



GASTAR EXPLORATION USA, INC.

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

Slot: Slot #1
 Well: Armstrong 1H
 Wellbore: Armstrong 1H (PWB)



51-01613

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 #1	-48.02	-35.01	1694228.000	14437103.000	39°45'13.299"N	80°48'30.736"W
Cody 9 (RT) to Mud line (At Slot: Slot #1)				10ft		
Mean Sea Level to Mud line (At Slot: Slot #1)				-1278ft		
Cody 9 (RT) to Mean Sea Level				1288ft		

Well Profile Data

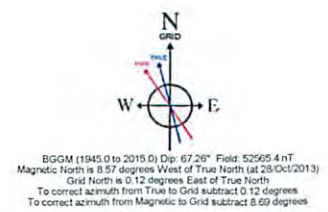
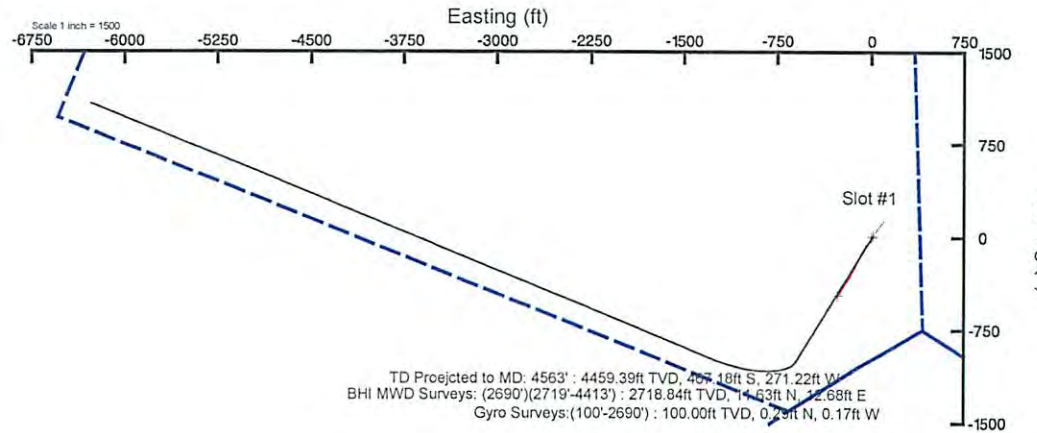
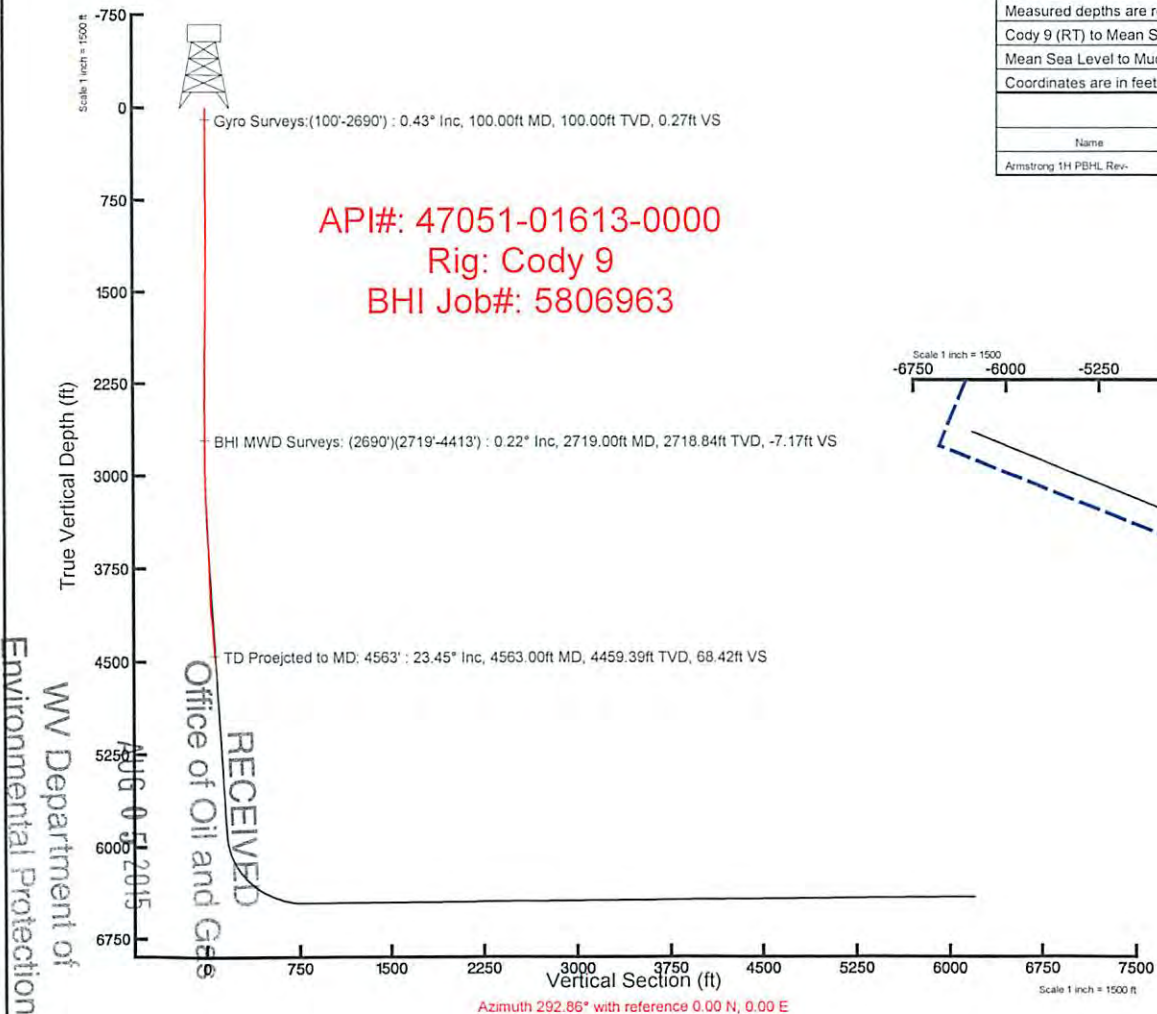
Design Comment	MD (ft)	Inc (°)	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (°/100ft)	VS (ft)
Tie On	2690.00	0.650	20.090	2689.84	11.52	12.64	0.00	-7.17
Proj. to Bottom	2706.00	0.650	20.090	2705.84	11.70	12.70	0.00	-7.16
End of Tangent	2760.17	0.650	20.090	2760.00	12.27	12.91	0.00	-7.13
End of 3D Arc	3562.74	23.439	211.217	3540.96	-121.94	-69.47	3.00	16.64
End of Tangent	6144.20	23.439	211.217	5909.41	-1000.11	-601.66	0.00	165.88
LP	7110.40	90.501	292.381	6458.00	-975.62	-1284.31	9.00	804.42
BHL	12505.16	90.501	292.381	6410.80	1078.43	-6272.50	0.00	6198.79

