

PM

March 28, 2014

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

API 47 - 001 - 03239W County Barbour District Pleasant
Quad Philippi Pad Name PHL13HS Field/Pool Name Philippi
Farm name MCCAULEY, RANDALL Well Number PHL13FHS Rework
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 4,341,371.374m Easting 585,243.266m
Landing Point of Curve Northing 4,341,163.384m Easting 584,964.691m
Bottom Hole Northing 4,338,632.614m Easting 586,380.533m

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 02/12/2013 Date drilling commenced 11/30/2011 Date drilling ceased 5/1/2013
Date completion activities began 8/18/2013 Date completion activities ceased 9/10/2013
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 1045' 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

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MAR 31 2014
West Virginia Department of Environmental Protection

Reviewed by:
[Signature]

API 47 - 001 - 03239W Farm name MCCAULEY, RANDALL Well number PHL13FHS Rework

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)

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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"	40'	N	L.S. 81.3 / 40'	N/A	Y
Surface	17 1/2"	13 3/8"	660'	N	J-55 54.5 / 660'	84.25'	Y
Coal	-	-	-	-	-	-	-
Intermediate 1	12 3/8"	9 5/8"	2003'	N	J-55 36 / 2003'	85.85'/167.5'	Y
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	8 3/4"	5 1/2"	17247'	N	P-110 20 / 17247'	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	60.2	Surface	8
Surface	Class A	450	14.6	1.39	634.4	Surface	8
Coal	-	-	-	-	-	-	-
Intermediate 1	Class A	625	15.2	1.26	870.2	Surface	8
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	Class A (Lead) / Class A (Tail)	149 (bbis) / 587 (bbis)	14.5 / 15.0	1.26	5567.3	Surface	24
Tubing	-	-	-	-	-	-	-

Drillers TD (ft) 7617.77' Loggers TD (ft) 7843'

Deepest formation penetrated Lower Marcellus Plug back to (ft) N/A

Plug back procedure N/A

Kick off depth (ft) 4500'

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	8/18/2013	0	0	3	Stage 1 was abandoned
2	8/21/2013	16979	16857	5	Marcellus
3	8/22/2013	16829	16707	5	Marcellus
4	8/22/2013	16679	16557	5	Marcellus
5	8/23/2013	16529	16407	5	Marcellus
6	8/24/2013	16379	16257	5	Marcellus
7	8/25/2013	16229	16107	5	Marcellus
8	8/25/2013	16079	15957	5	Marcellus
9	8/26/2013	15929	15807	5	Marcellus
10	8/26/2013	15779	15657	5	Marcellus
11	8/27/2013	15629	15507	5	Marcellus
12	8/27/2013	15479	15357	5	Marcellus
13	8/27/2013	15329	15207	5	Marcellus
14	8/28/2013	15170	14976	5	Marcellus
15	8/28/2013	14733	14607	5	Marcellus
16	8/28/2013	14579	14457	5	Marcellus
17	8/29/2013	14429	14307	5	Marcellus
18	8/29/2013	14279	14157	5	Marcellus
19	8/29/2013	14129	14007	5	Marcellus
20	8/30/2013	13979	13857	5	Marcellus
21	8/30/2013	13829	13707	5	Marcellus
22	8/31/2013	13679	13557	5	Marcellus
23	8/31/2013	13529	13407	5	Marcellus
24	8/31/2013	13379	13257	5	Marcellus
25	9/1/2013	13229	13107	5	Marcellus
26	9/1/2013	13079	12957	5	Marcellus
27	9/1/2013	12929	12807	5	Marcellus
28	9/2/2013	12779	12657	5	Marcellus
29	9/2/2013	12629	12507	5	Marcellus
30	9/2/2013	12479	12357	5	Marcellus
31	9/2/2013	12329	12207	5	Marcellus
32	9/3/2013	12179	12057	5	Marcellus
33	9/3/2013	12029	11907	5	Marcellus
34	9/3/2013	11879	11757	5	Marcellus

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35	9/4/2013	11729	11607	5	Marcellus
36	9/4/2013	11579	11457	5	Marcellus
37	9/4/2013	11429	11307	5	Marcellus
38	9/4/2013	11279	11157	5	Marcellus
39	9/5/2013	11129	11007	5	Marcellus
40	9/5/2013	10979	10857	5	Marcellus
41	9/5/2013	10829	10707	5	Marcellus
42	9/6/2013	10679	10557	5	Marcellus
43	9/6/2013	10529	10407	5	Marcellus
44	9/6/2013	10379	10257	5	Marcellus
45	9/6/2013	10229	10107	5	Marcellus
46	9/7/2013	10079	9957	5	Marcellus
47	9/7/2013	9929	9807	5	Marcellus
48	9/7/2013	9779	9657	5	Marcellus
49	9/8/2013	9629	9507	5	Marcellus
50	9/8/2013	9479	9357	5	Marcellus
51	9/8/2013	9329	9207	5	Marcellus
52	9/9/2013	9179	9057	5	Marcellus
53	9/9/2013	9029	8907	5	Marcellus
54	9/10/2013	8879	8757	5	Marcellus
55	9/10/2013	8729	8607	5	Marcellus
56	9/10/2013	8579	8457	5	Marcellus
57	9/10/2013	8429	8307	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	8/18/2013	20	7738	8526	4694	0	1307	3105
2	8/21/2013	18.5	7581	8526	6086	0	1373	3623
3	8/22/2013	70.1	8289	7060	4976	200000	5620	3718
4	8/22/2013	68.6	8413	6540	4836	199550	6547	3985
5	8/23/2013	74.8	8331	6868	5100	200450	4924	3453
6	8/24/2013	67.3	8443	6868	5078	201640	5795	3449
7	8/25/2013	81.4	8499	6214	5426	191040	5858	3550
8	8/25/2013	71.2	7836	6159	4908	200480	5065	3476
9	8/26/2013	71.8	8588	6748	5273	194550	5303	3446
10	8/26/2013	66.2	8517	6513	5985	109600	5417	3647
11	8/27/2013	69.7	8399	6543	5577	200850	5313	3593
12	8/27/2013	78.2	8505	6647	5179	200300	4829	3428
13	8/27/2013	75.6	8369	6534	5102	199330	5367	3539
14	8/28/2013	88.4	8818	6438	6229	244850	5791	3607
15	8/28/2013	88	8708	6710	5843	200750	5974	3726
16	8/28/2013	95.6	8721	6547	5993	199700	5239	3628
17	8/29/2013	96	8703	7055	5625	199750	5318	3578
18	8/29/2013	93	8800	6176	5844	200750	5016	3555
19	8/29/2013	91.3	8450	6086	5675	200600	5357	3642
20	8/30/2013	84.2	8577	6488	5814	201400	5046	3603
21	8/30/2013	87	8801	6364	6208	201000	4840	3513
22	8/31/2013	83	8722	6890	6818	200300	4813	3473
23	8/31/2013	87	8729	6809	6042	198900	4849	3459
24	8/31/2013	78.3	8564	7414	6086	199700	4979	3584
25	9/1/2013	93.2	8043	6602	5287	200200	4885	3581
26	9/1/2013	94	8701	6396	6330	203400	4893	3464
27	9/1/2013	98.4	8797	6316	5827	200300	5034	3486
28	9/2/2013	91.8	8507	6726	6086	200150	4994	3496
29	9/2/2013	87	8467	6135	6017	200900	4915	3452
30	9/2/2013	100	8478	6013	6052	202450	4927	3455
31	9/2/2013	96	8457	5832	6081	199700	5018	3579
32	9/3/2013	97.8	8464	6124	6104	201400	5054	3587
33	9/3/2013	85	8640	6525	6033	135000	4298	3390
34	9/3/2013	95.7	8672	6220	6229	199400	5009	3387
35	9/4/2013	89.4	8594	6430	6200	200800	5079	3594
36	9/4/2013	93.4	8687	6419	6459	201750	4919	3510
37	9/4/2013	77.6	7982	6235	6167	200750	4814	3333

