

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

API 47-059-02265 County Mingo District Hardee  
Quad Naugatuck Pad Name Nighbert Land Co. Field/Pool Name Devonian Shale  
Farm name Nighbert Land Company Well Number 828038  
Operator (as registered with the OOG) Core Appalachia Operating, LLC  
Address 414 Summers Street City Charleston State WV Zip 25301

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey  
Top hole Northing 4,187,703.21 M Easting 382,504.01 M  
Landing Point of Curve Northing 4,187,518.86 M Easting 382,569.09 M  
Bottom Hole Northing 4,186,199.84 M Easting 383,062.59 M

Elevation (ft) 944.47 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)  
N/A

Date permit issued 5/25/2018 Date drilling commenced 7/17/2018 Date drilling ceased 7/31/2018  
Date completion activities began 8/3/2018 Date completion activities ceased 8/31/2018  
Verbal plugging (Y/N) No Date permission granted \_\_\_\_\_ Granted by \_\_\_\_\_

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

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Freshwater depth(s) ft 680 Open mine(s) (Y/N) depths None  
Salt water depth(s) ft 1110 Void(s) encountered (Y/N) depths None  
Coal depth(s) ft 55 Cavern(s) encountered (Y/N) depths None  
Is coal being mined in area (Y/N) Yes

Reviewed

Reviewed by:

*AF 11-9-2018*



API 47-059 - 02265 Farm name Nighbert Land Company Well number 828038

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	17"	13 3/8"	34'	New	L.S., 54.5#	-	Sanded In
Surface							
Coal	12 3/8"	9 5/8"	433'	New	L.S., 36#	314'	Yes
Intermediate 1	8 7/8"	7"	2700'	New	AT-50, 19#	2530', 170'	No
Intermediate 2							
Intermediate 3							
Production							
Tubing							
Packer type and depth set							

Comment Details Well completed as natural. No production casing ran.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft <sup>3</sup> /sks)	Volume (ft <sup>3</sup> )	Cement Top (MD)	WOC (hrs)
Conductor	Sanded In	-	-	-	-	-	-
Surface							
Coal	Class A	160	15.6	1.20	192	Surface	11
Intermediate 1	Poz Mix/Class A	230/150	13.2/15.6	1.66/1.20	381.8/180	Not Logged	8
Intermediate 2							
Intermediate 3							
Production							
Tubing							

Drillers TD (ft) 8441' Loggers TD (ft) Not Logged at TD  
 Deepest formation penetrated Devonian Shale Plug back to (ft) N/A  
 Plug back procedure \_\_\_\_\_

Kick off depth (ft) 2802'

Check all wireline logs run at 7" casing point  
 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 \_\_\_\_\_

9 5/8" centralizers on joints #2 and #5  
7" centralizers on joints #1, 3, 6 and 39

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WAS WELL COMPLETED AS SHOT HOLE  Yes  No    DETAILS \_\_\_\_\_

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WAS WELL COMPLETED OPEN HOLE?  Yes  No    DETAILS Natural well, open hole: 2700'-8441'

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WERE TRACERS USED  Yes  No    TYPE OF TRACER(S) USED \_\_\_\_\_

API 47- 059 - 02265 Farm name Nighbert Land Company Well number 828038

PRODUCING FORMATION(S)	DEPTHS
Lower Huron	3280'-3431' TVD 3334'-8441' MD

Please insert additional pages as applicable.

GAS TEST  Build up  Drawdown  Open Flow OIL TEST  Flow  Pump

SHUT-IN PRESSURE Surface 40 psi Bottom Hole \_\_\_\_\_ psi DURATION OF TEST 12 hrs

OPEN FLOW Gas 2100 mcfpd Oil \_\_\_\_\_ bpd NGL \_\_\_\_\_ bpd Water \_\_\_\_\_ bpd GAS MEASURED BY  Estimated  Orifice  Pitot tube

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H <sub>2</sub> S, ETC)
Sand Shale	0	1068	0	1068	Coal 55'-61', water @ 680'
Salt Sand	1068	1458	1068	1458	Water @ 1110'
Upper Maxon	1506	1562	1506	1562	
Lower Maxon	1614	1684	1614	1684	
Little Lime	1773	1814	1773	1814	
Big Lime	1814	2011	1814	2011	Gas Show
Big Injun	2011	2028	2011	2028	
Pocono Shale	2028	2531	2028	2560	
Sunbury Shale	2531	2560	2560	2650	
Berea Sand	2560	2650	2560	2650	
Bedford Shale	2650	2660	2650	2660	
Cleveland	2660	2730	2660	2730	
Upper Dev. Undiff	2730	3280	2730	3334	
Lower Huron	3280	3431	3334	8441	Gas Shows

Please insert additional pages as applicable.

Drilling Contractor Gasco Drilling Inc  
Address P.O. Drawer 330 City Cedar Bluff State VA Zip 24609

Logging Company BHI Wireline Services  
Address 3415 Millennium Blvd City Massillon State OH Zip 44646

Cementing Company C & J Energy Service  
Address 580 Hawthorn Drive City Norton State VA Zip 24273

Stimulating Company N/A  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Please insert additional pages as applicable.

Completed by Robert E. Schindler Telephone 304-353-5000  
Signature R.E. Schindler Title Completions Superintendent Date 10-17-18

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# Core Operating

Well: Nighbert 20H  
 Site: Nighbert  
 Project: Mingo County, West Virginia (UTM NAD83)  
 Design: plan8 utm  
 Rig: Gasco Drilling rig #12

### Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
1	2215.00	0.09	47.09	2214.91	-11.21	-0.08	0.00	0.00	10.52	Survey @ 2215.00 MD 2214.91 TVD
2	2802.25	0.09	47.09	2802.16	-10.58	0.60	0.00	0.00	10.16	KOP Begin 8.79°/100' build/turn
3	2859.53	5.00	159.49	2859.37	-12.89	1.51	8.79	113.34	12.64	Begin 8.79°/100' build
4	3109.53	26.97	159.49	3098.23	-76.99	25.48	8.79	0.00	81.07	Begin 8.79°/100' build/turn
5	3825.75	90.00	160.17	3454.00	-622.12	224.34	8.80	0.76	661.33	Begin 90.00° lateral
6	9953.21	90.00	160.17	3454.00	-6386.20	2303.08	0.00	0.00	6788.79	

### ANNOTATIONS SURVEYS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Annotation
100.00	0.76	164.19	100.00	-0.64	0.18	0.66	Gyro
8386.00	93.74	156.07	3434.55	-4903.28	1812.74	5227.46	Survey @ 8386.00 MD 3434.55 TVD
8441.00	93.74	156.07	3430.96	-4953.44	1835.00	5282.20	Survey Projected to 8441.00 MD 3430.96 TVD

Geodetic System: Universal Transverse Mercator (US Survey Feet)  
 Datum: NAD83 West Virginia - HARN  
 Ellipsoid: GRS 1980  
 Zone: Zone 17N (84 W to 78 W)

