

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

API 47-001-03251H County Barbour District Pleasant
Quad Philippi Pad Name PHL10HS Field/Pool Name Philippi
Farm Name WATSON, MARY LOU & RONALD EARL CATE Well Number PHL10AHS
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 4,340,931.13 m Easting 583,170.43 m
Landing Point of Curve Northing 4,340,918.88 m Easting 583,776.14 m
Bottom Hole Northing 4,340,032.73 m Easting 584,296.66 m

Elevation (ft) 1618.50' 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 11/04/2011 Date drilling commenced 09/23/2013 Date drilling ceased 03/18/2014
Date completion activities began 06/10/2014 Date completion activities ceased 06/18/2014
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 305', 575' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1800' Void(s) encountered (Y/N) depths N
Coal depth(s) ft 570' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) Y

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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"	100'	N	J-55 96# / 100'	N/A	Y
Surface	17 1/2"	13 3/8"	666'	N	J-55 54.5# / 666'	48'/124'	Y
Coal	-	-	-	-	-	-	-
Intermediate 1	12 1/4"	9 5/8"	2059'	N	J-55 36# / 2059'	41'/126'	Y
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	8 3/4"	5 1/2"	12116'	N	P-110 20# / 12116'	N/A	N
Tubing	5 1/2"	2 3/8"	8521'	N	P-110 4.7# / 8521'	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	147.25	16.2	1.20	177	Surface	8
Surface	Class A	481	15.2	1.27	611	Surface	8
Coal	-	-	-	-	-	-	-
Intermediate 1	Class A	658	15.2	1.25	823	Surface	8
Intermediate 2	-	-	-	-	-	-	-
Intermediate 3	-	-	-	-	-	-	-
Production	Class A	2185	14.8	1.25	2731	1839'	8
Tubing	-	-	-	-	-	-	-

Drillers TD (ft) 7646' Loggers TD (ft) 7800'
 Deepest formation penetrated: Lower Marcellus Plug back to (ft) N/A
 Plug back procedure: N/A

Kick Off Depth (ft) 5140'

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 _____

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	6/10/2014	15313	15243	48	Marcellus
2	6/11/2014	11980	11744	40	Marcellus
3	6/12/2014	11688	11452	40	Marcellus
4	6/13/2014	11104	10868	40	Marcellus
5	6/14/2014	11104	10868	40	Marcellus
6	6/14/2014	10812	10575	40	Marcellus
7	6/15/2014	10519	10282	40	Marcellus
8	6/15/2014	10226	9989	40	Marcellus
9	6/16/2014	9933	9696	40	Marcellus
10	6/17/2014	9640	9403	40	Marcellus
11	6/17/2014	9347	9110	40	Marcellus
12	6/18/2014	9054	8817	40	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 (bbbls)	Amount of Nitrogen / other (gals)
1	6/10/2014	79.1	8128	6150	4802	226744	6696	3482
2	6/11/2014	93.5	8452	7372	5557	650670	10151	3666
3	6/12/2014	89	8439	8362	5307	652690	11386	3699
4	6/13/2014	90.6	8330	7438	5522	655940	12116	3657
5	6/14/2014	94.3	7240	7489	4663	651620	12013	3621
6	6/14/2014	85.3	8494	8235	5995	648160	18985	7161
7	6/15/2014	81.4	8268	7051	5685	653800	12232	3644
8	6/15/2014	81.5	8351	7230	6660	664240	12366	3710
9	6/16/2014	90.1	8252	4812	4812	654900	11985	3701
10	6/17/2014	94.8	8352	6900	5453	657120	12592	3776
11	6/17/2014	82.3	8287	7626	5456	651990	12297	3646
12	6/18/2014	86.8	8203	6681	4953	646030	13784	3912

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PRODUCING FORMATION(S)	DEPTHS	TVD	MD
MIDDLE MARCELLUS	7792'- 7800'		

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
 SHUT-IN PRESSURE Surface 1300 psi Bottom Hole 4818 psi DURATION OF TEST 208 hrs
 OPEN FLOW Gas 3304 mcfpd Oil 0 bpd NGL 0 bpd Water 603 bpd GAS MEASURED BY Estimated Orifice Pilot

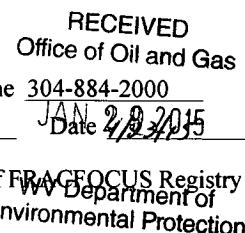
LITHOLOGY / FORMATION	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY TYPE OF FLUID (FRESHWATER, BRINE, GAS, H2S, ETC)
					SEE ATTACHED

Please insert additional pages as applicable.

