

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

API 47-001-03306H6A County Barbour District Pleasant
Quad Philippi Pad Name PHL3HS Field/Pool Name Philippi
Farm Name PHILIPPI DEVELOPMENT, INC. Well Number PHL3BHS
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 4,338,913.07 m Easting 581,574.58 m
Landing Point of Curve Northing 4,338,551.83 m Easting 581,653.17 m
Bottom Hole Northing 4,336,711.82 m Easting 583,645.37 m

Elevation (ft) 1444.50' 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

Drilled 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)

Mineral Oil Based Mud, Bactericide, Polymers and Weighting Agents.

Date Permit Issued 11/19/2013 Date drilling commenced 07/05/2014 Date drilling ceased 11/25/2014
Date completion activities began 12/29/2014 Date completion activities ceased 1/19/2015
Verbal plugging (Y/N) N 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 328', 544', 665' Open mine(s) (Y/N) depths _____
Salt water depth(s) ft N/A Void(s) encountered (Y/N) depths N
Coal depth(s) ft 451', 544', 665' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) Y

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Reviewed by:
Batton, Daniel

7/10/15

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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 to the right *
Conductor	26"	20"	80'	N	J-55 94# / 80'	N/A	Y
Surface	17 1/2"	13 3/8"	787.9'	N	J-55 54.5# / 787.9'	N/A	Y
Coal	-	-	-	-	-	-	-
Intermediate 1	12 1/4"	9 5/8"	2202.9'	N	J-55 36# / 2202.9'	N/A	Y
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	8 3/4"	5 1/2"	14860.7'	N	P-110 20# / 14860.7'	N/A	N
Tubing	5 1/2"	2 3/8"	8044'	N	J-55 4.7# / 8044'	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	77	15.6	1.18	91	Surface	24
Surface	Class A	568	15.6	1.20	681	Surface	8
Coal	-	-	-	-	-	-	-
Intermediate 1	Class A	759	15.6	1.19	903	Surface	8
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	Class A (Lead) / Class A (Tail)	899 / 2137	14.2 / 14.8	1.26 / 1.25	3804	2003	8
Tubing	-	-	-	-	-	-	-

Drillers TD (ft) 7502.2' Loggers TD (ft) 7713'

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

Plug back procedure: N/A

Kick Off Depth (ft) 7675.22'

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

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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 - Bow spring centralizers on first joint then every fourth joint to 100 feet from surface. 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 USE Yes No TYPES 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	12/29/2014	14767	14657	36	Marcellus
2	12/30/2014	14595	14443	36	Marcellus
3	12/30/2014	14370	14218	36	Marcellus
4	12/30/2014	14145	13993	36	Marcellus
5	12/31/2014	13920	13768	36	Marcellus
6	12/31/2014	13695	13543	36	Marcellus
7	12/31/2014	13470	13318	36	Marcellus
8	12/31/2014	13245	13093	36	Marcellus
9	1/1/2015	13020	12868	36	Marcellus
10	1/1/2015	12795	12643	36	Marcellus
11	1/1/2015	12570	12418	36	Marcellus
12	1/1/2015	12345	12193	36	Marcellus
13	1/2/2015	12120	11968	36	Marcellus
14	1/2/2015	11895	11743	36	Marcellus
15	1/2/2015	11670	11518	36	Marcellus
16	1/11/2015	11445	11293	36	Marcellus
17	1/12/2015	11220	11068	36	Marcellus
18	1/12/2015	10994	10842	36	Marcellus
19	1/13/2015	10768	10616	36	Marcellus
20	1/13/2015	10542	10390	36	Marcellus
21	1/14/2015	10316	10164	36	Marcellus
22	1/15/2015	10090	9938	36	Marcellus
23	1/15/2015	9864	9712	36	Marcellus
24	1/16/2015	9638	9486	36	Marcellus
25	1/17/2015	9412	9260	36	Marcellus
26	1/17/2015	9186	9034	36	Marcellus
27	1/17/2015	8960	8808	36	Marcellus
28	1/18/2015	8734	8582	36	Marcellus
29	1/18/2015	8508	8356	36	Marcellus
30	1/19/2015	8282	8125	36	Marcellus

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STIMULATION INFORMATION PER STAGE

