

Revised

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

RECEIVED
Office of Oil and Gas

JUN 21 2017

WV Department of
Environmental Protection

API 47-051-01765 County Marshall District Franklin
Quad Powhatan Point Pad Name MND 06 Field/Pool Name N/A
Farm name Consolidated Coal Company Well Number MND 06 MHS
Operator (as registered with the OOG) Noble Energy, Inc.
Address 1000 Noble Energy Drive City Canonsburg State PA Zip 15317

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 39.817622 Easting 80.791759
Landing Point of Curve Northing 39.815344 Easting 80.799604
Bottom Hole Northing 39.830658 Easting 80.813932

Elevation (ft) 722' 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

Drilling 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 07/02/2014 Date drilling commenced 08/03/2014 Date drilling ceased 12/23/2014
Date completion activities began Not completed Date completion activities ceased na
Verbal plugging (Y/N) _____ Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 128' and 265' Open mine(s) (Y/N) depths N
Salt water depth(s) ft none noted for offsets Void(s) encountered (Y/N) depths N-drilled in pillar
Coal depth(s) ft 284' - 294' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) NO

APPROVED

NAME: *Jim Tindler*
DATE: *7/6/2017*

Reviewed by: *[Signature]* **09/15/2017**

API 47- 051 - 01765 Farm name Consolidated Coal Company Well number MND 06 MHS

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/N) * Provide details below*
Conductor	26"	20"	40'	New	DH-36		Y
Surface	18"	16"	113'	New	H-40		Y
Coal	17.5"	13 3/8"	713'	New	J-55		N
Intermediate 1	12.38"	9 5/8"	2026'	New	HCK-55		Y
Intermediate 2							
Intermediate 3							
Production	8-3/4" & 8-1/2"	5 1/2"	13,727.3'	New	P-110	334.0	Y
Tubing							
Packer type and depth set							

Comment Details was unable to displace cement out of the hole do to pressure exceeding 1000 psi and pumping casing up hole 3".

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	CaCl 1.15					0	8
Surface	CaCl 1.15					0	8
Coal	Type 1 / Class A	192	15.6	1.20	230.4	0	8
Intermediate 1	Type 1 / Class A	728	15.6	1.18	859.04	0	8
Intermediate 2							
Intermediate 3							
Production	Type 1 / Class A	lead 700 tail 1983	14.8	Lead 1.54 tail 1.37	total 3794.71	1815.0	8
Tubing							

Drillers TD (ft) 13527 Loggers TD (ft) 13162
 Deepest formation penetrated Marcellus Plug back to (ft) _____
 Plug back procedure _____

RECEIVED
Office of Oil and Gas
JUN 21 2017

Kick off depth (ft) 2108 WV Department of Environmental Protection

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 No centralizers used on conductor.
 17 Centralizers on Intermediate String (Bow string centralizers on first two joints then every third joint to 100' from surface).
 219 Centralizers on Production String (rigid bow string 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 _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

WERE TRACERS USED Yes No TYPE OF TRACER(S) USED _____

Perforations							
API	Well Name	Date	Top (ftKB)	Btm (ftKB)	Com	Entered Shot Total	Est Hole Dia (in)
47-051-01765	MND-6M-HS	4/25/2017	6,522.00	6,704.00	STG #35	58	
47-051-01765	MND-6M-HS	4/25/2017	6,729.00	6,906.00	STG #34	58	
47-051-01765	MND-6M-HS	4/25/2017	6,931.00	7,108.00	STG #33	58	
47-051-01765	MND-6M-HS	4/24/2017	7,133.00	7,310.00	STG #32	58	
47-051-01765	MND-6M-HS	4/24/2017	7,335.00	7,512.00	STG #31	58	
47-051-01765	MND-6M-HS	4/24/2017	7,537.00	7,714.00	STG #30	58	
47-051-01765	MND-6M-HS	4/24/2017	7,736.00	7,919.00	STG #29	58	
47-051-01765	MND-6M-HS	4/23/2017	7,941.00	8,118.00	STG #28	58	
47-051-01765	MND-6M-HS	4/23/2017	8,143.00	8,316.00	STG #27	58	
47-051-01765	MND-6M-HS	4/23/2017	8,346.00	8,521.00	STG #26	58	
47-051-01765	MND-6M-HS	4/22/2017	8,547.00	8,724.00	STG #25	58	
47-051-01765	MND-6M-HS	4/21/2017	8,749.00	8,926.00	STG #24	58	
47-051-01765	MND-6M-HS	4/21/2017	8,954.00	9,128.00	STG #23	58	
47-051-01765	MND-6M-HS	4/21/2017	9,153.00	9,330.00	STG #22	58	
47-051-01765	MND-6M-HS	4/21/2017	9,360.00	9,532.00	STG #21	58	
47-051-01765	MND-6M-HS	4/20/2017	9,557.00	9,730.00	STG #20	58	
47-051-01765	MND-6M-HS	4/20/2017	9,759.00	9,936.00	STG #19	58	
47-051-01765	MND-6M-HS	4/20/2017	9,961.00	10,138.00	STG #18	58	
47-051-01765	MND-6M-HS	4/20/2017	10,163.00	10,340.00	STG #17	58	
47-051-01765	MND-6M-HS	4/20/2017	10,365.00	10,537.00	STG #16	58	
47-051-01765	MND-6M-HS	4/19/2017	10,567.00	10,744.00	STG #15	58	
47-051-01765	MND-6M-HS	4/19/2017	10,769.00	10,946.00	STG #14	58	
47-051-01765	MND-6M-HS	4/19/2017	10,977.00	11,148.00	STG #13	58	
47-051-01765	MND-6M-HS	4/18/2017	11,173.00	11,345.00	STG #12	58	
47-051-01765	MND-6M-HS	4/18/2017	11,375.00	11,552.00	STG #11	58	
47-051-01765	MND-6M-HS	4/18/2017	11,577.00	11,749.00	STG #10	58	
47-051-01765	MND-6M-HS	4/18/2017	11,779.00	11,956.00	STG #9	58	
47-051-01765	MND-6M-HS	4/17/2017	11,986.00	12,158.00	STG #8	58	
47-051-01765	MND-6M-HS	4/17/2017	12,186.00	12,360.00	STG #7	58	
47-051-01765	MND-6M-HS	4/17/2017	12,385.00	12,562.00	STG #6	58	
47-051-01765	MND-6M-HS	4/17/2017	12,587.00	12,760.00	STG #5	58	
47-051-01765	MND-6M-HS	4/16/2017	12,789.00	12,961.00	STG #4	58	
47-051-01765	MND-6M-HS	4/4/2017	12,991.00	13,168.00	STG #3	58	
47-051-01765	MND-6M-HS	4/4/2017	13,196.00	13,370.00	STG #2	58	
47-051-01765	MND-6M-HS	4/4/2017	13,395.00	13,572.00	STG #1	58	