Drilling Contractor Nabors Drilling USA
 Address 515 West Greens Road, Ste 1000 City Houston State TX Zip 77067
 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 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 Spittler Title Steve Spittler - Completions Manager-Gas WV Date JAN 22 2015

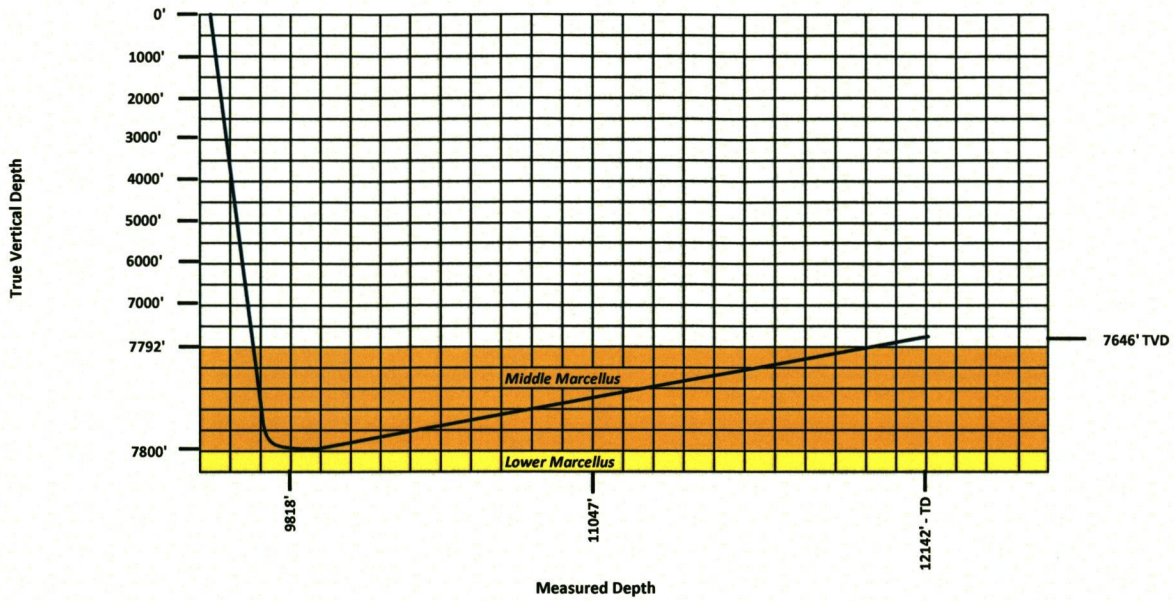


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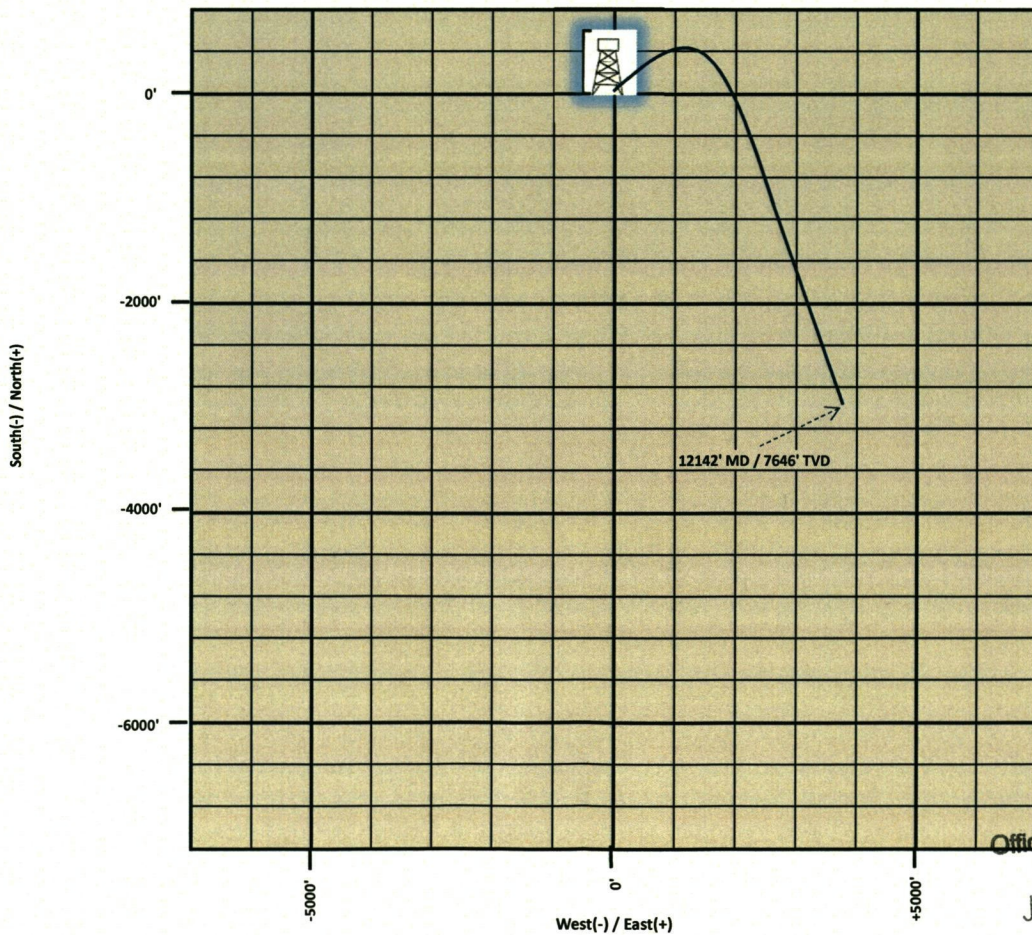
LITHOLOGY / FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY TYPE OF FLUID (FRESHWATER, BRINE, GAS, H2S, ETC)
	DEPTH IN FT	DEPTH IN FT	DEPTH IN FT	DEPTH IN FT	
	TVD	TVD	MD	MD	
FILL	0	110			
SHALE	110	450			Black
SAND	450	570			Gray
COAL	570	585			Black
SHALE/SAND	585	650			Black/Gray
SAND	650	820			Gray
SHALE/SAND	820	1150			Black/Gray
RED ROCK	1150	1182			Red
SHALE	1182	1850			Black
SAND	1850	1960			Gray
SAND/SHALE	1960	2100			Gray/Black
RED ROCK	2100	2140			Red
SANDY SHALE	2140				Gray/Black
FOURTH SAND	2275	2308			
SPEECHLEY	3128	3139			
BALLTOWN	3313	3349			
BRADFORD	3615	3857			
RILEY	4045	4226			
BENSON	4439	4505			
FIRST ELK	4671	4729			
SECOND ELK	4823	4903			
THIRD ELK	5082	5120			
FOURTH ELK	5353	5391			
SYCAMORE GRIT	6679	7083			
FRIB	7083	7536			
BURKETT	7536	7553			
TULLY LIMESTONE	7553	7609			
HAMILTON SHALE	7609	7767			
UPPER MARCELLUS	7767	7792			
MIDDLE MARCELLUS	7792	7800			
LOWER MARCELLUS	7800				