Plot reference wellpath is Armstrong 1H PWP Rev-A.0
 True vertical depths are referenced to Cody 9 (RT)
 Measured depths are referenced to Cody 9 (RT)
 Cody 9 (RT) to Mean Sea Level: 1288 feet
 Mean Sea Level to Mud line (At Slot: Slot #1): -1278 feet
 Coordinates are in feet referenced to Slot

Grid System: NAD83 / UTM Zone 17 North, US feet
 North Reference: Grid north
 Scale: True distance
 Depths are in feet
 Created by: frisjest on 30/Oct/2013

Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Armstrong 1H PBHL Rev-	12505.16	6410.80	1078.43	-6272.50	1697958.00	14438181.00	39°45'24.082"N	80°49'51.022"W



51-01613

REFERENCE WELLPATH IDENTIFICATION			
Operator	GASTAR EXPLORATION INC.	Slot	Slot #1
Area	Marshall County, WV	Well	Armstrong 1H
Field	Marshall	Wellbore	Armstrong 1H (AWB)
Facility	Armstrong	Wellpath	Armstrong 1H AWP [SH] Proj: 12,572'
		Sidetrack	(none)

WELLPATH DATA † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sec [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
0.00	0.00	330.27	0.00	0.00	0.00	0.00	516401.6	4400437.8	39°45'13.299"N	80°48'30.736"W	0.00	0.00	0.00
29.40	0.00	330.27	29.40	0.00	0.00	0.00	516401.6	4400437.8	39°45'13.299"N	80°48'30.736"W	0.00	0.00	0.00
119.40	0.43	330.27	119.40	0.27	0.29	-0.17	516401.6	4400437.9	39°45'13.302"N	80°48'30.738"W	0.34	330.27	0.48
219.40	0.35	330.05	219.40	0.80	0.88	-0.51	516401.6	4400438.1	39°45'13.308"N	80°48'30.743"W	1.02	330.20	0.08
319.40	0.22	283.60	319.40	1.24	1.19	-0.85	516401.5	4400438.2	39°45'13.311"N	80°48'30.747"W	1.46	324.70	0.25
419.40	0.18	274.16	419.40	1.57	1.25	-1.19	516401.4	4400438.2	39°45'13.312"N	80°48'30.751"W	1.72	316.45	0.05
519.40	0.11	272.28	519.39	1.81	1.27	-1.44	516401.3	4400438.2	39°45'13.312"N	80°48'30.755"W	1.92	311.29	0.07
619.40	0.18	287.84	619.39	2.06	1.32	-1.69	516401.2	4400438.2	39°45'13.312"N	80°48'30.758"W	2.14	307.99	0.08
719.40	0.12	290.66	719.39	2.32	1.40	-1.93	516401.1	4400438.2	39°45'13.313"N	80°48'30.761"W	2.39	305.95	0.06
819.40	0.07	297.53	819.39	2.49	1.47	-2.09	516401.1	4400438.2	39°45'13.314"N	80°48'30.763"W	2.55	305.13	0.05
919.40	0.12	294.14	919.39	2.65	1.54	-2.24	516401.0	4400438.3	39°45'13.315"N	80°48'30.765"W	2.71	304.53	0.05
1019.40	0.07	274.58	1019.39	2.82	1.59	-2.39	516401.0	4400438.3	39°45'13.315"N	80°48'30.767"W	2.87	303.55	0.06
1119.40	0.11	197.10	1119.39	2.87	1.50	-2.48	516401.0	4400438.3	39°45'13.314"N	80°48'30.768"W	2.90	301.14	0.12
1219.40	0.18	103.61	1219.39	2.70	1.37	-2.36	516401.0	4400438.2	39°45'13.313"N	80°48'30.766"W	2.73	300.18	0.22
1319.40	0.06	97.68	1319.39	2.50	1.33	-2.15	516401.1	4400438.2	39°45'13.312"N	80°48'30.764"W	2.53	301.65	0.12
1419.40	0.25	77.79	1419.39	2.27	1.37	-1.89	516401.2	4400438.2	39°45'13.313"N	80°48'30.760"W	2.33	305.89	0.19
1519.40	0.53	72.26	1519.39	1.73	1.55	-1.23	516401.4	4400438.3	39°45'13.315"N	80°48'30.752"W	1.98	321.54	0.28
1619.40	0.88	74.48	1619.38	0.77	1.90	-0.05	516401.7	4400438.4	39°45'13.318"N	80°48'30.737"W	1.90	358.40	0.35
1719.40	1.01	86.96	1719.37	-0.63	2.15	1.57	516402.2	4400438.5	39°45'13.320"N	80°48'30.716"W	2.66	36.07	0.24
1819.40	1.22	80.00	1819.35	-2.32	2.38	3.50	516402.8	4400438.5	39°45'13.323"N	80°48'30.691"W	4.23	55.71	0.25
1919.40	1.10	68.63	1919.33	-3.92	2.92	5.44	516403.4	4400438.7	39°45'13.328"N	80°48'30.666"W	6.17	61.78	0.26
2019.40	0.03	66.87	2019.31	-5.24	3.62	7.16	516403.9	4400438.9	39°45'13.335"N	80°48'30.644"W	8.02	63.17	0.08
2119.40	0.84	46.69	2119.30	-6.17	4.48	8.52	516404.3	4400439.2	39°45'13.343"N	80°48'30.627"W	9.62	62.28	0.38
2219.40	0.89	42.26	2219.29	-6.74	5.55	9.57	516404.6	4400439.5	39°45'13.354"N	80°48'30.613"W	11.07	59.88	0.08
2319.40	0.95	40.64	2319.28	-7.26	6.76	10.64	516405.0	4400439.9	39°45'13.366"N	80°48'30.600"W	12.60	57.57	0.07