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38	9/4/2013	87.8	10327	6143	5854	200300	5152	3401
39	9/5/2013	86.3	7968	6562	6094	201100	4892	3507
40	9/5/2013	85.5	7939	6781	5567	200300	5146	3482
41	9/5/2013	81.1	7765	6143	5726	198950	5200	3490
42	9/6/2013	89.4	7786	6181	5675	197900	5042	3493
43	9/6/2013	89.4	7803	6603	5376	201650	5078	3448
44	9/6/2013	81.1	8038	6510	5372	200300	5093	3327
45	9/6/2013	85.7	7898	6468	5843	163700	4517	6610
46	9/7/2013	77.4	8001	6670	5377	182250	4893	3482
47	9/7/2013	87.2	7913	6258	5643	201850	5115	3492
48	9/7/2013	84.6	7934	6698	5155	201600	5021	3470
49	9/8/2013	85.3	8030	7062	6124	200700	5050	3488
50	9/8/2013	81.9	7981	6411	6144	201200	5092	3521
51	9/8/2013	86	8004	6449	6088	202450	5734	3449
52	9/9/2013	83.4	8072	6577	5954	203250	5240	3361
53	9/9/2013	86.6	8004	6928	6080	202400	5154	3385
54	9/10/2013	76.3	8227	7368	6216	200100	5791	3534
55	9/10/2013	88.6	7980	6584	5483	199300	4947	3490
56	9/10/2013	83.3	8063	7617	5608	200380	4872	3500
57	9/10/2013	87.9	8062	7062	5593	199750	5200	3392

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<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>	
<u>UPPER MARCELLUS</u>	<u>7590'</u> TVD	<u>8133'</u> MD
<u>MIDDLE MARCELLUS</u>	<u>7604'</u>	<u>8160'</u>
_____	_____	_____
_____	_____	_____

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 1000 psi Bottom Hole 5117 psi DURATION OF TEST 148 hrs

OPEN FLOW Gas 13570 mcfpd Oil N/A bpd NGL N/A bpd Water 1160 bpd GAS MEASURED BY Estimated Orifice Pilot

<u>LITHOLOGY/ FORMATION</u>	<u>TOP</u>		<u>BOTTOM</u>		<u>DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H₂S, ETC)</u>
	<u>DEPTH IN FT NAME TVD</u>	<u>DEPTH IN FT TVD</u>	<u>DEPTH IN FT MD</u>	<u>DEPTH IN FT MD</u>	
	<u>0</u>		<u>0</u>		
					See Attached

Please insert additional pages as applicable.

Drilling Contractor Patterson UTI
Address 450 Gears Road Suite 500 City Houston State TX Zip 77067

Logging Company Diversified Mud Logging
Address 440 Route 519 City Eighty Four State PA Zip 15330

Cementing Company CalFrac
Address 2001 Summit View Rd City Smithfield State PA Zip 15478

Stimulating Company CalFrac
Address 2001 Summit View Rd City Smithfield State PA Zip 15478

Please insert additional pages as applicable.

Completed by CNX Gas WV Operations Company, LLC - Drilling and Completions Telephone 304-884-2000
Signature *Steve Spiller* Title Steve Spiller - Completions Manager-Gas WV Date 3/26/14

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

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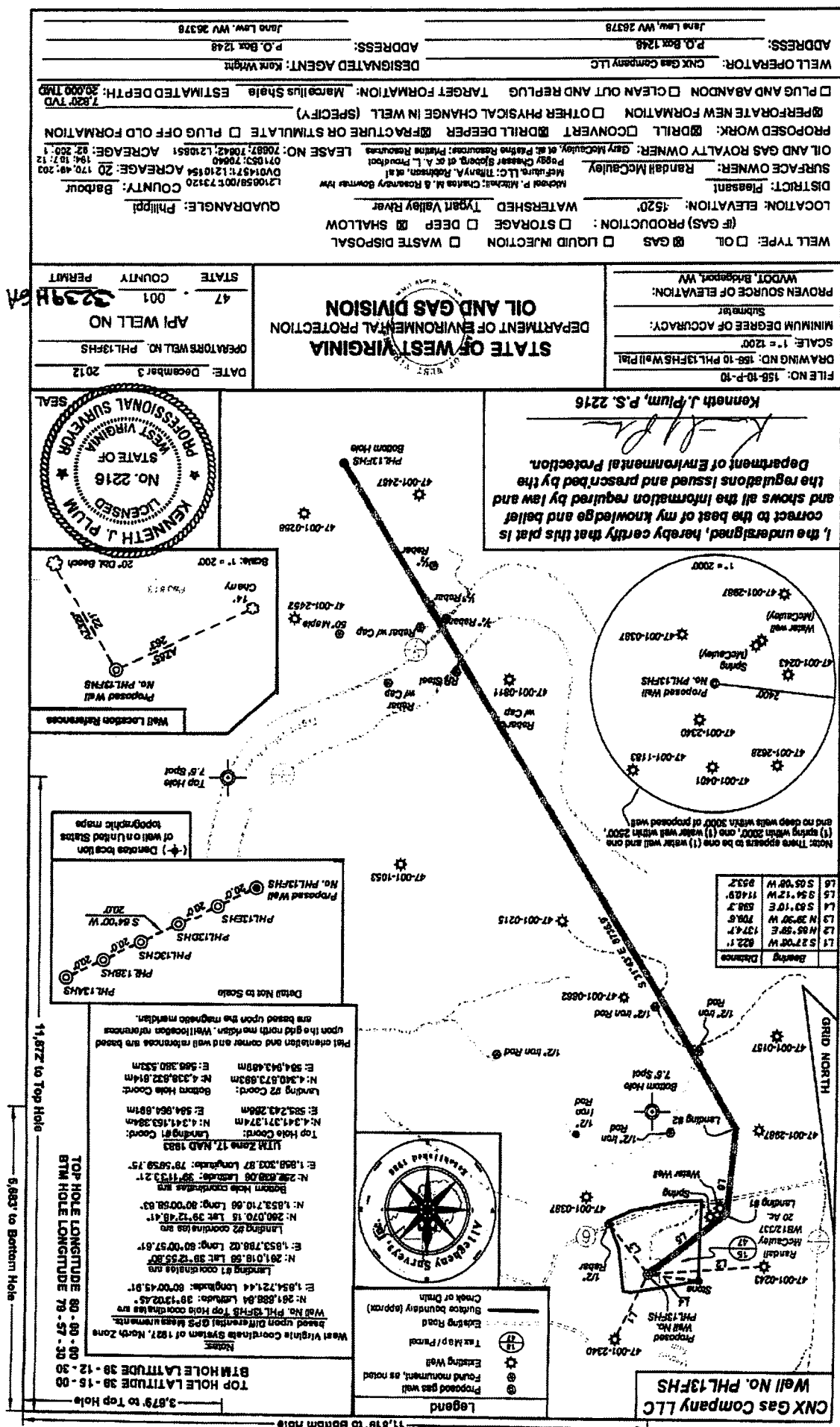
LITHOLOGY / FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY TYPE OF FLUID (FRESHWATER,BRINE,GAS,H2S, ETC)
	DEPTH IN FT TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
FILL	0	30			Brown
SAND/SHALE	30	190			Gray
COAL	190	195			Black
SAND/CLAY	195	230			Red
SAND/SHALE/COAL	230	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	7347	7365	7777	7800	
TULLY LIMESTONE	7365	7422	7800	7875	
HAMILTON SHALE	7422	7590	7875	8133	
UPPER MARCELLUS	7590	7604	8133	8160	
MIDDLE MARCELLUS	7604	7638	8160	8250	
LOWER MARCELLUS	7638	7678	8250		
ONONDAGA LIMESTONE	7678	7692			
HUNTERSVILLE CHERT	7692				
LTD	7843				