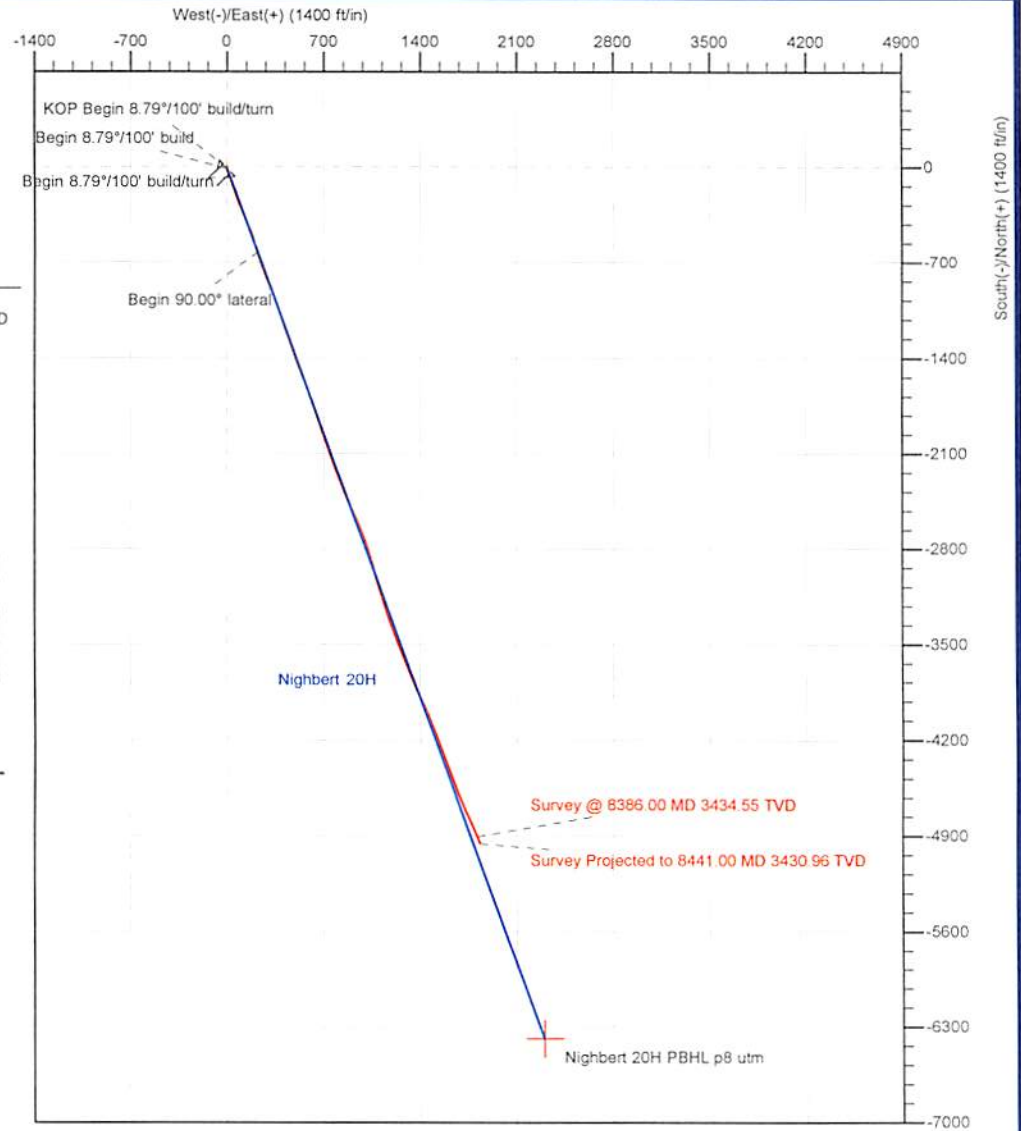
System Datum: Mean Sea Level  
 Depth Reference: GL (copy) @ 943.00ft

Northing: 13739156.80  
 Easting: 1254929.78  
 Latitude: 37.82919083  
 Longitude: -82.33515006

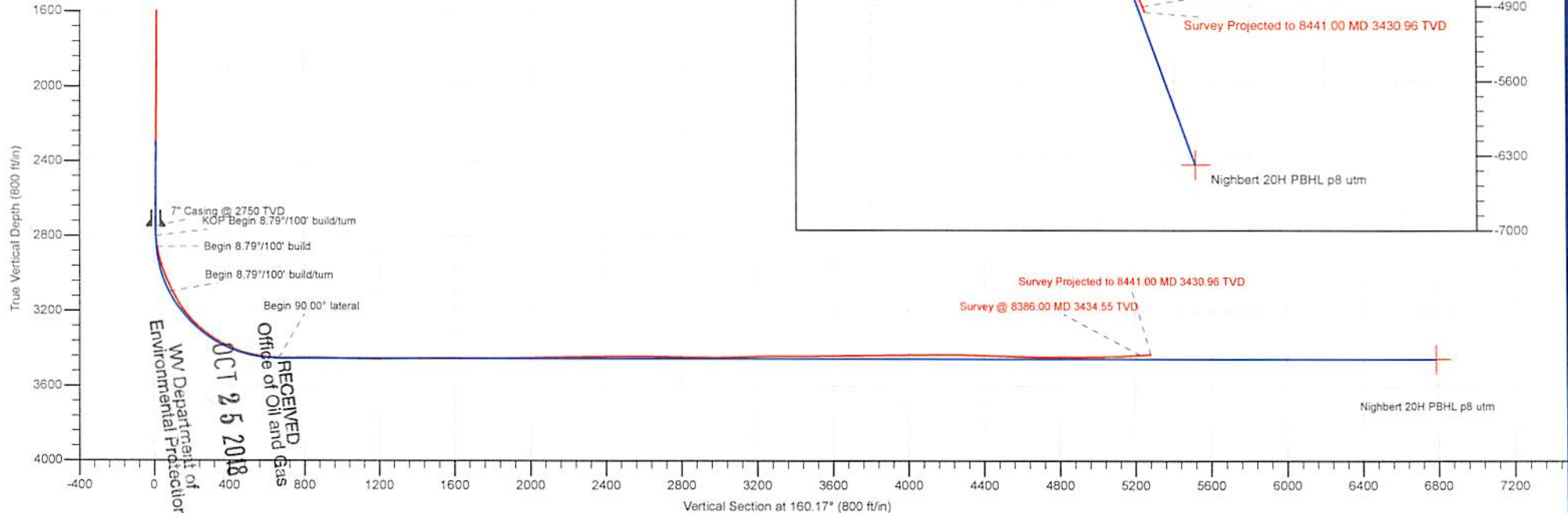
Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 7.20°



Azimuths to Grid North  
 True North: 0.82°  
 Magnetic North: -7.20°  
 Magnetic Field  
 Strength: 51450.9snT  
 Dip Angle: 65.70°  
 Date: 3/17/2018  
 Model: HDGM



ALL DEPTHS ARE REFERENCED TO GROUND ELEVATION



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### Survey Report

<b>Company:</b> Core Operating	<b>Local Co-ordinate Reference:</b> Well Nighbert 19H
<b>Project:</b> Mingo County, West Virginia (UTM NAD83)	<b>TVD Reference:</b> GL (copy) @ 943.00ft (Gasco Drilling Rig 12)
<b>Site:</b> Nighbert	<b>MD Reference:</b> GL (copy) @ 943.00ft (Gasco Drilling Rig 12)
<b>Well:</b> Nighbert 19H	<b>North Reference:</b> Grid
<b>Wellbore:</b> Original Hole	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> Surveys Original Hole	<b>Database:</b> DB_Jul2216dt_v14

<b>Project</b> Mingo County, West Virginia (UTM NAD83)	
<b>Map System:</b> Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b> Mean Sea Level
<b>Geo Datum:</b> NAD83 West Virginia - HARN	
<b>Map Zone:</b> Zone 17N (84 W to 78 W)	

