667, Long: -79.9761	**Co. Man:**	
Well State:	WV		

UOM: DEN: lbm/galUS ● DEP: ft ● DIA: in ● FLO: galUS/min ● INC: deg ● MAS: klbm ● PRE: psi ● TEM: degF ● TOR: kft.lbf ● VOL: galUS ● DLS: deg/100ft ● CON: ppm ● CON_

Daily Report for Sunday, August, 30 2015

From: Aug-29-2015 00:00 To: Aug-30-2015 00:00

DRILLING SUMMARY

Start Depth	2,691	**Rotary Hours**	5.00
End Depth	7,367	**Total Circu. Hours**	14.75
Total Drilled	432	**Avg. Total ROP**	18.00
Total Rotary Drilled	332	**Avg. Rotary ROP**	66.40
Total Sliding Drilled	100	**Avg. Slide ROP**	19.67
Slide Hours	5.08	**Percent Rotary**	76.85%
Below Rotary Hrs	24.00	**Percent Slide**	23.15%

DRILLING PARAMETERS

WOB Rot	20.00	**PU**	144.00	**Slack Off**	134.00
WOB Slid	13.50	**SPP**	2,067.69	**Flow Rate**	354.00 - 495.00
RAB	140.00	**SPM**	120.00		

MUD DATA

Type	Water Base			**PV**	15	**SOLID**	21.50
Weight	12.20	**Gas**		**YP**	15	**BHT°**	
Viscosity	45	**Sand**		**PH**	8.8	**Flow T°**	88.00
Chlorides	133,00	**WL**	10.00			**Oil%**	

PERSONNEL

Directional Company	
Company Man	
DD	Sagne, Babacar
DD - Cell Manager	Perry, John
MLWD	Hamrick, Anthony Joseph
MLWD	Olson, Aaron J

Incl. In	1.3	**Azm. In**	287.01	**Incl. Out**	1.2	**Azm. Out**	281.15

Max Inclination: 5.4500913

CASING

Size	Set Depth
9.625	1,800

DAILY COST

Daily Cost:

Cumulative Cost:

Signature:

BHA & COMMENTS

RIH, Fill hole, circulate, and drill pilot.

FORECAST NEXT 24

Drill pilot to TD, POOH, and LD BHA

DD JOURNAL

Date	Start	End	Hours	Start	End	Activity	Comment
29-Aug-15	00:00	07:35	7.58	2691	6706	TIH	TIH To 6706'
29-Aug-15	07:35	07:45	0.17	6706	6706	Circulating	Fill Pipe / Break Circulation
29-Aug-15	07:45	08:15	0.5	6706	6706	Circulating	Displace Brine With WBM
29-Aug-15	08:15	08:20	0.08	6706	6706	MWD Survey	Benchmark Survey @ 6661'
29-Aug-15	08:20	11:35	3.25	6706	6935	Circulating	Wash And Ream
29-Aug-15	11:35	13:00	1.42	6935	6950	Sliding	15' @ 275 mtf
29-Aug-15	13:00	13:15	0.25	6950	6958	Rotating	
29-Aug-15	13:15	13:40	0.42	6958	6958	MWD Survey & Conn.	C/S @ 6911
29-Aug-15	13:40	15:15	1.58	6958	7000	Rotating	
29-Aug-15	15:15	15:20	0.08	7000	7000	Other – Inhole	Checkshot
29-Aug-15	15:20	16:45	1.42	7000	7020	Sliding	20' @ 280 mtf

Run Statistics Calculated from DD Journal

Schlumberger

Job Number: 15NEB1137
Company Name: NORTHEAST NATURAL ENERGY LLC
Rig Name: PATTERSON #254
Well Name: MIP 3H
Well Location: Lat: 39.601667, Long: -79.9761
Well State: WV

Well County: Monongalia
Well Field: WV Monongalia County (NAD 83)
Well Country: UNITED STATES
Lead DD: Perry, John
Co. Man:

UOM: DEN: lbm/galUS ● DEP: ft ● DIA: in ● FLO: galUS/min ● INC: deg ● MAS: klbm ● PRE: psi ● TEM: degF ● TOR: kft.lbf ● VOL: galUS ● DLS: deg/100ft ● CON: ppm ● CON_

DD JOURNAL

Date	Start	End	Hours	Start	End	Activity	Comment
29-Aug-15	16:45	17:00	0.25	7020	7052	Rotating	
29-Aug-15	17:00	17:15	0.25	7052	7052	MWD Survey & Conn.	C/S @ 7005
29-Aug-15	17:15	17:45	0.5	7052	7052	Rig Service-Inhole	
29-Aug-15	17:45	18:05	0.33	7052	7084	Rotating	
29-Aug-15	18:05	18:15	0.17	7084	7084	Other – Inhole	Checkshot
29-Aug-15	18:15	18:35	0.33	7084	7094	Sliding	10' @ 285 MTF
29-Aug-15	18:35	19:10	0.58	7094	7145	Rotating	
29-Aug-15	19:10	19:25	0.25	7145	7145	MWD Survey & Conn.	C/S @ 7099
29-Aug-15	19:25	20:05	0.67	7145	7165	Sliding	20' @ 285 mtf
29-Aug-15	20:05	20:25	0.33	7165	7200	Rotating	
29-Aug-15	20:25	20:30	0.08	7200	7200	Other – Inhole	Checkshot
29-Aug-15	20:30	21:10	0.67	7200	7215	Sliding	
29-Aug-15	21:10	21:40	0.5	7215	7239	Rotating	
29-Aug-15	21:40	21:45	0.08	7239	7239	MWD Survey & Conn.	C/S @ 7194
29-Aug-15	21:45	21:55	0.17	7239	7239	Other – Inhole	Change shaker screens
29-Aug-15	21:55	22:30	0.58	7239	7286	Rotating	
29-Aug-15	22:30	22:40	0.17	7286	7286	MWD Survey	Survey @ 7239
29-Aug-15	22:40	23:15	0.58	7286	7306	Sliding	
29-Aug-15	23:15	23:30	0.25	7306	7334	Rotating	
29-Aug-15	23:30	23:40	0.17	7334	7334	MWD Survey & Conn.	C/S @ 7288
29-Aug-15	23:40	00:00	0.33	7334	7367	Rotating	