PHL13FHS

A5-DRILLED PLM

47-001-03239

04/25/2014



47-001-03239

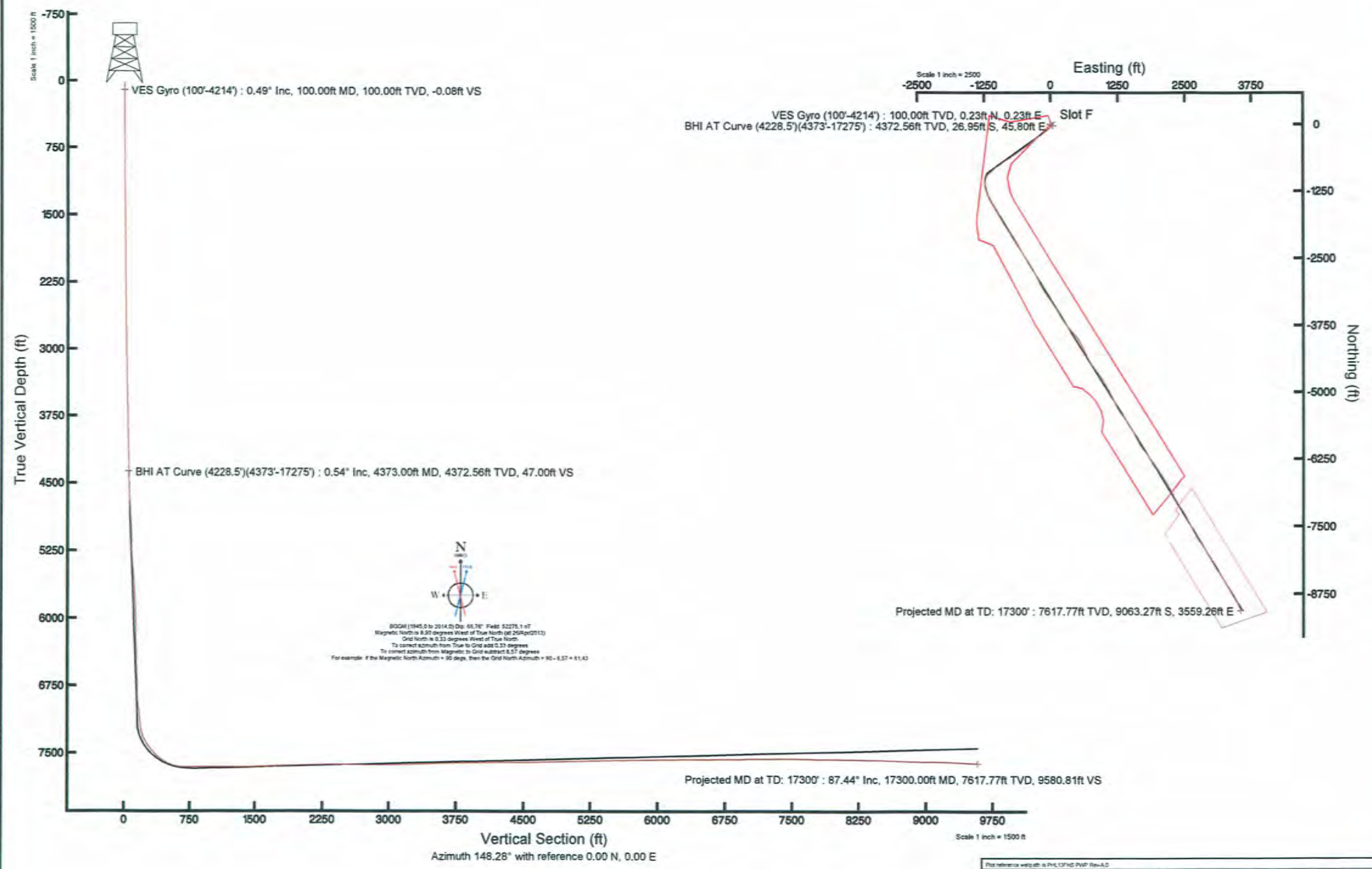
PHL13FHS



CNX GAS COMPANY, LLC

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

Slot: Slot F
Well: PHL13FHS
Wellbore: PHL13FHS PWB



This reference wellpath is PHL13FHS PWB Rev-0.0	Grid System: NAD2011 Lambert Vertical Virginia SP, Northern Zone (4701), US feet
True vertical depths are referenced to Patterson 334 (RT)	North Reference: Grid north
Measured depths are referenced to Patterson 334 (RT)	Scale: True distance
Patterson 334 (RT) to Mean Sea Level: 1051.6 feet	Depths are in feet
Mean Sea Level to Mud line (at Slot F): 0 feet	Created by: tomhuett on 30Apr2013
Coordinates are in feet referenced to Slot	

1-03239 W



Actual Wellpath Report

PHL13FHS AWP Proj: 17300'MD
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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot F
Area	Barbour County, WV	Well	PHL13FHS
Field	Barbour	Wellbore	PHL13FHS AWB
Facility	PHL13 Pad		

REPORT SETUP INFORMATION

Projection System	NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet	Software System	WellArchitect® 3.0.3
North Reference	Grid	User	Thomsuzc
Scale	0.999966	Report Generated	30/Apr/2013 at 10:58
Convergence at slot	0.33° West	Database/Source file	WA_Eastern_US/PHL13FHS_AWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-44.44	-89.63	1854721.40	261686.63	39°13'02.446"N	80°00'45.905"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	1551.60ft
Horizontal Reference Pt	Slot	Patterson 331 (RT) to Mean Sea Level	1551.60ft
Vertical Reference Pt	Patterson 331 (RT)	Patterson 331 (RT) to Mud Line at Slot (Slot F)	1551.60ft
MD Reference Pt	Patterson 331 (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	148.28°



Actual Wellpath Report

PHL13FHS AWP Proj: 17300 MD

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REFERENCE WELLPATH IDENTIFICATION			
Operator	CNX GAS COMPANY, LLC	Slot	Slot F
Area	Barbour County, WV	Well	PHL13FHS
Field	Barbour	Wellbore	PHL13FHS AWB
Facility	PHL13 Pad		

WELLPATH DATA (193 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	44.180	0.00	0.00	0.00	0.00	1854721.40	261686.63	39°13'02.446"N	80°00'45.905"W	0.00	0.000	0.00	0.00	0.00
24.50	0.000	44.180	24.50	0.00	0.00	0.00	1854721.40	261686.63	39°13'02.446"N	80°00'45.905"W	0.00	0.000	0.00	0.00	0.00
114.50	0.590	44.180	114.50	-0.11	0.33	0.32	1854721.73	261686.96	39°13'02.449"N	80°00'45.901"W	0.46	44.180	0.66	0.66	0.00
214.50	0.300	64.260	214.50	-0.21	0.82	0.92	1854722.32	261687.45	39°13'02.454"N	80°00'45.894"W	1.23	48.380	0.32	-0.29	20.08
314.50	0.650	68.160	314.49	-0.09	1.14	1.68	1854723.08	261687.77	39°13'02.457"N	80°00'45.884"W	2.03	55.840	0.35	0.35	3.90
414.50	0.390	80.380	414.49	0.14	1.41	2.54	1854723.94	261688.04	39°13'02.460"N	80°00'45.873"W	2.91	61.020	0.28	-0.26	12.22
514.50	0.330	80.560	514.49	0.38	1.51	3.16	1854724.56	261688.14	39°13'02.461"N	80°00'45.865"W	3.50	64.442	0.06	-0.06	0.18
614.50	0.160	80.170	614.48	0.54	1.58	3.58	1854724.99	261688.21	39°13'02.462"N	80°00'45.860"W	3.92	66.165	0.17	-0.17	-0.39
714.50	0.530	83.500	714.48	0.79	1.66	4.18	1854725.58	261688.29	39°13'02.462"N	80°00'45.853"W	4.50	68.351	0.37	0.37	3.33
814.50	0.430	80.990	814.48	1.13	1.77	5.01	1854726.41	261688.40	39°13'02.464"N	80°00'45.842"W	5.31	70.540	0.10	-0.10	-2.51
914.50	0.750	80.150	914.47	1.52	1.94	6.03	1854727.43	261688.57	39°13'02.465"N	80°00'45.829"W	6.33	72.145	0.32	0.32	-0.84
1014.50	0.470	92.000	1014.47	1.99	2.04	7.08	1854728.48	261688.67	39°13'02.466"N	80°00'45.816"W	7.37	73.937	0.31	-0.28	11.85
1114.50	0.740	111.170	1114.46	2.73	1.79	8.09	1854729.50	261688.42	39°13'02.464"N	80°00'45.803"W	8.29	77.520	0.33	0.27	19.17
1214.50	0.860	110.170	1214.45	3.84	1.30	9.40	1854730.80	261687.93	39°13'02.459"N	80°00'45.786"W	9.49	82.130	0.12	0.12	-1.00
1314.50	0.830	110.040	1314.44	5.00	0.79	10.78	1854732.19	261687.42	39°13'02.454"N	80°00'45.769"W	10.81	85.798	0.03	-0.03	-0.13
1414.50	0.370	107.660	1414.44	5.81	0.45	11.77	1854733.17	261687.08	39°13'02.451"N	80°00'45.756"W	11.78	87.830	0.46	-0.46	-2.38
1514.50	0.550	106.040	1514.43	6.41	0.22	12.54	1854733.94	261686.85	39°13'02.449"N	80°00'45.746"W	12.54	89.015	0.18	0.18	-1.62
1614.50	0.540	105.330	1614.43	7.11	-0.04	13.46	1854734.86	261686.59	39°13'02.446"N	80°00'45.735"W	13.46	90.177	0.01	-0.01	-0.71
1714.50	0.390	105.600	1714.42	7.71	-0.26	14.24	1854735.64	261686.37	39°13'02.444"N	80°00'45.725"W	14.24	91.037	0.15	-0.15	0.27
1814.50	0.280	106.030	1814.42	8.14	-0.42	14.80	1854736.20	261686.22	39°13'02.442"N	80°00'45.717"W	14.81	91.613	0.11	-0.11	0.43
1914.50	0.280	133.260	1914.42	8.55	-0.65	15.21	1854736.62	261685.98	39°13'02.440"N	80°00'45.712"W	15.23	92.453	0.13	0.00	27.23
2014.50	0.600	133.800	2014.42	9.30	-1.18	15.77	1854737.17	261685.45	39°13'02.435"N	80°00'45.705"W	15.81	94.285	0.32	0.32	0.54
2114.50	0.370	142.420	2114.42	10.12	-1.80	16.35	1854737.75	261684.83	39°13'02.429"N	80°00'45.698"W	16.44	96.284	0.24	-0.23	8.62
2214.50	0.420	144.070	2214.41	10.81	-2.35	16.76	1854738.16	261684.28	39°13'02.423"N	80°00'45.692"W	16.92	97.991	0.05	0.05	1.65
2314.50	0.660	144.390	2314.41	11.75	-3.12	17.31	1854738.71	261683.51	39°13'02.416"N	80°00'45.685"W	17.59	100.211	0.24	0.24	0.32
2414.50	0.840	124.510	2414.40	13.00	-4.00	18.25	1854739.65	261682.63	39°13'02.407"N	80°00'45.673"W	18.68	102.367	0.31	0.18	-19.88
2514.50	1.050	124.640	2514.39	14.51	-4.94	19.61	1854741.01	261681.70	39°13'02.398"N	80°00'45.656"W	20.22	104.135	0.21	0.21	0.13
2614.50	0.820	128.410	2614.37	16.02	-5.90	20.92	1854742.32	261680.73	39°13'02.389"N	80°00'45.639"W	21.74	105.757	0.24	-0.23	3.77
2714.50	0.990	124.810	2714.36	17.49	-6.84	22.19	1854743.59	261679.79	39°13'02.379"N	80°00'45.623"W	23.22	107.133	0.18	0.17	-3.60
2814.50	0.850	129.040	2814.35	18.98	-7.80	23.48	1854744.88	261678.83	39°13'02.370"N	80°00'45.607"W	24.74	108.381	0.16	-0.14	4.23



