

Please keep confidential for One (1) Year
Amended Report

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

API 47-051-01732 County Marshall District Franklin
Quad Powhatan Point Pad Name MND 9 Field/Pool Name NA
Farm name Consolidated Coal Company Well Number MND 6 HHS
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 4407541.33 Easting 517840.19
Landing Point of Curve Northing 4407831.59 Easting 517857.10
Bottom Hole Northing 44100470.62 Easting 516227.00

Elevation (ft) 719.9 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 4/3/2014 Date drilling commenced 12/25/2014 Date drilling ceased 2/12/2015
Date completion activities began 7/9/2015 Date completion activities ceased 8/12/2015
Verbal plugging (Y/N) 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
Coal depth(s) ft NA Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:

Reviewed

jer
2/21/19

API 47-051 - 01732 Farm name Consolidated Coal Company Well number MND 6 HHS

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	36	30	142.9	N	X-70		Y
Surface	24	20	743.0	N	J-55 94#		Y
Coal							
Intermediate 1	17 1/2	13 3/8	2,060.0	N	J-55 54.5#		Y
Intermediate 2	12 3/8	9 5/8	8,950.3	N	P-110 53.5		Y
Intermediate 3							
Production	8 1/2	5 1/2	20,228.6	N	P-110 23#		N
Tubing							
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	435	15.6	1.19	516.5	0	96
Surface	Class A	1125	15.6	1.19	1338.8	0	8
Coal							
Intermediate 1	Class A	1685	15.6	1.19	2005	0	9
Intermediate 2	Class A	Lead 2136 Tail 259	Lead 14.5 Tail 15.8	Lead 1.51 Tail 1.19	Lead 2965 Tail 965	0	9
Intermediate 3							
Production	Class H	Lead 694 Tail 2695	Lead 14.8 Tail 15.8	Lead 1.44 Tail 1.16	Lead 1000 Tail 3126	2247	9
Tubing							

Drillers TD (ft) 20,309 Loggers TD (ft) 20,284
 Deepest formation penetrated Utica Plug back to (ft) 9,180
 Plug back procedure Bottom Plug: 10,763 - 9,730: 338 sks, 0.94 ft3/sk, 175 prg Class H, Top Plug: 9,730 - 9,180: 238 sks 0.94 ft3/sk, 17.5 ppg Class H

Kick off depth (ft) 9,080

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 has no centralizers.
7 Centralizer on Surface casing, 18 Centralizers on Intermediate 1 casing, 69 Centralizers on Intermediate 2 casing, 40 Centralizers on Intermediate 3 casing, 200 7 7/8" C Centralizers on Production casing.
On the Surface, and Intermediate strings the centralizer are on every 3rd joint of casing
On the Production string, the centralizers are on every 3rd from the Surface to Top of curve, then every joint until TD

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 _____

Perforation Record

API: MND 6 HHS 47-051-01732-08-00		Farm name:	Consolidated Coal Company	Well Name: MND6H	
Stage No.	Stim Date	Top Perf	Bottom Perf	# of Perfs	Formation
1	7/9/2015	19827	20069	50	Utica
2	7/9/2015	19525	19767	50	Utica
3	7/10/2015	19223	19465	50	Utica
4	7/10/2015	18921	19163	50	Utica
5	7/11/2015	18619	18861	50	Utica
6	7/23/2015	18265	18467	50	Utica
7	7/24/2015	18015	18217	50	Utica
8	7/24/2015	17713	17955	50	Utica
8B	7/24/2015	17623	17685	30	Utica
9	7/25/2015	17396	17546	50	Utica
9B	7/25/2015	17306	17368	30	Utica
10	7/25/2015	17101	17268	50	Utica
11	7/26/2015	16799	17041	50	Utica
12	7/27/2015	16497	16739	50	Utica
13	7/27/2015	16195	16437	50	Utica
14	7/27/2015	15893	16135	50	Utica
15	7/28/2015	15591	15833	50	Utica
16	7/28/2015	15289	15531	50	Utica
16C	7/29/2015	14987	15531	50	Utica
17	7/30/2015	14685	14927	50	Utica
18	7/30/2015	14383	14625	50	Utica
19	7/30/2015	14081	14323	50	Utica
20	7/30/2015	13779	14021	50	Utica
21	7/31/2015	13477	13719	50	Utica
22	7/31/2015	13175	13417	50	Utica
23	8/1/2015	12873	13115	50	Utica
23B	8/1/2015	12783	12845	30	Utica
24	8/2/2015	12511	12729	50	Utica
24B	8/2/2015	12421	12483	30	Utica
25	8/2/2015	12121	12339	50	Utica
26	8/2/2015	11885	12077	50	Utica
27	8/3/2015	11630	11842	50	Utica
28	8/3/2015	11328	11570	50	Utica
29	8/3/2015	11026	11268	50	Utica
30	8/4/2015	10724	10966	50	Utica

MND 6 HHS

47-051-01732

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	

Shale	8254	8341	8890	8983	
Clinton Sand	8341	8355	8983	8998	
Shale	8355	8424	8998	9073	
Medina Sand	8424	8523	9073	9179	
Queenston Shale	8523	9280	9179	9995	
Reedsville Shale	9280	9898	9995	10660	Gas
Utica Shale	9898	10511	10660	not encountered	
Point Pleasant	10511	10631	not encountered	not encountered	
Trenton Limestone	10631		not encountered	not encountered	

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	7/9/2015
Job End Date:	8/4/2015
State:	West Virginia
County:	Marshall
API Number:	47-051-01732-08-00
Operator Name:	Noble Energy, Inc.
Well Name and Number:	MND 6 HHS
Longitude:	-80.79174100
Latitude:	39.81759300
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	10,478
Total Base Water Volume (gal):	22,020,117
Total Base Non Water Volume:	133,000



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Fresh Water	Operator	Base Fluid					
			Fresh Water	7732-18-5	100.00000	91.53027	Density = 8.330
EconoProp 30/50	Halliburton	Proppant					
			Mullite	1302-93-8	100.00000	3.27057	
			Crystalline silica, cristobalite	14464-46-1	30.00000	0.98117	
			Silica, amorphous - fumed	7631-86-9	30.00000	0.98117	
Premium White 40/70	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	3.61525	
Common White 100M	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	0.79159	
HCl < 10%	Halliburton	Solvent					
			Hydrochloric Acid	7647-01-0	100.00000	0.53490	
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
			Guar gum	9000-30-0	100.00000	0.07370	
HCl > 10%	Halliburton	Solvent					
			Hydrochloric Acid	7647-01-0	100.00000	0.03352	
FR-76	Halliburton	Friction Reducer					
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02670	

HCl = 10%	Halliburton	Solvent				
			Hydrochloric Acid	7647-01-0	100.00000	0.00655
FE-1A ACIDIZING COMPOSITION	Halliburton	Additive				
			Acetic anhydride	108-24-7	100.00000	0.00322
			Acetic acid	64-19-7	60.00000	0.00193
BE-9	Halliburton	Biocide				
			Tributyl tetradecyl phosphonium chloride	81741-28-8	10.00000	0.00425
PermVis VFR-10	Halliburton	Friction Reducer				
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.00143
			Ammonium chloride	12125-02-9	10.00000	0.00048
			Alcohols, C12-16, ethoxylated	68551-12-2	10.00000	0.00048
			9-Octadecenamide, n,n-bis-2 (hydroxy-ethyl)-, (Z)	93-83-4	5.00000	0.00024
SP BREAKER	Halliburton	Breaker				
			Sodium persulfate	7775-27-1	100.00000	0.00254
LOSURF-300D	Halliburton	Non-ionic Surfactant				
			Ethanol	64-17-5	60.00000	0.00066
			Heavy aromatic petroleum naphtha	64742-94-5	30.00000	0.00033
			Naphthalene	91-20-3	5.00000	0.00006
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00000	0.00006
			1,2,4 Trimethylbenzene	95-63-6	1.00000	0.00001
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor				
			Methanol	67-56-1	60.00000	0.00032
			Propargyl alcohol	107-19-7	10.00000	0.00005
LP-65 MC	Halliburton	Scale Inhibitor				
			Ammonium Chloride	12125-02-9	5.00000	0.00026
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 Ingredient(s)				
			Aluminum Silicate	1302-76-7		3.27057
		Other Ingredient(s)				
			Water	7732-18-5		0.08154
		Other Ingredient(s)				
			Water	7732-18-5		0.04248
		Other Ingredient(s)				
			Polyacrylate	Confidential		0.02980
		Other Ingredient(s)				
			Bentonite, benzyl(hydrogenated tallow alkyl) dimethylammonium stearate complex	121888-68-4		0.00368
		Other Ingredient(s)				
			Surfactant mixture	Confidential		0.00074
		Other Ingredient(s)				

		Surfactant mixture	Confidential		0.00074	
	Other Ingredient(s)					
		Silica gel	112926-00-8		0.00074	
	Other Ingredient(s)					
		Oxyalkylated phenolic resin	Confidential		0.00033	
	Other Ingredient(s)					
		Fatty acids, tall oil	Confidential		0.00016	Denise Tuck, Halliburton 3000 N. Sam Houston Pkwy E., Houston, TX 77032 281-871-6226
	Other Ingredient(s)					
		Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1		0.00016	
	Other Ingredient(s)					
		Alcohols, C14-C15, ethoxylated	68951-67-7		0.00016	
	Other Ingredient(s)					
		Oxyalkylated phenolic resin	Confidential		0.00011	
	Other Ingredient(s)					
		Crystalline Silica, Quartz	14808-60-7		0.00007	
	Other Ingredient(s)					
		Olefins	Confidential		0.00003	
	Other Ingredient(s)					
		Olefins	Confidential		0.00003	
	Other Ingredient(s)					
		Olefins	Confidential		0.00001	
	Other Ingredient(s)					
		Olefins	Confidential		0.00001	
	Other Ingredient(s)					
		Sodium sulfate	7757-82-6		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%

