

March 28, 2014

AM

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 001 - 03220D County Barbour District Pleasant
Quad Philippi Pad Name PHL13HS Field/Pool Name Philippi
Farm name MCCAULEY, RANDALL Well Number PHL13AHS Drilling Deeper
Operator (as registered with the OOG) CNX Gas Company, LLC
Address P.O. Box 1248 City Jane Lew State WV Zip 26378

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,341,385.187m Easting 585,270.428m
Landing Point of Curve Northing 4,341,281.938m Easting 585,929.577m
Bottom Hole Northing 4,339,661.693m Easting 587,078.637m

Elevation (ft) 1520' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine

Mud Type(s) and Additive(s)
Waterbased Mud, Bactericide, Polymers and Weighting Agents.

Date permit issued 02/20/2013 Date drilling commenced 10/25/2011 Date drilling ceased 7/4/2013
Date completion activities began 9/26/2013 Date completion activities ceased 11/2/2013
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft None Reported Open mine(s) (Y/N) depths N
Salt water depth(s) ft None Reported Void(s) encountered (Y/N) depths 6803' - Fault
Coal depth(s) ft 190', 230', 310' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
[Signature]

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CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	26"	20"	100'	N	L.S. 81.3 / 100'	N/A	Y
Surface	17 1/2"	13 3/8"	657'	N	J-55 54.5 / 657'	84'	Y
Coal	-	-	-	-	-	-	-
Intermediate 1	12 3/8"	9 5/8"	2032'	N	J-55 36 / 2032'	83.1'/165.1'	Y
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	8 3/4"	5 1/2"	15813'	N	P-110 20 / 15813'	N/A	Y
Tubing	8 3/4"	2 3/8"	7595'	N	J-55 4.7 / 7595'	N/A	N
Packer type and depth set		None					

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	Grouted to Surface	15.6	1.18	150.5	Surface	8
Surface	Class A	600	14.6	1.39	645.7	Surface	8
Coal	-	-	-	-	-	-	-
Intermediate 1	Class A	630	15.2	1.26	794.5	Surface	8
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	Class A (Lead) / Class A (Tail)	879.96 / 2029	14.2 / 14.8	1.26	3762.09	2000'	8
Tubing	-	-	-	-	-	-	-

Drillers TD (ft) 7641.79' Loggers TD (ft) 7843'
 Deepest formation penetrated Onondaga Plug back to (ft) 7830'-6200'
 Plug back procedure Solid Plug from 7830'-6200'

Kick off depth (ft) 6200'

Check all wireline logs run caliper density deviated/directional induction
 neutron resistivity gamma ray temperature sonic

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Conductor - No centralizers used. Fresh water & Coal - Bow spring centralizers on first joint then every fourth joint to 100 feet from surface. Intermediate - Bow spring centralizers one on the first two joints and every fourth joint until inside surface casing. Production - Rigid bow spring centralizer on first joint then every 2 casing joints (free floating) through the lateral and the curve.
 (Note: cementing the 5 1/2" casing completely in open hole lateral and curve.)

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS Plug and Perforation Shot Hole

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number Of Perforations	Formation(s)
1	9/26/2013	15688	15593	4	Marcellus
2	10/9/2013	15564	15442	5	Marcellus
3	10/10/2013	15414	15292	5	Marcellus
4	10/11/2013	15264	15142	5	Marcellus
5	10/11/2013	15114	14992	5	Marcellus
6	10/11/2013	14964	14842	5	Marcellus
7	10/12/2013	14814	14692	5	Marcellus
8	10/13/2013	14664	14542	5	Marcellus
9	10/13/2013	14514	14392	5	Marcellus
10	10/14/2013	14364	14242	5	Marcellus
11	10/14/2013	14212	14110	4	Marcellus
12	10/15/2013	13652	13557	4	Marcellus
13	10/15/2013	13528	13406	5	Marcellus
14	10/16/2013	13378	13256	5	Marcellus
15	10/17/2013	13228	13106	5	Marcellus
16	10/18/2013	13078	12956	5	Marcellus
17	10/18/2013	12928	12806	5	Marcellus
18	10/19/2013	12778	12656	5	Marcellus
19	10/19/2013	12628	12506	5	Marcellus
20	10/20/2013	12478	12356	5	Marcellus
21	10/21/2013	12328	12206	5	Marcellus
22	10/21/2013	12178	12056	5	Marcellus
23	10/21/2013	12028	11906	5	Marcellus
24	10/22/2013	11878	11756	5	Marcellus
25	10/24/2013	11728	11606	5	Marcellus
26	10/25/2013	11578	11456	5	Marcellus
27	10/25/2013	11428	11306	5	Marcellus
28	10/25/2013	11278	11156	5	Marcellus
29	10/26/2013	11128	11006	5	Marcellus
30	10/27/2013	10978	10856	5	Marcellus
31	10/27/2013	10828	10706	5	Marcellus
32	10/27/2013	10678	10556	5	Marcellus
33	10/28/2013	10528	10406	5	Marcellus
34	10/28/2013	10378	10256	5	Marcellus

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number Of Perforations	Formation(s)
35	10/29/2013	10228	10106	5	Marcellus
36	10/29/2013	10078	9956	5	Marcellus
37	10/30/2013	9928	9806	5	Marcellus
38	10/30/2013	9778	9656	5	Marcellus
39	10/30/2013	9628	9506	5	Marcellus
40	10/31/2013	9478	9356	5	Marcellus
41	10/31/2013	9328	9206	5	Marcellus
42	10/31/2013	9178	9056	5	Marcellus
43	11/1/2013	9028	8906	5	Marcellus
44	11/1/2013	8878	8756	5	Marcellus
45	11/1/2013	8728	8606	5	Marcellus
46	11/2/2013	8578	8456	5	Marcellus
47	11/2/2013	8428	8306	5	Marcellus
48	11/2/2013	8276	8134	5	Marcellus

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STIMULATION INFORMATION PER STAGE

Stage No.	Stimulations Date	Avg Pump Rate (BPM)	Avg Treatment Pressure (PSI)	Max Breakdown Perforations	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen / other (gals)
1	9/26/2013	65.9	7830	6744	9321	140250	8997	4547
2	10/9/2013	69.9	8007	7105	5425	200200	5512	3802
3	10/10/2013	57.9	8285	8150	5626	200150	6605	4030
4	10/11/2013	74.6	8318	7407	5665	199950	6571	3951
5	10/11/2013	74.5	8328	7004	5627	159600	4991	3563
6	10/11/2013	58.5	7976	7808	5703	58000	5118	3743
7	10/12/2013	57.6	7888	9113	5894	199550	7597	7637
8	10/13/2013	70.3	8259	7421	5958	199200	7188	3869
9	10/13/2013	66.5	8260	7665	5527	192300	6811	3760
10	10/14/2013	57.4	8199	7375	5697	183300	7254	4139
11	10/14/2013	67.3	8177	7502	5996	239350	6161	3864
12	10/15/2013	54.5	8231	9033	5614	239950	5526	9131
13	12/15/2556	48.1	8089	8315	6006	149250	8048	5344
14	10/16/2013	51.1	8132	7923	5906	168700	6658	3204
15	10/17/2013	58.9	8405	8389	5941	161150	6289	3692
16	10/18/2013	64.5	8294	7770	5920	151900	5332	3524
17	10/18/2013	74.1	8593	7434	5570	149700	7069	4120
18	10/19/2013	78.5	8111	6755	5904	202150	6558	3682
19	10/19/2013	85.8	8509	6985	5897	199350	6809	3865
20	10/20/2013	78	8335	6679	6273	199800	6876	3774
21	10/21/2013	83.1	8522	6735	6369	177300	4816	3545
22	10/21/2013	78.8	8518	7819	6074	201800	5618	3556
23	10/21/2013	84.8	8560	7374	6406	199400	5424	3555
24	10/22/2013	75.6	7934	6561	5845	200650	4848	3414
25	10/24/2013	93.5	8528	6812	6164	200000	5008	3502
26	10/25/2013	89	8522	6735	6262	200075	4745	3491
27	10/25/2013	92.5	8681	6917	6574	198900	5098	3430
28	10/25/2013	95.7	8537	8087	6062	199400	5418	3436
29	10/26/2013	94.9	8486	7780	6172	200250	5929	3648
30	10/27/2013	85	8578	7470	5916	200000	4941	3594
31	10/27/2013	98	8534	7804	5613	199600	4993	3433
32	10/27/2013	93	8553	7724	5770	200400	5080	3590
33	10/28/2013	97	8488	7333	5755	200500	4861	3369
34	10/28/2013	73.2	8551	8796	5773	181700	7200	7058
35	10/29/2013	85	8772	7805	5654	157350	4948	3459
36	10/29/2013	89	8719	7856	5558	138000	4396	3411
37	10/30/2013	83.8	8574	7359	6018	201700	4941	3605