Department of Environmental Protection
 Division of Oil and Gas
 AUG 05 2015
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WELLPATH DATA † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sec [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
2419.40	0.83	33.04	2419.26	-7.66	7.99	11.57	516405.3	4400440.2	39°45'13.378"N	80°48'30.588"W	14.06	55.36	0.17
2519.40	0.84	11.36	2519.25	-7.65	9.32	12.11	516405.4	4400440.6	39°45'13.391"N	80°48'30.581"W	15.28	52.42	0.31
2619.40	0.62	11.62	2619.24	-7.41	10.57	12.36	516405.5	4400441.0	39°45'13.403"N	80°48'30.578"W	16.26	49.48	0.22
2709.40	0.65	20.09	2709.24	-7.30	11.52	12.64	516405.6	4400441.3	39°45'13.413"N	80°48'30.574"W	17.10	47.64	0.11
2738.40	0.22	194.16	2738.24	-7.30	11.63	12.68	516405.6	4400441.3	39°45'13.414"N	80°48'30.574"W	17.20	47.48	3.00
2769.40	0.75	213.82	2769.24	-7.27	11.40	12.55	516405.6	4400441.3	39°45'13.412"N	80°48'30.575"W	16.96	47.76	1.77
2800.40	2.00	209.99	2800.23	-7.15	10.76	12.17	516405.4	4400441.1	39°45'13.405"N	80°48'30.580"W	16.25	48.51	4.04
2832.40	2.84	204.84	2832.20	-7.05	9.56	11.56	516405.2	4400440.7	39°45'13.393"N	80°48'30.588"W	15.00	50.41	2.71
2863.40	4.08	206.45	2863.14	-6.94	7.87	10.74	516405.0	4400440.2	39°45'13.377"N	80°48'30.598"W	13.32	53.76	4.01
2894.40	5.34	205.36	2894.04	-6.78	5.58	9.63	516404.7	4400439.5	39°45'13.354"N	80°48'30.613"W	11.13	59.90	4.07
2925.40	6.29	209.51	2924.88	-6.50	2.80	8.18	516404.2	4400438.6	39°45'13.327"N	80°48'30.631"W	8.65	71.09	3.35
2956.40	7.34	207.95	2955.66	-6.09	-0.43	6.41	516403.7	4400437.7	39°45'13.295"N	80°48'30.654"W	6.43	93.79	3.44
2988.40	7.93	202.88	2987.37	-5.88	-4.26	4.60	516403.1	4400436.5	39°45'13.257"N	80°48'30.677"W	6.27	132.84	2.80
3019.40	9.38	208.43	3018.02	-5.59	-8.46	2.56	516402.5	4400435.2	39°45'13.216"N	80°48'30.704"W	8.84	163.13	5.39
3051.40	9.30	209.49	3049.60	-5.00	-13.00	0.05	516401.7	4400433.8	39°45'13.171"N	80°48'30.736"W	13.00	179.78	0.59
3082.40	9.74	213.07	3080.17	-4.20	-17.38	-2.61	516400.9	4400432.5	39°45'13.128"N	80°48'30.770"W	17.57	188.56	2.38
3114.40	9.78	208.76	3111.71	-3.40	-22.03	-5.40	516400.1	4400431.1	39°45'13.082"N	80°48'30.806"W	22.68	193.77	2.29
3145.40	9.97	215.91	3142.25	-2.47	-26.51	-8.24	516399.2	4400429.7	39°45'13.037"N	80°48'30.842"W	27.76	197.27	4.00
3177.40	10.09	216.61	3173.76	-1.14	-31.00	-11.54	516398.2	4400428.4	39°45'12.993"N	80°48'30.885"W	33.08	200.41	0.53
3209.40	10.98	216.66	3205.22	0.30	-35.70	-15.03	516397.1	4400426.9	39°45'12.947"N	80°48'30.930"W	38.73	202.83	2.78
3240.40	11.81	219.24	3235.61	1.95	-40.53	-18.80	516396.0	4400425.4	39°45'12.899"N	80°48'30.978"W	44.67	204.88	3.14
3271.40	12.39	219.28	3265.92	3.84	-45.56	-22.91	516394.7	4400423.9	39°45'12.850"N	80°48'31.031"W	50.99	206.70	1.87
3303.40	13.33	217.82	3297.12	5.82	-51.13	-27.34	516393.4	4400422.2	39°45'12.795"N	80°48'31.088"W	57.98	208.14	3.11
3334.40	13.64	217.91	3327.26	7.75	-56.83	-31.78	516392.0	4400420.5	39°45'12.738"N	80°48'31.145"W	65.12	209.21	1.00
3365.40	14.22	217.05	3357.35	9.69	-62.76	-36.32	516390.7	4400418.7	39°45'12.680"N	80°48'31.203"W	72.51	210.06	1.99
3396.40	14.75	214.14	3387.37	11.46	-69.06	-40.83	516389.3	4400416.8	39°45'12.618"N	80°48'31.261"W	80.23	210.59	2.90
3427.40	15.43	214.58	3417.30	13.14	-75.72	-45.39	516387.9	4400414.7	39°45'12.552"N	80°48'31.319"W	88.28	210.94	2.22
3458.40	16.24	212.16	3447.12	14.74	-82.79	-50.03	516386.5	4400412.6	39°45'12.482"N	80°48'31.379"W	96.73	211.15	3.37
3489.40	17.31	211.44	3476.80	16.21	-90.39	-54.75	516385.0	4400410.3	39°45'12.407"N	80°48'31.440"W	105.68	211.20	3.52
3521.40	18.22	210.22	3507.27	17.64	-98.78	-59.75	516383.5	4400407.7	39°45'12.324"N	80°48'31.504"W	115.44	211.17	3.07
3552.40	19.14	209.96	3536.64	18.97	-107.37	-64.73	516382.0	4400405.1	39°45'12.240"N	80°48'31.568"W	125.37	211.08	2.98

