



GASTAR EXPLORATION USA, INC.

Location: Marshall County, WV
 Field: Marshall
 Facility: Armstrong

Slot: Slot #5
 Well: Armstrong 5H
 Wellbore: Armstrong 5H (PWB)



Location Information

Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude		
Armstrong	1694263.000	14437151.000	39°45'13.773"N	80°48'30.287"W		
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot #5	16.01	12.00	1694275.000	14437167.000	39°45'13.931"N	80°48'30.132"W
Nomac 323 (RT) to Mud line (At Slot: Slot #5)				29.4ft		
Mean Sea Level to Mud line (At Slot: Slot #5)				-1278ft		
Nomac 323 (RT) to Mean Sea Level				1307.4ft		

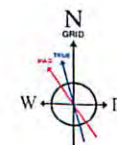
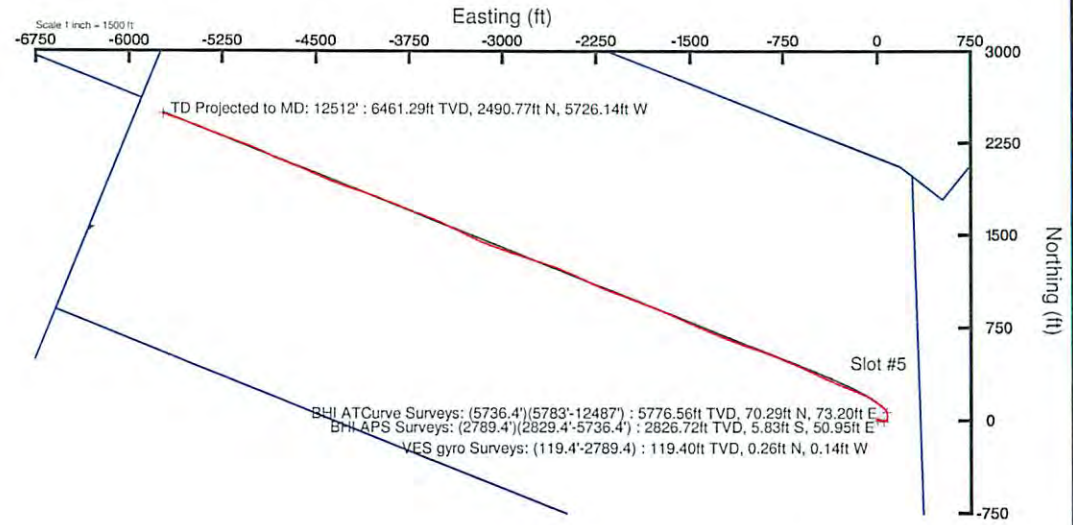
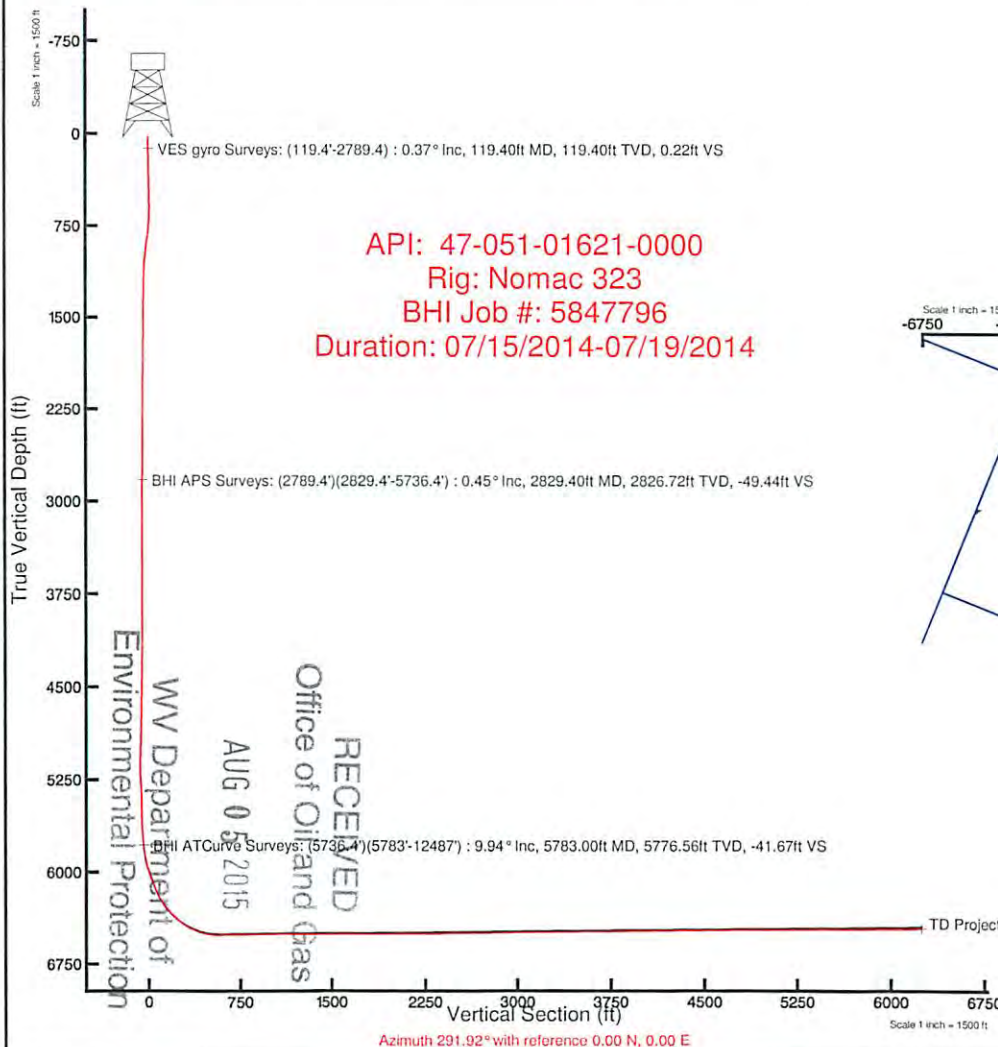
Well Profile Data

Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	5736.40	8.830	345.930	5730.58	62.91	74.99	2.67	-46.08
End of Tangent	5828.40	8.830	345.930	5821.49	76.61	71.56	0.00	-37.79
End of 3D Arc	5995.59	21.294	309.805	5982.91	108.67	44.96	9.00	-1.14
End of Tangent	6158.62	21.294	309.805	6134.81	146.57	-0.52	0.00	55.20
LP	6862.39	90.600	291.920	6507.00	391.31	-488.01	10.00	599.81
BHL	12505.94	90.600	291.920	6447.90	2498.00	-5723.28	0.00	6242.05

Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Armstrong 5H PBHL Rev-2	12505.94	6447.90	2498.00	-5723.28	1688554.00	14439664.00	39°45'38.733"N	80°49'43.351"W
Armstrong 5H PBHL Rev	6487.40	2498.00	-5723.28	1688554.00	14439664.00	39°45'38.733"N	80°49'43.351"W	
Armstrong 5H LP Rev-1	6862.39	6507.00	391.31	-488.01	1693787.18	14437558.15	39°45'17.808"N	80°48'36.370"W

Plot reference wellpath is Armstrong 5H PWP Rev-D.0
 True vertical depths are referenced to Nomac 323 (RT) Grid System: NAD83 / UTM Zone 17 North, US feet
 Measured depths are referenced to Nomac 323 (RT) North Reference: Grid north
 Nomac 323 (RT) to Mean Sea Level: 1307.4 feet Scale: True distance
 Mean Sea Level to Mud line (At Slot: Slot #5): -1278 feet Depths are in feet
 Coordinates are in feet referenced to Slot Created by: Injsjnl on 7/21/2014



BGCM (1945.0 to 2016.0) Dip: 67.23° Field: 52484.9 nT
 Magnetic North is 0.54 degrees West of True North (at 7/1/2014)
 Grid North is 0.12 degrees East of True North
 To correct azimuth from True to Grid subtract 0.12 degrees
 To correct azimuth from Magnetic to Grid subtract 8.66 degrees

51-01621

RECEIVED
 Office of Oil and Gas
 AUG 05 2015
 WV Department of
 Environmental Protection

REFERENCE WELLPATH IDENTIFICATION			
Operator	GASTAR EXPLORATION INC.	Slot	Slot #5
Area	Marshall County, WV	Well	Armstrong 5H
Field	Marshall	Wellbore	Armstrong 5H (AWB)
Facility	Armstrong	Wellpath	Armstrong 5H (AWP) Proj: 12,512'
		Sidetrack	(none)

