

47-001-03223

PHL13DHS

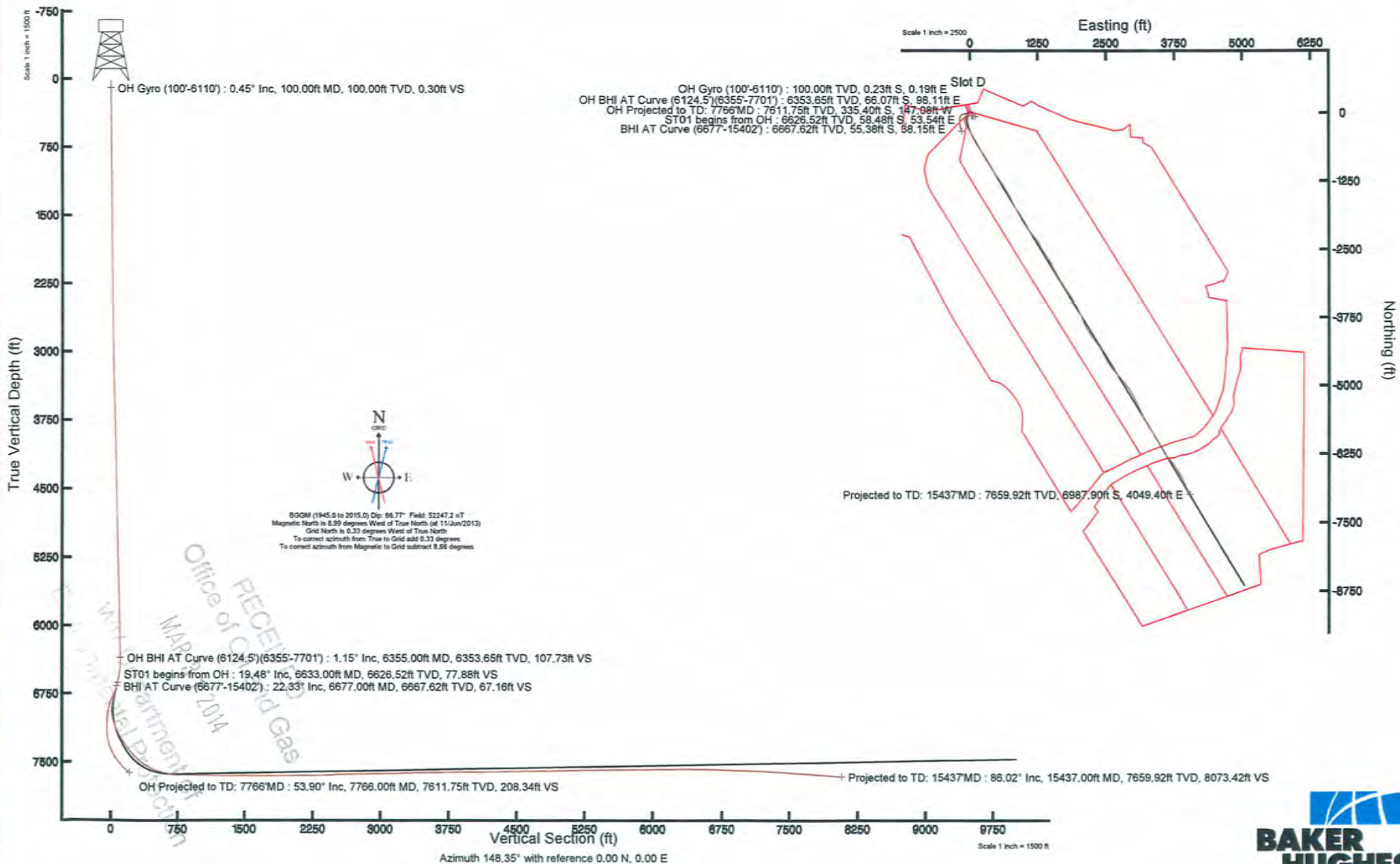
CNX GAS COMPANY, LLC

Location: Barbour County, WV
 Field: Barbour
 Facility: PHL13 Pad

Slot: Slot D
 Well: PHL13DHS ST01
 Wellbore: PHL13DHS ST01 PWB



This reference well path is the 13DHS ST01 Rev-C-5	
True vertical depths are referenced to Patterson 331 (RT)	Grid System: NAD83 / Lambert West Virginia SP, Northern Zone (47D), US feet
Measured depths are referenced to Patterson 331 (RT)	North Reference: Grid north
Patterson 331 (RT) to Mean Sea Level: 1551.44 feet	Scale: True distance
Mean Sea Level to Mud line (JK Slot C): 0 feet	Depth: in feet
Coordinates are in feet referenced to Slot	Created by: thomson on 26 Jun 2013





Actual Wellpath Report

PHL13DHS AWP ST01 Proj: 15437' MD

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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot D
Area	Barbour County, WV	Well	PHL13DHS ST01
Field	Barbour	Wellbore	PHL13DHS AWP ST01
Facility	PHL13 Pad	Sidetrack from	PHL13DHS AWP at 6633.00 MD