51-01613

Department of
Oil and Gas
REGULATORY
ALG 05 2015

WELL PATH DATA † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sec [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
3583.40	19.73	208.92	3565.87	20.24	-116.35	-69.79	516380.5	4400402.3	39°45'12.151"N	80°48'31.633"W	135.68	210.96	2.21
3615.40	20.62	208.81	3595.91	21.48	-126.02	-75.12	516378.8	4400399.4	39°45'12.055"N	80°48'31.701"W	146.71	210.80	2.78
3646.40	21.50	209.19	3624.84	22.77	-135.76	-80.52	516377.2	4400396.4	39°45'11.959"N	80°48'31.771"W	157.85	210.67	2.87
3677.40	22.60	209.42	3653.57	24.17	-145.91	-86.22	516375.5	4400393.3	39°45'11.859"N	80°48'31.844"W	169.48	210.58	3.56
3709.40	22.52	207.83	3683.12	25.51	-156.68	-92.10	516373.7	4400390.1	39°45'11.753"N	80°48'31.920"W	181.75	210.45	1.92
3741.40	22.90	207.86	3712.64	26.68	-167.61	-97.87	516371.9	4400386.7	39°45'11.645"N	80°48'31.994"W	194.09	210.28	1.19
3773.40	23.13	208.19	3742.10	27.91	-178.65	-103.75	516370.1	4400383.4	39°45'11.536"N	80°48'32.069"W	206.59	210.15	0.82
3805.40	23.68	208.52	3771.46	29.24	-189.84	-109.79	516368.3	4400380.0	39°45'11.425"N	80°48'32.147"W	219.30	210.04	1.77
3835.40	24.70	208.39	3798.83	30.54	-200.65	-115.64	516366.5	4400376.7	39°45'11.319"N	80°48'32.222"W	231.59	209.96	3.40
3867.40	24.58	207.40	3827.91	31.82	-212.44	-121.89	516364.6	4400373.1	39°45'11.202"N	80°48'32.303"W	244.92	209.85	1.34
3928.40	23.33	205.76	3883.66	33.64	-234.58	-132.97	516361.2	4400366.3	39°45'10.984"N	80°48'32.445"W	269.65	209.55	2.32
3992.40	23.81	205.32	3942.32	35.05	-257.67	-144.01	516357.9	4400359.3	39°45'10.756"N	80°48'32.587"W	295.18	209.20	0.80
4055.40	24.81	207.56	3999.73	36.90	-280.88	-155.56	516354.3	4400352.2	39°45'10.527"N	80°48'32.736"W	321.09	208.98	2.16
4118.40	26.03	208.28	4056.63	39.51	-304.78	-168.23	516350.5	4400344.9	39°45'10.291"N	80°48'32.898"W	348.12	208.90	2.00
4181.40	26.01	211.50	4113.25	43.12	-328.73	-181.99	516346.3	4400337.6	39°45'10.054"N	80°48'33.075"W	375.75	208.97	2.24
4245.40	25.43	216.19	4170.92	48.63	-351.79	-197.44	516341.6	4400330.6	39°45'09.827"N	80°48'33.274"W	403.41	209.30	3.31
4308.40	24.56	214.08	4228.02	54.51	-373.55	-212.77	516336.9	4400324.0	39°45'09.612"N	80°48'33.471"W	429.89	209.67	1.98
4371.40	24.26	212.96	4285.39	59.54	-395.25	-227.14	516332.5	4400317.4	39°45'09.398"N	80°48'33.655"W	455.87	209.89	0.88
4432.40	23.45	211.24	4341.17	63.71	-416.15	-240.26	516328.5	4400311.0	39°45'09.192"N	80°48'33.824"W	480.52	210.00	1.75
4485.00	22.79	210.91	4389.55	66.84	-433.84	-250.92	516325.3	4400305.6	39°45'09.017"N	80°48'33.961"W	501.17	210.04	1.28
4574.00	21.58	213.58	4471.96	72.57	-462.26	-268.83	516319.8	4400297.0	39°45'08.737"N	80°48'34.191"W	534.75	210.18	1.77
4669.00	21.65	210.27	4560.28	78.37	-491.95	-287.32	516314.2	4400287.9	39°45'08.443"N	80°48'34.428"W	569.71	210.29	1.29
4764.00	23.18	205.61	4648.11	81.83	-523.95	-304.24	516309.0	4400278.2	39°45'08.128"N	80°48'34.646"W	605.88	210.14	2.47
4859.00	23.64	205.30	4735.29	83.86	-558.03	-320.46	516304.1	4400267.8	39°45'07.791"N	80°48'34.854"W	643.50	209.87	0.50
4953.00	23.64	210.66	4821.41	87.53	-591.29	-338.13	516298.7	4400257.6	39°45'07.463"N	80°48'35.082"W	681.14	209.76	2.29
5048.00	23.50	209.10	4908.49	92.49	-624.22	-357.06	516292.9	4400247.6	39°45'07.138"N	80°48'35.325"W	719.13	209.77	0.67
5143.00	22.74	209.39	4995.86	96.95	-656.77	-375.28	516287.4	4400237.7	39°45'06.816"N	80°48'35.559"W	756.43	209.74	0.81
5238.00	23.82	214.11	5083.13	103.09	-688.66	-395.05	516281.4	4400228.0	39°45'06.502"N	80°48'35.813"W	793.92	209.84	2.27
5332.00	23.78	216.44	5169.14	111.55	-719.62	-416.95	516274.7	4400218.5	39°45'06.196"N	80°48'36.094"W	831.68	210.09	1.00
5427.00	23.83	211.38	5256.07	119.21	-751.41	-438.32	516268.2	4400208.9	39°45'05.882"N	80°48'36.369"W	869.91	210.26	2.15
5522.00	23.77	216.42	5343.19	126.75	-782.84	-459.41	516261.8	4400199.3	39°45'05.572"N	80°48'36.640"W	907.69	210.41	2.23