WELLPATH DATA † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
0.00	0.00	331.39	0.00	0.00	0.00	0.00	516416.1	4400457.4	39°45'13.931"N	80°48'30.132"W	0.00	0.00	0.00
29.40	0.00	331.39	29.40	0.00	0.00	0.00	516416.1	4400457.4	39°45'13.931"N	80°48'30.132"W	0.00	0.00	0.00
119.40	0.37	331.39	119.40	0.22	0.26	-0.14	516416.0	4400457.4	39°45'13.934"N	80°48'30.134"W	0.29	331.39	0.41
219.40	0.68	296.29	219.40	1.07	0.80	-0.83	516415.8	4400457.5	39°45'13.939"N	80°48'30.143"W	1.15	314.14	0.43
319.40	1.28	320.99	319.38	2.63	1.93	-2.06	516415.4	4400457.9	39°45'13.950"N	80°48'30.159"W	2.82	313.15	0.72
419.40	1.73	310.70	419.35	5.04	3.78	-3.91	516414.9	4400458.5	39°45'13.968"N	80°48'30.182"W	5.44	314.08	0.52
519.40	1.77	347.89	519.30	7.33	6.28	-5.38	516414.4	4400459.2	39°45'13.993"N	80°48'30.201"W	8.27	319.43	1.12
619.40	2.21	28.28	619.25	7.98	9.49	-4.79	516414.6	4400460.2	39°45'14.025"N	80°48'30.193"W	10.63	333.22	1.43
719.40	4.22	73.87	719.10	4.87	12.21	-0.34	516415.9	4400461.0	39°45'14.052"N	80°48'30.136"W	12.21	358.41	3.10
819.40	7.62	90.18	818.56	-4.19	13.21	9.83	516419.0	4400461.3	39°45'14.061"N	80°48'30.006"W	16.47	36.66	3.76
919.40	7.07	101.03	917.74	-16.39	12.01	22.50	516422.9	4400461.0	39°45'14.049"N	80°48'29.844"W	25.51	61.91	1.49
1019.40	5.43	110.94	1017.15	-27.17	9.14	32.96	516426.1	4400460.1	39°45'14.021"N	80°48'29.710"W	34.21	74.50	1.96
1119.40	2.90	128.57	1116.88	-34.32	5.87	39.36	516428.0	4400459.1	39°45'13.988"N	80°48'29.628"W	39.80	81.51	2.81
1219.40	1.40	147.58	1216.81	-37.74	3.27	41.99	516428.8	4400458.3	39°45'13.962"N	80°48'29.595"W	42.12	85.55	1.64
1319.40	0.70	156.96	1316.79	-39.16	1.67	42.89	516429.1	4400457.8	39°45'13.947"N	80°48'29.583"W	42.92	87.77	0.72
1419.40	0.55	160.93	1416.78	-39.91	0.66	43.28	516429.2	4400457.5	39°45'13.937"N	80°48'29.578"W	43.29	89.13	0.16
1519.40	0.68	165.20	1516.78	-40.58	-0.37	43.59	516429.3	4400457.2	39°45'13.926"N	80°48'29.574"W	43.59	90.49	0.14
1619.40	0.74	155.15	1616.77	-41.40	-1.53	44.01	516429.5	4400456.8	39°45'13.915"N	80°48'29.569"W	44.04	91.99	0.14
1719.40	0.73	158.58	1716.76	-42.31	-2.71	44.52	516429.6	4400456.5	39°45'13.903"N	80°48'29.562"W	44.60	93.48	0.05
1819.40	0.76	169.90	1816.75	-43.10	-3.96	44.87	516429.7	4400456.1	39°45'13.891"N	80°48'29.558"W	45.04	95.04	0.15
1919.40	0.70	157.15	1916.74	-43.88	-5.17	45.22	516429.8	4400455.7	39°45'13.879"N	80°48'29.554"W	45.52	96.52	0.17
2019.40	0.65	143.21	2016.74	-44.80	-6.19	45.80	516430.0	4400455.4	39°45'13.869"N	80°48'29.546"W	46.21	97.70	0.17
2119.40	0.46	113.69	2116.73	-45.68	-6.80	46.50	516430.2	4400455.2	39°45'13.863"N	80°48'29.537"W	47.00	98.32	0.34
2219.40	0.39	110.54	2216.73	-46.42	-7.09	47.19	516430.4	4400455.1	39°45'13.860"N	80°48'29.528"W	47.72	98.54	0.07
2319.40	0.40	84.72	2316.73	-47.07	-7.17	47.86	516430.6	4400455.1	39°45'13.859"N	80°48'29.520"W	48.39	98.52	0.18