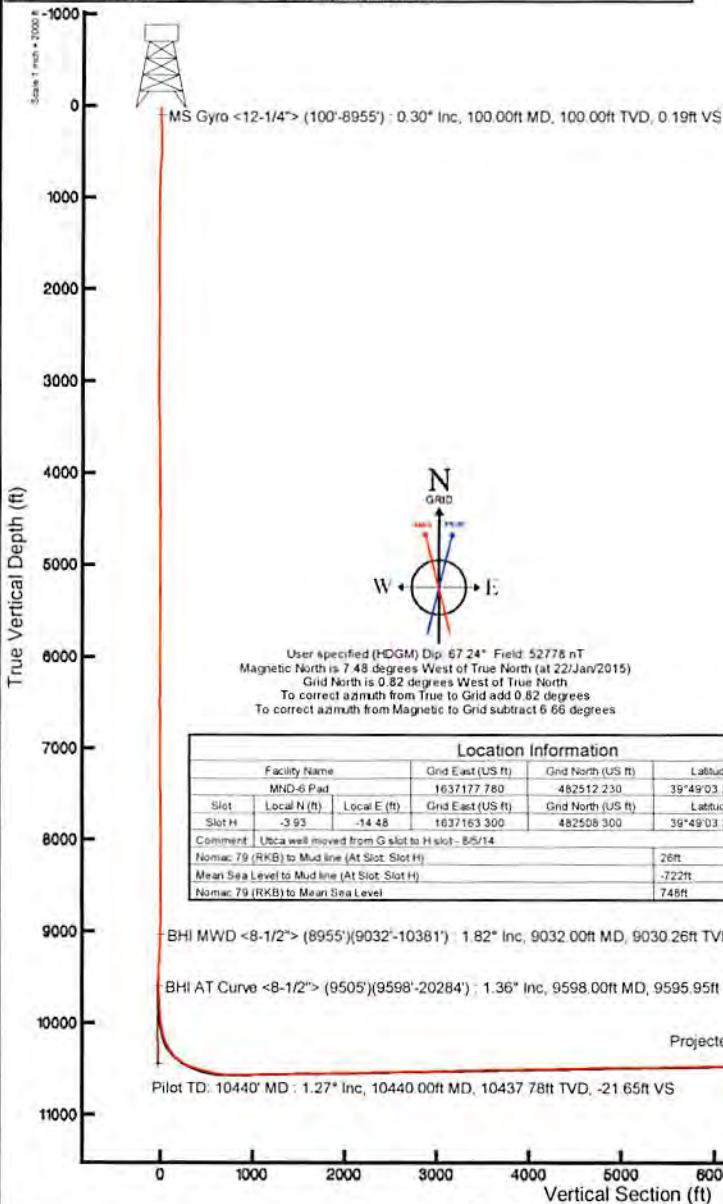
Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

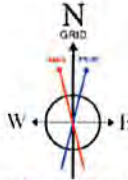
Location: Marshall County, WV
 Field: Marshall
 Facility: MND-6 Pad

Slot: Slot H
 Well: MND-6H-UHS ST01
 Wellbore: MND-6H-UHS ST01 PWB

Pipe reference azimuth is MWD 891145, ST01 PWB Pipe A-D	
True vertical depths are referenced to Nomac 79 (RKB)	Grid System: NAD83 / Lambert West Virginia SP, Northern Zone (4703), US feet
Measured depths are referenced to Nomac 79 (RKB)	North Reference: Grid north
Nomac 79 (RKB) to Mean Sea Level: 745 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot: Slot H): -722 feet	Depths are in feet
Created by: sekunyan on 24/Feb/2015	

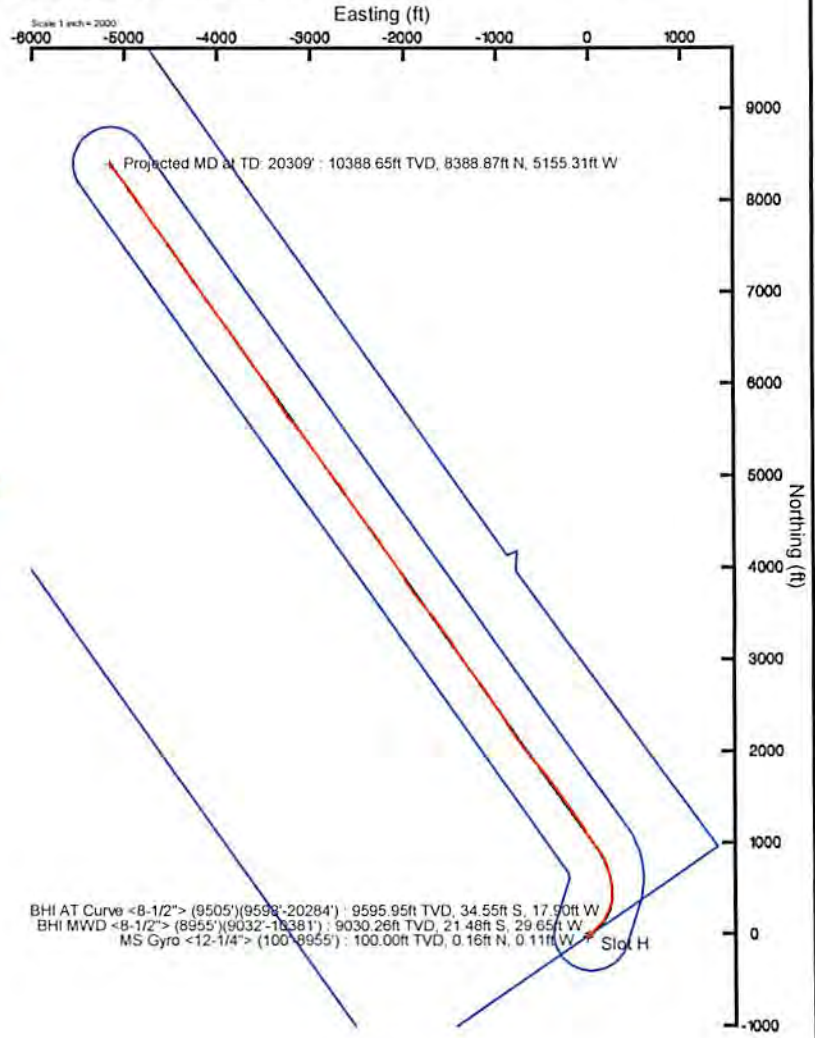


API: 47-510-17320-0100
 BHI Job #: 6944065
 Rig: Nomac 79
 Duration: 1/24/2015-2/7/2015



User specified (HDGM) Dip: 67.24° Field: 52778 nT
 Magnetic North is 7.48 degrees West of True North (at 22/Jan/2015)
 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 6.66 degrees

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)	Latitude	Longitude
Slot H	-3.93	-14.48	1637163.300	482508.300	39°49'03.334"N	80°47'30.268"W
Comment: Ultra well moved from G slot to H slot - 8/5/14						
Nomac 79 (RKB) to Mud line (At Slot: Slot H)					26ft	
Mean Sea Level to Mud line (At Slot: Slot H)					-722ft	
Nomac 79 (RKB) to Mean Sea Level					748ft	



BHI AT Curve <8-1/2> (9505')(9598'-20284') : 9595.95ft TVD, 34.55ft S, 17.90ft W
 BHI MWD <8-1/2> (8955')(9032'-10381') : 9030.26ft TVD, 21.48ft S, 29.65ft W
 MS Gyro <12-1/4> (100'-8955') : 100.00ft TVD, 0.16ft N, 0.11ft W

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

API 47 - 051 - 01732 County Marshall District Franklin
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Farm name Consolidated Coal Company Well Number MND 6 HHS
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As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
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Salt water depth(s) ft None noted for Offsets Void(s) encountered (Y/N) depths N
Coal depth(s) ft NA Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: _____

API 47-051 - 01732 Farm name Consolidated Coal Company Well number MND 6 HHS

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 neutron resistivity gamma ray temperature sonic

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On the Surface, and Intermediate strings the centralizer are on every 3rd joint of casing
On the Production string, the centralizers are on every 3rd from the Surface to Top of curve, then every joint until TD

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 _____

Perforation Record

API: MND6 HHS 47-051-01732-08-00		Farm name:	Consolidated Coal Company	Well Name: MND6H	
Stage No.	Stim Date	Top Perf	Bottom Perf	# of Perfs	Formation
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6	7/23/2015	18265	18467	50	Utica
7	7/24/2015	18015	18217	50	Utica
8	7/24/2015	17713	17955	50	Utica
8B	7/24/2015	17623	17685	30	Utica
9	7/25/2015	17396	17546	50	Utica
9B	7/25/2015	17306	17368	30	Utica
10	7/25/2015	17101	17268	50	Utica
11	7/26/2015	16799	17041	50	Utica
12	7/27/2015	16497	16739	50	Utica
13	7/27/2015	16195	16437	50	Utica
14	7/27/2015	15893	16135	50	Utica
15	7/28/2015	15591	15833	50	Utica
16	7/28/2015	15289	15531	50	Utica
16C	7/29/2015	14987	15531	50	Utica
17	7/30/2015	14685	14927	50	Utica
18	7/30/2015	14383	14625	50	Utica
19	7/30/2015	14081	14323	50	Utica
20	7/30/2015	13779	14021	50	Utica
21	7/31/2015	13477	13719	50	Utica
22	7/31/2015	13175	13417	50	Utica
23	8/1/2015	12873	13115	50	Utica
23B	8/1/2015	12783	12845	30	Utica
24	8/2/2015	12511	12729	50	Utica
24B	8/2/2015	12421	12483	30	Utica
25	8/2/2015	12121	12339	50	Utica
26	8/2/2015	11885	12077	50	Utica
27	8/3/2015	11630	11842	50	Utica
28	8/3/2015	11328	11570	50	Utica
29	8/3/2015	11026	11268	50	Utica
30	8/4/2015	10724	10966	50	Utica

MND 6 HHS

47-051-01732

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	
Rhinstreet	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	

Shale	8254	8341	8890	8983	
Clinton Sand	8341	8355	8983	8998	
Shale	8355	8424	8998	9073	
Medina Sand	8424	8523	9073	9179	
Queenston Shale	8523	9280	9179	9995	
Reedsville Shale	9280	9898	9995	10660	Gas
Utica Shale	9898	10511	10660	not encountered	
Point Pleasant	10511	10631	not encountered	not encountered	
Trenton Limestone	10631		not encountered	not encountered	

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date	7/9/2015
Job End Date	8/4/2015
State	West Virginia
County	Marshall
API Number	47-051-01732-08-00
Operator Name	Noble Energy, Inc.
Well Name and Number	MND 6 HHS
Longitude	-80.79174100
Latitude	39.81759300
Datum	NAD27
Federal/Tribal Well	NO
True Vertical Depth	10,478
Total Base Water Volume (gal)	22,020,117
Total Base Non Water Volume	133,000



Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Fresh Water	Operator	Base Fluid	Fresh Water	7732-18-5	100.00000	91.53027	Density = 8.330
EconoProp 30/50	Halliburton	Proppant	Mullite	1302-93-8	100.00000	3.27057	
			Crystalline silica, cristobalite	14464-46-1	30.00000	0.98117	
			Silica, amorphous - fumed	7631-86-9	30.00000	0.98117	
Premium White 40/70	Halliburton	Proppant	Crystalline silica, quartz	14808-60-7	100.00000	3.61525	
Common White 100M	Halliburton	Proppant	Crystalline silica, quartz	14808-60-7	100.00000	0.79159	
HCl < 10%	Halliburton	Solvent	Hydrochloric Acid	7647-01-0	100.00000	0.53490	
WG-36 GELLING AGENT	Halliburton	Gelling Agent	Guar gum	9000-30-0	100.00000	0.07370	
HCl > 10%	Halliburton	Solvent	Hydrochloric Acid	7647-01-0	100.00000	0.03352	
FR-76	Halliburton	Friction Reducer	Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02670	