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STIMULATION INFORMATION PER STAGE

Stage No.	Stimulations Date	Avg Pump Rate (BPM)	Avg Treatment Pressure (PSI)	Max Breakdown Perforations	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen / other (gals)
38	10/30/2013	100	8400	6732	6340	200700	4989	3416
39	10/30/2013	81.4	7922	6796	6049	200750	4762	3331
40	10/31/2013	82.3	8504	7048	4932	200600	5745	3414
41	10/31/2013	80.5	8045	7440	5796	199250	5010	3404
42	10/31/2013	76.9	8196	6881	5092	200100	6206	3452
43	11/1/2013	83.2	8143	6951	5268	165550	4760	3338
44	11/1/2013	81.4	8041	6757	5346	200900	4527	3309
45	11/1/2013	75.6	8221	7184	5822	200000	5424	3424
46	11/2/2013	63.4	8092	7354	5808	200300	5264	3455
47	11/2/2013	60.7	8077	7257	6482	111000	4803	3442
48	11/2/2013	61.1	7921	6946	5577	206463	7411	4778

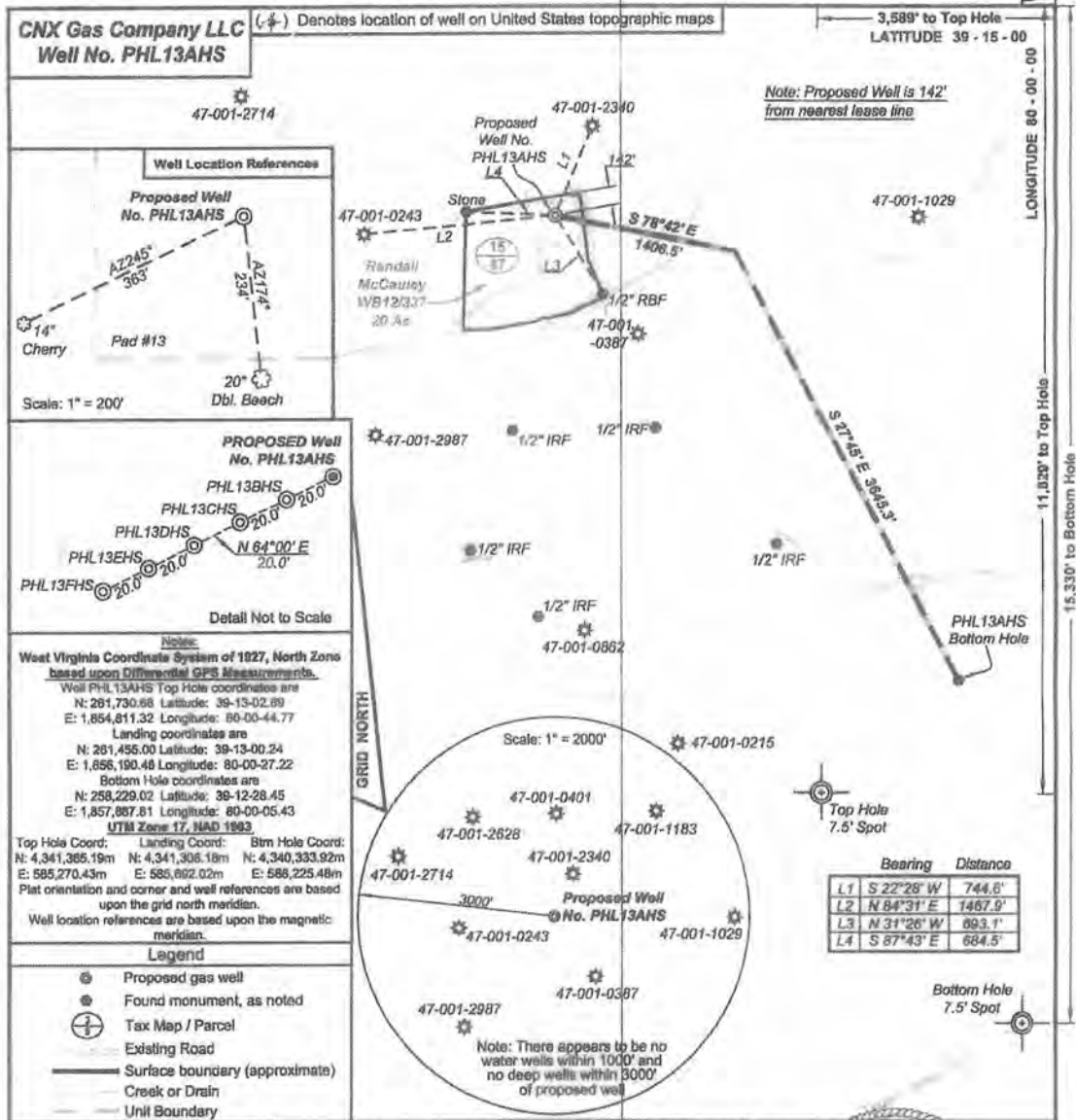
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LITHOLOGY / FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY TYPE OF FLUID (FRESHWATER,BRINE,GAS,H2S, ETC)
	DEPTH IN FT TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
FILL	0	30			Brown
SAND/SHALE	30	190			Gray
COAL	190	195			Black
SAND/CLAY	195	230			Red
SAND/SHALE/COAL	230	310			Gray/Black
COAL	310	315			Black
SAND/SHALE	315	1045			Gray/Red/Brown/Black
SHALE/REDROCK	1045				Gray/Red
LITTLE LIME	1162	1170			
BIG LIME	1188	1240			
BIG INJUN	1240	1365			
GANTZ	1550	1574			
FOURTH SAND	2089	2118			
WARREN	2520	2550			
SPEECHLEY	2834	2873			
BALLTOWN	2996	3024			
RILEY	3720	3940			
BENSON SAND	4020	4085			
FIRST ELK	4250	4302			
SECOND ELK	4400	4480			
THIRD ELK	4660	4680			
FOURTH ELK	4934	4975			
SYCAMORE GRIT	6298	6405			
UN-NAMED SILTSTONE	6672	6760			
FAULT	6803				
UN-NAMED SILTSTONE REPEAT	6850	6927			
BURKET SHALE	7330	7351	7550	7581	
TULLY LIMESTONE	7351	7412	7581	7672	
HAMILTON SHALE	7412	7585	7672	8082	
UPPER MARCELLUS	7585	7598	8082	8140	
PURCELL	7598	7600	8140	8150	
MIDDLE MARCELLUS	7600	7678	8150		
ONONDAGA LIMESTONE	7678	7692			
HUNTERSVILLE CHERT	7692				
LTD	7843				

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I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the regulations issued and prescribed by the Department of Environmental Protection.

Kenneth J. Plum, P.S. 2216



FILE NO: 158-10-P-10
DRAWING #: 158-10 PHL13AHS Rev2 Well Plat
SCALE: 1" = 1000'
MINIMUM DEGREE OF ACCURACY: Submeter
PROVEN SOURCE OF ELEVATION: CORS Glenville, WV

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

DATE: July 14 2011
OPERATOR'S WELL NO. PHL13AHS
API WELL NO:
47 - 001 -
STATE COUNTY PERMIT

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL
(IF GAS) PRODUCTION: STORAGE DEEP SHALLOW

LOCATION: ELEVATION: 1520' WATERSHED Mitchell Run
QUADRANGLE: Philippi DISTRICT: Pleasant COUNTY: Barbour

SURFACE OWNER: Randall McCauley
OIL AND GAS ROYALTY OWNER: Gary McCauley, et al; Pristine Resources, Inc.; Clara McDaniel, et al
PROPOSED WORK: DRILL CONVERT DRILL DEEPER FRACTURE OR STIMULATE PLUG OFF OLD FORMATION
 PERFORATE NEW FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY)
 PLUG AND ABANDON CLEAN OUT AND REPLUG TARGET FORMATION: Marcellus Shale ESTIMATED DEPTH: 7,070' TVD 13,500' TMD

ACREAGE: 20
LEASE NO: 70887; 70841; 70844. ACREAGE: 92; 200; 38
63; 200; 38

WELL OPERATOR: CNX Gas Company LLC DESIGNATED AGENT: Kent Wright
ADDRESS: P.O. Box 1248 ADDRESS: P.O. Box 1248
Jane Lew, WV 26378 Jane Lew, WV 26378