51.01621

Environmental Protection
 Office of Oil and Gas
 AIG 05/2015

WELL PATH DATA † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
2419.40	0.39	78.20	2416.73	-47.67	-7.07	48.54	516430.8	4400455.1	39°45'13.860"N	80°48'29.511"W	49.05	98.29	0.05
2519.40	0.57	71.83	2516.72	-48.33	-6.85	49.34	516431.1	4400455.2	39°45'13.862"N	80°48'29.501"W	49.82	97.90	0.19
2619.40	0.18	50.72	2616.72	-48.79	-6.59	49.94	516431.3	4400455.3	39°45'13.865"N	80°48'29.493"W	50.37	97.52	0.41
2719.40	0.30	51.29	2716.72	-48.99	-6.33	50.26	516431.4	4400455.4	39°45'13.867"N	80°48'29.489"W	50.66	97.18	0.12
2789.40	0.53	53.74	2786.72	-49.25	-6.02	50.67	516431.5	4400455.5	39°45'13.870"N	80°48'29.484"W	51.02	96.78	0.33
2829.40	0.45	58.48	2826.72	-49.44	-5.83	50.95	516431.6	4400455.5	39°45'13.872"N	80°48'29.480"W	51.28	96.53	0.22
2861.40	0.44	78.74	2858.71	-49.62	-5.74	51.18	516431.6	4400455.6	39°45'13.873"N	80°48'29.477"W	51.50	96.40	0.49
2924.40	0.40	92.29	2921.71	-50.03	-5.70	51.64	516431.8	4400455.6	39°45'13.874"N	80°48'29.471"W	51.95	96.30	0.17
2986.40	0.34	126.08	2983.71	-50.41	-5.82	52.00	516431.9	4400455.5	39°45'13.872"N	80°48'29.467"W	52.33	96.39	0.36
3049.40	0.44	113.90	3046.71	-50.84	-6.03	52.37	516432.0	4400455.5	39°45'13.870"N	80°48'29.462"W	52.72	96.57	0.21
3111.40	0.08	181.00	3108.71	-51.09	-6.17	52.59	516432.1	4400455.4	39°45'13.869"N	80°48'29.459"W	52.95	96.69	0.67
3173.40	0.10	162.44	3170.71	-51.14	-6.26	52.61	516432.1	4400455.4	39°45'13.868"N	80°48'29.459"W	52.98	96.79	0.06
3267.40	0.31	150.85	3264.71	-51.39	-6.56	52.75	516432.1	4400455.3	39°45'13.865"N	80°48'29.457"W	53.16	97.09	0.23
3362.40	0.05	332.66	3359.71	-51.56	-6.75	52.86	516432.2	4400455.2	39°45'13.863"N	80°48'29.456"W	53.29	97.28	0.38
3457.40	0.45	294.07	3454.71	-51.15	-6.56	52.50	516432.0	4400455.3	39°45'13.865"N	80°48'29.460"W	52.91	97.12	0.43
3552.40	0.27	277.09	3549.71	-50.56	-6.38	51.94	516431.9	4400455.4	39°45'13.867"N	80°48'29.468"W	52.33	97.01	0.22
3646.40	0.24	275.39	3643.70	-50.16	-6.34	51.52	516431.8	4400455.4	39°45'13.867"N	80°48'29.473"W	51.91	97.01	0.03
3741.40	0.37	348.91	3738.70	-49.80	-6.02	51.26	516431.7	4400455.5	39°45'13.870"N	80°48'29.476"W	51.62	96.69	0.40
3836.40	0.27	53.14	3833.70	-49.75	-5.58	51.38	516431.7	4400455.6	39°45'13.875"N	80°48'29.475"W	51.69	96.20	0.37
3931.40	0.51	29.67	3928.70	-49.93	-5.08	51.77	516431.8	4400455.8	39°45'13.880"N	80°48'29.470"W	52.02	95.60	0.30
4025.40	0.39	55.65	4022.70	-50.16	-4.53	52.24	516432.0	4400455.9	39°45'13.885"N	80°48'29.464"W	52.44	94.96	0.25
4120.40	0.71	68.85	4117.69	-50.77	-4.14	53.06	516432.2	4400456.0	39°45'13.889"N	80°48'29.453"W	53.22	94.46	0.36
4215.40	0.69	52.15	4212.69	-51.49	-3.58	54.06	516432.5	4400456.2	39°45'13.895"N	80°48'29.440"W	54.18	93.79	0.22
4309.40	1.09	70.61	4306.67	-52.44	-2.93	55.35	516432.9	4400456.4	39°45'13.901"N	80°48'29.424"W	55.43	93.03	0.52
4404.40	1.06	72.81	4401.66	-53.80	-2.37	57.04	516433.4	4400456.6	39°45'13.906"N	80°48'29.402"W	57.09	92.38	0.05
4498.40	1.68	61.90	4495.63	-55.36	-1.47	59.09	516434.1	4400456.9	39°45'13.915"N	80°48'29.376"W	59.11	91.42	0.71
4593.40	1.78	55.63	4590.59	-57.08	0.02	61.54	516434.8	4400457.3	39°45'13.930"N	80°48'29.345"W	61.54	89.98	0.23
4688.40	2.11	40.50	4685.53	-58.45	2.18	63.89	516435.5	4400458.0	39°45'13.951"N	80°48'29.314"W	63.93	88.04	0.64
4783.40	2.70	43.34	4780.45	-59.83	5.14	66.56	516436.3	4400458.9	39°45'13.980"N	80°48'29.280"W	66.76	85.58	0.63
4876.40	2.42	61.97	4873.36	-61.89	7.66	69.80	516437.3	4400459.6	39°45'14.005"N	80°48'29.239"W	70.22	83.74	0.94
4970.40	1.61	84.78	4967.30	-64.34	8.71	72.86	516438.3	4400460.0	39°45'14.016"N	80°48'29.199"W	73.38	83.18	1.20

