

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

API 47-085-10129FH6A County Ritchie District Clay
Quad Ellenboro 7.5' Pad Name PEN20HS Field/Pool Name Pennsboro
Farm Name COKELEY, LAWRENCE & ANGELA Well Number PEN20GHS - Fracture
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 4,353,170.70 m Easting 497,759.89 m
Landing Point of Curve Northing 4,353,486.96 m Easting 497,887.16 m
Bottom Hole Northing 4,354,561.18 m Easting 496,922.89 m

Elevation (ft) 1081' 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)
Synthetic Oil Based.

Date Permit Issued 03/13/2017 Date drilling commenced 01/13/2015 Date drilling ceased 02/03/2015
Date completion activities began 07/17/2017 Date completion activities ceased 7/25/2017
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

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Freshwater depth(s) ft 398' Open mine(s) (Y/N) depths N
Salt water depth(s) ft None Noted for Offsets Void(s) encountered (Y/N) depths N
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: As

Reviewed

02/16/2018

API 47-085-10129FH6A Farm name COKELEY, LAWRENCE & ANGELA Well number PEN20GHS - Fracture

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"	40'	New	DH-36		
Surface	17 1/2"	13 3/8"	599.3'	New	J-55		Y
Coal							
Intermediate 1	12 3/8"	9 5/8"	5330.5'	New	HCK-55		Y
Intermediate 2							
Intermediate 3							
Production	8 3/4"	5 1/2"	11596.9'	New	P-110		Y
Tubing	5 1/2"	2 3/8"	6766.30'	New	P-110 4.7# / 6766.30'		
Packer Type and Depth Set		None					

Comment Details *approved cement variance of 2% accelerator (S001) 0.2% Antifoam (D046) 0.125 lb/sk Polyester Flake (D130).

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							
Surface	PJSM Cement	530 sks	15.60	1.19	630.7	25.8'	8
Coal							
Intermediate 1	Type 1 / Class A	989 sks / 317 sks	15.60	1.61 / 1.19	2286	25.8'	8
Intermediate 2							
Intermediate 3							
Production	Type 1 / Class A	455 sks / 1202 sks	14.8	1.61 / 1.37	2379.29	25.8'	8
Tubing							

Drillers TD (ft) 6203' Loggers TD (ft) 6233'
 Deepest formation penetrated: Marcellus Plug back to (ft) _____
 Plug back procedure: _____

Kick Off Depth (ft) 5353'

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 - 5 centralizers used. Intermediate - 68 centralizers used (Bow spring centralizers on first two joints then every third joint to 100' from surface). Production - 252 centralizers used (rigid bow spring every joint to KOP, rigid bow spring every third joint from KOP to top of cement).

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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API 47-085-10129FH6A Farm name COKELEY, LAWRENCE Well number PEN20GHS - Fracture
& ANGELA

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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Please insert additional pages as applicable.

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number Of Perforations	Formation(s)
1	7/17/2017	11314	11468	40	Marcellus
2	7/17/2017	14699	14533	40	Marcellus
3	7/17/2017	14494	14338	40	Marcellus
4	7/18/2017	14289	14143	40	Marcellus
5	7/18/2017	14084	13948	40	Marcellus
6	7/18/2017	13879	13753	40	Marcellus
7	7/18/2017	10149	10305	40	Marcellus
8	7/19/2017	9954	10110	40	Marcellus
9	7/19/2017	13264	13168	40	Marcellus
10	7/19/2017	13059	12973	40	Marcellus
11	7/19/2017	9369	9525	40	Marcellus
12	7/22/2017	9174	9331	40	Marcellus
13	7/23/2017	8981	9136	40	Marcellus
14	7/23/2017	11314	11468	40	Marcellus
15	7/23/2017	8748	8593	40	Marcellus
16	7/24/2017	8399	8554	40	Marcellus
17	7/24/2017	8399	8554	40	Marcellus
18	7/24/2017	8011	8166	40	Marcellus
19	7/24/2017	7817	7972	40	Marcellus
20	7/25/2017	7623	7778	40	Marcellus
21	7/25/2017	7429	7584	40	Marcellus
22	7/25/2017	7235	7390	40	Marcellus
23	7/25/2017	7041	7196	40	Marcellus
24	7/25/2017	6847	7002	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 (bbls)	Amount of Nitrogen / other (gals)
1	7/17/2017	89.1	7294	5757	2843	401384	7645	8175
2	7/17/2017	88.1	7269	5096	3268	401545	8010	4445
3	7/18/2017	88.7	7598	5829	3479	400907	7965	4348
4	7/18/2017	88.0	88.0	5884	3404	400359	7567	4273
5	7/18/2017	73.5	7506	5783	3100	400611	6868	4301
6	7/18/2017	87.9	7499	5373	3446	400285	6686	4263
7	7/18/2017	88.5	7468	5628	3708	401012	7374	4298
8	7/19/2017	89.5	7522	6189	3785	400921	7284	4310
9	7/19/2017	91.4	7746	6133	4083	400593	6687	4247
10	7/19/2017	89.2	7192	3983	3816	400823	6672	4233
11	7/19/2017	89.1	7495	6526	3801	403750	7434	4251
12	7/22/2017	79.9	7396	4582	4485	213761	7098	8707
13	7/23/2017	88.5	6790	5389	4398	401755	6944	4317
14	7/23/2017	88.4	6944	6073	3940	402121	7032	4255
15	7/23/2017	91.3	6959	6177	3765	400897	7353	4300
16	7/24/2017	89.5	6962	5985	3936	400906	7275	4277
17	7/24/2017	92.3	7033	5868	3664	403303	6765	4249
18	7/24/2017	93.0	6534	3969	4345	401677	6831	4238
19	7/24/2017	92.2	6839	5892	4030	400715	7038	4235
20	7/25/2017	91.6	6789	4933	4050	400789	7034	4220
21	7/25/2017	89.6	6613	5411	4012	402015	6691	4240
22	7/25/2017	88.8	6538	6100	3806	401318	6587	4215
23	7/25/2017	92.2	6678	5536	4004	400799	7044	4232
24	7/26/2017	92.5	6688	5496	4634	400785	6912	4206

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PRODUCING FORMATION(S)	DEPTHS
<u>MARCELLUS</u>	<u>6203'</u> TVD <u>11615'</u> MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump
 SHUT-IN PRESSURE Surface 722 psi Bottom Hole 2265 psi DURATION OF TEST .5 hrs
 OPEN FLOW Gas 3523.21 mcfpd Oil 48 bpd NGL N/A bpd Water 384 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 Nomac 78 Drilling
 Address 171 Locust Ave. Ext. City Mt. Morris State PA Zip 15349
 Logging Company Baker Hughes
 Address 400 Technology Drive City Canonsburg State PA Zip 15317
 Cementing Company Schlumberger
 Address 4600 J. Barry Ct., Suite 200 City Canonsburg State PA Zip 15317
 Stimulating Company U.S. Well Service
 Address 533 Industrial Park Drive City Jane Lew State WV Zip 26378

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Please insert additional pages as applicable.