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CNX PHL10AHS - Views Profile View



As Drilled View



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CNX PHL10AHS Gyro+MWD 7106.5ft to update Survey Report

(Non-Def Survey)

Report Date:	March 18, 2014 - 12:42 PM	Survey / DLS Computation:	Minimum Curvature / Lubinski
Client:	CNX	Vertical Section Azimuth:	129.476 ° (Grid North)
Field:	WV Barbour County (NAD27)	Vertical Section Origin:	0.000 ft, 0.000 ft
Structure / Slot:	CNX PHL10 Pad / PHL10AHS	TVD Reference Datum:	KB
Well:	PHL10AHS	TVD Reference Elevation:	1628.340 ft above MSL
Borehole:	Original Borehole	Seabed / Ground Elevation:	1605.840 ft above MSL
UWI / API#:	Unknown / Unknown	Magnetic Declination:	-9.519 °
Survey Name:	CNX PHL10AHS Gyro+MWD 7106.5ft to update	Total Gravity Field Strength:	999.2715mgn (9.80665 Based)
Survey Date:	March 10, 2014	Gravity Model:	GARM
Tort / AHD / DDI / ERD Ratio:	209.881 ° / 5685.738 ft / 6.269 / 0.729	Total Magnetic Field Strength:	52201.394 nT
Coordinate Reference System:	NAD27 West Virginia State Plane, Northern Zone, US Feet	Magnetic Dip Angle:	66.401 °
Location Lat / Long:	N 39° 12' 48.89425", W 80° 2' 12.53046"	Declination Date:	March 10, 2014
Location Grid N/E Y/X:	N 280355.458 RUS, E 1847895.631 ftUS	Magnetic Declination Model:	HDGM 2013
CRS Grid Convergence Angle:	-0.3424 °	North Reference:	Grid North
Grid Scale Factor:	0.99998649	Grid Convergence Used:	-0.3424 °
Version / Patch:	2.7.1043.0	Total Corr Mag North->Grid North:	-9.1770 °
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (N/S ft)	EW (E/W ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (ft)
SHL	0.00	0.00	0.00	0.00	0.00	N 0.00	E 0.00	0.00	0.00	N/A	162.98M
	110.50	0.27	162.98	110.50	0.22	S 0.25	E 0.08	0.26	162.98	0.24	167.48M
	210.50	0.26	167.48	210.50	0.59	S 0.70	E 0.19	0.72	164.39	0.02	166.51M
	310.50	0.24	166.51	310.50	0.94	S 1.12	E 0.29	1.16	165.38	0.02	171.31M
	410.50	0.29	171.31	410.50	1.29	S 1.57	E 0.38	1.62	166.45	0.05	166.85M
	510.50	0.15	168.85	510.50	1.59	S 1.95	E 0.45	2.00	167.09	0.14	170.71M
	610.50	0.18	170.71	610.50	1.81	S 2.23	E 0.50	2.29	167.32	0.03	171.43M
	710.50	0.19	171.43	710.49	2.05	S 2.55	E 0.55	2.61	167.79	0.01	165.98M
	810.50	0.09	165.98	810.49	2.24	S 2.79	E 0.60	2.86	167.95	0.10	127.34M
	910.50	0.16	127.34	910.49	2.44	S 2.95	E 0.73	3.04	166.19	0.11	114.21M
	1010.50	0.30	114.21	1010.49	2.83	S 3.15	E 1.08	3.33	161.12	0.15	126.74M
	1110.50	0.22	126.74	1110.49	3.28	S 3.37	E 1.47	3.68	156.44	0.10	133.43M
	1210.50	0.27	133.43	1210.49	3.70	S 3.65	E 1.79	4.06	153.80	0.06	143.43M
	1310.50	0.07	143.43	1310.49	4.00	S 3.88	E 2.00	4.35	152.58	0.20	151.2M
	1410.50	0.14	151.20	1410.49	4.17	S 4.01	E 2.10	4.53	152.42	0.07	77.11M
	1510.50	0.14	77.11	1510.49	4.36	S 4.09	E 2.27	4.88	150.94	0.17	87.31M
	1610.50	0.17	87.31	1610.49	4.54	S 4.06	E 2.54	4.79	147.94	0.04	99.19M
	1710.50	0.29	99.19	1710.49	4.87	S 4.09	E 2.94	5.04	144.31	0.13	136.29M
	1810.50	0.24	136.29	1810.49	5.30	S 4.28	E 3.33	5.43	142.10	0.18	129.2M
	1910.50	0.13	129.20	1910.49	5.62	S 4.51	E 3.57	5.75	141.64	0.11	124.43M
	2010.50	0.32	124.43	2010.49	6.01	S 4.74	E 3.89	6.13	140.64	0.19	121.74M
	2110.50	0.27	121.74	2110.49	6.52	S 5.02	E 4.32	6.62	139.30	0.05	122.45M
	2210.50	0.36	122.45	2210.48	7.07	S 5.31	E 4.78	7.15	138.00	0.09	130.23M
	2310.50	0.41	130.23	2310.48	7.74	S 5.71	E 5.32	7.80	137.03	0.07	145.86M