51-01621

Dept of
 Oil and
 Gas
 DIVISION OF
 WELLBORE
 PROTECTION
 AUG 05 2015

WELL PATH DATA † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
5032.40	2.02	69.57	5029.27	-65.93	9.17	74.76	516438.8	4400460.1	39°45'14.020"N	80°48'29.175"W	75.32	83.01	1.01
5063.40	2.15	69.40	5060.25	-66.76	9.57	75.81	516439.2	4400460.2	39°45'14.024"N	80°48'29.161"W	76.41	82.81	0.42
5094.40	2.22	65.85	5091.23	-67.60	10.02	76.90	516439.5	4400460.4	39°45'14.028"N	80°48'29.147"W	77.55	82.58	0.49
5125.40	1.78	50.44	5122.21	-68.25	10.57	77.82	516439.8	4400460.5	39°45'14.034"N	80°48'29.136"W	78.54	82.27	2.23
5156.40	2.29	13.11	5153.19	-68.39	11.48	78.33	516439.9	4400460.8	39°45'14.043"N	80°48'29.129"W	79.17	81.66	4.48
5187.40	3.10	349.86	5184.16	-67.85	12.91	78.33	516439.9	4400461.2	39°45'14.057"N	80°48'29.129"W	79.38	80.64	4.34
5219.40	4.35	339.74	5216.09	-66.57	14.90	77.75	516439.7	4400461.8	39°45'14.077"N	80°48'29.136"W	79.17	79.15	4.40
5251.40	5.30	337.84	5247.97	-64.73	17.41	76.78	516439.4	4400462.6	39°45'14.101"N	80°48'29.149"W	78.73	77.23	3.01
5282.40	5.27	340.44	5278.84	-62.79	20.07	75.76	516439.1	4400463.4	39°45'14.128"N	80°48'29.162"W	78.37	75.16	0.78
5314.40	6.01	352.50	5310.69	-60.99	23.12	75.05	516438.9	4400464.3	39°45'14.158"N	80°48'29.171"W	78.53	72.88	4.35
5346.40	6.32	3.85	5342.50	-59.62	26.54	74.95	516438.9	4400465.4	39°45'14.192"N	80°48'29.172"W	79.51	70.50	3.92
5378.40	6.28	9.59	5374.31	-58.70	30.02	75.36	516439.0	4400466.5	39°45'14.226"N	80°48'29.167"W	81.12	68.28	1.97
5409.40	5.94	16.27	5405.14	-58.18	33.23	76.09	516439.2	4400467.4	39°45'14.258"N	80°48'29.157"W	83.03	66.41	2.54
5440.40	5.06	18.48	5435.99	-57.94	36.07	76.97	516439.5	4400468.3	39°45'14.286"N	80°48'29.146"W	85.00	64.89	2.92
5472.40	3.94	19.25	5467.89	-57.81	38.44	77.78	516439.8	4400469.0	39°45'14.309"N	80°48'29.135"W	86.77	63.70	3.51
5504.40	3.20	13.50	5499.83	-57.63	40.35	78.35	516439.9	4400469.6	39°45'14.328"N	80°48'29.128"W	88.13	62.75	2.57
5536.40	3.59	5.79	5531.77	-57.22	42.22	78.66	516440.0	4400470.2	39°45'14.347"N	80°48'29.124"W	89.28	61.78	1.87
5566.40	4.16	357.04	5561.71	-56.50	44.24	78.70	516440.0	4400470.8	39°45'14.367"N	80°48'29.124"W	90.28	60.66	2.73
5597.40	4.58	350.39	5592.62	-55.38	46.58	78.44	516440.0	4400471.5	39°45'14.390"N	80°48'29.127"W	91.23	59.30	2.12
5629.40	5.87	350.60	5624.48	-53.86	49.45	77.96	516439.8	4400472.4	39°45'14.418"N	80°48'29.133"W	92.32	57.61	4.03
5660.40	6.83	348.30	5655.29	-52.01	52.82	77.32	516439.6	4400473.4	39°45'14.451"N	80°48'29.141"W	93.65	55.66	3.20
5736.40	8.83	345.93	5730.58	-46.08	62.91	74.99	516438.9	4400476.5	39°45'14.551"N	80°48'29.171"W	97.88	50.01	2.67
5783.00	9.94	346.76	5776.56	-41.67	70.29	73.20	516438.4	4400478.7	39°45'14.624"N	80°48'29.193"W	101.48	46.16	2.40
5813.00	10.44	343.08	5806.08	-38.47	75.41	71.82	516437.9	4400480.3	39°45'14.675"N	80°48'29.211"W	104.14	43.60	2.74
5859.00	11.22	327.79	5851.27	-32.23	83.19	68.22	516436.8	4400482.7	39°45'14.752"N	80°48'29.257"W	107.58	39.35	6.45
5907.00	12.48	316.90	5898.25	-23.74	90.93	62.18	516435.0	4400485.0	39°45'14.828"N	80°48'29.334"W	110.16	34.37	5.34
5954.00	14.93	314.06	5943.91	-13.53	98.85	54.36	516432.6	4400487.4	39°45'14.907"N	80°48'29.434"W	112.81	28.81	5.40
6001.00	19.67	312.28	5988.77	-0.50	108.39	44.15	516429.5	4400490.3	39°45'15.001"N	80°48'29.564"W	117.03	22.16	10.15
6096.00	22.28	306.57	6077.48	31.92	129.88	17.85	516421.5	4400496.9	39°45'15.214"N	80°48'29.900"W	131.10	7.83	3.49
6144.00	22.54	305.12	6121.86	49.69	140.59	3.02	516417.0	4400500.1	39°45'15.320"N	80°48'30.090"W	140.62	1.23	1.27
6191.00	24.96	305.73	6164.87	68.09	151.57	-12.40	516412.3	4400503.5	39°45'15.429"N	80°48'30.287"W	152.07	355.32	5.18