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CNX GAS COMPANY, LLC

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

Slot: Slot A
 Well: PHL13AHS
 Wellbore: PHL13AHS PWB



Location Information

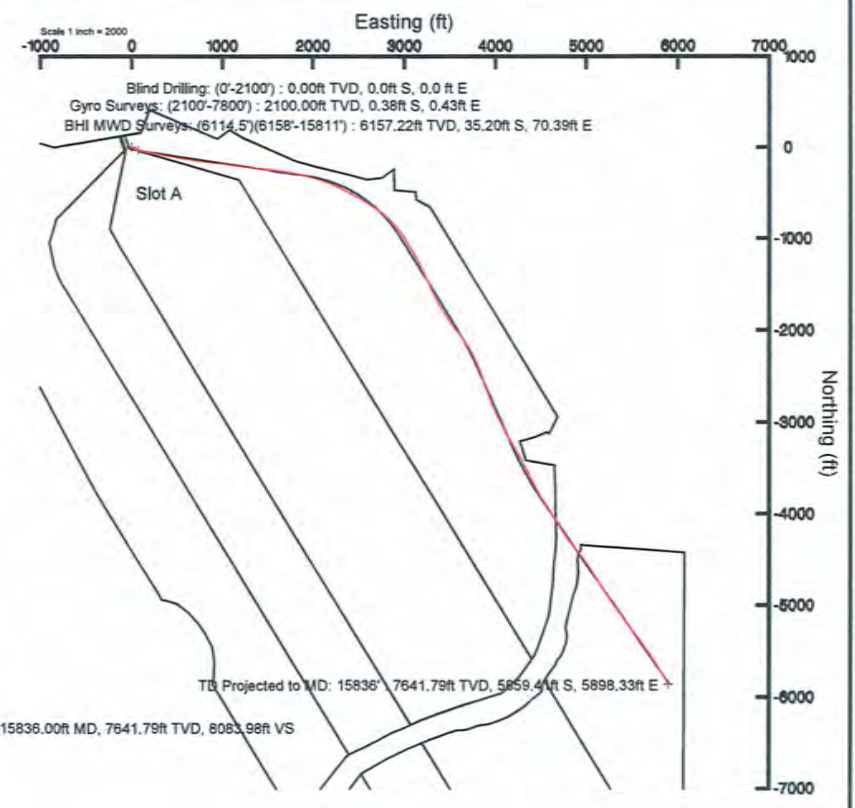
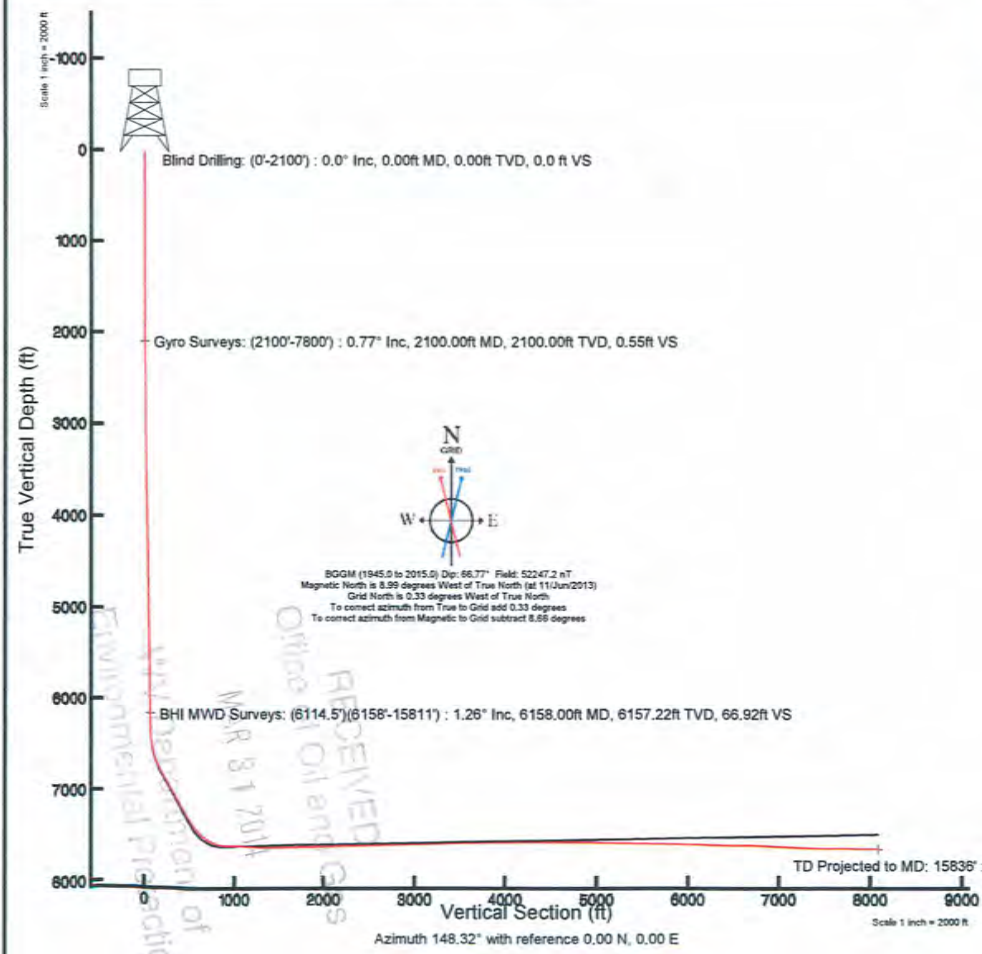
Facility Name		Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	
PHL13 Pad		1854811.025	261731.069	39°13'02.890"N	80°00'44.770"W	
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot A	-0.87	0.97	1854811.995	261730.198	39°13'02.881"N	80°00'44.758"W
Patterson 331 (RT) to Mud line (At Slot: Slot A)			1551.75ft			
Mean Sea Level to Mud line (At Slot: Slot A)			0ft			
Patterson 331 (RT) to Mean Sea Level			1551.75ft			
Plot reference wellpath is PHL13AHS PWB Rev-B.0						
True vertical depths are referenced to Patterson 331 (RT)			Grid System: NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet			
Measured depths are referenced to Patterson 331 (RT)			North Reference: Grid north			
Patterson 331 (RT) to Mean Sea Level: 1551.75 feet			Scale: True distance			
Mean Sea Level to Mud line (At Slot: Slot A): 0 feet			Depths are in feet			
Coordinates are in feet referenced to Slot			Created by: frjsejal on 09/Jul/2013			

Well Profile Data

Design Comment	MD (ft)	Inc (")	Az (°)	TVD (ft)	Local N (ft)	Local E (ft)	DLS (/100ft)	VS (ft)
Tie On	6114.50	1.200	110.830	6113.73	-34.89	69.51	0.00	66.19
End of Tangent	6349.50	1.200	110.830	6348.68	-36.64	74.11	0.00	70.10
End of 3D Arc	6848.88	41.122	98.508	6805.05	-63.90	248.53	8.00	184.90
End of Tangent	7595.07	41.122	98.508	7367.17	-136.51	733.87	0.00	501.58
End of 3D Arc	8143.55	85.000	98.500	7609.63	-207.05	1205.73	8.00	809.42
End of Build	8293.55	91.000	98.500	7614.86	-229.20	1353.92	4.00	906.09
End of Tangent	8893.55	91.000	98.500	7604.39	-317.87	1947.24	0.00	1293.15
End of 3D Arc	10133.35	91.000	148.100	7581.29	-977.38	2951.24	4.00	2381.66
End of Tangent	11333.35	91.000	148.100	7560.35	-1995.99	3585.27	0.00	3581.47
End of 3D Arc	11859.94	91.000	156.000	7551.14	-2460.71	3831.85	1.50	4106.44
End of Tangent	12709.94	91.000	156.000	7536.31	-3237.11	4177.52	0.00	4948.69
End of 3D Arc	13417.76	91.001	145.381	7523.92	-3853.35	4523.47	1.50	5654.79
End of Tangent	15850.91	91.001	145.381	7481.43	-5855.40	5905.58	0.00	8084.37

Targets

Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
PHL13AHS PBHL Rev-1	15850.91	7481.43	-5855.40	5905.58	1860717.36	255875.01	39°12'05.335"N	79°59'23.319"W
PHL13AHS LP Plat	7581.00	7581.00	-745.48	2748.45	1857580.35	260864.74	39°12'55.667"N	80°00'09.785"W
PHL13AHS LP Rev-1	8293.55	7614.86	-229.20	1353.92	1856185.87	261501.01	39°13'00.892"N	80°00'27.539"W