HCl = 10%	Halliburton	Solvent					
			Hydrochloric Acid	7647-01-0	100.00000	0.00655	
FE-1A ACIDIZING COMPOSITION	Halliburton	Additive					
			Acetic anhydride	108-24-7	100.00000	0.00322	
			Acetic acid	64-19-7	60.00000	0.00193	
BE-9	Halliburton	Biocide					
			Tributyl tetradecyl phosphonium chloride	81741-28-8	10.00000	0.00425	
PermVis VFR-10	Halliburton	Friction Reducer					
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.00143	
			Ammonium chloride	12125-02-9	10.00000	0.00048	
			Alcohols, C12-16, ethoxylated	68551-12-2	10.00000	0.00048	
			9-Octadecenamide, n,n-bis-2 (hydroxy-ethyl)-,(Z)	93-83-4	5.00000	0.00024	
SP BREAKER	Halliburton	Breaker					
			Sodium persulfate	7775-27-1	100.00000	0.00254	
LOSURF-300D	Halliburton	Non-ionic Surfactant					
			Ethanol	64-17-5	60.00000	0.00066	
			Heavy aromatic petroleum naphtha	64742-94-5	30.00000	0.00033	
			Naphthalene	91-20-3	5.00000	0.00006	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00000	0.00006	
			1,2,4 Trimethylbenzene	95-63-6	1.00000	0.00001	
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
			Methanol	67-56-1	60.00000	0.00032	
			Propargyl alcohol	107-19-7	10.00000	0.00005	
LP-65 MC	Halliburton	Scale Inhibitor					
			Ammonium Chloride	12125-02-9	5.00000	0.00026	
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 Ingredient(s)					
			Aluminum Silicate	1302-76-7		3.27057	
		Other Ingredient(s)					
			Water	7732-18-5		0.08154	
		Other Ingredient(s)					
			Water	7732-18-5		0.04248	
		Other Ingredient(s)					
			Polyacrylate	Confidential		0.02980	
		Other Ingredient(s)					
			Bentonite, benzyl(hydrogenated tallow alkyl) dimethylammonium stearate complex	121888-68-4		0.00368	
		Other Ingredient(s)					
			Surfactant mixture	Confidential		0.00074	
		Other Ingredient(s)					

		Surfactant mixture	Confidential		0.00074	
	Other Ingredient(s)					
		Silica gel	112926-00-8		0.00074	
	Other Ingredient(s)					
		Oxyalkylated phenolic resin	Confidential		0.00033	
	Other Ingredient(s)					
		Fatty acids, tall oil	Confidential		0.00016	Denise Tuck, Halliburton 3000 N. Sam Houston Pkwy E., Houston, TX 77032 281-871-6226
	Other Ingredient(s)					
		Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	38527-49-1		0.00016	
	Other Ingredient(s)					
		Alcohols, C14-C15, ethoxylated	38951-67-7		0.00016	
	Other Ingredient(s)					
		Oxyalkylated phenolic resin	Confidential		0.00011	
	Other Ingredient(s)					
		Crystalline Silica, Quartz	14808-60-7		0.00007	
	Other Ingredient(s)					
		Olefins	Confidential		0.00003	
	Other Ingredient(s)					
		Olefins	Confidential		0.00003	
	Other Ingredient(s)					
		Olefins	Confidential		0.00001	
	Other Ingredient(s)					
		Olefins	Confidential		0.00001	
	Other Ingredient(s)					
		Sodium sulfate	7757-82-8		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%

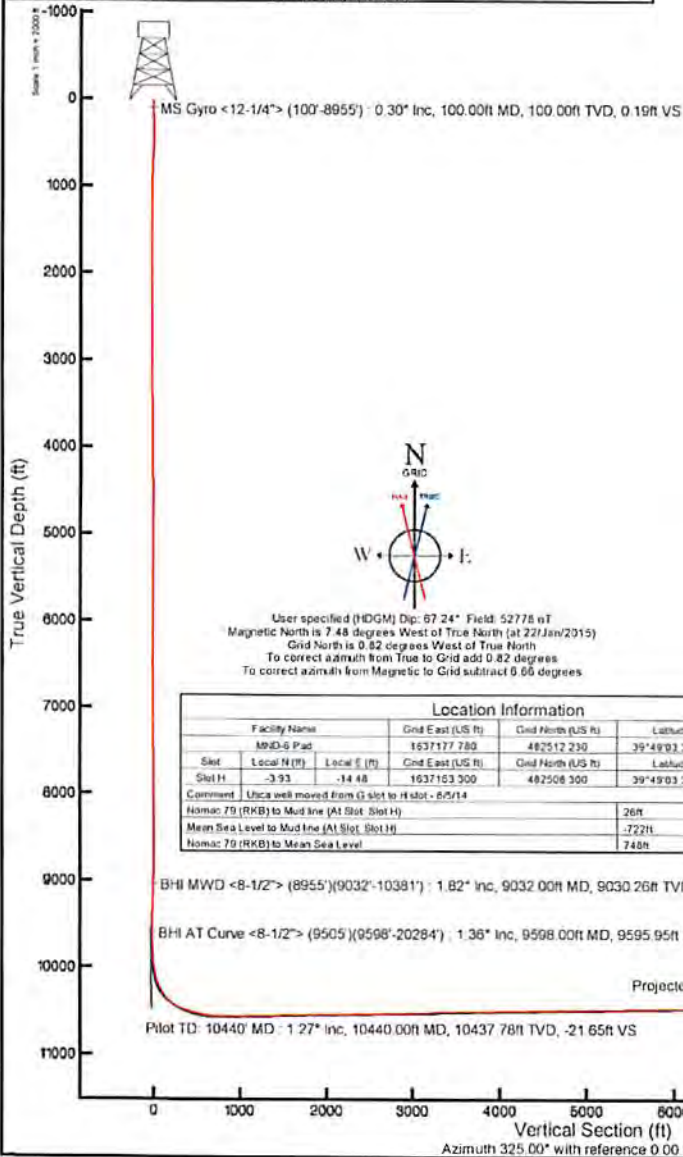
Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.

Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

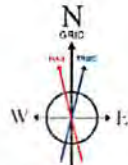
Location: Marshall County, WV
 Field: Marshall
 Facility: MND-6 Pad

Slot: Slot H
 Well: MND-6H-UHS ST01
 Wellbore: MND-6H-UHS ST01 PWB

The reference wellpath is MND-6H-UHS ST01 PWB Rev A.5	
True vertical depths are referenced to Home: 79 (RAI)	Grid System: NAD83 / Lambert West Virginia SP, National Zone (4201), US foot
Measured depths are referenced to Home: 79 (RAI)	North Reference: Grid north
Home: 79 (RAI) to Mean Sea Level: 748 feet	Scale: True distance
Mean Sea Level to Mud line (AI Slot): -772 feet	Depths are in feet
Coordinates are in feet referenced to SIA	
Created by: vslu@gn on 24 Feb 2015	

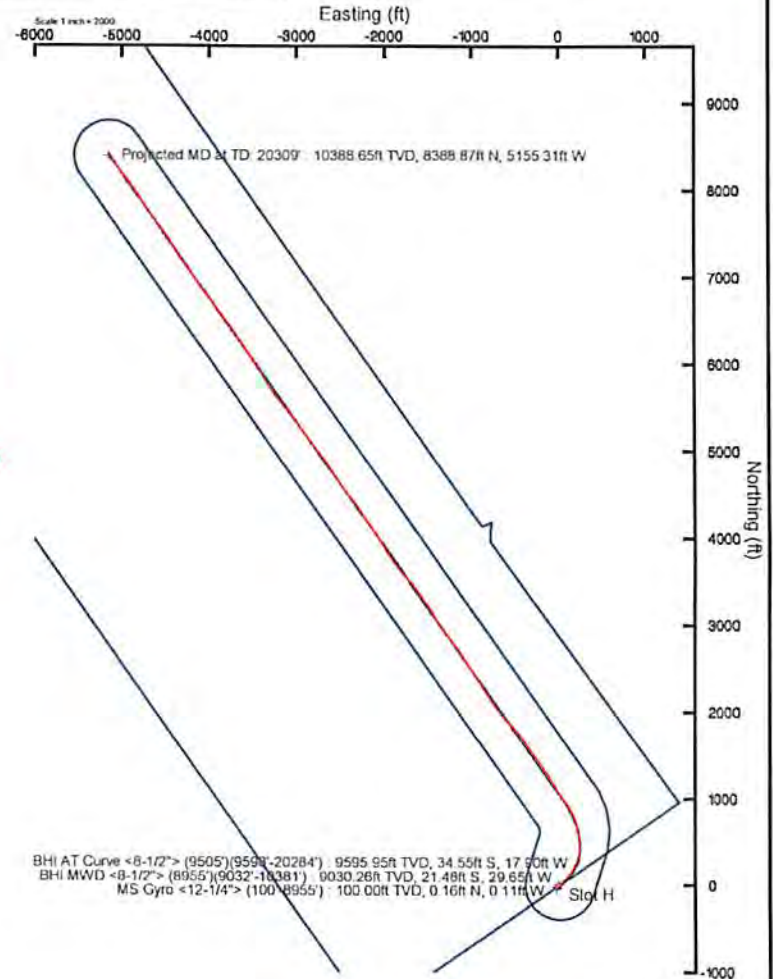


API: 47-510-17320-0100
 BHI Job #: 6944065
 Rig: Nomac 79
 Duration: 1/24/2015-2/7/2015



User specified (HDGM) Dip: 67.24° Field: 52778 nT
 Magnetic North is 7.48 degrees West of True North (at 22 Jan 2015)
 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 0.66 degrees

Location Information					
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude	
MND-6 Pad	1637177.780	482512.230	39°48'03.3237N	80°47'30.0537W	
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude
Slot H	-3.93	-14.48	1637183.300	482508.300	39°48'03.3347N
Comment: Ulica well moved from G slot to H slot - 8/2/14					
Home: 79 (RKB) to Mud line (AI Slot: Slot H)	26ft				
Mean Sea Level to Mud line (AI Slot: Slot H)	-772ft				
Home: 79 (RKB) to Mean Sea Level	748ft				



Vertical Section (ft)
 Azimuth 325.00° with reference 0.00 N, 0.00 E

Scale 1 inch = 2000 ft



Actual Wellpath Report

MND-6H-UHS ST01 AWP Proj: 20309'
Page 1 of 11



REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot H
Area	Marshall County, WV	Well	MND-6H-UHS ST01
Field	Marshall	Wellbore	MND-6H-UHS ST01 AWB
Facility	MND-6 Pad	Sidetrack from	MND-6H-UHS AWB at 9505.00 MD

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	0.999946	Report Generated	24/Feb/2015 at 10:58
Convergence at slot	0.82° West	Database/Source file	WellArchitectEasternDB/MND-6H-UHS_ST01_AWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-3.93	-14.48	1637163.30	482508.30	39°49'03.334"N	80°47'30.268"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	748.00ft
Horizontal Reference Pt	Slot	Nomac 79 (RKB) to Mean Sea Level	748.00ft
Vertical Reference Pt	Nomac 79 (RKB)	Nomac 79 (RKB) to Mud Line at Slot (Slot H)	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-6H-UHS ST01 AWP Proj: 20309'
Page 2 of 11



REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot H
Area	Marshall County, WV	Well	MND-6H-UHS ST01
Field	Marshall	Wellbore	MND-6H-UHS ST01 AWB
Facility	MND-6 Pad	Sidetrack from	MND-6H-UHS AWB at 9505.00 MD