51-01621

RECEIVED
 AUG 05 2015

WELL PATH DATA † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
6238.00	29.12	305.62	6206.73	88.84	164.02	-29.76	516407.0	4400507.3	39°45'15.553"N	80°48'30.509"W	166.70	349.72	8.85
6286.00	34.40	303.13	6247.53	113.50	178.25	-50.62	516400.6	4400511.6	39°45'15.694"N	80°48'30.776"W	185.30	344.15	11.33
6332.00	38.91	299.47	6284.42	140.59	192.47	-74.10	516393.5	4400515.9	39°45'15.835"N	80°48'31.076"W	206.24	338.94	10.89
6381.00	42.46	296.24	6321.58	172.35	207.35	-102.34	516384.9	4400520.5	39°45'15.982"N	80°48'31.437"W	231.23	333.73	8.42
6426.00	46.18	294.26	6353.77	203.73	220.75	-130.78	516376.2	4400524.6	39°45'16.115"N	80°48'31.801"W	256.58	329.36	8.82
6475.00	50.01	291.94	6386.49	240.18	235.03	-164.32	516366.0	4400528.9	39°45'16.257"N	80°48'32.230"W	286.77	325.04	8.57
6521.00	54.34	291.91	6414.70	276.50	248.59	-198.02	516355.7	4400533.0	39°45'16.392"N	80°48'32.661"W	317.82	321.46	9.41
6571.00	59.97	292.05	6441.80	318.49	264.31	-236.96	516343.9	4400537.8	39°45'16.548"N	80°48'33.159"W	354.98	318.12	11.26
6617.00	65.53	292.98	6462.86	359.37	279.97	-274.71	516332.4	4400542.6	39°45'16.704"N	80°48'33.642"W	392.24	315.54	12.22
6665.00	68.46	292.89	6481.62	403.54	297.19	-315.40	516320.0	4400547.9	39°45'16.875"N	80°48'34.163"W	433.36	313.30	6.11
6711.00	74.35	293.59	6496.28	447.11	314.39	-355.44	516307.8	4400553.1	39°45'17.045"N	80°48'34.675"W	474.53	311.49	12.89
6759.00	80.17	294.21	6506.86	493.88	333.35	-398.23	516294.7	4400558.9	39°45'17.234"N	80°48'35.222"W	519.33	309.93	12.19
6853.00	90.71	295.55	6514.32	587.32	372.72	-483.11	516268.9	4400570.9	39°45'17.625"N	80°48'36.308"W	610.17	307.65	11.30
6949.00	90.89	295.78	6512.98	683.11	414.30	-569.63	516242.5	4400583.5	39°45'18.037"N	80°48'37.415"W	704.35	306.03	0.30
7044.00	90.58	293.03	6511.76	778.00	453.54	-656.12	516216.1	4400595.5	39°45'18.427"N	80°48'38.521"W	797.62	304.65	2.91
7138.00	90.58	293.41	6510.81	871.97	490.60	-742.50	516189.8	4400606.8	39°45'18.795"N	80°48'39.626"W	889.94	303.45	0.40
7233.00	90.58	291.29	6509.85	966.96	526.72	-830.36	516163.1	4400617.8	39°45'19.154"N	80°48'40.750"W	983.33	302.39	2.23
7328.00	90.55	289.32	6508.91	1061.91	559.68	-919.45	516135.9	4400627.8	39°45'19.481"N	80°48'41.890"W	1076.40	301.33	2.07
7424.00	90.28	289.09	6508.22	1157.80	591.26	-1010.10	516108.3	4400637.4	39°45'19.795"N	80°48'43.050"W	1170.42	300.34	0.37
7519.00	89.91	289.36	6508.06	1252.70	622.54	-1099.80	516081.0	4400647.0	39°45'20.106"N	80°48'44.197"W	1263.77	299.51	0.48
7614.00	89.94	291.35	6508.18	1347.66	655.59	-1188.87	516053.8	4400657.0	39°45'20.435"N	80°48'45.337"W	1357.64	298.87	2.09
7709.00	90.55	292.93	6507.78	1442.65	691.39	-1276.86	516027.0	4400668.0	39°45'20.790"N	80°48'46.462"W	1452.03	298.44	1.78
7805.00	90.68	293.14	6506.75	1538.63	728.95	-1365.20	516000.1	4400679.4	39°45'21.164"N	80°48'47.593"W	1547.62	298.10	0.26
7900.00	90.55	293.42	6505.73	1633.59	766.49	-1452.46	515973.5	4400690.8	39°45'21.536"N	80°48'48.709"W	1642.30	297.82	0.32
7995.00	90.22	294.78	6505.09	1728.52	805.28	-1539.17	515947.1	4400702.7	39°45'21.921"N	80°48'49.818"W	1737.10	297.62	1.47
8090.00	90.25	294.80	6504.70	1823.40	845.12	-1625.42	515920.8	4400714.8	39°45'22.317"N	80°48'50.921"W	1831.99	297.47	0.04
8184.00	90.28	292.45	6504.26	1917.35	882.78	-1711.53	515894.6	4400726.3	39°45'22.691"N	80°48'52.023"W	1925.79	297.28	2.50
8279.00	90.22	290.47	6503.85	2012.34	917.54	-1799.94	515867.6	4400736.9	39°45'23.036"N	80°48'53.154"W	2020.31	297.01	2.09
8374.00	90.25	291.97	6503.46	2106.33	951.56	-1887.56	515841.0	4400747.2	39°45'23.374"N	80°48'54.275"W	2113.85	296.75	1.60
8468.00	90.28	290.91	6503.02	2201.33	986.28	-1975.99	515814.0	4400757.8	39°45'23.719"N	80°48'55.406"W	2208.46	296.53	1.12
8562.00	90.25	291.45	6502.59	2295.32	1020.25	-2063.64	515787.3	4400768.2	39°45'24.057"N	80°48'56.528"W	2302.06	296.31	0.58