RECEIVED
Office of Oil and Gas

JUN 21 2017

WV Department of
Environmental Protection 06/13/2017

Well Header							
API: 47-051-01765	Well Name: MND-6M-HS						
WR-35 - Stimulation Information Per Stage							
Int Des	Start Date	Slurry Rate Avg (bbl/min)	P Treat Avg (psi)	P Breakdown (psi)	ISIP (psi)	Propant Deliver (lb)	Vol Slurry Total (gal)
STG# 1 INJ TEST	3/5/2017	15.5	7,637.00			0	30,870.00
STG# 1 INJ TEST 2	4/4/2017	22	8,633.00			0	37,115.40
STG# 1	4/4/2017	90	8,217.00	5,651.00		589,388.00	620,029.20
STG# 2	4/4/2017	88.9	8,194.00	6,353.00	4,147.00	605,035.00	604,081.80
STG# 3A	4/11/2017	84.8	9,702.00	6,208.00	4,355.00	88,689.00	152,779.20
STG# 3 INJ TEST	4/11/2017	6.4	5,106.00				5,884.20
STG# 3B	4/16/2017	65.8	8,889.00	5,061.00	4,699.00	257,094.00	506,667.00
STG# 4	4/16/2017	84.9	8,384.00	5,773.00	3,845.00	663,615.00	664,490.40
STG# 5	4/17/2017	92.9	8,645.00	5,851.00	4,177.00	672,021.00	603,107.40
STG# 6	4/17/2017	92.3	8,336.00	5,544.00	4,398.00	605,657.00	623,116.20
STG# 7	4/17/2017	92.8	8,712.00	5,931.00	4,340.00	603,999.00	553,954.80
STG# 8	4/17/2017	89.3	8,903.00	5,542.00	4,151.00	595,433.00	560,687.40
STG# 9	4/18/2017	88.7	8,057.00	5,540.00	4,358.00	603,010.00	558,112.80
STG# 10	4/18/2017	87.6	7,974.00	5,467.00	4,329.00	601,810.00	540,754.20
STG# 11	4/18/2017	88.8	7,907.00	5,266.00	4,626.00	602,615.00	549,427.20
STG# 12	4/19/2017	89.5	7,993.00	5,254.00	4,399.00	600,971.00	543,916.80
STG# 13	4/19/2017	87.1	7,801.00	5,377.00	4,065.00	602,108.00	623,784.00
STG# 14	4/19/2017	88.1	7,724.00	5,503.00	4,260.00	600,160.00	546,168.00
STG# 15	4/19/2017	90.3	7,709.00	5,441.00	4,506.00	603,132.00	535,890.60
STG# 16	4/20/2017	90.5	7,783.00	5,708.00	4,348.00	602,535.00	540,430.80
STG# 17	4/20/2017	96.8	8,078.00	5,447.00	4,517.00	603,829.00	603,325.80
STG# 18	4/20/2017	90.7	8,000.00	5,462.00	4,351.00	598,469.00	597,609.60
STG# 19	4/20/2017	94.5	7,834.00	5,288.00	4,598.00	538,832.00	513,450.00
STG# 20	4/21/2017	94.3	7,753.00	5,351.00	4,398.00	659,399.00	570,553.20
STG# 21	4/21/2017	90.5	7,592.00	5,624.00	4,373.00	603,351.00	544,891.62
STG# 22	4/21/2017	94.6	7,640.00	5,541.00	4,438.00	602,161.00	553,240.80
STG# 23	4/21/2017	95.1	7,650.00	5,337.00	4,625.00	600,916.00	540,414.00
STG# 24	4/22/2017	93.9	7,805.00	5,507.00	4,689.00	639,334.00	723,954.00
STG# 25	4/23/2017	89.3	8,153.00	5,501.00	6,966.00	419,694.00	463,272.60
STG# 26	4/23/2017	93.3	7,421.00	5,114.00	4,996.00	605,585.00	560,960.40
STG# 27	4/23/2017	92.5	7,245.00	5,171.00	4,783.00	601,032.00	596,425.20
STG# 28	4/23/2017	96	7,428.00	5,130.00	4,758.00	601,223.00	543,849.60
STG# 29	4/24/2017	92.6	7,397.00	5,208.00	4,341.00	600,487.00	542,526.60
STG# 30	4/24/2017	92.9	7,352.00	5,309.00	4,875.00	598,997.00	575,232.00
STG# 31	4/24/2017	99.1	7,449.00	5,364.00	4,824.00	599,505.00	546,079.80
STG# 32	4/24/2017	98.5	7,976.00	5,357.00	4,782.00	601,173.00	545,286.00
STG# 33	4/25/2017	99.2	7,370.00	5,457.00	4,295.00	604,044.00	537,994.80
STG# 34	4/25/2017	87.2	6,711.00	5,431.00	4,657.00	602,166.00	616,320.60
STG# 35	4/25/2017	98.7	6,947.00	6,497.00	4,526.00	603,135.00	489,270.60

RECEIVED
Office of Oil and Gas

JUN 21 2017

WV Department of
Environmental Protection

MND 6

Formations	Top TVD	Base TVD	Top MD	Base MD	Fluid
Shale and Sandstone	0	284	0	284	
Pittsburgh Coal	284	294	284	294	
Shale and Sandstone	294	706	294	706	
Dunkard Sand	706	727	706	727	
Shale	727	876	727	876	
Gas Sand	876	947	876	5972	
Shale	947	1016	947	6191	
1st Salt Sand	1016	1032	1016	6313	
Shale	1032	1139	1032	6719	
2nd Salt Sand	1139	1168	1139	7118	
Shale and Sandstone	1168	1298	1168	7333	
Maxton Sand	1298	1345	1298	8194	
Shale	1345	1363	1345	8194	
Big Lime	1363	1435	1363	8541	
Big Injun	1435	1705	1435	8869	
Price	1705	1803	1705	8890	
Murrysville	1803	1910	1803	8983	
Shale and Sandstone	1910	2448	1910	8998	
Gordon	2448	2478	2448	9073	
Shale and Sandstone	2478	2999	2478	9179	
Fifth Sand	2999	3052	2999	9995	
Shale and Sandstone	3052	3854	3052	9179	
Warren Sand	3854	3863	3860	9995	
Shale	3863	4580	3869	10660	
Java Shale	4580	4664	4593	not encountered	
Pipe Creek Shale	4664	4739	4678	not encountered	
Angola Shale	4739	5323	4754	not encountered	
Rhinestreet	5323	5642	5344	not encountered	
Cashaqua	5642	5714	5666	not encountered	
Middlesex	5714	5737	5739	not encountered	
West River	5737	5798	5762	not encountered	
Burkett	5798	5822	5824	not encountered	
Tully Limestone	5822	5848	5848	not encountered	
Hamilton	5848	5883	5875	not encountered	
Marcellus	5883	5936	5910	not encountered	
Onondaga	5936	5944	5964	not encountered	
Huntersville	5944	6158	5972	6191	
Oriskany	6158	6270	6191	6313	
Helderburg	6270	6530	6313	6719	
Bass Island Dolomite	6530	6609	6719	7118	
Salina G Big Lime	6609	6809	7118	7333	
Salina F	6809	7608	7333	8194	
Lockport Dolomite	7608	7930	8194	8541	
Rochester Shale	7930	8235	8541	8869	
Dayton Fm/Packer Shell	8235	8254	8869	8890	

RECEIVED
Office of Oil and Gas

JUN 21 2017

WV Department of
Environmental Protection

09/15/2017

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	2017-04-26
State:	West Virginia
County:	Marshall
API Number:	4705101765
Operator Name:	NOBLE ENERGY INC
Well Name and Number:	MND 6 M
Longitude:	-80.79
Latitude:	39.82
Longitude Projection:	NAD27
Indian/Federal:	none
Production Type:	Gas
True Vertical Depth (TVD):	5,837
Total Water Volume (gal):	19,118,826

RECEIVED
Office of Oil and Gas

JUN 21 2017

WV Department of
Environmental Protection

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)**	Ingredient Mass lbs	Comments	Company	First Name	Last Name	Email	Phone
Fresh Water	Operator	Base Fluid	Water	7732-18-5	100.00%	0.29379%	159259292	Density = 8.330					
FE-1A ACIDIZING COMPOSITION	Halliburton	Additive	Listed Below	Listed Below			0	NA					
FR-76	Halliburton	Friction Reducer	Listed Below	Listed Below			0	NA					
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor	Listed Below	Listed Below			0	NA					
HYDROCHLORIC ACID	Halliburton	Solvent	Listed Below	Listed Below			0	NA					
OILPERM A	Halliburton	Non-ionic Surfactant	Listed Below	Listed Below			0	NA					
SAND-COMMON WHITE-100 MESH, SSA-2, BULK (100003675)	Halliburton	Proppant	Listed Below	Listed Below			0	NA					
SAND-PREMIUM WHITE-40/70, BULK	Halliburton	Proppant	Listed Below	Listed Below			0	NA					
SF BREAKER	Halliburton	Breaker	Listed Below	Listed Below			0	NA					
WG-96 GELLING AGENT	Halliburton	Gelling Agent	Listed Below	Listed Below			0	NA					
MSDS and Non-MSDS Ingredients are listed below the green line													
Ingredients	Listed Above	Listed Above	1,2,4-Trimethylbenzene	95-63-6	1.00%	0.00001%	18						
			Acetic acid	64-19-7	60.00%	0.00171%	3092						
			Acetic anhydride	108-24-7	100.00%	0.00286%	5153						
			Acrylamide acrylate copolymer	Proprietary	30.00%	0.01723%	31084	Denise Tuck, Halliburton, 3000 N. Sam Houston Pkwy E., Houston, TX 77032, 281-871-6226	Halliburton	Denise	Tuck	Denise.Tuck@Halliburton.com	281-871-6226
			Crystalline silica, quartz	14808-60-7	100.00%	11.50691%	20754100						
			Ethanol	64-17-5	60.00%	0.00052%	1040						
			Ethoxylated alcohols	Proprietary	30.00%	0.00014%	256		Halliburton	Denise	Tuck	Denise.Tuck@Halliburton.com	281-871-6226
			Fatty acids, tall oil	Proprietary	30.00%	0.00014%	256		Halliburton	Denise	Tuck	Denise.Tuck@Halliburton.com	281-871-6226
			Guar gum	9000-30-0	100.00%	0.00109%	1961						
			Heavy aromatic petroleum naphtha	64742-94-5	30.00%	0.00029%	520						
			Hydrochloric acid	7647-01-0	7.50%	0.00978%	17645.875						
			Hydrotreated light petroleum distillate	64742-47-8	30.00%	0.01723%	31084						
			Inorganic salt	Proprietary	30.00%	0.01723%	31084		Halliburton	Denise	Tuck	Denise.Tuck@Halliburton.com	281-871-6226
			Methanol	67-56-1	60.00%	0.00028%	512						
			Naphthalene	91-20-3	5.00%	0.00005%	87						
			Olefins	Proprietary	5.00%	0.00006%	104		Halliburton	Denise	Tuck	Denise.Tuck@Halliburton.com	281-871-6226
			Oxynkylated phenolic resin	Proprietary	30.00%	0.00038%	694		Halliburton	Denise	Tuck	Denise.Tuck@Halliburton.com	281-871-6226
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00%	0.00005%	87						
			Propargyl alcohol	107-19-7	10.00%	0.00005%	86						

		Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1	30.00%	0.00014%	256					
		Sodium persulfate	7775-27-1	100.00%	0.00003%	53					
		Sodium sulfate	7757-82-6	0.10%	0.00000%	1					
		Water	7732-18-5	100.00%	0.16492%	297445					

* 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.