WELLPATH DATA (231 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	327.140	0.00	0.00	0.00	0.00	1637163.30	482508.30	39°49'03.334"N	80°47'30.268"W	0.00	0.000	0.00	0.00	0.00
26.00	0.000	327.140	26.00	0.00	0.00	0.00	1637163.30	482508.30	39°49'03.334"N	80°47'30.268"W	0.00	0.000	0.00	0.00	0.00
100.00	0.300	327.140	100.00	0.19	0.16	-0.11	1637163.19	482508.46	39°49'03.335"N	80°47'30.269"W	0.19	327.140	0.41	0.41	0.00
200.00	1.110	355.070	199.99	1.29	1.35	-0.33	1637162.97	482509.65	39°49'03.347"N	80°47'30.273"W	1.39	346.225	0.86	0.81	27.93
300.00	1.760	2.370	299.96	3.35	3.85	-0.35	1637162.95	482512.15	39°49'03.372"N	80°47'30.273"W	3.86	354.799	0.67	0.65	7.30
400.00	1.760	4.710	399.91	5.75	6.91	-0.16	1637163.14	482515.21	39°49'03.402"N	80°47'30.271"W	6.91	358.669	0.07	0.00	2.34
500.00	1.440	163.840	499.90	5.75	7.24	0.32	1637163.62	482515.54	39°49'03.405"N	80°47'30.265"W	7.24	2.496	3.15	-0.32	159.13
600.00	4.520	166.940	599.75	0.90	2.19	1.56	1637164.86	482510.49	39°49'03.356"N	80°47'30.248"W	2.69	35.402	3.08	3.08	3.10
700.00	3.590	166.070	699.50	-5.68	-4.69	3.20	1637166.50	482503.61	39°49'03.288"N	80°47'30.226"W	5.68	145.685	0.93	-0.93	-0.87
800.00	1.950	164.420	799.38	-10.20	-9.37	4.41	1637167.71	482498.93	39°49'03.242"N	80°47'30.210"W	10.35	154.784	1.64	-1.64	-1.65
900.00	1.160	164.900	899.34	-12.76	-11.98	5.13	1637168.43	482496.32	39°49'03.216"N	80°47'30.200"W	13.03	156.817	0.79	-0.79	0.48
1000.00	0.600	171.610	999.33	-14.18	-13.48	5.47	1637168.77	482494.82	39°49'03.201"N	80°47'30.195"W	14.55	157.905	0.57	-0.56	6.71
1100.00	0.560	160.290	1099.32	-15.12	-14.46	5.71	1637169.01	482493.85	39°49'03.192"N	80°47'30.192"W	15.54	158.437	0.12	-0.04	-11.32
1200.00	0.560	159.240	1199.32	-16.06	-15.37	6.05	1637169.35	482492.93	39°49'03.183"N	80°47'30.188"W	16.52	158.515	0.01	0.00	-1.05
1300.00	0.240	75.190	1299.32	-16.61	-15.78	6.43	1637169.73	482492.52	39°49'03.179"N	80°47'30.183"W	17.03	157.837	0.59	-0.32	-84.05
1400.00	0.260	81.060	1399.32	-16.78	-15.69	6.85	1637170.15	482492.61	39°49'03.180"N	80°47'30.177"W	17.12	156.402	0.03	0.02	5.87
1500.00	0.320	86.770	1499.32	-17.03	-15.64	7.36	1637170.66	482492.66	39°49'03.180"N	80°47'30.171"W	17.28	154.806	0.07	0.06	5.71
1600.00	0.260	56.300	1599.31	-17.18	-15.49	7.82	1637171.12	482492.81	39°49'03.182"N	80°47'30.165"W	17.36	153.210	0.16	-0.06	-30.47
1700.00	0.220	57.290	1699.31	-17.19	-15.27	8.17	1637171.47	482493.04	39°49'03.184"N	80°47'30.160"W	17.32	151.833	0.04	-0.04	0.99
1800.00	0.150	105.200	1799.31	-17.30	-15.20	8.46	1637171.76	482493.11	39°49'03.185"N	80°47'30.157"W	17.39	150.889	0.16	-0.07	47.91
1900.00	0.380	250.140	1899.31	-17.31	-15.34	8.28	1637171.58	482492.96	39°49'03.183"N	80°47'30.159"W	17.43	151.657	0.51	0.23	144.94
2000.00	0.310	29.880	1999.31	-17.11	-15.22	8.10	1637171.40	482493.08	39°49'03.185"N	80°47'30.161"W	17.24	151.982	0.65	-0.07	139.74
2047.00	0.170	181.850	2046.31	-17.12	-15.18	8.16	1637171.46	482493.12	39°49'03.185"N	80°47'30.161"W	17.23	151.740	0.99	-0.30	323.34
2100.00	0.050	143.750	2099.31	-17.20	-15.28	8.17	1637171.47	482493.02	39°49'03.184"N	80°47'30.161"W	17.33	151.860	0.25	-0.23	-71.89
2200.00	0.250	314.750	2199.31	-17.03	-15.16	8.04	1637171.34	482493.14	39°49'03.185"N	80°47'30.162"W	17.16	152.053	0.30	0.20	171.00
2300.00	0.250	289.690	2299.31	-16.64	-14.93	7.68	1637170.98	482493.37	39°49'03.187"N	80°47'30.167"W	16.79	152.776	0.11	0.00	-25.06
2400.00	0.360	312.060	2399.31	-16.15	-14.65	7.24	1637170.54	482493.65	39°49'03.190"N	80°47'30.173"W	16.34	153.689	0.16	0.11	22.37
2500.00	0.360	307.340	2499.31	-15.55	-14.25	6.76	1637170.06	482494.05	39°49'03.194"N	80°47'30.179"W	15.77	154.616	0.03	0.00	-4.72
2600.00	0.120	222.890	2599.31	-15.27	-14.13	6.44	1637169.74	482494.17	39°49'03.195"N	80°47'30.183"W	15.53	155.506	0.37	-0.24	-84.45
2700.00	0.040	73.120	2699.31	-15.30	-14.20	6.40	1637169.70	482494.10	39°49'03.194"N	80°47'30.183"W	15.58	155.734	0.16	-0.08	-149.77



Actual Wellpath Report

MND-6H-UHS ST01 AWP Proj: 20309



REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot H
Area	Marshall County, WV	Well	MND-6H-UHS ST01
Field	Marshall	Wellbore	MND-6H-UHS ST01 AWB
Facility	MND-6-Pad	Sidetrack from	MND-6H-UHS AWB at 9505.00 MD

WELLPATH DATA (231 stations)

MD	Inclination	Azimuth	TVD	Vert Sect	East	North	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir	DLS	Build Rate	Turn Rate
ft	°	°	ft	ft	ft	ft	ft	ft	°	°	ft	ft	ft	ft/100ft	ft/100ft
2800.00	0.190	255.730	2799.31	-15.26	-14.23	6.27	1637169.57	482494.07	39°49'03.194"N	80°47'30.185"W	15.55	156.208	0.23	0.15	-177.39
2900.00	0.340	321.120	2899.30	-14.90	-14.04	5.93	1637169.23	482494.85	39°49'03.196"N	80°47'30.189"W	15.24	157.114	0.31	0.15	65.39
3000.00	0.460	333.040	2999.30	-14.21	-13.45	5.56	1637168.86	482494.85	39°49'03.202"N	80°47'30.194"W	14.55	157.548	0.15	0.12	11.92
3100.00	0.360	340.780	3099.30	-13.51	-12.80	5.27	1637168.57	482495.50	39°49'03.208"N	80°47'30.198"W	13.84	157.605	0.11	-0.10	7.74
3200.00	0.400	334.450	3199.30	-12.86	-12.19	5.02	1637168.32	482496.12	39°49'03.214"N	80°47'30.201"W	13.18	157.613	0.06	0.04	-6.33
3300.00	0.050	293.450	3299.30	-12.48	-11.85	4.83	1637168.13	482496.45	39°49'03.217"N	80°47'30.204"W	12.80	157.835	0.36	-0.35	-11.00
3400.00	0.200	324.510	3399.30	-12.27	-11.69	4.69	1637167.99	482496.61	39°49'03.219"N	80°47'30.206"W	12.60	158.157	0.16	0.15	31.06
3500.00	0.610	16.820	3499.29	-11.76	-11.04	4.74	1637168.04	482497.26	39°49'03.225"N	80°47'30.205"W	12.02	156.767	0.51	0.41	52.31
3600.00	0.460	14.730	3599.29	-11.18	-10.14	5.00	1637168.30	482498.16	39°49'03.234"N	80°47'30.202"W	11.31	153.779	0.15	-0.15	-2.09
3700.00	0.440	11.880	3699.29	-10.65	-9.38	5.18	1637168.48	482498.92	39°49'03.242"N	80°47'30.200"W	10.71	151.104	0.03	-0.02	-2.85
3800.00	0.840	5.820	3799.28	-9.84	-8.28	5.33	1637168.63	482500.03	39°49'03.253"N	80°47'30.198"W	9.84	147.212	0.41	0.40	-6.06
3900.00	0.510	357.370	3899.27	-8.91	-7.10	5.38	1637168.68	482501.20	39°49'03.264"N	80°47'30.198"W	8.91	142.830	0.34	-0.33	-8.45
4000.00	0.330	27.450	3999.27	-8.40	-6.40	5.50	1637168.80	482501.90	39°49'03.271"N	80°47'30.196"W	8.44	139.347	0.28	-0.18	30.08
4100.00	0.500	7.070	4099.27	-7.94	-5.71	5.68	1637168.98	482502.59	39°49'03.278"N	80°47'30.194"W	8.06	135.148	0.22	0.17	-20.38
4200.00	0.600	2.380	4199.26	-7.20	-4.76	5.76	1637169.06	482503.54	39°49'03.288"N	80°47'30.193"W	7.47	129.556	0.11	0.10	-4.69
4300.00	0.910	16.010	4299.25	-6.28	-3.47	6.00	1637169.30	482504.83	39°49'03.300"N	80°47'30.191"W	6.93	120.046	0.36	0.31	13.63
4400.00	0.870	1.680	4399.24	-5.18	-1.95	6.24	1637169.54	482506.35	39°49'03.315"N	80°47'30.188"W	6.54	107.336	0.23	-0.04	-14.33
4500.00	0.670	19.420	4499.23	-4.23	-0.64	6.46	1637169.76	482507.66	39°49'03.328"N	80°47'30.185"W	6.49	95.641	0.31	-0.20	17.74
4600.00	0.340	20.140	4599.23	-3.72	0.19	6.75	1637170.05	482508.49	39°49'03.337"N	80°47'30.182"W	6.76	88.371	0.33	-0.33	0.72
4700.00	0.400	6.000	4699.23	-3.28	0.82	6.89	1637170.19	482509.12	39°49'03.343"N	80°47'30.180"W	6.94	83.233	0.11	0.06	-14.14
4800.00	0.620	11.120	4799.22	-2.65	1.70	7.03	1637170.33	482510.00	39°49'03.352"N	80°47'30.178"W	7.24	76.444	0.22	0.22	5.12
4900.00	0.860	29.090	4899.22	-1.94	2.88	7.50	1637170.80	482511.18	39°49'03.363"N	80°47'30.172"W	8.04	68.983	0.33	0.24	17.97
5000.00	0.990	18.410	4999.20	-1.10	4.36	8.14	1637171.44	482512.66	39°49'03.378"N	80°47'30.165"W	9.23	61.837	0.22	0.13	-10.68
5100.00	0.560	39.800	5099.19	-0.46	5.55	8.73	1637172.03	482513.85	39°49'03.390"N	80°47'30.157"W	10.34	57.528	0.51	-0.43	21.39
5200.00	0.480	21.720	5199.19	-0.10	6.32	9.19	1637172.49	482514.62	39°49'03.398"N	80°47'30.151"W	11.16	55.504	0.18	-0.08	-18.08
5300.00	0.330	53.950	5299.19	0.14	6.88	9.58	1637172.88	482515.18	39°49'03.403"N	80°47'30.147"W	11.79	54.335	0.27	-0.15	32.23
5400.00	0.440	110.840	5399.18	-0.18	6.91	10.17	1637173.47	482515.21	39°49'03.404"N	80°47'30.139"W	12.30	55.818	0.38	0.11	56.89
5500.00	0.480	74.250	5499.18	-0.63	6.89	10.94	1637174.23	482515.19	39°49'03.403"N	80°47'30.129"W	12.92	57.800	0.29	0.04	-36.59
5600.00	0.460	122.270	5599.18	-1.14	6.79	11.68	1637174.98	482515.09	39°49'03.403"N	80°47'30.120"W	13.51	59.840	0.38	-0.02	48.02
5700.00	0.470	127.970	5699.18	-1.90	6.32	12.34	1637175.64	482514.62	39°49'03.398"N	80°47'30.111"W	13.86	62.885	0.05	0.01	5.70