<b>Site</b> Nighbert		
<b>Site Position:</b>	<b>Northing:</b> 13,739,187.59 usft	<b>Latitude:</b> 37.82927539
<b>From:</b> Map	<b>Easting:</b> 1,254,929.99 usft	<b>Longitude:</b> -82.33515087
<b>Position Uncertainty:</b> 0.00 ft	<b>Slot Radius:</b> 13-3/16 "	<b>Grid Convergence:</b> -0.82 °

<b>Well</b> Nighbert 19H			
<b>Well Position</b>	<b>+N/-S</b> 0.00 ft	<b>Northing:</b> 13,739,187.59 usft	<b>Latitude:</b> 37.82927539
	<b>+E/-W</b> 0.00 ft	<b>Easting:</b> 1,254,929.99 usft	<b>Longitude:</b> -82.33515087
<b>Position Uncertainty</b>	0.00 ft	<b>Wellhead Elevation:</b> ft	<b>Ground Level:</b> 943.00 ft

<b>Wellbore</b> Original Hole					
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	3/17/2018	-8.02	65.70	51,450.90000000

<b>Design</b> Surveys Original Hole					
<b>Audit Notes:</b>					
<b>Version:</b> 1.0	<b>Phase:</b> ACTUAL	<b>Tie On Depth:</b> 0.00			
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	129.76	

Survey Program		Date			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
100.00	2,600.00	Gyro (Original Hole)	GYRO-NS	OWSG Gyrocompass Gyro	
2,701.00	5,100.00	MWD (Original Hole)	MWD	OWSG MWD - Standard	
5,225.00	5,225.00	Projection (Original Hole)	MWD	OWSG MWD - Standard	

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Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.34	33.59	100.00	0.25	0.16	-0.03	0.34	0.34	0.00
200.00	0.41	185.09	200.00	0.14	0.30	0.14	0.73	0.07	151.50
300.00	0.56	170.39	300.00	-0.70	0.35	0.71	0.19	0.15	-14.70
400.00	0.25	130.79	399.99	-1.32	0.59	1.30	0.40	-0.31	-39.60
500.00	0.26	111.79	499.99	-1.55	0.97	1.74	0.08	0.01	-19.00
600.00	0.40	187.69	599.99	-1.98	1.13	2.14	0.42	0.14	75.90
700.00	0.64	141.59	699.99	-2.77	1.43	2.87	0.46	0.24	-46.10
800.00	0.56	118.19	799.98	-3.43	2.21	3.90	0.26	-0.08	-23.40



Survey Report

<b>Company:</b>	Core Operating	<b>Local Co-ordinate Reference:</b>	Well Nighbert 19H
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<b>Site:</b>	Nighbert	<b>MD Reference:</b>	GL (copy) @ 943.00ft (Gasco Drilling Rig 12)
<b>Well:</b>	Nighbert 19H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Jul2216dt_v14

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Survey										WV Department of Environmental Protection
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Rate (°/100ft)	
900.00	0.08	170.89	899.98	-3.73	2.65	4.43	0.52	-0.48	52.70	
1,000.00	0.08	106.09	999.98	-3.82	2.73	4.54	0.09	0.00	-64.80	
1,100.00	0.65	149.69	1,099.98	-4.33	3.08	5.14	0.59	0.57	43.60	
1,200.00	0.63	148.59	1,199.97	-5.29	3.66	6.19	0.02	-0.02	-1.10	
1,300.00	0.17	69.19	1,299.97	-5.71	4.08	6.79	0.62	-0.46	-79.40	
1,400.00	0.48	181.89	1,399.97	-6.07	4.21	7.12	0.57	0.31	112.70	
1,500.00	0.33	87.49	1,499.97	-6.48	4.48	7.59	0.60	-0.15	-94.40	
1,600.00	0.24	337.79	1,599.96	-6.27	4.69	7.62	0.47	-0.09	-109.70	
1,700.00	0.28	343.59	1,699.96	-5.84	4.54	7.23	0.05	0.04	5.80	
1,800.00	0.30	353.39	1,799.96	-5.35	4.44	6.84	0.05	0.02	9.80	
1,900.00	0.32	271.69	1,899.96	-5.08	4.13	6.43	0.41	0.02	-81.70	
2,000.00	0.24	163.99	1,999.96	-5.27	3.91	6.38	0.45	-0.08	-107.70	
2,100.00	0.34	314.69	2,099.96	-5.27	3.76	6.26	0.56	0.10	150.70	
2,200.00	0.34	292.19	2,199.96	-4.95	3.27	5.68	0.13	0.00	-22.50	
2,300.00	0.30	226.39	2,299.96	-5.01	2.81	5.37	0.35	-0.04	-65.80	
2,400.00	0.35	9.09	2,399.96	-4.89	2.67	5.18	0.62	0.05	142.70	
2,500.00	0.33	357.29	2,499.96	-4.30	2.70	4.83	0.07	-0.02	-11.80	
2,600.00	0.30	155.79	2,599.95	-4.26	2.80	4.87	0.62	-0.03	158.50	
2,701.00	0.82	303.64	2,700.95	-4.10	2.30	4.39	1.08	0.51	146.39	
<b>MWD surveys</b>										
2,733.00	0.57	23.68	2,732.95	-3.82	2.18	4.12	2.86	-0.78	250.13	
2,764.00	3.71	82.63	2,763.93	-3.55	3.23	4.76	11.13	10.13	190.16	
2,797.00	7.54	86.08	2,796.76	-3.27	6.45	7.05	11.65	11.61	10.45	
2,828.00	10.79	86.39	2,827.36	-2.95	11.38	10.63	10.49	10.48	1.00	
2,859.00	13.50	86.91	2,857.66	-2.57	17.89	15.39	8.75	8.74	1.68	
2,892.00	15.38	89.31	2,889.62	-2.31	26.11	21.55	5.98	5.70	7.27	
2,923.00	16.98	92.04	2,919.39	-2.42	34.75	28.26	5.71	5.16	8.81	
2,955.00	17.61	95.42	2,949.95	-3.05	44.24	35.95	3.71	1.97	10.56	
2,986.00	19.47	97.25	2,979.34	-4.14	54.03	44.18	6.29	6.00	5.90	
3,017.00	22.01	96.17	3,008.33	-5.42	64.93	53.38	8.29	8.19	-3.48	
3,049.00	24.87	95.92	3,037.68	-6.76	77.59	63.97	8.94	8.94	-0.78	
3,080.00	27.30	96.79	3,065.52	-8.27	91.13	75.35	7.94	7.84	2.81	
3,112.00	29.00	102.73	3,093.74	-10.85	105.99	88.42	10.24	5.31	18.56	
3,144.00	32.05	106.42	3,121.31	-14.96	121.71	103.13	11.18	9.53	11.53	
3,176.00	35.85	108.14	3,147.85	-20.28	138.76	119.64	12.25	11.88	5.38	
3,207.00	39.28	109.91	3,172.42	-26.45	156.62	137.31	11.60	11.06	5.71	
3,239.00	42.32	111.06	3,196.64	-33.78	176.20	157.05	9.79	9.50	3.59	
3,270.00	45.03	111.05	3,219.06	-41.47	196.18	177.33	8.74	8.74	-0.03	
3,302.00	47.51	111.67	3,241.18	-49.89	217.71	199.27	7.88	7.75	1.94	
3,333.00	49.71	111.31	3,261.67	-58.41	239.35	221.35	7.15	7.10	-1.16	
3,365.00	52.44	111.44	3,281.77	-67.49	262.53	244.97	8.54	8.53	0.41	
3,397.00	54.85	111.51	3,300.74	-76.92	286.51	269.44	7.53	7.53	0.22	
3,428.00	57.01	112.43	3,318.11	-86.53	310.32	293.89	7.39	6.97	2.97	