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 Department of
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WELL PATH DATA † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sec [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
5618.00	22.83	212.88	5431.57	134.72	-813.68	-480.74	516255.3	4400189.9	39°45'05.268"N	80°48'36.913"W	945.09	210.58	1.48
5712.00	22.91	211.54	5518.18	140.96	-844.59	-500.21	516249.3	4400180.5	39°45'04.963"N	80°48'37.164"W	981.60	210.64	0.56
5806.00	22.83	210.29	5604.79	146.38	-875.93	-518.98	516243.6	4400170.9	39°45'04.654"N	80°48'37.405"W	1018.13	210.65	0.52
5901.00	22.87	211.56	5692.33	151.86	-907.57	-537.94	516237.8	4400161.3	39°45'04.341"N	80°48'37.648"W	1055.02	210.66	0.52
5995.00	22.10	210.99	5779.19	157.42	-938.30	-556.60	516232.1	4400151.9	39°45'04.038"N	80°48'37.888"W	1090.97	210.68	0.85
6090.00	22.95	213.88	5866.94	163.79	-968.99	-576.13	516226.2	4400142.6	39°45'03.735"N	80°48'38.139"W	1127.33	210.73	1.47
6185.00	23.69	215.03	5954.18	171.66	#####	-597.41	516219.7	4400133.1	39°45'03.429"N	80°48'38.412"W	1164.86	210.85	0.91
6279.00	25.67	221.96	6039.61	182.63	#####	-621.87	516212.3	4400123.8	39°45'03.127"N	80°48'38.726"W	1203.70	211.11	3.73
6374.00	29.26	237.93	6124.00	203.05	#####	-655.36	516202.1	4400115.4	39°45'02.854"N	80°48'39.156"W	1244.77	211.77	8.59
6469.00	33.32	253.85	6205.31	237.04	#####	-700.19	516188.4	4400109.4	39°45'02.661"N	80°48'39.730"W	1285.37	213.01	9.66
6564.00	40.57	268.84	6281.34	285.94	#####	-756.33	516171.3	4400107.0	39°45'02.584"N	80°48'40.449"W	1323.27	214.86	12.13
6659.00	49.84	276.00	6348.24	349.27	#####	-823.51	516150.8	4400107.9	39°45'02.617"N	80°48'41.309"W	1360.25	217.26	11.12
6753.00	58.24	277.12	6403.39	422.41	#####	-899.02	516127.8	4400110.6	39°45'02.705"N	80°48'42.276"W	1400.55	219.93	8.99
6847.00	65.41	278.82	6447.75	502.62	#####	-981.02	516102.8	4400114.1	39°45'02.820"N	80°48'43.325"W	1446.06	222.72	7.79
6942.00	72.69	285.51	6481.73	589.84	#####	#####	516076.5	4400119.8	39°45'03.008"N	80°48'44.433"W	1492.95	225.65	10.09
7038.00	79.86	289.38	6504.50	682.67	#####	#####	516049.4	4400128.4	39°45'03.286"N	80°48'45.571"W	1539.14	228.71	8.43
7132.00	89.26	290.60	6513.40	776.06	-983.67	#####	516022.6	4400138.1	39°45'03.604"N	80°48'46.694"W	1586.16	231.67	10.08
7227.00	90.62	294.45	6513.50	871.04	-947.28	#####	515995.9	4400149.2	39°45'03.965"N	80°48'47.817"W	1634.53	234.58	4.30
7322.00	91.42	303.03	6511.81	965.35	-901.65	#####	515970.5	4400163.1	39°45'04.418"N	80°48'48.881"W	1678.07	237.50	9.07
7418.00	93.05	293.40	6508.05	#####	-856.35	#####	515944.8	4400176.9	39°45'04.867"N	80°48'49.960"W	1726.95	240.27	10.17
7513.00	90.65	286.68	6504.98	#####	-823.84	#####	515917.6	4400186.8	39°45'05.191"N	80°48'51.101"W	1789.71	242.59	7.51
7608.00	90.68	288.69	6503.88	#####	-794.98	#####	515890.1	4400195.6	39°45'05.478"N	80°48'52.259"W	1857.99	244.67	2.12
7703.00	90.65	290.56	6502.78	#####	-763.08	#####	515862.8	4400205.3	39°45'05.795"N	80°48'53.404"W	1926.38	246.66	1.97
7798.00	90.55	285.94	6501.78	#####	-733.34	#####	515835.3	4400214.4	39°45'06.090"N	80°48'54.558"W	1998.40	248.47	4.86
7893.00	91.02	286.69	6500.48	#####	-706.65	#####	515807.6	4400222.5	39°45'06.356"N	80°48'55.724"W	2074.23	250.08	0.93
7989.00	91.14	291.88	6498.67	#####	-674.96	#####	515780.0	4400232.1	39°45'06.671"N	80°48'56.883"W	2149.44	251.70	5.41
8084.00	90.40	293.21	6497.39	#####	-638.55	#####	515753.2	4400243.2	39°45'07.033"N	80°48'58.005"W	2222.17	253.30	1.60
8178.00	90.12	293.24	6496.97	#####	-601.48	#####	515726.9	4400254.5	39°45'07.401"N	80°48'59.110"W	2295.05	254.81	0.30
8273.00	90.03	295.52	6496.84	#####	-562.27	#####	515700.6	4400266.5	39°45'07.790"N	80°49'00.217"W	2369.04	256.27	2.40
8367.00	90.22	295.62	6496.64	#####	-521.69	#####	515674.7	4400278.8	39°45'08.193"N	80°49'01.301"W	2442.51	257.67	0.23
8462.00	90.09	292.40	6496.38	#####	-483.04	#####	515648.3	4400290.6	39°45'08.576"N	80°49'02.411"W	2519.65	258.95	3.39