Completed by CNX Gas WV Operations Company, LLC - Drilling and Completions Telephone 304-884-2000
 Signature [Signature] Title Adam Shutler - Completions Superintendent-Gas WV Date 12/20/17

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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	
SHALE/SANDSTONE	0	1222			
SANDSTONE	1222	1346			
SHALE/SANDSTONE	1346	1506			
SANDSTONE	1506	1548			
SHALE/SANDSTONE	1548	1650			
MAXTON SAND	1650	1733			
SHALE/SANDSTONE	1733	1856			
BIG LIME	1856	1911			
BIG INJUN	1911	2046			
PRICE	2046	2318			
WEIR	2318	2357			
SHALE	2357	2637			
GORDON	2637	2654			
SHALE/SANDSTONE	2654	2834			
5TH SAND	2834	2846			
SHALE	2846	2989			
SANDSTONE	2989	3003			
SHALE/SANDSTONE	3003	3411			
BENSON	4838	4900			
SHALE	4900	5060			
ALEXANDER	5060	5128			
SHALE	5128	5638			
RHINESTREET	5638	5964			
CASHAQUA	5964	6056			
MIDDLESEX SHALE	6056	6085			
WEST RIVER	6085	6129			
BURKETT	6129	6172			
TULLY LIMESTONE	6172	6173			
HAMILTON SHALE	6173	6174			
MARCELLUS	6174	6233			
ONONDAGA	6233				

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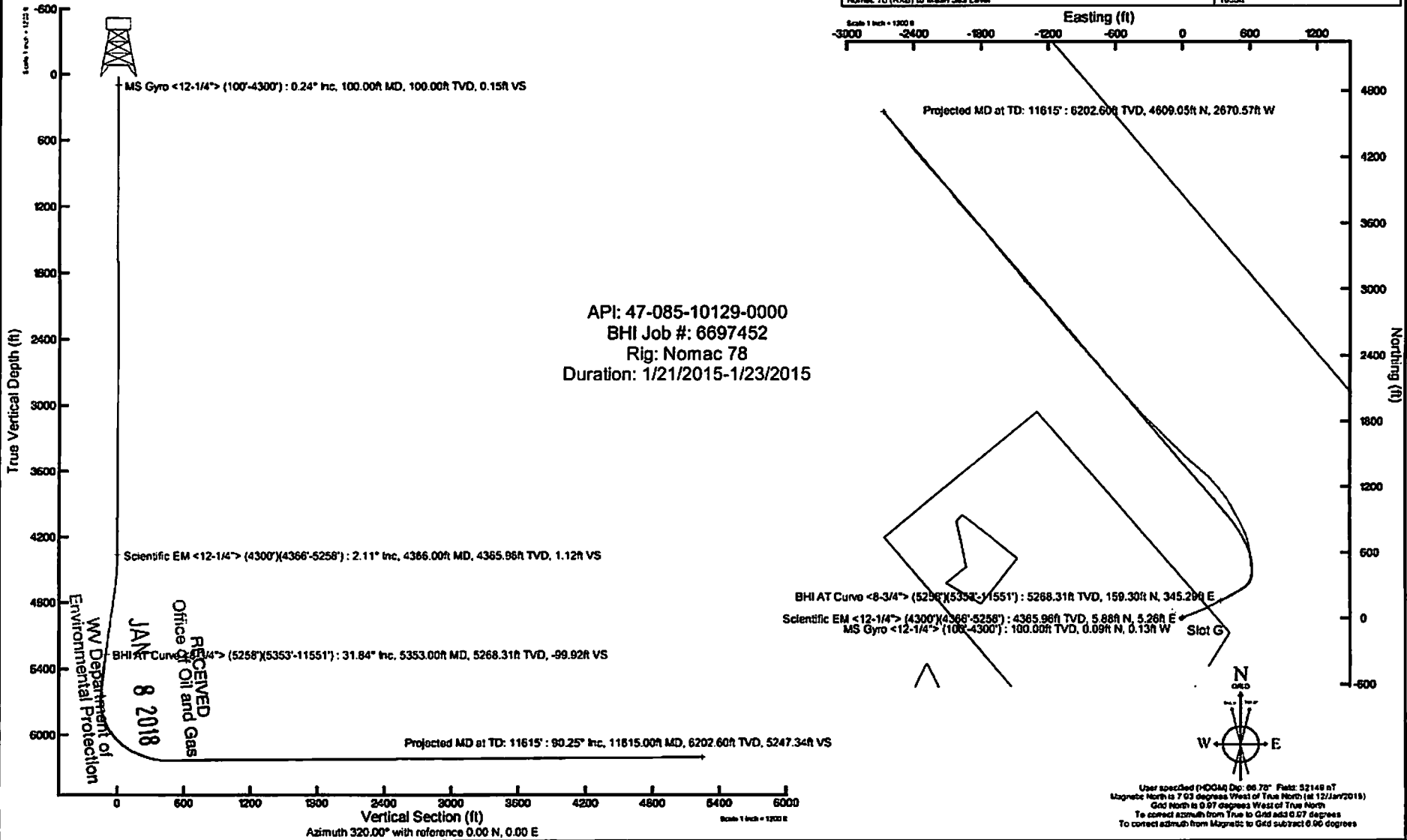
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Location: Ritchie County, WV
 Field: Ritchie
 Facility: PEN-20 Pad

Slot: Slot G
 Well: PEN-20G-HS
 Wellbore: PEN-20G-HS PWB

Field reference well(s) is PEN-20G PWB Rev C 0	Ort System: NAD83 / Lambert West Virginia SP, Northern Zone (2011) US feet
True north of depths are referenced to Magnetic N (2015)	North Reference: Grid north
Measured depths are referenced to Nomac 78 (R28)	Seal: True distance
Nomac 78 (R28) to Mean Sea Level: 1853 feet	Depth area: feet
Mean Sea Level to Mud line (At Slot: Slot G): -1029 feet	Checked by: subuser on 2/12/2015
Coordinates are as first referenced to 946	

Location Information						
Facility Name		Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	
PEN-20 Pad		1568205.620	305276.580	39°19'41.124"N	81°01'35.326"W	
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot G	-81.03	68.02	1568203.820	305193.950	39°19'40.332"N	81°01'34.169"W
Nomac 78 (RXB) to Mud line (At Slot: Slot G)				282		
Mean Sea Level to Mud line (At Slot: Slot G)				-1029 ft		
Nomac 78 (RXB) to Mean Sea Level				1853 ft		





Actual Wellpath Report

PEN-20G-HS AWP Proj: 11615'
Page 1 of 8



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot G
Area	Ritchie County, WV	Well	PEN-20G-HS
Field	Ritchie	Wellbore	PEN-20G-HS AWB
Facility	PEN-20 Pad		

REPORT SETUP INFORMATION			
Projection System	NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet	Software System	WellArchitect® 4.0.1
North Reference	Grid	User	Edsaryar
Scale	0.999954	Report Generated	27/Jan/2015 at 10:59
Convergence at slot	0.97° West	Database/Source file	WellArchitectEasternDB/PEN-20G-HS_AWB.xml

WELLPATH LOCATION						
	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-81.63	88.02	1568293.82	305193.95	39°19'40.332"N	81°01'34.169"W
Facility Reference Pt			1568205.80	305275.58	39°19'41.124"N	81°01'35.306"W
Field Reference Pt			0.00	0.00	38°17'12.460"N	86°28'23.077"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Nomac 78 (RKB) to Facility Vertical Datum	1055.00ft
Horizontal Reference Pt	Slot	Nomac 78 (RKB) to Mean Sea Level	1055.00ft
Vertical Reference Pt	Nomac 78 (RKB)	Nomac 78 (RKB) to Mud Line at Slot (Slot G)	26.00ft
MD Reference Pt	Nomac 78 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	320.00°