## Survey Report

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Survey										
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3,460.00	58.87	112.64	3,335.09	-96.93	335.37	319.79	5.84	5.81	0.66	
3,491.00	60.35	113.33	3,350.77	-107.37	359.98	345.39	5.15	4.77	2.23	
3,522.00	62.11	113.23	3,365.69	-118.11	384.94	371.45	5.68	5.68	-0.32	
3,554.00	64.58	112.36	3,380.05	-129.19	411.31	398.80	8.09	7.72	-2.72	
3,585.00	66.41	112.84	3,392.91	-140.04	437.34	425.75	6.07	5.90	1.55	
3,617.00	68.76	113.45	3,405.11	-151.67	464.54	454.10	7.55	7.34	1.91	
3,649.00	71.31	115.23	3,416.03	-164.06	491.94	483.09	9.53	7.97	5.56	
3,680.00	73.71	116.40	3,425.35	-176.94	518.55	511.78	8.54	7.74	3.77	
3,712.00	76.15	117.27	3,433.67	-190.89	546.12	541.90	8.06	7.63	2.72	
3,743.00	79.30	117.16	3,440.26	-204.75	573.05	571.46	10.17	10.16	-0.35	
3,775.00	81.88	117.99	3,445.49	-219.36	601.03	602.32	8.46	8.06	2.59	
3,807.00	83.46	118.40	3,449.57	-234.36	629.00	633.41	5.10	4.94	1.28	
3,838.00	86.02	117.93	3,452.42	-248.93	656.21	663.65	8.39	8.26	-1.52	
3,869.00	88.39	118.97	3,453.93	-263.68	683.44	694.01	8.35	7.65	3.35	
3,900.00	89.13	119.16	3,454.60	-278.74	710.52	724.46	2.46	2.39	0.61	
3,931.00	89.29	118.76	3,455.03	-293.75	737.64	754.91	1.39	0.52	-1.29	
3,964.00	90.46	118.46	3,455.10	-309.55	766.61	787.28	3.66	3.55	-0.91	
3,996.00	90.84	118.76	3,454.73	-324.88	794.70	818.68	1.51	1.19	0.94	
4,027.00	90.70	118.88	3,454.32	-339.82	821.86	849.11	0.59	-0.45	0.39	
4,090.00	90.19	121.83	3,453.83	-371.66	876.21	911.26	4.75	-0.81	4.68	
4,122.00	90.57	121.83	3,453.62	-388.53	903.40	942.95	1.19	1.19	0.00	
4,153.00	90.85	123.23	3,453.23	-405.20	929.53	973.70	4.61	0.90	4.52	
4,216.00	89.42	126.40	3,453.08	-441.17	981.25	1,036.46	5.52	-2.27	5.03	
4,247.00	89.42	128.05	3,453.40	-459.92	1,005.93	1,067.42	5.32	0.00	5.32	
4,279.00	89.61	127.85	3,453.67	-479.60	1,031.16	1,099.41	0.86	0.59	-0.63	
4,310.00	89.89	128.56	3,453.80	-498.78	1,055.52	1,130.39	2.46	0.90	2.29	
4,342.00	90.07	129.35	3,453.81	-518.90	1,080.40	1,162.39	2.53	0.56	2.47	
4,373.00	90.19	129.69	3,453.74	-538.63	1,104.31	1,193.39	1.16	0.39	1.10	
4,405.00	90.07	130.36	3,453.67	-559.21	1,128.81	1,225.39	2.13	-0.38	2.09	
4,436.00	89.63	131.77	3,453.75	-579.57	1,152.18	1,256.38	4.76	-1.42	4.55	
4,468.00	89.81	132.47	3,453.91	-601.03	1,175.92	1,288.35	2.26	0.56	2.19	
4,564.00	90.46	131.96	3,453.68	-665.54	1,247.01	1,384.26	0.86	0.68	-0.53	
4,627.00	90.94	132.01	3,452.91	-707.68	1,293.84	1,447.21	0.77	0.76	0.08	
4,722.00	88.49	130.02	3,453.39	-770.02	1,365.50	1,542.17	3.32	-2.58	-2.09	
4,816.00	87.77	132.09	3,456.45	-831.73	1,436.34	1,636.09	2.33	-0.77	2.20	
4,910.00	88.08	132.74	3,459.86	-895.09	1,505.69	1,729.93	0.77	0.33	0.69	
5,006.00	89.60	133.41	3,461.80	-960.65	1,575.79	1,825.75	1.73	1.58	0.70	
5,100.00	89.60	131.92	3,462.46	-1,024.35	1,644.91	1,919.62	1.59	0.00	0.00	
<b>Survey @ 5100.00 MD 3462.46 TVD</b>										
5,225.00	89.60	131.92	3,463.33	-1,107.87	1,737.91	2,044.53	0.00	0.00	0.00	
<b>Survey projected to 5225.00 MD 3463.33 TVD</b>										

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## Survey Report

<b>Company:</b> Core Operating	<b>Local Co-ordinate Reference:</b> Well Nighbert 19H
<b>Project:</b> Mingo County, West Virginia (UTM NAD83)	<b>TVD Reference:</b> GL (copy) @ 943.00ft (Gasco Drilling Rig 12)
<b>Site:</b> Nighbert	<b>MD Reference:</b> GL (copy) @ 943.00ft (Gasco Drilling Rig 12)
<b>Well:</b> Nighbert 19H	<b>North Reference:</b> Grid
<b>Wellbore:</b> Original Hole	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> Surveys Original Hole	<b>Database:</b> DB_Jul2216dt_v14

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,701.00	2,700.95	-4.10	2.30	MWD surveys
5,100.00	3,462.46	-1,024.35	1,644.91	Survey @ 5100.00 MD 3462.46 TVD
5,225.00	3,463.33	-1,107.87	1,737.91	Survey projected to 5225.00 MD 3463.33 TVD

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## Survey Report - Geographic

<b>Company:</b> Core Operating	<b>Local Co-ordinate Reference:</b> Well Nighbert 19H
<b>Project:</b> Mingo County, West Virginia (UTM NAD83)	<b>TVD Reference:</b> GL (copy) @ 943.00ft (Gasco Drilling Rig 12)
<b>Site:</b> Nighbert	<b>MD Reference:</b> GL (copy) @ 943.00ft (Gasco Drilling Rig 12)
<b>Well:</b> Nighbert 19H	<b>North Reference:</b> Grid
<b>Wellbore:</b> Original Hole	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> Surveys Original Hole	<b>Database:</b> DB_Jul2216dt_v14

<b>Project</b> Mingo County, West Virginia (UTM NAD83)			
<b>Map System:</b> Universal Transverse Mercator (US Survey Feet)	<b>System Datum:</b> Mean Sea Level		
<b>Geo Datum:</b> NAD83 West Virginia - HARN			
<b>Map Zone:</b> Zone 17N (84 W to 78 W)			