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

RECEIVED
 Office of Oil and Gas

JUN 21 2017

WV Department of
 Environmental Protection



Actual Wellpath Report

MND-6M-HS AWP Proj: 13752'
Page 1 of 8

RECEIVED
Office of Oil and Gas
JUN 21 2017
WV Department of Environmental Protection



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot M
Area	Marshall County, WV	Well	MND-6M-HS
Field	Marshall	Wellbore	MND-6M-HS AWB
Facility	MND-6 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	0.999946	Report Generated	1/12/2015 at 2:44:41 PM
Convergence at slot	0.82° West	Database/Source file	WA_NorthEast/MND-6M-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	-19.94	-72.38	1637105.40	482492.29	39°49'03.167"N	80°47'31.007"W
Facility Reference Pt			1637177.78	482512.23	39°49'03.375"N	80°47'30.083"W
Field Reference Pt			609601.22	0.00	38°23'48.753"N	84°21'09.765"W

WELLPATH DATUM			
Calculation method	Minimum curvature	Nomac 79 (RKB) to Facility Vertical Datum	746.53ft
Horizontal Reference Pt	Slot	Nomac 79 (RKB) to Mean Sea Level	746.53ft
Vertical Reference Pt	Nomac 79 (RKB)	Nomac 79 (RKB) to Mud Line at Slot (Slot M)	26.00ft
MD Reference Pt	Nomac 79 (RKB)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	325.00°



Actual Wellpath Report

MND-6M-HS AWP Proj: 13752

Page 2 of 8

WV Department of Environmental Protection

JUN 21 2017

RECEIVED
Office of Oil and Gas



BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION

Operator	NORLE ENERGY
Area	Marshall County, WV
Field	Marshall
Facility	MND-6 Pad
Slot	Slot M
Well	MND-6M-HS
Wellbore	MND-6M-HS AWR

MD	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]
0.00	0.00	321.260	0.00	0.00	0.00	0.00	1637105.40	482492.29	39°49'03.167"N	80°47'31.007"W	0.00	0.00	0.00
26.00	0.000	321.260	26.00	0.00	0.00	0.00	1637105.40	482492.29	39°49'03.167"N	80°47'31.007"W	0.00	0.00	0.00
50.00	0.080	321.260	50.00	0.02	0.01	-0.01	1637105.39	482492.30	39°49'03.168"N	80°47'31.007"W	0.02	0.02	0.33
100.00	0.270	265.920	100.00	0.11	0.03	-0.15	1637105.25	482492.32	39°49'03.168"N	80°47'31.009"W	0.15	282.024	0.47
177.00	0.560	317.860	177.00	0.45	0.20	-0.59	1637104.91	482492.49	39°49'03.169"N	80°47'31.013"W	0.53	291.915	0.37
208.00	0.460	309.520	208.00	0.66	0.35	-0.65	1637104.75	482492.64	39°49'03.171"N	80°47'31.015"W	0.74	298.123	0.37
217.00	0.610	275.230	217.00	0.73	0.38	-0.73	1637104.67	482492.67	39°49'03.171"N	80°47'31.016"W	0.82	297.321	3.85
238.00	0.650	270.800	238.00	0.87	0.39	-0.96	1637104.44	482492.68	39°49'03.171"N	80°47'31.019"W	1.04	292.048	0.30
260.00	0.760	266.780	259.99	1.02	0.38	-1.23	1637104.17	482492.67	39°49'03.171"N	80°47'31.023"W	1.29	287.264	0.55
311.00	0.560	278.050	310.99	1.37	0.40	-1.82	1637103.58	482492.69	39°49'03.171"N	80°47'31.030"W	1.86	282.379	0.47
327.00	0.380	318.510	326.99	1.47	0.45	-1.93	1637103.47	482492.74	39°49'03.172"N	80°47'31.032"W	1.98	283.114	2.29
422.00	0.170	330.430	421.99	1.93	0.81	-2.21	1637103.19	482493.10	39°49'03.175"N	80°47'31.035"W	2.35	290.108	0.23
516.00	0.380	140.380	515.99	1.76	0.69	-2.08	1637103.32	482492.98	39°49'03.174"N	80°47'31.034"W	2.19	288.355	0.58
611.00	0.140	123.410	610.99	1.33	0.38	-1.78	1637103.62	482492.67	39°49'03.171"N	80°47'31.030"W	1.82	282.132	0.26
703.00	0.720	108.500	702.99	0.77	0.14	-1.14	1637104.26	482492.43	39°49'03.169"N	80°47'31.022"W	1.14	276.972	0.64
786.00	0.710	147.310	785.98	-0.17	-0.46	-0.36	1637105.04	482491.83	39°49'03.163"N	80°47'31.012"W	0.58	218.419	0.58
804.00	0.750	159.400	803.98	-0.39	-0.66	-0.26	1637105.14	482491.63	39°49'03.161"N	80°47'31.010"W	0.71	201.545	0.88
902.00	1.850	233.750	901.96	-1.05	-2.20	-1.31	1637104.09	482490.09	39°49'03.145"N	80°47'31.023"W	2.56	210.825	1.84
999.00	3.380	249.030	998.85	-0.39	-4.15	-5.24	1637100.16	482488.14	39°49'03.136"N	80°47'31.073"W	6.69	231.665	1.72
1095.00	3.590	249.200	1094.68	1.03	-6.23	-10.70	1637094.70	482486.06	39°49'03.104"N	80°47'31.143"W	12.88	239.794	0.22
1180.00	5.500	247.640	1179.40	2.58	-8.72	-16.95	1637088.45	482483.57	39°49'03.079"N	80°47'31.223"W	19.06	242.774	2.25
1274.00	5.170	245.190	1273.00	4.31	-12.21	-24.96	1637080.44	482480.08	39°49'03.043"N	80°47'31.325"W	27.79	243.930	0.43
1370.00	4.810	243.650	1368.63	5.68	-15.81	-32.50	1637072.91	482476.48	39°49'03.006"N	80°47'31.421"W	36.14	244.050	0.40
1465.00	3.650	235.070	1463.37	6.29	-19.31	-38.54	1637066.86	482472.98	39°49'02.971"N	80°47'31.497"W	43.11	243.385	1.39
1561.00	3.560	233.030	1559.18	6.19	-22.86	-43.43	1637061.97	482469.44	39°49'02.935"N	80°47'31.559"W	49.08	242.244	0.16
1656.00	1.820	224.240	1654.08	5.81	-25.71	-46.84	1637058.56	482466.58	39°49'02.907"N	80°47'31.603"W	53.43	241.237	1.88
1751.00	0.380	105.810	1749.06	5.28	-26.88	-47.59	1637057.81	482465.41	39°49'02.895"N	80°47'31.612"W	54.65	240.543	2.14
1845.00	0.540	82.500	1843.06	4.83	-26.90	-46.85	1637058.55	482465.39	39°49'02.895"N	80°47'31.602"W	54.03	240.133	0.26
1940.00	0.510	71.440	1938.05	4.51	-26.71	-46.01	1637059.40	482465.58	39°49'02.897"N	80°47'31.592"W	53.20	239.860	0.11
2090.00	0.440	71.590	2007.05	4.34	-26.53	-45.46	1637059.94	482465.76	39°49'02.899"N	80°47'31.585"W	52.64	239.734	0.10

WELLPATH DATA (156 stations) † = interpolated/extrapolated station



Actual Wellpath Report

MND-6M-HS AWP Proj: 137521
Page 3 of 8

RECEIVED
Office of Oil and Gas
JUN 21 2017
WV Department of Environmental Protection



REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot M
Area	Marshall County, WV	Well	MND-6M-HS
Field	Marshall	Wellbore	MND-6M-HS AWB
Facility	MND-6 Pad		

WELLPATH DATA (156 stations)

MID [ft]	Inclination [°]	Azimuth [°]	YVD [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]
2108.00	0.40	102.800	2106.05	4.21	-26.42	-45.07	1637060.33	482465.87	39°49'02.900"N	80°47'31.580"W	52.24	239.623	0.41
2173.00	0.410	243.830	2171.05	4.23	-26.53	-45.26	1637060.15	482465.77	39°49'02.899"N	80°47'31.582"W	52.46	239.624	0.68
2267.00	3.780	241.950	2264.97	4.66	-28.13	-48.29	1637057.11	482464.16	39°49'02.883"N	80°47'31.621"W	55.89	239.779	3.59
2362.00	6.570	237.840	2359.58	5.30	-32.50	-55.66	1637049.74	482459.79	39°49'02.838"N	80°47'31.714"W	64.45	239.721	2.96
2456.00	8.480	236.620	2452.76	5.77	-39.17	-66.00	1637039.40	482453.12	39°49'02.771"N	80°47'31.846"W	76.75	239.509	2.04
2551.00	12.250	234.550	2546.20	5.89	-48.88	-80.06	1637025.44	482443.42	39°49'02.673"N	80°47'32.024"W	93.80	238.597	3.99
2646.00	15.190	233.460	2638.48	5.47	-62.13	-98.28	1637007.13	482430.16	39°49'02.539"N	80°47'32.255"W	116.27	237.697	3.11
2741.00	17.550	231.880	2729.67	4.37	-78.29	-119.42	1636985.98	482414.00	39°49'02.377"N	80°47'32.523"W	142.80	236.752	2.52
2836.00	20.280	231.120	2819.58	2.48	-97.57	-143.39	1636962.02	482394.92	39°49'02.185"N	80°47'32.826"W	173.33	235.820	3.09
2930.00	24.460	232.910	2906.49	0.67	-119.35	-171.61	1636933.80	482372.95	39°49'01.964"N	80°47'33.184"W	209.03	235.183	4.50
3025.00	30.710	235.930	2990.65	0.34	-144.82	-207.43	1636897.98	482347.48	39°49'01.707"N	80°47'33.638"W	252.98	235.078	6.74
3120.00	35.620	236.100	3070.15	1.27	-173.86	-250.51	1636854.90	482318.44	39°49'01.414"N	80°47'34.185"W	304.93	235.239	5.17
3215.00	34.830	232.810	3147.76	0.76	-205.69	-295.09	1636810.33	482286.61	39°49'01.093"N	80°47'34.750"W	359.70	235.122	2.16
3309.00	34.420	230.980	3225.12	-2.12	-238.64	-337.11	1636768.30	482253.66	39°49'00.761"N	80°47'35.283"W	413.03	234.705	1.19
3404.00	33.660	231.330	3303.84	-5.69	-272.00	-378.53	1636726.89	482220.31	39°49'00.426"N	80°47'35.807"W	466.12	234.300	0.83
3498.00	33.750	233.940	3382.04	-7.84	-303.65	-419.98	1636683.44	482188.66	39°49'00.107"N	80°47'36.333"W	518.25	234.133	1.54
3593.00	34.810	236.810	3460.54	-7.47	-334.03	-464.01	1636641.42	482158.28	39°48'59.801"N	80°47'36.891"W	571.74	234.251	2.03
3688.00	36.100	238.020	3537.93	-5.14	-363.70	-510.44	1636594.98	482128.61	39°48'59.501"N	80°47'37.481"W	626.76	234.530	1.53
3783.00	35.440	235.890	3615.01	-3.24	-393.97	-556.99	1636548.44	482098.35	39°48'59.195"N	80°47'38.072"W	682.24	234.728	1.48
3878.00	34.560	233.390	3692.83	-3.57	-425.48	-601.43	1636504.01	482066.83	39°48'58.877"N	80°47'38.635"W	736.72	234.722	1.77
3972.00	36.150	233.900	3769.49	-4.85	-457.72	-645.23	1636460.20	482034.59	39°48'58.553"N	80°47'39.191"W	791.10	234.649	1.72
4068.00	35.960	234.690	3847.11	-5.55	-490.70	-691.11	1636414.32	482001.62	39°48'58.220"N	80°47'39.772"W	847.60	234.625	0.52
4162.00	33.910	234.610	3924.16	-5.88	-521.84	-733.02	1636370.42	481970.48	39°48'57.906"N	80°47'40.329"W	901.42	234.627	2.18
4257.00	33.450	235.900	4003.22	-5.64	-551.86	-778.30	1636327.14	481940.46	39°48'57.603"N	80°47'40.878"W	954.10	234.661	0.90
4351.00	35.500	238.600	4080.71	-5.52	-580.61	-823.06	1636282.39	481911.71	39°48'57.313"N	80°47'41.446"W	1007.24	234.800	2.72
4446.00	35.580	237.890	4158.01	-0.40	-609.67	-870.01	1636235.44	481882.65	39°48'57.019"N	80°47'42.043"W	1062.37	234.979	0.44
4541.00	35.450	239.310	4235.34	3.07	-638.43	-917.11	1636188.34	481853.90	39°48'56.728"N	80°47'42.641"W	1117.45	235.157	0.88
4636.00	34.930	239.140	4312.98	7.10	-666.44	-964.15	1636141.30	481825.89	39°48'56.445"N	80°47'43.238"W	1172.06	235.347	0.56
4730.00	35.020	240.140	4390.00	11.46	-693.67	-1010.64	1636094.81	481798.66	39°48'56.169"N	80°47'43.829"W	1225.80	235.536	0.62
4826.00	35.100	240.710	4468.58	16.67	-720.89	-1058.60	1636046.86	481771.44	39°48'55.893"N	80°47'44.439"W	1280.75	235.746	0.35



Actual Wellpath Report

MND-6M-HS AWP Proj: 13752

Page 4 of 8

RECEIVED
Office of Oil and Gas
JUN 21 2017
WV Department of Environmental Protection



BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION

Operator	Area	Field	Facility
NOBLE ENERGY	Marshall County, WV	Marshall	MND-6 Pad
Slot M	MND-6M-HS	Well	Wellbore
Slot M	MND-6M-HS	MND-6M-HS AWB	

WELLPATH DATA (156 stations)

