

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

API 47-085-10122FH6A County Ritchie District Clay
Quad Ellenboro 7.5' Pad Name PEN20HS Field/Pool Name Pennsboro
Farm Name COKELEY, LAWRENCE & ANGELA Well Number PEN20EHS - 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 4,353,178.80 m Easting 497,750.84 m
Landing Point of Curve Northing 4,353,694.71 m Easting 498,147.55 m
Bottom Hole Northing 4,355,286.23 m Easting 496,832.94 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

RECEIVED
Oil and Gas
JAN 8 2018
WV Department of
Environmental Protection

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 11/29/2014 Date drilling ceased 12/18/2014
Date completion activities began 06/25/2017 Date completion activities ceased 7/5/2017
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

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: MS

Reviewed

02/16/2018

API 47-085-10122EH6A Farm name COKELEY, LAWRENCE & ANGELA Well number PEN20EHS - 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"	590.3'	New	J-55		Y
Coal							
Intermediate 1	12 3/8"	9 5/8"	5510.6'	New	HCK-55		Y
Intermediate 2							
Intermediate 3							
Production	8 3/4"	5 1/2"	14380'	New	P-110		N
Tubing	5 1/2"	2 3/8"	6783.00'	New	P-110 4.7# / 6783.00'		
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	1.20	636	0'	8
Coal							
Intermediate 1	Type I / Class A	1050 sks / 330 sks	15.60	1.62 / 1.19	2419.2	0'	8
Intermediate 2							
Intermediate 3							
Production	Type I / Class A	489 sks / 1715 sks	14.8	1.62 / 1.37	3106.6	5100'	8
Tubing							

Drillers TD (ft) 6194' Loggers TD (ft) 6233'

Deepest formation penetrated: Marcellus Plug back to (ft) _____

Plug back procedure: _____

Kick Off Depth (ft) 5459'

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 _____

RECEIVED
Office of Oil and Gas
JAN 8 2018
WV Department of
Environmental Protection

API 47-085-10122FH6A Farm name COKELEY, LAWRENCE & ANGELA Well number PEN20EHS - Fracture

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				

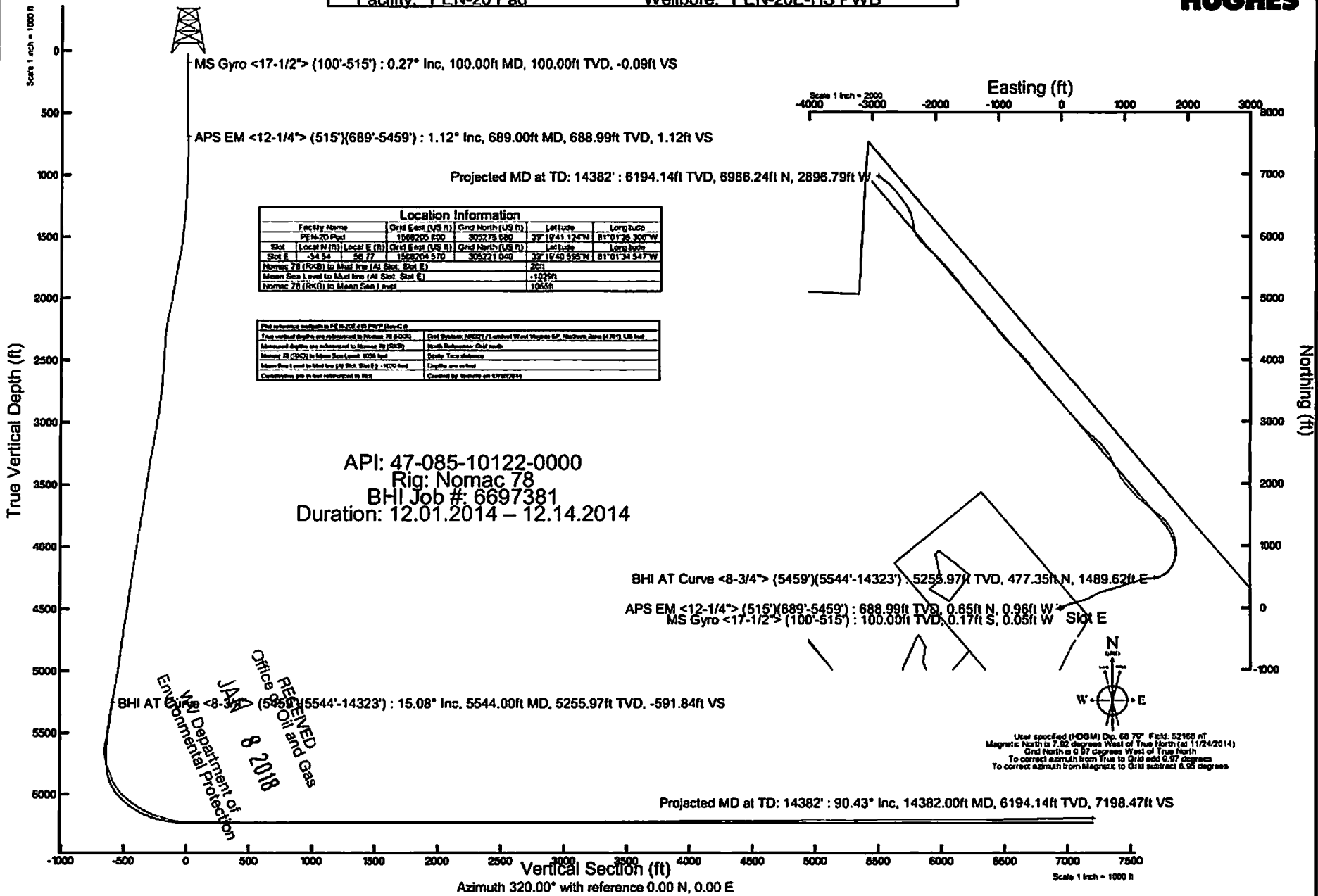
RECEIVED
Office of Oil and Gas
JAN 8 2018
WV Department of
Environmental Protection



NOBLE ENERGY

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

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





Actual Wellpath Report

PEN-20E-HS AWP Proj: 14382'

Page 1 of 9



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot E
Area	Ritchie County, WV	Well	PEN-20E-HS
Field	Ritchie	Wellbore	PEN-20E-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	Kroschr
Scale	0.999954	Report Generated	12/16/2014 at 1:29:20 PM
Convergence at slot	0.97° West	Database/Source file	WA_NorthEast/PEN-20E-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	-54.54	58.77	1568264.57	305221.04	39°19'40.595"N	81°01'34.547"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 E)	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°