WELLPATH DATA (175 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
0.00†	0.000	141.520	0.00	0.00	0.00	0.00	1854757.37	261704.01	39°13'02.620"N	80°00'45.450"W	0.00	0.000	0.00	0.00	0.00
24.50	0.000	141.520	24.50	0.00	0.00	0.00	1854757.37	261704.01	39°13'02.620"N	80°00'45.450"W	0.00	0.000	0.00	0.00	0.00
114.50	0.540	141.520	114.50	0.42	-0.33	0.26	1854757.63	261703.68	39°13'02.616"N	80°00'45.446"W	0.42	141.520	0.60	0.60	0.00
214.50	0.600	97.440	214.49	1.22	-0.77	1.08	1854758.44	261703.24	39°13'02.612"N	80°00'45.436"W	1.32	125.534	0.43	0.06	-44.08
314.50	0.380	140.200	314.49	1.88	-1.09	1.81	1854759.18	261702.92	39°13'02.609"N	80°00'45.427"W	2.11	121.118	0.41	-0.22	42.76
414.50	0.320	113.620	414.49	2.44	-1.46	2.28	1854759.64	261702.56	39°13'02.605"N	80°00'45.421"W	2.70	122.644	0.17	-0.06	-26.58
514.50	0.380	100.060	514.49	2.89	-1.63	2.86	1854760.23	261702.39	39°13'02.604"N	80°00'45.413"W	3.29	119.661	0.10	0.06	-13.56
614.50	0.640	108.260	614.48	3.53	-1.86	3.72	1854761.08	261702.15	39°13'02.601"N	80°00'45.402"W	4.16	116.603	0.27	0.26	8.20
714.50	0.360	93.720	714.48	4.14	-2.06	4.56	1854761.93	261701.96	39°13'02.599"N	80°00'45.392"W	5.00	114.275	0.31	-0.28	-14.54
814.50	0.620	104.150	814.48	4.71	-2.21	5.40	1854762.76	261701.80	39°13'02.598"N	80°00'45.381"W	5.83	112.256	0.27	0.26	10.43
914.50	0.750	124.270	914.47	5.70	-2.71	6.46	1854763.83	261701.30	39°13'02.593"N	80°00'45.367"W	7.01	112.746	0.27	0.13	20.12
1014.50	0.530	135.410	1014.46	6.75	-3.41	7.33	1854764.70	261700.61	39°13'02.586"N	80°00'45.356"W	8.08	114.937	0.25	-0.22	11.14
1114.50	0.460	113.060	1114.46	7.52	-3.89	8.02	1854765.39	261700.12	39°13'02.582"N	80°00'45.348"W	8.92	115.892	0.20	-0.07	-22.35
1214.50	0.410	127.480	1214.46	8.19	-4.27	8.68	1854766.04	261699.74	39°13'02.578"N	80°00'45.339"W	9.67	116.200	0.12	-0.05	14.42
1314.50	0.570	102.070	1314.45	8.86	-4.59	9.45	1854766.81	261699.42	39°13'02.575"N	80°00'45.329"W	10.50	115.920	0.27	0.16	-25.41
1414.50	0.370	107.790	1414.45	9.45	-4.79	10.24	1854767.61	261699.22	39°13'02.573"N	80°00'45.319"W	11.31	115.085	0.21	-0.20	5.72
1514.50	0.490	123.640	1514.45	10.09	-5.13	10.90	1854768.27	261698.88	39°13'02.569"N	80°00'45.311"W	12.05	115.192	0.17	0.12	15.85
1614.50	0.310	97.080	1614.44	10.64	-5.40	11.53	1854768.90	261698.61	39°13'02.567"N	80°00'45.303"W	12.73	115.097	0.25	-0.18	-26.56
1714.50	0.540	105.400	1714.44	11.16	-5.56	12.25	1854769.62	261698.46	39°13'02.565"N	80°00'45.294"W	13.45	114.402	0.24	0.23	8.32
1814.50	0.730	86.110	1814.43	11.80	-5.64	13.34	1854770.71	261698.37	39°13'02.565"N	80°00'45.280"W	14.48	112.916	0.28	0.19	-19.29
1914.50	0.740	99.120	1914.43	12.52	-5.70	14.61	1854771.98	261698.31	39°13'02.564"N	80°00'45.264"W	15.69	111.304	0.17	0.01	13.01
2014.50	0.730	101.370	2014.42	13.38	-5.93	15.88	1854773.24	261698.09	39°13'02.562"N	80°00'45.248"W	16.95	110.471	0.03	-0.01	2.25
2114.50	0.790	116.950	2114.41	14.40	-6.36	17.11	1854774.48	261697.65	39°13'02.558"N	80°00'45.232"W	18.26	110.399	0.21	0.06	15.58
2214.50	0.910	105.760	2214.40	15.57	-6.89	18.49	1854775.86	261697.12	39°13'02.552"N	80°00'45.214"W	19.74	110.441	0.20	0.12	-11.19
2314.50	1.020	111.380	2314.38	16.87	-7.43	20.09	1854777.45	261696.58	39°13'02.547"N	80°00'45.194"W	21.42	110.307	0.14	0.11	5.62
2414.50	0.980	108.880	2414.37	18.24	-8.03	21.72	1854779.09	261695.98	39°13'02.541"N	80°00'45.173"W	23.16	110.295	0.06	-0.04	-2.50
2514.50	1.020	104.210	2514.35	19.54	-8.53	23.40	1854780.76	261695.48	39°13'02.537"N	80°00'45.152"W	24.90	110.030	0.09	0.04	-4.67
2614.50	0.820	112.340	2614.34	20.76	-9.02	24.92	1854782.29	261694.99	39°13'02.532"N	80°00'45.133"W	26.50	109.897	0.24	-0.20	8.13
2714.50	0.940	108.660	2714.33	21.97	-9.55	26.36	1854783.73	261694.46	39°13'02.527"N	80°00'45.114"W	28.04	109.923	0.13	0.12	-3.68
2814.50	0.810	114.090	2814.32	23.18	-10.11	27.78	1854785.15	261693.91	39°13'02.521"N	80°00'45.096"W	29.56	109.988	0.15	-0.13	5.43



Actual Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot D
Area	Barbour County, WV	Well	PHL13DHS ST01
Field	Barbour	Wellbore	PHL13DHS AWB ST01
Facility	PHL13 Pad	Sidetrack from	PHL13DHS AWB at 6633.00 MD

