

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

API 47-001-03308H6A County Barbour District Pleasant
Quad Philippi Pad Name PHL3HS Field/Pool Name Philippi
Farm Name PHILIPPI DEVELOPMENT, INC. Well Number PHL3DHS
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 4,338,909.33 m Easting 581,569.76 m
Landing Point of Curve Northing 4,338,285.00 m Easting 581,268.42 m
Bottom Hole Northing 4,336,879.15 m Easting 582,790.55 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 07/22/2014 Date drilling ceased 11/05/2014
Date completion activities began 01/11/2015 Date completion activities ceased 01/22/2015
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 N
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

Received
Reviewed by
Office of Oil & Gas
Batton, Daniel
JUN 29 2015 JK-7/2/15
WS 7/14/15

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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"	793.3'	N	J-55 54.5# / 793.3'	N/A	Y
Coal	-	-	-	-	-	-	-
Intermediate 1	12 1/4"	9 5/8"	2360'	N	J-55 36# / 2360.0'	N/A	Y
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	8 3/4"	5 1/2"	15458.3'	N	P-110 20# / 15458.3'	N/A	Y
Tubing	5 1/2"	2 3/8"	8015'	N	J-55 4.7# / 8015'	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	610	15.6	1.21	738	Surface	8
Coal	-	-	-	-	-	-	-
Intermediate 1	Class A	761	15.6	1.19	906	Surface	8
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	Class A (Lead) / Class A (Tail)	2959	14.2 / 14.8	1.26 / 1.25	3706	1155'	8
Tubing	-	-	-	-	-	-	-

Drillers TD (ft) 7502.2 Loggers TD (ft) 7743'

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

Plug back procedure: N/A

Kick Off Depth (ft) 7345.5'

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 - 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

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WERE TRACERS USE Yes No TYPES OF TRACER(S) USED

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DEVELOPMENT, INC.

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number Of Perforations	Formation(s)
1	1/11/2015	15352	14350	12	Marcellus
2	1/12/2015	15241	15045	30	Marcellus
3	1/12/2015	14985	14775	30	Marcellus
4	1/13/2015	14718	14478	30	Marcellus
5	1/13/2015	14420	14180	30	Marcellus
6	1/14/2015	14122	13882	30	Marcellus
7	1/14/2015	13864	13623	30	Marcellus
8	1/15/2015	13564	13323	30	Marcellus
9	1/16/2015	13226	12988	30	Marcellus
10	1/16/2015	12964	12723	30	Marcellus
11	1/17/2015	12663	12392	30	Marcellus
12	1/17/2015	12364	12123	30	Marcellus
13	1/18/2015	12064	11823	30	Marcellus
14	1/18/2015	11764	11523	30	Marcellus
15	1/19/2015	11463	11200	30	Marcellus
16	1/19/2015	11164	10923	30	Marcellus
17	1/20/2015	10864	10623	30	Marcellus
18	1/20/2015	10564	10323	30	Marcellus
19	1/20/2015	10264	10023	30	Marcellus
20	1/21/2015	9964	9723	30	Marcellus
21	1/21/2015	9664	9416	30	Marcellus
22	1/21/2015	9364	9123	30	Marcellus
23	1/21/2015	9064	8823	30	Marcellus
24	1/22/2015	8764	8523	30	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	1/11/2015	60	8461	8574	4886	102000	4750	4250
2	1/12/2015	64.2	8256	8859	5001	355400	8620	3517
3	1/12/2015	65	8233	8552	5144	355150	8820	3506
4	1/13/2015	66.2	8777	8491	5201	354900	8418	3564
5	1/13/2015	65	8290	8235	5304	354950	9144	3633
6	1/14/2015	62	8535	9222	5270	354900	9338	3696
7	1/14/2015	64	8257	7375	5293	355130	9946	3649
8	1/15/2015	68	8161	7375	5205	355000	8274	3499
9	1/16/2015	68	8354	7298	5207	355250	8316	3445
10	1/16/2015	66	8193	6880	5174	355050	8306	3569
11	1/17/2015	66	8256	7040	5530	354800	7642	3444
12	1/17/2015	65	8228	7191	5371	355300	7969	3514
13	1/18/2015	67	8403	7525	5397	354850	7867	3588
14	1/18/2015	66	8237	7380	5376	355200	8604	3634
15	1/19/2015	68	8244	8081	5443	325350	7660	3440
16	1/19/2015	69	7871	7250	5196	384500	8480	3414
17	1/20/2015	68	7972	7649	5418	355400	7936	3381
18	1/20/2015	69	7970	7895	5405	354950	7910	3339
19	1/20/2015	69	7789	7522	5142	355200	8985	3469
20	1/21/2015	67	8084	7629	5501	355500	7785	3434
21	1/21/2015	67	8183	7937	5807	355300	7787	3384
22	1/21/2015	67	8103	7919	5351	355300	7945	3443
23	1/21/2015	68	7706	7511	5342	355300	7689	3364
24	1/22/2015	67	7747	7886	5237	369870	7780	3396