<b>Site</b> Nighbert					
<b>Site Position:</b>		<b>Northing:</b> 13,739,187.59 usft	<b>Latitude:</b> 37.82927539		
<b>From:</b> Map		<b>Easting:</b> 1,254,929.99 usft	<b>Longitude:</b> -82.33515087		
<b>Position Uncertainty:</b> 0.00 ft		<b>Slot Radius:</b> 13-3/16 "	<b>Grid Convergence:</b> -0.82 °		

<b>Well</b> Nighbert 19H					
<b>Well Position</b>	<b>+N/-S</b> 0.00 ft	<b>Northing:</b> 13,739,187.59 usft	<b>Latitude:</b> 37.82927539		
	<b>+E/-W</b> 0.00 ft	<b>Easting:</b> 1,254,929.99 usft	<b>Longitude:</b> -82.33515087		
<b>Position Uncertainty</b>	0.00 ft	<b>Wellhead Elevation:</b> ft	<b>Ground Level:</b> 943.00 ft		

<b>Wellbore</b> Original Hole					
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM	3/17/2018	-8.02	65.70	51,450.90000000

<b>Design</b> Surveys Original Hole					
<b>Audit Notes:</b>					
<b>Version:</b> 1.0	<b>Phase:</b> ACTUAL	<b>Tie On Depth:</b> 0.00			
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	129.76	

<b>Survey Program</b>					
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
100.00	2,600.00	Gyro (Original Hole)	GYRO-NS	OWSG Gyrocompass Gyro	
2,701.00	5,100.00	MWD (Original Hole)	MWD	OWSG MWD - Standard	
5,225.00	5,225.00	Projection (Original Hole)	MWD	OWSG MWD - Standard	

<b>Survey</b>									
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Map Northing (usft)</b>	<b>Map Easting (usft)</b>	<b>Latitude</b>	<b>Longitude</b>
0.00	0.00	0.00	0.00	0.00	0.00	13,739,187.59	1,254,929.99	37.82927539	-82.33515087
100.00	0.34	33.59	100.00	0.25	0.16	13,739,187.83	1,254,930.15	37.82927608	-82.33515031
200.00	0.41	185.09	200.00	0.14	0.30	13,739,187.73	1,254,930.28	37.82927578	-82.33514985
300.00	0.56	170.39	300.00	-0.70	0.35	13,739,186.89	1,254,930.33	37.82927348	-82.33514964
400.00	0.25	130.79	399.99	-1.32	0.59	13,739,186.26	1,254,930.58	37.82927178	-82.33514875
500.00	0.26	111.79	499.99	-1.55	0.97	13,739,186.04	1,254,930.95	37.82927117	-82.33514744
600.00	0.40	187.69	599.99	-1.98	1.13	13,739,185.61	1,254,931.12	37.82926999	-82.33514685
700.00	0.64	141.59	699.99	-2.77	1.43	13,739,184.82	1,254,931.42	37.82926785	-82.33514577
800.00	0.56	118.19	799.98	-3.43	2.21	13,739,184.15	1,254,932.20	37.82926605	-82.33514305
900.00	0.08	170.89	899.98	-3.73	2.65	13,739,183.85	1,254,932.64	37.82926524	-82.33514150

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Survey Report - Geographic

<b>Company:</b>	Core Operating	<b>Local Co-ordinate Reference:</b>	Well Nighbert 19H
<b>Project:</b>	Mingo County, West Virginia (UTM NAD83)	<b>TVD Reference:</b>	GL (copy) @ 943.00ft (Gasco Drilling Rig 12)
<b>Site:</b>	Nighbert	<b>MD Reference:</b>	GL (copy) @ 943.00ft (Gasco Drilling Rig 12)
<b>Well:</b>	Nighbert 19H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Jul2216dt_v14

