

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

API 47-001-03313H6A County Barbour District Pleasant
Quad Philippi Pad Name PHL29HS Field/Pool Name Philippi
Farm Name PHILIPPI DEVELOPMENT, INC. Well Number PHL29EHS
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 4,339,562.30 m Easting 581,623.71 m
Landing Point of Curve Northing 4,339,276.00 m Easting 581,655.05 m
Bottom Hole Northing 4,337,280.93 m Easting 583,815.13 m

Elevation (ft) 1406' 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 10/08/2013 Date drilling commenced 01/31/2014 Date drilling ceased 07/22/2014
Date completion activities began 10/27/2014 Date completion activities ceased 12/01/2014
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 plu

Freshwater depth(s) ft 474' Open mine(s) (Y/N) depths N
Salt water depth(s) ft None Reported Void(s) encountered (Y/N) depths N
Coal depth(s) ft 474', 595' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) Y

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Reviewed by:

Batton, Daniel

AK 6/24/15

WS 6/25/15

API 47-001-03313H6A Farm name PHILIPPI DEVELOPMENT, INC. Well number PHL29EHS

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"	692.2'	N	J-55 54.5# / 692.2'	N/A	Y
Coal	-	-	-	-	-	-	-
Intermediate 1	12 1/4"	9 5/8"	2008.1'	N	J-55 36# / 2008.1'	N/A	Y
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	8 3/4"	5 1/2"	18013.3'	N	P-110 20# / 18013.3'	N/A	N
Tubing	5 1/2"	2 3/8"	0'	N	L-80 4.7# / 0'	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	90.5	Surface	24
Surface	Class A	585	15.6	1.18	690	Surface	8
Coal	-	-	-	-	-	-	-
Intermediate 1	Class A	680	15.6	1.18	802	Surface	8
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	Class A (Lead) / Class A (Tail)	1150 / 2350	14.5 / 15.0	1.26	4410	1700'	8
Tubing	-	-	-	-	-	-	-

Drillers TD (ft) 7734.91' Loggers TD (ft) 7729'
 Deepest formation penetrated: Marcellus Plug back to (ft) N/A
 Plug back procedure: N/A

Kick Off Depth (ft) 5945'

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 Office of Oil & Gas

JUN 01 2015

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

API 47-001-03313H6A Farm name PHILIPPI DEVELOPMENT, INC. Well number PHL29EHS

PERFORATION RECORD

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

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation 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)
								See Attached

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Office of Oil & Gas
JUN 01 2015

Please insert additional pages as applicable.

API 47-001-03313H6A Farm name PHILIPPI DEVELOPMENT, INC. Well number PHL29EHS

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number Of Perforations	Formation(s)
1.0	10/27/2014	17974	17876	48	Marcellus
2.0	10/28/2014	17844	17714	40	Marcellus
3.0	11/6/2014	17663	17519	56	Marcellus
4.0	11/6/2014	17480	17338	40	Marcellus
5.0	11/7/2014	17305	17163	64	Marcellus
6.0	11/8/2014	17111	16991	40	Marcellus
7.0	11/8/2014	16963	16853	40	Marcellus
8.0	11/8/2014	16815	16695	40	Marcellus
9.0	11/9/2014	16667	16543	40	Marcellus
10.0	11/9/2014	16519	16399	40	Marcellus
11.0	11/9/2014	16371	16251	40	Marcellus
12.0	11/10/2014	16223	16109	40	Marcellus
13.0	11/10/2014	16075	15955	40	Marcellus
14.0	11/17/2014	15927	15807	40	Marcellus
15.0	11/18/2014	15779	15659	40	Marcellus
16.0	11/18/2014	15631	15511	40	Marcellus
17.0	11/18/2014	15483	15363	40	Marcellus
18.0	11/19/2014	15335	15215	40	Marcellus
19.0	11/19/2014	15185	15067	40	Marcellus
20.0	11/19/2014	15042	14919	40	Marcellus
21.0	11/20/2014	14891	14771	40	Marcellus
22.0	11/20/2014	14743	14618	40	Marcellus
23.0	11/28/2014	14595	14475	40	Marcellus
24.0	11/28/2014	14447	14327	40	Marcellus
25.0	11/28/2014	14300	14179	40	Marcellus
26.0	11/29/2014	14151	14031	40	Marcellus
27.0	11/29/2014	14003	13883	40	Marcellus
28.0	11/29/2014	13855	13735	40	Marcellus
29.0	11/29/2014	13707	13587	40	Marcellus
30.0	11/30/2014	13559	13444	40	Marcellus
31.0	11/30/2014	13411	13291	40	Marcellus
32.0	11/30/2014	13263	13143	40	Marcellus
33.0	11/30/2014	13115	12994	40	Marcellus
34.0	11/30/2014	12966	12845	40	Marcellus
35.0	12/1/2014	12812	12696	40	Marcellus