Actual Wellpath Report

PHL13AHS AWP Proj: 15836'

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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot A
Area	Barbour County, WV	Well	PHL13AHS
Field	Barbour	Wellbore	PHL13AHS AWB
Facility	PHL13 Pad		

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	Frisjesl
Scale	0.999966	Report Generated	09/Jul/2013 at 14:01
Convergence at slot	0.33° West	Database/Source file	WA_EasternUS/PHL13AHS_AWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-0.87	0.97	1854812.00	261730.20	39°13'02.881"N	80°00'44.758"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	1551.75ft
Horizontal Reference Pt	Slot	Patterson 331 (RT) to Mean Sea Level	1551.75ft
Vertical Reference Pt	Patterson 331 (RT)	Patterson 331 (RT) to Mud Line at Slot (Slot A)	1551.75ft
MD Reference Pt	Patterson 331 (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	148.32°

47-001-03220

PHL13AHS



Actual Wellpath Report

PHL13AHS AWP Proj: 15836'

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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot A
Area	Barbour County, WV	Well	PHL13AHS
Field	Barbour	Wellbore	PHL13AHS AWB
Facility	PHL13 Pad		

WELLPATH DATA (194 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]
0.00†	0.000	131.830	0.00	0.00	0.00	0.00	1854812.00	261730.20	39°13'02.881"N	80°00'44.758"W	0.00	0.000	0.00
24.50	0.000	131.830	24.50	0.00	0.00	0.00	1854812.00	261730.20	39°13'02.881"N	80°00'44.758"W	0.00	0.000	0.00
2014.50	0.000	0.000	2014.50	0.00	0.00	0.00	1854812.00	261730.20	39°13'02.881"N	80°00'44.758"W	0.00	0.000	0.00
2114.50	0.900	131.830	2114.50	0.75	-0.52	0.59	1854812.58	261729.67	39°13'02.876"N	80°00'44.750"W	0.79	131.830	0.90
2164.50	1.000	130.130	2164.49	1.54	-1.07	1.21	1854813.21	261729.13	39°13'02.871"N	80°00'44.742"W	1.61	131.371	0.21
2214.50	1.000	127.630	2214.48	2.37	-1.61	1.89	1854813.89	261728.58	39°13'02.866"N	80°00'44.733"W	2.49	130.497	0.09
2264.50	1.000	128.230	2264.47	3.18	-2.15	2.58	1854814.57	261728.05	39°13'02.860"N	80°00'44.725"W	3.36	129.830	0.02
2314.50	0.900	123.730	2314.47	3.95	-2.64	3.25	1854815.24	261727.56	39°13'02.856"N	80°00'44.716"W	4.19	129.092	0.25
2364.50	0.900	122.030	2364.46	4.66	-3.07	3.91	1854815.90	261727.13	39°13'02.851"N	80°00'44.708"W	4.97	128.112	0.05
2414.50	0.900	121.930	2414.45	5.36	-3.48	4.57	1854816.57	261726.72	39°13'02.847"N	80°00'44.699"W	5.75	127.275	0.00
2464.50	0.900	122.530	2464.45	6.07	-3.90	5.24	1854817.23	261726.30	39°13'02.843"N	80°00'44.691"W	6.53	126.669	0.02
2514.50	0.900	120.730	2514.44	6.77	-4.31	5.91	1854817.90	261725.89	39°13'02.839"N	80°00'44.682"W	7.31	126.129	0.06
2564.50	0.800	117.130	2564.44	7.42	-4.67	6.55	1854818.55	261725.53	39°13'02.836"N	80°00'44.674"W	8.05	125.477	0.23
2614.50	0.800	115.730	2614.43	8.01	-4.98	7.18	1854819.17	261725.22	39°13'02.833"N	80°00'44.666"W	8.74	124.758	0.04
2664.50	0.800	116.430	2664.43	8.60	-5.29	7.81	1854819.80	261724.91	39°13'02.830"N	80°00'44.658"W	9.43	124.118	0.02
2714.50	0.800	114.530	2714.42	9.19	-5.59	8.44	1854820.43	261724.61	39°13'02.827"N	80°00'44.650"W	10.12	123.524	0.05
2764.50	0.800	119.930	2764.42	9.78	-5.91	9.06	1854821.05	261724.29	39°13'02.824"N	80°00'44.642"W	10.81	123.119	0.15
2814.50	0.800	115.330	2814.41	10.38	-6.23	9.68	1854821.67	261723.97	39°13'02.820"N	80°00'44.634"W	11.51	122.787	0.13
2864.50	0.800	118.230	2864.41	10.98	-6.55	10.30	1854822.29	261723.65	39°13'02.817"N	80°00'44.626"W	12.20	122.444	0.08
2914.50	0.800	116.930	2914.40	11.58	-6.87	10.92	1854822.91	261723.33	39°13'02.814"N	80°00'44.618"W	12.90	122.181	0.04
2964.50	0.900	120.430	2964.40	12.22	-7.23	11.57	1854823.56	261722.97	39°13'02.811"N	80°00'44.610"W	13.64	121.997	0.23
3014.50	0.900	119.930	3014.39	12.92	-7.62	12.25	1854824.24	261722.58	39°13'02.807"N	80°00'44.601"W	14.42	121.898	0.02
3064.50	0.900	118.130	3064.38	13.60	-8.00	12.93	1854824.93	261722.20	39°13'02.803"N	80°00'44.593"W	15.21	121.750	0.06
3114.50	0.900	117.430	3114.38	14.28	-8.37	13.63	1854825.62	261721.83	39°13'02.800"N	80°00'44.584"W	15.99	121.555	0.02
3164.50	0.900	118.130	3164.37	14.95	-8.73	14.32	1854826.32	261721.46	39°13'02.796"N	80°00'44.575"W	16.78	121.378	0.02
3214.50	1.000	116.930	3214.37	15.67	-9.12	15.06	1854827.05	261721.08	39°13'02.792"N	80°00'44.566"W	17.60	121.196	0.20
3264.50	1.000	119.430	3264.36	16.42	-9.53	15.83	1854827.82	261720.67	39°13'02.788"N	80°00'44.556"W	18.47	121.053	0.09
3314.50	1.100	119.730	3314.35	17.22	-9.98	16.62	1854828.62	261720.22	39°13'02.784"N	80°00'44.546"W	19.39	120.984	0.20
3364.50	1.100	120.130	3364.34	18.07	-10.46	17.45	1854829.45	261719.74	39°13'02.779"N	80°00'44.535"W	20.35	120.934	0.02
3414.50	1.100	119.130	3414.33	18.91	-10.94	18.29	1854830.28	261719.26	39°13'02.774"N	80°00'44.524"W	21.31	120.876	0.04
3464.50	1.200	117.530	3464.32	19.78	-11.41	19.17	1854831.17	261718.79	39°13'02.770"N	80°00'44.513"W	22.31	120.760	0.21
3514.50	1.200	118.030	3514.31	20.68	-11.90	20.10	1854832.09	261718.30	39°13'02.765"N	80°00'44.501"W	23.36	120.626	0.02
3564.50	1.200	118.230	3564.30	21.59	-12.39	21.02	1854833.02	261717.81	39°13'02.760"N	80°00'44.490"W	24.40	120.519	0.01
3614.50	1.100	117.430	3614.29	22.45	-12.86	21.91	1854833.90	261717.34	39°13'02.756"N	80°00'44.478"W	25.41	120.414	0.20
3664.50	1.100	117.230	3664.28	23.27	-13.30	22.76	1854834.76	261716.90	39°13'02.751"N	80°00'44.467"W	26.36	120.301	0.01