Actual Wellpath Report

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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot H
Area	Marshall County, WV	Well	MND-6H-UHS ST01
Field	Marshall	Wellbore	MND-6H-UHS ST01 AWB
Facility	MND-6 Pad	Sidetrack from	MND-6H-UHS AWB at 9505.00 MD

WELLPATH DATA (231 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]
5800.00	0.510	112.610	5799.17	-2.67	5.90	13.07	1637176.37	482514.20	39°49'03.394"N	80°47'30.102"W	14.34	65.729	0.14	0.04	-15.36
5900.00	0.060	231.120	5899.17	-3.05	5.69	13.45	1637176.74	482513.99	39°49'03.392"N	80°47'30.097"W	14.60	67.056	0.54	-0.45	118.51
6000.00	0.380	177.480	5999.17	-3.33	5.33	13.42	1637176.72	482513.63	39°49'03.388"N	80°47'30.097"W	14.44	68.346	0.35	0.32	-53.64
6100.00	0.250	178.670	6099.17	-3.79	4.78	13.44	1637176.74	482513.08	39°49'03.383"N	80°47'30.097"W	14.26	70.427	0.13	-0.13	1.19
6200.00	0.500	194.390	6199.17	-4.26	4.14	13.34	1637176.63	482512.44	39°49'03.377"N	80°47'30.098"W	13.96	72.763	0.27	0.25	15.72
6300.00	0.480	187.310	6299.16	-4.85	3.30	13.17	1637176.47	482511.60	39°49'03.368"N	80°47'30.100"W	13.58	75.940	0.06	-0.02	-7.08
6400.00	0.370	200.270	6399.16	-5.35	2.58	13.01	1637176.31	482510.88	39°49'03.361"N	80°47'30.102"W	13.26	78.778	0.15	-0.11	12.96
6500.00	0.280	228.210	6499.16	-5.56	2.12	12.71	1637176.01	482510.42	39°49'03.357"N	80°47'30.105"W	12.89	80.555	0.18	-0.09	27.94
6600.00	0.220	274.060	6599.16	-5.47	1.97	12.34	1637175.64	482510.27	39°49'03.355"N	80°47'30.110"W	12.50	80.948	0.20	-0.06	45.85
6700.00	0.350	248.510	6699.16	-5.28	1.87	11.86	1637175.16	482510.17	39°49'03.354"N	80°47'30.116"W	12.01	81.055	0.18	0.13	-25.55
6800.00	0.930	254.160	6799.15	-4.94	1.53	10.80	1637174.10	482509.83	39°49'03.351"N	80°47'30.130"W	10.91	81.915	0.58	0.58	5.65
6900.00	1.750	244.630	6899.12	-4.42	0.66	8.64	1637171.94	482508.96	39°49'03.342"N	80°47'30.157"W	8.66	85.642	0.85	0.82	-9.53
7000.00	2.010	251.370	6999.07	-3.67	-0.56	5.60	1637168.90	482507.74	39°49'03.329"N	80°47'30.196"W	5.63	95.672	0.34	0.26	6.74
7100.00	2.180	252.570	7099.00	-2.60	-1.69	2.12	1637165.42	482506.61	39°49'03.317"N	80°47'30.241"W	2.71	128.474	0.18	0.17	1.20
7200.00	2.350	246.330	7198.92	-1.62	-3.08	-1.57	1637161.73	482505.22	39°49'03.303"N	80°47'30.288"W	3.46	207.031	0.30	0.17	-6.24
7300.00	2.640	250.880	7298.83	-0.59	-4.66	-5.62	1637157.68	482503.64	39°49'03.287"N	80°47'30.339"W	7.30	230.381	0.35	0.29	4.55
7400.00	2.630	245.970	7398.72	0.48	-6.34	-9.90	1637153.40	482501.96	39°49'03.270"N	80°47'30.394"W	11.76	237.334	0.23	-0.01	-4.91
7500.00	2.620	246.210	7498.62	1.36	-8.20	-14.08	1637149.22	482500.10	39°49'03.251"N	80°47'30.447"W	16.30	239.786	0.01	-0.01	0.24
7600.00	2.290	252.570	7598.53	2.41	-9.72	-18.08	1637145.22	482498.58	39°49'03.235"N	80°47'30.498"W	20.53	241.734	0.43	-0.33	6.36
7700.00	1.640	246.620	7698.47	3.30	-10.89	-21.30	1637142.00	482497.41	39°49'03.223"N	80°47'30.539"W	23.92	242.926	0.68	-0.65	-5.95
7800.00	1.140	234.490	7798.44	3.58	-12.03	-23.42	1637139.88	482496.27	39°49'03.212"N	80°47'30.566"W	26.33	242.809	0.58	-0.50	-12.13
7900.00	1.250	243.680	7898.41	3.73	-13.09	-25.21	1637138.09	482495.21	39°49'03.201"N	80°47'30.589"W	28.41	242.552	0.22	0.11	9.19
8000.00	1.140	243.930	7998.39	4.05	-14.02	-27.08	1637136.22	482494.29	39°49'03.191"N	80°47'30.612"W	30.49	242.637	0.11	-0.11	0.25
8100.00	1.000	234.480	8098.38	4.20	-14.96	-28.69	1637134.62	482493.34	39°49'03.182"N	80°47'30.633"W	32.35	242.458	0.22	-0.14	-9.45
8200.00	1.230	240.270	8198.36	4.29	-16.00	-30.33	1637132.97	482492.30	39°49'03.171"N	80°47'30.654"W	34.29	242.187	0.26	0.23	5.79
8300.00	0.590	229.760	8298.34	4.34	-16.86	-31.65	1637131.65	482491.44	39°49'03.163"N	80°47'30.671"W	35.87	241.952	0.66	-0.64	-10.51
8400.00	0.810	207.680	8398.34	3.97	-17.82	-32.37	1637130.93	482490.48	39°49'03.153"N	80°47'30.680"W	36.96	241.167	0.34	0.22	-22.08
8500.00	0.760	208.980	8498.33	3.35	-19.03	-33.02	1637130.28	482489.27	39°49'03.141"N	80°47'30.688"W	38.11	240.049	0.05	-0.05	1.30
8600.00	0.680	240.060	8598.32	3.12	-19.90	-33.86	1637129.44	482488.40	39°49'03.132"N	80°47'30.698"W	39.28	239.550	0.39	-0.08	31.08
8700.00	0.220	176.010	8698.32	3.00	-20.39	-34.36	1637128.94	482487.91	39°49'03.127"N	80°47'30.705"W	39.96	239.311	0.62	-0.46	-64.05



Actual Wellpath Report

MND-6H-UHS ST01 AWP Proj: 20309'

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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot H
Area	Marshall County, WV	Well	MND-6H-UHS ST01
Field	Marshall	Wellbore	MND-6H-UHS ST01 AWB
Facility	MND-6 Pad	Sidetrack from	MND-6H-UHS AWB at 9505.00 MD

WELLPATH DATA (231 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]
8800.00	0.370	98.550	8798.32	2.62	-20.63	-34.03	1637129.27	482487.67	39°49'03.125"N	80°47'30.700"W	39.79	238.770	0.39	0.15	-77.46
8900.00	1.050	84.940	8898.31	1.94	-20.60	-32.80	1637130.51	482487.70	39°49'03.126"N	80°47'30.684"W	38.73	237.867	0.70	0.68	-13.61
8955.00	1.580	90.730	8953.29	1.24	-20.56	-31.54	1637131.77	482487.74	39°49'03.126"N	80°47'30.668"W	37.65	236.891	0.99	0.96	10.53
9032.00	1.820	137.320	9030.26	-0.59	-21.48	-29.65	1637133.66	482486.82	39°49'03.117"N	80°47'30.644"W	36.61	234.078	1.77	0.31	60.51
9127.00	2.110	139.100	9125.21	-3.82	-23.91	-27.48	1637135.82	482484.39	39°49'03.094"N	80°47'30.616"W	36.42	228.974	0.31	0.31	1.87
9221.00	2.130	132.570	9219.14	-7.25	-26.40	-25.06	1637138.24	482481.90	39°49'03.069"N	80°47'30.584"W	36.40	223.509	0.26	0.02	-6.95
9315.00	2.220	140.420	9313.07	-10.77	-28.98	-22.61	1637140.69	482479.32	39°49'03.044"N	80°47'30.552"W	36.76	217.960	0.33	0.10	8.35
9410.00	1.890	143.430	9408.01	-14.17	-31.66	-20.51	1637142.80	482476.64	39°49'03.018"N	80°47'30.525"W	37.72	212.931	0.37	-0.35	3.17
9505.00	1.800	154.290	9502.96	-17.21	-34.26	-18.93	1637144.38	482474.04	39°49'02.993"N	80°47'30.504"W	39.14	208.915	0.38	-0.09	11.43
9598.00	1.360	20.990	9595.95	-18.03	-34.55	-17.90	1637145.41	482473.75	39°49'02.990"N	80°47'30.491"W	38.91	207.385	3.13	-0.47	-143.33
9692.00	6.610	28.570	9689.69	-15.00	-28.75	-14.91	1637148.39	482479.55	39°49'03.048"N	80°47'30.454"W	32.38	207.407	5.60	5.59	8.06
9739.00	7.680	29.090	9736.32	-12.42	-23.63	-12.09	1637151.21	482484.67	39°49'03.099"N	80°47'30.419"W	26.54	207.089	2.28	2.28	1.11
9787.00	10.830	36.010	9783.69	-9.55	-17.18	-7.87	1637155.43	482491.12	39°49'03.163"N	80°47'30.366"W	18.90	204.628	6.95	6.56	14.42
9836.00	14.920	43.380	9831.45	-6.78	-8.86	-0.83	1637162.47	482499.44	39°49'03.246"N	80°47'30.277"W	8.90	185.362	8.98	8.35	15.04
9882.00	18.620	45.020	9875.49	-4.32	0.63	8.43	1637171.73	482508.93	39°49'03.341"N	80°47'30.160"W	8.46	85.703	8.11	8.04	3.57
9932.00	23.280	43.240	9922.17	-0.92	13.48	20.86	1637184.15	482521.78	39°49'03.470"N	80°47'30.003"W	24.83	57.121	9.41	9.32	-3.56
9977.00	27.350	41.860	9962.84	3.25	27.66	33.85	1637197.15	482535.96	39°49'03.612"N	80°47'29.839"W	43.72	50.743	9.14	9.04	-3.07
10025.00	31.960	41.420	10004.55	8.74	45.41	49.62	1637212.92	482553.71	39°49'03.790"N	80°47'29.641"W	67.26	47.536	9.61	9.60	-0.92
10071.00	36.350	42.150	10042.60	14.63	64.66	66.83	1637230.13	482572.95	39°49'03.982"N	80°47'29.424"W	92.99	45.948	9.58	9.54	1.59
10123.00	41.680	43.690	10082.99	21.45	88.60	89.13	1637252.43	482596.90	39°49'04.222"N	80°47'29.142"W	125.68	45.171	10.42	10.25	2.96
10166.00	45.420	43.020	10114.15	27.44	110.14	109.46	1637272.76	482618.44	39°49'04.438"N	80°47'28.886"W	155.29	44.823	8.76	8.70	-1.56
10215.00	46.940	36.680	10148.10	36.69	137.28	132.08	1637295.37	482645.57	39°49'04.709"N	80°47'28.601"W	190.50	43.894	9.83	3.10	-12.94
10261.00	47.250	28.840	10179.44	49.43	165.57	150.28	1637313.57	482673.86	39°49'04.991"N	80°47'28.373"W	223.60	42.228	12.50	0.67	-17.04
10309.00	46.880	24.480	10212.14	66.10	196.96	166.04	1637329.33	482705.25	39°49'05.304"N	80°47'28.177"W	257.61	40.132	6.69	-0.77	-9.08
10356.00	46.540	26.760	10244.37	82.89	227.80	180.83	1637344.12	482736.09	39°49'05.611"N	80°47'27.993"W	290.85	38.442	3.60	-0.72	4.85
10405.00	47.500	27.480	10277.78	99.65	259.71	197.17	1637360.46	482767.99	39°49'05.928"N	80°47'27.789"W	326.08	37.206	2.23	1.96	1.47
10451.00	48.940	21.550	10308.44	117.05	290.90	211.38	1637374.66	482799.18	39°49'06.238"N	80°47'27.613"W	359.59	36.003	10.11	3.13	-12.89
10500.00	51.090	14.220	10339.95	139.71	326.60	222.86	1637386.14	482834.88	39°49'06.593"N	80°47'27.473"W	395.38	34.308	12.27	4.39	-14.96
10545.00	53.940	8.360	10367.35	164.39	361.59	229.81	1637393.09	482869.87	39°49'06.940"N	80°47'27.390"W	428.44	32.438	12.12	6.33	-13.02
10594.00	57.300	4.160	10395.02	194.79	401.77	234.18	1637397.47	482910.05	39°49'07.337"N	80°47'27.341"W	465.04	30.237	9.85	6.86	-8.57