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REFERENCE WELLPATH IDENTIFICATION			
Operator	CNX GAS COMPANY, LLC	Slot	Slot F
Area	Barbour County, WV	Well	PHL13FHS
Field	Barbour	Wellbore	PHL13FHS AWB
Facility	PHL13 Pad		

WELLPATH DATA (193 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	0.830	133.000	2914.34	20.38	-8.76	24.58	1854745.98	261677.87	39°13'02.361"N	80°00'45.593"W	26.10	109.618	0.06	-0.02	3.96
3014.50	0.810	133.800	3014.33	21.76	-9.74	25.62	1854747.02	261676.89	39°13'02.351"N	80°00'45.579"W	27.41	110.825	0.02	-0.02	0.80
3114.50	1.050	134.350	3114.31	23.33	-10.87	26.79	1854748.19	261675.76	39°13'02.340"N	80°00'45.564"W	28.91	112.096	0.24	0.24	0.55
3214.50	0.970	130.080	3214.30	25.03	-12.06	28.09	1854749.49	261674.57	39°13'02.328"N	80°00'45.548"W	30.57	113.237	0.11	-0.08	-4.27
3314.50	1.000	129.590	3314.28	26.66	-13.16	29.41	1854750.81	261673.47	39°13'02.317"N	80°00'45.531"W	32.22	114.110	0.03	0.03	-0.49
3414.50	1.310	129.150	3414.26	28.56	-14.44	30.97	1854752.37	261672.19	39°13'02.305"N	80°00'45.511"W	34.17	114.998	0.31	0.31	-0.44
3514.50	1.190	132.490	3514.24	30.64	-15.86	32.62	1854754.02	261670.77	39°13'02.291"N	80°00'45.490"W	36.27	115.932	0.14	-0.12	3.34
3614.50	1.270	132.810	3614.22	32.71	-17.32	34.20	1854755.60	261669.32	39°13'02.277"N	80°00'45.470"W	38.33	116.855	0.08	0.08	0.32
3714.50	1.170	132.320	3714.19	34.76	-18.76	35.77	1854757.17	261667.88	39°13'02.262"N	80°00'45.450"W	40.39	117.674	0.10	-0.10	-0.49
3814.50	0.970	131.100	3814.18	36.55	-20.00	37.16	1854758.56	261666.63	39°13'02.250"N	80°00'45.432"W	42.20	118.291	0.20	-0.20	-1.22
3914.50	1.260	130.270	3914.16	38.40	-21.27	38.64	1854760.04	261665.36	39°13'02.238"N	80°00'45.413"W	44.10	118.831	0.29	0.29	-0.83
4014.50	1.260	126.580	4014.13	40.47	-22.63	40.36	1854761.76	261664.00	39°13'02.224"N	80°00'45.391"W	46.27	119.285	0.08	0.00	-3.69
4114.50	1.270	126.920	4114.11	42.53	-23.95	42.13	1854763.53	261662.68	39°13'02.211"N	80°00'45.369"W	48.46	119.624	0.01	0.01	0.34
4228.50	1.240	129.100	4228.08	44.87	-25.49	44.09	1854765.50	261661.14	39°13'02.196"N	80°00'45.343"W	50.93	120.033	0.05	-0.03	1.91
4373.00	0.540	134.000	4372.56	47.00	-26.95	45.80	1854767.20	261659.68	39°13'02.182"N	80°00'45.322"W	53.14	120.476	0.49	-0.48	3.39
4414.00	0.930	137.080	4413.56	47.52	-27.33	46.16	1854767.56	261659.30	39°13'02.178"N	80°00'45.317"W	53.65	120.626	0.96	0.95	7.51
4466.00	5.660	222.550	4465.47	48.63	-29.53	44.72	1854766.12	261657.10	39°13'02.156"N	80°00'45.335"W	53.59	123.440	10.89	9.10	164.37
4516.00	11.290	232.390	4514.91	49.80	-34.34	39.17	1854760.57	261652.30	39°13'02.109"N	80°00'45.405"W	52.09	131.241	11.59	11.26	19.68
4560.00	16.240	233.230	4557.63	50.78	-40.65	30.82	1854752.22	261645.98	39°13'02.046"N	80°00'45.511"W	51.01	142.832	11.26	11.25	1.91
4655.00	25.200	228.150	4646.40	55.52	-62.14	5.06	1854726.46	261624.49	39°13'01.832"N	80°00'45.837"W	62.35	175.345	9.61	9.43	-5.35
4751.00	25.700	227.280	4733.09	63.09	-89.90	-25.46	1854695.95	261596.74	39°13'01.556"N	80°00'46.222"W	93.43	195.811	0.65	0.52	-0.91
4845.00	25.700	232.990	4817.80	68.86	-116.00	-56.71	1854664.69	261570.64	39°13'01.296"N	80°00'46.618"W	129.12	206.054	2.63	0.00	6.07
4939.00	25.700	233.850	4902.50	72.31	-140.29	-89.45	1854631.96	261546.34	39°13'01.054"N	80°00'47.032"W	166.38	212.520	0.40	0.00	0.91
5033.00	27.710	231.320	4986.47	76.53	-165.98	-122.97	1854598.44	261520.66	39°13'00.798"N	80°00'47.456"W	206.57	216.534	2.46	2.14	-2.69
5127.00	29.380	233.890	5069.05	80.95	-193.23	-158.66	1854562.75	261493.41	39°13'00.527"N	80°00'47.907"W	250.02	219.390	2.20	1.78	2.73
5221.00	30.620	239.420	5150.47	82.23	-219.00	-197.91	1854523.50	261467.64	39°13'00.270"N	80°00'48.404"W	295.18	222.104	3.22	1.32	5.88
5316.00	30.140	237.050	5232.43	82.27	-244.28	-238.75	1854482.66	261442.36	39°13'00.018"N	80°00'48.921"W	341.58	224.344	1.36	-0.51	-2.49
5411.00	29.650	230.990	5314.81	85.76	-272.05	-277.04	1854444.38	261414.59	39°12'59.741"N	80°00'49.406"W	388.28	225.520	3.22	-0.52	-6.38
5505.00	26.670	226.730	5397.68	92.94	-301.16	-310.47	1854410.94	261385.48	39°12'59.452"N	80°00'49.828"W	432.54	225.873	3.82	-3.17	-4.53
5601.00	26.950	228.060	5483.36	101.11	-330.47	-342.34	1854379.07	261356.18	39°12'59.160"N	80°00'50.231"W	475.82	226.011	0.69	0.29	1.39