RECEIVED
 Office of Oil and Gas
 JAN 8 2018
 WV Department of Environmental Protection



Actual Wellpath Report

PEN-20E-HS AWP Proj: 14382'

Page 2 of 9



REFERENCE WELLPATH IDENTIFICATION

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

WELLPATH DATA (154 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]
0.007	0.000	197.880	0.00	0.00	0.00	0.00	1568264.57	305221.04	39°19'40.595"N	81°01'34.547"W	0.00	0.000	0.00
26.00	0.000	197.880	26.00	0.00	0.00	0.00	1568264.57	305221.04	39°19'40.595"N	81°01'34.547"W	0.00	0.000	0.00
100.00	0.270	197.880	100.00	-0.09	-0.17	-0.05	1568264.52	305220.87	39°19'40.593"N	81°01'34.547"W	0.17	197.880	0.36
200.00	0.270	239.950	200.00	-0.18	-0.51	-0.33	1568264.24	305220.53	39°19'40.590"N	81°01'34.551"W	0.61	212.985	0.19
300.00	0.050	58.240	300.00	-0.14	-0.60	-0.50	1568264.07	305220.44	39°19'40.589"N	81°01'34.553"W	0.78	219.469	0.32
400.00	0.220	83.160	400.00	-0.25	-0.56	-0.27	1568264.30	305220.48	39°19'40.589"N	81°01'34.550"W	0.62	205.760	0.18
500.00	0.130	142.610	500.00	-0.47	-0.62	-0.01	1568264.56	305220.42	39°19'40.589"N	81°01'34.547"W	0.62	180.866	0.19
515.00	0.060	116.040	515.00	-0.50	-0.64	0.01	1568264.58	305220.40	39°19'40.589"N	81°01'34.547"W	0.64	179.290	0.54
689.00	1.120	321.790	688.99	1.12	0.65	-0.96	1568263.61	305221.69	39°19'40.601"N	81°01'34.559"W	1.16	304.233	0.67
779.00	0.740	62.350	778.98	1.87	1.62	-0.99	1568263.58	305222.66	39°19'40.611"N	81°01'34.560"W	1.90	328.465	1.61
874.00	2.300	78.710	873.94	0.83	2.27	1.42	1568265.99	305223.31	39°19'40.618"N	81°01'34.529"W	2.68	32.017	1.69
970.00	4.540	75.310	969.77	-1.72	3.61	6.99	1568271.56	305224.65	39°19'40.632"N	81°01'34.459"W	7.87	62.647	2.34
1066.00	7.730	62.460	1065.21	-4.74	7.56	16.39	1568280.96	305228.60	39°19'40.672"N	81°01'34.340"W	18.05	65.225	3.60
1161.00	11.880	60.510	1158.80	-7.90	15.34	30.57	1568295.14	305236.37	39°19'40.752"N	81°01'34.161"W	34.20	63.361	4.38
1257.00	15.490	65.210	1252.06	-13.07	25.58	50.82	1568315.39	305246.62	39°19'40.856"N	81°01'33.906"W	56.89	63.283	3.93
1352.00	16.890	68.150	1343.29	-20.70	36.03	75.15	1568339.71	305257.07	39°19'40.964"N	81°01'33.598"W	83.34	64.381	1.71
1448.00	16.770	69.670	1435.18	-29.71	46.04	101.08	1568365.64	305267.07	39°19'41.067"N	81°01'33.271"W	111.07	65.513	0.48
1544.00	17.470	71.590	1526.93	-39.67	55.40	127.74	1568392.30	305276.44	39°19'41.164"N	81°01'32.934"W	139.23	66.554	0.94
1639.00	21.290	74.560	1616.53	-52.09	64.50	157.90	1568422.47	305285.53	39°19'41.259"N	81°01'32.552"W	170.57	67.782	4.15
1735.00	25.010	76.190	1704.79	-68.30	73.99	194.42	1568458.98	305295.02	39°19'41.359"N	81°01'32.089"W	208.02	69.166	3.93
1830.00	24.460	74.450	1791.07	-85.30	84.05	232.87	1568497.43	305305.09	39°19'41.465"N	81°01'31.602"W	247.58	70.154	0.96
1926.00	22.430	72.990	1879.14	-100.68	94.74	269.54	1568535.09	305315.77	39°19'41.576"N	81°01'31.138"W	285.70	70.634	2.20
2022.00	24.010	71.080	1967.37	-114.86	106.43	305.53	1568570.08	305327.46	39°19'41.698"N	81°01'30.682"W	323.54	70.794	1.82
2117.00	28.370	73.900	2052.60	-130.96	118.96	345.52	1568610.73	305340.00	39°19'41.828"N	81°01'30.176"W	365.42	71.001	4.77
2212.00	27.770	71.410	2136.42	-148.19	132.28	388.18	1568652.07	305353.31	39°19'41.967"N	81°01'29.636"W	410.10	71.183	1.39
2307.00	25.420	68.550	2221.37	-162.76	146.79	428.14	1568692.69	305367.82	39°19'42.117"N	81°01'29.131"W	452.61	71.075	2.82
2403.00	22.320	62.070	2309.16	-173.13	162.87	463.44	1568727.99	305383.90	39°19'42.282"N	81°01'28.685"W	491.23	70.636	4.23
2499.00	20.740	59.030	2398.46	-179.61	180.16	494.12	1568758.67	305401.19	39°19'42.458"N	81°01'28.299"W	525.94	69.968	2.01
2594.00	21.830	60.920	2486.98	-185.59	197.40	523.99	1568788.53	305418.43	39°19'42.634"N	81°01'27.922"W	559.93	69.357	1.36
2690.00	20.220	60.670	2576.59	-192.05	214.20	554.05	1568818.59	305435.23	39°19'42.805"N	81°01'27.544"W	594.01	68.863	1.68

RECEIVED
Office of Oil and Gas
JAN 8 2018
WV Department of Environmental Protection



Actual Wellpath Report

PEN-20E-HS AWP Proj: 14382'