	2410.50	0.33	145.86	2410.48	8.37	S 6.18	E 5.75	8.44	137.04	0.13	154.56M
	2510.50	0.26	154.56	2510.48	8.85	S 6.62	E 6.01	8.95	137.76	0.08	158.73M
	2610.50	0.40	158.73	2610.48	9.36	S 7.15	E 6.24	9.49	138.91	0.14	154.01M
	2710.50	0.48	154.01	2710.47	10.05	S 7.86	E 6.55	10.23	140.19	0.09	149.83M
	2810.50	0.59	149.83	2810.47	10.91	S 8.68	E 6.99	11.14	141.14	0.12	148.12M
	2910.50	0.49	148.12	2910.47	11.80	S 9.49	E 7.47	12.08	141.76	0.10	144.35M
	3010.50	0.51	144.35	3010.46	12.64	S 10.21	E 7.96	12.95	142.06	0.04	155.71M
	3110.50	0.51	155.71	3110.46	13.46	S 10.98	E 8.40	13.82	142.57	0.10	162.04M
	3210.50	0.52	162.04	3210.45	14.25	S 11.81	E 8.73	14.69	143.55	0.06	150.19M
	3310.50	0.69	150.19	3310.45	15.19	S 12.77	E 9.16	15.72	144.33	0.21	157.63M
	3410.50	0.65	157.63	3410.44	16.26	S 13.82	E 9.68	16.87	144.98	0.10	182.51M
	3510.50	0.45	182.51	3510.44	16.99	S 14.73	E 9.86	17.74	146.16	0.31	227.35M
	3610.50	0.38	227.35	3610.43	17.18	S 15.35	E 9.62	18.11	147.93	0.32	248.87M
	3710.50	0.44	248.87	3710.43	16.95	S 15.71	E 9.02	18.12	150.15	0.16	253.44M
	3810.50	0.76	253.44	3810.43	16.39	S 16.04	E 8.02	17.93	153.43	0.32	265.85M
	3910.50	1.10	265.85	3910.41	15.32	S 16.30	E 6.43	17.52	158.47	0.39	277.18M
	4010.50	1.45	277.18	4010.39	13.56	S 16.21	E 4.22	16.75	165.42	0.43	280.33M
	4110.50	1.42	280.33	4110.36	11.41	S 15.83	E 1.74	15.93	173.72	0.08	277.21M
	4210.50	2.37	277.21	4210.30	8.58	S 15.35	W 1.53	15.42	185.69	0.96	277.9M
	4310.50	2.24	277.90	4310.22	5.16	S 14.82	W 5.52	15.81	200.41	0.13	270.13M
	4410.50	1.53	270.13	4410.17	2.47	S 14.55	W 8.79	17.00	211.13	0.75	260.84M
	4510.50	1.02	260.84	4510.14	0.85	S 14.69	W 11.00	18.35	216.83	0.55	251.39M
	4610.50	0.63	251.39	4610.13	-0.03	S 15.00	W 12.40	19.46	219.57	0.41	200.81M
	4710.50	0.38	200.81	4710.13	-0.22	S 15.49	W 13.04	20.25	220.09	0.49	182.63M
	4810.50	0.39	182.63	4810.12	0.09	S 16.14	W 13.17	20.83	219.22	0.12	174.71M
	4910.50	0.46	174.71	4910.12	0.58	S 16.88	W 13.15	21.40	217.92	0.09	160.21M
	5010.50	0.58	160.21	5010.12	1.30	S 17.75	W 12.94	21.97	216.09	0.18	146.19M
	5110.50	0.69	146.19	5110.11	2.31	S 18.73	W 12.44	22.48	213.58	0.19	140.69M
	5140.50	0.76	140.69	5140.11	2.68	S 19.04	W 12.21	22.81	212.68	0.33	107.8M
	5189.50	1.10	107.80	5189.10	3.43	S 19.43	W 11.56	22.61	210.74	1.26	66.6M
	5234.50	4.50	66.60	5234.04	4.64	S 18.86	W 9.52	21.13	200.78	8.32	62.7M
	5279.50	7.50	62.70	5278.79	6.60	S 16.81	W 5.29	17.63	197.47	6.72	62.2M
	5324.50	10.60	62.20	5323.23	9.36	S 13.53	E 0.98	13.57	197.47	6.89	20.15L
	5369.50	13.10	58.20	5367.27	12.60	S 8.92	E 8.98	12.65	134.81	2.98L	
	5414.50	15.70	57.70	5410.85	16.14	S 2.97	E 18.46	18.70	99.15	5.78	12.28R
	5459.50	17.50	59.00	5453.97	20.30	N 3.76	E 29.41	29.65	82.71	4.08	96.41R
	5504.50	17.40	68.00	5496.91	25.78	N 9.77	E 41.45	42.58	78.74	8.00	36.82R
	5549.50	19.00	71.60	5539.66	32.89	N 14.60	E 54.64	56.55	75.04	4.34	6.61L
	5594.50	21.90	70.70	5581.82	41.14	N 19.69	E 69.51	72.25	74.18	6.48	0.95R
	5639.50	24.40	70.80	5623.19	50.32	N 25.52	E 86.21	89.91	89.91	5.56	9.59R
	5684.50	27.10	71.80	5663.72	60.64	N 31.78	E 104.73	109.45	109.45	6.08	27.39R
	5729.50	29.50	74.30	5703.34	72.44	N 37.98	E 125.14	130.77	130.77	6.95	12.76L
	5774.50	32.60	73.00	5741.89	85.47	N 44.53	E 147.40	153.98	153.98	7.31	12.64L
	5819.50	34.90	72.10	5779.30	99.11	N 52.03	E 171.25	178.98	178.98	5.23	28.35L