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ENVIRONMENTAL PROTECTION
 DIVISION
 AUG 05 2015
 DECEMBER 15 2015

WELL PATH DATA † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sec [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
8556.00	90.15	293.99	6496.18	#####	-446.02	#####	515622.0	4400301.9	39°45'08.944"N	80°49'03.517"W	2597.89	260.11	1.69
8651.00	90.22	294.41	6495.88	#####	-407.08	#####	515595.6	4400313.8	39°45'09.331"N	80°49'04.625"W	2677.09	261.25	0.45
8745.00	90.40	294.08	6495.37	#####	-368.48	#####	515569.4	4400325.5	39°45'09.714"N	80°49'05.721"W	2756.41	262.32	0.40
8841.00	90.55	292.07	6494.57	#####	-330.86	#####	515542.5	4400337.0	39°45'10.087"N	80°49'06.851"W	2839.32	263.31	2.10
8935.00	90.09	290.91	6494.05	#####	-296.42	#####	515515.9	4400347.5	39°45'10.430"N	80°49'07.970"W	2922.52	264.18	1.33
9030.00	90.12	291.88	6493.87	#####	-261.77	#####	515488.9	4400358.0	39°45'10.774"N	80°49'09.102"W	3007.31	265.01	1.02
9125.00	90.18	292.86	6493.63	#####	-225.61	#####	515462.2	4400369.1	39°45'11.133"N	80°49'10.225"W	3091.99	265.82	1.03
9219.00	90.12	294.69	6493.38	#####	-187.72	#####	515436.0	4400380.6	39°45'11.509"N	80°49'11.326"W	3175.32	266.61	1.95
9314.00	90.46	293.21	6492.90	#####	-149.16	#####	515409.5	4400392.4	39°45'11.892"N	80°49'12.436"W	3260.00	267.38	1.60
9408.00	90.58	290.58	6492.05	#####	-114.11	#####	515382.9	4400403.0	39°45'12.240"N	80°49'13.552"W	3345.74	268.05	2.80
9503.00	90.58	288.88	6491.08	#####	-82.04	#####	515355.7	4400412.8	39°45'12.559"N	80°49'14.696"W	3434.18	268.63	1.79
9598.00	90.55	288.80	6490.15	#####	-51.36	#####	515328.3	4400422.1	39°45'12.864"N	80°49'15.846"W	3523.48	269.17	0.09
9693.00	90.62	290.10	6489.18	#####	-19.73	#####	515301.0	4400431.8	39°45'13.178"N	80°49'16.993"W	3612.74	269.69	1.37
9788.00	90.58	292.94	6488.18	#####	15.11	#####	515274.1	4400442.4	39°45'13.524"N	80°49'18.123"W	3701.08	270.23	2.99
9883.00	90.58	294.73	6487.22	#####	53.50	#####	515247.6	4400454.1	39°45'13.905"N	80°49'19.235"W	3788.31	270.81	1.88
9978.00	90.62	292.84	6486.22	#####	91.81	#####	515221.1	4400465.8	39°45'14.285"N	80°49'20.346"W	3875.95	271.36	1.99
10073.00	90.62	292.16	6485.20	#####	128.16	#####	515194.4	4400476.8	39°45'14.646"N	80°49'21.469"W	3964.69	271.85	0.72
10166.00	90.65	293.12	6484.17	#####	163.96	#####	515168.3	4400487.7	39°45'15.002"N	80°49'22.567"W	4051.77	272.32	1.03
10260.00	90.62	292.85	6483.12	#####	200.66	#####	515141.9	4400498.9	39°45'15.366"N	80°49'23.674"W	4139.85	272.78	0.29
10354.00	90.62	290.85	6482.11	#####	235.64	#####	515115.3	4400509.6	39°45'15.714"N	80°49'24.790"W	4228.79	273.19	2.13
10449.00	90.62	291.61	6481.08	#####	270.04	#####	515088.3	4400520.1	39°45'16.055"N	80°49'25.923"W	4319.21	273.59	0.80
10543.00	90.62	291.26	6480.06	#####	304.39	#####	515061.7	4400530.5	39°45'16.397"N	80°49'27.043"W	4408.78	273.96	0.37
10639.00	90.58	292.61	6479.06	#####	340.25	#####	515034.5	4400541.5	39°45'16.753"N	80°49'28.182"W	4500.18	274.34	1.41
10734.00	90.62	294.17	6478.06	#####	377.96	#####	515008.0	4400553.0	39°45'17.127"N	80°49'29.297"W	4590.07	274.72	1.64
10829.00	90.58	291.91	6477.07	#####	415.14	#####	514981.3	4400564.3	39°45'17.496"N	80°49'30.416"W	4680.35	275.09	2.38
10924.00	90.58	290.18	6476.11	#####	449.25	#####	514954.3	4400574.7	39°45'17.835"N	80°49'31.550"W	4771.75	275.40	1.82
11018.00	90.55	290.75	6475.18	#####	482.11	#####	514927.5	4400584.7	39°45'18.161"N	80°49'32.677"W	4862.58	275.69	0.61
11114.00	90.65	291.55	6474.17	#####	516.75	#####	514900.2	4400595.2	39°45'18.505"N	80°49'33.822"W	4955.16	275.99	0.84
11209.00	90.74	291.85	6473.02	#####	551.87	#####	514873.3	4400605.9	39°45'18.854"N	80°49'34.951"W	5046.67	276.28	0.33
11303.00	90.74	293.18	6471.81	#####	587.86	#####	514846.9	4400616.9	39°45'19.212"N	80°49'36.062"W	5136.98	276.57	1.41
11398.00	90.71	293.33	6470.60	#####	625.37	#####	514820.3	4400628.3	39°45'19.584"N	80°49'37.179"W	5228.04	276.87	0.16