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Actual Wellpath Report

PEN-20G-HS AWP Proj: 11615'
Page 2 of 8



REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot G
Area	Ritchie County, WV	Well	PEN-20G-HS
Field	Ritchie	Wellbore	PEN-20G-HS AWB
Facility	PEN-20 Pad		

WELLPATH DATA (124 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	303.550	0.00	0.00	0.00	0.00	1568293.82	305193.95	39°19'40.332"N	81°01'34.169"W	0.00	0.000	0.00	0.00	0.00
26.00	0.000	303.550	26.00	0.00	0.00	0.00	1568293.82	305193.95	39°19'40.332"N	81°01'34.169"W	0.00	0.000	0.00	0.00	0.00
100.00	0.240	303.550	100.00	0.15	0.09	-0.13	1568293.69	305194.04	39°19'40.333"N	81°01'34.170"W	0.15	303.550	0.32	0.32	0.00
200.00	0.060	4.900	200.00	0.39	0.25	-0.30	1568293.52	305194.20	39°19'40.334"N	81°01'34.173"W	0.39	310.278	0.22	-0.18	61.35
300.00	0.120	224.880	300.00	0.41	0.23	-0.37	1568293.45	305194.18	39°19'40.334"N	81°01'34.174"W	0.44	302.131	0.17	0.06	-140.02
400.00	0.170	295.200	400.00	0.54	0.22	-0.58	1568293.24	305194.17	39°19'40.334"N	81°01'34.176"W	0.62	290.921	0.17	0.05	70.32
500.00	0.150	323.950	500.00	0.80	0.39	-0.79	1568293.03	305194.34	39°19'40.336"N	81°01'34.179"W	0.88	296.301	0.08	-0.02	28.75
600.00	0.080	177.190	600.00	0.88	0.43	-0.86	1568292.96	305194.38	39°19'40.336"N	81°01'34.180"W	0.96	296.286	0.22	-0.07	-146.76
700.00	0.160	253.430	700.00	0.88	0.32	-0.99	1568292.83	305194.27	39°19'40.335"N	81°01'34.181"W	1.04	287.671	0.16	0.08	76.24
800.00	0.160	308.540	800.00	1.07	0.36	-1.24	1568292.58	305194.31	39°19'40.335"N	81°01'34.185"W	1.29	286.388	0.15	0.00	55.11
900.00	0.070	182.880	900.00	1.16	0.39	-1.35	1568292.47	305194.34	39°19'40.336"N	81°01'34.186"W	1.40	286.112	0.21	-0.09	-125.66
1000.00	0.140	254.900	1000.00	1.17	0.30	-1.47	1568292.35	305194.25	39°19'40.335"N	81°01'34.188"W	1.50	281.411	0.14	0.07	72.02
1100.00	0.130	7.180	1100.00	1.30	0.38	-1.57	1568292.25	305194.33	39°19'40.336"N	81°01'34.189"W	1.62	283.488	0.22	-0.01	112.28
1200.00	0.100	77.890	1200.00	1.34	0.51	-1.47	1568292.35	305194.46	39°19'40.337"N	81°01'34.188"W	1.56	289.031	0.14	-0.03	70.71
1300.00	0.180	333.250	1300.00	1.45	0.67	-1.46	1568292.36	305194.62	39°19'40.338"N	81°01'34.187"W	1.60	294.567	0.23	0.08	-104.64
1400.00	0.070	75.190	1400.00	1.57	0.82	-1.47	1568292.35	305194.77	39°19'40.340"N	81°01'34.188"W	1.68	299.231	0.21	-0.11	101.94
1500.00	0.200	51.200	1500.00	1.55	0.95	-1.27	1568292.55	305194.90	39°19'40.341"N	81°01'34.185"W	1.59	306.623	0.14	0.13	-23.99
1600.00	0.180	338.120	1600.00	1.69	1.20	-1.20	1568292.62	305195.15	39°19'40.344"N	81°01'34.184"W	1.70	315.129	0.23	-0.02	-73.08
1700.00	0.240	1.980	1700.00	2.00	1.56	-1.25	1568292.57	305195.51	39°19'40.347"N	81°01'34.185"W	2.00	321.287	0.10	0.06	23.86
1800.00	0.230	36.260	1800.00	2.20	1.93	-1.12	1568292.70	305195.88	39°19'40.351"N	81°01'34.183"W	2.23	329.802	0.14	-0.01	34.28
1900.00	0.120	56.900	1899.99	2.23	2.15	-0.92	1568292.90	305196.10	39°19'40.353"N	81°01'34.181"W	2.34	336.901	0.13	-0.11	20.64
2000.00	0.120	330.810	1999.99	2.32	2.30	-0.88	1568292.94	305196.25	39°19'40.355"N	81°01'34.180"W	2.46	339.046	0.16	0.00	-86.09
2100.00	0.170	14.970	2099.99	2.51	2.53	-0.89	1568292.93	305196.48	39°19'40.357"N	81°01'34.181"W	2.68	340.584	0.12	0.05	44.16
2200.00	0.230	68.800	2199.99	2.53	2.75	-0.67	1568293.15	305196.70	39°19'40.359"N	81°01'34.178"W	2.83	346.358	0.19	0.06	53.83
2300.00	0.160	75.000	2299.99	2.41	2.86	-0.34	1568293.48	305196.81	39°19'40.360"N	81°01'34.174"W	2.88	353.117	0.07	-0.07	6.20
2400.00	0.080	190.300	2399.99	2.31	2.82	-0.22	1568293.60	305196.77	39°19'40.360"N	81°01'34.172"W	2.83	355.497	0.21	-0.08	115.30
2500.00	0.110	203.270	2499.99	2.22	2.67	-0.27	1568293.55	305196.62	39°19'40.358"N	81°01'34.173"W	2.68	354.160	0.04	0.03	12.97
2600.00	0.090	248.890	2599.99	2.20	2.55	-0.38	1568293.44	305196.50	39°19'40.357"N	81°01'34.174"W	2.58	351.437	0.08	-0.02	45.62
2700.00	0.090	87.470	2699.99	2.18	2.53	-0.38	1568293.44	305196.47	39°19'40.357"N	81°01'34.174"W	2.55	351.470	0.18	0.00	-161.42
2800.00	0.120	57.640	2799.99	2.12	2.58	-0.21	1568293.61	305196.53	39°19'40.358"N	81°01'34.172"W	2.59	355.315	0.06	0.03	-29.83

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Actual Wellpath Report

PEN-20G-HS AWP Proj: 11615'

Page 3 of 8



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Operator	NOBLE ENERGY	Slot	Slot G
Area	Ritchie County, WV	Well	PEN-20G-HS
Field	Ritchie	Wellbore	PEN-20G-HS AWB
Facility	PEN-20 Pad		