Page 3 of 9



REFERENCE WELLPATH IDENTIFICATION

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

WELLPATH DATA (154 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 [1/100ft]
2786.00	18.860	62.990	2667.06	-198.61	229.38	582.34	1568846.88	305430.41	39°19'42.959"N	81°01'27.187"W	625.88	68.501	1.63
2881.00	18.180	70.850	2757.15	-207.33	241.21	610.02	1568874.56	305462.24	39°19'43.081"N	81°01'26.837"W	655.98	68.425	2.72
2976.00	19.210	74.410	2847.14	-219.07	250.28	639.08	1568903.62	305471.30	39°19'43.175"N	81°01'26.469"W	686.34	68.614	1.62
3072.00	19.850	73.200	2937.62	-232.02	259.23	669.90	1568935.43	305480.26	39°19'43.269"N	81°01'26.079"W	718.30	68.845	0.79
3167.00	20.660	71.690	3026.74	-244.57	269.16	701.25	1568965.78	305490.19	39°19'43.372"N	81°01'25.683"W	751.13	69.002	1.01
3263.00	22.130	73.460	3116.13	-258.02	279.63	734.66	1568999.20	305500.65	39°19'43.481"N	81°01'25.260"W	786.08	69.162	1.67
3358.00	23.000	74.950	3203.20	-273.62	289.94	771.21	1569035.74	305510.96	39°19'43.589"N	81°01'24.797"W	823.91	69.396	3.09
3453.00	22.380	73.190	3290.19	-289.21	300.38	807.91	1569072.44	305521.41	39°19'43.699"N	81°01'24.332"W	861.95	69.605	2.86
3549.00	20.930	72.390	3379.41	-302.94	310.85	841.75	1569106.28	305531.88	39°19'43.808"N	81°01'23.904"W	897.32	69.731	1.54
3645.00	19.980	74.400	3469.35	-316.25	320.45	873.90	1569138.42	305541.48	39°19'43.908"N	81°01'23.497"W	930.80	69.862	1.23
3739.00	20.290	74.030	3557.61	-329.52	329.26	905.03	1569169.56	305550.28	39°19'44.000"N	81°01'23.103"W	963.06	70.008	0.36
3835.00	22.160	71.880	3647.10	-343.05	339.47	938.25	1569202.77	305560.49	39°19'44.107"N	81°01'22.682"W	997.77	70.109	2.11
3929.00	23.750	72.680	3733.65	-356.95	350.62	973.17	1569237.69	305571.64	39°19'44.223"N	81°01'22.240"W	1034.40	70.187	1.72
4024.00	22.050	73.500	3821.16	-371.44	361.38	1008.53	1569273.05	305582.40	39°19'44.335"N	81°01'21.793"W	1071.32	70.286	1.82
4119.00	22.160	73.310	3909.18	-385.64	371.59	1042.79	1569307.31	305592.61	39°19'44.442"N	81°01'21.359"W	1107.02	70.387	0.14
4213.00	21.230	72.590	3996.52	-399.19	381.77	1076.01	1569340.53	305602.79	39°19'44.548"N	81°01'20.938"W	1141.73	70.465	1.03
4305.00	22.310	72.810	4081.95	-412.36	391.92	1108.59	1569373.11	305612.94	39°19'44.654"N	81°01'20.526"W	1175.83	70.530	1.18
4399.00	22.750	72.130	4168.78	-426.13	402.77	1142.93	1569407.45	305623.79	39°19'44.767"N	81°01'20.091"W	1211.83	70.588	0.54
4491.00	22.080	71.690	4253.83	-439.22	413.66	1176.28	1569440.80	305634.68	39°19'44.880"N	81°01'19.669"W	1246.90	70.625	0.75
4586.00	20.710	71.050	4342.28	-451.85	424.72	1209.12	1569473.63	305645.74	39°19'44.995"N	81°01'19.254"W	1281.55	70.645	1.46
4681.00	19.140	72.260	4431.59	-463.78	434.93	1239.84	1569504.36	305655.94	39°19'45.101"N	81°01'18.865"W	1313.92	70.670	1.71
4775.00	19.780	78.370	4520.23	-477.18	442.83	1270.10	1569534.61	305663.85	39°19'45.184"N	81°01'18.482"W	1345.09	70.779	2.27
4870.00	19.930	80.050	4609.58	-492.93	448.87	1301.80	1569566.30	305669.88	39°19'45.249"N	81°01'18.080"W	1377.01	70.976	0.62
4965.00	16.700	80.250	4699.76	-507.92	455.98	1331.21	1569595.71	305674.99	39°19'45.304"N	81°01'17.707"W	1406.49	71.169	3.40
5060.00	14.420	79.190	4791.27	-520.56	458.51	1356.28	1569620.79	305679.53	39°19'45.353"N	81°01'17.389"W	1431.69	71.322	2.42
5155.00	14.050	81.160	4883.35	-532.30	462.50	1379.29	1569643.80	305683.52	39°19'45.397"N	81°01'17.097"W	1454.77	71.463	0.64
5250.00	15.690	82.850	4975.17	-545.23	465.87	1403.44	1569667.94	305686.89	39°19'45.434"N	81°01'16.790"W	1478.74	71.636	1.79
5345.00	17.540	84.170	5066.20	-560.24	468.92	1430.42	1569694.93	305689.94	39°19'45.469"N	81°01'16.448"W	1505.32	71.855	1.99
5439.00	18.550	81.350	5155.58	-575.98	472.61	1459.30	1569723.80	305693.63	39°19'45.510"N	81°01'16.081"W	1533.92	72.055	1.42
5490.00	18.260	81.060	5174.55	-579.25	473.58	1465.54	1569730.04	305694.59	39°19'45.520"N	81°01'16.002"W	1540.16	72.092	1.52

RECEIVED
Office of Oil and
JAN 8 2015
WV Department of
Environmental Protection



Actual Wellpath Report
 PEN-20E-HS AWP Proj: 14382
 Page 4 of 9



REFERENCE WELLPATH IDENTIFICATION

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

WELLPATH DATA (154 stations)