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PRODUCING FORMATION(S)	DEPTHS	
MARCELLUS	7743'-	TVD 8491'- MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
 SHUT-IN PRESSURE Surface 1006 psi Bottom Hole 4802 psi DURATION OF TEST 157 hrs
 OPEN FLOW Gas 6584 mcfpd Oil 0 bpd NGL 0 bpd Water 1225 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY / FORMATION	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY TYPE OF FLUID (FRESHWATER, BRINE, GAS, H2S, ETC)
					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 15332
 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 [Signature] Title Steve Spitler - Completions Manager-Gas WV Date 6/17/15

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	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	7521	7545	8042	8073	Medium Gray
TULLY	7545	7595	8073	8144	Light Gray
HAMILTON SHALE	7595	7743	8144	8491	Medium Gray
MARCELLUS	7743		8491		Black

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/11/2015
Job End Date:	1/22/2015
State:	West Virginia
County:	Barbour
API Number:	47-001-03308-00-00
Operator Name:	CONSOL Energy Inc.
Well Name and Number:	PHL 3D
Longitude:	-80.05559440
Latitude:	39.19551670
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	7,744
Total Base Water Volume (gal):	8,174,107
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	88.81976	
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	10.74719	
			Hydrochloric acid	7647-01-0	35.00000	0.28151	
			2-Propenoic acid, polymer with propenamide, sodium salt	225987-30-8	40.00000	0.03656	
			Distillates (petroleum), hydrotreated middle	84742-46-7	60.00000	0.03431	
			Calcite	471-34-1	1.00000	0.01855	
			Guar gum	9000-30-0	60.00000	0.00690	
			2-Propenoic acid, polymer with sodium phosphonate	71050-62-9	60.00000	0.00670	
			Illite	12173-60-3	1.00000	0.00528	
			Dimethylcocoamine, bis (chloroethyl) ether, diquaternary ammonium salt	68607-28-3	40.00000	0.00523	
			Isopropanol	67-63-0	40.00000	0.00523	
			Goethite	1310-14-1	0.10000	0.00460	

		Sorbitan monooleate	1338-43-8	5.00000	0.00457
		Poly(oxyethylene)nonylphenol ether	9016-45-9	5.00000	0.00457
		Methanol	67-56-1	15.00000	0.00438
		Biotite	1302-27-8	0.10000	0.00284
		Apatite	64476-38-6	0.10000	0.00284
		Ilmenite	98072-94-7	0.10000	0.00196
		Alcohols, C14-15, ethoxylated	68951-67-7	0.10000	0.00121
		Fatty acids, tall-oil	61790-12-3	0.10000	0.00121
		Alkenes, C>10 a-	64743-02-8	0.10000	0.00121
		Modified thiourea polymer	68527-49-1	0.10000	0.00121
		Diallyldimethylammonium chloride	7398-69-8	5.00000	0.00065
		Quaternary ammonium compounds, bis(hydrogenated tallow alkyl)dimethyl, salts with bentonite	68953-58-2	5.00000	0.00057
		Propargyl Alcohol	107-19-7	0.10000	0.00040
		Ammonium Persulfate	7727-54-0	100.00000	0.00027
		Oxirane, 2-methyl-, polymer with oxirane, monodecyl ether	37251-67-5	1.50000	0.00017
		Formaldehyde	50-00-0	0.10000	0.00008
		Sodium chloride	7647-14-5	0.10000	0.00004

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)