Job Number:	15NEB1137	**Well County:**	Monongalia
Company Name:	NORTHEAST NATURAL ENERGY LLC	**Well Field:**	WV Monongalia County (NAD 83)
Rig Name:	PATTERSON #254	**Well Country:**	UNITED STATES
Well Name:	MIP 3H	**Lead DD:**	Perry, John
Well Location:	Lat: 39.601667, Long: -79.9761	**Co. Man:**	
Well State:	WV		

UOM: DEN: lbm/galUS ● DEP: ft ● DIA: in ● FLO: galUS/min ● INC: deg ● MAS: klbm ● PRE: psi ● TEM: degF ● TOR: kft.lbf ● VOL: galUS ● DLS: deg/100ft ● CON: ppm ● CON_

Daily Report for Monday, August, 31 2015

From: Aug-30-2015 00:00 To: Aug-31-2015 00:00

DRILLING SUMMARY

Start Depth	7,367	**Rotary Hours**	0.58
End Depth	0	**Total Circu. Hours**	3.00
Total Drilled	78	**Avg. Total ROP**	7.80
Total Rotary Drilled	59	**Avg. Rotary ROP**	101.14
Total Sliding Drilled	19	**Avg. Slide ROP**	38.00
Slide Hours	0.50	**Percent Rotary**	75.64%
Below Rotary Hrs	10.00	**Percent Slide**	24.36%

DRILLING PARAMETERS

WOB Rot	20.00	**PU**	145.00	**Slack Off**	134.00
WOB Slid	9.00	**SPP**	2,553.33	**Flow Rate**	495.00 - 495.00
RAB	140.00	**SPM**	140.00		

MUD DATA

Type	Water Base			**PV**	18	**SOLID**	21.50
Weight	12.20	**Gas**		**YP**	17	**BHT°**	111
Viscosity	45	**Sand**		**PH**	8.8	**Flow T°**	88.00
Chlorides	133,00	**WL**	10.00			**Oil%**	

PERSONNEL

Directional Company	
Company Man	
MLWD	Olson, Aaron J
MLWD	Hamrick, Anthony Joseph
DD - Cell Manager	Perry, John
DD	Sagne, Babacar

Incl. In	1.3	**Azm. In**	287.01	**Incl. Out**	1.2	**Azm. Out**	281.15

Max Inclination: 5.4500913

CASING

Size	Set Depth
9.625	1,800

DAILY COST

Daily Cost:

Cumulative Cost:

Signature:

BHA & COMMENTS

Drill To section TD

FORECAST NEXT 24

Standby For Next Section

DD JOURNAL

Date	Start	End	Hours	Start	End	Activity	Comment
30-Aug-15	00:00	00:05	0.08	7367	7380	Rotating	
30-Aug-15	00:05	00:10	0.08	7380	7380	Other – Inhole	Survey @ 7333
30-Aug-15	00:10	00:30	0.33	7380	7415	Rotating	
30-Aug-15	00:30	00:50	0.33	7415	7428	Sliding	13' @ 110 mtf
30-Aug-15	00:50	01:00	0.17	7428	7428	MWD Survey & Conn.	C/S @ 7383
30-Aug-15	01:00	01:10	0.17	7428	7434	Sliding	6' @ 100 mtf
30-Aug-15	01:10	01:20	0.17	7434	7445	Rotating	
30-Aug-15	01:20	01:55	0.58	7445	7445	Circulating	
30-Aug-15	01:55	03:20	1.42	7445	7445	Short Trip	Short trip to 6900'
30-Aug-15	03:20	04:40	1.33	7445	7445	Circulating	
30-Aug-15	04:40	08:45	4.08	7445	0	POOH	

Run Statistics Calculated from DD Journal

UOM: DEN: lbm/galUS ● DEP: ft ● DIA: in ● FLO: galUS/min ● INC: deg ● MAS: klbm ● PRE: psi ● TEM: degF ● TOR: kft.lbf ● VOL: galUS ● DLS: deg/100ft ● CON: ppm ● CON_

DD JOURNAL

Date	Start	End	Hours	Start	End	Activity	Comment
30-Aug-15	08:45	09:00	0.25	0	0	Other – Inhole	Pre-Job Safety Meeting
30-Aug-15	09:00	10:00	1	0	0	Lay Down BHA	Lay Down BHA 1
30-Aug-15	10:00	00:00	14	0	0	Standby	Attended Standby

Schlumberger

Job Number: 15NEB1137
Company Name: NORTHEAST NATURAL ENERGY LLC
Rig Name: PATTERSON #254
Well Name: MIP 3H
Well Location: Lat: 39.601667, Long: -79.9761
Well State: WV

Well County: Monongalia
Well Field: WV Monongalia County (NAD 83)
Well Country: UNITED STATES
Lead DD: Perry, John
Co. Man:

UOM: DEN: lbm/galUS ● DEP: ft ● DIA: in ● FLO: galUS/min ● INC: deg ● MAS: klbm ● PRE: psi ● TEM: degF ● TOR: kft.lbf ● VOL: galUS ● DLS: deg/100ft ● CON: ppm ● CON_2: lbm/bbl ● PRE_2: lbf/100ft2 ● VIS_1: s/qt ● VIS_2: cP ● HHP: h

Motor Information			
Desc:	NOV 7/8 5.0 0.29RPG FXD 1.50°		
Bent Hsg/Sub:	1.50	**Bit to Bend:**	4.00
Pad OD:	6.75	**NB Stab:**	