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JUN 01 2015

API 47-001-03313H6A Farm name PHILIPPI DEVELOPMENT, INC. Well number PHL29EHS

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)
1.0	10/27/2014	76.62	7928	8546	4636	199902	6673	3583
2.0	10/28/2014	70.6	8230	9211	8368	201090	4711	3466
3.0	11/6/2014	67.68	7936	9284	5749	205152	7163	3797
4.0	11/6/2014	71.1	7926	8540	4888	184023	7256	3645
5.0	11/7/2014	51.2	7853	8530	5315	94618	5746	3569
6.0	11/8/2014	51.33	8303	8690	4681	167978	7476	3833
7.0	11/8/2014	56.3	8280	9019	5013	184913	6446	3664
8.0	11/8/2014	57.7	8308	8728	5598	202752	6819	3727
9.0	11/9/2014	58.2	8516	8746	5177	198825	6365	3706
10.0	11/9/2014	61.9	8369	8825	6008	201582	6330	3667
11.0	11/9/2014	69.49	8916	8488	5628	197788	7993	3917
12.0	11/10/2014	62.7	8426	8869	5321	200271	6116	3668
13.0	11/10/2014	45.9	8257	9165	NA	102909	4894	3577
14.0	11/17/2014	72.5	8236	8828	5611	231670	6602	3771
15.0	11/18/2014	65.94	8235	8887	5394	238630	5660	3585
16.0	11/18/2014	74.3	8305	8628	5341	229258	5853	3651
17.0	11/18/2014	74.1	8219	8467	5607	243356	5779	3676
18.0	11/19/2014	79.88	8292	8725	5722	200003	4728	3517
19.0	11/19/2014	72	8235	8725	5228	200255	6314	3735
20.0	11/19/2014	68.7	8250	8485	5241	200707	5713	3571
21.0	11/20/2014	78.2	8443	8886	5414	200820	6316	3632
22.0	11/20/2014	87.34	8321	8572	5582	203496	5181	3544
23.0	11/28/2014	76.6	8521	8716	5162	204578	5055	3457
24.0	11/28/2014	71.8	8377	8636	5253	201286	5405	3446
25.0	11/28/2014	71.8	8408	8728	5308	201378	5135	3429
26.0	11/29/2014	79.3	8590	8906	5465	201030	4794	3447
27.0	11/29/2014	82	8520	8753	5816	202067	5051	3426
28.0	11/29/2014	78.6	8428	8678	5360	202403	5092	3439
29.0	11/29/2014	84.1	8365	8577	5330	200206	5135	3421
30.0	11/30/2014	91.3	8488	8818	5719	203338	4794	3445
31.0	11/30/2014	90.1	8488	8716	5666	200245	4689	3284
32.0	11/30/2014	91.5	8344	8609	5415	203192	5089	3473
33.0	11/30/2014	90.8	8360	8525	5082	195354	5089	3458
34.0	11/30/2014	92.9	8322	8598	5553	208205	5090	3448
35.0	12/1/2014	94.3	7360	8623	4097	24514	3968	3198

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Office of Oil & Gas
JUN 01 2015

API 47-001-03313H6A Farm name PHILIPPI DEVELOPMENT, INC. Well number PHL29EHS

PRODUCING FORMATION(S)	DEPTHS	TVD	MD
<u>MARCELLUS</u>	<u>7729-</u>		

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
 SHUT-IN PRESSURE Surface 900 psi Bottom Hole 4925 psi DURATION OF TEST 108 hrs
 OPEN FLOW Gas 5171 mcfpd Oil 0 bpd NGL 0 bpd Water 839 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 207 Carlton Dr City Eighty Four State PA Zip 15330
 Logging Company Horizon
 Address 7136 South Yale, Suite 414 City Tulsa State OK Zip 74136-6378
 Cementing Company CalFrac
 Address 2001 Summit View Rd City Smithfield State PA Zip 15478
 Stimulating Company Halliburton
 Address 121 Champion Way, Suite 110 City Canonsburg State PA Zip 15317-5817

Please insert additional pages as applicable.