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Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (N/S ft)	EW (EW ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
	5863.50	36.80	70.40	5814.98	112.87	N 60.32	E 195.64	204.73	72.87	4.87	102.12R
	5908.50	36.70	71.20	5851.02	128.86	N 69.17	E 221.07	231.64	72.62	1.09	14.37L
	5953.50	37.90	70.70	5886.82	140.90	N 78.08	E 246.84	258.90	72.45	2.75	90L
	5998.50	37.90	70.20	5922.32	155.13	N 87.33	E 272.89	286.53	72.26	0.68	38.91R
	6043.50	39.00	71.60	5957.57	169.72	N 96.48	E 299.34	314.50	72.14	3.12	27.98R
	6088.50	40.60	72.90	5992.14	185.31	N 105.25	E 326.77	343.30	72.15	4.01	147.33L
	6133.50	40.00	72.30	6026.46	201.22	N 113.96	E 354.54	372.41	72.18	1.59	70.81L
	6178.50	40.30	71.00	6060.86	216.67	N 123.09	E 382.08	401.42	72.14	1.98	15.71R
	6223.50	41.00	71.30	6095.00	232.06	N 132.56	E 409.82	430.73	72.08	1.62	147.12L
	6268.50	40.40	70.70	6129.11	247.41	N 142.11	E 437.57	460.07	72.01	1.59	139.65L
	6313.50	39.80	69.90	6163.53	262.26	N 151.88	E 464.86	489.04	71.91	1.76	79.27L
	6358.50	39.90	69.10	6198.08	276.69	N 161.98	E 491.87	517.85	71.77	1.16	62.82L
	6403.50	40.10	68.50	6232.55	290.85	N 172.44	E 518.83	546.74	71.62	0.97	162.51L
	6448.50	39.10	68.00	6267.23	304.66	N 183.07	E 545.48	575.38	71.45	2.33	168.36R
	6493.50	38.20	68.30	6302.37	318.14	N 193.53	E 571.56	603.44	71.29	2.04	72.51R
	6537.50	38.40	69.30	6336.90	331.50	N 203.39	E 598.98	630.68	71.19	1.48	46.86R
	6582.50	39.30	70.80	6371.95	345.86	N 213.02	E 623.52	658.90	71.14	2.89	151.48L
	6627.50	38.50	70.10	6406.97	360.40	N 222.47	E 650.15	687.16	71.11	2.03	31.97L
	6672.50	38.80	70.00	6442.16	374.67	N 232.04	E 676.51	715.20	71.07	0.26	27.82L
	6717.50	39.20	69.50	6477.18	388.91	N 241.82	E 703.02	743.45	71.02	1.50	155.06L
	6762.50	38.40	68.90	6512.25	402.90	N 251.83	E 729.38	771.63	70.95	1.96	165.32R
	6794.50	37.70	69.20	6537.45	412.63	N 258.89	E 747.80	791.34	70.90	2.26	40.75R
	6825.50	38.50	70.30	6561.85	422.27	N 265.51	E 765.74	810.47	70.88	3.38	57.53R
	6856.50	38.70	70.80	6586.07	432.26	N 271.95	E 783.98	829.81	70.87	1.20	174.97L
	6888.50	38.00	70.70	6611.17	442.56	N 278.49	E 802.72	849.66	70.87	2.20	118.72L
	6919.50	37.80	70.10	6635.63	452.35	N 284.88	E 820.66	868.70	70.86	1.35	90R
	6950.50	37.80	71.40	6660.13	462.21	N 291.14	E 838.60	887.70	70.85	2.57	31.91R
	6981.50	38.40	72.00	6684.52	472.41	N 297.15	E 856.76	906.83	70.87	2.27	38.46L
	7012.50	39.20	71.00	6708.68	482.71	N 303.31	E 875.18	926.25	70.89	3.28	20.98R
	7044.50	39.70	71.30	6733.39	493.39	N 309.88	E 894.42	946.58	70.89	1.67	165.82L