Actual Wellpath Report

MND-6H-UHS ST01 AWP Proj: 20309'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot H
Area	Marshall County, WV	Well	MND-6H-UHS ST01
Field	Marshall	Wellbore	MND-6H-UHS ST01 AWB
Facility	MND-6 Pad	Sidetrack from	MND-6H-UHS AWB at 9505.00 MD

WELLPATH DATA (231 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]
10640.00	60.710	359.720	10418.72	226.31	441.16	235.49	1637398.78	482949.44	39°49'07.727"N	80°47'27.332"W	500.08	28.093	11.11	7.41	-9.65
10686.00	64.400	356.540	10439.92	260.49	481.95	234.14	1637397.43	482990.22	39°49'08.130"N	80°47'27.357"W	535.81	25.911	10.10	8.02	-6.91
10735.00	67.970	353.330	10459.70	299.33	526.58	230.17	1637393.45	483034.85	39°49'08.570"N	80°47'27.416"W	574.69	23.610	9.43	7.29	-6.55
10782.00	71.500	350.670	10475.98	338.61	570.23	224.02	1637387.31	483078.50	39°49'09.001"N	80°47'27.502"W	612.66	21.448	9.20	7.51	-5.66
10829.00	74.400	348.630	10489.76	379.45	614.43	215.94	1637379.23	483122.69	39°49'09.436"N	80°47'27.614"W	651.27	19.364	7.44	6.17	-4.34
10876.00	76.360	347.350	10501.63	421.31	658.90	206.48	1637369.77	483167.17	39°49'09.874"N	80°47'27.744"W	690.50	17.399	4.93	4.17	-2.72
10924.00	75.950	345.820	10513.11	464.65	704.24	195.67	1637358.96	483212.50	39°49'10.321"N	80°47'27.890"W	730.91	15.527	3.21	-0.85	-3.19
10970.00	76.650	343.410	10524.01	506.74	747.32	183.81	1637347.10	483255.58	39°49'10.745"N	80°47'28.050"W	769.60	13.818	5.31	1.52	-5.24
11019.00	77.190	338.640	10535.10	552.60	792.44	168.29	1637331.58	483300.70	39°49'11.188"N	80°47'28.257"W	810.12	11.990	9.55	1.10	-9.73
11066.00	80.110	333.390	10544.36	597.81	834.52	149.56	1637312.85	483342.77	39°49'11.602"N	80°47'28.505"W	847.82	10.161	12.59	6.21	-11.17
11113.00	81.970	327.470	10551.69	644.01	874.88	126.66	1637289.95	483383.13	39°49'11.997"N	80°47'28.806"W	884.00	8.237	13.06	3.96	-12.60
11159.00	84.390	323.470	10557.15	689.67	912.49	100.77	1637264.06	483420.74	39°49'12.365"N	80°47'29.145"W	918.04	6.302	10.11	5.26	-8.70
11208.00	89.570	322.720	10559.73	738.56	951.60	71.40	1637234.69	483459.85	39°49'12.748"N	80°47'29.528"W	954.28	4.291	10.68	10.57	-1.53
11233.00	90.830	323.890	10559.64	763.55	971.65	56.46	1637219.75	483479.89	39°49'12.943"N	80°47'29.724"W	973.29	3.325	6.88	5.04	4.68
11302.00	90.890	326.700	10558.61	832.53	1028.36	17.18	1637180.48	483536.60	39°49'13.498"N	80°47'30.237"W	1028.50	0.957	4.07	0.09	4.07
11397.00	90.950	329.240	10557.08	927.38	1108.88	-33.19	1637130.11	483617.12	39°49'14.287"N	80°47'30.898"W	1109.38	358.285	2.67	0.06	2.67
11491.00	90.890	328.560	10555.57	1021.15	1189.36	-81.74	1637081.56	483697.59	39°49'15.075"N	80°47'31.535"W	1192.17	356.068	0.73	-0.06	-0.72
11586.00	91.170	325.770	10553.86	1116.06	1269.16	-133.24	1637030.07	483777.39	39°49'15.856"N	80°47'32.209"W	1276.14	354.007	2.95	0.29	-2.94
11681.00	90.860	324.800	10552.18	1211.04	1347.24	-187.33	1636975.98	483855.46	39°49'16.620"N	80°47'32.917"W	1360.20	352.084	1.07	-0.33	-1.02
11775.00	90.920	325.800	10550.72	1305.03	1424.51	-240.84	1636922.48	483932.73	39°49'17.376"N	80°47'33.617"W	1444.73	350.404	1.07	0.06	1.06
11870.00	90.860	325.630	10549.25	1400.01	1502.99	-294.34	1636868.97	484011.21	39°49'18.144"N	80°47'34.317"W	1531.54	348.920	0.19	-0.06	-0.18
11965.00	90.950	324.710	10547.75	1495.00	1580.96	-348.60	1636814.72	484089.18	39°49'18.907"N	80°47'35.027"W	1618.94	347.566	0.97	0.09	-0.97
12060.00	90.950	324.400	10546.17	1589.98	1658.35	-403.68	1636759.64	484166.55	39°49'19.664"N	80°47'35.747"W	1706.77	346.319	0.33	0.00	-0.33
12155.00	91.020	322.620	10544.54	1684.93	1734.71	-460.16	1636703.16	484242.91	39°49'20.410"N	80°47'36.485"W	1794.71	345.143	1.87	0.07	-1.87
12250.00	90.830	318.050	10543.00	1779.58	1807.81	-520.78	1636642.55	484316.01	39°49'21.124"N	80°47'37.275"W	1881.33	343.930	4.81	-0.20	-4.81
12344.00	90.830	318.020	10541.64	1872.87	1877.70	-583.63	1636579.70	484385.89	39°49'21.806"N	80°47'38.093"W	1966.31	342.734	0.03	0.00	-0.03
12439.00	91.020	321.220	10540.11	1967.43	1950.05	-645.16	1636518.18	484458.24	39°49'22.512"N	80°47'38.895"W	2054.00	341.694	3.37	0.20	3.37
12534.00	90.980	323.100	10538.45	2062.30	2025.05	-703.42	1636459.91	484533.24	39°49'23.245"N	80°47'39.656"W	2143.75	340.845	1.98	-0.04	1.98
12628.00	90.800	323.740	10536.99	2156.25	2100.53	-759.44	1636403.91	484608.71	39°49'23.983"N	80°47'40.387"W	2233.60	340.123	0.71	-0.19	0.68
12721.00	90.920	326.850	10535.59	2249.22	2176.97	-812.37	1636350.97	484685.15	39°49'24.731"N	80°47'41.080"W	2323.60	339.536	3.35	0.13	3.34



Actual Wellpath Report

MND-6H-UHS ST01 AWP Proj: 20309'
Page 7 of 11



REFERENCE WELLPATH IDENTIFICATION			
Operator	NOBLE ENERGY	Slot	Slot H
Area	Marshall County, WV	Well	MND-6H-UHS ST01
Field	Marshall	Wellbore	MND-6H-UHS ST01 AWB
Facility	MND-6 Pad	Sidetrack from	MND-6H-UHS AWB at 9505.00 MD