MID	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir	DLS
(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(US ft)	(US ft)			(ft)	(°/100ft)	
5544.00	15.080	81.110	5255.97	-591.84	477.35	1489.62	1569754.12	305698.37	39°19'45.562"N	81°01'15.696"W	1564.24	72.232	3.74
5639.00	17.830	77.760	5347.07	-605.00	482.35	1516.05	1569780.55	305703.37	39°19'45.616"N	81°01'15.361"W	1590.94	72.351	3.06
5733.00	22.970	69.690	5435.17	-617.89	491.77	1547.35	1569811.84	305712.79	39°19'45.714"N	81°01'14.965"W	1623.61	72.369	6.22
5828.00	32.380	74.580	5519.21	-634.76	505.00	1589.35	1569853.85	305726.02	39°19'45.852"N	81°01'14.433"W	1667.65	72.373	10.18
5923.00	39.280	62.420	5596.29	-651.85	525.74	1640.66	1569905.15	305746.76	39°19'46.065"W	81°01'13.785"W	1722.84	72.232	10.41
6018.00	40.610	44.940	5669.35	-655.61	561.67	1689.31	1569953.80	305782.68	39°19'46.428"N	81°01'13.174"W	1780.23	71.609	11.87
6113.00	40.320	28.780	5741.83	-641.72	610.63	1726.05	1569990.54	305831.64	39°19'46.918"N	81°01'12.717"W	1830.88	70.518	11.02
6207.00	40.680	25.950	5813.31	-618.22	664.83	1754.10	1570018.58	305885.84	39°19'47.459"N	81°01'12.055"W	1875.86	69.242	1.99
6303.00	42.940	21.900	5884.88	-590.06	723.33	1779.99	1570044.48	305944.33	39°19'48.041"N	81°01'12.055"W	1921.35	67.885	3.67
6397.00	49.360	13.550	5950.02	-553.72	787.83	1800.33	1570064.82	306008.83	39°19'48.682"N	81°01'11.810"W	1965.17	66.366	9.35
6491.00	56.110	6.620	6006.95	-505.64	861.40	1813.21	1570077.69	306082.40	39°19'49.411"N	81°01'11.662"W	2007.42	64.589	9.27
6581.00	62.990	354.980	6104.93	-383.60	1023.73	1816.81	1570081.29	306244.72	39°19'51.016"N	81°01'11.651"W	2085.38	60.600	8.03
6681.00	66.950	347.210	6145.16	-309.93	1108.65	1803.40	1570067.89	306329.64	39°19'51.853"N	81°01'11.840"W	2116.92	58.419	8.50
6776.00	66.950	347.210	6145.16	-309.93	1108.65	1803.40	1570067.89	306329.64	39°19'51.853"N	81°01'11.840"W	2116.92	58.419	8.50
6871.00	71.950	337.790	6178.56	-227.84	1193.30	1776.59	1570041.07	306414.29	39°19'52.685"N	81°01'12.199"W	2140.15	56.111	10.67
6966.00	76.640	330.640	6204.14	-139.22	1275.58	1736.77	1570006.56	306496.56	39°19'53.491"N	81°01'12.724"W	2154.87	53.704	8.89
7062.00	83.020	323.960	6220.94	-45.56	1355.00	1685.71	1569950.20	306575.98	39°19'54.268"N	81°01'13.390"W	2162.79	51.207	9.40
7157.00	88.000	316.340	6228.38	49.04	1427.62	1625.07	1569889.57	306648.59	39°19'54.975"N	81°01'14.177"W	2163.09	48.701	9.56
7253.00	90.030	311.250	6230.04	144.43	1494.03	1555.81	1569820.31	306714.99	39°19'55.620"N	81°01'15.073"W	2157.01	46.161	5.71
7349.00	90.000	306.670	6229.94	238.63	1554.37	1481.19	1569745.69	306775.34	39°19'56.204"N	81°01'16.036"W	2147.09	43.619	4.77
7445.00	89.970	307.000	6229.89	332.11	1611.93	1404.35	1569668.85	306832.89	39°19'56.760"N	81°01'17.026"W	2137.87	41.063	0.37
7540.00	89.910	310.320	6229.98	425.24	1671.26	1330.18	1569594.69	306892.22	39°19'57.334"N	81°01'17.982"W	2136.00	38.517	3.50
7635.00	89.940	313.690	6230.11	519.30	1734.83	1259.60	1569524.11	306955.78	39°19'57.950"N	81°01'18.894"W	2143.88	35.982	3.55
7731.00	90.030	318.030	6230.13	615.03	1803.70	1192.76	1569457.27	307024.66	39°19'58.619"N	81°01'19.760"W	2162.41	33.476	4.32
7826.00	90.180	317.460	6229.96	709.95	1874.02	1128.88	1569393.39	307094.97	39°19'59.304"N	81°01'20.588"W	2187.76	31.064	0.62
7922.00	89.910	318.890	6229.88	805.90	1945.55	1064.86	1569329.38	307166.50	39°20'00.000"N	81°01'21.418"W	2217.91	28.693	1.52
8017.00	90.400	322.620	6229.63	900.88	2019.11	1004.77	1569269.29	307240.06	39°20'00.717"N	81°01'22.198"W	2255.30	26.456	3.96
8113.00	90.310	328.680	6229.03	996.36	2098.33	950.36	1569215.15	307319.27	39°20'01.491"N	81°01'22.904"W	2303.63	24.372	6.31
8209.00	90.860	334.210	6228.05	1090.41	2182.62	904.76	1569169.29	307403.55	39°20'02.316"N	81°01'23.506"W	2362.71	22.515	5.79
8304.00	90.740	333.060	6226.72	1182.73	2267.73	862.58	1569127.11	307488.66	39°20'03.150"N	81°01'24.061"W	2426.24	20.825	1.22

RECEIVED
 Office of Oil and Gas
 JAN 8 2018
 WV Department of Environmental Protection



Actual Wellpath Report

PEN-20E-HS AWP Proj: 14382'