Actual Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot F
Area	Barbour County, WV	Well	PHL13FHS
Field	Barbour	Wellbore	PHL13FHS AWB
Facility	PHL13 Pad		

WELLPATH DATA (193 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]
5694.00	31.380	231.860	5564.56	107.56	-359.52	-377.08	1854344.33	261327.12	39°12'58.871"N	80°00'50.670"W	521.01	226.366	5.16	4.76	4.09
5786.00	32.290	232.800	5642.72	112.59	-389.17	-415.50	1854305.92	261297.47	39°12'58.576"N	80°00'51.156"W	569.29	226.874	1.13	0.99	1.02
5882.00	31.290	232.390	5724.31	117.59	-419.89	-455.67	1854265.75	261266.76	39°12'58.270"N	80°00'51.664"W	619.63	227.340	1.07	-1.04	-0.43
5978.00	30.210	234.650	5806.82	121.68	-449.08	-495.12	1854226.30	261237.57	39°12'57.979"N	80°00'52.163"W	668.45	227.792	1.65	-1.13	2.35
6072.00	29.690	235.990	5888.27	124.11	-475.79	-533.71	1854187.71	261210.86	39°12'57.713"N	80°00'52.652"W	715.00	228.284	0.90	-0.55	1.43
6166.00	29.630	232.740	5969.95	127.28	-502.88	-571.50	1854149.92	261183.77	39°12'57.443"N	80°00'53.130"W	761.25	228.655	1.71	-0.06	-3.46
6260.00	29.880	231.730	6051.56	132.20	-531.45	-608.38	1854113.04	261155.20	39°12'57.159"N	80°00'53.596"W	807.81	228.861	0.60	0.27	-1.07
6354.00	30.630	239.360	6132.79	134.42	-558.16	-647.38	1854074.04	261128.49	39°12'56.892"N	80°00'54.090"W	854.78	229.233	4.16	0.80	8.12
6449.00	32.650	238.920	6213.66	133.67	-583.73	-690.16	1854031.27	261102.92	39°12'56.637"N	80°00'54.632"W	903.91	229.776	2.14	2.13	-0.46
6543.00	32.560	231.190	6292.88	136.51	-612.69	-731.60	1853989.83	261073.97	39°12'56.349"N	80°00'55.156"W	954.27	230.055	4.43	-0.10	-8.22
6636.00	32.750	235.760	6371.20	140.71	-642.53	-771.90	1853949.53	261044.13	39°12'56.052"N	80°00'55.666"W	1004.33	230.226	2.66	0.20	4.91
6731.00	30.610	241.420	6452.05	140.51	-668.57	-814.40	1853907.03	261018.09	39°12'55.792"N	80°00'56.204"W	1053.67	230.616	3.85	-2.25	5.96
6825.00	29.320	235.180	6533.51	140.45	-693.16	-854.32	1853867.11	260993.49	39°12'55.546"N	80°00'56.709"W	1100.16	230.945	3.59	-1.37	-6.64
6919.00	27.010	230.070	6616.38	144.74	-720.01	-889.59	1853831.84	260966.64	39°12'55.279"N	80°00'57.155"W	1144.46	231.014	3.55	-2.46	-5.44
7014.00	28.420	232.770	6700.49	149.99	-747.54	-924.14	1853797.30	260939.12	39°12'55.005"N	80°00'57.592"W	1188.63	231.030	1.99	1.48	2.84
7111.00	33.550	240.460	6783.65	151.19	-774.75	-965.88	1853755.56	260911.91	39°12'54.734"N	80°00'58.121"W	1238.21	231.266	6.67	5.29	7.93
7204.00	30.480	238.320	6862.50	150.20	-799.81	-1008.32	1853713.11	260886.85	39°12'54.484"N	80°00'58.658"W	1287.02	231.578	3.52	-3.30	-2.30
7298.00	30.740	225.690	6943.48	155.42	-829.15	-1045.84	1853675.60	260857.52	39°12'54.192"N	80°00'59.133"W	1334.64	231.593	6.84	0.28	-13.44
7393.00	32.210	224.340	7024.51	166.82	-864.22	-1080.91	1853640.53	260822.45	39°12'53.843"N	80°00'59.576"W	1383.92	231.357	1.72	1.55	-1.42
7487.00	32.180	229.340	7104.07	176.74	-898.45	-1117.42	1853604.02	260788.22	39°12'53.502"N	80°01'00.037"W	1433.82	231.199	2.83	-0.03	5.32
7581.00	32.190	231.530	7183.62	183.58	-930.34	-1156.01	1853565.43	260756.33	39°12'53.185"N	80°01'00.525"W	1483.88	231.174	1.24	0.01	2.33
7629.00	31.520	224.110	7224.41	188.15	-947.31	-1174.76	1853546.68	260739.36	39°12'53.016"N	80°01'00.762"W	1509.12	231.118	8.27	-1.40	-15.46
7673.00	33.230	213.780	7261.60	195.97	-965.60	-1189.48	1853531.96	260721.07	39°12'52.835"N	80°01'00.948"W	1532.08	230.931	13.14	3.89	-23.48
7724.00	34.280	204.520	7304.03	209.76	-990.30	-1203.22	1853518.22	260696.37	39°12'52.590"N	80°01'01.120"W	1558.35	230.544	10.29	2.06	-18.16
7768.00	35.730	196.780	7340.09	225.17	-1013.89	-1212.08	1853509.37	260672.78	39°12'52.356"N	80°01'01.231"W	1580.22	230.088	10.61	3.30	-17.59
7809.00	38.880	191.290	7372.70	242.52	-1037.98	-1218.06	1853503.39	260648.69	39°12'52.118"N	80°01'01.305"W	1600.33	229.564	11.17	7.68	-13.39
7863.00	43.660	190.220	7413.28	268.79	-1072.96	-1224.69	1853496.76	260613.71	39°12'51.772"N	80°01'01.387"W	1628.22	228.778	8.95	8.85	-1.98
7911.00	44.810	186.650	7447.68	294.38	-1106.08	-1229.59	1853491.86	260580.59	39°12'51.444"N	80°01'01.447"W	1653.87	228.027	5.71	2.40	-7.44
7958.00	45.430	178.410	7480.87	321.87	-1139.29	-1231.04	1853490.41	260547.38	39°12'51.116"N	80°01'01.463"W	1677.33	227.217	12.49	1.32	-17.53
8004.00	46.370	170.190	7512.91	351.51	-1172.10	-1227.75	1853493.70	260514.57	39°12'50.791"N	80°01'01.419"W	1697.41	226.328	12.99	2.04	-17.87

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PHL13FHS

REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot F
Area	Barbour County, WV	Well	PHL13FHS
Field	Barbour	Wellbore	PHL13FHS AWB
Facility	PHL13 Pad		