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Survey OCT 25 2018

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	WV Department of Environmental Protection	
								Latitude	Longitude
1,000.00	0.08	106.09	999.98	-3.82	2.73	13,739,183.77	1,254,932.72	37.82926500	-82.33514123
1,100.00	0.65	149.69	1,099.98	-4.33	3.08	13,739,183.26	1,254,933.07	37.82926362	-82.33513998
1,200.00	0.63	148.59	1,199.97	-5.29	3.66	13,739,182.30	1,254,933.64	37.82926101	-82.33513795
1,300.00	0.17	69.19	1,299.97	-5.71	4.08	13,739,181.88	1,254,934.07	37.82925988	-82.33513645
1,400.00	0.48	181.89	1,399.97	-6.07	4.21	13,739,181.51	1,254,934.19	37.82925888	-82.33513600
1,500.00	0.33	87.49	1,499.97	-6.48	4.48	13,739,181.11	1,254,934.47	37.82925778	-82.33513504
1,600.00	0.24	337.79	1,599.96	-6.27	4.69	13,739,181.32	1,254,934.67	37.82925835	-82.33513432
1,700.00	0.28	343.59	1,699.96	-5.84	4.54	13,739,181.74	1,254,934.53	37.82925952	-82.33513486
1,800.00	0.30	353.39	1,799.96	-5.35	4.44	13,739,182.24	1,254,934.43	37.82926088	-82.33513523
1,900.00	0.32	271.69	1,899.96	-5.08	4.13	13,739,182.51	1,254,934.12	37.82926160	-82.33513631
2,000.00	0.24	163.99	1,999.96	-5.27	3.91	13,739,182.31	1,254,933.90	37.82926106	-82.33513707
2,100.00	0.34	314.69	2,099.96	-5.27	3.76	13,739,182.32	1,254,933.74	37.82926108	-82.33513760
2,200.00	0.34	292.19	2,199.96	-4.95	3.27	13,739,182.64	1,254,933.26	37.82926194	-82.33513930
2,300.00	0.30	226.39	2,299.96	-5.01	2.81	13,739,182.57	1,254,932.79	37.82926173	-82.33514090
2,400.00	0.35	9.09	2,399.96	-4.89	2.67	13,739,182.69	1,254,932.65	37.82926206	-82.33514139
2,500.00	0.33	357.29	2,499.96	-4.30	2.70	13,739,183.28	1,254,932.69	37.82926368	-82.33514130
2,600.00	0.30	155.79	2,599.95	-4.26	2.80	13,739,183.33	1,254,932.78	37.82926382	-82.33514098
2,701.00	0.82	303.64	2,700.95	-4.10	2.30	13,739,183.49	1,254,932.29	37.82926423	-82.33514270
<b>MWD surveys</b>									
2,733.00	0.57	23.68	2,732.95	-3.82	2.18	13,739,183.76	1,254,932.16	37.82926498	-82.33514315
2,764.00	3.71	82.63	2,763.93	-3.55	3.23	13,739,184.03	1,254,933.22	37.82926576	-82.33513950
2,797.00	7.54	86.08	2,796.76	-3.27	6.45	13,739,184.32	1,254,936.44	37.82926667	-82.33512837
2,828.00	10.79	86.39	2,827.36	-2.95	11.38	13,739,184.64	1,254,941.36	37.82926775	-82.33511132
2,859.00	13.50	86.91	2,857.66	-2.57	17.89	13,739,185.02	1,254,947.87	37.82926904	-82.33508880
2,892.00	15.38	89.31	2,889.62	-2.31	26.11	13,739,185.28	1,254,956.10	37.82927007	-82.33506034
2,923.00	16.98	92.04	2,919.39	-2.42	34.75	13,739,185.17	1,254,964.73	37.82927011	-82.33503043
2,955.00	17.61	95.42	2,949.95	-3.05	44.24	13,739,184.54	1,254,974.22	37.82926876	-82.33499755
2,986.00	19.47	97.25	2,979.34	-4.14	54.03	13,739,183.45	1,254,984.02	37.82926614	-82.33496358
3,017.00	22.01	96.17	3,008.33	-5.42	64.93	13,739,182.17	1,254,994.92	37.82926306	-82.33492576
3,049.00	24.87	95.92	3,037.68	-6.76	77.59	13,739,180.83	1,255,007.57	37.82925988	-82.33488187
3,080.00	27.30	96.79	3,065.52	-8.27	91.13	13,739,179.31	1,255,021.12	37.82925625	-82.33483489
3,112.00	29.00	102.73	3,093.74	-10.85	105.99	13,739,176.74	1,255,035.98	37.82924975	-82.33478332
3,144.00	32.05	106.42	3,121.31	-14.96	121.71	13,739,172.62	1,255,051.69	37.82923908	-82.33472870
3,176.00	35.85	108.14	3,147.85	-20.28	138.76	13,739,167.30	1,255,068.75	37.82922513	-82.33466938
3,207.00	39.28	109.91	3,172.42	-26.45	156.62	13,739,161.13	1,255,086.61	37.82920888	-82.33460723
3,239.00	42.32	111.06	3,196.64	-33.78	176.20	13,739,153.81	1,255,106.19	37.82918954	-82.33453907
3,270.00	45.03	111.05	3,219.06	-41.47	196.18	13,739,146.12	1,255,126.16	37.82916920	-82.33446952
3,302.00	47.51	111.67	3,241.18	-49.89	217.71	13,739,137.69	1,255,147.70	37.82914690	-82.33439454
3,333.00	49.71	111.31	3,261.67	-58.41	239.35	13,739,129.17	1,255,169.33	37.82912435	-82.33431919
3,365.00	52.44	111.44	3,281.77	-67.49	262.53	13,739,120.10	1,255,192.51	37.82910034	-82.33423848
3,397.00	54.85	111.51	3,300.74	-76.92	286.51	13,739,110.66	1,255,216.49	37.82907537	-82.33415498
3,428.00	57.01	112.43	3,318.11	-86.53	310.32	13,739,101.05	1,255,240.30	37.82904991	-82.33407206
3,460.00	58.87	112.64	3,335.09	-96.93	335.37	13,739,090.66	1,255,265.35	37.82902234	-82.33398481
3,491.00	60.35	113.33	3,350.77	-107.37	359.98	13,739,080.21	1,255,289.97	37.82899462	-82.33389906
3,522.00	62.11	113.23	3,365.69	-118.11	384.94	13,739,069.47	1,255,314.93	37.82896610	-82.33381210
3,554.00	64.58	112.36	3,380.05	-129.19	411.31	13,739,058.39	1,255,341.29	37.82893671	-82.33372027
3,585.00	66.41	112.84	3,392.91	-140.04	437.34	13,739,047.55	1,255,367.33	37.82890795	-82.33362957
3,617.00	68.76	113.45	3,405.11	-151.67	464.54	13,739,035.92	1,255,394.53	37.82887708	-82.33353481
3,649.00	71.31	115.23	3,416.03	-164.06	491.94	13,739,023.52	1,255,421.92	37.82884410	-82.33343933
3,680.00	73.71	116.40	3,425.35	-176.94	518.55	13,739,010.65	1,255,448.54	37.82880977	-82.33334655
3,712.00	76.15	117.27	3,433.67	-190.89	546.12	13,738,996.69	1,255,476.10	37.82877254	-82.33325040
3,743.00	79.30	117.16	3,440.26	-204.75	573.05	13,738,982.84	1,255,503.04	37.82873555	-82.33315645
3,775.00	81.88	117.99	3,445.49	-219.36	601.03	13,738,968.23	1,255,531.02	37.82869650	-82.33305885
3,807.00	83.46	118.40	3,449.57	-234.36	629.00	13,738,953.23	1,255,558.99	37.82865641	-82.33296125
3,838.00	86.02	117.93	3,452.42	-248.93	656.21	13,738,938.66	1,255,586.20	37.82861746	-82.33286631



## Survey Report - Geographic

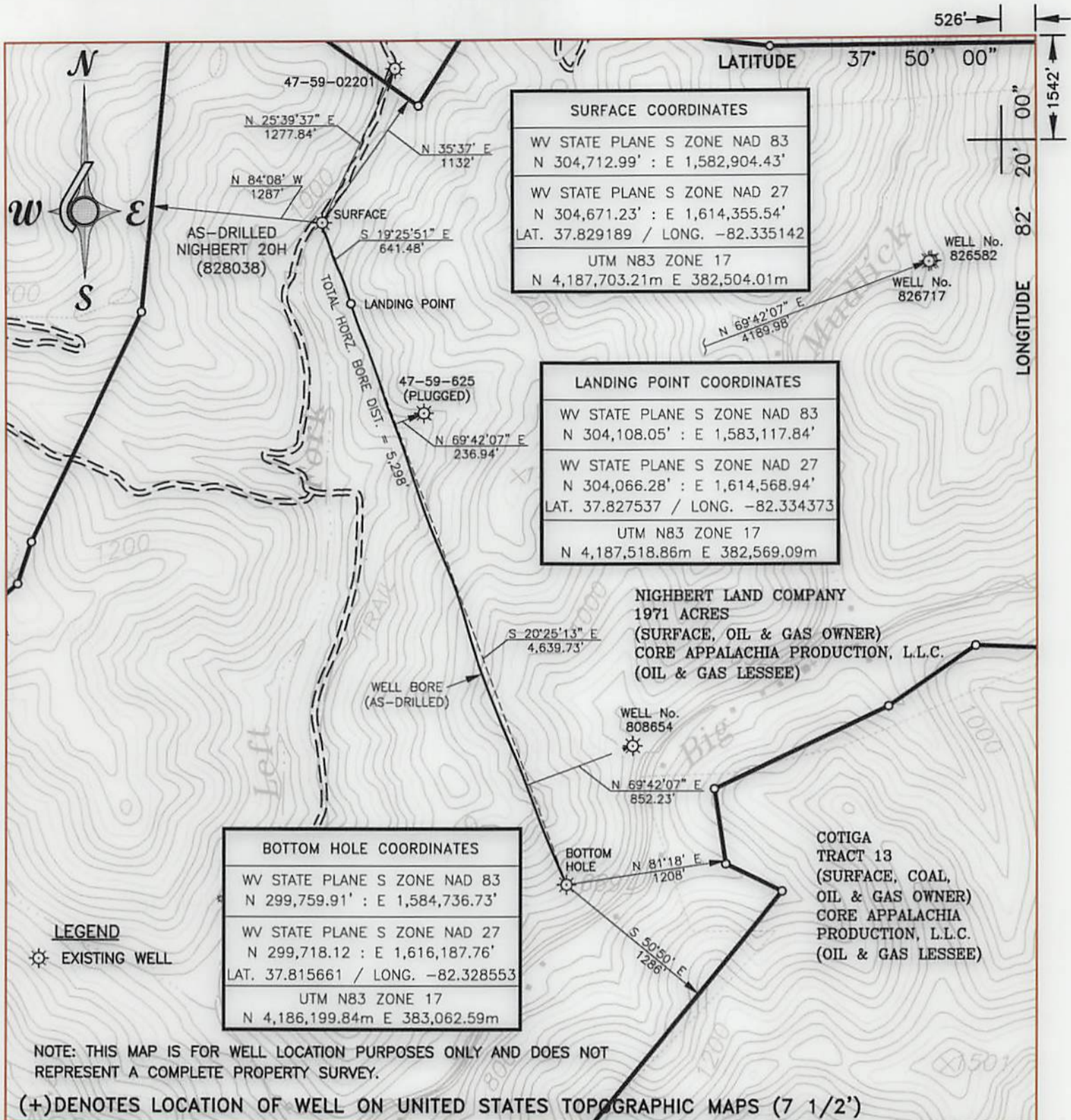
<b>Company:</b>	Core Operating	<b>Local Co-ordinate Reference:</b>	Well Nighbert 19H
<b>Project:</b>	Mingo County, West Virginia (UTM NAD83)	<b>TVD Reference:</b>	GL (copy) @ 943.00ft (Gasco Drilling Rig 12)
<b>Site:</b>	Nighbert	<b>MD Reference:</b>	GL (copy) @ 943.00ft (Gasco Drilling Rig 12)
<b>Well:</b>	Nighbert 19H	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys Original Hole	<b>Database:</b>	DB_Jul2216dt_v14

