



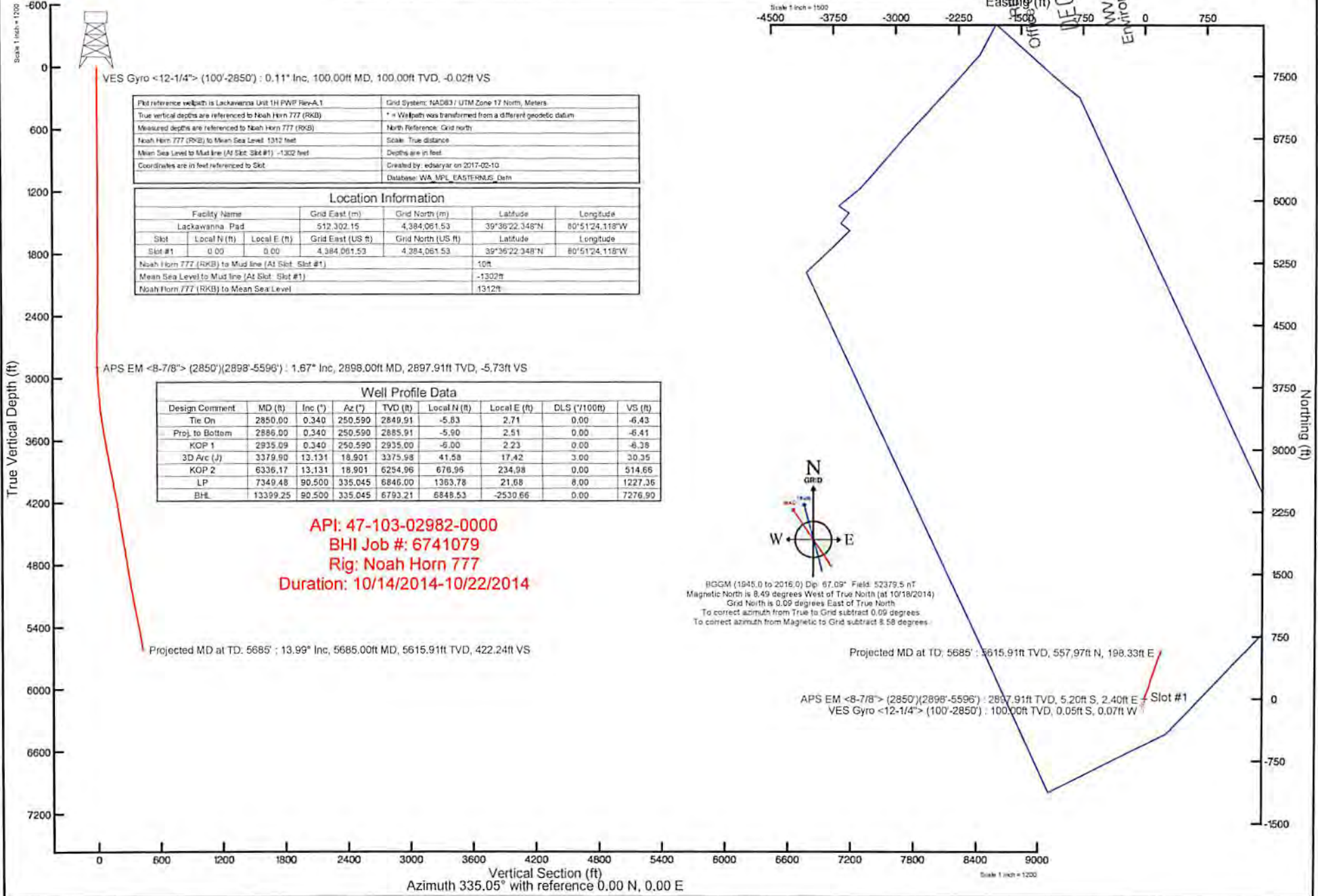
GASTAR EXPLORATION USA, INC.

Location: Wetzel County, WV
 Field: Wetzel
 Facility: Lackawanna Unit Pad

Slot: Slot #1
 Well: Lackawanna NO.1H
 Wellbore: Lackawanna NO. 1H



RECEIVED
 OFFICE OF Oil and Gas
 DEC 4 2017
 WV Department of Environmental Protection



Actual Wellpath Report (CSV ver.)
 Prepared by Baker Hughes
 Software System: WellArchitect 4.0.1

RECEIVED
 Office of Oil and Gas
 DEC 4 2017
 WV Department of
 Environmental Protection