	7075.50	39.20	71.10	6757.33	503.75	N 316.23	E 913.07	966.28	70.90	1.66	97L
	7106.50	39.10	69.70	6781.37	513.80	N 322.79	E 931.51	985.85	70.89	2.87	45.77L
	7169.00	39.72	68.71	6829.66	533.48	N 336.88	E 986.60	1025.51	70.82	1.41	147R
	7263.00	39.34	69.10	6902.16	562.87	N 358.42	E 1024.42	1085.31	70.72	0.48	91R
	7358.00	39.35	72.39	6975.63	594.13	N 378.27	E 1081.26	1145.52	70.72	2.20	156.99R
	7452.00	38.33	73.09	7048.85	628.46	N 395.77	E 1137.56	1204.44	70.82	1.18	175.24R
	7499.00	37.67	73.18	7085.89	642.50	N 404.16	E 1165.25	1233.35	70.87	1.41	95.67R
	7547.00	37.46	79.10	7123.95	659.95	N 411.17	E 1193.63	1262.46	70.99	7.53	114.23R
	7594.00	35.98	85.30	7161.63	678.97	N 415.00	E 1221.44	1290.01	71.23	8.49	80.75R
	7642.00	36.18	87.22	7200.43	699.57	N 416.85	E 1249.64	1317.33	71.55	2.39	68.21R
	7689.00	37.02	90.52	7238.16	720.85	N 417.39	E 1277.65	1344.10	71.91	4.55	21.36R
	7736.00	38.03	91.16	7275.44	743.21	N 416.97	E 1306.27	1371.21	72.30	2.30	41.2R
	7783.00	40.93	94.95	7311.72	767.26	N 415.35	E 1336.10	1399.17	72.73	8.02	116.74R
	7831.00	40.25	97.10	7348.17	793.31	N 412.07	E 1367.15	1427.90	73.23	3.24	91.85R
	7878.00	40.23	99.09	7384.05	819.23	N 407.80	E 1397.21	1455.50	73.73	2.74	30.16R
	7925.00	45.33	103.19	7418.54	847.33	N 401.58	E 1428.49	1483.87	74.30	12.36	36.12R
	7972.00	49.74	107.33	7450.27	878.95	N 392.42	E 1461.91	1513.66	74.97	11.41	66.25R
	8019.00	51.70	112.65	7480.04	913.23	N 379.97	E 1496.06	1543.56	75.75	9.70	83R
	8066.00	52.16	116.68	7509.03	948.99	N 364.53	E 1529.68	1572.51	76.60	6.82	59.53R
	8114.00	54.42	121.22	7537.73	986.81	N 345.90	E 1563.32	1601.13	77.52	8.92	35.83R
	8161.00	57.97	124.21	7563.88	1025.58	N 324.78	E 1596.16	1628.86	78.50	9.22	28.67R
	8208.00	61.95	126.66	7587.40	1066.15	N 301.18	E 1629.29	1656.89	79.53	9.59	22.89R
	8255.00	65.14	128.14	7608.34	1108.20	N 275.62	E 1662.70	1685.39	80.59	7.35	7.39R
	8303.00	66.27	128.30	7628.09	1151.94	N 248.56	E 1697.07	1715.18	81.67	2.37	74.23R
	8350.00	66.78	130.22	7646.81	1195.04	N 221.27	E 1730.45	1744.54	82.71	3.90	120.41R
	8398.00	65.64	132.38	7666.18	1238.94	N 192.29	E 1763.45	1773.90	83.78	4.75	53.44R
	8445.00	68.03	135.80	7684.67	1282.00	N 162.23	E 1794.47	1801.78	84.83	8.40	49.01R
	8492.00	70.21	138.44	7701.42	1325.51	N 130.05	E 1824.34	1828.97	85.92	7.00	42.38R
	8539.00	71.64	139.81	7716.78	1369.30	N 96.46	E 1853.40	1855.91	87.02	4.10	50.24R
	8587.00	72.46	140.84	7731.57	1414.14	N 61.31	E 1882.55	1883.55	88.13	2.66	43.28R
	8634.00	75.41	143.69	7744.58	1458.18	N 25.60	E 1910.18	1910.35	89.23	8.56	31.62R
	8682.00	78.41	145.57	7755.45	1503.30	S 12.52	E 1937.24	1937.28	90.37	7.32	32.94R