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3714.50	1.100	116.630	3714.27	24.09	-13.74	23.62	1854835.61	261716.46	39°13'02.747"N	80°00'44.457"W	27.32	120.183	0.02
3764.50	1.200	116.830	3764.26	24.95	-14.19	24.51	1854836.51	261716.01	39°13'02.743"N	80°00'44.445"W	28.32	120.061	0.20
3814.50	1.200	117.030	3814.25	25.84	-14.66	25.45	1854837.44	261715.54	39°13'02.738"N	80°00'44.433"W	29.37	119.949	0.01
3864.50	1.200	117.830	3864.24	26.74	-15.14	26.38	1854838.37	261715.05	39°13'02.733"N	80°00'44.421"W	30.42	119.863	0.03
3914.50	1.300	119.230	3914.23	27.69	-15.67	27.34	1854839.33	261714.53	39°13'02.728"N	80°00'44.409"W	31.51	119.817	0.21
3964.50	1.400	118.430	3964.21	28.71	-16.23	28.37	1854840.36	261713.96	39°13'02.723"N	80°00'44.396"W	32.68	119.781	0.20
4014.50	1.300	117.330	4014.20	29.73	-16.79	29.41	1854841.40	261713.41	39°13'02.717"N	80°00'44.383"W	33.86	119.716	0.21
4064.50	1.200	116.830	4064.19	30.66	-17.28	30.38	1854842.37	261712.92	39°13'02.712"N	80°00'44.370"W	34.95	119.634	0.20
4114.50	1.200	115.530	4114.18	31.55	-17.74	31.32	1854843.31	261712.45	39°13'02.708"N	80°00'44.358"W	36.00	119.534	0.05
4164.50	1.200	114.930	4164.17	32.43	-18.19	32.27	1854844.26	261712.01	39°13'02.703"N	80°00'44.346"W	37.04	119.412	0.03

PHILBERTS

47-001-03220



Actual Wellpath Report

PHL13AHS AWP Proj: 15836'

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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot A
Area	Barbour County, WV	Well	PHL13AHS
Field	Barbour	Wellbore	PHL13AHS AWB
Facility	PHL13 Pad		

WELLPATH DATA (194 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]
4214.50	1.300	116.430	4214.15	33.34	-18.66	33.25	1854845.24	261711.54	39°13'02.699"N	80°00'44.334"W	38.13	119.306	0.21
4264.50	1.300	117.030	4264.14	34.31	-19.17	34.26	1854846.26	261711.03	39°13'02.694"N	80°00'44.321"W	39.26	119.232	0.03
4314.50	1.300	117.830	4314.13	35.28	-19.70	35.27	1854847.26	261710.50	39°13'02.689"N	80°00'44.308"W	40.40	119.181	0.04
4364.50	1.200	120.530	4364.12	36.24	-20.23	36.22	1854848.22	261709.97	39°13'02.684"N	80°00'44.296"W	41.49	119.180	0.23
4414.50	1.100	116.930	4414.11	37.11	-20.71	37.10	1854849.09	261709.49	39°13'02.679"N	80°00'44.285"W	42.49	119.171	0.25
4464.50	1.100	115.730	4464.10	37.92	-21.14	37.96	1854849.95	261709.06	39°13'02.675"N	80°00'44.274"W	43.45	119.108	0.05
4514.50	1.100	115.330	4514.09	38.73	-21.55	38.83	1854850.82	261708.65	39°13'02.671"N	80°00'44.263"W	44.41	119.031	0.02
4564.50	1.100	115.330	4564.08	39.53	-21.96	39.69	1854851.69	261708.24	39°13'02.667"N	80°00'44.252"W	45.36	118.953	0.00
4614.50	1.000	114.430	4614.07	40.30	-22.35	40.53	1854852.52	261707.85	39°13'02.663"N	80°00'44.241"W	46.28	118.873	0.20
4664.50	1.000	113.330	4664.06	41.02	-22.70	41.32	1854853.32	261707.50	39°13'02.659"N	80°00'44.231"W	47.15	118.780	0.04
4714.50	1.000	115.930	4714.05	41.74	-23.06	42.12	1854854.11	261707.14	39°13'02.656"N	80°00'44.221"W	48.02	118.705	0.09
4764.50	1.100	115.930	4764.05	42.52	-23.46	42.94	1854854.93	261706.74	39°13'02.652"N	80°00'44.210"W	48.93	118.653	0.20
4814.50	1.100	115.830	4814.04	43.33	-23.88	43.80	1854855.80	261706.32	39°13'02.648"N	80°00'44.199"W	49.89	118.600	0.00
4864.50	1.200	115.930	4864.03	44.18	-24.32	44.71	1854856.70	261705.88	39°13'02.644"N	80°00'44.188"W	50.89	118.546	0.20
4914.50	1.300	114.830	4914.01	45.09	-24.79	45.69	1854857.69	261705.41	39°13'02.639"N	80°00'44.175"W	51.98	118.479	0.21
4964.50	1.300	114.530	4964.00	46.04	-25.26	46.72	1854858.72	261704.94	39°13'02.634"N	80°00'44.162"W	53.11	118.398	0.01
5014.50	1.300	113.430	5013.99	46.97	-25.72	47.76	1854859.75	261704.48	39°13'02.630"N	80°00'44.149"W	54.25	118.306	0.05
5064.50	1.300	113.430	5063.98	47.90	-26.17	48.80	1854860.79	261704.03	39°13'02.626"N	80°00'44.136"W	55.38	118.206	0.00
5114.50	1.300	112.930	5113.96	48.83	-26.62	49.84	1854861.84	261703.58	39°13'02.621"N	80°00'44.122"W	56.51	118.105	0.02
5164.50	1.300	112.830	5163.95	49.75	-27.06	50.89	1854862.88	261703.14	39°13'02.617"N	80°00'44.109"W	57.64	118.003	0.00
5214.50	1.300	113.430	5213.94	50.68	-27.51	51.93	1854863.92	261702.69	39°13'02.613"N	80°00'44.096"W	58.77	117.909	0.03
5264.50	1.300	112.930	5263.92	51.61	-27.95	52.97	1854864.97	261702.25	39°13'02.608"N	80°00'44.083"W	59.90	117.819	0.02
5314.50	1.300	113.130	5313.91	52.53	-28.40	54.02	1854866.01	261701.80	39°13'02.604"N	80°00'44.069"W	61.03	117.730	0.01
5364.50	1.300	112.630	5363.90	53.46	-28.84	55.06	1854867.06	261701.36	39°13'02.600"N	80°00'44.056"W	62.16	117.642	0.02
5414.50	1.300	113.630	5413.89	54.39	-29.28	56.11	1854868.10	261700.92	39°13'02.595"N	80°00'44.043"W	63.29	117.561	0.05
5464.50	1.300	113.330	5463.87	55.32	-29.74	57.15	1854869.14	261700.46	39°13'02.591"N	80°00'44.029"W	64.42	117.489	0.01
5514.50	1.300	113.230	5513.86	56.25	-30.18	58.19	1854870.18	261700.02	39°13'02.586"N	80°00'44.016"W	65.55	117.417	0.00
5564.50	1.200	112.730	5563.85	57.14	-30.61	59.19	1854871.19	261699.59	39°13'02.582"N	80°00'44.003"W	66.64	117.344	0.20
5614.50	1.200	113.230	5613.84	57.99	-31.02	60.16	1854872.15	261699.18	39°13'02.578"N	80°00'43.991"W	67.68	117.277	0.02
5664.50	1.200	113.830	5663.83	58.85	-31.44	61.12	1854873.11	261698.76	39°13'02.574"N	80°00'43.979"W	68.73	117.220	0.03
5714.50	1.100	113.430	5713.82	59.67	-31.84	62.04	1854874.03	261698.36	39°13'02.570"N	80°00'43.967"W	69.73	117.168	0.20
5764.50	1.200	113.030	5763.81	60.50	-32.23	62.96	1854874.95	261697.96	39°13'02.566"N	80°00'43.955"W	70.73	117.112	0.20
5814.50	1.200	113.430	5813.80	61.35	-32.65	63.92	1854875.91	261697.55	39°13'02.562"N	80°00'43.943"W	71.78	117.056	0.02
5864.50	1.100	112.030	5863.79	62.17	-33.04	64.85	1854876.84	261697.16	39°13'02.559"N	80°00'43.931"W	72.78	116.996	0.21
5914.50	1.100	112.230	5913.78	62.94	-33.40	65.74	1854877.73	261696.80	39°13'02.555"N	80°00'43.920"W	73.73	116.933	0.01