WELLPATH DATA (124 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]
2900.00	0.130	28.550	2899.99	2.14	2.74	-0.07	1568293.75	305196.69	39°19'40.359"N	81°01'34.170"W	2.74	358.555	0.06	0.01	-29.09
3000.00	0.120	320.880	2999.99	2.29	2.92	-0.08	1568293.74	305196.87	39°19'40.361"N	81°01'34.170"W	2.92	358.412	0.14	-0.01	-67.67
3100.00	0.130	102.780	3099.99	2.30	2.98	-0.04	1568293.78	305196.93	39°19'40.361"N	81°01'34.170"W	2.98	359.299	0.24	0.01	141.90
3200.00	0.090	359.220	3199.99	2.27	3.03	0.07	1568293.89	305196.98	39°19'40.362"N	81°01'34.168"W	3.03	1.382	0.17	-0.04	-103.56
3300.00	0.140	142.480	3299.99	2.21	3.01	0.15	1568293.97	305196.96	39°19'40.362"N	81°01'34.168"W	3.02	2.784	0.22	0.05	143.26
3400.00	0.020	251.300	3399.99	2.10	2.91	0.20	1568294.02	305196.86	39°19'40.361"N	81°01'34.167"W	2.92	4.017	0.15	-0.12	108.82
3500.00	0.190	67.720	3499.99	2.05	2.97	0.34	1568294.16	305196.92	39°19'40.361"N	81°01'34.165"W	2.99	6.561	0.21	0.17	176.42
3600.00	0.170	39.770	3599.99	2.03	3.14	0.59	1568294.41	305197.09	39°19'40.363"N	81°01'34.162"W	3.20	10.621	0.09	-0.02	-27.95
3700.00	0.310	51.300	3699.99	2.05	3.43	0.90	1568294.72	305197.38	39°19'40.366"N	81°01'34.158"W	3.54	14.645	0.15	0.14	11.53
3800.00	0.360	43.280	3799.99	2.08	3.83	1.32	1568295.14	305197.77	39°19'40.370"N	81°01'34.153"W	4.05	19.067	0.07	0.05	-8.02
3900.00	0.140	60.650	3899.99	2.09	4.11	1.64	1568295.46	305198.06	39°19'40.373"N	81°01'34.149"W	4.43	21.783	0.23	-0.22	17.37
4000.00	0.420	58.010	3999.99	2.02	4.37	2.06	1568295.88	305198.32	39°19'40.376"N	81°01'34.143"W	4.83	25.265	0.28	0.28	-2.64
4100.00	0.380	64.140	4099.98	1.89	4.71	2.67	1568296.49	305198.66	39°19'40.379"N	81°01'34.136"W	5.41	29.571	0.06	-0.04	6.13
4200.00	0.420	52.890	4199.98	1.79	5.07	3.26	1568297.08	305199.02	39°19'40.383"N	81°01'34.128"W	6.03	32.739	0.09	0.04	-11.25
4300.00	0.410	65.390	4299.98	1.68	5.44	3.88	1568297.70	305199.39	39°19'40.386"N	81°01'34.121"W	6.68	35.478	0.09	-0.01	12.50
4366.00	2.110	74.010	4365.96	1.12	5.88	5.26	1568299.08	305199.83	39°19'40.391"N	81°01'34.103"W	7.89	41.845	2.58	2.58	13.06
4461.00	7.170	69.410	4460.62	-1.56	8.44	12.50	1568306.32	305202.39	39°19'40.418"N	81°01'34.012"W	15.08	55.955	5.34	5.33	-4.84
4556.00	14.160	67.090	4553.92	-6.96	15.06	28.77	1568322.59	305209.01	39°19'40.486"N	81°01'33.806"W	32.47	62.370	7.37	7.36	-2.44
4651.00	20.480	68.670	4644.57	-15.70	25.64	54.98	1568348.80	305219.59	39°19'40.595"N	81°01'33.475"W	60.67	64.999	6.67	6.65	1.66
4745.00	24.360	69.740	4731.45	-27.52	38.34	88.50	1568382.32	305232.29	39°19'40.726"N	81°01'33.051"W	96.45	66.577	4.15	4.13	1.14
4841.00	23.220	67.160	4819.29	-39.79	52.54	124.52	1568418.33	305246.49	39°19'40.872"N	81°01'32.596"W	135.15	67.122	1.61	-1.19	-2.69
4935.00	27.170	66.360	4904.33	-51.31	68.35	161.27	1568455.08	305262.29	39°19'41.035"N	81°01'32.132"W	175.15	67.032	4.22	4.20	-0.85
5030.00	30.580	66.410	4987.51	-64.25	86.72	203.30	1568497.11	305280.67	39°19'41.223"N	81°01'31.601"W	221.02	66.898	3.59	3.59	0.05
5125.00	29.540	63.890	5069.73	-76.69	106.70	246.47	1568540.28	305300.64	39°19'41.428"N	81°01'31.056"W	268.58	66.592	1.72	-1.09	-2.65
5219.00	28.170	60.640	5152.06	-86.36	127.78	286.63	1568580.43	305321.72	39°19'41.643"N	81°01'30.549"W	313.82	65.973	2.21	-1.46	-3.46
5313.00	28.850	61.110	5186.33	-89.87	136.84	302.89	1568596.69	305330.78	39°19'41.735"N	81°01'30.345"W	332.36	65.688	1.84	1.74	1.21
5407.00	31.840	62.990	5268.31	-99.92	159.30	345.29	1568639.09	305353.24	39°19'41.964"N	81°01'29.810"W	380.26	65.234	3.30	3.15	1.98
5499.00	34.770	59.260	5347.71	-109.91	184.53	390.91	1568684.71	305378.47	39°19'42.221"N	81°01'29.235"W	432.28	64.730	3.76	3.08	-3.93
5591.00	29.020	58.250	5428.33	-117.59	210.52	433.83	1568727.63	305404.46	39°19'42.485"N	81°01'28.694"W	482.21	64.114	6.08	-6.05	-1.06
5683.00	29.730	61.960	5511.12	-125.78	233.73	474.22	1568768.01	305427.66	39°19'42.721"N	81°01'28.186"W	528.69	63.763	2.06	0.75	3.91

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Actual Wellpath Report

PEN-20G-HS AWP Proj: 11615
Page 4 of 8



REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY
Area	Ritchie County, WV
Field	Ritchie
Facility	PEN-20 Pad
Slot	Slot G
Well	PEN-20G-HS
Wellbore	PEN-20G-HS AWB

WELLPATH DATA (124 stations)