WELLPATH DATA (231 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TYD [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]
12817.00	91.230	330.920	10533.79	2344.97	2259.12	-861.96	1636301.38	484767.30	39°49'25.535"N	80°47'41.730"W	2417.98	339.116	4.25	0.32	4.24
12912.00	91.110	327.670	10531.85	2439.67	2340.78	-910.46	1636252.90	484848.95	39°49'26.335"N	80°47'42.367"W	2511.61	338.746	3.42	-0.13	-3.42
13007.00	91.140	325.230	10529.98	2534.61	2419.93	-962.94	1636200.41	484928.09	39°49'27.110"N	80°47'43.054"W	2604.48	338.301	2.57	0.03	-2.57
13102.00	91.200	327.430	10528.04	2629.56	2498.97	-1015.60	1636147.76	485007.13	39°49'27.884"N	80°47'43.744"W	2697.46	337.883	2.32	0.06	2.32
13197.00	91.140	326.730	10526.10	2724.48	2578.70	-1067.22	1636096.14	485086.86	39°49'28.664"N	80°47'44.420"W	2790.81	337.517	0.74	-0.06	-0.74
13292.00	91.350	326.500	10524.04	2819.42	2658.00	-1119.48	1636043.88	485166.16	39°49'29.440"N	80°47'45.104"W	2884.13	337.160	0.33	0.22	-0.24
13386.00	91.380	323.390	10521.80	2913.38	2734.92	-1173.45	1635989.92	485243.07	39°49'30.193"N	80°47'45.810"W	2976.03	336.778	3.31	0.03	-3.31
13481.00	91.350	321.020	10519.54	3008.23	2809.97	-1231.65	1635931.72	485318.11	39°49'30.926"N	80°47'46.570"W	3068.04	336.331	2.49	-0.03	-2.49
13576.00	91.290	323.640	10517.35	3103.10	2885.14	-1289.68	1635873.69	485393.27	39°49'31.661"N	80°47'47.327"W	3160.27	335.915	2.76	-0.06	2.76
13670.00	91.480	324.300	10515.08	3197.05	2961.13	-1344.96	1635818.42	485469.27	39°49'32.404"N	80°47'48.050"W	3252.26	335.572	0.73	0.20	0.70
13765.00	91.380	329.570	10512.70	3291.94	3040.69	-1396.75	1635766.62	485548.82	39°49'33.182"N	80°47'48.728"W	3346.15	335.328	5.55	-0.11	5.55
13859.00	91.380	331.000	10510.44	3385.51	3122.31	-1443.33	1635720.05	485630.43	39°49'33.982"N	80°47'49.340"W	3439.77	335.191	1.52	0.00	1.52
13954.00	90.980	326.120	10508.48	3480.27	3203.32	-1492.86	1635670.52	485711.44	39°49'34.776"N	80°47'49.990"W	3534.10	335.013	5.15	-0.42	-5.14
14049.00	90.980	322.480	10506.86	3575.24	3280.44	-1548.28	1635615.11	485788.56	39°49'35.530"N	80°47'50.715"W	3627.46	334.734	3.83	0.00	-3.83
14144.00	90.830	325.670	10505.36	3670.20	3357.35	-1604.00	1635559.38	485865.46	39°49'36.282"N	80°47'51.443"W	3720.84	334.463	3.36	-0.16	3.36
14239.00	90.800	324.810	10504.01	3765.19	3435.39	-1658.16	1635505.23	485943.50	39°49'37.045"N	80°47'52.152"W	3814.63	334.235	0.91	-0.03	-0.91
14333.00	90.830	316.610	10502.67	3858.84	3508.07	-1717.63	1635445.77	486016.18	39°49'37.755"N	80°47'52.927"W	3906.00	333.913	8.72	0.03	-8.72
14428.00	90.890	320.560	10501.24	3953.21	3579.29	-1780.45	1635382.95	486087.39	39°49'38.450"N	80°47'53.745"W	3997.67	333.553	4.16	0.06	4.16
14523.00	90.950	323.560	10499.71	4048.06	3654.20	-1838.85	1635324.55	486162.29	39°49'39.182"N	80°47'54.508"W	4090.79	333.288	3.16	0.06	3.16
14618.00	91.080	321.900	10498.03	4142.97	3729.78	-1896.37	1635267.04	486237.88	39°49'39.921"N	80°47'55.259"W	4184.20	333.049	1.75	0.14	-1.75
14713.00	91.110	328.750	10496.21	4237.90	3807.85	-1950.37	1635213.04	486315.94	39°49'40.684"N	80°47'55.965"W	4278.28	332.879	7.21	0.03	7.21
14808.00	91.110	330.920	10494.37	4332.53	3889.96	-1998.10	1635165.31	486398.05	39°49'41.489"N	80°47'56.592"W	4373.12	332.812	2.28	0.00	2.28
14903.00	91.140	327.120	10492.51	4427.26	3971.38	-2046.98	1635116.43	486479.46	39°49'42.286"N	80°47'57.234"W	4467.89	332.732	4.00	0.03	-4.00
14997.00	91.170	324.770	10490.61	4521.23	4049.24	-2099.60	1635063.81	486557.31	39°49'43.048"N	80°47'57.923"W	4561.21	332.592	2.50	0.03	-2.50
15092.00	91.200	324.910	10488.65	4616.21	4126.89	-2154.30	1635009.12	486634.96	39°49'43.808"N	80°47'58.638"W	4655.34	332.435	0.15	0.03	0.15
15187.00	91.230	326.540	10486.63	4711.17	4205.37	-2207.79	1634955.64	486713.44	39°49'44.576"N	80°47'59.338"W	4749.68	332.301	1.72	0.03	1.72
15282.00	91.140	327.510	10484.67	4806.09	4285.05	-2259.48	1634903.95	486793.11	39°49'45.356"N	80°48'00.015"W	4844.27	332.198	1.03	-0.09	1.02
15377.00	90.890	325.290	10482.98	4901.04	4364.16	-2312.04	1634851.39	486872.22	39°49'46.130"N	80°48'00.704"W	4938.77	332.086	2.35	-0.26	-2.34
15472.00	90.920	320.760	10481.48	4995.95	4440.03	-2369.16	1634794.27	486948.08	39°49'46.871"N	80°48'01.450"W	5032.57	331.916	4.77	0.03	-4.77
15566.00	90.920	325.440	10479.97	5089.86	4515.17	-2425.57	1634737.86	487023.22	39°49'47.606"N	80°48'02.187"W	5125.44	331.755	4.98	0.00	4.98

~~Confidential request~~
~~11/17/2015~~



Released
by OGCC
2/6/19

November 12, 2015

West Virginia Department of Environmental Protection
Office of Oil & Gas
601 57th street, SE
Charleston, WV 25304-2345

To whom it may concern:

Enclosed is the Amended Well Operator's Report of Well; Work, WR-35 for the following Well, located in Tyler County, District Centerville.

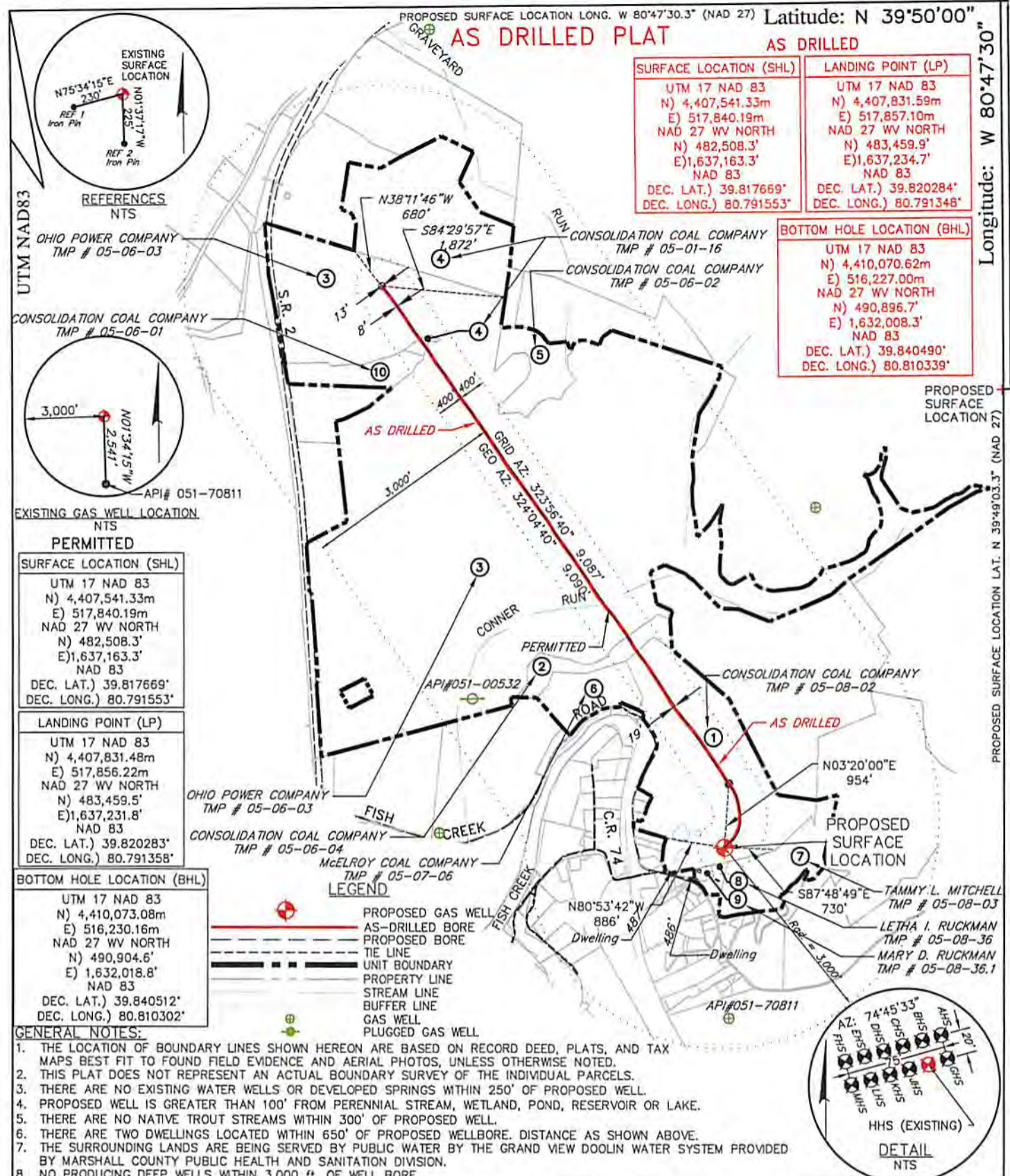
Well	Permit Number
MND 6 HHS	47-051-01732

If you require any additional information or have questions please feel free to contact me at rlogue@nobleenergyinc.com or by calling my office number 724-820-3559.

Sincerely,

A handwritten signature in blue ink that reads 'Regina Logue'.