5101621

Direction of
 Gas
 RECEIVED
 AUG 08 2015

WELL PATH DATA † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
8657.00	90.68	291.83	6501.82	2390.31	1055.28	-2151.94	515760.4	4400778.8	39°45'24.405"N	80°48'57.658"W	2396.76	296.12	0.60
8752.00	90.62	293.85	6500.74	2485.29	1092.15	-2239.48	515733.7	4400790.1	39°45'24.771"N	80°48'58.778"W	2491.60	296.00	2.13
8847.00	90.83	294.99	6499.54	2580.19	1131.42	-2325.97	515707.4	4400802.0	39°45'25.161"N	80°48'59.884"W	2586.55	295.94	1.22
8941.00	90.83	295.58	6498.18	2674.02	1171.56	-2410.96	515681.5	4400814.3	39°45'25.559"N	80°49'00.971"W	2680.54	295.92	0.63
9036.00	90.83	292.00	6496.80	2768.94	1209.88	-2497.86	515655.0	4400825.9	39°45'25.939"N	80°49'02.083"W	2775.45	295.84	3.77
9131.00	90.80	290.22	6495.45	2863.92	1244.09	-2586.47	515628.0	4400836.4	39°45'26.279"N	80°49'03.217"W	2870.12	295.69	1.87
9225.00	90.77	288.36	6494.16	2957.81	1275.14	-2675.18	515601.0	4400845.8	39°45'26.588"N	80°49'04.352"W	2963.54	295.49	1.98
9320.00	90.89	287.84	6492.79	3052.59	1304.65	-2765.47	515573.5	4400854.8	39°45'26.881"N	80°49'05.507"W	3057.77	295.26	0.56
9414.00	90.80	288.52	6491.40	3146.37	1333.97	-2854.77	515546.3	4400863.7	39°45'27.173"N	80°49'06.650"W	3151.06	295.05	0.73
9509.00	90.80	288.98	6490.07	3241.22	1364.50	-2944.72	515518.9	4400873.0	39°45'27.477"N	80°49'07.801"W	3245.50	294.86	0.48
9604.00	90.89	290.81	6488.67	3336.15	1396.83	-3034.04	515491.6	4400882.9	39°45'27.798"N	80°49'08.943"W	3340.14	294.72	1.93
9699.00	90.83	291.43	6487.25	3431.13	1431.05	-3122.64	515464.6	4400893.3	39°45'28.138"N	80°49'10.077"W	3434.94	294.62	0.66
9794.00	90.77	294.77	6485.92	3526.08	1468.32	-3210.01	515438.0	4400904.7	39°45'28.508"N	80°49'11.195"W	3529.89	294.58	3.52
9888.00	90.86	296.48	6484.58	3619.87	1508.97	-3294.75	515412.2	4400917.1	39°45'28.911"N	80°49'12.279"W	3623.86	294.61	1.82
9983.00	90.68	296.90	6483.31	3714.54	1551.63	-3379.62	515386.4	4400930.1	39°45'29.335"N	80°49'13.364"W	3718.79	294.66	0.48
10079.00	90.74	294.83	6482.12	3810.30	1593.51	-3465.99	515360.0	4400942.8	39°45'29.750"N	80°49'14.469"W	3814.76	294.69	2.16
10172.00	90.65	293.07	6480.99	3903.23	1631.25	-3550.97	515334.1	4400954.3	39°45'30.125"N	80°49'15.557"W	3907.74	294.67	1.89
10265.00	90.65	290.01	6479.93	3996.21	1665.39	-3637.46	515307.8	4400964.7	39°45'30.464"N	80°49'16.663"W	4000.58	294.60	3.29
10360.00	90.55	290.59	6478.94	4091.16	1698.35	-3726.56	515280.6	4400974.8	39°45'30.791"N	80°49'17.803"W	4095.32	294.50	0.62
10454.00	90.65	292.47	6477.95	4185.15	1732.84	-3813.99	515254.0	4400985.3	39°45'31.134"N	80°49'18.922"W	4189.18	294.43	2.00
10549.00	90.80	291.66	6476.75	4280.14	1768.53	-3902.02	515227.2	4400996.1	39°45'31.488"N	80°49'20.048"W	4284.10	294.38	0.87
10644.00	90.65	291.82	6475.55	4375.14	1803.71	-3990.26	515200.3	4401006.9	39°45'31.838"N	80°49'21.177"W	4378.99	294.32	0.23
10740.00	90.71	289.11	6474.41	4471.09	1837.27	-4080.19	515172.9	4401017.1	39°45'32.171"N	80°49'22.328"W	4474.76	294.24	2.82
10835.00	90.71	288.60	6473.23	4565.95	1867.97	-4170.08	515145.5	4401026.4	39°45'32.476"N	80°49'23.478"W	4569.34	294.13	0.54
10930.00	90.62	288.91	6472.13	4660.79	1898.51	-4260.03	515118.1	4401035.7	39°45'32.780"N	80°49'24.629"W	4663.93	294.02	0.34
11025.00	90.68	291.46	6471.05	4755.74	1931.29	-4349.18	515090.9	4401045.7	39°45'33.106"N	80°49'25.770"W	4758.71	293.94	2.68
11120.00	90.74	294.63	6470.21	4850.70	1968.47	-4436.59	515064.3	4401057.1	39°45'33.475"N	80°49'26.888"W	4853.68	293.93	3.36
11215.00	90.40	294.15	6469.59	4945.61	2007.70	-4523.11	515038.0	4401069.0	39°45'33.864"N	80°49'27.995"W	4948.67	293.94	0.51
11309.00	90.40	292.69	6468.94	5039.57	2045.06	-4609.36	515011.7	4401080.4	39°45'34.235"N	80°49'29.098"W	5042.66	293.93	1.55
11404.00	90.37	291.45	6468.30	5134.57	2080.75	-4697.39	514984.9	4401091.3	39°45'34.589"N	80°49'30.225"W	5137.61	293.89	1.31
11499.00	90.43	292.37	6467.63	5229.57	2116.20	-4785.53	514958.0	4401102.1	39°45'34.942"N	80°49'31.352"W	5232.55	293.86	0.97