Page 5 of 9



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

WELLPATH DATA (154 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]
8400.00	90.650	332.250	6225.56	1276.39	2352.99	818.48	1569083.01	307573.92	39°20'03.985"N	81°01'24.641"W	2491.28	19.180	0.85
8495.00	90.400	329.450	6224.69	1369.67	2435.95	772.22	1569036.75	307656.87	39°20'04.797"N	81°01'25.247"W	2555.42	17.589	2.96
8591.00	90.250	325.820	6224.15	1464.81	2517.02	720.84	1568985.37	307737.94	39°20'05.590"N	81°01'25.918"W	2618.21	15.981	3.78
8686.00	90.430	320.790	6223.58	1559.62	2593.17	664.09	1568928.62	307814.08	39°20'06.333"N	81°01'26.657"W	2676.85	14.364	5.30
8782.00	89.820	313.790	6223.37	1655.45	2663.66	599.01	1568863.55	307884.58	39°20'07.018"N	81°01'27.500"W	2730.19	12.674	7.32
8877.00	89.880	312.240	6223.62	1749.74	2728.47	529.55	1568794.10	307949.38	39°20'07.647"N	81°01'28.398"W	2779.38	10.984	1.63
8972.00	90.150	312.910	6223.60	1843.94	2792.74	459.60	1568724.14	308013.65	39°20'08.271"N	81°01'29.302"W	2830.31	9.345	0.76
9068.00	90.120	313.450	6223.37	1939.26	2858.43	389.59	1568654.14	308079.34	39°20'08.908"N	81°01'30.207"W	2884.86	7.761	0.56
9163.00	89.850	317.160	6223.39	2033.93	2925.95	322.79	1568587.34	308146.85	39°20'09.564"N	81°01'31.072"W	2943.71	6.295	3.92
9259.00	89.970	318.520	6223.54	2129.86	2997.12	258.35	1568522.91	308218.01	39°20'10.256"N	81°01'31.907"W	3008.23	4.927	1.42
9354.00	89.820	318.060	6223.72	2224.81	3068.03	195.14	1568459.71	308288.93	39°20'10.947"N	81°01'32.727"W	3074.23	3.639	0.51
9450.00	89.820	319.230	6224.02	2320.79	3140.09	131.72	1568396.28	308360.98	39°20'11.648"N	81°01'33.550"W	3142.85	2.402	1.22
9546.00	89.940	320.690	6224.22	2416.78	3213.59	69.96	1568334.53	308434.47	39°20'12.364"N	81°01'34.351"W	3214.35	1.247	1.53
9642.00	89.940	320.140	6224.32	2512.78	3287.57	8.79	1568273.36	308508.46	39°20'13.085"N	81°01'35.146"W	3287.59	0.153	0.57
9737.00	90.590	320.110	6223.88	2607.78	3360.48	-52.12	1568212.45	308581.36	39°20'13.795"N	81°01'35.937"W	3360.88	359.111	0.68
9833.00	89.880	318.330	6223.49	2703.76	3433.17	-114.82	1568149.76	308654.04	39°20'14.503"N	81°01'36.750"W	3435.09	358.085	2.00
9928.00	89.880	317.230	6223.69	2798.69	3503.52	-178.65	1568085.92	308724.39	39°20'15.187"N	81°01'37.578"W	3508.07	357.081	1.16
10023.00	90.250	316.950	6223.58	2893.57	3573.10	-243.34	1568021.25	308793.97	39°20'15.864"N	81°01'38.416"W	3581.38	356.104	0.49
10118.00	90.860	320.960	6222.66	2988.53	3644.73	-305.70	1567958.88	308865.60	39°20'16.562"N	81°01'39.225"W	3657.53	355.206	4.27
10214.00	90.220	321.550	6221.75	3084.50	3719.60	-365.78	1567898.81	308940.46	39°20'17.291"N	81°01'40.006"W	3737.54	354.384	0.91
10310.00	90.890	327.930	6220.82	3180.12	3797.94	-421.17	1567843.42	309018.80	39°20'18.056"N	81°01'40.728"W	3821.23	353.672	6.68
10405.00	90.920	327.130	6219.32	3274.28	3878.08	-472.16	1567792.43	309098.94	39°20'18.840"N	81°01'41.394"W	3906.72	353.058	0.84
10501.00	90.250	322.700	6218.34	3369.90	3956.62	-527.33	1567737.27	309177.47	39°20'19.606"N	81°01'42.113"W	3991.60	352.409	4.67
10597.00	90.430	318.100	6217.77	3465.87	4030.56	-588.50	1567676.10	309251.41	39°20'20.327"N	81°01'42.907"W	4073.30	351.693	4.80
10692.00	90.220	314.640	6217.23	3560.67	4099.31	-654.04	1567610.56	309320.16	39°20'20.995"N	81°01'43.756"W	4151.16	350.935	3.65
10788.00	89.750	311.540	6217.26	3655.96	4164.89	-724.14	1567540.47	309385.73	39°20'21.632"N	81°01'44.662"W	4227.37	350.137	3.27
10883.00	90.090	314.310	6217.39	3750.22	4229.58	-793.70	1567470.91	309450.42	39°20'22.259"N	81°01'45.562"W	4303.41	349.372	2.94
10979.00	90.150	317.140	6217.19	3845.95	4298.31	-860.71	1567403.91	309519.14	39°20'22.927"N	81°01'46.429"W	4383.64	348.677	2.95
11074.00	90.310	319.890	6216.81	3940.91	4369.47	-923.63	1567340.98	309590.30	39°20'23.620"N	81°01'47.245"W	4466.02	348.064	2.90
11169.00	90.520	322.610	6216.12	4035.87	4443.55	-983.09	1567281.53	309664.38	39°20'24.342"N	81°01'48.018"W	4551.00	347.525	2.87

RECEIVED
 Office of Oil and Gas
 WV Department of Environmental Protection
 JAN 8 2018



Actual Wellpath Report

PEN-20E-HS AWP Proj: 14382'