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PHL13AHS

5964.50	1.100	112.130	5963.77	63.72	-33.76	66.62	1854878.62	261696.44	39°13'02.552"N	80°00'43.909"W	74.69	116.872	0.00
6014.50	1.200	111.330	6013.76	64.52	-34.13	67.56	1854879.55	261696.07	39°13'02.548"N	80°00'43.897"W	75.69	116.804	0.20
6064.50	1.200	111.130	6063.75	65.36	-34.51	68.53	1854880.53	261695.69	39°13'02.544"N	80°00'43.884"W	76.73	116.728	0.01
6114.50	1.200	110.830	6113.73	66.19	-34.89	69.51	1854881.50	261695.31	39°13'02.541"N	80°00'43.872"W	77.77	116.651	0.01
6158.00	1.260	108.970	6157.22	66.92	-35.20	70.39	1854882.38	261695.00	39°13'02.537"N	80°00'43.861"W	78.70	116.570	0.17
6251.00	1.320	105.810	6250.20	68.50	-35.83	72.39	1854884.38	261694.37	39°13'02.531"N	80°00'43.835"W	80.77	116.333	0.10
6344.00	1.620	92.400	6343.17	70.03	-36.17	74.73	1854886.72	261694.03	39°13'02.528"N	80°00'43.806"W	83.02	115.830	0.49
6391.00	5.670	91.050	6390.07	71.66	-36.24	77.72	1854889.71	261693.96	39°13'02.528"N	80°00'43.768"W	85.75	115.003	8.62
6438.00	9.970	94.940	6436.62	75.34	-36.64	84.09	1854896.09	261693.56	39°13'02.524"N	80°00'43.687"W	91.73	113.541	9.21
6485.00	13.310	99.690	6482.65	81.35	-37.90	93.48	1854905.48	261692.30	39°13'02.512"N	80°00'43.567"W	100.87	112.068	7.39

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Actual Wellpath Report

PHL13AHS AWP Proj: 15836'

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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot A
Area	Barbour County, WV	Well	PHL13AHS
Field	Barbour	Wellbore	PHL13AHS AWB
Facility	PHL13 Pad		

WELLPATH DATA (194 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]
6533.00	16.660	103.450	6529.01	89.88	-40.43	105.63	1854917.62	261689.77	39°13'02.488"N	80°00'43.413"W	113.10	110.945	7.26
6584.00	19.940	103.400	6577.42	101.22	-44.15	121.20	1854933.19	261686.05	39°13'02.452"N	80°00'43.215"W	128.99	110.014	6.43
6628.00	23.050	102.460	6618.36	112.53	-47.74	136.91	1854948.90	261682.46	39°13'02.417"N	80°00'43.015"W	145.00	109.225	7.11
6720.00	31.010	100.820	6700.24	141.13	-56.09	177.84	1854989.83	261674.11	39°13'02.337"N	80°00'42.494"W	186.48	107.506	8.69
6764.00	36.160	99.840	6736.89	157.41	-60.44	201.78	1855013.77	261669.76	39°13'02.295"N	80°00'42.190"W	210.64	106.675	11.77
6814.00	39.480	99.600	6776.38	177.68	-65.62	232.00	1855043.98	261664.59	39°13'02.246"N	80°00'41.805"W	241.10	105.792	6.65
6909.00	40.980	100.550	6848.90	218.54	-76.36	292.40	1855104.39	261653.84	39°13'02.143"N	80°00'41.037"W	302.21	104.635	1.71
7001.00	40.750	100.810	6918.48	259.10	-87.51	351.55	1855163.54	261642.69	39°13'02.036"N	80°00'40.285"W	362.28	103.978	0.31
7096.00	40.860	100.970	6990.39	301.10	-99.24	412.52	1855224.50	261630.96	39°13'01.924"N	80°00'39.509"W	424.29	103.527	0.16
7191.00	41.380	100.670	7061.96	343.30	-110.97	473.88	1855285.86	261619.24	39°13'01.811"N	80°00'38.729"W	486.70	103.179	0.59
7284.00	41.490	99.630	7131.68	384.35	-121.81	534.46	1855346.44	261608.39	39°13'01.708"N	80°00'37.958"W	548.17	102.839	0.75
7376.00	41.470	97.800	7200.61	423.83	-131.04	594.69	1855406.66	261599.16	39°13'01.620"N	80°00'37.192"W	608.96	102.427	1.32
7470.00	41.390	98.180	7271.09	463.54	-139.69	656.29	1855468.26	261590.51	39°13'01.538"N	80°00'36.409"W	670.99	102.016	0.28
7564.00	45.520	98.740	7339.31	505.22	-149.21	720.22	1855532.19	261580.99	39°13'01.447"N	80°00'35.596"W	735.51	101.705	4.41
7656.00	49.940	98.300	7401.17	549.14	-159.29	787.53	1855599.50	261570.92	39°13'01.351"N	80°00'34.740"W	803.48	101.434	4.82
7750.00	57.920	95.920	7456.48	596.63	-168.60	862.86	1855674.83	261561.60	39°13'01.264"N	80°00'33.783"W	879.18	101.056	8.73
7844.00	62.810	96.120	7502.94	646.59	-177.17	944.09	1855756.05	261553.03	39°13'01.183"N	80°00'32.750"W	960.57	100.629	5.21
7940.00	67.850	96.780	7543.00	700.44	-186.98	1030.75	1855842.71	261543.23	39°13'01.091"N	80°00'31.648"W	1047.57	100.282	5.29
8031.00	73.910	98.050	7572.80	754.65	-198.09	1115.97	1855927.92	261532.12	39°13'00.986"N	80°00'30.565"W	1133.41	100.065	6.79
8127.00	78.640	98.230	7595.57	814.35	-211.29	1208.26	1856020.21	261518.92	39°13'00.861"N	80°00'29.391"W	1226.59	99.919	4.93
8221.00	87.230	98.010	7607.12	874.01	-224.45	1300.52	1856112.47	261505.76	39°13'00.736"N	80°00'28.218"W	1319.75	99.792	9.14
8282.00	90.550	97.070	7608.30	912.57	-232.45	1360.98	1856172.92	261497.75	39°13'00.660"N	80°00'27.449"W	1380.68	99.692	5.66
8314.00	90.180	96.360	7608.09	932.44	-236.19	1392.76	1856204.70	261494.01	39°13'00.625"N	80°00'27.045"W	1412.64	99.625	2.50
8408.00	89.450	96.020	7608.40	990.14	-246.33	1486.21	1856298.15	261483.88	39°13'00.530"N	80°00'25.857"W	1506.48	99.411	0.86
8501.00	88.950	96.550	7609.70	1047.35	-256.51	1578.64	1856390.58	261473.70	39°13'00.435"N	80°00'24.682"W	1599.34	99.229	0.78
8595.00	88.030	97.980	7612.17	1106.41	-268.39	1671.85	1856483.78	261461.82	39°13'00.322"N	80°00'23.497"W	1693.25	99.120	1.81
8690.00	87.970	99.900	7615.49	1168.22	-283.15	1765.63	1856577.56	261447.06	39°13'00.182"N	80°00'22.305"W	1788.19	99.111	2.02
8782.00	88.060	102.690	7618.68	1230.89	-301.15	1855.79	1856667.71	261429.06	39°13'00.009"N	80°00'21.158"W	1880.06	99.217	3.03
8875.00	88.150	104.900	7621.75	1297.15	-323.31	1946.05	1856757.97	261406.90	39°12'59.795"N	80°00'20.009"W	1972.72	99.433	2.38
8970.00	87.880	106.550	7625.04	1367.04	-349.04	2037.44	1856849.36	261381.17	39°12'59.546"N	80°00'18.847"W	2067.12	99.721	1.76
9065.00	90.030	108.430	7626.78	1438.91	-377.59	2128.02	1856939.94	261352.62	39°12'59.269"N	80°00'17.694"W	2161.26	100.062	3.01
9159.00	90.950	113.790	7625.97	1513.74	-411.43	2215.67	1857027.59	261318.78	39°12'58.939"N	80°00'16.578"W	2253.55	100.519	5.79
9253.00	90.950	116.140	7624.41	1592.24	-451.10	2300.87	1857112.79	261279.12	39°12'58.552"N	80°00'15.492"W	2344.68	101.092	2.50
9348.00	90.920	117.110	7622.86	1673.06	-493.66	2385.79	1857197.70	261236.55	39°12'58.136"N	80°00'14.410"W	2436.33	101.691	1.02
9443.00	90.920	119.300	7621.34	1755.22	-538.55	2469.49	1857281.40	261191.66	39°12'57.697"N	80°00'13.344"W	2527.53	102.303	2.30