Mid	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir	DLS	Build Rate	Turn Rate
[ft]	[°]	[°]	[ft]	[ft]	[ft]	[ft]	[US ft]	[US ft]	[ft]	[ft]	[ft]	[°]	[%/100ft]	[%/100ft]	[%/100ft]
5732.00	29.800	60.950	5592.72	-135.04	256.02	515.21	1568809.00	305449.96	39°19'42.94"N	81°01'27.66"W	575.31	63.576	0.54	0.07	-1.07
5827.00	28.840	50.800	5675.60	-139.85	281.99	553.62	1568847.42	305475.92	39°19'43.21"N	81°01'27.18"W	621.30	63.008	5.32	-1.01	-10.68
5922.00	28.860	38.240	5758.89	-135.49	314.50	585.60	1568879.39	305508.44	39°19'43.53"N	81°01'26.78"W	664.71	61.761	6.37	0.02	-13.22
6017.00	32.730	20.840	5840.64	-118.27	356.61	608.98	1568902.77	305550.55	39°19'43.95"N	81°01'26.49"W	705.72	59.647	10.18	4.07	-18.32
6112.00	36.800	3.410	5918.87	-84.98	409.17	619.84	1568913.63	305603.10	39°19'44.80"N	81°01'26.37"W	742.72	56.570	11.27	4.28	-18.35
6207.00	43.630	5591.42	-37.47	470.35	618.83	1568912.62	305664.28	305664.28	39°19'45.08"N	81°01'26.39"W	777.29	52.763	9.06	7.19	-8.57
6302.00	50.700	354.380	6055.97	19.70	539.69	612.52	1568906.31	305733.61	39°19'45.76"N	81°01'26.49"W	816.36	48.617	7.47	7.44	-0.94
6397.00	59.680	353.430	6110.14	84.39	617.16	604.21	1568898.00	305811.08	39°19'46.53"N	81°01'26.61"W	863.69	44.393	9.49	9.45	-1.00
6490.00	67.150	346.750	6151.77	156.32	698.94	589.77	1568883.56	305892.85	39°19'47.33"N	81°01'26.81"W	914.51	40.158	10.28	8.03	-7.18
6585.00	69.400	337.070	6187.01	238.09	782.68	562.35	1568856.14	305976.59	39°19'48.16"N	81°01'27.18"W	963.75	35.697	9.76	2.37	-10.19
6680.00	75.350	332.420	6215.77	325.60	864.47	523.70	1568817.49	306058.38	39°19'48.96"N	81°01'27.69"W	1010.73	31.207	7.81	6.26	-4.89
6775.00	86.240	331.080	6230.95	417.27	946.95	479.36	1568773.16	306140.85	39°19'49.77"N	81°01'28.27"W	1061.37	26.849	11.55	11.46	-1.41
6876.00	91.820	333.000	6231.81	467.12	991.97	455.47	1568749.26	306185.87	39°19'50.21"N	81°01'28.85"W	1091.53	24.662	11.57	10.94	-3.76
6870.00	92.060	331.540	6230.32	510.09	1030.89	435.01	1568728.80	306224.79	39°19'50.59"N	81°01'28.85"W	1118.91	22.878	3.36	0.55	-3.32
6968.00	90.740	323.560	6227.92	607.13	1113.49	382.48	1568676.28	306307.39	39°19'51.40"N	81°01'29.54"W	1177.35	18.957	8.25	-1.35	-8.14
7061.00	90.950	321.190	6226.55	700.04	1187.14	325.71	1568619.52	306381.03	39°19'52.11"N	81°01'30.28"W	1231.01	15.343	2.56	0.23	-2.55
7157.00	91.850	318.220	6224.20	795.99	1260.33	263.66	1568557.46	306454.22	39°19'52.83"N	81°01'31.08"W	1287.61	11.816	3.23	0.94	-3.09
7255.00	90.310	311.840	6222.36	893.55	1329.61	194.44	1568488.26	306523.50	39°19'53.50"N	81°01'31.98"W	1343.75	8.320	6.70	-1.57	-6.51
7348.00	89.540	311.440	6222.48	985.57	1391.40	124.94	1568418.76	306585.29	39°19'54.10"N	81°01'32.88"W	1397.00	5.131	0.93	-0.83	-0.43
7444.00	89.600	313.400	6223.20	1080.72	1456.16	54.08	1568347.90	306650.04	39°19'54.73"N	81°01'33.79"W	1457.16	2.127	2.04	0.06	2.04
7539.00	90.370	314.950	6223.22	1175.23	1522.36	-14.05	1568279.77	306716.23	39°19'55.37"N	81°01'34.67"W	1522.42	359.471	1.82	0.81	1.63
7634.00	90.030	314.530	6222.89	1269.82	1589.22	-81.53	1568212.29	306783.10	39°19'56.02"N	81°01'35.55"W	1591.31	357.063	0.57	-0.36	-0.44
7730.00	89.940	316.300	6222.92	1365.51	1657.59	-148.92	1568144.91	306851.46	39°19'56.68"N	81°01'36.42"W	1664.27	354.866	1.85	-0.09	1.84
7825.00	90.150	313.840	6222.84	1460.15	1724.85	-216.01	1568077.82	306918.71	39°19'57.34"N	81°01'37.29"W	1738.32	352.862	2.60	0.22	-2.59
7921.00	90.280	315.390	6222.48	1555.73	1792.27	-284.34	1568009.49	306986.13	39°19'57.96"N	81°01'38.17"W	1814.68	350.985	1.62	0.14	1.61
8016.00	90.580	318.260	6221.77	1650.57	1861.54	-349.33	1567944.50	307055.40	39°19'58.67"N	81°01'39.01"W	1894.03	349.372	3.04	0.32	3.02
8110.00	90.920	318.210	6220.51	1746.51	1933.14	-413.27	1567880.57	307127.00	39°19'59.36"N	81°01'39.84"W	1976.82	347.933	0.36	0.35	-0.05
8200.00	90.890	316.960	6218.99	1842.42	2004.00	-478.01	1567815.83	307197.86	39°20'00.05"N	81°01'40.68"W	2060.22	346.584	1.30	-0.03	-1.30
8300.00	91.140	315.710	6217.31	1937.20	2072.71	-543.59	1567750.25	307266.56	39°20'00.72"N	81°01'41.53"W	2142.81	345.304	1.34	0.26	-1.32
8399.00	89.380	316.910	6216.88	2033.00	2142.12	-609.90	1567683.95	307335.97	39°20'01.39"N	81°01'42.39"W	2227.26	344.107	2.22	-1.83	1.25

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Actual Wellpath Report

PEN-20G-HS AWP Proj: 11615'

Page 5 of 8



REFERENCE WELLPATH IDENTIFICATION					
Operator	NOBLE ENERGY			Slot	Slot G
Area	Ritchie County, WV			Well	PEN-20G-HS
Field	Ritchie			Wellbore	PEN-20G-HS AWB
Facility	PEN-20 Pad				