Steering Sheet / DD Journal Report for BHA # 1 on Run # 1 for Job # 15NEB1137

Note: Surveys listed are interpolated from the actual surveys

#	Date	Drill Mode	Start Time	End Time	Hours	Start MD	End MD	Depth Drilled	WOB	ROP	Surf. RPM	Surf. Torque	Flow Rate	SPP On Bottom	TFO	Steer Ratio	Pad Press.	Survey Depth (MD)	INC	AZM	DLS	Note
1	29-Aug	Sliding	11:35	13:00	01:25	6935	6950	15	18	10.59			354	1300	275 M							15' @ 275 mtf
1	29-Aug	Rotating	13:00	13:15	00:15	6950	6958	8	20	32.00	50	8	354	1700								
1	29-Aug	Rotating	13:40	15:15	01:35	6958	7000	42	20	26.53	50	8	354	1700								
1	29-Aug	Sliding	15:20	16:45	01:25	7000	7020	20	20	14.12			354	1700	280 M							20' @ 280 mtf
1	29-Aug	Rotating	16:45	17:00	00:15	7020	7052	32	20	128.00	50	8	430	2200								
1	29-Aug	Rotating	17:45	18:05	00:20	7052	7084	32	20	96.00	50	8	430	2200								
1	29-Aug	Sliding	18:15	18:35	00:20	7084	7094	10	13	30.00			430	1900	285 M							10' @ 285 MTF
1	29-Aug	Rotating	18:35	19:10	00:35	7094	7145	51	20	87.43	50	9	430	2220								
1	29-Aug	Sliding	19:25	20:05	00:40	7145	7165	20	12	30.00			430	1900	285 M							20' @ 285 mtf
1	29-Aug	Rotating	20:05	20:25	00:20	7165	7200	35	20	105.00	60	9	430	2220								
1	29-Aug	Sliding	20:30	21:10	00:40	7200	7215	15	10	22.50			430	1900	280 M							
1	29-Aug	Rotating	21:10	21:40	00:30	7215	7239	24	20	48.00	60	9	430	2220								
1	29-Aug	Rotating	21:55	22:30	00:35	7239	7286	47	20	80.57	60	9	430	2220								
1	29-Aug	Sliding	22:40	23:15	00:35	7286	7306	20	8	34.29			495	2360	100M							
1	29-Aug	Rotating	23:15	23:30	00:15	7306	7334	28	20	112.00	60	8	495	2630								
1	29-Aug	Rotating	23:40	00:00	00:20	7334	7367	33	20	99.00	60	8	495	2630								
1	30-Aug	Rotating	00:00	00:05	00:05	7367	7380	13	20	156.00	60	8	495	2630								

Schlumberger

Job Number: 15NEB1137
Company Name: NORTHEAST NATURAL ENERGY LLC
Rig Name: PATTERSON #254
Well Name: MIP 3H
Well Location: Lat: 39.601667, Long: -79.9761
Well State: WV

Well County: Monongalia
Well Field: WV Monongalia County (NAD 83)
Well Country: UNITED STATES
Lead DD: Perry, John
Co. Man:

UOM: DEN: lbm/galUS ● DEP: ft ● DIA: in ● FLO: galUS/min ● INC: deg ● MAS: klbm ● PRE: psi ● TEM: degF ● TOR: kft.lbf ● VOL: galUS ● DLS: deg/100ft ● CON: ppm ● CON_2: lbm/bbl ● PRE_2: lbf/100ft2 ● VIS_1: s/qt ● VIS_2: cP ● HHP: h

Steering Sheet / DD Journal Report for BHA # 1 on Run # 1 for Job # 15NEB1137

Note: Surveys listed are interpolated from the actual surveys

#	Date	Drill Mode	Start Time	End Time	Hours	Start MD	End MD	Depth Drilled	WOB	ROP	Surf. RPM	Surf. Torque	Flow Rate	SPP On Bottom	TFO	Steer Ratio	Pad Press.	Survey Depth (MD)	INC	AZM	DLS	Note
1	30-Aug	Rotating	00:10	00:30	00:20	7380	7415	35	20	105.00	60	8	495	2630								
1	30-Aug	Sliding	00:30	00:50	00:20	7415	7428	13	9	39.00			495	2400	110 M							13' @ 110 mtf
1	30-Aug	Sliding	01:00	01:10	00:10	7428	7434	6	9	36.00			495	2400	110 M							6' @ 100 mtf
1	30-Aug	Rotating	01:10	01:20	00:10	7434	7445	11	20	66.00	60	8	495	2630								

Total Drilled:	510	**Avg. On Bottom ROP:**	45.67		**DEPTH% - TIME%**
Total Rotary Drilled:	391	**Avg. Rotary ROP:**	70.03	**Percent Rotary:**	76.67% - 50%
Total Drilled Sliding:	119	**Avg. Slide ROP:**	21.31	**Percent Slide:**	23.33% - 50%

Job Number:	15NEB1137	**Well County:**	Monongalia
Company Name:	NORTHEAST NATURAL ENERGY LLC	**Well Field:**	WV Monongalia County (NAD 83)
Rig Name:	PATTERSON #254	**Well Country:**	UNITED STATES
Well Name:	MIP 3H	**Lead DD:**	Perry, John
Well Location:	Lat: 39.601667, Long: -79.9761	**Co. Man:**	
Well State:	WV		

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BHA Summary Report JOB - 15NEB1137

	TIME IN - OUT			DEPTHs		TVD DEPTHs		Footage / Hours			ROP			RPM	FLOW	Inclination		Azimuth		Weight Ranges		
#	Time In	Time Out	Hrs	IN	Out	IN	OUT	Rotary	Slide	Total	Avg	Rotary	Slide	RPM	FLOW	IN	OUT	IN	OUT	SO	PU	RAB
1	28-Aug-15 13:30	30-Aug-15 10:00	44.5	6935	7445	6934	7442.42	391 / 5.58	119 / 5.58	510 / 11.17	45.67	70.03	21.31	50-60	354-495	1.3	1.2	287.01	281.15	134-134	144-145	140-140

PDC 8.75" MDSiZ 616 - BPX , O.D=8.75, Length=0.8

NOV 7/8 5.0 0.29RPG FXD 1.50°, O.D=6.75, Length=24.6, F.N=6.75

Pony NMDC (Slick), O.D=6.88, Length=10.09, F.N=6.875

CROSS OVER SUB 675, O.D=6.88, Length=2.69, F.N=6.875

COLLAR PONY (Telepacer Express MWD), O.D=6.88, Length=10.66, F.N=6.875

COLLAR PONY (Telepacer Express MWD), O.D=6.88, Length=13.37, F.N=6.88

Gap Sub, O.D=6.88, Length=4.69, F.N=6.88

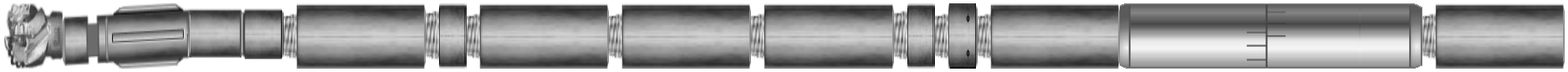
4 1/2 IF B x 5 1/2FH P XO, O.D=6.88, Length=2.62, F.N=6.875