WELLPATH DATA (175 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
2914.50	1.060	118.590	2914.30	24.57	-10.84	29.24	1854786.61	261693.18	39°13'02.514"N	80°00'45.078"W	31.18	110.335	0.26	0.25	4.50
3014.50	1.310	119.340	3014.28	26.37	-11.84	31.05	1854788.42	261692.17	39°13'02.504"N	80°00'45.054"W	33.23	110.872	0.25	0.25	0.75
3114.50	1.390	130.660	3114.26	28.53	-13.19	32.97	1854790.33	261690.82	39°13'02.491"N	80°00'45.030"W	35.51	111.806	0.28	0.08	11.32
3214.50	1.390	126.530	3214.23	30.81	-14.70	34.86	1854792.23	261689.31	39°13'02.476"N	80°00'45.006"W	37.83	112.867	0.10	0.00	-4.13
3314.50	1.480	123.850	3314.19	33.11	-16.14	36.91	1854794.27	261687.87	39°13'02.462"N	80°00'44.980"W	40.28	113.624	0.11	0.09	-2.68
3414.50	1.600	128.670	3414.16	35.60	-17.73	39.07	1854796.44	261686.28	39°13'02.446"N	80°00'44.952"W	42.91	114.415	0.18	0.12	4.82
3514.50	1.550	124.790	3514.12	38.15	-19.38	41.27	1854798.64	261684.64	39°13'02.430"N	80°00'44.924"W	45.59	115.153	0.12	-0.05	-3.88
3614.50	1.570	124.120	3614.08	40.64	-20.92	43.51	1854800.88	261683.10	39°13'02.415"N	80°00'44.895"W	48.28	115.675	0.03	0.02	-0.67
3714.50	1.560	137.770	3714.05	43.23	-22.70	45.56	1854802.93	261681.32	39°13'02.398"N	80°00'44.869"W	50.90	116.478	0.37	-0.01	13.65
3814.50	1.650	133.460	3814.01	45.96	-24.69	47.52	1854804.89	261679.32	39°13'02.378"N	80°00'44.844"W	53.56	117.456	0.15	0.09	-4.31
3914.50	1.750	129.140	3913.96	48.79	-26.65	49.75	1854807.12	261677.37	39°13'02.359"N	80°00'44.816"W	56.44	118.173	0.16	0.10	-4.32
4014.50	1.560	133.070	4013.92	51.55	-28.54	51.93	1854809.30	261675.47	39°13'02.340"N	80°00'44.788"W	59.26	118.792	0.22	-0.19	3.93
4114.50	1.540	127.040	4113.89	54.11	-30.28	54.00	1854811.36	261673.73	39°13'02.323"N	80°00'44.762"W	61.91	119.281	0.16	-0.02	-6.03
4214.50	1.590	128.930	4213.85	56.67	-31.96	56.15	1854813.52	261672.05	39°13'02.307"N	80°00'44.734"W	64.61	119.649	0.07	0.05	1.89
4314.50	1.660	119.070	4313.81	59.24	-33.54	58.50	1854815.86	261670.48	39°13'02.291"N	80°00'44.704"W	67.43	119.826	0.29	0.07	-9.86
4414.50	1.500	119.670	4413.77	61.65	-34.89	60.90	1854818.26	261669.13	39°13'02.278"N	80°00'44.674"W	70.18	119.808	0.16	-0.16	0.60
4514.50	1.360	128.350	4513.74	63.92	-36.27	62.97	1854820.33	261667.74	39°13'02.265"N	80°00'44.647"W	72.67	119.944	0.26	-0.14	8.68
4614.50	1.460	137.910	4613.71	66.29	-37.95	64.75	1854822.12	261666.06	39°13'02.248"N	80°00'44.624"W	75.06	120.377	0.26	0.10	9.56
4714.50	1.520	136.460	4713.67	68.84	-39.86	66.52	1854823.88	261664.15	39°13'02.229"N	80°00'44.602"W	77.55	120.932	0.07	0.06	-1.45
4814.50	1.440	111.820	4813.64	71.14	-41.29	68.60	1854825.96	261662.73	39°13'02.215"N	80°00'44.575"W	80.07	121.043	0.64	-0.08	-24.64
4914.50	1.660	116.220	4913.61	73.38	-42.40	71.07	1854828.43	261661.62	39°13'02.205"N	80°00'44.544"W	82.75	120.820	0.25	0.22	4.40
5014.50	1.570	115.820	5013.57	75.76	-43.63	73.60	1854830.96	261660.38	39°13'02.192"N	80°00'44.512"W	85.56	120.662	0.09	-0.09	-0.40
5114.50	1.540	124.430	5113.53	78.15	-44.99	75.94	1854833.30	261659.03	39°13'02.179"N	80°00'44.482"W	88.27	120.644	0.24	-0.03	8.61
5214.50	1.530	133.940	5213.49	80.67	-46.68	78.01	1854835.37	261657.34	39°13'02.163"N	80°00'44.455"W	90.91	120.894	0.25	-0.01	9.51
5314.50	1.560	126.180	5313.46	83.22	-48.41	80.07	1854837.43	261655.61	39°13'02.146"N	80°00'44.429"W	93.56	121.155	0.21	0.03	-7.76
5414.50	1.480	124.500	5413.42	85.66	-49.94	82.23	1854839.60	261654.07	39°13'02.131"N	80°00'44.401"W	96.21	121.271	0.09	-0.08	-1.68
5514.50	1.470	131.390	5513.39	88.07	-51.52	84.26	1854841.62	261652.50	39°13'02.115"N	80°00'44.376"W	98.76	121.444	0.18	-0.01	6.89
5614.50	1.330	139.800	5613.36	90.44	-53.25	85.97	1854843.33	261650.76	39°13'02.098"N	80°00'44.354"W	101.13	121.776	0.25	-0.14	8.41
5714.50	1.430	138.410	5713.33	92.82	-55.07	87.55	1854844.91	261648.94	39°13'02.080"N	80°00'44.333"W	103.43	122.173	0.11	0.10	-1.39
5814.50	1.360	140.550	5813.30	95.23	-56.92	89.13	1854846.49	261647.09	39°13'02.062"N	80°00'44.313"W	105.76	122.565	0.09	-0.07	2.14