Regina Logue
Regulatory Analyst



SURFACE LOCATION (SHL)	LANDING POINT (LP)
UTM 17 NAD 83 N) 4,407,541.33m E) 517,840.19m NAD 27 WV NORTH N) 482,508.3' E) 1,637,163.3' NAD 83 DEC. LAT.) 39.817669° DEC. LONG.) 80.791553°	UTM 17 NAD 83 N) 4,407,831.59m E) 517,857.10m NAD 27 WV NORTH N) 483,459.9' E) 1,637,234.7' NAD 83 DEC. LAT.) 39.820284° DEC. LONG.) 80.791348°

BOTTOM HOLE LOCATION (BHL)
UTM 17 NAD 83 N) 4,410,070.62m E) 516,227.00m NAD 27 WV NORTH N) 490,896.7' E) 1,632,008.3' NAD 83 DEC. LAT.) 39.840490° DEC. LONG.) 80.810339°

OHIO POWER COMPANY
TMP # 05-06-03

CONSOLIDATION COAL COMPANY
TMP # 05-06-01

EXISTING GAS WELL LOCATION
NTS

PERMITTED
SURFACE LOCATION (SHL) UTM 17 NAD 83 N) 4,407,541.33m E) 517,840.19m NAD 27 WV NORTH N) 482,508.3' E) 1,637,163.3' NAD 83 DEC. LAT.) 39.817669° DEC. LONG.) 80.791553°
LANDING POINT (LP) UTM 17 NAD 83 N) 4,407,831.48m E) 517,856.22m NAD 27 WV NORTH N) 483,459.5' E) 1,637,231.8' NAD 83 DEC. LAT.) 39.820283° DEC. LONG.) 80.791358°
BOTTOM HOLE LOCATION (BHL) UTM 17 NAD 83 N) 4,410,073.08m E) 516,230.16m NAD 27 WV NORTH N) 490,904.6' E) 1,632,018.8' NAD 83 DEC. LAT.) 39.840512° DEC. LONG.) 80.810302°

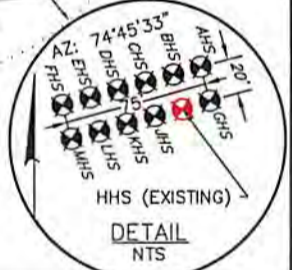
PERMITTED
SURFACE LOCATION (SHL) UTM 17 NAD 83 N) 4,407,541.33m E) 517,840.19m NAD 27 WV NORTH N) 482,508.3' E) 1,637,163.3' NAD 83 DEC. LAT.) 39.817669° DEC. LONG.) 80.791553°
LANDING POINT (LP) UTM 17 NAD 83 N) 4,407,831.48m E) 517,856.22m NAD 27 WV NORTH N) 483,459.5' E) 1,637,231.8' NAD 83 DEC. LAT.) 39.820283° DEC. LONG.) 80.791358°
BOTTOM HOLE LOCATION (BHL) UTM 17 NAD 83 N) 4,410,073.08m E) 516,230.16m NAD 27 WV NORTH N) 490,904.6' E) 1,632,018.8' NAD 83 DEC. LAT.) 39.840512° DEC. LONG.) 80.810302°

BOTTOM HOLE LOCATION (BHL)
UTM 17 NAD 83 N) 4,410,073.08m E) 516,230.16m NAD 27 WV NORTH N) 490,904.6' E) 1,632,018.8' NAD 83 DEC. LAT.) 39.840512° DEC. LONG.) 80.810302°

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

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. DISTANCE AS SHOWN ABOVE.
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.
8. NO PRODUCING DEEP WELLS WITHIN 3,000 FT. OF WELL BORE.



FILE #: **093842010**

DRAWING #: **093842010_SV-Plat**

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

MINIMUM DEGREE OF ACCURACY: **1/2,500**

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: *Craig Robert West*

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: **AUGUST 24, 2015**

OPERATOR'S WELL #: **MND 06 HHS**

API WELL #: **47 051 01732**

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: **UTICA and POINT PLEASANT**

ESTIMATED DEPTH: **TVD: 10,412±ft. TMD: 20,115±ft.**

WELL OPERATOR: **NOBLE ENERGY, INC.**

DESIGNATED AGENT: **STEVE M. GREEN**

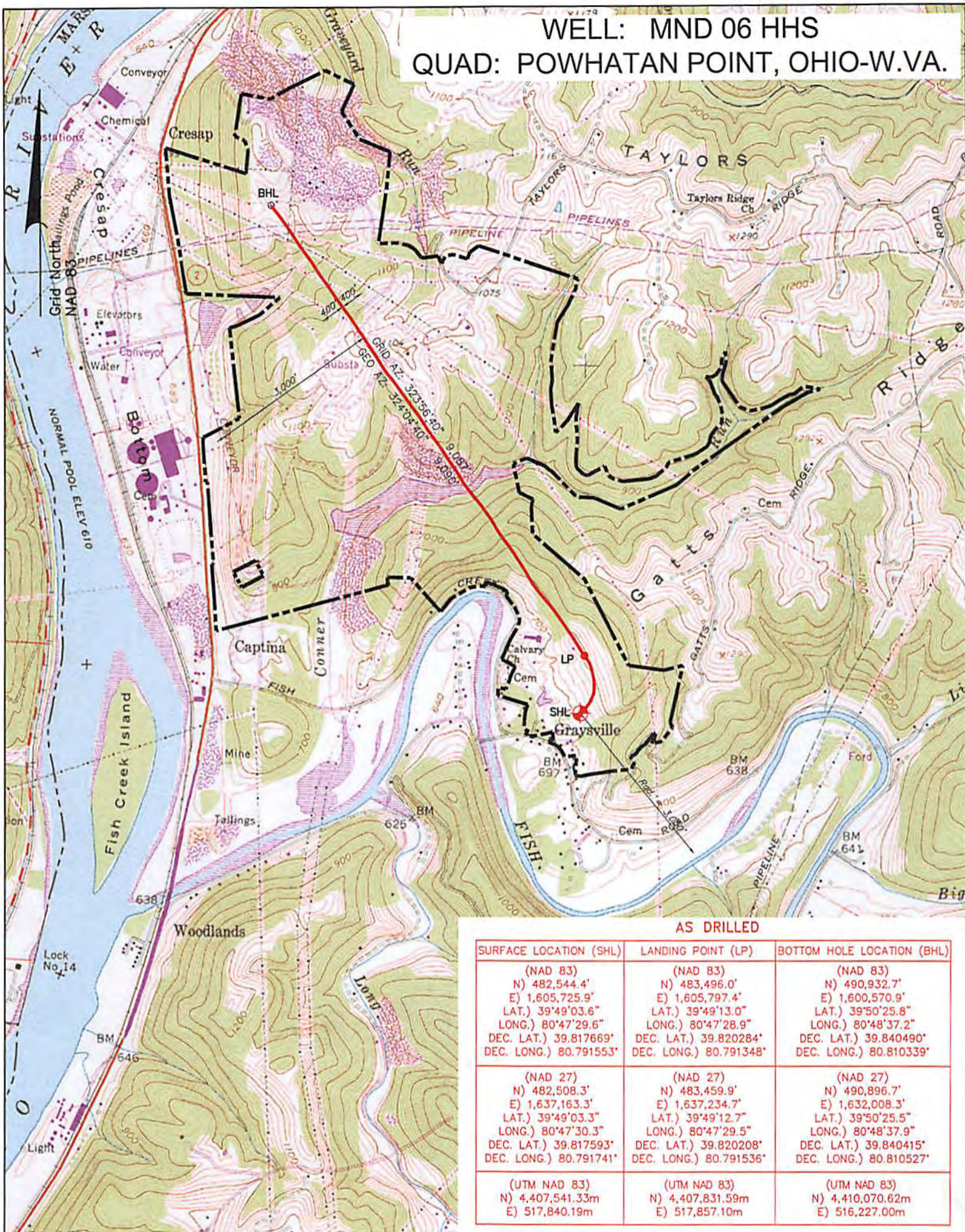
ADDRESS: **333 TECHNOLOGY DRIVE, SUITE 116**

ADDRESS: **500 VIRGINIA STREET EAST, UNITED CENTER SUITE 590**

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

CITY: **CHARLESTON** STATE: **WV** ZIP CODE: **25301**

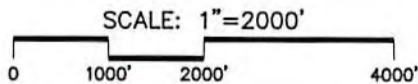
WELL: MND 06 HHS
 QUAD: POWHATAN POINT, OHIO-W.VA.



AS DRILLED

SURFACE LOCATION (SHL)	LANDING POINT (LP)	BOTTOM HOLE LOCATION (BHL)
(NAD 83) N) 482,544.4' E) 1,605,725.9' LAT.) 39°49'03.6" LONG.) 80°47'29.6" DEC. LAT.) 39.817669° DEC. LONG.) 80.791553°	(NAD 83) N) 483,496.0' E) 1,605,797.4' LAT.) 39°49'13.0" LONG.) 80°47'28.9" DEC. LAT.) 39.820284° DEC. LONG.) 80.791348°	(NAD 83) N) 490,932.7' E) 1,600,570.9' LAT.) 39°50'25.8" LONG.) 80°48'37.2" DEC. LAT.) 39.840490° DEC. LONG.) 80.810339°
(NAD 27) N) 482,508.3' E) 1,637,163.3' LAT.) 39°49'03.3" LONG.) 80°47'30.3" DEC. LAT.) 39.817593° DEC. LONG.) 80.791741°	(NAD 27) N) 483,459.9' E) 1,637,234.7' LAT.) 39°49'12.7" LONG.) 80°47'29.5" DEC. LAT.) 39.820208° DEC. LONG.) 80.791536°	(NAD 27) N) 490,896.7' E) 1,632,008.3' LAT.) 39°50'25.5" LONG.) 80°48'37.9" DEC. LAT.) 39.840415° DEC. LONG.) 80.810527°
(UTM NAD 83) N) 4,407,541.33m E) 517,840.19m	(UTM NAD 83) N) 4,407,831.59m E) 517,857.10m	(UTM NAD 83) N) 4,410,070.62m E) 516,227.00m

AS DRILLED PLAT



GENERAL NOTE:
 THE PURPOSE OF THIS PLAT IS FOR THE LOCATION OF PROPOSED GAS WELLS AND DOES NOT REPRESENT A CLOSED BOUNDARY SURVEY. PROPERTY LINES AND OWNERS WERE OBTAINED FROM VARIOUS FIELD EVIDENCE, TAX RECORDS AND AERIAL MAPPING.

LEGEND

- EXISTING GAS WELL
- PROPOSED BOTTOM HOLE
- AS-DRILLED BORE
- UNIT BOUNDARY

PERMITTED

SURFACE LOCATION (SHL)	LANDING POINT (LP)	BOTTOM HOLE LOCATION (BHL)
(NAD 83) N) 482,544.4' E) 1,605,726.0' LAT.) 39°49'03.6" LONG.) 80°47'29.6" DEC. LAT.) 39.817669° DEC. LONG.) 80.791553°	(NAD 83) N) 483,495.7' E) 1,605,794.4' LAT.) 39°49'13.0" LONG.) 80°47'28.9" DEC. LAT.) 39.820283° DEC. LONG.) 80.791358°	(NAD 83) N) 490,940.6' E) 1,600,581.4' LAT.) 39°50'25.8" LONG.) 80°48'37.1" DEC. LAT.) 39.840512° DEC. LONG.) 80.810302°
(NAD 27) N) 482,508.3' E) 1,637,163.3' LAT.) 39°49'03.3" LONG.) 80°47'30.3" DEC. LAT.) 39.817593° DEC. LONG.) 80.791741°	(NAD 27) N) 483,445.96' E) 1,637,231.8' LAT.) 39°49'12.7" LONG.) 80°47'29.6" DEC. LAT.) 39.820207° DEC. LONG.) 80.791546°	(NAD 27) N) 490,904.6' E) 1,632,018.8' LAT.) 39°50'25.6" LONG.) 80°48'37.8" DEC. LAT.) 39.840437° DEC. LONG.) 80.810490°
(UTM NAD 83) N) 4,407,541.33m E) 517,840.20m	(UTM NAD 83) N) 4,407,831.48m E) 517,856.22m	(UTM NAD 83) N) 4,410,073.08m E) 516,230.16m

Applicant / Well Operator Name
NOBLE ENERGY, INC.

Address
333 TECHNOLOGY DRIVE, SUITE 116, CANONSBURG, PA 15317

Surface Landowner / Lessor
CONSOLIDATION COAL COMPANY

Well(Farm) Name
MND06

County - Code
MARSHALL - 051

USGS 71/2 Quadrangle Map Name
POWHATAN POINT, OHIO-W.VA

District
FRANKLIN

Well #
HHS

Serial #

Scale:
1" = 2,000'