NM UBHO, O.D=6.75, Length=3.9, F.N=6.75

NM Drill Collar (Slimpulse MWD), O.D=6.81, Length=30.64, F.N=6.81

NM Flow Sleeve Sub, O.D=6.81, Length=2.6, F.N=6.81

Non-Mag Drill Collar, O.D=6.75, Length=30.28, F.N=6.75



Schlumberger

Job Number:	15NEB1137	**Well County:**	Monongalia
Company Name:	NORTHEAST NATURAL ENERGY LLC	**Well Field:**	WV Monongalia County (NAD 83)
Rig Name:	PATTERSON #254	**Well Country:**	UNITED STATES
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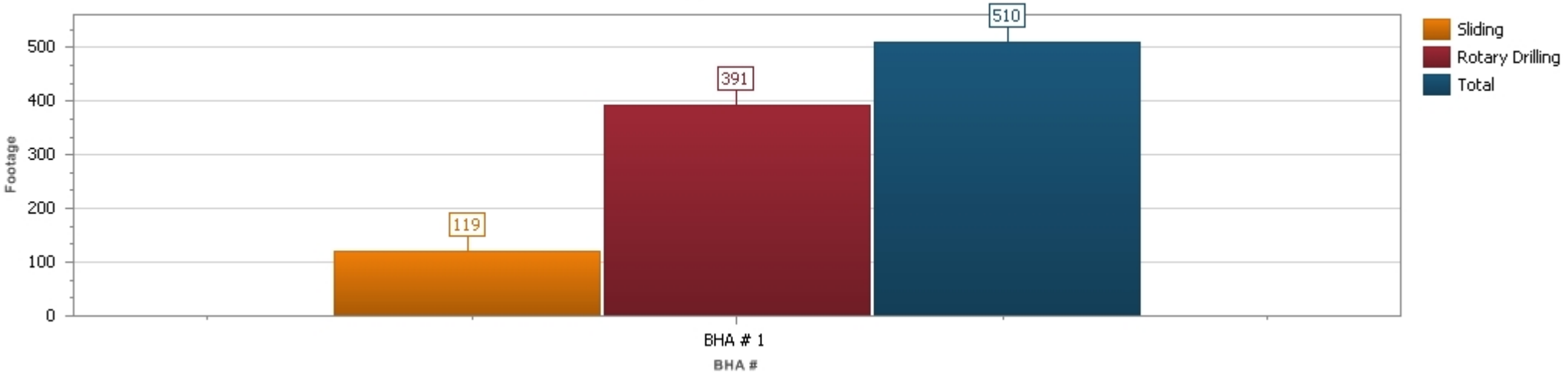
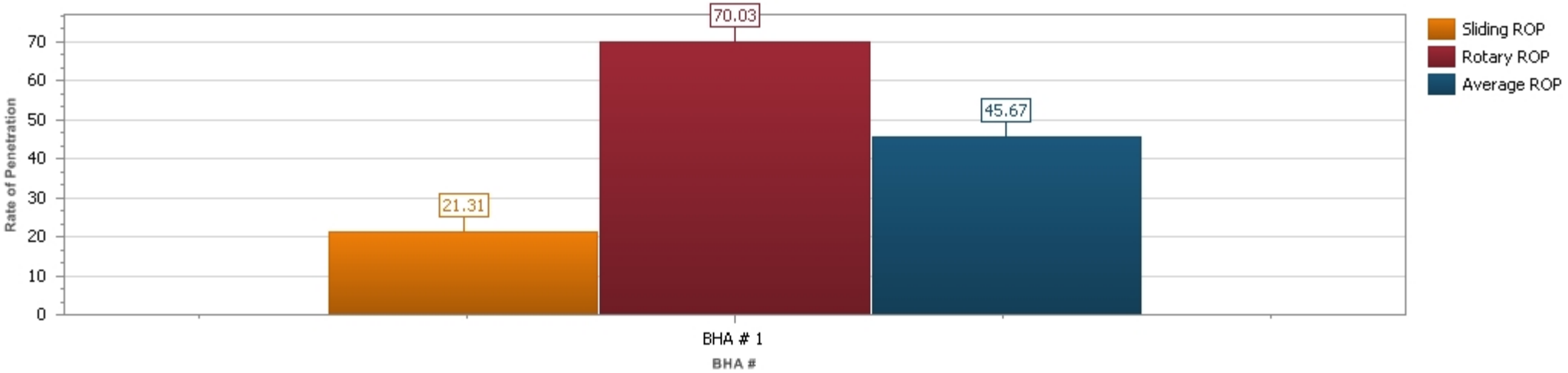
Footage Drilled for BHA