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PHLIBAHS

9538.00	90.950	119.780	7619.79	1838.47	-585.39	2552.13	1857364.03	261144.83	39°12'57.238"N	80°00'12.290"W	2618.41	102.919	0.51
9633.00	90.890	122.870	7618.26	1923.10	-634.76	2633.26	1857445.16	261095.46	39°12'56.755"N	80°00'11.256"W	2708.69	103.553	3.25
9727.00	91.790	125.570	7616.06	2008.88	-687.61	2710.96	1857522.86	261042.62	39°12'56.237"N	80°00'10.265"W	2796.80	104.232	3.03
9823.00	92.310	130.360	7612.63	2098.80	-746.61	2786.58	1857598.47	260983.62	39°12'55.658"N	80°00'09.300"W	2884.86	104.999	5.02
9916.00	91.540	136.870	7609.50	2188.65	-810.69	2853.83	1857665.72	260919.54	39°12'55.028"N	80°00'08.441"W	2966.74	105.858	7.04
10011.00	91.660	138.900	7606.85	2282.04	-881.13	2917.51	1857729.40	260849.10	39°12'54.335"N	80°00'07.627"W	3047.67	106.805	2.14
10105.00	91.350	145.830	7604.37	2375.44	-955.50	2974.86	1857786.74	260774.73	39°12'53.604"N	80°00'06.893"W	3124.54	107.807	7.38
10200.00	91.350	149.070	7602.14	2470.39	-1035.54	3025.95	1857837.83	260694.69	39°12'52.815"N	80°00'06.239"W	3198.24	108.892	3.41
10293.00	91.380	147.980	7599.92	2563.36	-1114.84	3074.49	1857886.38	260615.40	39°12'52.034"N	80°00'05.616"W	3270.38	109.931	1.17
10387.00	91.320	149.990	7597.71	2657.33	-1195.37	3122.91	1857934.79	260534.87	39°12'51.241"N	80°00'04.995"W	3343.87	110.946	2.14

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PHL13AHS

Actual Wellpath Report

PHL13AHS AWP Proj: 15836'
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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot A
Area	Barbour County, WV	Well	PHL13AHS
Field	Barbour	Wellbore	PHL13AHS AWB
Facility	PHL13 Pad		

WELLPATH DATA (194 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]
10481.00	91.260	153.660	7595.59	2751.11	-1278.20	3167.28	1857979.16	260452.05	39°12'50.425"N	80°00'04.426"W	3415.47	111.977	3.90
10575.00	91.350	154.810	7593.45	2844.59	-1362.83	3208.12	1858020.00	260367.42	39°12'49.591"N	80°00'03.901"W	3485.59	113.016	1.23
10670.00	91.320	154.910	7591.23	2938.94	-1448.81	3248.47	1858060.35	260281.44	39°12'48.743"N	80°00'03.382"W	3556.91	114.037	0.11
10764.00	91.320	154.990	7589.07	3032.29	-1533.94	3288.26	1858100.14	260196.31	39°12'47.904"N	80°00'02.871"W	3628.45	115.009	0.09
10858.00	91.350	154.120	7586.88	3125.71	-1618.80	3328.64	1858140.51	260111.46	39°12'47.067"N	80°00'02.352"W	3701.40	115.935	0.93
10953.00	91.320	151.540	7584.66	3220.38	-1703.29	3372.00	1858183.88	260026.97	39°12'46.235"N	80°00'01.795"W	3777.78	116.800	2.72
11049.00	91.260	148.070	7582.50	3316.31	-1786.23	3420.27	1858232.14	259944.03	39°12'45.417"N	80°00'01.176"W	3858.60	117.576	3.61
11145.00	91.020	145.130	7580.59	3412.23	-1866.35	3473.09	1858284.96	259863.92	39°12'44.628"N	80°00'00.499"W	3942.80	118.252	3.07
11237.00	90.740	143.550	7579.18	3504.00	-1941.09	3526.72	1858338.59	259789.18	39°12'43.893"N	79°59'59.812"W	4025.61	118.828	1.74
11330.00	90.990	140.680	7577.78	3596.43	-2014.47	3583.82	1858395.68	259715.80	39°12'43.171"N	79°59'59.082"W	4111.18	119.340	3.10
11427.00	90.950	143.410	7576.13	3692.83	-2090.94	3643.46	1858455.33	259639.34	39°12'42.418"N	79°59'58.319"W	4200.81	119.851	2.81
11523.00	90.860	147.040	7574.62	3788.66	-2169.77	3698.20	1858510.06	259560.51	39°12'41.642"N	79°59'57.618"W	4287.72	120.401	3.78
11614.00	90.920	150.840	7573.20	3879.63	-2247.70	3745.14	1858557.00	259482.58	39°12'40.874"N	79°59'57.016"W	4367.86	120.971	4.18
11712.00	91.020	155.970	7571.54	3977.20	-2335.29	3788.99	1858600.85	259395.00	39°12'40.011"N	79°59'56.453"W	4450.84	121.647	5.23
11806.00	91.200	158.440	7569.72	4070.04	-2421.92	3825.40	1858637.25	259308.36	39°12'39.157"N	79°59'55.984"W	4527.62	122.339	2.63
11900.00	91.050	159.670	7567.88	4162.38	-2509.69	3858.99	1858670.85	259220.60	39°12'38.291"N	79°59'55.551"W	4603.30	123.038	1.32
11995.00	90.490	160.420	7566.60	4255.39	-2598.98	3891.41	1858703.27	259131.31	39°12'37.410"N	79°59'55.133"W	4679.51	123.738	0.99
12089.00	90.280	159.660	7565.97	4347.42	-2687.33	3923.50	1858735.35	259042.97	39°12'36.539"N	79°59'54.719"W	4755.58	124.408	0.84
12183.00	90.120	159.380	7565.64	4439.63	-2775.39	3956.39	1858768.24	258954.91	39°12'35.670"N	79°59'54.295"W	4832.78	125.049	0.34
12278.00	89.450	155.030	7566.00	4533.47	-2862.95	3993.18	1858805.03	258867.36	39°12'34.807"N	79°59'53.821"W	4913.45	125.639	4.63
12372.00	90.250	153.510	7566.24	4626.96	-2947.62	4033.99	1858845.84	258782.68	39°12'33.972"N	79°59'53.297"W	4996.15	126.155	1.83
12466.00	90.490	153.110	7565.63	4720.60	-3031.60	4076.21	1858888.06	258698.70	39°12'33.145"N	79°59'52.755"W	5079.97	126.639	0.50
12560.00	89.420	151.460	7565.71	4814.37	-3114.82	4119.93	1858931.77	258615.49	39°12'32.325"N	79°59'52.194"W	5164.87	127.091	2.09
12654.00	89.020	149.450	7566.99	4908.29	-3196.58	4166.27	1858978.12	258533.73	39°12'31.519"N	79°59'51.599"W	5251.28	127.497	2.18
12748.00	88.250	148.170	7569.23	5002.26	-3276.97	4214.94	1859026.78	258453.35	39°12'30.727"N	79°59'50.975"W	5338.93	127.864	1.59
12843.00	87.960	150.780	7572.37	5097.18	-3358.75	4263.16	1859075.00	258371.57	39°12'29.921"N	79°59'50.357"W	5427.31	128.233	2.76
12938.00	88.980	152.010	7574.91	5192.01	-3442.12	4308.62	1859120.46	258288.20	39°12'29.100"N	79°59'49.773"W	5514.75	128.621	1.68
13032.00	88.890	151.800	7576.65	5285.81	-3525.03	4352.88	1859164.72	258205.29	39°12'28.283"N	79°59'49.205"W	5601.20	129.001	0.24
13130.00	88.920	154.350	7578.53	5383.44	-3612.39	4397.25	1859209.08	258117.94	39°12'27.422"N	79°59'48.636"W	5690.79	129.403	2.60
13221.00	88.950	151.910	7580.22	5474.10	-3693.54	4438.37	1859250.20	258036.79	39°12'26.622"N	79°59'48.108"W	5774.20	129.767	2.68
13318.00	88.950	149.090	7582.00	5571.00	-3777.94	4486.12	1859297.95	257952.39	39°12'25.790"N	79°59'47.495"W	5864.99	130.102	2.91
13412.00	88.920	146.840	7583.74	5664.98	-3857.61	4535.97	1859347.80	257872.73	39°12'25.006"N	79°59'46.856"W	5954.51	130.379	2.39
13506.00	88.920	147.020	7585.51	5758.94	-3936.37	4587.25	1859399.08	257793.97	39°12'24.230"N	79°59'46.199"W	6044.66	130.633	0.19
13600.00	88.980	148.440	7587.24	5852.91	-4015.83	4637.43	1859449.26	257714.51	39°12'23.447"N	79°59'45.556"W	6134.55	130.891	1.51
13692.00	88.920	148.440	7588.92	5944.90	-4094.21	4685.57	1859497.40	257636.13	39°12'22.675"N	79°59'44.939"W	6222.31	131.147	0.07