Actual Wellpath Report

PHL13DHS AWP ST01 Proj: 15437' MD

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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot D
Area	Barbour County, WV	Well	PHL13DHS ST01
Field	Barbour	Wellbore	PHL13DHS AWP ST01
Facility	PHL13 Pad	Sidetrack from	PHL13DHS AWP at 6633.00 MD

WELLPATH DATA (175 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [%/100ft]	Build Rate [%/100ft]	Turn Rate [%/100ft]
5914.50	1.330	131.170	5913.27	97.51	-58.60	90.76	1854848.12	261645.41	39°13'02.045"N	80°00'44.292"W	108.03	122.851	0.22	-0.03	-9.38
6014.50	1.380	134.770	6013.25	99.79	-60.22	92.49	1854849.85	261643.80	39°13'02.030"N	80°00'44.270"W	110.36	123.068	0.10	0.05	3.60
6124.50	1.510	135.300	6123.21	102.49	-62.18	94.45	1854851.81	261641.84	39°13'02.010"N	80°00'44.245"W	113.08	123.359	0.12	0.12	0.48
6355.00	1.150	138.610	6353.65	107.73	-66.07	98.11	1854855.48	261637.94	39°13'01.972"N	80°00'44.198"W	118.29	123.958	0.16	-0.16	1.44
6445.00	6.420	275.420	6443.48	105.58	-66.28	93.69	1854851.06	261637.74	39°13'01.970"N	80°00'44.255"W	114.76	125.274	8.11	5.86	152.01
6491.00	8.830	280.880	6489.07	101.64	-65.37	87.66	1854845.03	261638.65	39°13'01.978"N	80°00'44.331"W	109.35	126.710	5.46	5.24	11.87
6538.00	12.350	281.430	6535.26	95.77	-63.69	79.19	1854836.56	261640.33	39°13'01.995"N	80°00'44.439"W	101.63	128.807	7.49	7.49	1.17
6595.00	16.810	281.580	6590.41	85.96	-60.82	65.14	1854822.50	261643.19	39°13'02.022"N	80°00'44.618"W	89.12	133.039	7.82	7.82	0.26
6633.00	19.480	281.290	6626.52	77.88	-58.48	53.54	1854810.90	261645.53	39°13'02.045"N	80°00'44.765"W	79.29	137.527	7.03	7.03	-0.76
6677.00	22.330	281.450	6667.62	67.16	-55.38	38.15	1854795.51	261648.63	39°13'02.074"N	80°00'44.961"W	67.25	145.442	6.48	6.48	0.36
6728.00	23.370	283.210	6714.62	53.41	-51.15	18.80	1854776.17	261652.87	39°13'02.115"N	80°00'45.207"W	54.50	159.815	2.44	2.04	3.45
6774.00	22.220	279.730	6757.02	41.22	-47.59	1.35	1854758.72	261656.42	39°13'02.149"N	80°00'45.429"W	47.61	178.377	3.85	-2.50	-7.57
6820.00	22.240	272.090	6799.61	30.64	-45.81	-15.93	1854741.44	261658.21	39°13'02.166"N	80°00'45.649"W	48.50	199.173	6.28	0.04	-16.61
6869.00	22.250	264.190	6844.98	21.44	-46.41	-34.43	1854722.94	261657.61	39°13'02.159"N	80°00'45.884"W	57.78	216.570	6.10	0.02	-16.12
6916.00	22.160	253.270	6888.51	15.28	-49.86	-51.78	1854705.59	261654.15	39°13'02.124"N	80°00'46.104"W	71.88	226.079	8.77	-0.19	-23.23
6962.00	21.470	237.560	6931.25	13.16	-56.88	-67.20	1854690.17	261647.13	39°13'02.054"N	80°00'46.299"W	88.04	229.755	12.74	-1.50	-34.15
7059.00	24.110	206.610	7020.99	23.86	-84.22	-91.15	1854666.22	261619.80	39°13'01.782"N	80°00'46.602"W	124.10	227.263	12.51	2.72	-31.91
7105.00	24.160	197.320	7062.99	34.99	-101.61	-98.16	1854659.21	261602.40	39°13'01.610"N	80°00'46.690"W	141.28	224.011	8.25	0.11	-20.20
7154.00	25.400	184.590	7107.51	50.06	-121.68	-101.99	1854655.38	261582.34	39°13'01.411"N	80°00'46.737"W	158.77	219.970	11.16	2.53	-25.98
7199.00	27.740	172.110	7147.78	67.45	-141.69	-101.32	1854656.05	261562.33	39°13'01.213"N	80°00'46.727"W	174.19	215.570	13.42	5.20	-27.73
7255.00	30.020	162.230	7196.84	92.99	-167.96	-95.26	1854662.12	261536.06	39°13'00.954"N	80°00'46.648"W	193.09	209.560	9.43	4.07	-17.64
7296.00	31.380	157.580	7232.10	113.49	-187.59	-88.05	1854669.32	261516.43	39°13'00.760"N	80°00'46.555"W	207.23	205.145	6.67	3.32	-11.34
7345.00	33.740	153.000	7273.40	139.65	-211.52	-77.01	1854680.36	261492.50	39°13'00.525"N	80°00'46.413"W	225.10	200.005	6.96	4.82	-9.35
7390.00	35.080	149.480	7310.53	165.04	-233.80	-64.76	1854692.61	261470.22	39°13'00.305"N	80°00'46.256"W	242.60	195.483	5.33	2.98	-7.82
7433.00	36.460	147.450	7345.42	190.17	-255.21	-51.61	1854705.76	261448.81	39°13'00.094"N	80°00'46.087"W	260.38	191.433	4.23	3.21	-4.72
7484.00	41.440	146.730	7385.07	222.21	-282.11	-34.19	1854723.18	261421.91	39°12'59.829"N	80°00'45.864"W	284.18	186.910	9.80	9.76	-1.41
7533.00	44.230	147.130	7421.00	255.51	-310.03	-16.02	1854741.35	261393.99	39°12'59.554"N	80°00'45.631"W	310.44	182.957	5.72	5.69	0.82
7576.00	47.360	147.900	7450.98	286.33	-336.03	0.53	1854757.90	261367.99	39°12'59.298"N	80°00'45.419"W	336.03	179.909	7.39	7.28	1.79
7626.00	50.250	148.210	7483.91	323.95	-367.95	20.43	1854777.80	261336.07	39°12'58.984"N	80°00'45.164"W	368.52	176.821	5.80	5.78	0.62
7670.00	55.180	147.430	7510.55	358.95	-397.57	39.08	1854796.45	261306.46	39°12'58.692"N	80°00'44.924"W	399.49	174.386	11.29	11.20	-1.77