Page 6 of 9



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

WELLPATH DATA (154 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]
11265.00	90.460	322.300	6215.30	4131.78	4519.66	-1041.58	1567223.04	309740.49	39°20'25.084"N	81°01'48.779"W	4638.13	347.022	0.33
11361.00	90.250	320.320	6214.70	4227.75	4594.59	-1101.59	1567163.03	309815.41	39°20'25.814"N	81°01'49.559"W	4724.80	346.517	2.07
11456.00	89.910	320.440	6214.57	4322.75	4667.77	-1162.17	1567102.45	309888.58	39°20'26.527"N	81°01'50.346"W	4810.27	346.019	0.38
11552.00	89.970	320.610	6214.67	4418.74	4741.87	-1223.20	1567041.43	309962.68	39°20'27.249"N	81°01'51.139"W	4897.10	345.535	0.19
11647.00	89.940	320.060	6214.75	4513.74	4815.00	-1283.84	1566980.79	310035.81	39°20'27.962"N	81°01'51.926"W	4983.22	345.070	0.58
11743.00	90.000	321.300	6214.80	4609.73	4889.26	-1344.67	1566919.97	310110.07	39°20'28.685"N	81°01'52.716"W	5070.80	344.622	1.29
11839.00	90.280	322.030	6214.56	4705.69	4964.57	-1404.21	1566860.42	310185.37	39°20'29.420"N	81°01'53.490"W	5159.33	344.207	0.81
11934.00	90.370	322.610	6214.02	4800.61	5039.75	-1462.28	1566802.36	310260.55	39°20'30.153"N	81°01'54.246"W	5247.60	343.820	0.62
12030.00	90.250	323.010	6213.50	4896.49	5116.23	-1520.31	1566744.33	310337.02	39°20'30.899"N	81°01'55.001"W	5337.33	343.450	0.44
12125.00	90.220	323.280	6213.12	4991.35	5192.24	-1577.29	1566687.36	310413.03	39°20'31.640"N	81°01'55.742"W	5426.53	343.102	0.29
12221.00	90.250	323.120	6212.72	5087.20	5269.11	-1634.79	1566629.85	310489.90	39°20'32.390"N	81°01'56.491"W	5516.89	342.763	0.17
12316.00	90.310	322.900	6212.26	5182.07	5344.99	-1691.95	1566572.70	310565.77	39°20'33.131"N	81°01'57.235"W	5606.39	342.435	0.24
12412.00	90.400	321.940	6211.66	5277.98	5421.07	-1750.50	1566514.16	310641.85	39°20'33.872"N	81°01'57.996"W	5696.68	342.104	1.00
12508.00	90.280	318.700	6211.09	5373.96	5494.94	-1811.78	1566452.87	310715.72	39°20'34.592"N	81°01'58.792"W	5785.92	341.752	3.38
12604.00	90.430	315.590	6210.50	5469.83	5565.31	-1877.07	1566387.59	310786.08	39°20'35.277"N	81°01'59.638"W	5873.33	341.362	3.24
12700.00	90.340	313.850	6209.85	5565.41	5632.85	-1945.28	1566319.38	310853.62	39°20'35.933"N	81°02'00.521"W	5959.29	340.948	1.81
12795.00	90.220	311.810	6209.39	5659.67	5697.43	-2014.94	1566249.72	310918.20	39°20'36.559"N	81°02'01.422"W	6043.24	340.523	2.15
12891.00	90.520	314.560	6208.77	5754.98	5763.12	-2084.93	1566179.74	310983.89	39°20'37.196"N	81°02'02.327"W	6128.66	340.111	2.88
12986.00	88.740	313.810	6209.38	5849.48	5829.33	-2153.05	1566111.62	311050.09	39°20'37.839"N	81°02'03.208"W	6214.23	339.728	2.03
13082.00	90.250	319.340	6210.23	5945.27	5899.02	-2219.01	1566045.66	311119.78	39°20'38.517"N	81°02'04.063"W	6302.58	339.385	5.97
13177.00	90.490	327.110	6209.61	6040.04	5975.05	-2275.84	1565988.84	311195.81	39°20'39.258"N	81°02'04.802"W	6393.80	339.149	8.18
13273.00	90.280	341.410	6208.97	6132.84	6061.30	-2317.43	1565947.26	311282.05	39°20'40.104"N	81°02'05.350"W	6489.21	339.077	14.90
13368.00	90.180	349.630	6208.58	6218.50	6153.21	-2341.16	1565923.52	311373.95	39°20'41.008"N	81°02'05.672"W	6583.54	339.169	8.65
13463.00	90.740	349.550	6207.82	6301.10	6246.64	-2358.32	1565906.36	311467.38	39°20'41.928"N	81°02'05.911"W	6676.99	339.317	0.60
13559.00	91.660	343.210	6205.81	6387.04	6339.87	-2380.91	1565883.77	311560.61	39°20'42.846"N	81°02'06.219"W	6772.20	339.417	6.67
13655.00	90.890	333.400	6203.67	6478.05	6428.94	-2416.35	1565848.34	311649.67	39°20'43.720"N	81°02'06.689"W	6868.04	339.401	10.25
13750.00	90.460	324.570	6202.55	6571.79	6510.27	-2465.25	1565799.44	311731.00	39°20'44.516"N	81°02'07.329"W	6961.40	339.260	9.31
13845.00	90.680	323.000	6201.60	6666.57	6586.91	-2521.37	1565743.32	311807.63	39°20'45.263"N	81°02'08.060"W	7052.99	339.054	1.67
13940.00	91.260	323.900	6199.99	6761.38	6663.21	-2577.94	1565686.76	311883.94	39°20'46.008"N	81°02'08.797"W	7144.52	338.849	1.13
14036.00	90.550	320.320	6198.48	6857.29	6738.95	-2636.88	1565627.82	311959.67	39°20'46.746"N	81°02'09.563"W	7236.48	338.630	3.80

RECEIVED
 Office of Oil and Gas
 JAN 8 2018
 WV Department of Environmental Protection



Actual Wellpath Report
 PEN-20E-HS AWP Proj: 14382'
 Page 7 of 9



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

WELLPATH DATA (154 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]
14132.00	90.830	312.070	6197.32	6952.99	6808.17	-2703.27	1365561.43	312028.89	39°20'47.419"N	81°02'10.423"W	7325.22	338.344	8.60
14227.00	91.010	310.100	6195.79	7046.82	6870.59	-2774.86	1365489.84	312091.30	39°20'48.024"N	81°02'11.348"W	7409.78	338.007	2.08
14323.00	90.430	307.220	6194.59	7140.93	6930.55	-2849.81	1365414.90	312151.26	39°20'48.604"N	81°02'12.315"W	7493.59	337.648	3.06
14382.00	90.430	307.220	6194.14	7198.47	6966.24	-2896.79	1365367.92	312186.95	39°20'48.949"N	81°02'12.921"W	7544.53	337.421	0.00

RECEIVED
 Office of Oil and Gas
 JAN 8 2018
 WV Department of Environmental Protection
 file://C:\Windows\System32\WellArchitect\PEN-20E-HS_AWB.xml



Actual Wellpath Report

PEN-20E-HS AWP Proj: 14382'
Page 8 of 9



REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot E
Area	Ritchie County, WV	Well	PEN-20E-HS
Field	Ritchie	Wellbore	PEN-20E-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-20E-HS LP Plar		6168.00	1650.00	1382.76	1569647.26	306870.96	39°19'57.132"N	81°01'17.309"W	point
PEN-20E-HS BHL Rev-2		6233.00	6877.48	-3003.63	1565261.08	312098.19	39°20'48.053"N	81°02'14.261"W	point
PEN-20E-HS LP Rev-2		6233.00	1361.97	1624.45	1569888.94	306582.94	39°19'54.326"N	81°01'14.171"W	point
PEN-20 ALT Vertices		6948.00	-16.86	-15.85	1568248.72	305204.18	39°19'40.426"N	81°01'34.745"W	polygon
PEN-20 Cokely Tract 1		6948.00	-16.86	-15.85	1568248.72	305204.18	39°19'40.426"N	81°01'34.745"W	polygon
PEN-20 Cokely Tract 2		6948.00	-16.86	-15.85	1568248.72	305204.18	39°19'40.426"N	81°01'34.745"W	polygon
PEN-20 LL		6948.00	-16.86	-15.85	1568248.72	305204.18	39°19'40.426"N	81°01'34.745"W	polygon
PEN-20 Parcel 3.12-1.2		6948.00	-16.86	-15.85	1568248.72	305204.18	39°19'40.426"N	81°01'34.745"W	polygon

WELLPATH COMPOSITION - Ref Wellbore: PEN-20E-HS AWB Ref Wellpath: PEN-20E-HS AWP Proj: 14382'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	515.00	Generic gyro - northseeking (Standard)	01_MS Gyro <17-1/2"> (100'-515')	PEN-20E-HS AWB
515.00	5459.00	ISWISA MWD, Rev. 2 (Standard)	02_APS EM <12-1/4"> (515')(689'-5459') Proj:5525'	PEN-20E-HS AWB
5459.00	14323.00	NaviTrak (AT Curve Short Spaced)	03_BHH AT Curve <8-3/4"> (5459')(5544'-14323')	PEN-20E-HS AWB
14323.00	14382.00	Blind Drilling (std)	Projection to bit	PEN-20E-HS AWB