WELLPATH DATA (193 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [ft]	Grid North [ft]	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
8053.00	50.670	164.840	7545.37	386.16	-1207.90	-1219.76	1853501.68	260478.77	39°12'50.438"N	80°01'01.315"W	1716.64	225.280	11.99	8.78
8097.00	56.160	162.160	7571.59	420.24	-1241.75	-1209.71	1853511.74	260444.93	39°12'50.104"N	80°01'01.184"W	1733.59	224.251	13.40	12.48
8147.00	61.140	159.970	7597.59	461.87	-1282.12	-1195.83	1853525.61	260404.56	39°12'49.706"N	80°01'01.005"W	1753.24	223.006	10.64	9.96
8194.00	65.680	158.750	7618.63	503.11	-1321.43	-1181.02	1853540.43	260365.25	39°12'49.318"N	80°01'00.814"W	1772.28	221.788	9.93	9.66
8240.00	71.270	156.640	7635.50	545.31	-1361.00	-1164.77	1853556.68	260325.68	39°12'48.928"N	80°01'00.605"W	1791.37	220.558	12.88	12.15
8289.00	78.000	154.200	7648.48	592.16	-1403.93	-1145.11	1853576.33	260282.75	39°12'48.505"N	80°01'00.352"W	1811.71	219.202	14.55	13.73
8350.00	85.900	149.770	7657.02	652.37	-1457.19	-1116.75	1853604.69	260229.50	39°12'47.980"N	80°00'59.988"W	1835.90	217.466	14.81	12.95
8429.00	90.490	146.940	7659.51	731.30	-1524.38	-1075.34	1853646.10	260162.31	39°12'47.318"N	80°00'59.457"W	1865.50	215.200	6.82	5.81
8523.00	91.170	149.250	7658.14	825.28	-1604.17	-1025.67	1853695.77	260082.52	39°12'46.533"N	80°00'58.820"W	1904.03	212.594	2.56	0.72
8618.00	90.030	149.680	7657.15	920.26	-1685.98	-977.41	1853744.03	260000.71	39°12'45.727"N	80°00'58.201"W	1948.81	210.102	1.28	0.45
8712.00	89.820	149.000	7657.27	1014.24	-1766.84	-929.47	1853791.97	259919.85	39°12'44.930"N	80°00'57.586"W	1996.41	207.747	0.76	-0.22
8808.00	89.880	148.420	7657.52	1110.24	-1848.88	-879.61	1853841.82	259837.82	39°12'44.122"N	80°00'56.946"W	2047.46	205.443	0.61	-0.06
8902.00	89.820	147.050	7657.77	1204.23	-1928.36	-829.43	1853892.00	259758.34	39°12'43.339"N	80°00'56.303"W	2099.18	203.274	1.46	-0.06
8996.00	90.370	148.410	7657.61	1298.22	-2007.84	-779.25	1853942.18	259678.86	39°12'42.557"N	80°00'55.660"W	2153.75	201.211	1.56	0.59
9091.00	90.280	148.960	7657.07	1393.22	-2089.00	-729.87	1853991.56	259597.71	39°12'41.757"N	80°00'55.026"W	2212.83	199.259	0.59	-0.09
9185.00	91.420	147.950	7655.68	1487.20	-2169.10	-680.70	1854040.73	259517.61	39°12'40.969"N	80°00'54.396"W	2273.40	197.423	1.62	-1.07
9279.00	91.690	146.170	7653.13	1581.16	-2248.22	-630.02	1854091.40	259438.49	39°12'40.189"N	80°00'53.746"W	2334.83	195.654	1.29	-1.26
9374.00	91.540	146.060	7650.45	1676.07	-2327.33	-577.49	1854143.93	259359.38	39°12'39.410"N	80°00'53.073"W	2397.91	193.936	0.76	-0.16
9467.00	92.530	144.550	7647.15	1768.88	-2403.75	-524.59	1854196.83	259282.97	39°12'38.658"N	80°00'51.731"W	2460.32	192.311	1.94	-1.06
9561.00	92.620	148.400	7642.92	1862.72	-2482.01	-472.74	1854248.68	259204.71	39°12'37.888"N	80°00'51.076"W	2526.63	190.784	4.09	0.10
9656.00	91.510	146.450	7639.50	1957.64	-2562.01	-421.62	1854299.79	259124.71	39°12'37.100"N	80°00'51.076"W	2596.47	189.345	2.36	-1.17
9750.00	91.600	148.160	7636.95	2051.59	-2641.09	-370.87	1854350.55	259045.64	39°12'36.321"N	80°00'50.425"W	2667.00	187.993	1.82	0.10
9845.00	90.710	151.050	7635.03	2146.53	-2723.00	-322.82	1854398.60	258963.73	39°12'35.514"N	80°00'49.809"W	2742.07	186.761	3.18	-0.94
9940.00	90.920	151.920	7633.68	2241.38	-2806.47	-277.47	1854443.94	258880.26	39°12'34.692"N	80°00'49.227"W	2820.15	185.646	0.94	0.22
10034.00	90.220	156.610	7632.75	2334.83	-2891.12	-236.67	1854484.74	258795.62	39°12'33.857"N	80°00'48.702"W	2900.79	184.680	5.04	-0.74
10129.00	90.430	152.330	7632.21	2429.25	-2976.82	-195.74	1854525.67	258709.92	39°12'33.013"N	80°00'48.176"W	2983.25	183.762	4.51	0.22
10223.00	90.030	149.270	7631.83	2523.15	-3058.87	-149.88	1854571.52	258627.88	39°12'32.204"N	80°00'47.588"W	3062.54	182.805	3.28	-0.43
10316.00	89.940	148.050	7631.86	2616.15	-3138.29	-101.51	1854619.89	258548.45	39°12'31.422"N	80°00'46.968"W	3139.94	181.853	1.32	-0.10
10410.00	88.830	143.650	7632.87	2710.03	-3216.06	-48.76	1854672.64	258470.69	39°12'30.656"N	80°00'46.292"W	3216.43	180.869	4.83	-1.18
10505.00	88.980	145.330	7634.68	2804.80	-3293.38	6.41	1854727.81	258393.37	39°12'29.895"N	80°00'45.585"W	3293.38	179.889	1.78	0.16



Actual Wellpath Report

PHL13FHS AWP Proj: 17300'MD

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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot F
Area	Barbour County, WV	Well	PHL13FHS
Field	Barbour	Wellbore	PHL13FHS AWB
Facility	PHL13 Pad		