ROP vs BHA



Schlumberger

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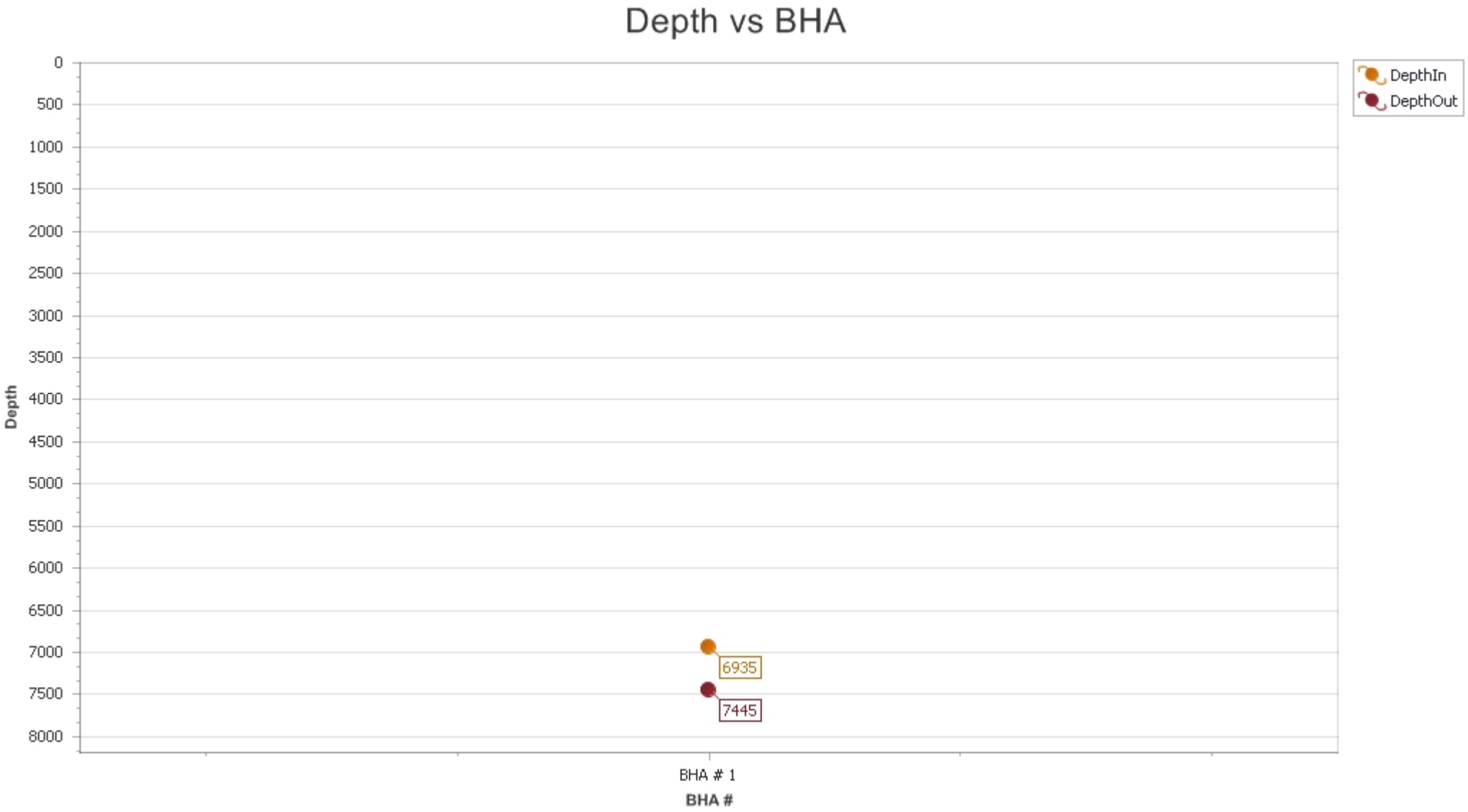

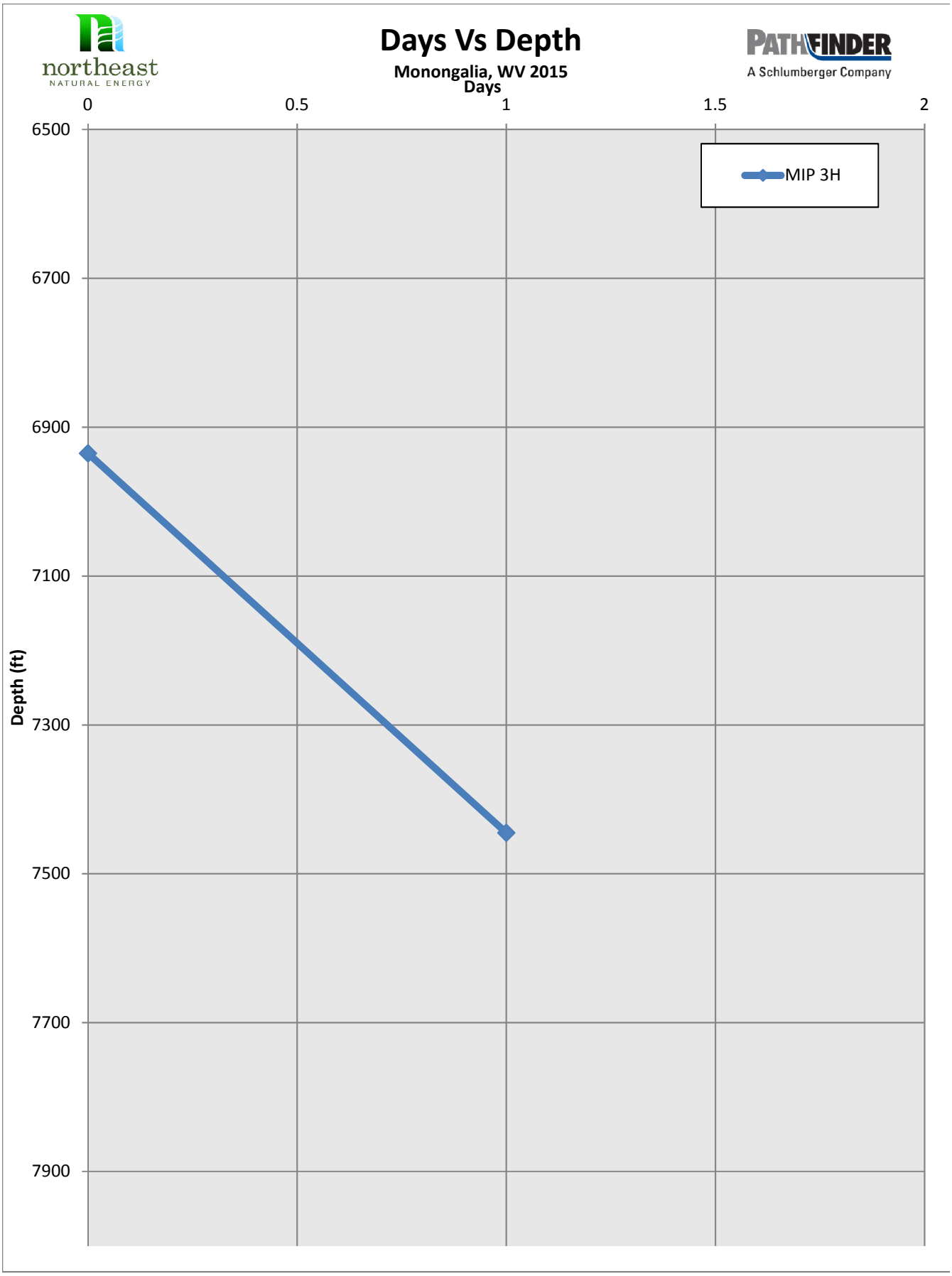
northeast
NATURAL ENERGY
Days Vs Depth
Monongalia, WV 2015
PATHFINDER
A Schlumberger Company
Days
0
0.5
1
1.5
2
6500
6700
6900
7100
7300
7500
7700
7900
Depth (ft)
MIP 3H