RECEIVED
Office of Oil and Gas
JAN 8 2018
WV Department of Environmental Protection



Actual Wellpath Report

PEN-20E-HS AWP Proj: 14382'

Page 9 of 9



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

COMMENTS
<p>Wellpath general comments API: 47-085-10122-0000 BHI Job #: 6697381 Rig: Nomac 78 Duration: 12.01.2014 – 12.14.2014 MS Gyro <17-1/2"> (100'-515') APS EM <12-1/4"> (515')(689'-5459') BHI AT Curve <8-3/4"> (5459')(5544'-14323') Projected MD at TD: 14382'</p>

RECEIVED
 Office of Oil and Gas
 JAN 8 2018
 WV Department of
 Environmental Protection

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/25/2017
Job End Date:	7/6/2017
State:	West Virginia
County:	Ritchie
API Number:	47-085-10122-00-00
Operator Name:	CONSOL Energy Inc.
Well Name and Number:	PEN20EHS
Latitude:	39.32799000
Longitude:	-81.02629000
Datum:	NAD83
Federal Well:	NO
Indian Well:	NO
True Vertical Depth:	6,195
Total Base Water Volume (gal):	11,249,826
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	85.02046	None
Sand	UJP	Proppant	Crystalline Silica in the form of Quartz	14808-60-7	99.90000	13.79979	None
HCL Acid (7.5%)	UJP	Acidizing	Hydrochloric Acid	7647-01-0	7.50000	0.07541	None
Unislick CST	UJP	Friction Reducer	copolymer of 2-propenamide	Proprietary	30.00000	0.01529	None
			Petroleum Distillate	64742-47-8	20.00000	0.01019	None
			Oleic Acid Diethanolamide	93-83-4	2.00000	0.00102	None
			Alcohols, C12-16, ethoxylated	68551-12-2	2.00000	0.00102	None
			Ammonium chloride ((NH4)Cl)	12125-02-9	1.00000	0.00051	None
K-Bac 1020	UJP	Biocide	Polyethylene glycol	25322-68-3	50.00000	0.01058	None
			Water	7732-18-5	30.00000	0.00635	None
			2,2-Dibromo-3-nitropropionamide	10222-01-2	21.00000	0.00445	None
HCL Acid (15%)	UJP	Acidizing					

WV Department of Environmental Protection
 Office of Oil and Gas
 JAN 8 2018

			Hydrochloric Acid	7647-01-0	15.00000	0.01103	None
Scale-Hib A	UPP	Scale Inhibitor					
			Triethanolamine Tri(Phosphate Ester), Sodium Salt	68171-29-9	30.00000	0.00358	None
			Ethylene Glycol	107-21-1	30.00000	0.00358	None
SuperSurf	UPP	Surfactant					
			Other components below reportable levels	Proprietary	50.00000	0.00097	None
			Alcohols, C6-C12, ethoxylated	68439-45-2	40.00000	0.00078	None
			Methanol	67-56-1	30.00000	0.00058	None
Unihib G	UPP	Acid inhibitor					
			Butyl diglycol	112-34-5	75.00000	0.00064	None
			Alcohols, C10-16, ethoxylated	68002-97-1	50.00000	0.00042	None
			Methanol	67-56-1	5.00000	0.00004	None
			Thiourea	62-56-6	1.00000	0.00001	None
			Formaldehyde	50-00-0	1.00000	0.00001	None
NE-50	UPP	Non emulsifier					
			Isopropyl alcohol	67-63-0	30.00000	0.00004	None
			Dimethylcocoamine, bis (chloroethyl) ether, diquaternary ammonium salt	68607-28-3	20.00000	0.00003	None
			Methanol	67-56-1	10.00000	0.00001	None
			Dimethylcocoamine	61788-93-0	5.00000	0.00001	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	0.01058	
			Petroleum Distillate	64742-47-8	20.00000	0.01019	
			Water	7732-18-5	30.00000	0.00635	
			Ethylene Glycol	107-21-1	30.00000	0.00358	
			Alcohols, C12-16, ethoxylated	68551-12-2	2.00000	0.00102	
			Oleic Acid Diethanolamide	93-83-4	2.00000	0.00102	
			Other components below reportable levels	Proprietary	50.00000	0.00097	
			Methanol	67-56-1	30.00000	0.00058	
			Ammonium chloride ((NH4)Cl)	12125-02-9	1.00000	0.00051	
			Alcohols, C10-16, ethoxylated	68002-97-1	50.00000	0.00042	
			Methanol	67-56-1	5.00000	0.00004	
			Dimethylcocoamine, bis (chloroethyl) ether, diquaternary ammonium salt	68607-28-3	20.00000	0.00003	
			Methanol	67-56-1	10.00000	0.00001	
			Formaldehyde	50-00-0	1.00000	0.00001	
			Thiourea	62-56-6	1.00000	0.00001	
			Dimethylcocoamine	61788-93-0	5.00000	0.00001	

RECEIVED
 Office of Oil and Gas
 Environmental Protection
 Department of
 Environmental Protection
 JAN 8 2018

* 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)