	8730.00	83.90	149.13	7762.83	1548.41	S 52.44	E 1962.80	1963.50	91.53	13.58	19.49R
	8777.00	84.97	149.51	7767.39	1592.41	S 92.67	E 1986.67	1988.83	92.67	2.41	5.88L
	8824.00	86.04	149.40	7771.07	1636.44	S 133.02	E 2010.48	2014.88	93.79	2.29	18.76L
	8871.00	87.04	149.06	7773.91	1680.59	S 173.33	E 2034.48	2041.85	94.87	2.25	19.04R
	8918.00	87.59	149.25	7776.11	1724.80	S 213.64	E 2058.55	2069.61	95.93	1.24	7.92R
	8966.00	88.38	149.36	7777.80	1769.93	S 254.89	E 2083.04	2098.58	96.98	1.66	4.16R
	9013.00	88.93	149.40	7778.90	1814.11	S 295.32	E 2106.97	2127.57	97.98	1.17	55.3R
	9060.00	89.11	149.66	7779.71	1858.25	S 335.83	E 2130.80	2157.10	98.96	0.67	80.05R
	9107.00	89.21	150.23	7780.40	1902.28	S 376.50	E 2154.34	2186.99	99.91	1.23	120.47L
	9155.00	89.11	150.06	7781.10	1947.18	S 418.13	E 2178.23	2218.00	100.87	0.41	166.61R
	9202.00	88.90	150.11	7781.91	1991.17	S 458.86	E 2201.67	2248.98	101.77	0.46	80.54R
	9250.00	88.93	150.29	7782.82	2036.06	S 500.51	E 2225.52	2281.10	102.67	0.38	74.05R
	9297.00	88.97	150.43	7783.69	2079.96	S 541.35	E 2248.76	2313.00	103.54	0.31	33.37R
	9344.00	89.38	150.70	7784.36	2123.81	S 582.28	E 2271.85	2345.28	104.38	1.04	170.01L
	9439.00	86.15	150.13	7788.07	2212.45	S 664.82	E 2318.71	2412.14	106.00	3.45	44.25R
	9534.00	86.56	150.53	7794.11	2301.05	S 747.19	E 2365.64	2480.84	107.53	0.60	19.9L
	9629.00	88.66	149.77	7798.07	2389.85	S 829.51	E 2412.88	2551.49	108.97	2.35	33.69L
	9723.00	88.90	149.61	7800.07	2478.04	S 910.65	E 2460.31	2623.44	110.31	0.31	23.71L
	9818.00	90.79	148.78	7800.33	2567.46	S 992.24	E 2508.96	2698.04	111.58	2.17	12.83L
	9912.00	92.72	148.34	7797.45	2656.25	S 1072.40	E 2557.97	2773.67	112.75	2.11	76.2R
	10007.00	92.96	149.32	7792.74	2745.77	S 1153.58	E 2607.08	2850.89	113.87	1.06	75.58R
	10101.00	93.18	150.10	7787.72	2833.85	S 1234.63	E 2654.42	2927.50	114.94	0.86	70.88L
	10196.00	93.44	149.29	7782.25	2922.84	S 1316.51	E 2702.28	3005.91	115.97	0.90	20.01L
	10291.00	95.19	148.65	7775.11	3012.14	S 1397.69	E 2751.11	3085.79	116.93	1.96	99.37R
	10385.00	94.98	149.92	7766.77	3100.23	S 1478.18	E 2798.93	3165.28	117.84	1.36	156.47R
	10480.00	94.27	150.23	7759.11	3188.86	S 1560.24	E 2846.17	3245.77	118.73	0.82	103.16R
	10574.00	94.09	151.00	7752.26	3276.30	S 1641.93	E 2892.17	3325.74	119.60	0.84	79.06R
	10669.00	94.33	152.25	7745.29	3364.05	S 1725.29	E 2937.19	3406.42	120.43	0.34	46.72R
	10764.00	95.37	153.36	7737.26	3450.97	S 1809.48	E 2980.45	3486.74	121.22	0.65	65.28R
	10858.00	96.20	155.18	7727.78	3535.67	S 1893.73	E 3021.05	3565.52	122.08	2.12	85.18R
	10953.00	96.30	156.39	7717.44	3620.						