47-001-03223

PHL13DHS



BAKER HUGHES



Actual Wellpath Report

PHL13DHS AWP ST01 Proj: 15437MD

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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC
Area	Barbour County, WV
Field	Barbour
Facility	PHL13 Pad
Slot	Slot D
Slot	PHL13DHS ST01
Wellbore	PHL13DHS AWP ST01
Sidetrack from	PHL13DHS AWP at 6633.00 MD

WELLPATH DATA (175 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [ft]	Grid North [ft]	Longitude	Latitude	Closure Dist [ft]	Closure Dir [°]	DLS [%/100ft]	Build Rate [%/100ft]	Turn Rate [%/100ft]
772.00	58.870	147.870	7538.85	402.56	-434.42	62.41	1854819.78	261269.61	39°12'58.329"N	80°00'44.625"W	438.88	171.824	7.13	7.10	0.85
7767.00	62.310	148.400	7560.94	441.75	-467.71	83.10	1854840.47	261236.32	39°12'58.002"N	80°00'44.360"W	475.03	169.925	7.71	7.64	1.18
7860.00	72.980	151.650	7596.27	527.58	-542.14	125.93	1854883.29	261161.89	39°12'57.268"N	80°00'43.811"W	556.57	166.924	11.92	11.47	3.49
7955.00	76.490	153.630	7621.28	618.96	-623.53	168.02	1854925.39	261080.51	39°12'56.466"N	80°00'43.270"W	645.77	164.918	4.21	3.69	2.08
8049.00	83.060	152.400	7637.96	711.10	-705.91	209.99	1854967.35	260998.13	39°12'55.654"N	80°00'42.731"W	736.48	163.434	7.11	6.99	-1.31
8142.00	89.260	149.130	7644.19	803.76	-786.83	255.28	1855012.64	260917.22	39°12'54.857"N	80°00'42.149"W	827.20	162.024	7.53	6.67	-3.52
8237.00	89.380	148.650	7645.31	898.74	-868.16	304.37	1855061.72	260835.89	39°12'54.056"N	80°00'41.520"W	919.96	160.680	0.52	0.13	-0.51
8331.00	89.010	148.050	7646.64	992.73	-948.17	353.68	1855111.04	260755.88	39°12'53.268"N	80°00'40.888"W	1011.99	159.544	0.75	-0.39	-0.64
8426.00	89.260	145.770	7648.07	1087.69	-1027.75	405.54	1855162.89	260676.30	39°12'52.484"N	80°00'40.223"W	1104.86	158.466	2.41	0.26	-2.40
8521.00	89.940	144.100	7648.73	1182.51	-1105.50	460.12	1855217.47	260598.55	39°12'51.719"N	80°00'39.524"W	1197.43	157.403	1.90	0.72	-1.76
8615.00	89.940	144.060	7648.83	1276.25	-1181.62	515.26	1855272.61	260522.43	39°12'50.970"N	80°00'38.818"W	1289.08	156.440	0.04	0.00	-0.04
8710.00	90.060	144.220	7648.83	1371.00	-1258.62	570.91	1855328.26	260445.44	39°12'50.212"N	80°00'38.105"W	1382.05	155.601	0.21	0.13	0.17
8804.00	90.180	148.120	7648.63	1464.91	-1336.69	623.24	1855380.58	260367.38	39°12'49.443"N	80°00'37.435"W	1474.84	155.003	4.15	0.13	4.15
8901.00	89.630	149.030	7648.80	1561.91	-1419.46	673.81	1855431.15	260284.61	39°12'48.628"N	80°00'36.786"W	1571.27	154.607	1.10	-0.57	0.94
8994.00	89.940	149.590	7649.14	1654.89	-1499.43	721.27	1855478.62	260204.64	39°12'47.840"N	80°00'36.178"W	1663.89	154.311	0.69	0.33	0.60
9086.00	90.150	153.220	7649.07	1746.75	-1580.19	765.30	1855522.64	260123.88	39°12'47.044"N	80°00'35.613"W	1755.76	154.159	3.95	0.23	3.95
9180.00	89.880	155.550	7649.05	1840.22	-1664.95	805.94	1855565.37	260039.12	39°12'46.209"N	80°00'35.090"W	1849.75	154.170	2.50	-0.29	2.48
9274.00	89.910	152.520	7649.22	1933.75	-1743.45	847.09	1855604.42	259954.62	39°12'45.376"N	80°00'34.561"W	1943.74	154.164	3.22	0.03	-3.22
9369.00	90.580	151.340	7648.81	2028.56	-1833.28	891.79	1855649.12	259870.80	39°12'44.550"N	80°00'33.987"W	2038.67	154.060	1.43	0.71	-1.24
9463.00	90.650	151.180	7647.80	2122.43	-1915.69	936.98	1855694.32	259788.39	39°12'43.738"N	80°00'33.407"W	2132.56	153.936	0.19	0.07	-0.17
9558.00	89.940	146.670	7647.32	2217.40	-1997.03	986.00	1855743.34	259707.05	39°12'42.937"N	80°00'32.779"W	2227.18	153.723	4.81	-0.75	-4.75
9654.00	91.970	149.440	7645.71	2313.37	-2078.47	1036.78	1855794.11	259625.62	39°12'42.135"N	80°00'32.128"W	2322.71	153.489	3.58	2.11	2.89
9748.00	91.320	138.130	7643.01	2406.88	-2154.16	1092.21	1855849.54	259549.93	39°12'41.390"N	80°00'31.418"W	2415.22	153.114	12.05	-0.69	-12.03
9841.00	94.070	139.520	7638.63	2498.49	-2224.07	1153.36	1855910.69	259480.02	39°12'40.702"N	80°00'30.636"W	2505.34	152.590	3.31	2.96	1.49
9937.00	91.140	143.050	7634.27	2593.63	-2298.88	1213.32	1855970.65	259405.21	39°12'39.966"N	80°00'29.869"W	2599.42	152.175	4.78	-3.05	3.68
9985.00	91.350	145.010	7633.23	2641.48	-2337.72	1241.51	1855998.83	259366.38	39°12'39.584"N	80°00'29.508"W	2646.94	152.028	4.11	0.44	4.08
10080.00	91.350	153.370	7630.99	2736.36	-2419.22	1290.11	1856047.43	259284.88	39°12'38.781"N	80°00'28.885"W	2741.71	151.930	8.80	0.00	8.80
10123.00	90.890	152.250	7630.15	2779.22	-2457.46	1309.76	1856067.08	259246.65	39°12'38.404"N	80°00'28.632"W	2784.70	151.944	2.82	-1.07	-2.60
10218.00	90.950	147.460	7628.62	2874.15	-2539.57	1357.44	1856114.76	259164.53	39°12'37.595"N	80°00'28.021"W	2879.60	151.875	5.04	0.06	-5.04
10312.00	90.580	144.770	7627.36	2968.06	-2617.59	1409.84	1856167.16	259086.51	39°12'36.827"N	80°00'27.349"W	2973.12	151.693	2.89	-0.39	-2.86