WELLPATH DATA (193 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]
10601.00	88.800	145.510	7636.54	2900.67	-3372.40	60.88	1854782.28	258314.35	39°12'29.117"N	80°00'44.888"W	3372.95	178.966	0.27	-0.19	0.19
10696.00	89.940	147.940	7637.59	2995.62	-3451.81	112.99	1854834.39	258234.94	39°12'28.335"N	80°00'44.220"W	3453.66	178.125	2.83	1.20	2.56
10790.00	91.020	151.440	7636.80	3089.57	-3532.95	160.43	1854881.82	258153.81	39°12'27.536"N	80°00'43.611"W	3536.59	177.400	3.90	1.15	3.72
10884.00	91.170	148.470	7635.00	3183.50	-3614.29	207.48	1854928.87	258072.47	39°12'26.735"N	80°00'43.008"W	3620.24	176.715	3.16	0.16	-3.16
10977.00	91.820	143.870	7632.57	3276.38	-3691.50	259.22	1854980.61	257995.26	39°12'25.975"N	80°00'42.345"W	3700.59	175.983	4.99	0.70	-4.95
11071.00	91.720	142.550	7629.67	3369.97	-3766.74	315.49	1855036.88	257920.03	39°12'25.234"N	80°00'41.625"W	3779.93	175.212	1.41	-0.11	-1.40
11167.00	94.190	136.770	7624.72	3464.71	-3839.78	377.51	1855098.90	257846.99	39°12'24.516"N	80°00'40.831"W	3858.30	174.385	6.54	2.57	-6.02
11263.00	92.890	137.990	7618.79	3558.79	-3910.29	442.39	1855163.78	257776.48	39°12'23.823"N	80°00'40.002"W	3935.23	173.545	1.86	-1.35	1.27
11358.00	89.910	144.920	7616.47	3653.02	-3984.52	501.52	1855222.91	257702.26	39°12'23.092"N	80°00'39.246"W	4015.96	172.826	7.94	-3.14	7.29
11452.00	91.230	152.610	7615.53	3746.94	-4064.82	550.23	1855271.61	257621.95	39°12'22.301"N	80°00'38.621"W	4101.90	172.291	8.30	1.40	8.18
11547.00	90.920	152.040	7613.75	3841.69	-4148.94	594.34	1855315.72	257537.84	39°12'21.472"N	80°00'38.055"W	4191.30	171.848	0.68	-0.33	-0.60
11641.00	90.920	154.760	7612.24	3935.29	-4232.97	636.42	1855357.80	257453.81	39°12'20.644"N	80°00'37.514"W	4280.55	171.450	2.89	0.00	2.89
11735.00	90.890	153.370	7610.75	4028.80	-4317.49	677.53	1855398.91	257369.29	39°12'19.811"N	80°00'36.986"W	4370.33	171.082	1.48	-0.03	-1.48
11830.00	90.800	151.890	7609.35	4123.52	-4401.85	721.20	1855442.57	257284.94	39°12'18.980"N	80°00'36.425"W	4460.54	170.695	1.56	-0.09	-1.56
11924.00	90.770	145.540	7608.06	4217.46	-4482.13	769.98	1855491.35	257204.66	39°12'18.189"N	80°00'35.799"W	4547.79	170.252	6.75	-0.03	-6.76
12019.00	89.850	144.180	7607.55	4312.28	-4559.81	824.66	1855546.03	257126.98	39°12'17.424"N	80°00'35.099"W	4633.78	169.749	1.73	-0.97	-1.43
12112.00	90.090	142.590	7607.60	4404.94	-4634.46	880.12	1855601.49	257052.34	39°12'16.690"N	80°00'34.389"W	4717.29	169.247	1.73	0.26	-1.71
12207.00	90.710	147.690	7606.93	4499.76	-4712.38	934.40	1855655.77	256974.42	39°12'15.923"N	80°00'33.694"W	4804.13	168.784	5.41	0.65	5.37
12302.00	91.170	149.440	7605.37	4594.74	-4793.43	983.94	1855705.31	256893.38	39°12'15.124"N	80°00'33.059"W	4893.37	168.400	1.90	0.48	1.84
12396.00	91.510	148.990	7603.18	4688.71	-4874.16	1032.04	1855753.40	256812.65	39°12'14.329"N	80°00'32.442"W	4982.22	168.045	0.60	0.36	-0.48
12487.00	91.110	150.530	7601.10	4779.65	-4952.75	1077.85	1855799.22	256734.06	39°12'13.555"N	80°00'31.855"W	5068.68	167.722	1.75	-0.44	1.69
12585.00	91.420	153.050	7598.93	4877.43	-5039.08	1124.16	1855845.53	256647.73	39°12'12.704"N	80°00'31.260"W	5162.95	167.424	2.59	0.32	2.57
12679.00	91.450	155.170	7596.58	4970.91	-5123.62	1165.19	1855886.55	256563.20	39°12'11.871"N	80°00'30.733"W	5254.44	167.188	2.25	0.03	2.26
12774.00	91.020	155.560	7594.53	5065.16	-5209.95	1204.78	1855926.14	256476.87	39°12'11.020"N	80°00'30.224"W	5347.44	166.979	0.61	-0.45	0.41
12870.00	91.630	152.390	7592.31	5160.65	-5296.18	1246.89	1855968.25	256390.64	39°12'10.170"N	80°00'29.683"W	5440.98	166.752	3.36	0.64	-3.30
12964.00	90.950	146.120	7590.19	5254.57	-5376.91	1294.91	1856016.26	256309.92	39°12'09.375"N	80°00'29.067"W	5530.64	166.459	6.71	-0.72	-6.67
13058.00	91.020	142.070	7588.57	5348.28	-5453.02	1350.01	1856071.37	256233.81	39°12'08.626"N	80°00'28.362"W	5617.65	166.095	4.31	0.07	-4.31
13152.00	90.890	144.300	7587.01	5441.89	-5528.26	1406.33	1856127.68	256158.57	39°12'07.885"N	80°00'27.641"W	5704.33	165.727	2.38	-0.14	2.37
13247.00	90.920	146.220	7585.51	5536.75	-5606.31	1460.46	1856181.81	256080.52	39°12'07.117"N	80°00'26.948"W	5793.42	165.399	2.02	0.03	2.02
13342.00	90.890	150.930	7584.01	5631.71	-5687.34	1509.97	1856231.32	255999.49	39°12'06.318"N	80°00'26.313"W	5884.38	165.131	4.96	-0.03	4.96



Actual Wellpath Report

PHL13FHS AWP Proj: 17300'MD
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REFERENCE WELLPATH IDENTIFICATION

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WELLPATH DATA (193 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]
13436.00	90.920	153.830	7582.52	5725.44	-5770.61	1553.54	1856274.88	255916.23	39°12'05.498"N	80°00'25.754"W	5976.07	164.932	3.08	0.03	3.09
13531.00	90.920	153.450	7581.00	5820.02	-5855.72	1595.71	1856317.06	255831.12	39°12'04.659"N	80°00'25.212"W	6069.25	164.757	0.40	0.00	-0.40
13625.00	90.920	151.610	7579.49	5913.74	-5939.11	1639.06	1856360.41	255747.73	39°12'03.837"N	80°00'24.655"W	6161.13	164.572	1.96	0.00	-1.96
13720.00	90.950	147.680	7577.94	6008.68	-6021.06	1687.06	1856408.40	255665.79	39°12'03.030"N	80°00'24.040"W	6252.95	164.348	4.14	0.03	-4.14
13812.00	90.430	141.800	7576.83	6100.46	-6096.14	1740.14	1856461.48	255590.71	39°12'02.291"N	80°00'23.360"W	6339.64	164.069	6.42	-0.57	-6.39
13907.00	90.370	142.670	7576.16	6194.93	-6171.24	1798.32	1856519.66	255515.61	39°12'01.552"N	80°00'22.616"W	6427.92	163.754	0.92	-0.06	0.92
14002.00	90.400	144.600	7575.52	6289.61	-6247.74	1854.64	1856575.98	255439.12	39°12'00.799"N	80°00'21.895"W	6517.20	163.466	2.03	0.03	2.03
14095.00	90.340	144.400	7574.92	6382.41	-6323.45	1908.65	1856629.98	255363.41	39°12'00.054"N	80°00'21.203"W	6605.22	163.204	0.22	-0.06	-0.22
14189.00	90.370	144.270	7574.34	6476.18	-6399.81	1963.45	1856684.78	255287.05	39°11'59.302"N	80°00'20.502"W	6694.23	162.944	0.14	0.03	-0.14
14283.00	90.400	146.280	7573.71	6570.04	-6477.07	2016.99	1856738.32	255209.80	39°11'58.541"N	80°00'19.816"W	6783.85	162.703	2.14	0.03	2.14
14376.00	90.310	144.650	7573.13	6662.93	-6553.67	2069.71	1856791.04	255133.19	39°11'57.787"N	80°00'19.141"W	6872.73	162.473	1.76	-0.10	-1.75
14470.00	90.460	149.650	7572.50	6756.88	-6632.62	2120.69	1856842.01	255054.25	39°11'57.010"N	80°00'18.488"W	6963.40	162.269	5.32	0.16	5.32
14564.00	90.430	149.030	7571.77	6850.86	-6713.47	2168.62	1856889.94	254973.40	39°11'56.213"N	80°00'17.873"W	7055.04	162.098	0.66	-0.03	-0.66
14658.00	90.400	149.350	7571.09	6944.84	-6794.20	2216.76	1856938.09	254892.67	39°11'55.418"N	80°00'17.256"W	7146.70	161.930	0.34	-0.03	0.34
14752.00	90.490	152.280	7570.36	7038.74	-6876.26	2262.60	1856983.92	254810.62	39°11'54.610"N	80°00'16.668"W	7238.94	161.786	3.12	0.10	3.12
14846.00	90.460	152.550	7569.58	7132.49	-6959.57	2306.12	1857027.44	254727.31	39°11'53.788"N	80°00'16.109"W	7331.70	161.667	0.29	-0.03	0.29
14940.00	90.400	148.080	7568.88	7226.40	-7041.21	2352.66	1857073.98	254645.67	39°11'52.984"N	80°00'15.512"W	7423.86	161.524	4.76	-0.06	-4.76
15033.00	90.460	147.180	7568.18	7319.40	-7119.76	2402.45	1857123.77	254567.13	39°11'52.211"N	80°00'14.874"W	7514.17	161.354	0.97	0.06	-0.97
15126.00	89.750	144.560	7568.01	7412.30	-7196.73	2454.62	1857175.94	254490.16	39°11'51.453"N	80°00'14.206"W	7603.82	161.167	2.92	-0.76	-2.82
15220.00	90.150	147.950	7568.09	7506.23	-7274.88	2506.83	1857228.15	254412.01	39°11'50.683"N	80°00'13.537"W	7694.68	160.987	3.63	0.43	3.61
15315.00	89.380	155.110	7568.48	7601.02	-7358.34	2552.09	1857273.40	254328.56	39°11'49.861"N	80°00'12.956"W	7788.35	160.872	7.58	-0.81	7.54
15407.00	88.800	151.190	7569.94	7692.65	-7440.39	2593.63	1857314.94	254246.51	39°11'49.052"N	80°00'12.423"W	7879.49	160.782	4.31	-0.63	-4.26
15501.00	88.890	152.910	7571.84	7786.43	-7523.41	2637.68	1857358.98	254163.49	39°11'48.234"N	80°00'11.858"W	7972.39	160.680	1.83	0.10	1.83
15595.00	89.940	152.990	7572.80	7880.11	-7607.12	2680.42	1857401.73	254079.78	39°11'47.409"N	80°00'11.309"W	8065.54	160.590	1.12	1.12	0.09
15687.00	89.910	149.450	7572.92	7971.97	-7687.74	2724.71	1857446.01	253999.16	39°11'46.615"N	80°00'10.741"W	8156.31	160.485	3.85	-0.03	-3.85
15781.00	89.510	143.930	7573.39	8065.90	-7766.27	2776.31	1857497.61	253920.64	39°11'45.841"N	80°00'10.080"W	8247.60	160.329	5.89	-0.43	-5.87
15875.00	88.860	144.960	7574.73	8159.68	-7842.74	2830.96	1857552.26	253844.18	39°11'45.089"N	80°00'09.380"W	8338.04	160.152	1.30	-0.69	1.10
15970.00	88.860	146.680	7576.62	8254.57	-7921.31	2884.32	1857605.62	253765.61	39°11'44.315"N	80°00'08.697"W	8430.09	159.992	1.81	0.00	1.81
16063.00	88.860	149.280	7578.47	8347.54	-8000.14	2933.61	1857654.91	253686.78	39°11'43.539"N	80°00'08.065"W	8521.05	159.862	2.80	0.00	2.80
16157.00	88.650	150.590	7580.51	8441.48	-8081.47	2980.69	1857701.99	253605.45	39°11'42.737"N	80°00'07.461"W	8613.63	159.754	1.41	-0.22	1.39