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13789.00	87.940	146.400	7591.58	6041.84	-4175.91	4737.78	1859549.61	257554.44	39°12'21.871"N	79°59'44.270"W	6315.44	131.393	2.33
13884.00	87.880	144.540	7595.05	6136.66	-4254.12	4791.59	1859603.42	257476.23	39°12'21.101"N	79°59'43.581"W	6407.57	131.600	1.96
13978.00	87.880	141.880	7598.52	6230.21	-4329.34	4847.84	1859659.66	257401.01	39°12'20.360"N	79°59'42.861"W	6499.60	131.766	2.83
14072.00	88.770	141.210	7601.27	6323.51	-4402.92	4906.28	1859718.10	257327.44	39°12'19.636"N	79°59'42.114"W	6592.21	131.905	1.18
14168.00	89.940	143.620	7602.35	6418.99	-4478.98	4964.82	1859776.64	257251.38	39°12'18.888"N	79°59'41.365"W	6686.61	132.055	2.79
14260.00	90.000	145.770	7602.40	6510.80	-4554.06	5017.99	1859829.80	257176.30	39°12'18.149"N	79°59'40.684"W	6776.40	132.225	2.34
14356.00	89.970	147.050	7602.43	6606.74	-4634.03	5071.10	1859882.91	257096.34	39°12'17.361"N	79°59'40.004"W	6869.52	132.421	1.33
14449.00	87.510	148.260	7604.47	6699.71	-4712.57	5120.84	1859932.65	257017.80	39°12'16.587"N	79°59'39.367"W	6959.26	132.623	2.95
14545.00	87.510	147.030	7608.64	6795.61	-4793.59	5172.17	1859983.97	256936.78	39°12'15.789"N	79°59'38.709"W	7051.93	132.825	1.28
14639.00	87.510	146.740	7612.73	6889.49	-4872.25	5223.47	1860035.28	256858.13	39°12'15.015"N	79°59'38.052"W	7143.07	133.008	0.31

PHL13AHS



Actual Wellpath Report

PHL13AHS AWP Proj: 15836'
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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot A
Area	Barbour County, WV	Well	PHL13AHS
Field	Barbour	Wellbore	PHL13AHS AWB
Facility	PHL13 Pad		

WELLPATH DATA (194 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]
14735.00	87.480	146.280	7616.92	6985.35	-4952.23	5276.39	1860088.20	256778.14	39°12'14.227"N	79°59'37.374"W	7236.36	133.185	0.48
14830.00	87.450	144.700	7621.12	7080.14	-5030.44	5330.16	1860141.96	256699.94	39°12'13.457"N	79°59'36.685"W	7329.11	133.343	1.66
14925.00	87.350	144.540	7625.43	7174.84	-5107.81	5385.11	1860196.91	256622.57	39°12'12.695"N	79°59'35.982"W	7422.21	133.486	0.20
15018.00	87.410	144.160	7629.68	7267.52	-5183.30	5439.25	1860251.05	256547.08	39°12'11.952"N	79°59'35.289"W	7513.46	133.620	0.41
15113.00	87.480	142.460	7633.92	7362.06	-5259.40	5495.96	1860307.75	256470.98	39°12'11.203"N	79°59'34.563"W	7607.03	133.740	1.79
15207.00	88.890	143.270	7636.90	7455.59	-5334.30	5552.67	1860364.47	256396.09	39°12'10.466"N	79°59'33.838"W	7699.80	133.851	1.73
15301.00	90.220	144.620	7637.63	7549.30	-5410.29	5607.99	1860419.79	256320.10	39°12'09.718"N	79°59'33.130"W	7792.36	133.972	2.02
15395.00	90.180	145.730	7637.30	7643.16	-5487.45	5661.67	1860473.47	256242.94	39°12'08.958"N	79°59'32.442"W	7884.59	134.105	1.18
15490.00	89.290	146.460	7637.74	7738.09	-5566.30	5714.67	1860526.45	256164.10	39°12'08.182"N	79°59'31.764"W	7977.54	134.246	1.21
15583.00	89.420	147.010	7638.78	7831.04	-5644.05	5765.67	1860577.46	256086.35	39°12'07.416"N	79°59'31.110"W	8068.35	134.389	0.61
15678.00	89.510	147.570	7639.67	7926.02	-5723.98	5817.01	1860628.79	256006.42	39°12'06.629"N	79°59'30.453"W	8160.98	134.538	0.60
15771.00	89.450	149.440	7640.52	8019.02	-5803.28	5865.59	1860677.37	255927.13	39°12'05.848"N	79°59'29.830"W	8251.25	134.694	2.01
15811.00	88.620	149.880	7641.19	8059.00	-5837.79	5885.79	1860697.57	255892.61	39°12'05.508"N	79°59'29.571"W	8289.90	134.765	2.35
15836.00	88.620	149.880	7641.79	8083.98	-5859.41	5898.33	1860710.12	255871.00	39°12'05.295"N	79°59'29.410"W	8314.03	134.810	0.00

HOLE & CASING SECTIONS - Ref Wellbore: PHL13AHS AWB Ref Wellpath: PHL13AHS AWP Proj: 15836'

String/Diameter	Start MD [ft]	End MD [ft]	Interval [ft]	Start TVD [ft]	End TVD [ft]	Start N/S [ft]	Start E/W [ft]	End N/S [ft]	End E/W [ft]
9.625in Casing	24.50	2045.50	2021.00	24.50	2045.50	0.00	0.00	-0.05	0.06

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
PHL13AHS PBHL Rev-1		7481.43	-5855.40	5905.58	1860717.36	255875.01	39°12'05.335"N	79°59'29.319"W	point
PHL13AHS LP Plat		7581.00	-745.48	2748.45	1857560.35	260984.74	39°12'55.667"N	80°00'09.785"W	point
PHL13AHS LP Rev-1		7614.86	-229.20	1353.92	1856165.87	261501.01	39°13'00.692"N	80°00'27.539"W	point

WELLPATH COMPOSITION - Ref Wellbore: PHL13AHS AWB Ref Wellpath: PHL13AHS AWP Proj: 15836'

Start MD	End MD	Positional Uncertainty Model	Log Name/Comment	Wellbore
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PHL13AHS AWB	Blind Drilling (0'-2100')	24.50	15811.00	15811.00	Blind Drilling (std)
PHL13AHS AWB	Gyro (2100'-7800') Corrected to Grid By ST per MR	2014.50	6114.50	15811.00	NavTrak (AT Curve Short Spaced)
PHL13AHS AWB	BHI AT Curve (6114.5')(6158-15811')	2014.50	6114.50	15836.00	Blind Drilling (std)
PHL13AHS AWB	Projection to bit				

PHL13AHS

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Actual Wellpath Report

PHL13AHS AWP Proj: 15836'

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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot A
Area	Barbour County, WV	Well	PHL13AHS
Field	Barbour	Wellbore	PHL13AHS AWB
Facility	PHL13 Pad		

COMMENTS

Wellpath general comments
Blind Drilling:(0'-2100')
Gyro Surveys: (2100'-7800')
BHI MWD Surveys: (6114.5')(6158'-15811')
TD Projected to MD: 15836'

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	9/26/2013
Job End Date:	11/2/2013
State:	West Virginia
County:	Barbour
API Number:	47-001-03220-00-00
Operator Name:	CONSOL Energy Inc.
Well Name and Number:	PHL13AHS
Longitude:	-80.01313000
Latitude:	39.21762500
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	7,601
Total Base Water Volume (gal):	11,884,238
Total Base Non Water Volume:	0



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Customer	Base Fluid	Water	7732-18-5	100.00000	91.61410	
Sand (Proppant)	CWS	Propping Agent	Silicon Dioxide	14808-60-7	100.00000	8.26020	
DWP-111	CWS	Gel Slurry	No Hazardous Materials	NA	100.00000	0.04380	
DWP-NE1	CWS	Non-Emulsifier	Dimethylcocoamine, bis (chlorethyl)ether, diquatary ammonium salt	68607-28-03	40.00000	0.01720	
			Isopropyl alcohol	67-63-0	40.00000	0.01720	
			Methyl Alcohol	67-56-1	15.00000	0.00640	
			Dimethyldiallylammonium Chloride	7398-69-8	5.00000	0.00210	
DAP-903	CWS	Scale Inhibitor	No Hazardous Materials	NA	100.00000	0.01540	
BioClear 2000	CWS	Biocide	2,2-Dibromo-3-Nitrilopropionamide	10222-01-2	40.00000	0.01040	
DWP-901	CWS	Breaker	Ammonium Persulfate	7727-54-0	95.00000	0.00670	

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DWP-614	CWS	Viscosifier	Polyethylene glycol nonylphenyl ether	9016-45-9	5.00000	0.00650
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Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.

* Total Water Volume sources may include fresh water, produced water, and/or recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)