MID [ft]	Inclinometer [ft]	Azimuth [ft]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [L S ft]	Grid North [U S ft]	Longitude	Closure Dist [ft]	Closure Dir [ft]	DLS [ft/100ft]
4920.00	35.070	2405.10	4545.50	21.95	-747.40	-1105.68	1635099.78	481744.93	39°48'55.624"W	1334.59	235.943	0.13
5015.00	35.090	236.160	4623.26	25.13	-776.05	-1152.12	1635953.34	481716.28	39°48'55.335"W	1389.12	236.037	2.63
5110.00	35.090	236.850	4700.99	26.56	-806.19	-1197.67	1635907.80	481686.15	39°48'55.030"W	1443.73	236.054	0.42
5205.00	35.070	241.380	4778.75	30.48	-834.20	-1244.49	1635860.98	481658.14	39°48'54.747"W	1498.22	236.166	2.74
5299.00	35.030	241.360	4855.70	36.47	-860.06	-1291.88	1635813.59	481632.27	39°48'54.484"W	1551.98	236.246	0.04
5394.00	35.010	237.190	4933.52	40.53	-887.90	-1338.72	1635766.76	481604.44	39°48'54.203"W	1606.40	236.446	2.52
5489.00	34.980	236.700	5011.34	42.38	-917.62	-1384.38	1635721.10	481574.72	39°48'53.903"W	1660.89	236.462	0.30
5583.00	34.980	237.180	5088.36	44.20	-947.02	-1429.55	1635675.93	481545.33	39°48'53.606"W	1714.77	236.477	0.29
5678.00	35.020	232.660	5166.19	44.13	-978.32	-1474.11	1635631.37	481514.03	39°48'53.290"W	1769.21	236.429	2.73
5772.00	35.050	232.700	5243.16	41.94	-1011.03	-1517.03	1635588.46	481481.51	39°48'52.961"W	1823.06	236.218	0.04
5867.00	35.010	233.660	5320.95	40.21	-1043.71	-1560.68	1635544.81	481448.61	39°48'52.631"W	1877.51	236.227	0.58
5962.00	35.560	238.020	5398.51	41.03	-1074.50	-1606.07	1635499.42	481417.85	39°48'52.321"W	1932.35	236.217	2.71
6057.00	38.280	256.230	5474.68	53.18	-1096.20	-1658.25	1635447.25	481396.15	39°48'52.099"W	1987.82	236.533	11.83
6151.00	42.940	267.420	5546.12	80.94	-1104.59	-1718.63	1635386.87	481374.76	39°48'52.007"W	2042.99	237.271	9.18
6246.00	44.320	279.460	5615.00	121.60	-1100.58	-1783.80	1635321.69	481351.77	39°48'52.038"W	2096.01	238.326	8.86
6341.00	50.480	287.920	5679.34	174.18	-1083.82	-1851.54	1635253.97	481408.53	39°48'52.193"W	2145.43	239.657	9.21
6436.00	58.710	293.820	5734.36	238.29	-1056.09	-1923.70	1635181.81	481436.26	39°48'52.457"W	2194.53	241.234	10.03
6531.00	60.280	303.170	5782.70	312.01	-1015.83	-1994.73	1635110.78	481474.54	39°48'52.845"W	2238.50	243.012	10.42
6625.00	63.840	311.270	5826.77	391.47	-964.44	-2059.87	1635054.64	481527.90	39°48'53.343"W	2274.47	244.911	6.87
6720.00	72.750	315.410	5861.88	477.82	-903.87	-2123.92	1634981.60	481588.47	39°48'53.933"W	2308.25	246.947	10.21
6814.00	85.660	320.020	5879.46	569.20	-835.67	-2185.83	1634919.69	481656.67	39°48'54.598"W	2340.13	249.078	14.55
6862.00	90.710	323.020	5880.98	617.07	-798.13	-2215.67	1634889.85	481694.21	39°48'54.965"W	2355.04	250.190	12.23
6909.00	90.580	324.700	5880.45	664.06	-760.18	-2243.39	1634862.14	481732.16	39°48'55.136"W	2368.68	251.281	3.58
7004.00	90.310	324.960	5879.71	759.05	-682.52	-2298.11	1634807.42	481809.81	39°48'56.095"W	2397.32	253.459	0.39
7099.00	90.220	323.110	5879.27	854.03	-605.63	-2353.90	1634751.63	481886.69	39°48'56.847"W	2430.56	255.571	1.95
7194.00	90.580	323.290	5878.61	948.98	-529.57	-2410.80	1634694.73	481962.75	39°48'57.591"W	2468.28	257.611	0.42
7289.00	90.580	322.960	5877.65	1043.93	-453.58	-2467.81	1634637.73	482038.74	39°48'58.333"W	2509.14	259.585	0.35
7384.00	90.530	322.280	5876.73	1138.84	-378.09	-2525.48	1634580.06	482114.22	39°48'59.071"W	2553.62	261.485	0.72
7480.00	90.650	322.450	5875.75	1234.73	-302.07	-2584.10	1634521.45	482190.24	39°48'59.814"W	2601.69	263.333	0.22
7575.00	90.220	323.810	5875.03	1329.68	-226.07	-2641.09	1634464.45	482266.23	39°49'00.557"W	2650.75	265.107	1.50



Actual Wellpath Report

MND-6M-HS AWP Proj: 13752

Page 5 of 8

WV Department of Environmental Protection

JUN 21 2017

RECEIVED
Office of Oil and Gas



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot M
Area	Marshall County, WV	Well	MND-6M-HS
Field	Marshall	Wellbore	MND-6M-HS AWB
Facility	MND-6 Pad		

WELLPATH DATA (156 stations)													
MID	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Longitude	Latitude	Closure Dist	Closure Dir	DLS
[ft]	[°]	[ft]	[ft]	[ft]	[ft]	[ft]	[US ft]	[US ft]	[LS ft]	[LS ft]	[ft]	[°]	[%/100ft]
7669.00	90.430	326.530	5874.50	1423.67	-148.92	-2694.77	1634410.78	482343.38	39°49'01.11"N	80°48'05.510"W	2698.89	266.837	2.90
7764.00	90.340	329.720	5873.66	1518.51	-68.26	-2744.93	1634360.62	482424.03	39°49'02.101"N	80°48'06.168"W	2745.78	268.575	3.36
7859.00	90.460	329.820	5873.20	1613.18	13.82	-2792.76	1634312.79	482506.11	39°49'02.905"N	80°48'06.796"W	2792.80	270.283	0.16
7953.00	90.430	329.900	5872.47	1706.84	95.11	-2839.96	1634265.60	482587.39	39°49'03.702"N	80°48'07.416"W	2841.55	271.918	0.09
8048.00	90.520	332.760	5871.68	1801.25	178.45	-2885.53	1634220.03	482670.73	39°49'04.591"N	80°48'08.015"W	2891.04	273.539	3.01
8143.00	90.650	330.250	5870.71	1895.62	261.93	-2930.85	1634174.72	482754.20	39°49'05.337"N	80°48'08.611"W	2942.53	275.107	2.65
8238.00	90.680	325.590	5869.61	1990.47	342.40	-2981.28	1634124.28	482834.67	39°49'06.125"N	80°48'09.273"W	3000.88	276.552	4.91
8333.00	90.650	321.340	5868.50	2085.41	418.70	-3037.82	1634067.75	482910.97	39°49'06.871"N	80°48'10.011"W	3066.54	277.848	4.47
8427.00	90.710	319.860	5867.39	2179.12	491.33	-3097.48	1634008.09	482983.60	39°49'07.581"N	80°48'10.789"W	3136.21	279.013	1.58
8522.00	90.680	318.400	5866.24	2273.61	563.17	-3159.64	1633945.94	483055.42	39°49'08.281"N	80°48'11.599"W	3209.43	280.106	1.54
8617.00	90.620	318.970	5865.16	2368.03	634.51	-3222.35	1633883.23	483126.77	39°49'08.978"N	80°48'12.416"W	3284.23	281.140	0.60
8711.00	90.580	321.760	5864.17	2461.71	706.89	-3282.30	1633823.28	483199.15	39°49'09.684"N	80°48'13.198"W	3357.56	282.154	2.97
8806.00	90.620	325.550	5863.18	2556.66	783.30	-3338.72	1633766.87	483275.55	39°49'10.431"N	80°48'13.935"W	3429.38	283.203	3.79
8901.00	90.680	325.920	5862.10	2651.64	861.72	-3392.33	1633713.25	483353.96	39°49'11.198"N	80°48'14.636"W	3500.07	284.253	0.59
8996.00	90.620	324.030	5861.02	2746.63	939.51	-3446.85	1633658.74	483431.75	39°49'11.959"N	80°48'15.349"W	3572.60	285.247	1.99
9000.00	90.580	323.860	5860.04	2840.61	1015.50	-3502.17	1633603.42	483507.73	39°49'12.702"N	80°48'16.073"W	3646.43	286.170	0.19
9185.00	90.620	325.090	5859.04	2935.60	1092.81	-3557.37	1633548.23	483585.04	39°49'13.458"N	80°48'16.794"W	3721.44	287.077	1.30
9279.00	90.650	325.550	5858.00	3029.59	1170.11	-3610.85	1633494.75	483662.33	39°49'14.214"N	80°48'17.494"W	3795.71	287.953	0.49
9373.00	90.310	327.200	5857.21	3123.56	1248.37	-3662.90	1633442.70	483740.59	39°49'14.980"N	80°48'18.176"W	3869.79	288.820	1.79
9469.00	90.250	328.120	5856.74	3219.45	1329.48	-3714.25	1633391.35	483821.70	39°49'15.774"N	80°48'18.849"W	3945.02	289.694	0.96
9563.00	90.580	330.890	5856.06	3313.15	1410.47	-3761.95	1633343.66	483902.68	39°49'16.568"N	80°48'19.475"W	4017.67	290.553	2.97
9658.00	90.400	333.410	5855.25	3407.40	1494.45	-3806.32	1633299.29	483986.66	39°49'17.391"N	80°48'20.059"W	4089.19	291.436	2.66
9753.00	90.370	332.230	5854.61	3501.52	1578.96	-3849.72	1633255.90	484071.16	39°49'18.220"N	80°48'20.631"W	4160.94	292.301	1.24
9847.00	90.740	330.710	5853.70	3594.91	1661.54	-3894.61	1633211.01	484153.74	39°49'19.030"N	80°48'21.222"W	4234.23	293.104	1.66
9942.00	90.890	324.940	5852.35	3689.74	1741.91	-3945.17	1633160.45	484234.10	39°49'19.817"N	80°48'21.885"W	4312.61	293.823	6.08
10037.00	91.140	324.880	5850.67	3784.73	1819.63	-3999.78	1633105.85	484311.82	39°49'20.577"N	80°48'22.599"W	4394.23	294.462	0.27
10132.00	91.080	322.700	5848.83	3879.68	1896.26	-4055.88	1633049.74	484388.44	39°49'21.326"N	80°48'23.332"W	4477.27	295.058	2.30
10227.00	90.980	321.160	5847.12	3974.53	1971.04	-4114.43	1632991.18	484463.22	39°49'22.057"N	80°48'24.097"W	4562.20	295.597	1.62
10322.00	90.980	322.230	5845.49	4069.36	2045.57	-4173.33	1632932.31	484537.75	39°49'22.785"N	80°48'24.885"W	4647.69	296.112	1.13
10416.00	91.020	322.670	5843.85	4163.25	2120.09	-4230.61	1632875.03	484612.26	39°49'23.515"N	80°48'25.613"W	4732.10	296.617	0.47