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
3,869.00	88.39	118.97	3,453.93	-263.68	683.44	13,738,923.91	1,255,613.42	37.82857801	-82.33277133
3,900.00	89.13	119.16	3,454.60	-278.74	710.52	13,738,908.85	1,255,640.51	37.82853772	-82.33267678
3,931.00	89.29	118.76	3,455.03	-293.75	737.64	13,738,893.84	1,255,667.63	37.82849755	-82.33258214
3,964.00	90.46	118.46	3,455.10	-309.55	766.61	13,738,878.04	1,255,696.60	37.82845529	-82.33248105
3,996.00	90.84	118.76	3,454.73	-324.88	794.70	13,738,862.71	1,255,724.69	37.82841430	-82.33238302
4,027.00	90.70	118.88	3,454.32	-339.82	821.86	13,738,847.77	1,255,751.84	37.82837432	-82.33228825
4,090.00	90.19	121.83	3,453.83	-371.66	876.21	13,738,815.93	1,255,806.20	37.82828901	-82.33209847
4,122.00	90.57	121.83	3,453.62	-388.53	903.40	13,738,799.05	1,255,833.38	37.82824372	-82.33200350
4,153.00	90.85	123.23	3,453.23	-405.20	929.53	13,738,782.38	1,255,859.52	37.82819896	-82.33191219
4,216.00	89.42	126.40	3,453.08	-441.17	981.25	13,738,746.42	1,255,911.23	37.82810221	-82.33173135
4,247.00	89.42	128.05	3,453.40	-459.92	1,005.93	13,738,727.67	1,255,935.91	37.82805167	-82.33164497
4,279.00	89.61	127.85	3,453.67	-479.60	1,031.16	13,738,707.99	1,255,961.14	37.82799861	-82.33155663
4,310.00	89.89	128.56	3,453.80	-498.78	1,055.52	13,738,688.81	1,255,985.50	37.82794690	-82.33147134
4,342.00	90.07	129.35	3,453.81	-518.90	1,080.40	13,738,668.69	1,256,010.38	37.82789261	-82.33138419
4,373.00	90.19	129.69	3,453.74	-538.63	1,104.31	13,738,648.96	1,256,034.29	37.82783937	-82.33130041
4,405.00	90.07	130.36	3,453.67	-559.21	1,128.81	13,738,628.38	1,256,058.80	37.82778380	-82.33121455
4,436.00	89.63	131.77	3,453.75	-579.57	1,152.18	13,738,608.02	1,256,082.17	37.82772878	-82.33113262
4,468.00	89.81	132.47	3,453.91	-601.03	1,175.92	13,738,586.55	1,256,105.90	37.82767077	-82.33104938
4,564.00	90.46	131.96	3,453.68	-665.54	1,247.01	13,738,522.05	1,256,177.00	37.82749638	-82.33080003
4,627.00	90.94	132.01	3,452.91	-707.68	1,293.84	13,738,479.90	1,256,223.82	37.82738247	-82.33063582
4,722.00	88.49	130.02	3,453.39	-770.02	1,365.50	13,738,417.56	1,256,295.49	37.82721406	-82.33038459
4,816.00	87.77	132.09	3,456.45	-831.73	1,436.34	13,738,355.86	1,256,366.32	37.82704736	-82.33013627
4,910.00	88.08	132.74	3,459.86	-895.09	1,505.69	13,738,292.49	1,256,435.67	37.82687604	-82.32989302
5,006.00	89.60	133.41	3,461.80	-960.65	1,575.79	13,738,226.94	1,256,505.78	37.82669874	-82.32964705
5,100.00	89.60	131.92	3,462.46	-1,024.35	1,644.91	13,738,163.24	1,256,574.89	37.82652648	-82.32940460
<b>Survey @ 5100.00 MD 3462.46 TVD</b>									
5,225.00	89.60	131.92	3,463.33	-1,107.87	1,737.91	13,738,079.72	1,256,667.89	37.82630074	-82.32907846
<b>Survey projected to 5225.00 MD 3463.33 TVD</b>									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,701.00	2,700.95	-4.10	2.30	MWD surveys
5,100.00	3,462.46	-1,024.35	1,644.91	Survey @ 5100.00 MD 3462.46 TVD
5,225.00	3,463.33	-1,107.87	1,737.91	Survey projected to 5225.00 MD 3463.33 TVD

**RECEIVED**  
 Office of Oil and Gas  
**OCT 25 2018**  
 WV Department of  
 Environmental Protection





I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENERGY.

(SIGNED) *Dewey L. Bocook, Jr.*  
 DEWEY L. BOCOOK, JR.  
 R.P.E. 6778 L.L.S. 1054



FILE NO. \_\_\_\_\_  
 DRAWING NO. GSE1068\_20H  
 SCALE 1" = 1000'  
 MINIMUM DEGREE OF ACCURACY 1/200  
 PROVEN SOURCE OF ELEVATION GPS

STATE OF WEST VIRGINIA  
 DIVISION OF ENVIRONMENTAL PROTECTION  
 SECTION OF OIL & GAS

DATE: OCTOBER 09, 2018  
 OPERATOR'S WELL NO. 828038  
 API WELL NO. \_\_\_\_\_

WELL TYPE: OIL  GAS  LIQUID INJECTION \_\_\_\_\_ WASTE DISPOSAL 47 059 02265  
 (IF "GAS,") PRODUCTION  STORAGE \_\_\_\_\_ DEEP \_\_\_\_\_ SHALLOW \_\_\_\_\_ STATE COUNTY PERMIT