REFERENCE WELLPATH IDENTIFICATION			
Operator	GASTAR EXPLORATION USA INC.	Slot	Slot #1
Area	Marshall County, WV	Well	Lackawanna 1H
Field	Marshall	Wellbore	Lackawanna 1H (AWB)
Facility	Lackawanna Unit	Wellpath	Lackawanna 1H (AWP) Proj: 5,685'
		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	231.09	0.00	0.00	0.00	0.00	512302.2	4384061.5	39°36'22.348"N	80°51'24.118"W	0.00	0.00	0.00
10.00	0.00	231.09	10.00	0.00	0.00	0.00	512302.2	4384061.5	39°36'22.348"N	80°51'24.118"W	0.00	0.00	0.00
100.00	0.11	231.09	100.00	-0.02	-0.05	-0.07	512302.2	4384061.5	39°36'22.347"N	80°51'24.119"W	0.09	231.09	0.12
200.00	0.42	287.04	200.00	0.20	-0.01	-0.49	512301.9	4384061.4	39°36'22.348"N	80°51'24.124"W	0.49	269.17	0.37
300.00	0.36	309.38	300.00	0.73	0.30	-1.09	512301.7	4384061.5	39°36'22.351"N	80°51'24.132"W	1.13	285.43	0.16
400.00	0.29	330.34	400.00	1.26	0.72	-1.45	512301.6	4384061.6	39°36'22.355"N	80°51'24.136"W	1.62	296.31	0.14
500.00	0.44	284.90	499.99	1.76	1.04	-1.95	512301.5	4384061.7	39°36'22.358"N	80°51'24.143"W	2.21	298.02	0.31
600.00	0.23	284.84	599.99	2.14	1.19	-2.52	512301.3	4384061.8	39°36'22.359"N	80°51'24.150"W	2.78	295.28	0.21
700.00	0.11	308.84	699.99	2.35	1.30	-2.78	512301.2	4384061.8	39°36'22.361"N	80°51'24.153"W	3.07	295.02	0.14
800.00	0.07	207.12	799.99	2.40	1.31	-2.89	512301.2	4384061.8	39°36'22.361"N	80°51'24.155"W	3.17	294.33	0.14
900.00	0.17	107.20	899.99	2.26	1.21	-2.77	512301.2	4384061.8	39°36'22.360"N	80°51'24.153"W	3.02	293.52	0.19
1000.00	0.19	121.02	999.99	2.03	1.08	-2.49	512301.3	4384061.7	39°36'22.358"N	80°51'24.150"W	2.71	293.41	0.05
1100.00	0.22	136.23	1099.99	1.71	0.85	-2.21	512301.4	4384061.7	39°36'22.356"N	80°51'24.146"W	2.37	291.08	0.06
1200.00	0.19	211.45	1199.99	1.43	0.57	-2.17	512301.4	4384061.6	39°36'22.353"N	80°51'24.146"W	2.24	284.82	0.25
1300.00	0.44	198.33	1299.99	1.06	0.07	-2.37	512301.4	4384061.4	39°36'22.348"N	80°51'24.148"W	2.38	271.63	0.26
1400.00	0.36	189.48	1399.99	0.52	-0.61	-2.55	512301.3	4384061.2	39°36'22.342"N	80°51'24.150"W	2.62	256.60	0.10
1500.00	0.18	220.25	1499.98	0.20	-1.04	-2.70	512301.3	4384061.1	39°36'22.337"N	80°51'24.152"W	2.89	249.00	0.23
1600.00	0.05	202.88	1599.98	0.10	-1.20	-2.82	512301.2	4384061.1	39°36'22.336"N	80°51'24.154"W	3.06	247.00	0.13
1700.00	0.23	308.93	1699.98	0.25	-1.11	-2.99	512301.2	4384061.1	39°36'22.337"N	80°51'24.156"W	3.19	249.63	0.25
1800.00	0.37	334.34	1799.98	0.76	-0.69	-3.29	512301.1	4384061.2	39°36'22.341"N	80°51'24.160"W	3.36	258.09	0.19
1900.00	0.35	317.74	1899.98	1.37	-0.18	-3.63	512301.0	4384061.4	39°36'22.346"N	80°51'24.164"W	3.64	267.22	0.11
2000.00	0.11	215.70	1999.98	1.62	-0.03	-3.89	512300.9	4384061.4	39°36'22.347"N	80°51'24.168"W	3.89	269.58	0.39
2100.00	0.78	131.41	2099.98	0.95	-0.56	-3.44	512301.0	4384061.2	39°36'22.342"N	80°51'24.162"W	3.48	260.81	0.78
2200.00	0.77	125.25	2199.97	-0.26	-1.39	-2.38	512301.3	4384061.0	39°36'22.334"N	80°51'24.148"W	2.76	239.64	0.08
2300.00	1.03	124.37	2299.95	-1.62	-2.29	-1.09	512301.7	4384060.7	39°36'22.325"N	80°51'24.132"W	2.54	205.46	0.26
2400.00	1.02	123.23	2399.94	-3.15	-3.29	0.40	512302.2	4384060.4	39°36'22.315"N	80°51'24.113"W	3.31	173.13	0.02
2500.00	0.94	121.23	2499.92	-4.58	-4.20	1.84	512302.6	4384060.1	39°36'22.306"N	80°51'24.094"W	4.58	156.31	0.09