WELLPATH DATA (124 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]
8495.00	89.420	321.100	6217.88	2128.96	2214.56	-672.86	1567620.99	307408.41	39°20'02.104"N	81°01'43.209"W	2314.52	343.099	4.36	0.04	4.36
8590.00	90.340	321.460	6218.08	2223.93	2288.68	-732.28	1567561.57	307482.52	39°20'02.826"N	81°01'43.982"W	2402.98	342.257	1.04	0.97	0.38
8686.00	90.120	319.720	6217.70	2319.92	2362.85	-793.23	1567500.63	307556.69	39°20'03.549"N	81°01'44.773"W	2492.44	341.443	1.83	-0.23	-1.81
8781.00	90.150	318.430	6217.47	2414.91	2434.63	-855.46	1567438.40	307628.46	39°20'04.248"N	81°01'45.581"W	2580.54	340.640	1.36	0.03	-1.36
8876.00	89.510	318.530	6217.75	2509.87	2505.75	-918.43	1567375.43	307699.58	39°20'04.940"N	81°01'46.397"W	2668.77	339.871	0.68	-0.67	0.11
8971.00	90.120	318.080	6218.06	2604.83	2576.69	-981.62	1567312.25	307770.52	39°20'05.630"N	81°01'47.217"W	2757.34	339.145	0.80	0.64	-0.47
9067.00	89.780	319.720	6218.14	2700.81	2649.03	-1044.73	1567249.14	307842.85	39°20'06.335"N	81°01'48.035"W	2847.60	338.477	1.74	-0.35	1.71
9163.00	89.750	321.710	6218.54	2796.80	2723.33	-1105.51	1567188.37	307917.15	39°20'07.059"N	81°01'48.825"W	2939.16	337.906	2.07	-0.03	2.07
9258.00	90.370	322.880	6218.44	2891.72	2798.49	-1163.61	1567130.27	307992.30	39°20'07.792"N	81°01'49.581"W	3030.76	337.423	1.39	0.65	1.23
9354.00	90.800	319.350	6217.46	2987.68	2873.20	-1223.86	1567070.02	308067.01	39°20'08.520"N	81°01'50.364"W	3123.00	336.928	3.70	0.45	-3.68
9450.00	90.370	317.120	6216.48	3083.62	2944.80	-1287.80	1567006.09	308138.61	39°20'09.217"N	81°01'51.193"W	3214.07	336.380	2.37	-0.45	-2.32
9545.00	90.120	316.920	6216.07	3178.49	3014.30	-1352.56	1566941.32	308208.10	39°20'09.893"N	81°01'52.032"W	3303.85	335.834	0.34	-0.26	-0.21
9641.00	90.340	319.900	6215.69	3274.45	3086.09	-1416.28	1566877.61	308279.89	39°20'10.591"N	81°01'52.858"W	3395.55	335.349	3.11	0.23	3.10
9736.00	90.650	323.710	6214.87	3369.38	3160.73	-1475.01	1566818.88	308354.53	39°20'11.319"N	81°01'53.622"W	3487.96	334.983	4.02	0.33	4.01
9832.00	90.520	321.130	6213.88	3465.28	3236.80	-1533.55	1566760.35	308430.60	39°20'12.061"N	81°01'54.383"W	3581.71	334.649	2.69	-0.14	-2.69
9927.00	90.650	319.640	6212.91	3560.27	3309.98	-1594.12	1566699.78	308503.77	39°20'12.774"N	81°01'55.170"W	3673.85	334.284	1.57	0.14	-1.57
10022.00	89.750	322.080	6212.58	3655.25	3383.65	-1654.08	1566639.82	308577.44	39°20'13.492"N	81°01'55.949"W	3766.31	333.949	2.74	-0.95	2.57
10118.00	91.140	322.600	6211.84	3751.16	3459.65	-1712.73	1566581.18	308653.43	39°20'14.233"N	81°01'56.712"W	3860.39	333.662	1.55	1.45	0.54
10213.00	90.920	318.850	6210.13	3846.12	3533.16	-1772.84	1566521.06	308726.95	39°20'14.949"N	81°01'57.493"W	3953.00	333.354	3.95	-0.23	-3.95
10309.00	90.400	317.110	6209.02	3942.05	3604.48	-1837.10	1566456.81	308798.25	39°20'15.643"N	81°01'58.326"W	4045.64	332.993	1.89	-0.54	-1.81
10405.00	90.180	318.440	6208.54	4037.98	3675.56	-1901.61	1566392.30	308869.34	39°20'16.335"N	81°01'59.162"W	4138.34	332.644	1.40	-0.23	1.39
10500.00	90.090	320.110	6208.31	4132.97	3747.56	-1963.59	1566330.32	308941.33	39°20'17.036"N	81°01'59.967"W	4230.82	332.347	1.76	-0.09	1.76
10596.00	90.370	322.710	6207.93	4228.93	3822.59	-2023.46	1566270.45	309016.35	39°20'17.767"N	81°02'00.745"W	4325.11	332.106	2.72	0.29	2.71
10691.00	90.370	322.450	6207.31	4323.83	3898.03	-2081.19	1566212.73	309091.80	39°20'18.503"N	81°02'01.496"W	4418.83	331.902	0.27	0.00	-0.27
10787.00	90.580	318.600	6206.52	4419.80	3972.12	-2142.21	1566151.71	309165.88	39°20'19.225"N	81°02'02.288"W	4512.96	331.662	4.02	0.22	-4.01
10882.00	90.220	316.480	6205.86	4514.71	4042.20	-2206.33	1566087.59	309235.96	39°20'19.907"N	81°02'03.120"W	4605.14	331.373	2.26	-0.38	-2.23
10978.00	90.250	318.030	6205.46	4610.60	4112.70	-2271.49	1566022.44	309306.45	39°20'20.592"N	81°02'03.964"W	4698.29	331.088	1.61	0.03	1.61
11074.00	90.370	320.160	6204.95	4705.58	4184.49	-2333.69	1565960.24	309378.24	39°20'21.291"N	81°02'04.771"W	4791.25	330.852	2.25	0.13	2.24
11169.00	90.090	321.300	6204.56	4801.57	4258.81	-2394.46	1565899.48	309452.56	39°20'22.015"N	81°02'05.561"W	4885.79	330.654	1.22	-0.29	1.19
11264.00	90.280	321.780	6204.26	4896.53	4333.20	-2453.54	1565840.39	309526.94	39°20'22.741"N	81°02'06.329"W	4979.61	330.481	0.54	0.20	0.51

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Actual Wellpath Report
 PEN-20G-HS AWP Proj: 11615'
 Page 6 of 8



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot G
Area	Ritchie County, WV	Well	PEN-20G-HS
Field	Ritchie	Wellbore	PEN-20G-HS AWB
Facility	PEN-20 Pad		

WELLPATH DATA (124 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]
11360.00	90.310	322.540	6203.76	4992.46	4409.01	-2512.43	1565781.51	309602.75	39°20'23.480"N	81°02'07.095"W	5074.61	330.324	0.79	0.03	0.79
11455.00	90.250	321.640	6203.30	5087.40	4483.96	-2570.80	1565723.14	309677.70	39°20'24.211"N	81°02'07.854"W	5168.65	330.173	0.95	-0.06	-0.95
11551.00	90.250	321.330	6202.88	5183.36	4559.08	-2630.58	1565663.36	309752.81	39°20'24.943"N	81°02'08.631"W	5263.57	330.015	0.32	0.00	-0.32
11615.00	90.250	321.330	6202.60	5247.34	4609.05	-2670.57	1565623.37	309802.77	39°20'25.430"N	81°02'09.151"W	5326.84	329.911	0.00	0.00	0.00

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Actual Wellpath Report

PEN-20G-HS AWP Proj: 11615'

Page 7 of 8



REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot G
Area	Ritchie County, WV	Well	PEN-20G-HS
Field	Ritchie	Wellbore	PEN-20G-HS AWB
Facility	PEN-20 Pad		

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
PEN-20G-HS LP Plat		6168.00	835.00	492.86	1568786.66	306028.91	39°19'48.666"N	81°01'28.078"W	point
PEN-20G-HS BHL Rev-3		6206.05	4588.62	-2656.80	1565637.15	309782.35	39°20'25.230"N	81°02'08.971"W	point
PEN-20G-HS LP Rev-3		6231.00	938.72	405.83	1568699.63	306132.63	39°19'49.677"N	81°01'29.208"W	point
PEN-20G-HS BHL Rev-2		6235.00	5151.97	-3129.50	1565164.47	310345.67	39°20'30.718"N	81°02'15.109"W	point
PEN-20 ALT Vertices		6948.00	10.23	-45.10	1568248.72	305204.18	39°19'40.426"N	81°01'34.745"W	polygon
PEN-20 Cokely Tract 1		6948.00	10.23	-45.10	1568248.72	305204.18	39°19'40.426"N	81°01'34.745"W	polygon
PEN-20 Cokely Tract		6948.00	10.23	-45.10	1568248.72	305204.18	39°19'40.426"N	81°01'34.745"W	polygon
PEN-20 LL		6948.00	10.23	-45.10	1568248.72	305204.18	39°19'40.426"N	81°01'34.745"W	polygon
PEN-20 Parcel 3.12-1		6948.00	10.23	-45.10	1568248.72	305204.18	39°19'40.426"N	81°01'34.745"W	polygon