47-001-03223



Actual Wellpath Report
 PHL13DHS AWP ST01 Proj: 15437MD
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PHL13DHS

REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC
Area	Barbour County, WV
Field	Barbour
Facility	PHL13 Pad
	Wellbore
	PHL13DHS AWP ST01
	Well
	PHL13DHS ST01
	Slot
	Slot D
	Sidetrack from
	PHL13DHS AWP at 6633.00 MD

WELLPATH DATA (175 stations)

MD	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [ft]	Grid North [ft]	Longitude	Latitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
10407.00	90.950	147.520	7626.10	3062.97	-2696.47	1462.76	1856220.07	259007.64	39°12'36.05"N	80°00'26.67"W	3067.67	151.521	2.92	0.39	2.89
10501.00	91.170	155.690	7624.35	3156.73	-2779.08	1507.41	1856264.73	258925.04	39°12'35.237"N	80°00'26.098"W	3161.58	151.524	8.69	0.23	8.69
10597.00	92.250	150.860	7621.49	3252.30	-2864.76	1550.55	1856307.86	258839.36	39°12'34.392"N	80°00'25.544"W	3257.46	151.576	5.15	1.13	-5.03
10691.00	90.860	149.620	7618.94	3346.21	-2946.33	1597.19	1856354.50	258757.79	39°12'33.589"N	80°00'24.946"W	3351.40	151.538	1.98	-1.48	-1.32
10785.00	91.140	151.750	7617.30	3440.11	-3028.27	1643.20	1856400.51	258675.85	39°12'32.781"N	80°00'24.555"W	3445.37	151.515	2.29	0.30	2.27
10880.00	90.860	150.140	7615.64	3535.00	-3111.30	1689.33	1856446.64	258592.82	39°12'31.963"N	80°00'23.763"W	3540.34	151.500	1.72	-0.29	-1.69
10975.00	90.710	145.740	7614.33	3629.96	-3191.79	1739.74	1856497.05	258512.34	39°12'31.170"N	80°00'23.117"W	3635.13	151.407	4.63	-0.16	-4.63
11070.00	90.890	144.010	7613.01	3724.77	-3269.48	1794.39	1856551.70	258434.66	39°12'30.406"N	80°00'22.418"W	3729.52	151.241	1.83	0.19	-1.82
11163.00	91.450	147.800	7611.11	3817.65	-3346.46	1846.51	1856603.81	258357.67	39°12'29.488"N	80°00'21.750"W	3822.09	151.111	4.12	0.60	4.08
11258.00	89.850	151.940	7610.03	3912.59	-3428.60	1894.18	1856651.48	258275.54	39°12'28.838"N	80°00'21.139"W	3917.04	151.081	4.67	-1.68	4.36
11353.00	89.720	150.180	7610.39	4007.48	-3511.73	1940.14	1856697.44	258192.41	39°12'28.019"N	80°00'20.549"W	4012.03	151.080	1.86	-0.14	-1.85
11448.00	90.990	152.520	7609.80	4102.34	-3595.09	1985.69	1856742.98	258109.05	39°12'27.198"N	80°00'19.964"W	4107.02	151.087	2.80	1.34	2.46
11541.00	91.110	154.840	7608.09	4194.91	-3678.43	2026.91	1856784.21	258025.72	39°12'26.377"N	80°00'19.434"W	4199.91	151.144	2.50	0.13	2.49
11636.00	90.950	159.690	7606.39	4288.72	-3766.01	2063.61	1856820.90	257938.14	39°12'25.513"N	80°00'18.962"W	4294.33	151.279	5.11	-0.17	5.11
11731.00	91.320	155.650	7604.50	4382.43	-3853.85	2099.69	1856856.98	257850.30	39°12'24.647"N	80°00'18.497"W	4388.72	151.417	4.27	0.39	-4.25
11825.00	91.080	152.080	7602.53	4475.96	-3938.21	2141.08	1856898.37	257765.95	39°12'23.815"N	80°00'17.966"W	4482.60	151.468	3.81	-0.26	-3.80
11921.00	90.920	148.040	7600.86	4571.88	-4021.36	2188.98	1856946.27	257682.79	39°12'22.996"N	80°00'17.351"W	4578.54	151.439	4.21	-0.17	-4.21
12013.00	90.920	145.620	7599.38	4663.83	-4098.36	2239.30	1856996.59	257605.80	39°12'22.238"N	80°00'16.706"W	4670.23	151.348	2.63	0.00	-2.63
12107.00	90.710	142.810	7598.04	4757.53	-4174.30	2294.60	1857051.94	257529.86	39°12'21.490"N	80°00'15.998"W	4763.43	151.202	3.63	-0.22	-3.63
12201.00	90.550	144.880	7597.01	4851.18	-4249.90	2350.50	1857107.78	257454.27	39°12'20.746"N	80°00'15.283"W	4856.59	151.054	2.85	-0.17	2.84
12296.00	91.050	149.340	7595.68	4946.13	-4329.64	2402.07	1857159.35	257374.53	39°12'19.961"N	80°00'14.622"W	4951.34	150.979	4.72	0.53	4.69
12390.00	91.020	154.770	7593.98	5039.88	-4412.64	2446.09	1857203.37	257291.53	39°12'19.143"N	80°00'14.057"W	5045.27	150.999	5.78	-0.03	5.78
12484.00	90.920	150.430	7592.39	5133.59	-4496.06	2489.34	1857246.61	257208.11	39°12'18.321"N	80°00'13.502"W	5139.20	151.028	4.62	-0.11	-4.62
12579.00	91.350	150.440	7590.51	5228.50	-4578.68	2536.20	1857293.48	257125.50	39°12'17.507"N	80°00'12.901"W	5234.17	151.017	0.45	0.45	0.01
12675.00	90.340	145.040	7589.09	5324.45	-4659.82	2587.42	1857344.69	257044.36	39°12'16.708"N	80°00'12.244"W	5329.97	150.958	5.72	-1.05	-5.63
12769.00	91.020	139.210	7587.98	5417.85	-4733.98	2645.10	1857402.37	256970.21	39°12'15.978"N	80°00'11.506"W	5422.83	150.806	6.24	0.72	-6.20
12863.00	90.920	134.380	7586.38	5509.90	-4802.46	2709.42	1857466.69	256901.72	39°12'15.305"N	80°00'10.684"W	5514.04	150.569	5.14	-0.11	-5.14
12957.00	90.460	142.320	7585.25	5602.40	-4872.64	2771.84	1857529.11	256831.55	39°12'14.615"N	80°00'09.886"W	5605.87	150.366	8.46	-0.49	8.45
13052.00	90.520	142.100	7584.44	5696.85	-4947.71	2830.05	1857587.32	256756.48	39°12'13.876"N	80°00'09.142"W	5699.92	150.231	0.24	0.06	-0.23
13147.00	90.800	143.890	7583.34	5791.42	-5023.57	2887.22	1857644.49	256680.62	39°12'13.129"N	80°00'08.410"W	5794.16	150.113	1.91	0.29	1.88