Actual Wellpath Report

MND-6M-HIS AWP Proj: 13752



RECEIVED
Office of Oil and Gas
JUN 21 2017
WV Department of Environmental Protection
Environmental Protection

Operator	NOBLE ENERGY
Area	Marshall County, WV
Field	Marshall
Facility	MND-6 Pad
Slot	Wellbore
Slot M	MND-6M-HIS
	MND-6M-HIS AWB

WELLPATH DATA (156 stations)													
MID [ft]	Inclination [°]	Azimuth [°]	IVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [ft/100ft]	
10511.00	91.050	322.900	5842.14	4258.16	2195.73	-4288.05	162817.59	484687.90	39°49'24.252"N	80°48'26.363"W	4817.53	297.115	0.24
10606.00	91.170	322.580	5840.30	4353.07	2271.32	-4345.56	162760.08	484763.49	39°49'24.991"N	80°48'27.114"W	4903.55	297.595	0.36
10700.00	90.800	318.410	5838.68	4446.75	2343.83	-4405.33	162700.31	484835.98	39°49'25.699"N	80°48'27.894"W	4990.04	298.015	4.45
10795.00	90.770	324.780	5837.38	4541.52	2418.23	-4464.31	162641.33	484910.38	39°49'26.425"N	80°48'28.663"W	5077.20	298.443	6.70
10889.00	90.280	328.470	5836.52	4635.46	2496.71	-4516.01	162589.64	484988.86	39°49'27.193"N	80°48'29.341"W	5160.23	298.936	3.96
10984.00	90.370	325.900	5835.98	4730.38	2576.54	-4567.49	162538.16	485068.69	39°49'27.975"N	80°48'30.015"W	5244.10	299.428	2.71
11079.00	90.550	324.430	5835.21	4825.38	2654.51	-4621.75	162483.90	485146.65	39°49'28.738"N	80°48'30.725"W	5329.82	299.871	1.56
11173.00	90.580	325.750	5834.29	4919.37	2731.59	-4675.55	162430.12	485223.73	39°49'29.493"N	80°48'31.429"W	5415.01	300.295	1.40
11268.00	90.650	325.900	5833.27	5014.35	2810.18	-4728.91	162376.76	485302.31	39°49'30.260"N	80°48'32.127"W	5500.88	300.721	0.17
11363.00	90.740	326.300	5832.12	5109.33	2889.03	-4781.89	162323.78	485381.16	39°49'31.032"N	80°48'32.821"W	5586.85	301.139	0.43
11457.00	90.770	326.870	5830.88	5203.29	2967.48	-4833.65	162272.02	485459.61	39°49'31.800"N	80°48'33.499"W	5671.87	301.547	0.61
11552.00	91.050	326.870	5829.37	5298.22	3047.03	-4885.56	162220.11	485539.15	39°49'32.578"N	80°48'34.179"W	5757.87	301.951	0.29
11646.00	91.080	325.520	5827.62	5392.18	3125.12	-4937.85	162167.82	485617.24	39°49'33.343"N	80°48'34.861"W	5843.69	302.329	1.44
11741.00	91.020	322.290	5825.88	5487.14	3201.86	-4993.80	162111.88	485693.97	39°49'34.095"N	80°48'35.595"W	5932.11	302.667	3.40
11836.00	91.020	318.320	5824.19	5581.79	3274.93	-5054.46	162051.22	485767.04	39°49'34.808"N	80°48'36.386"W	6022.68	302.940	4.18
11931.00	90.950	318.300	5822.55	5676.12	3345.86	-5117.63	161988.05	485837.97	39°49'35.498"N	80°48'37.209"W	6114.32	303.176	0.08
12026.00	91.020	322.920	5820.92	5770.81	3419.25	-5177.89	161927.80	485911.35	39°49'36.214"N	80°48'37.995"W	6204.99	303.439	4.86
12121.00	90.990	324.930	5819.25	5865.77	3496.02	-5233.82	161871.87	485988.12	39°49'36.965"N	80°48'38.726"W	6294.05	303.742	2.12
12215.00	90.980	327.000	5817.64	5959.75	3573.44	-5287.10	161818.59	486065.54	39°49'37.722"N	80°48'39.424"W	6381.45	304.054	1.14
12310.00	90.950	327.600	5816.04	6054.69	3652.92	-5339.11	161766.59	486145.01	39°49'38.500"N	80°48'40.105"W	6469.15	304.379	1.68
12404.00	91.080	328.080	5814.37	6148.56	3732.49	-5389.14	161716.56	486224.57	39°49'39.279"N	80°48'40.761"W	6555.48	304.706	0.53
12499.00	90.950	328.090	5812.69	6243.41	3813.11	-5439.35	161666.35	486305.19	39°49'40.069"N	80°48'41.420"W	6642.77	305.031	0.14
12593.00	91.110	326.700	5811.00	6337.31	3892.29	-5490.00	161615.71	486384.36	39°49'40.844"N	80°48'42.084"W	6729.78	305.356	1.49
12687.00	91.200	323.880	5809.10	6431.28	3969.53	-5543.51	161562.20	486461.60	39°49'41.599"N	80°48'42.784"W	6818.19	305.605	3.00
12782.00	91.140	325.060	5807.16	6526.25	4046.83	-5598.70	161507.01	486538.89	39°49'42.355"N	80°48'43.506"W	6908.13	305.860	1.24
12877.00	91.050	325.100	5805.35	6621.23	4124.71	-5653.07	161452.64	486616.77	39°49'43.117"N	80°48'44.217"W	6997.89	306.116	0.10
12973.00	90.980	322.120	5803.65	6717.18	4201.97	-5710.01	161395.71	486694.02	39°49'43.872"N	80°48'44.961"W	7089.48	306.349	3.10
13068.00	91.020	325.070	5801.99	6812.12	4278.41	-5766.38	161339.34	486770.46	39°49'44.620"N	80°48'45.698"W	7180.24	306.574	3.11
13162.00	91.080	326.820	5800.27	6906.09	4356.27	-5819.01	161286.72	486848.32	39°49'45.381"N	80°48'46.387"W	7268.97	306.820	1.86
13257.00	90.680	323.770	5798.81	7001.07	4434.35	-5873.08	161232.65	486926.39	39°49'46.145"N	80°48'47.095"W	7359.11	307.054	3.24



Actual Wellpath Report

MND-6M-IIS AWP Proj: 13752'
Page 7 of 8

RECEIVED
Office of Oil and Gas

JUN 21 2017

WV Department of
Environmental Protection



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot M
Area	Marshall County, WV	Well	MND-6M-IIS
Field	Marshall	Wellbore	MND-6M-IIS AWB
Facility	MND-6 Pad		

WELLPATH DATA (156 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]
13352.00	90.310	323.800	5797.99	7096.04	-4511.00	-5929.21	1631176.52	487003.03	39°49'46.894"N	80°48'47.828"W	7450.14	307.264	0.39
13447.00	90.280	323.880	5797.50	7191.02	-4587.69	-5985.26	1631120.47	487079.73	39°49'47.644"N	80°48'48.561"W	7541.24	307.470	0.09
13541.00	90.340	323.010	5796.99	7284.99	-4663.20	-6041.24	1631064.49	487155.23	39°49'48.382"N	80°48'49.293"W	7631.65	307.664	0.93
13636.00	90.310	325.580	5796.45	7379.97	-4740.34	-6096.68	1631009.06	487232.36	39°49'49.136"N	80°48'50.018"W	7722.71	307.866	2.71
13728.00	90.490	329.150	5795.81	7471.87	-4817.80	-6146.29	1630959.46	487309.82	39°49'49.895"N	80°48'50.668"W	7809.48	308.091	3.89
13752.00	90.490	329.150	5795.60	7495.81	-4838.40	-6158.59	1630947.15	487330.42	39°49'50.097"N	80°48'50.830"W	7831.88	308.154	0.00