LOCATION: ELEVATION 944.47 WATER SHED LEFT FORK OF BIG BRANCH  
 DISTRICT HARDEE COUNTY MINGO

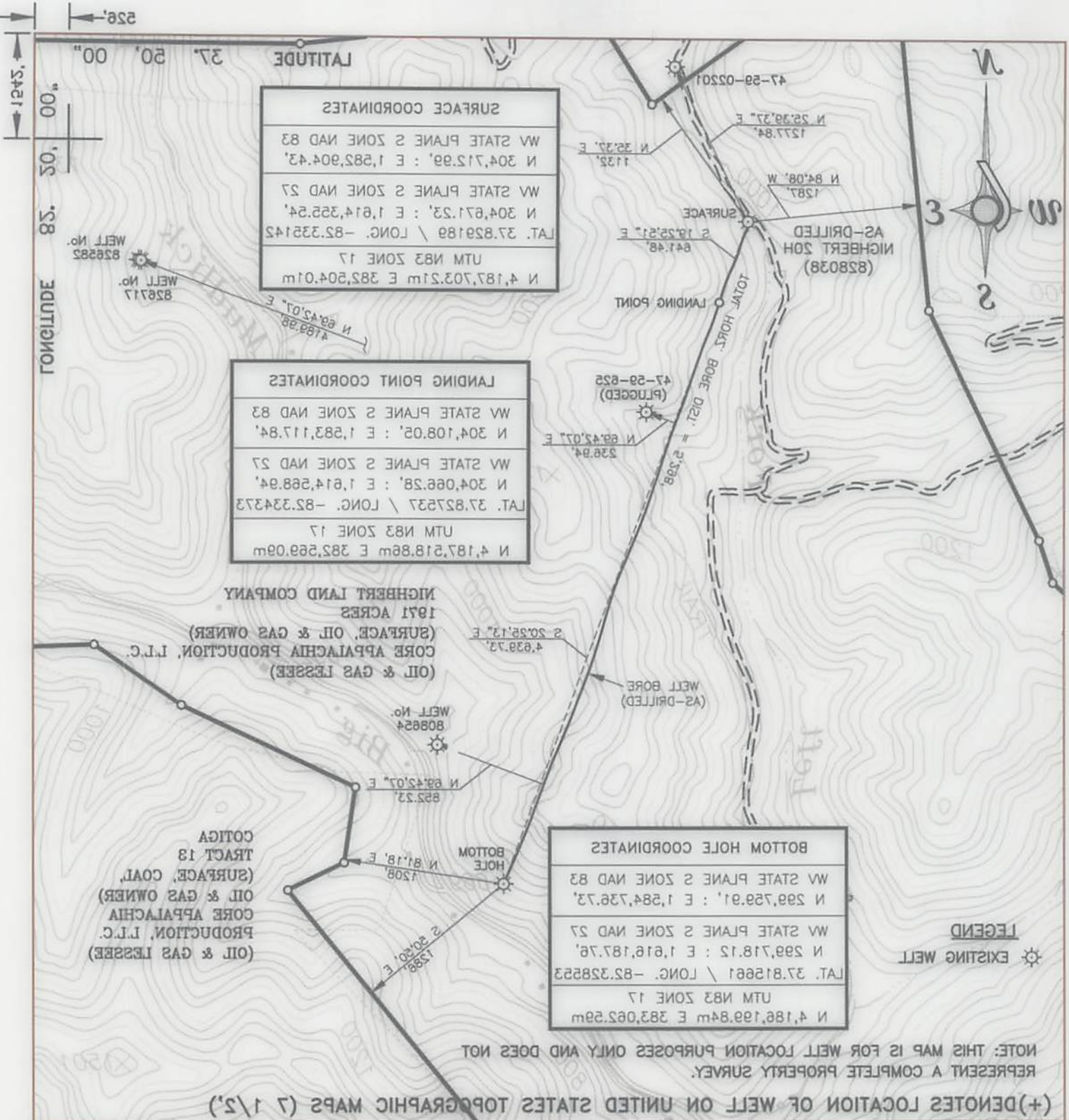
QUADRANGLE NAUGATUCK NAD 27 COORDINATES LAT: 37.829189 LONG: -82.335142  
 SURFACE OWNER NIGHBERT LAND COMPANY ACREAGE 1971  
 OIL & GAS ROYALTY OWNER NIGHBERT LAND COMPANY LEASE ACREAGE 1971  
 COAL OWNER NIGHBERT LAND COMPANY LEASE NO. 1026481

PROPOSED WORK: DRILL  CONVERT \_\_\_\_\_ DRILL DEEPER \_\_\_\_\_ REDRILL \_\_\_\_\_ FRACTURE OR  
 STIMULATE  PLUG OFF OLD FORMATION \_\_\_\_\_ PERFORATE NEW \_\_\_\_\_  
 FORMATION \_\_\_\_\_ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) **AS-DRILLED**

PLUG AND ABANDON \_\_\_\_\_ CLEAN OUT AND REPLUG \_\_\_\_\_  
 TARGET FORMATION DEVONIAN SHALE ESTIMATED DEPTH TOTAL VERTICAL DEPTH - 3480' / MEASURED DEPTH - 9950'  
 WELL OPERATOR CORE APPALACHIA OPERATING, LLC DESIGNATED AGENT JESSICA GREATHOUSE  
 ADDRESS 414 SUMMERS STREET; CHARLESTON, WV 25301 ADDRESS 414 SUMMERS STREET; CHARLESTON, WV 25301

COUNTY NAME MINGO PERMIT 02265





FILE NO. \_\_\_\_\_  
 DRAWING NO. GSE1088\_20H  
 SCALE 1" = 100'  
 MINIMUM DEGREE OF ACCURACY 1/200  
 PROVEN SOURCE OF ELEVATION GPS

(SIGNED) \_\_\_\_\_  
 DEWEY L. BOCOCK, JR.  
 R.P.E. 6778 L.L.S. 1024

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENERGY.

DEWEY L. BOCOCK, JR.  
 LICENSED PROFESSIONAL SURVEYOR  
 STATE OF WEST VIRGINIA  
 No. 1024  
 BOCOCK, JR.

STATE OF WEST VIRGINIA  
 DIVISION OF ENVIRONMENTAL PROTECTION  
 SECTION OF OIL & GAS

WELL TYPE: OIL GAS X LIQUID INJECTION WASTE DISPOSAL  
 (IF "GAS") PRODUCTION X STORAGE DEEP SHALLOW  
 LOCATION: ELEVATION 844.47 WATER SHED LEFT FORK OF BIG BRANCH  
 DISTRICT HARDEE COUNTY MINGO

QUADRANGLE NAUGLACK NAD 27 COORDINATES LAT: 37.829189 LONG: -82.325142  
 SURFACE OWNER NIGHBERT LAND COMPANY ACREAGE 1971  
 OIL & GAS ROYALTY OWNER NIGHBERT LAND COMPANY LEASE NO. 102481  
 COAL OWNER NIGHBERT LAND COMPANY

PROPOSED WORK: DRILL X CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION PERFORATE NEW  
 FORMATION OTHER PHYSICAL CHANGE IN WELL (SPECIFY) **AS-DRILLED**

PLUG AND ABANDON CLEAN OUT AND REPLUG  
 TARGET FORMATION DEVONIAN SHALE ESTIMATED DEPTH TOTAL VERTICAL DEPTH - 3480' \ MEASURED DEPTH - 9950'  
 WELL OPERATOR CORE APALACHIA OPERATING, L.L.C. DESIGNATED AGENT JESSICA GREATHOUSE  
 ADDRESS 414 SUMMERS STREET; CHARLESTON, WV 25301 ADDRESS 414 SUMMERS STREET; CHARLESTON, WV 25301

COUNTY NAME MINGO PERMIT 02562  
 DATE: OCTOBER 09, 2018  
 OPERATOR'S WELL NO. 828038  
 API WELL NO. 47  
 WASTE DISPOSAL STATE COUNTY PERMIT 02562