Completed by CNX Gas WV Operations Company, LLC - Drilling and Completions Telephone 304-882-0000
 Signature Steve Spittle Title Steve Spittle - Completions Manager-Gas WV Date 5/28/15

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API 47-001-03313H6A Farm name PHILIPPI DEVELOPMENT, INC. Well number PHL29EHS

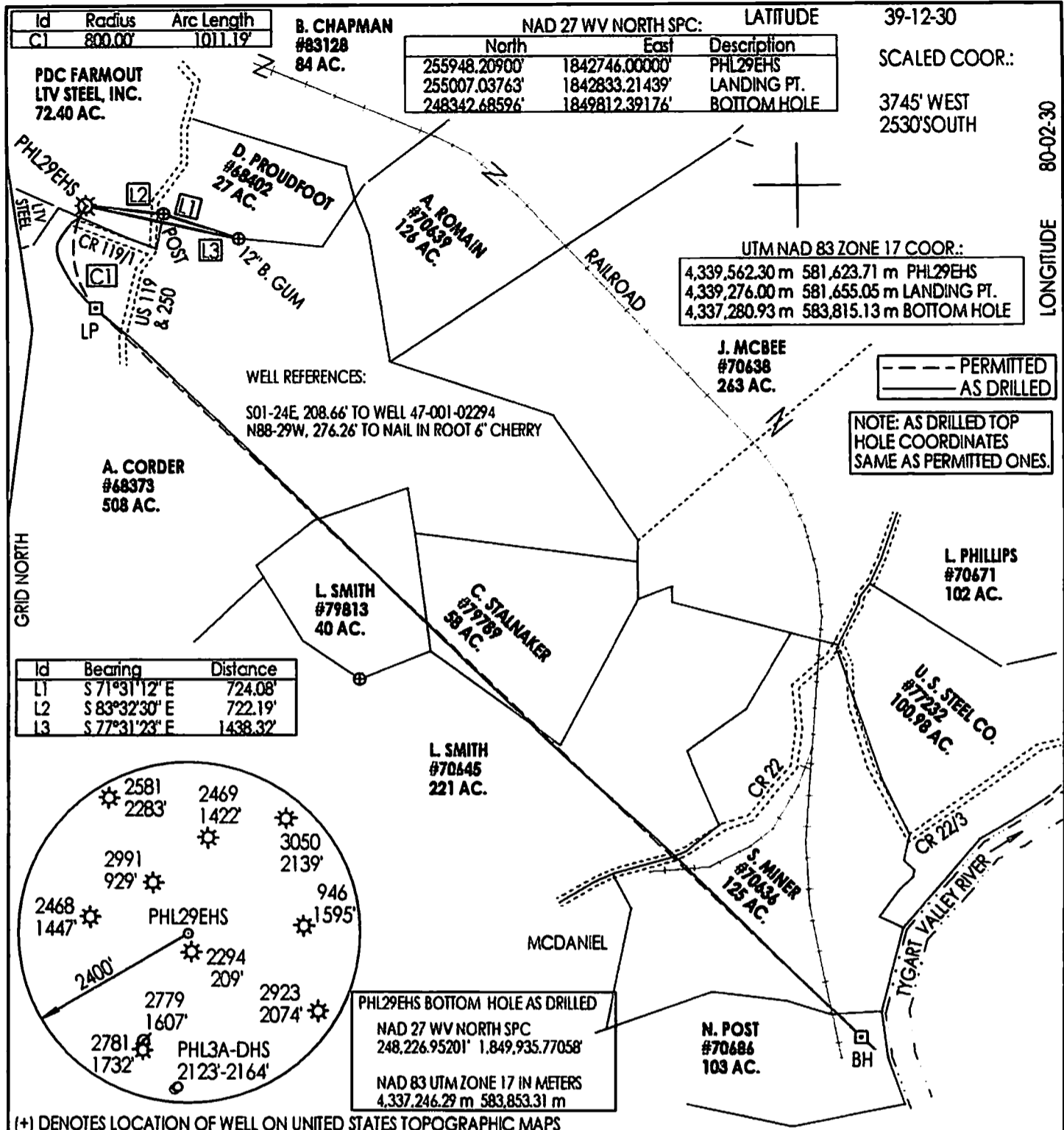
LITHOLOGY / FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY TYPE OF FLUID (FRESHWATER,BRINE,GAS,H2S, ETC)
	DEPTH IN FT TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
FILL	0	90			
SHALE	90	120			
SANDY SHALE	120	165			
SANDY SHALE	165	210			
SAND	210	255			
SHALE	255	390			
SAND	390	435			
SANDY SHALE	435	480			
WHITE SAND	480	615			
SHALE/SAND	615	660			
WHITE SAND	660	705			
SHALE/SAND	705	750			
SHALE/SAND	750	980			
SANDY SHALE	980	1100			
SHALE/GRAY SAND	1100	1520			
BASE BIG INJUN	1520	2182			
FOURTH SAND	2182	2275			
FIFTH SAND	2275	2714			
WARREN MARKER	2714	2737			
WARREN	2737	2982			
SPEECHLEY	2982	3198			
BALLTOWN	3198	3896			
RILEY	3896	4012			
FAULT	4012	4257			
BENSON	4257	4491			
FIRST ELK	4491	4632			
SECOND ELK	4632	4880			
THIRD ELK	4880	5018			
FAULT	5018	5044			
THIRD ELK	5044	5264			
FOURTH ELK	5264	5606			
RHINESTREET	5606	5741			
HAVERTY	5741	6161			
FOX	6161	6620			
SYCAMORE GRIT	6620	6821			
CASHAQUA	6821	7025			
"FRIB"	7025	7152			
MIDDLESEX	7152	7279			