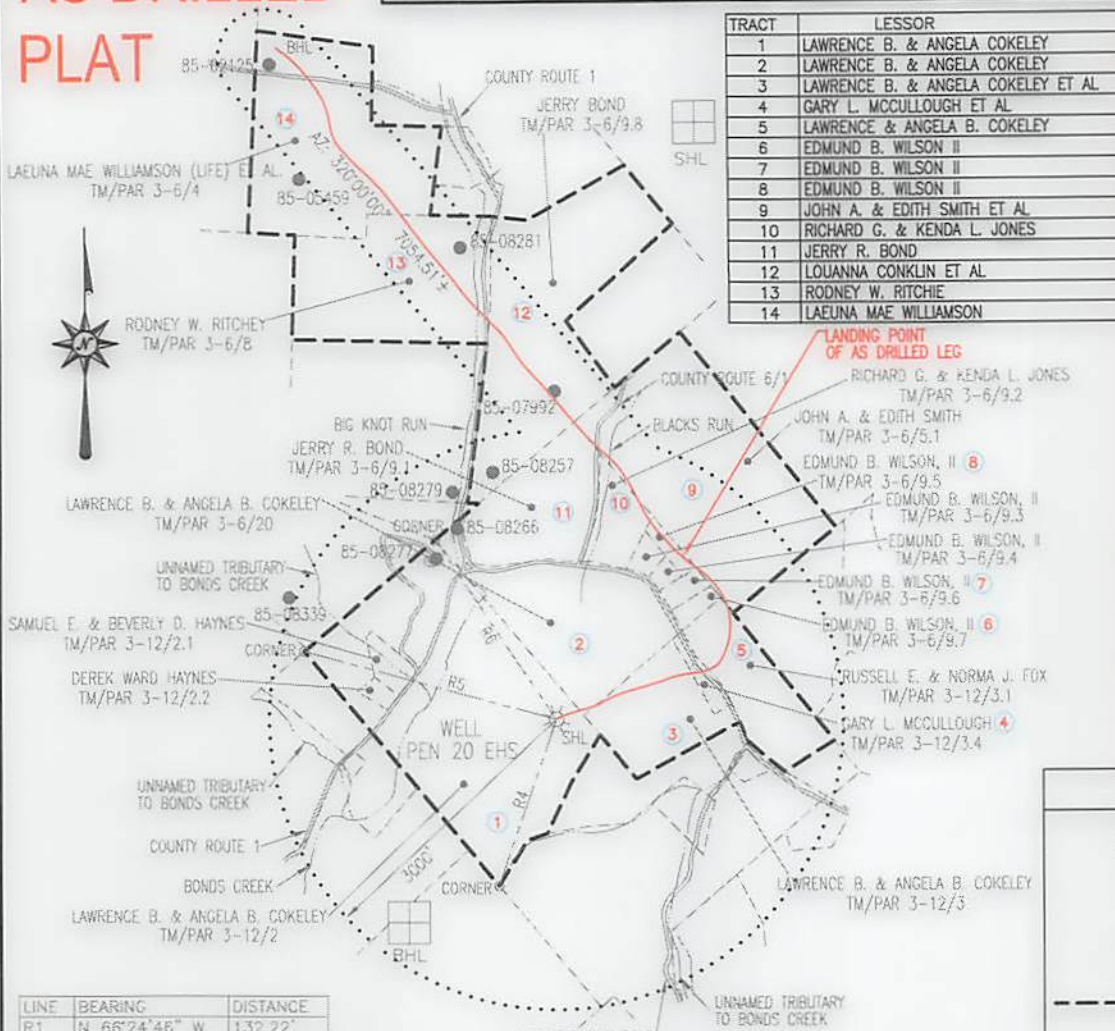
RECEIVED
Office of Oil and Gas
JAN 8 2018
WV Department of
Environmental Protection

02/16/2018

AS DRILLED PLAT

BHL is located on topo map 10,196' feet south of Latitude: 39° 22' 30"
 SHL is located on topo map 1,935' feet south of Latitude: 39° 20' 00"

BHL is located on topo map 10,394' feet west of Longitude: 81° 00' 00"
 SHL is located on topo map 7,382' feet west of Longitude: 81° 00' 00"



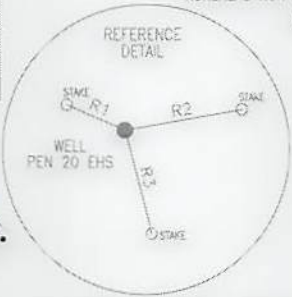
TRACT	LESSOR
1	LAWRENCE B. & ANGELA COKELEY
2	LAWRENCE B. & ANGELA COKELEY
3	LAWRENCE B. & ANGELA COKELEY ET AL
4	GARY L. MCCULLOUGH ET AL
5	LAWRENCE & ANGELA B. COKELEY
6	EDMUND B. WILSON II
7	EDMUND B. WILSON II
8	EDMUND B. WILSON II
9	JOHN A. & EDITH SMITH ET AL
10	RICHARD G. & KENDA L. JONES
11	JERRY R. BOND
12	LOUANNA CONKLIN ET AL
13	RODNEY W. RITCHEY
14	LAELUNA MAE WILLIAMSON

**AS DRILLED
SURFACE HOLE LOCATION (SHL)**
 UTM 17-NAD83
 N:4353178.80
 E:497750.84
 NAD27_WV NORTH
 N:305221.035
 E:1568264.571
 LAT/LON DATUM-NAD83
 LAT:39.3280213
 LON:-81.0260952

**AS DRILLED
LANDING POINT**
 UTM 17-NAD83
 N:4353694.71
 E:498147.55
 NAD27_WV NORTH
 N:306892.22
 E:1569594.69
 LAT/LON DATUM-NAD83
 LAT:39.332672
 LON:-81.021494

**AS DRILLED
BOTTOM HOLE LOCATION (BHL)**
 UTM 17-NAD83
 N:4355286.23
 E:496832.94
 NAD27_WV NORTH
 N:312186.95
 E:1565367.92
 LAT/LON DATUM-NAD83
 LAT:39.347008
 LON:-81.036756

LINE	BEARING	DISTANCE
R1	N 66°24'46" W	132.22'
R2	N 80°14'27" E	248.35'
R3	S 14°44'52" E	221.48'
R4	S 19°22'07" W	1814.60'
R5	N 74°52'28" W	2728.33'
R6	N 34°12'51" W	2252.15'



- NOTES:**
- There are no water wells or developed springs within 250' of proposed well.
 - There are no existing buildings within 625' of proposed well.
 - Proposed well is greater than 100' from perennial stream, wetland, pond, reservoir or lake.
 - There are no native trout streams within 300' of proposed well.
 - Proposed well is greater than 1000' from surface/groundwater intake or public water supply.
 - 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.

LEGEND

- TOPO MAP POINT
- WELL
- ALL ARE POINTS UNLESS OTHERWISE NOTED.
- WATER SOURCE
- LEASE NUMBER BASED ON ATTACHED WW-6A1
- MINERAL TRACT BOUNDARY
- PARCEL LINES
- WELL REFERENCE
- AS DRILLED
- ROAD
- STREAM CENTER LINE
- WELLS WITHIN 3000'
- EXISTING WELLS
- PLUGGED WELLS

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

FILE #: PEN 20 EHS-AS DRILLED
 DRAWING #: PEN 20 EHS-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 EHS-AS DRILLED
 API WELL #: 47 85 10122
 STATE COUNTY PERMIT

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

WATERSHED: NORTH FORK HUGHES RIVER ELEVATION: 1081'±
 COUNTY/DISTRICT: RITCHEY / CLAY QUADRANGLE: ELLENBORO, WV 7.5'
 SURFACE OWNER: LAWRENCE & ANGELA COKELEY ACREAGE: 126.17±
 OIL & GAS ROYALTY OWNER: LAWRENCE B. & ANGELA COKELEY ACREAGE: 575.272±

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: 6,194'± TMD: 14,382'±
 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

02/16/2018