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WELLPATH COMPOSITION - Ref Wellbore: PEN-20G-HS AWB Ref Wellpath: PEN-20G-HS AWP Proj: 11615'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	4300.00	Generic gyro - northseeking (Standard)	01_MS Gyro <12-1/4"> (100'-4300')	PEN-20G-HS AWB
4300.00	5258.00	ISCWSA MWD, Rev. 2 (Standard)	02_Scientific EM <12-1/4"> (4300')(4366'-5258')	PEN-20G-HS AWB
5258.00	11551.00	NaviTrak (AT Curve Short Spaced)	03_BHI AT Curve <8-3/4"> (5258')(5353'-11551')	PEN-20G-HS AWB
11551.00	11615.00	Blind Drilling (std)	Projection to bit	PEN-20G-HS AWB



Actual Wellpath Report
 PEN-20G-HS AWP Proj: 11615'
 Page 8 of 8



REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot G
Area	Ritchie County, WV	Well	PEN-20G-HS
Field	Ritchie	Wellbore	PEN-20G-HS AWB
Facility	PEN-20 Pad		

COMMENTS

Wellpath general comments
 API: 47-085-10129-0000
 BHI Job #: 6697452
 Rig: Nomac 78
 Duration: 1/21/2015-1/23/2015
 MS Gyro <12-1/4"> (100'-4300')
 Scientific EM <12-1/4"> (4300')(4366'-5258')
 BHI AT Curve <8-3/4"> (5258')(5353'-11551')
 Projected MD at TD: 11615'

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	7/17/2017
Job End Date:	7/26/2017
State:	West Virginia
County:	Ritchie
API Number:	47-085-10129-00-00
Operator Name:	CONSOL Energy Inc.
Well Name and Number:	PEN20GHS
Latitude:	39.32787000
Longitude:	-81.02616000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,203
Total Base Water Volume (gal):	7,394,100
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	Consol	Carrier/Base Fluid					
			Water	7732-18-5	100.00000	85.31554	None
Sand	Upp	Proppant					
			Crystalline Silica in the form of Quartz	14808-60-7	99.90000	13.14472	None
HCL Acid (7.5%)	Upp	Acidizing					
			Hydrochloric Acid	7647-01-0	7.50000	0.10784	None
K-Bac 1020	Upp	Biocide					
			Polyethylene glycol	25322-68-3	50.00000	0.00989	None
			Water	7732-18-5	30.00000	0.00593	None
			2,2-Dibromo-3-nitrilopropionamide	10222-01-2	21.00000	0.00415	None
Unislick ST50	Upp	Friction reducer					
			Petroleum distillates, hydrotreated light	64742-47-8	30.00000	0.00822	None
			Ammonium acetate	631-61-8	13.00000	0.00356	None
			Alcohols, ethoxylated	68551-12-2	5.00000	0.00137	None
			Alcohols, ethoxylated	68439-50-9	5.00000	0.00137	None
			Alcohols, ethoxylated	68002-97-1	5.00000	0.00137	None

Unislick CST	UPP	Friction Reducer					
			copolymer of 2-propenamide	Proprietary	30.00000	0.00822	None
			Petroleum Distillate	64742-47-8	20.00000	0.00548	None
			Oleic Acid Diethanolamide	93-83-4	2.00000	0.00055	None
			Alcohols, C12-16, ethoxylated	68551-12-2	2.00000	0.00055	None
			Ammonium chloride ((NH4)Cl)	12125-02-9	1.00000	0.00027	None
Scale-Hib A	UPP	Scale Inhibitor					
			Triethanolamine Tri(Phosphate Ester), Sodium Salt	68171-29-9	30.00000	0.00199	None
			Ethylene Glycol	107-21-1	30.00000	0.00199	None
WGA-7	UPP	Viscosifier					
			Distillates (petroleum), hydrotreated light	64742-47-8	55.00000	0.00095	None
			Guar Gum	9000-30-0	55.00000	0.00095	None
Scale Inhibitor E	UPP	Scale Inhibitor					
			Copolymer of Maleic and Acrylic Acid	52255-49-9	20.00000	0.00095	None
			DETA phosphonate	15827-60-8	5.00000	0.00024	None
			Hexamethylene Triamine Penta (Methylene Phosphonic Acid)	34690-00-1	5.00000	0.00024	None
Unihib G	UPP	Acid inhibitor					
			Butyl diglycol	112-34-5	75.00000	0.00076	None
			Alcohols, C10-16, ethoxylated	68002-97-1	50.00000	0.00051	None
			Methanol	67-56-1	5.00000	0.00005	None
			Formaldehyde	50-00-0	1.00000	0.00001	None
			Thiourea	62-56-6	1.00000	0.00001	None
AP Breaker	UPP	Gel breaker					
			Ammonium peroxydisulfate	7727-54-0	100.00000	0.00001	None
			Sulfuric acid	7664-93-9	0.50000	0.00000	None
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.							
Other Chemical(s)	Listed Above	See Trade Name(s) List					
			Polyethylene glycol	25322-68-3	50.00000	0.00989	
			Water	7732-18-5	30.00000	0.00593	
			Petroleum Distillate	64742-47-8	20.00000	0.00548	
			Ammonium acetate	631-61-8	13.00000	0.00356	
			Ethylene Glycol	107-21-1	30.00000	0.00199	
			Alcohols, ethoxylated	68551-12-2	5.00000	0.00137	
			Alcohols, ethoxylated	68002-97-1	5.00000	0.00137	
			Alcohols, ethoxylated	68439-50-9	5.00000	0.00137	
			Distillates (petroleum), hydrotreated light	64742-47-8	55.00000	0.00095	
			Oleic Acid Diethanolamide	93-83-4	2.00000	0.00055	
			Alcohols, C12-16, ethoxylated	68551-12-2	2.00000	0.00055	
			Alcohols, C10-16, ethoxylated	68002-97-1	50.00000	0.00051	
			Ammonium chloride ((NH4)Cl)	12125-02-9	1.00000	0.00027	
			Hexamethylene Triamine Penta (Methylene Phosphonic Acid)	34690-00-1	5.00000	0.00024	

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 JAN 8 2018

			DIETA phosphonate	15827-60-8	5.00000	0.00024
			Methanol	67-56-1	5.00000	0.00005
			Thiourea	62-56-6	1.00000	0.00001
			Formaldehyde	50-00-0	1.00000	0.00001
			Sulfuric acid	7664-93-9	0.50000	0.00000

* 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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BHL is located on topo map 12,575' feet south of Latitude: 39° 22' 30"
 SHL is located on topo map 1,962' feet south of Latitude: 39° 20' 00"

AS DRILLED PLAT

NOTES:

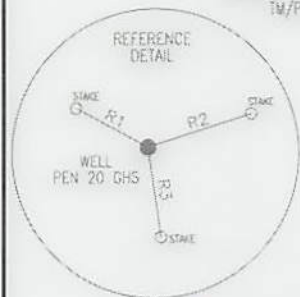
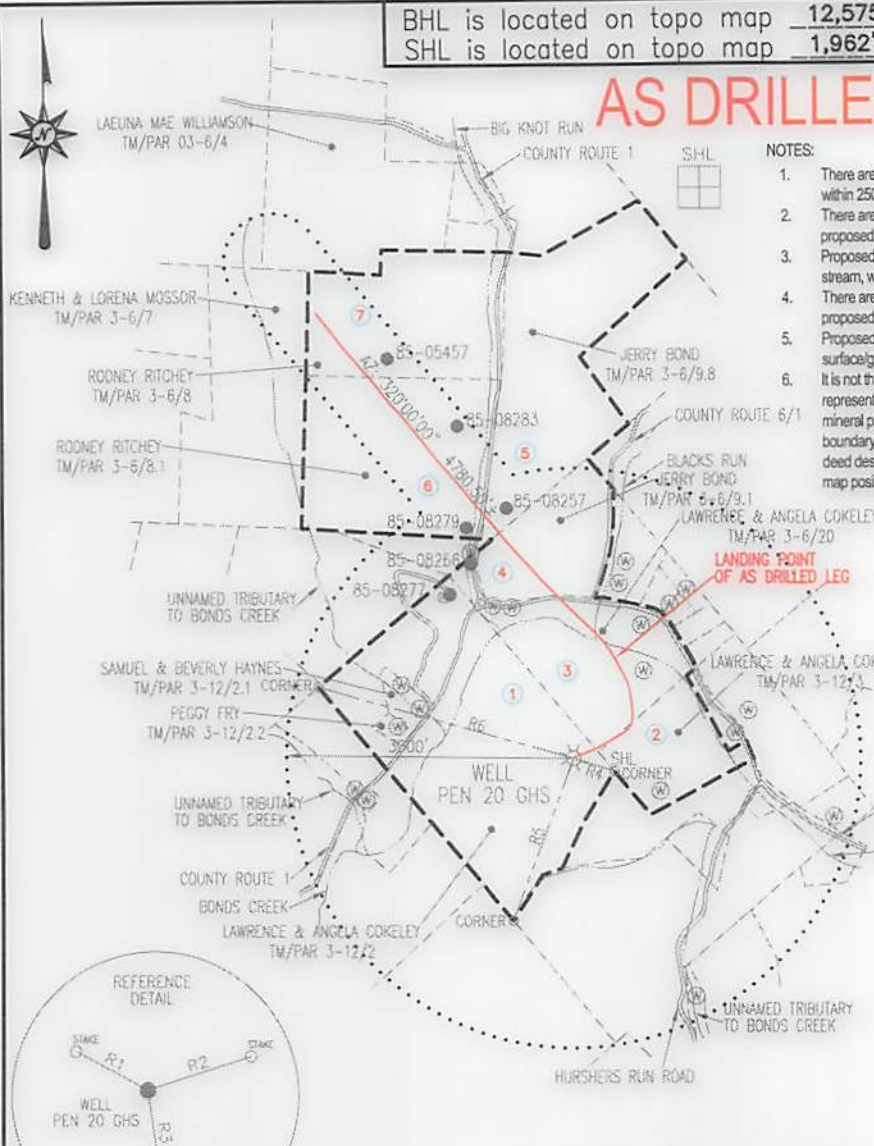
1. There are no water wells or developed springs within 250' of proposed well.
2. There are no existing buildings within 625' of proposed well.
3. Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
4. There are no native trout streams within 300' of proposed well.
5. Proposed well is greater than 1000' from surface/groundwater intake or public water supply.
6. It is not the purpose or intention of this plat to represent surveyed locations of the surface or mineral parcels depicted hereon. The location of the boundary lines, as shown, are based on record deed descriptions, field evidence found and/or tax map position, unless otherwise noted.

AS DRILLED SURFACE HOLE LOCATION (SHL)
 UTM 17-NAD83
 N:4353170.70
 E:497759.89
 NAD27, WV NORTH
 N:305193.948
 E:1568293.817
 LAT/LON DATUM-NAD83
 LAT:39.3279483
 LON:-81.0259902

AS DRILLED LANDING POINT
 UTM 17-NAD83
 N:4353486.96
 E:497887.16
 NAD27, WV NORTH
 N:306224.79
 E:1568728.80
 LAT/LON DATUM-NAD83
 LAT:39.330797
 LON:-81.024514

AS DRILLED BOTTOM HOLE LOCATION (BHL)
 UTM 17-NAD83
 N:4354561.18
 E:496922.89
 NAD27, WV NORTH
 N:309802.77
 E:1565623.37
 LAT/LON DATUM-NAD83
 LAT:39.340475
 LON:-81.035708

BHL is located on topo map 10,099' feet west of Longitude: 81° 00' 00"
 SHL is located on topo map 7,352' feet west of Longitude: 81° 00' 00"



LEGEND

- TOPO MAP POINT
- WELL
- ALL ARE POINTS UNLESS OTHERWISE NOTED.
- LEASE NUMBER
- MINERAL TRACT BOUNDARY
- PARCEL LINES
- WELL REFERENCE
- AS DRILLED
- ROAD
- STREAM CENTER LINE
- WELLS WITHIN 3000'
- EXISTING WELLS
- PLUGGED WELLS

TRACT	LESSOR
1	LAWRENCE B. & ANGELA COKELEY
2	LAWRENCE B. & ANGELA COKELEY ET AL
3	LAWRENCE B. & ANGELA COKELEY
4	JERRY R. BOND
5	LOUANNA CONKLIN ET AL
6	RODNEY W. RITCHIE
7	RODNEY W. RITCHIE

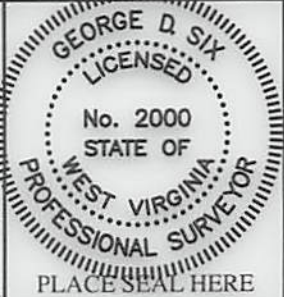
LINE	BEARING	DISTANCE
R1	N 61°59'43" W	170.37'
R2	N 72°12'06" E	226.34'
R3	S 08°15'07" E	189.05'
R4	S 72°41'01" E	444.59'
R5	S 20°32'01" W	1799.12'
R6	N 74°29'26" W	2763.69'

Blue Mountain Inc.
 11023 MASON DIXON HIGHWAY
 BURTON, WV 26562
 PHONE: (304) 662-6486

FILE #: PEN 20 GHS-AS DRILLED
 DRAWING #: PEN 20 GHS-AS DRILLED
 SCALE: 1" = 2000'
 MINIMUM DEGREE OF ACCURACY: 1/2500
 PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT THOMAS 1498.81'

I, THE UNDERSIGNED, HEREBY CERTIFY 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 ENVIRONMENTAL PROTECTION.

Signed: *George D. Six*
 R.P.E.: _____ L.L.S.: P.S. No. 2000



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP
 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304



DATE: NOVEMBER 2, 2017
 OPERATOR'S WELL #: PEN 20 GHS-AS DRILLED
 API WELL #: 47 85 10129
 STATE COUNTY PERMIT

Well Type: Oil Waste Disposal Production Deep
 Gas Liquid Injection Storage Shallow

WATERSHED: NORTH FORK HUGHES RIVER ELEVATION: 1081'±
 COUNTY/DISTRICT: RITCHIE / CLAY QUADRANGLE: ELLENBORO, WV 7.5'
 SURFACE OWNER: LAWRENCE B. & ANGELA COKELEY ACREAGE: 126.17±
 OIL & GAS ROYALTY OWNER: LAWRENCE B. & ANGELA COKELEY ACREAGE: 582.640±

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
 CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY): AS DRILLED

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 6,203'± TMD: 11,615'±
 WELL OPERATOR CNX GAS COMPANY LLC DESIGNATED AGENT CHRIS TURNER
 Address 1000 CONSOL ENERGY DRIVE Address 1 DOMINION DR.
 City CANONSBURG State PA Zip Code 15317 City JANE LEW State WV Zip Code 26378

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