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PHL13FHS



Actual Wellpath Report

PHL13FHS AWP Proj: 17300'MD
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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot F
Area	Barbour County, WV	Well	PHL13FHS
Field	Barbour	Wellbore	PHL13FHS AWB
Facility	PHL13 Pad		

WELLPATH DATA (193 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]
16250.00	87.850	150.980	7583.35	8534.34	-8162.60	3026.07	1857747.36	253524.33	39°11'41.938"N	80°00'06.879"W	8705.46	159.659	0.96	-0.86	0.42
16344.00	87.880	148.630	7586.85	8628.24	-8243.78	3073.31	1857794.60	253443.14	39°11'41.138"N	80°00'06.273"W	8798.02	159.554	2.50	0.03	-2.50
16437.00	87.880	145.520	7590.30	8721.14	-8321.78	3123.81	1857845.11	253365.15	39°11'40.370"N	80°00'05.626"W	8888.77	159.425	3.34	0.00	-3.34
16531.00	87.880	145.340	7593.77	8814.96	-8399.13	3177.11	1857898.40	253287.80	39°11'39.608"N	80°00'04.944"W	8979.95	159.280	0.19	0.00	-0.19
16624.00	87.910	149.110	7597.19	8907.87	-8477.26	3227.42	1857948.70	253209.68	39°11'38.839"N	80°00'04.299"W	9070.84	159.157	4.05	0.03	4.05
16719.00	89.320	145.700	7599.49	9002.81	-8557.26	3278.57	1857999.85	253129.68	39°11'38.051"N	80°00'03.644"W	9163.83	159.037	3.88	1.48	-3.59
16813.00	89.380	146.880	7600.55	9096.75	-8635.45	3330.73	1858052.02	253051.49	39°11'37.281"N	80°00'02.976"W	9255.53	158.908	1.26	0.06	1.26
16907.00	89.350	146.470	7601.60	9190.70	-8713.99	3382.37	1858103.65	252972.96	39°11'36.508"N	80°00'02.315"W	9347.41	158.786	0.44	-0.03	-0.44
17001.00	87.290	147.450	7604.35	9284.63	-8792.75	3433.60	1858154.88	252894.20	39°11'35.732"N	80°00'01.658"W	9439.39	158.669	2.43	-2.19	1.04
17095.00	87.600	154.750	7608.55	9378.36	-8874.90	3478.95	1858200.23	252812.05	39°11'34.923"N	80°00'01.077"W	9532.42	158.595	7.77	0.33	7.77
17186.00	87.320	157.430	7612.58	9468.42	-8958.00	3515.79	1858237.07	252728.95	39°11'34.103"N	80°00'00.603"W	9623.24	158.571	2.96	-0.31	2.95
17275.00	87.440	157.650	7616.65	9556.17	-9040.17	3549.76	1858271.04	252646.79	39°11'33.293"N	80°00'00.166"W	9712.13	158.562	0.28	0.13	0.25
17300.00	87.440	157.650	7617.77	9580.81	-9063.27	3559.26	1858280.53	252623.69	39°11'33.065"N	80°00'00.043"W	9737.10	158.559	0.00	0.00	0.00

HOLE & CASING SECTIONS - Ref Wellbore: PHL13FHS AWB Ref Wellpath: PHL13FHS AWP Proj: 17300'MD

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	2016.50	1992.00	24.50	2016.42	0.00	0.00	-1.20	15.79



Actual Wellpath Report

PHL13FHS AWP Proj: 17300'MD

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REFERENCE WELLPATH IDENTIFICATION

Operator	CNX GAS COMPANY, LLC	Slot	Slot F
Area	Barbour County, WV	Well	PHL13FHS
Field	Barbour	Wellbore	PHL13FHS AWB
Facility	PHL13 Pad		

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
PHL13FHS PBHL Rev-1		7447.21	-9048.90	3582.60	1858303.87	252638.06	39°11'33.209"N	79°59'59.748"W	point
PHL13FHS LP1 Plat		7672.10	-667.10	-925.42	1853796.02	261019.56	39°12'55.800"N	80°00'57.614"W	point
PHL13FHS LP2 Plat		7672.10	-1616.54	-1010.78	1853710.66	260070.15	39°12'46.411"N	80°00'58.630"W	point
PHL13FHS LP Rev-1		7676.00	-1617.17	-1011.08	1853710.36	260069.52	39°12'46.405"N	80°00'58.633"W	point

WELLPATH COMPOSITION - Ref Wellbore: PHL13FHS AWB Ref Wellpath: PHL13FHS AWP Proj: 17300'MD

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
24.50	4228.50	Generic gyro - northseeking (Standard)	VES Gyro (100'-4214')	PHL13FHS AWB
4228.50	17275.00	NaviTrak (MagCorr)	BHI AT Curve (4228.5')(4373'-17275')	PHL13FHS AWB
17275.00	17300.00	Blind Drilling (std)	Projection to bit	PHL13FHS AWB

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	8/21/2013
Job End Date:	9/11/2013
State:	West Virginia
County:	Barbour
API Number:	47-001-03239-00-00
Operator Name:	CONSOL Energy Inc.
Well Name and Number:	PHL13FHS
Longitude:	-80.01364900
Latitude:	39.21553400
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	8,607
Total Base Water Volume (gal):	10,633,631
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	89.94920	
Sand (Proppant)	CWS	Propping Agent					
			Silicon Dioxide	14808-60-7	100.00000	9.94390	
DWP-NE1	CWS	Non-Emulsifier					
			Isopropyl alcohol	67-63-0	40.00000	0.02270	
			Dimethylcocoamine, bis (chlorethyl)ether, diquatary ammonium salt	68607-28-03	40.00000	0.02270	
			Methyl Alcohol	67-56-1	15.00000	0.00850	
			Dimethyldiallylammonium Chloride	7398-69-8	5.00000	0.00280	
DAP-903	CWS	Scale Inhibitor					
			No Hazardous Materials	NA	100.00000	0.01690	
DWP-111	CWS	Gel Slurry					
			No Hazardous Materials	NA	100.00000	0.01380	
BioClear 2000	CWS	Biocide					
			2,2-Dibromo-3-Nitriopropionamide	10222-01-2	40.00000	0.01080	
DWP-614	CWS	Viscosifier					
			Polyethylene glycol nonylphenyl ether	9016-45-9	5.00000	0.00580	

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PHL13FHS

DWP-901	CWS	Breaker	Ammonium Persulfate	7727-54-0	95.00000	0.00270
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)