Actual Wellpath Report

PHL13DHS AWP ST01 Proj: 15437' MD
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REFERENCE WELLPATH IDENTIFICATION			
Operator	CNX GAS COMPANY, LLC	Slot	Slot D
Area	Barbour County, WV	Well	PHL13DHS ST01
Field	Barbour	Wellbore	PHL13DHS AWP ST01
Facility	PHL13 Pad	Sidetrack from	PHL13DHS AWP at 6633.00 MD

WELLPATH DATA (175 stations)															
MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
13242.00	90.620	149.770	7582.16	5886.34	-5103.05	2939.17	1857696.44	256601.15	39°12'12.347"N	80°00'07.744"W	5888.96	150.060	6.19	-0.19	6.19
13336.00	90.580	151.360	7581.18	5980.26	-5184.91	2985.36	1857742.62	256519.29	39°12'11.540"N	80°00'07.152"W	5982.95	150.068	1.69	-0.04	1.69
13430.00	90.650	151.510	7580.17	6074.12	-5267.46	3030.31	1857787.57	256436.74	39°12'10.727"N	80°00'06.575"W	6076.92	150.089	0.18	0.07	0.16
13524.00	90.150	152.300	7579.51	6167.94	-5350.38	3074.57	1857831.83	256353.82	39°12'09.910"N	80°00'06.007"W	6170.87	150.116	0.99	-0.53	0.84
13618.00	90.920	156.340	7578.64	6261.40	-5435.08	3115.30	1857872.55	256269.13	39°12'09.075"N	80°00'05.484"W	6264.59	150.179	4.38	0.82	4.30
13714.00	89.630	151.800	7578.18	6356.90	-5521.39	3157.26	1857914.52	256182.83	39°12'08.224"N	80°00'04.944"W	6360.35	150.238	4.92	-1.34	-4.73
13808.00	89.690	150.850	7578.73	6450.77	-5603.86	3202.37	1857959.62	256100.36	39°12'07.411"N	80°00'04.366"W	6454.33	150.254	1.01	0.06	-1.01
13901.00	88.830	147.990	7579.93	6543.73	-5683.91	3249.67	1858006.92	256020.31	39°12'06.623"N	80°00'03.759"W	6547.30	150.242	3.21	-0.92	-3.08
13995.00	88.770	149.460	7581.90	6637.71	-5764.23	3298.46	1858055.71	255939.99	39°12'05.832"N	80°00'03.134"W	6641.24	150.221	1.56	-0.06	1.56
14090.00	87.780	152.580	7584.76	6732.55	-5847.28	3344.46	1858101.71	255856.94	39°12'05.013"N	80°00'02.544"W	6736.18	150.232	3.44	-1.04	3.28
14183.00	87.780	151.670	7588.37	6825.27	-5929.43	3387.91	1858145.16	255774.80	39°12'04.204"N	80°00'01.986"W	6829.06	150.258	0.98	0.00	-0.98
14277.00	88.400	147.540	7591.50	6919.18	-6010.45	3435.43	1858192.68	255693.78	39°12'03.406"N	80°00'01.376"W	6922.98	150.249	4.44	0.66	-4.39
14370.00	88.250	148.460	7594.22	7012.14	-6089.28	3484.69	1858241.94	255614.95	39°12'02.629"N	80°00'00.745"W	7015.87	150.219	1.00	-0.16	0.99
14463.00	88.180	149.070	7597.12	7105.09	-6168.76	3532.90	1858290.14	255535.48	39°12'01.846"N	80°00'00.127"W	7108.79	150.200	0.66	-0.08	0.66
14557.00	86.640	147.970	7601.36	7198.99	-6248.84	3581.93	1858339.17	255455.40	39°12'01.057"N	79°59'59.499"W	7202.65	150.178	2.01	-1.64	-1.17
14650.00	86.830	137.960	7606.67	7291.31	-6322.86	3637.78	1858395.02	255381.38	39°12'00.329"N	79°59'58.784"W	7294.66	150.087	10.75	0.20	-10.76
14745.00	86.430	139.280	7612.26	7384.78	-6394.02	3700.47	1858457.71	255310.22	39°11'59.629"N	79°59'57.983"W	7387.62	149.940	1.45	-0.42	1.39
14839.00	86.400	144.170	7618.14	7477.94	-6467.65	3758.57	1858515.80	255236.60	39°11'58.905"N	79°59'57.240"W	7480.46	149.838	5.19	-0.03	5.20
14933.00	86.360	148.430	7624.08	7571.67	-6545.68	3810.61	1858567.84	255158.57	39°11'58.136"N	79°59'56.573"W	7574.07	149.794	4.52	-0.04	4.53
15026.00	86.430	150.710	7629.93	7664.46	-6625.70	3857.61	1858614.84	255078.55	39°11'57.348"N	79°59'55.970"W	7666.88	149.791	2.45	0.08	2.45