51-01613

The accuracy of
 this report is as
 represented by the
 data provided.
 AUG 05 2010
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MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sec [ft]	North [ft]	East [ft]	Grid East [M]	Grid North [M]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]
11493.00	90.68	293.85	6469.45	#####	663.38	#####	514793.8	4400639.9	39°45'19.961"N	80°49'38.292"W	5319.09	277.16	0.55
11586.00	90.71	293.60	6468.32	#####	700.80	#####	514767.8	4400651.3	39°45'20.333"N	80°49'39.381"W	5408.29	277.45	0.27
11681.00	90.46	294.44	6467.35	#####	739.46	#####	514741.4	4400663.1	39°45'20.716"N	80°49'40.491"W	5499.40	277.73	0.92
11776.00	90.49	294.42	6466.57	#####	778.75	#####	514715.0	4400675.1	39°45'21.106"N	80°49'41.598"W	5590.46	278.01	0.04
11871.00	90.46	293.34	6465.78	#####	817.21	#####	514688.6	4400686.8	39°45'21.488"N	80°49'42.709"W	5681.89	278.27	1.14
11966.00	90.46	291.99	6465.02	#####	853.82	#####	514661.9	4400697.9	39°45'21.851"N	80°49'43.831"W	5773.95	278.50	1.42
12062.00	90.43	292.50	6464.27	#####	890.16	#####	514634.8	4400709.0	39°45'22.212"N	80°49'44.968"W	5867.25	278.73	0.53
12157.00	89.97	289.40	6463.94	#####	924.12	#####	514607.8	4400719.4	39°45'22.550"N	80°49'46.103"W	5960.11	278.92	3.30
12251.00	89.94	289.84	6464.01	#####	955.68	#####	514580.8	4400729.0	39°45'22.863"N	80°49'47.235"W	6052.51	279.09	0.47
12346.00	89.94	287.66	6464.11	#####	986.22	#####	514553.4	4400738.3	39°45'23.167"N	80°49'48.386"W	6146.17	279.23	2.29
12441.00	90.22	289.38	6463.98	#####	1016.39	#####	514525.9	4400747.5	39°45'23.467"N	80°49'49.539"W	6239.94	279.37	1.83
12536.00	90.22	291.89	6463.61	#####	1049.87	#####	514498.9	4400757.7	39°45'23.799"N	80°49'50.677"W	6333.13	279.54	2.64
12572.00	90.22	291.89	6463.48	#####	1063.29	#####	514488.7	4400761.8	39°45'23.932"N	80°49'51.104"W	6368.30	279.61	0.00

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