TARGETS										
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape	
MND-6M-IIS BHL Rev-2		5788.55	4835.17	-6163.11	1630942.63	487327.19	39°49'50.064"N	80°48'50.887"W	point	
MND-6M-IIS LP Rev-2		5883.00	-750.62	-2251.89	1634853.64	481741.71	39°48'55.429"N	80°47'59.723"W	point	
MND-6 Pad LL		6499.55	39.21	67.26	1637172.66	482531.50	39°49'03.564"N	80°47'30.152"W	polygon	

WELLPATH COMPOSITION - Ref Wellbore: MND-6M-IIS AWB Ref Wellpath: MND-6M-IIS AWP Proj: 13752'				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
26.00	100.00	Generic gyro - northseeking (Standard)	01_Gyro <18"> (50'-100')	MND-6M-IIS AWB
100.00	703.00	ISCWSA MWD, Rev. 2 (Standard)	02_APS EM <14-3/4"> (100')(177'-703') Proj: 760'	MND-6M-IIS AWB
703.00	2009.00	ISCWSA MWD, Rev. 2 (Standard)	03_APS EM <12-1/4"> (703')(786'-2009')	MND-6M-IIS AWB
2009.00	13728.00	NaviTrak (AT Curve Short Spaced)	04_BHL AT Curve <8-3/4"> (2009')(2108'-13728')	MND-6M-IIS AWB
13728.00	13752.00	Blind Drilling (std)	Projection to bit	MND-6M-IIS AWB



Actual Wellpath Report

MND-6M-HS AWP Proj: 13752'
Page 8 of 8



REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot M
Area	Marshall County, WV	Well	MND-6M-HS
Field	Marshall	Wellbore	MND-6M-HS AWB
Facility	MND-6 Pad		

COMMENTS

Wellpath general comments
 API: 47-051-01765-0000
 Bill Job #: 6639467
 Rig: Nomac 79
 Duration: 12.11.2014 - 12.21.2014
 Gyro <18°> (50'-100')
 APS EM <14-3/4" > (100')(177'-703')
 APS EM <12-1/4" > (703')(786'-2009')
 BHI AT Curve <8-3/4" > (2009')(2108'-13728')
 Projected MD at TD: 13752'

RECEIVED
Office of Oil and Gas

JUN 21 2017

WV Department of
Environmental Protection



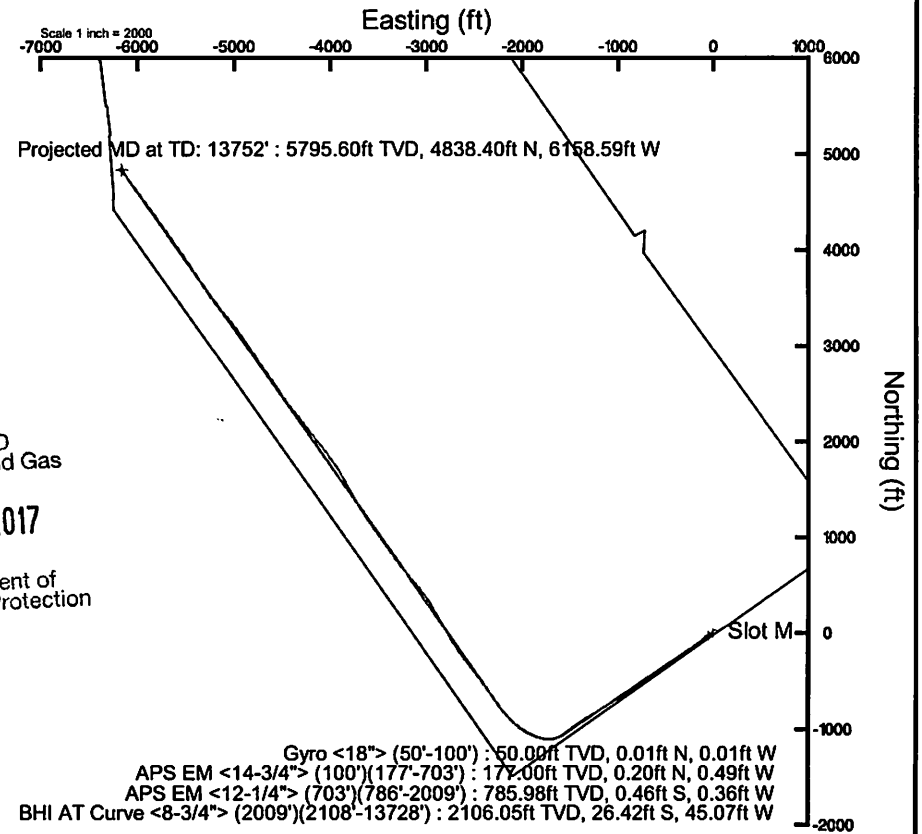
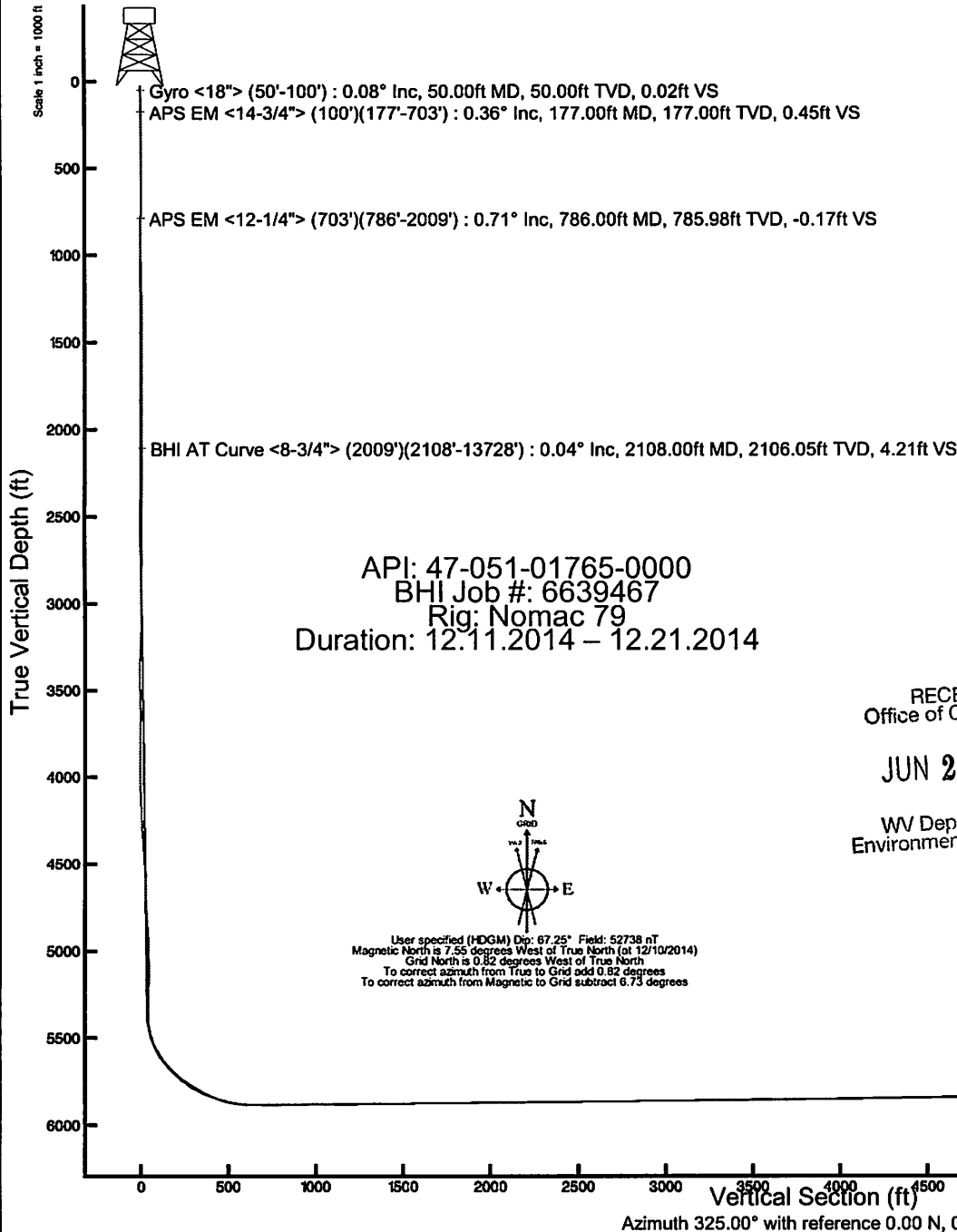
NOBLE ENERGY