Actual Wellpath Report (CSV ver.)
 Prepared by Baker Hughes
 Software System: WellArchitect 4.0.1

RECEIVED
 Office of Oil and Gas
 4/20/17
 Environmental Protection
 Department of

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]
2600.00	0.45	143.60	2599.92	-5.65	-4.94	2.78	512302.9	4384059.9	39°36'22.299"N	80°51'24.082"W	5.67	150.66	0.55
2700.00	0.11	132.72	2699.92	-6.12	-5.32	3.08	512303.0	4384059.8	39°36'22.295"N	80°51'24.079"W	6.15	149.94	0.34
2800.00	0.38	217.52	2799.91	-6.37	-5.65	2.95	512303.0	4384059.7	39°36'22.292"N	80°51'24.080"W	6.37	152.44	0.39
2850.00	0.34	250.59	2849.91	-6.43	-5.83	2.71	512302.9	4384059.6	39°36'22.290"N	80°51'24.083"W	6.43	155.09	0.42
2898.00	1.67	345.79	2897.91	-5.73	-5.20	2.40	512302.8	4384059.8	39°36'22.296"N	80°51'24.087"W	5.73	155.21	3.61
2930.00	2.51	352.15	2929.89	-4.60	-4.05	2.19	512302.7	4384060.2	39°36'22.308"N	80°51'24.090"W	4.61	151.60	2.72
2961.00	3.28	355.84	2960.85	-3.12	-2.50	2.03	512302.7	4384060.7	39°36'22.323"N	80°51'24.092"W	3.22	140.82	2.55
2992.00	4.18	1.02	2991.78	-1.28	-0.48	1.99	512302.7	4384061.3	39°36'22.343"N	80°51'24.092"W	2.05	103.61	3.10
3024.00	4.89	3.18	3023.68	0.98	2.05	2.09	512302.7	4384062.0	39°36'22.368"N	80°51'24.091"W	2.92	45.56	2.28
3055.00	5.74	7.84	3054.55	3.44	4.90	2.37	512302.8	4384062.9	39°36'22.396"N	80°51'24.087"W	5.44	25.82	3.07
3085.00	6.43	11.27	3084.38	6.06	8.03	2.90	512303.0	4384063.9	39°36'22.427"N	80°51'24.081"W	8.54	19.87	2.60
3116.00	6.41	17.79	3115.18	8.73	11.39	3.77	512303.2	4384064.9	39°36'22.460"N	80°51'24.069"W	11.99	18.33	2.35
3148.00	6.98	20.77	3146.96	11.40	14.90	5.01	512303.6	4384066.0	39°36'22.495"N	80°51'24.054"W	15.72	18.57	2.09
3178.00	7.33	21.55	3176.73	13.99	18.39	6.36	512304.0	4384067.0	39°36'22.529"N	80°51'24.036"W	19.46	19.07	1.21
3210.00	8.00	22.64	3208.44	16.90	22.34	7.96	512304.5	4384068.2	39°36'22.568"N	80°51'24.016"W	23.72	19.62	2.14
3241.00	7.91	23.09	3239.15	19.78	26.30	9.63	512305.0	4384069.4	39°36'22.607"N	80°51'23.994"W	28.00	20.12	0.35
3273.00	7.51	21.96	3270.86	22.68	30.26	11.28	512305.5	4384070.6	39°36'22.647"N	80°51'23.973"W	32.29	20.44	1.34
3305.00	7.85	19.73	3302.57	25.66	34.26	12.80	512306.0	4384071.9	39°36'22.686"N	80°51'23.954"W	36.57	20.48	1.41
3336.00	8.46	20.07	3333.26	28.78	38.39	14.29	512306.4	4384073.1	39°36'22.727"N	80°51'23.934"W	40.97	20.42	1.97
3368.00	9.25	19.87	3364.87	32.27	43.02	15.98	512306.9	4384074.5	39°36'22.773"N	80°51'23.913"W	45.89	20.37	2.47
3401.00	10.68	20.47	3397.38	36.30	48.38	17.95	512307.5	4384076.2	39°36'22.826"N	80°51'23.888"W	51.60	20.35	4.34
3432.00	11.61	23.60	3427.79	40.38	53.93	20.20	512308.2	4384077.9	39°36'22.880"N	80°51'23.859"W	57.59	20.53	3.58
3526.00	14.21	22.91	3519.41	54.38	73.23	28.48	512310.8	4384083.7	39°36'23.071"N	80°51'23.752"W	78.57	21.25	2.77
3620.00	13.41	20.74	3610.69	69.74	94.05	36.83	512313.3	4384090.1	39°36'23.277"N	80°51'23.645"W	101.00	21.39	1.01
3715.00	13.97	19.39	3702.99	85.63	115.17	44.54	512315.6	4384096.5	39°36'23.485"N	80°51'23.546"W	123.48	21.14	0.68
3809.00	14.11	16.97	3794.18	102.27	136.83	51.65	512317.8	4384103.1	39°36'23.699"N	80°51'23.455"W	146.26	20.68	0.64
3905.00	13.51	13.93	3887.41	119.71	158.91	57.77	512319.7	4384109.8	39°36'23.917"N	80°51'23.377"W	169.08	19.98	0.98
3999.00	13.64	15.16	3978.78	136.74	180.26	63.31	512321.4	4384116.3	39°36'24.128"N	80°51'23.305"W	191.06	19.35	0.34
4093.00	14.33	15.21	4070.00	154.10	202.19	69.26	512323.2	4384123.0	39°36'24.345"N	80°51'23.229"W	213.72	18.91	0.73
4188.00	14.61	18.65	4161.98	171.76	224.88	76.17	512325.3	4384129.9	39°36'24.569"N	80°51'23.140"W	237.43	18.71	0.95
4284.00	13.50	23.71	4255.11	187.93	246.62	84.55	512327.8	4384136.6	39°36'24.784"N	80°51'23.033"W	260.71	18.92	1.72
4379.00	12.51	20.09	4347.68	202.53	266.43	92.55	512330.3	4384142.6	39°36'24.979"N	80°51'22.930"W	282.05	19.16	1.35
4474.00	11.61	15.33	4440.58	217.09	285.32	98.61	512332.1	4384148.3	39°36'25.166"N	80°51'22.852"W	301.87	19.07	1.41