Job Number:	15NEB1137	**Well County:**	Monongalia
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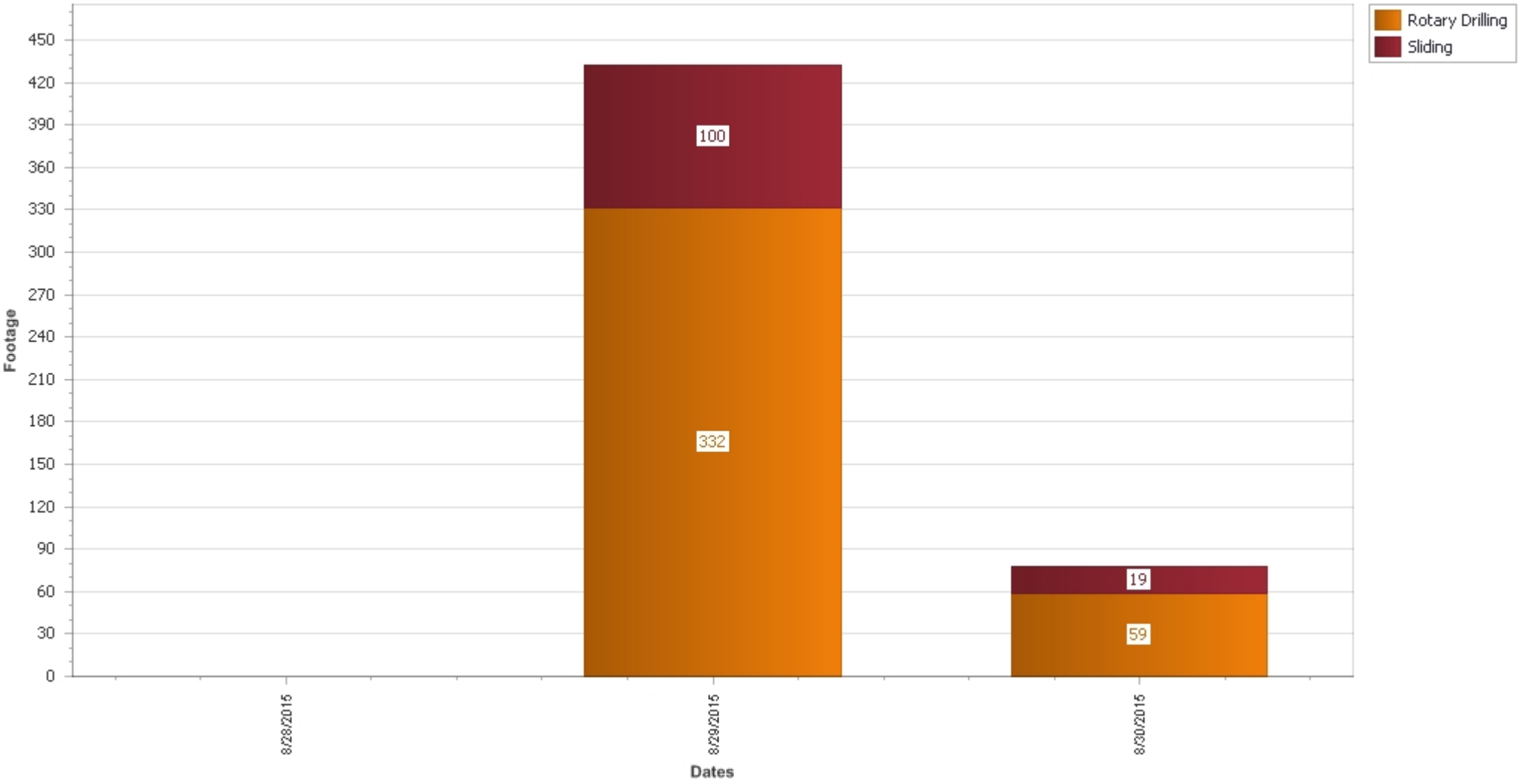
Daily Footage



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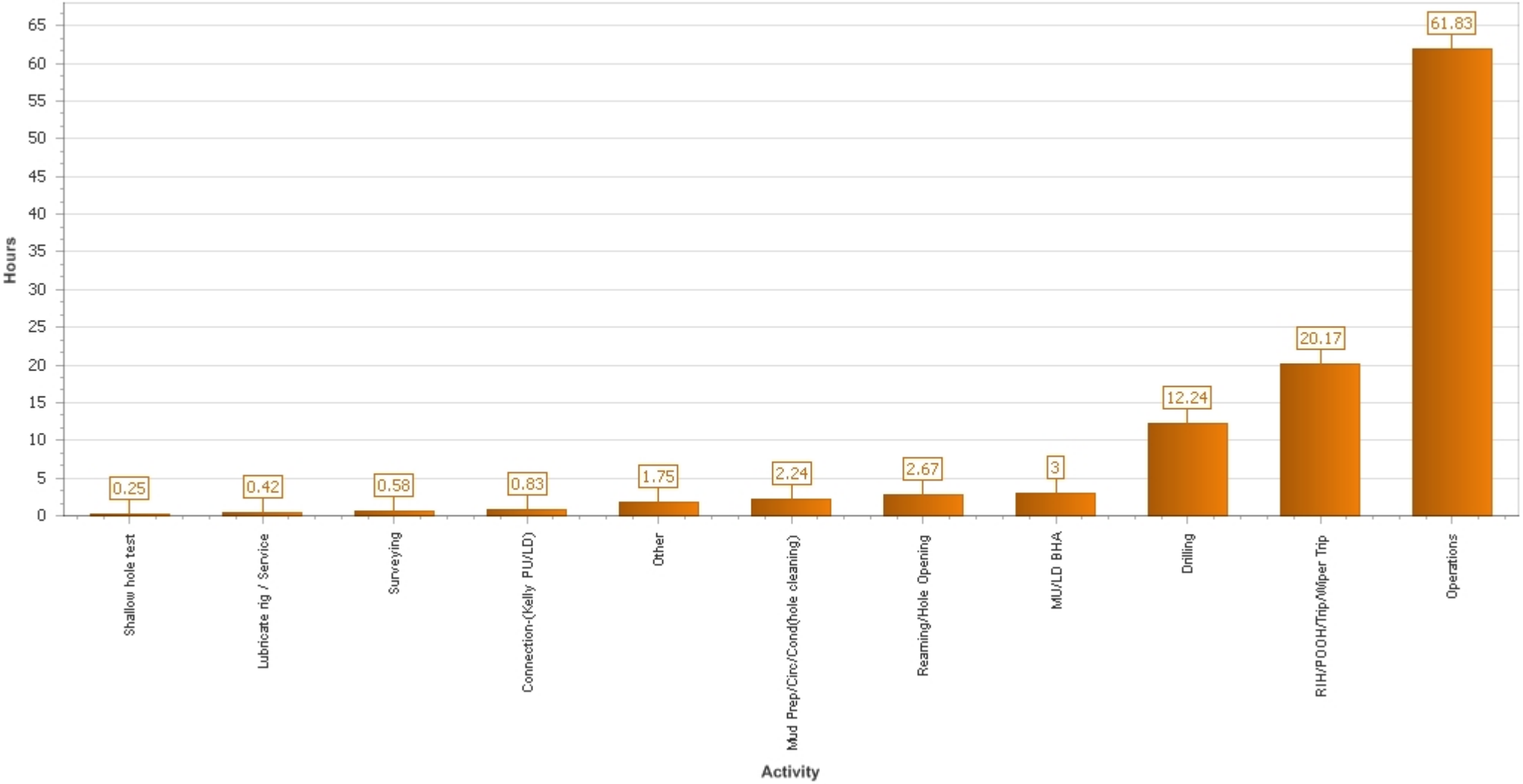
Activity Histograph