5/10/21

Division of
 Oil and Gas
 Regulation
 11/20/2015

WELLPATH DATA † = interpolated/extrapolated station													
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
11592.00	90.43	295.94	6466.94	5322.48	2154.25	-4870.37	514932.2	4401113.7	39°45'35.319"N	80°49'32.438"W	5325.53	293.86	3.84
11687.00	90.43	295.05	6466.22	5417.29	2195.14	-4956.12	514906.0	4401126.1	39°45'35.725"N	80°49'33.535"W	5420.49	293.89	0.94
11782.00	90.40	290.42	6465.53	5512.25	2231.84	-5043.71	514879.3	4401137.3	39°45'36.089"N	80°49'34.655"W	5515.44	293.87	4.87
11877.00	90.18	291.09	6465.05	5607.23	2265.51	-5132.54	514852.3	4401147.6	39°45'36.424"N	80°49'35.792"W	5610.30	293.82	0.74
11973.00	90.22	290.50	6464.72	5703.21	2299.59	-5222.29	514824.9	4401157.9	39°45'36.762"N	80°49'36.940"W	5706.17	293.77	0.62
12068.00	90.15	291.38	6464.41	5798.20	2333.54	-5311.01	514797.9	4401168.3	39°45'37.099"N	80°49'38.076"W	5801.06	293.72	0.93
12163.00	90.46	292.47	6463.91	5893.19	2369.01	-5399.14	514771.0	4401179.1	39°45'37.452"N	80°49'39.203"W	5896.01	293.69	1.19
12257.00	90.40	291.38	6463.20	5987.19	2404.11	-5486.34	514744.5	4401189.8	39°45'37.800"N	80°49'40.319"W	5989.96	293.66	1.16
12352.00	90.46	289.58	6462.49	6082.15	2437.35	-5575.32	514717.4	4401199.9	39°45'38.130"N	80°49'41.458"W	6084.81	293.61	1.90
12447.00	90.43	289.29	6461.75	6177.06	2468.96	-5664.91	514690.1	4401209.5	39°45'38.444"N	80°49'42.604"W	6179.56	293.55	0.31
12487.00	90.40	289.75	6461.46	6217.02	2482.32	-5702.61	514678.6	4401213.6	39°45'38.577"N	80°49'43.086"W	6219.46	293.52	1.15
12512.00	90.40	289.75	6461.29	6242.01	2490.77	-5726.14	514671.4	4401216.2	39°45'38.661"N	80°49'43.388"W	6244.40	293.51	0.00

51-01621

RECEIVED
Office of Oil and Gas
AUG 05 2015
WV Department of
Environmental Protection