Actual Wellpath Report (CSV ver.)
 Prepared by Baker Hughes
 Software System: WellArchitect 4.0.1

RECEIVED
 Office of Oil and Gas
 DEC 4 2017
 W Department of
 Environmental Protection

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]
4568.00	12.43	18.93	4532.52	231.60	304.01	104.39	512333.9	4384154.0	39°36'25.351"N	80°51'22.778"W	321.43	18.95	1.18
4662.00	12.98	18.51	4624.22	246.56	323.59	111.02	512335.9	4384160.0	39°36'25.544"N	80°51'22.693"W	342.10	18.94	0.59
4756.00	12.70	19.22	4715.87	261.63	343.36	117.78	512338.0	4384166.0	39°36'25.739"N	80°51'22.606"W	362.99	18.93	0.34
4851.00	12.72	18.93	4808.54	276.66	363.11	124.61	512340.0	4384172.1	39°36'25.934"N	80°51'22.518"W	383.89	18.94	0.07
4933.00	12.81	16.05	4888.51	290.03	380.39	130.05	512341.7	4384177.3	39°36'26.105"N	80°51'22.448"W	402.00	18.88	0.78
5027.00	13.51	22.71	4980.05	305.29	400.53	137.17	512343.9	4384183.5	39°36'26.304"N	80°51'22.357"W	423.37	18.91	1.78
5122.00	14.69	19.79	5072.19	321.32	422.10	145.53	512346.4	4384190.0	39°36'26.517"N	80°51'22.250"W	446.49	19.02	1.45
5216.00	15.41	18.13	5162.96	338.91	445.19	153.45	512348.8	4384197.1	39°36'26.745"N	80°51'22.148"W	470.89	19.02	0.89
5311.00	15.38	19.18	5254.56	357.17	469.08	161.52	512351.3	4384204.3	39°36'26.981"N	80°51'22.045"W	496.11	19.00	0.30
5407.00	15.88	20.65	5347.01	375.50	493.39	170.33	512354.0	4384211.7	39°36'27.221"N	80°51'21.931"W	521.97	19.05	0.66
5501.00	15.10	20.59	5437.59	393.07	516.89	179.18	512356.7	4384218.9	39°36'27.453"N	80°51'21.818"W	547.06	19.12	0.83
5596.00	13.99	26.65	5529.55	408.87	538.74	188.68	512359.6	4384225.6	39°36'27.669"N	80°51'21.696"W	570.82	19.30	1.98
5685.00	13.99	26.65	5615.91	422.24	557.97	198.33	512362.5	4384231.4	39°36'27.859"N	80°51'21.572"W	592.17	19.57	0.00