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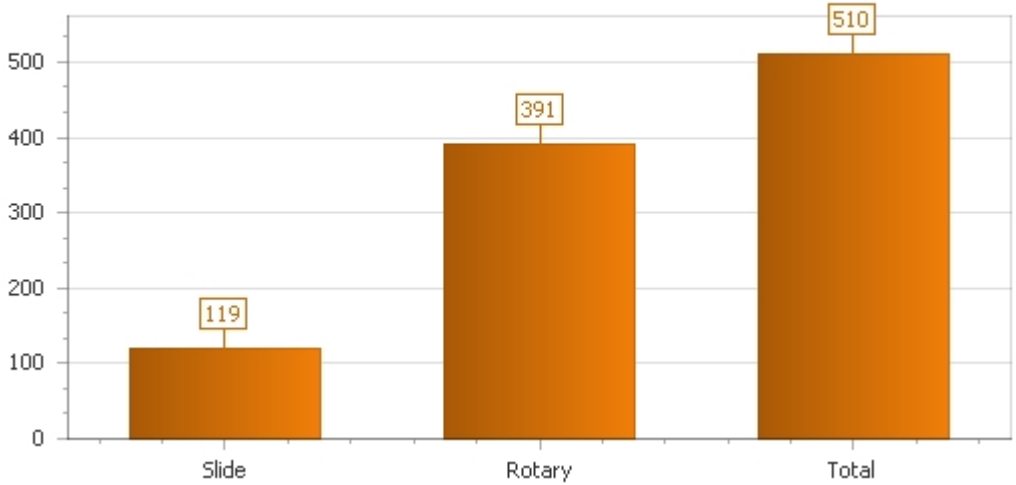
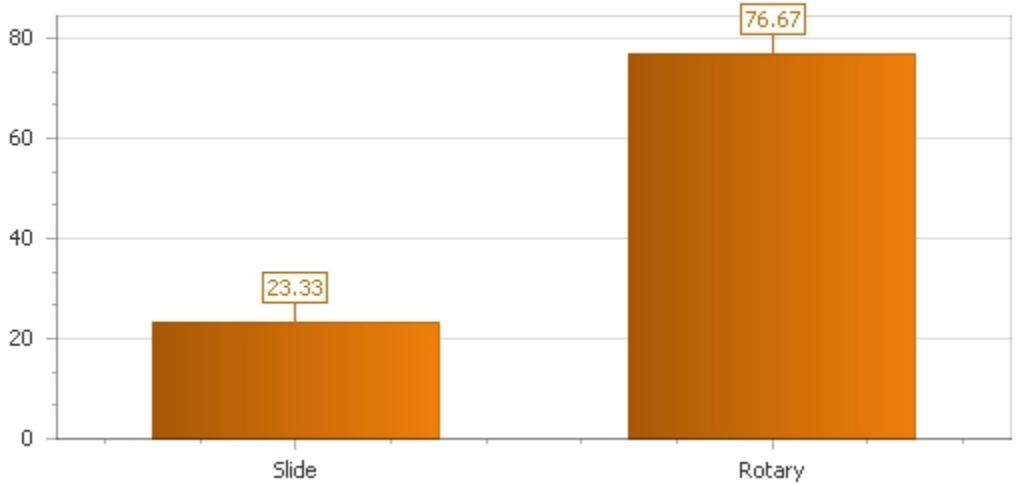
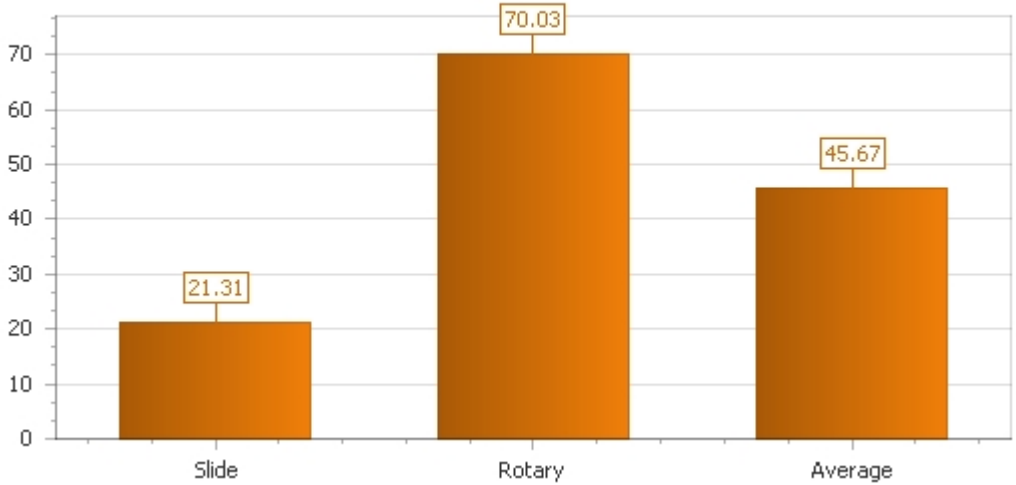
Totals for Footage Drilled