Stage No.	Stimulations Date	Avg Pump Rate (BPM)	Avg Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen / other (gals)
1	12/29/2014	75	8386	6806	5213	400350	8903	3453
2	12/30/2014	71	8426	5900	5189	300750	6971	3375
3	12/30/2014	72	8480	6035	5333	300150	7068	3354
4	12/30/2014	70	8407	6530	5355	300550	7074	3386
5	12/31/2014	72	8456	6944	5378	299950	7062	3385
6	12/31/2014	72	8436	7866	5398	301250	7163	3382
7	12/31/2014	69	8468	6777	4879	266550	9441	3614
8	12/31/2014	70	8433	7575	5279	310050	7159	3383
9	1/1/2015	72	8400	7590	5512	323200	7206	3376
10	1/1/2015	72	8462	7513	5020	301000	7337	3395
11	1/1/2015	67	8437	7329	5572	300500	9567	3748
12	1/1/2015	75	8493	6330	5261	300150	6932	3419
13	1/2/2015	70	8310	7805	5521	300250	6945	3389
14	1/2/2015	71	8323	7139	5441	300750	7097	3474
15	1/2/2015	71	8206	7405	5632	300250	6908	3392
16	1/11/2015	76	8274	7407	5376	300750	7144	3494
17	1/12/2015	75.5	8332	7706	5423	300100	8073	3514
18	1/12/2015	75	8161	8417	4912	300750	6579	3350
19	1/13/2015	82	8419	8005	5408	300150	6948	3376
20	1/13/2015	80	8089	7759	4880	300850	6632	3365
21	1/14/2015	90	8428	8220	5277	300350	6586	3379
22	1/15/2015	83	8314	8236	5503	300200	6858	3401
23	1/15/2015	77	8137	8392	5404	300550	6580	3372
24	1/16/2015	74	8406	8819	5531	300400	6782	3351
25	1/17/2015	69	8196	8600	5645	300550	6769	3457
26	1/17/2015	73	8239	7498	5432	300100	6636	3382
27	1/17/2015	73	8128	8835	5221	300950	6411	3364
28	1/18/2015	80	8340	6275	5522	300050	6258	3361
29	1/18/2015	75	8135	7820	5121	300700	6460	3367
30	1/19/2015	73	8336	9237	5160	300750	6704	3351

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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	80			
SHALE	80	171			Red
SAND/SHALE	171	451			Red/Light Brown/Light Gray/Dark Gray
SAND/SHALE/COAL	451	515			Dark Gray / Black Gray
SAND/SHALE	515	642			Gray Brown
SHALE	642	706			Brown / Gray Brown
SAND/SHALE	706	1556			Gray Brown / Gray
SAND	1556	1588			Brown
SAND/SHALE	1588	1747			Gray Brown
SAND	1747	1809			Brown
SAND/SHALE	1809	3566			Gray Brown / Light Gray
SHALE	3566	4293			Darker Gray
SAND/SHALE	4293	5398			Light Gray
SHALE	5398	6327			Dark Gray
SAND/SHALE	6327	6831			Light Gray
SHALE	6831	7019			Dark Gray
BURKETT	7487	7508	7691	7719	Medium Gray
TULLY	7508	7567	7719	7789	Light Gray
HAMILTON SHALE	7567	7713	7789	8092	Medium Gray
MARCELLUS	7713		8092		Black

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date	12/29/2014
Job End Date	1/19/2015
State	West Virginia
County	Barbour
API Number	47-001-03306-00-00
Operator Name	CONSOL Energy Inc.
Well Name and Number	PHL 3B
Longitude	-80.05551490
Latitude	39.19553830
Datum	NAD83
Federal/Tribal Well	NO
True Vertical Depth	7,708
Total Base Water Volume (gals)	8,908,662
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 & CWS	Base Fluid & Mix Water					
			Water	7732-18-5	100.00000	88.70325	
Sand (Proppant), DAP-903, DWP-111, DWP-614, DWP-901, DWP-NE1	CWS	Propping Agent, Scale Inhibitor, Gel Slurry, Viscosifier, Breaker, Non-Emulsifier					
			Crystalline silica (Quartz)	14808-60-7	100.00000	10.82957	
			Hydrochloric acid	7647-01-0	35.00000	0.31803	
			2-Propenoic acid, polymer with propanamide, sodium salt	225987-30-8	40.00000	0.03895	
			Distillates (petroleum), hydrotreated middle	64742-46-7	60.00000	0.03206	
			Calcite	471-34-1	1.00000	0.01797	
			2-Propenoic acid, polymer with sodium phosphonate	71050-62-9	60.00000	0.00666	
			Illite	12173-60-3	1.00000	0.00626	
			Goethite	1310-14-1	0.10000	0.00488	
			Poly(oxyethylene)nonylphenol ether	9016-45-9	5.00000	0.00487	
			Sorbitan monooleate	1338-43-8	5.00000	0.00487	
			Isopropanol	67-63-0	40.00000	0.00476	

			Dimethylcocoamine, bis (chloroethyl) ether, diquaternary ammonium salt	88607-28-3	40.00000	0.00476
			Methanol	67-56-1	15.00000	0.00451
			Biotite	1302-27-8	0.10000	0.00317
			Apatite	64476-38-6	0.10000	0.00317
			Guar gum	9000-30-0	60.00000	0.00285
			Ilmenite	98072-94-7	0.10000	0.00232
			Alcohols, C14-15, ethoxylated	68951-67-7	0.10000	0.00136
			Modified thiourea polymer	68527-49-1	0.10000	0.00136
			Fatty acids, tall-oil	61790-12-3	0.10000	0.00136
			Alkenes, C>10 a-	64743-02-8	0.10000	0.00136
			Diallyldimethylammonium chloride	7398-69-8	5.00000	0.00059
			Propargyl Alcohol	107-19-7	0.10000	0.00045
			Quaternary ammonium compounds, bis(hydrogenated tallow alkyl)dimethyl, salts with bentonite	68953-58-2	5.00000	0.00024
			Ammonium Persulfate	7727-54-0	100.00000	0.00015
			Formaldehyde	50-00-0	0.10000	0.00009
			Oxirane, 2-methyl-, polymer with oxirane, monodecyl ether	37251-67-5	1.50000	0.00007
			Sodium chloride	7647-14-5	0.10000	0.00005

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)