15123.00	86.240	152.810	7636.13	7761.08	-6710.98	3903.41	1858660.64	254993.28	39°11'56.507"N	79°59'55.383"W	7763.62	149.816	2.17	-0.20	2.16
15214.00	85.410	153.560	7642.75	7851.52	-6791.97	3944.36	1858701.58	254912.28	39°11'55.709"N	79°59'54.857"W	7854.23	149.855	1.23	-0.91	0.82
15308.00	85.290	151.870	7650.37	7944.93	-6875.24	3987.30	1858744.53	254829.02	39°11'54.889"N	79°59'54.305"W	7947.80	149.888	1.80	-0.13	-1.80
15402.00	86.020	150.720	7657.50	8038.54	-6957.45	4032.32	1858789.54	254746.82	39°11'54.078"N	79°59'53.728"W	8041.50	149.905	1.45	0.78	-1.22
15437.00	86.020	150.720	7659.92	8073.42	-6987.90	4049.40	1858806.62	254716.36	39°11'53.778"N	79°59'53.509"W	8076.41	149.908	0.00	0.00	0.00

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PHL13DHS



Actual Wellpath Report

PHL13DHS AWP ST01 Proj: 15437'MD

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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot D
Area	Barbour County, WV	Well	PHL13DHS ST01
Field	Barbour	Wellbore	PHL13DHS AWB ST01
Facility	PHL13 Pad	Sidetrack from	PHL13DHS AWB at 6633.00 MD

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
PHL13DHS ST01 PBHL Rev-2		7468.03	-8639.57	5042.56	1859799.75	253064.75	39°11'37.508"N	79°59'40.778"W	point
PHL13DHS ST01 LP Rev-2		7631.38	-672.90	131.84	1854889.20	261031.14	39°12'55.976"N	80°00'43.726"W	point
PHL13DHS ST01 LP Rev-3		7632.49	-742.74	235.21	1854992.57	260961.30	39°12'55.292"N	80°00'42.408"W	point

WELLPATH COMPOSITION - Ref Wellbore: PHL13DHS AWB ST01 Ref Wellpath: PHL13DHS AWP ST01 Proj: 15437'MD

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
24.50	6124.50	Generic gyro - northseeking (Standard)	VES Gyro (100'-6110')	PHL13DHS AWB
6124.50	6633.00	NaviTrak (MagCorr)	BHI AT Curce (6124.5')(6355'-7701')	PHL13DHS AWB
6633.00	15402.00	NaviTrak (MagCorr)	BHI ATCurve ST01 (6633')(6677'-15402')	PHL13DHS AWB ST01
15402.00	15437.00	Blind Drilling (std)	Projection to bit	PHL13DHS AWB ST01

47-001-03223



Actual Wellpath Report

PHL13DHS AWP ST01 Proj: 15437' MD

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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot D
Area	Barbour County, WV	Well	PHL13DHS ST01
Field	Barbour	Wellbore	PHL13DHS AWP ST01
Facility	PHL13 Pad	Sidetrack from	PHL13DHS AWP at 6633.00 MD

REPORT SETUP INFORMATION

Projection System	NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet	Software System	WellArchitect® 4.0.0
North Reference	Grid	User	Thomsuzc
Scale	0.999966	Report Generated	28/Jun/2013 at 09:12
Convergence at slot	0.33° West	Database/Source file	WA_Eastern_US/PHL13DHS_AWP_ST01.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-27.06	-53.66	1854757.37	261704.01	39°13'02.620"N	80°00'45.450"W
Facility Reference Pt			1854811.03	261731.07	39°13'02.890"N	80°00'44.770"W
Field Reference Pt			1853088.00	260038.65	39°12'46.064"N	80°01'06.538"W

WELLPATH DATUM

Calculation method	Minimum curvature	Patterson 331 (RT) to Facility Vertical Datum	1551.44ft
Horizontal Reference Pt	Slot	Patterson 331 (RT) to Mean Sea Level	1551.44ft
Vertical Reference Pt	Patterson 331 (RT)	Patterson 331 (RT) to Mud Line at Slot (Slot D)	1551.44ft
MD Reference Pt	Patterson 331 (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	148.35°