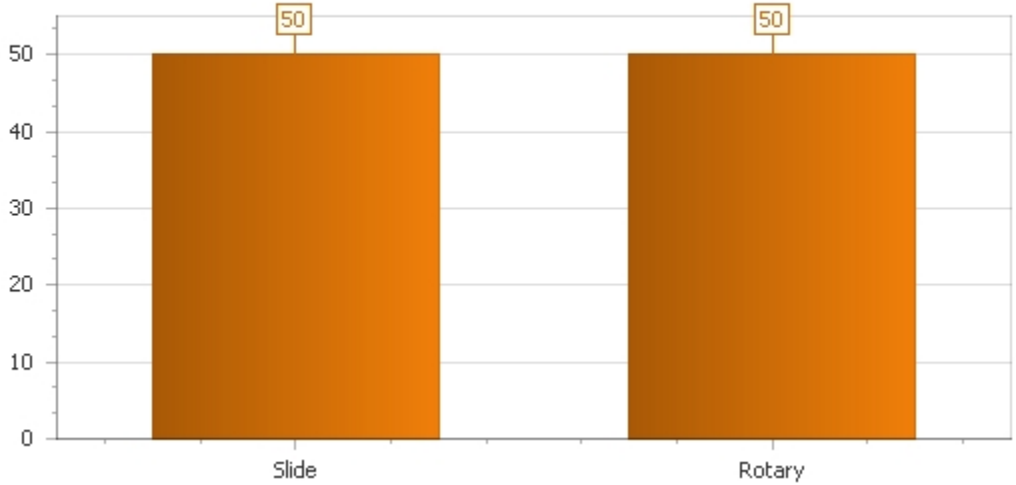
Percentage of Footage



Rate of Penetration



Percentage of Total Time



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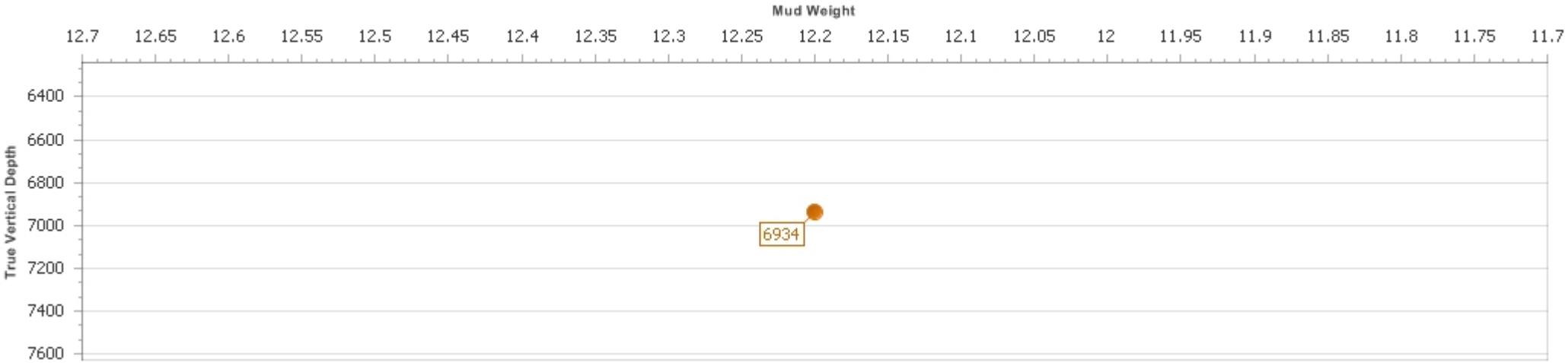
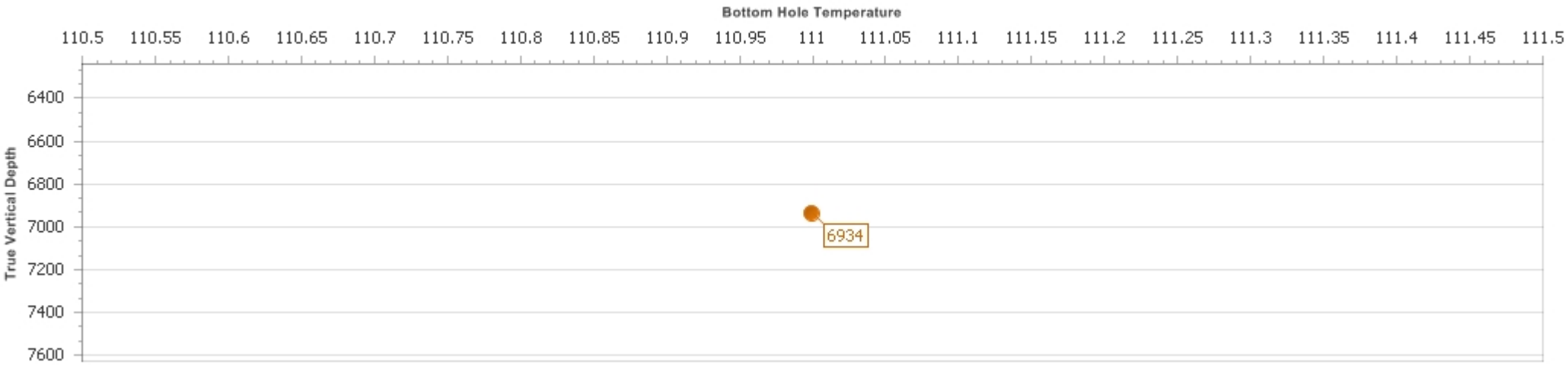
Mud Weight vs TVD Depth



Bottom Hole Temp vs TVD Depth