Received
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JUN 01 2015

API 47-001-03313H6A Farm name PHILIPPI DEVELOPMENT, INC. Well number PHL29EHS

LITHOLOGY / FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY TYPE OF FLUID (FRESHWATER,BRINE,GAS,H2S, ETC)
	DEPTH IN FT	DEPTH IN FT	DEPTH IN FT	DEPTH IN FT	
	TVD	TVD	MD	MD	
WEST RIVER	7279	7482			
BURKETT	7482	7515			
TULLY	7515	7568			
HAMILTON	7568	7729			
MARCELLUS	7729				

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JUN 01 2015



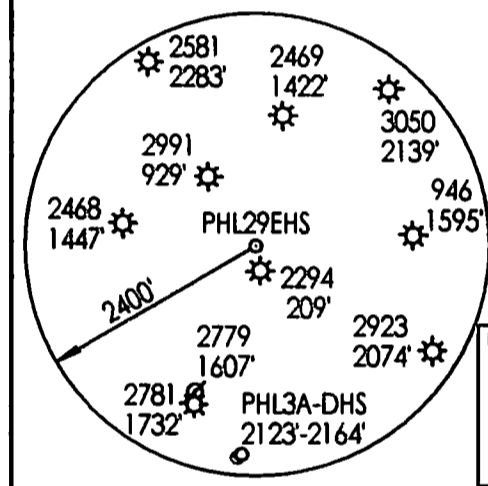
Id	Radius	Arc Length
C1	800.00'	1011.19'

NAD 27 WV NORTH SPC:		LATITUDE
North	East	Description
255948.20900'	1842746.00000'	PHL29EHS
255007.03763'	1842833.21439'	LANDING PT.
248342.68596'	1849812.39176'	BOTTOM HOLE

39-12-30
 SCALED COOR.:
 3745' WEST
 2530'SOUTH
 80-02-30
 LONGITUDE

UTM NAD 83 ZONE 17 COOR.:		
4,339,562.30 m	581,623.71 m	PHL29EHS
4,339,276.00 m	581,655.05 m	LANDING PT.
4,337,280.93 m	583,815.13 m	BOTTOM HOLE

Id	Bearing	Distance
L1	S 71°31'12" E	724.08'
L2	S 83°32'30" E	722.19'
L3	S 77°31'23" E	1438.32'

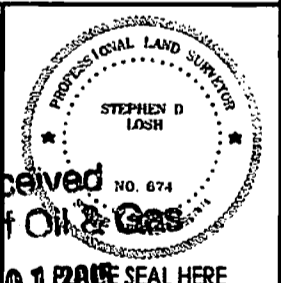


PHL29EHS BOTTOM HOLE AS DRILLED
 NAD 27 WV NORTH SPC
 248,226.95201' 1,849,935.77058'
 NAD 83 UTM ZONE 17 IN METERS
 4,337,246.29 m 583,853.31 m