Location: Marshall County, WV
 Field: Marshall
 Facility: MND-6 Pad

Slot: Slot M
 Well: MND-6M-HS
 Wellbore: MND-6M-HS PWB

Location Information				
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
MND-6 Pad	1637177.780	482512.230	39°49'03.375"N	80°47'30.083"W
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)
Slot M	-19.94	-72.38	1637105.400	482492.290
Nomac 79 (RKB) to Mud line (At Slot: Slot M)			26ft	
Mean Sea Level to Mud line (At Slot: Slot M)			-720.53ft	
Nomac 79 (RKB) to Mean Sea Level			746.53ft	
Plot reference wellpath is MND-6M-HS PWP Rev-B.0				
True vertical depths are referenced to Nomac 79 (RKB)		Grid System: NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet		
Measured depths are referenced to Nomac 79 (RKB)		North Reference: Grid north		
Nomac 79 (RKB) to Mean Sea Level: 746.53 feet		Scale: True distance		
Mean Sea Level to Mud line (At Slot: Slot M): -720.53 feet		Depths are in feet		
Coordinates are in feet referenced to Slot		Created by: kroschr on 1/12/2015		



RECEIVED
 Office of Oil and Gas
 JUN 21 2017
 WV Department of
 Environmental Protection

N
 W E
 User specified (HDGM) Dip: 67.25° Field: 52738 nT
 Magnetic North is 7.55 degrees West of True North (at 12/10/2014)
 Grid North is 0.82 degrees West of True North
 To correct azimuth from True to Grid add 0.82 degrees
 To correct azimuth from Magnetic to Grid subtract 6.73 degrees

Gyro <18°> (50'-100') : 50.00ft TVD, 0.01ft N, 0.01ft W
 APS EM <14-3/4°> (100')(177'-703') : 177.00ft TVD, 0.20ft N, 0.49ft W
 APS EM <12-1/4°> (703')(786'-2009') : 785.98ft TVD, 0.46ft S, 0.36ft W
 BHI AT Curve <8-3/4°> (2009')(2108'-13728') : 2106.05ft TVD, 26.42ft S, 45.07ft W

AS DRILLED PLAT

EXISTING SURFACE LOCATION LONG. W 80°47'31.0" (NAD 27)

Latitude: N 39°50'00"

LEGEND

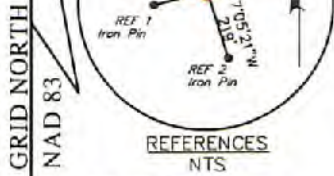
- EXISTING GAS WELL
- AS-DRILLED BORE
- PROPOSED BORE
- TIE LINE
- UNIT BOUNDARY
- PROPERTY LINE
- STREAM LINE
- BUFFER LINE
- GAS WELL
- PLUGGED GAS WELL

AS DRILLED

SURFACE LOCATION (SHL)	LANDING POINT (LP)
UTM 17 NAD 83 N) 4,407,536.16m E) 517,822.63m NAD 27 WV NORTH N) 482,492.3' E) 1,637,105.4' NAD 83 DEC. LAT.) 39.817622° DEC. LONG.) 80.791759°	UTM 17 NAD 83 N) 4,407,281.73m E) 517,151.70m NAD 27 WV NORTH N) 481,694.2' E) 1,634,889.9' NAD 83 DEC. LAT.) 39.815344° DEC. LONG.) 80.799604°

BOTTOM HOLE LOCATION (BHL)

UTM 17 NAD 83 N) 4,408,978.73m E) 515,921.85m NAD 27 WV NORTH N) 487,330.4' E) 1,630,947.2' NAD 83 DEC. LAT.) 39.830658° DEC. LONG.) 80.813932°



REFERENCES
NTS

PERMITTED

SURFACE LOCATION (SHL)

UTM 17 NAD 83
N) 4,407,536.23m
E) 517,822.64m
NAD 27 WV NORTH
N) 482,492.5'
E) 1,637,105.4'
NAD 83
DEC. LAT.) 39.817623°
DEC. LONG.) 80.791758°

LANDING POINT (LP)

UTM 17 NAD 83
N) 4,407,281.88m
E) 517,150.72m
NAD 27 WV NORTH
N) 481,694.8'
E) 1,634,886.7'
NAD 83
DEC. LAT.) 39.815345°
DEC. LONG.) 80.799616°

BOTTOM HOLE LOCATION (BHL)

UTM 17 NAD 83
N) 4,408,977.67m
E) 515,920.60m
NAD 27 WV NORTH
N) 487,327.0'
E) 1,630,943.0'
NAD 83
DEC. LAT.) 39.830648°
DEC. LONG.) 80.813947°

CONSOLIDATION COAL COMPANY
TMP # 05-07-04

JASON D. CONNER
TMP # 05-07-18

MARK L. RITTER ET UX.
TMP # 05-07-27.1

DHIO POWER COMPANY
TMP # 05-07-3.2

JAMES K. PERSINGER ET UX.
TMP # 05-07-27

JAMES K. PERSINGER ET AL.
TMP # 05-07-29

BRUCE S. CAMPBELL
TMP # 05-07-31.1

JON DAVID FROMHART
TMP # 05-08-43

JUNE MORRIS
TMP # 05-08-44

TERESA E. & KEVIN E. MCGILTON
TMP # 05-08-42

N79°11'28"W
832'

EXISTING
SURFACE
LOCATION

S87°37'50"E
813'

GLORIA JEAN WHITE
TMP # 05-08-33

JAMES B. MIDCAP ET UX.
TMP # 05-08-39

JAMES B. MIDCAP ET UX.
TMP # 05-08-40

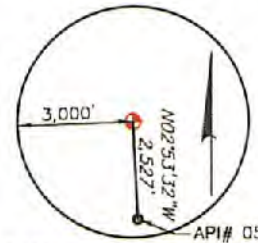
JAMES B. MIDCAP ET UX.
TMP # 05-08-41



DETAIL
NTS

GENERAL NOTES:

1. THE LOCATION OF BOUNDARY LINES SHOWN HEREON ARE BASED ON RECORD DEED, PLATS, AND TAX MAPS BEST FIT TO FOUND FIELD EVIDENCE AND AERIAL PHOTOS, UNLESS OTHERWISE NOTED.
2. THIS PLAT DOES NOT REPRESENT AN ACTUAL BOUNDARY SURVEY OF THE INDIVIDUAL PARCELS.
3. THERE ARE NO EXISTING WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' OF PROPOSED WELL.
4. PROPOSED WELL IS GREATER THAN 100' FROM PERENNIAL STREAM, WETLAND, POND, RESERVOIR OR LAKE.
5. THERE ARE NO NATIVE TROUT STREAMS WITHIN 300' OF PROPOSED WELL.
6. THERE ARE TWO DWELLINGS LOCATED WITHIN 650' OF PROPOSED WELLBORE.
7. THE SURROUNDING LANDS ARE BEING SERVED BY PUBLIC WATER BY THE GRAND VIEW DOOLIN WATER SYSTEM PROVIDED BY MARSHALL COUNTY PUBLIC HEALTH AND SANITATION DIVISION.



EXISTING GAS WELL LOCATION
NTS

FILE #: 093842010

DRAWING #: 093842010_SV-Plat

SCALE: PLAT & TICK: 1" = 2,000'

MINIMUM DEGREE OF ACCURACY: 1/200

PROVEN SOURCE OF ELEVATION: NGS (CORS)

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 RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

SIGNED:

R.P.E.: _____ L.L.S.: 2241



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



DATE: OCTOBER 7, 2016

OPERATOR'S WELL #: MND 6 MHS

API WELL #: 47 051 01765

STATE COUNTY PERMIT

WELL TYPE: OIL GAS WASTE DISPOSAL LIQUID INJECTION PRODUCTION STORAGE DEEP SHALLOW

WATERSHED: FISH CREEK

COUNTY/DISTRICT: MARSHALL / FRANKLIN

SURFACE OWNER: CONSOLIDATION COAL COMPANY

OIL & GAS ROYALTY OWNER: CNX GAS COMPANY LLC and NOBLE ENERGY, INC.

CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PERFORATE NEW FORMATION PLUG & ABANDON

DRILL PLUG OFF OLD FORMATION CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY): _____

TARGET FORMATION: MARCELLUS ESTIMATED DEPTH: TVD: 5,940± TMD: 13,804±

WELL OPERATOR: NOBLE ENERGY, INC. DESIGNATED AGENT: STEVEN GREEN

ADDRESS: 333 TECHNOLOGY DRIVE, SUITE 116 ADDRESS: 1000 NOBLE ENERGY DRIVE

CITY: CANONSBURG STATE: PA ZIP CODE: 15317 CITY: CANONSBURG STATE: PA ZIP CODE: 15317

09/15/2017