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (N/S ft)	EW (E/W ft)	Closure (ft)	Closure Azimuth (°)	DLS (°/100ft)	TF (°)
	11521.00	93.47	148.06	7677.09	4141.42	S 2481.51	E 3321.44	4148.06	126.76	1.59	139.81R
	11615.00	93.34	148.17	7671.51	4230.33	S 2561.19	E 3371.00	4233.60	127.23	0.18	78.87R
	11710.00	93.44	148.68	7665.89	4320.03	S 2641.98	E 3420.66	4322.15	127.68	0.55	97.6R
	11805.00	93.40	148.98	7660.22	4409.50	S 2723.12	E 3469.74	4410.72	128.13	0.32	101.76L
	11899.00	93.20	148.02	7654.81	4498.22	S 2803.14	E 3518.77	4498.82	128.54	1.04	170.43L
	11994.00	91.48	147.73	7650.93	4588.28	S 2883.52	E 3569.25	4588.49	128.93	1.84	85.77R
	12058.00	91.55	148.68	7649.24	4648.87	S 2937.90	E 3602.96	4648.93	129.19	1.49	HS
Projection to TD	12142.00	91.55	148.68	7646.97	4728.17	S 3009.63	E 3646.60	4728.17	129.53	0.00	

Survey Type: Non-Def Survey

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma
 Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	22.500	Act Stns	30.000	30.000	SLB_NSG+MSHOT-Depth Only	Original Borehole / CNX PHL10AHS Gyro+MWD 7106.5ft to update
	1	22.500	5140.500	Act Stns	30.000	30.000	SLB_NSG+MSHOT	Original Borehole / CNX PHL10AHS Gyro+MWD 7106.5ft
	1	5140.500	12058.000	Act Stns	30.000	30.000	SLB_MWD-STD	Original Borehole / CNX PHL10AHS Gyro+MWD 7106.5ft
	1	12058.000	12142.000	Act Stns	30.000	30.000	SLB_BLIND	Original Borehole / CNX PHL10AHS Gyro+MWD 7106.5ft

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/10/2014
Job End Date:	6/18/2014
State:	West Virginia
County:	Barbour
API Number:	47-001-03251-00-00
Operator Name:	CONSOL Energy Inc.
Well Name and Number:	PHL-10A
Longitude:	-80.03670270
Latitude:	39.21346520
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	7,800
Total Base Water Volume (gal):	6,121,326
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	100.0000	87.05484	
Sand (Proppant), DAP-903, DWP-111, DWP-614, DWP-901, BioClear 2000, DWP-NE1	CWS	Propping Agent, Scale Inhibitor, Gel Slurry, Viscosifier, Breaker, Biocide, Non-Emulsifier	Crystalline silica (Quartz)	14808-60-7	100.0000	12.59076	
			Hydrochloric acid	7647-01-0	35.0000	0.19693	
			2-Propenoic acid, polymer with 2-propenamido, sodium salt	225987-30-8	40.0000	0.03521	
			Distillates (petroleum), hydrotreated middle	64742-46-7	60.0000	0.02741	
			Calcite	471-34-1	1.0000	0.02119	
			Polyethylene glycol mixture	25322-68-3	70.0000	0.01364	
			2,2-Dibromo-3-Nitropropionamide	10222-01-2	20.0000	0.01364	
			2-Propenoic acid, polymer with sodium phosphonate	71050-62-9	60.0000	0.00731	
			Illite	12173-60-3	1.0000	0.00688	
			Goethite	1310-14-1	0.1000	0.00558	
			Sorbitan monooleate	1338-43-8	5.0000	0.00440	

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		Poly(oxyethylene)nonylphenol ether	9016-45-9	5.00000	0.00440
		Biotite	1302-27-8	0.10000	0.00356
		Apatite	64476-38-6	0.10000	0.00356
		Ilmenite	98072-94-7	0.10000	0.00255
		Methanol	67-56-1	15.00000	0.00193
		Guar gum	9000-30-0	60.00000	0.00100
		Alkenes, C>10 a-	64743-02-8	0.10000	0.00084
		Alcohols, C14-15, ethoxylated	68951-67-7	0.10000	0.00084
		Fatty acids, tall-oil	61790-12-3	0.10000	0.00084
		Modified thiourea polymer	68527-49-1	0.10000	0.00084
		Dimethylcocoamine, bis (chloroethyl) ether, diquatary ammonium salt	68607-28-3	40.00000	0.00063
		Isopropanol	67-63-0	40.00000	0.00063
		Propargyl Alcohol	107-19-7	0.10000	0.00028
		Diallyldimethylammonium chloride	7398-69-8	5.00000	0.00008
		Quaternary ammonium compounds, bis(hydrogenated tallow alkyl)dimethyl, salts with bentonite	68953-58-2	5.00000	0.00008
		Formaldehyde	50-00-0	0.10000	0.00006
		Sodium chloride	7647-14-5	0.10000	0.00003
		Ammonium Persulfate	7727-54-0	100.00000	0.00003
		Oxirane, 2-methyl-, polymer with oxirane, monodecyl ether	37251-67-5	1.50000	0.00002

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)

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