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

FILE NUMBER: _____
 DRAWING NUMBER: CNXPHL29EHSR1AD.PCS
 SCALE: 1" = 1300'
 MINIMUM DEGREE OF ACCURACY: SUBMETER
 PROVEN SOURCE OF ELEVATION: DGPS SURVEY
 RTK SYSTEM

I THE UNDERSIGNED, HEREBY STATE 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 ENERGY.
 (SIGNED) _____
 STEPHEN D. LOSH, P.S. #674



STATE OF WEST VIRGINIA
 DIVISION OF ENVIRONMENTAL PROTECTION
 OFFICE OF OIL AND GAS
 #10 McJUNKIN ROAD
 NITRO, WV 25143-2506
 FORM WW-6

LAND SURVEYING SERVICES
 21 CEDAR LANE, BRIDGEPORT, WV 26330
 PHONE: 304-842-2018 OR 842-5762

DATE: MARCH 06, 2015
 OPERATORS WELL NO.: PHL29EHS
 API WELL NO. (AS DRILLED)
 47 - 001 - 03313
 STATE COUNTY PERMIT

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

LOCATION: ELEVATION 1406.00' WATERSHED FOXGRAPE RUN
 DISTRICT PLEASANT COUNTY BARBOUR
 QUADRANGLE PHILIPPI LEASE NUMBER SEE ABOVE

SURFACE OWNER PHILIPPI DEVELOPMENT, INC. ACREAGE 2385.55 (20-23)
 OIL & GAS ROYALTY OWNER A. CORDER, ET. AL. LEASE ACREAGE 1728.38

PROPOSED WORK: DRILL CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___ PLUG OFF OLD FORMATION ___
 PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE (SPECIFY) HORIZONTAL

TARGET FORMATION MARCELLUS PLUG & ABANDON ___ CLEAN OUT & REPLUG ___
 ESTIMATED DEPTH TVD = 7734.50' TMD = 18048'

WELL OPERATOR CNX GAS COMPANY LLC DESIGNATED AGENT MATTHEW IMRICH
 ADDRESS P. O. BOX 1248 JANE LEW, WV 26378 ADDRESS P. O. BOX 1248 JANE LEW, WV 26378

COUNTY NAME
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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	10/27/2014
Job End Date:	12/1/2014
State:	West Virginia
County:	Barbour
API Number:	47-001-03313-00-00
Operator Name:	CONSOL Energy Inc.
Well Name and Number:	PHL 29E
Longitude:	-80.05489200
Latitude:	39.20139500
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	7,734
Total Base Water Volume (gal):	9,519,094
Total Base Non Water Volume:	



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 JUN 10 2015



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
Fresh Water	Operator	Base Fluid					
			Fresh Water	7732-18-5	100.00000	90.75323	Density = 8.330
CALCIUM CHLORIDE, HYDROCHLORIC ACID 5-10%, HYDROCHLORIC ACID 10-30%, LCA-1, LP-65 MC, MC MX 437-5, MC MX 8-2544, Premium White 100 Mesh Sand, Premium White 40/70 Mesh Sand, PermVis VFR-10	Halliburton / Multi-Chem	Additive, Brine, Live Culture- Nitrate Reducing Bacteria, Proppant, Scale Inhibitor, Solvent					
			Crystalline silica, quartz	14808-60-7	100.00000	7.80954	
			Water	7732-18-5	100.00000	1.30564	
			Hydrochloric acid	7647-01-0	30.00000	0.14394	
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.03485	
			Inorganic salt	Confidential	30.00000	0.03473	
			Polyacrylate	Confidential	30.00000	0.03473	
			Ammonium chloride	12125-02-9	10.00000	0.01322	
			Alcohols, C12-16, ethoxylated	68551-12-2	10.00000	0.01160	

		Calcium nitrate	10124-37-5	60.00000	0.00973
		Organic phosphonate	Confidential	60.00000	0.00973
		Fatty acid ester	Confidential	5.00000	0.00581
		9-Octadecenamide, n,n-bis-2 (hydroxy-ethyl)-, (Z)	93-83-4	5.00000	0.00579
		Calcium chloride	10043-52-4	60.00000	0.00417
		Paraffinic solvent	Confidential	100.00000	0.00245
		Nutrient Mixture	NA	5.00000	0.00104
		Polyacrylamide copolymer	Confidential	30.00000	0.00012
		Sorbitan monooleate polyoxyethylene derivative	9005-65-6	1.00000	0.00000
		Sorbitan, mono-9-octadecenoate, (Z)	10476-85-4	1.00000	0.00000
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)