



Mason & Tackett No. 519
Lincoln County, WV
Noah Horn 294 Rig

December 11, 2021

RECEIVED
Office of Oil and Gas

JAN 21 2021

WV Department of
Environmental Protection

Survey Certification Report



December 11, 2021



Operator Name: HG Energy
Well Name: Mason & Tackett No. 519
County/Parish: Lincoln County,
State: WV
Rig Name: Noah Horn 294
Job Number: LWW3163721

This is to certify the surveys performed on the referenced well by Professional Directional Ent., Inc. are true and correct MWD Surveys, data provided as follows:

<u>Surveyor</u>	<u>Surveyed Depths</u>	<u>Projection to Bit</u>	<u>Dates Performed</u>	<u>Type of Survey</u>
ProDirectional	596' MD – 2,756' MD	2,811' MD	12/07/21 – 12/08/21	MWD

Sincerely,

Mike Coats
Regulatory Specialist
Professional Directional

850 Conroe Park West Drive | Conroe, TX 77303 | Phone: 936.441.7266

prodirectional.com

HG Energy LLC
Lincoln County, West Virginia UTM
Mason/Tackett/Fowler
Mason & Tackett #519
Prelim D - Mason & Tackett #519



Universal Transverse Mercator
NAD83 West Virginia - HARN
GRS 1980
Zone 17N (84 W to 78 W)
Mean Sea Level

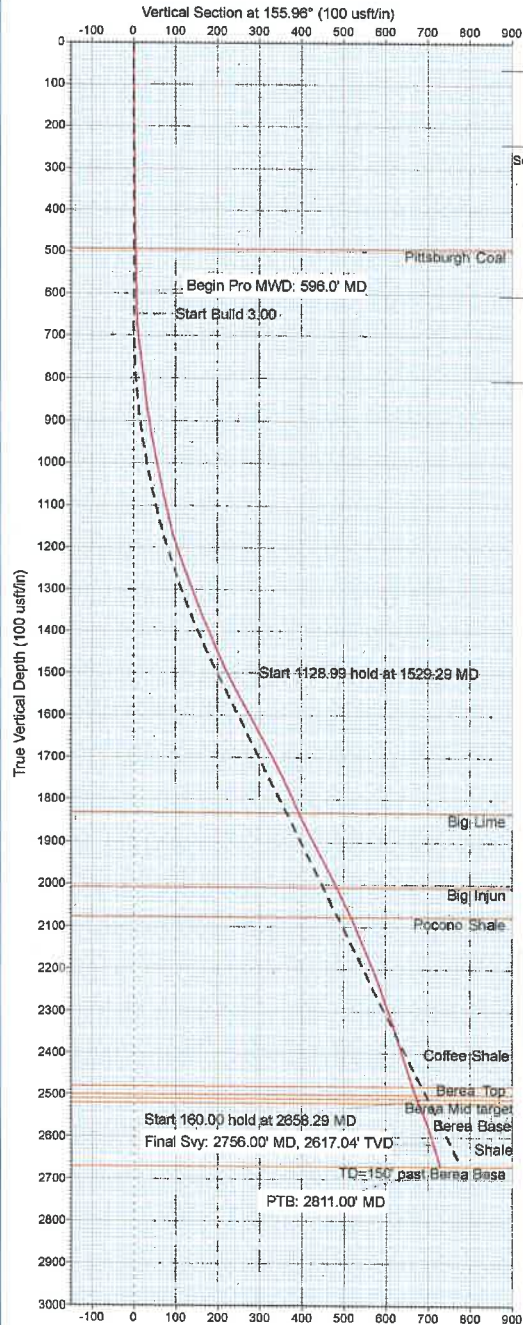


Azimuths to Grid North
True North: 0.60°
Magnetic North: -7.97°

Magnetic Field
Strength: 5120.43nT
Dip Angle: 65.33°
Date: 12/25/2021
Model: HDGM

Azimuth Corrections

Total Magnetic Corr. (M to G): Subtract 7.97°



36" x 48"

RKB Elevation: 1006+8=KB @ 1014.00usft

+N-S	+E-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	13888079.00	1363645.60	38.241907	-81.964014	

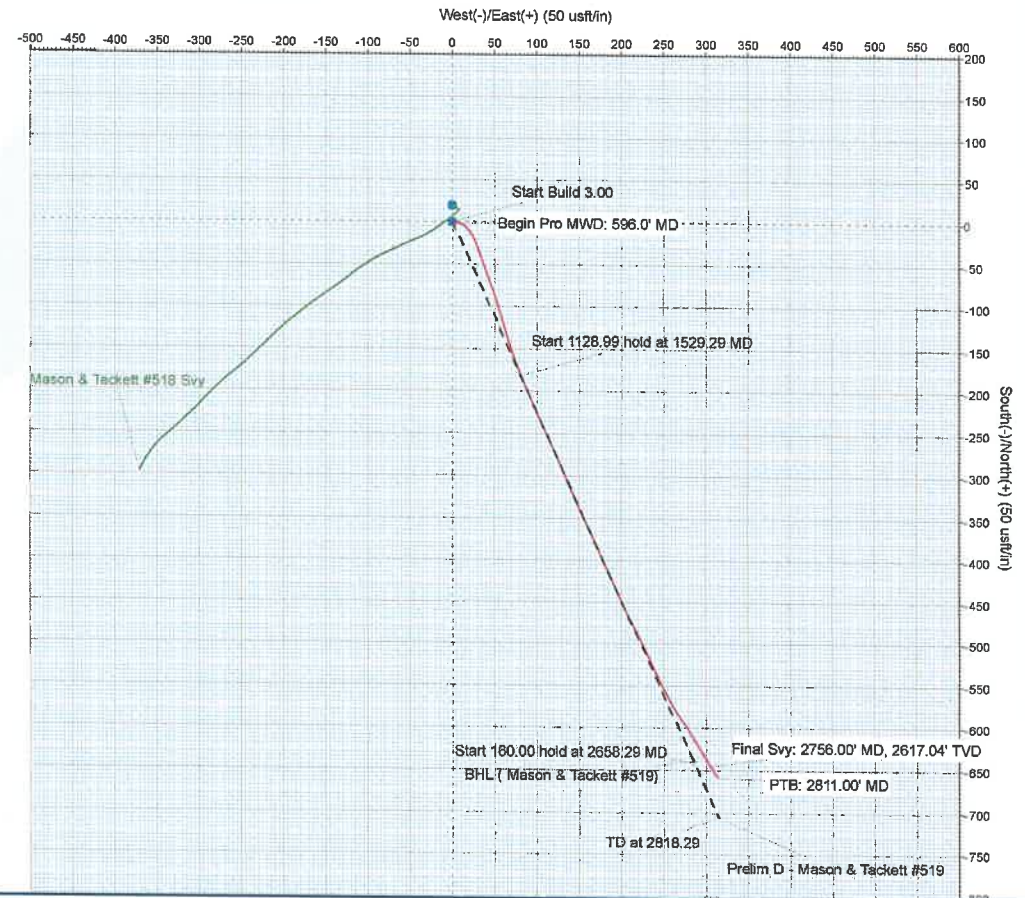
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	650.00	0.00	0.00	650.00	0.00	0.00	0.00	0.00	0.00
3	1529.29	26.38	155.96	1498.56	-181.91	81.02	3.00	155.96	198.86
4	2658.29	26.38	155.96	2510.00	-639.70	285.40	0.00	0.00	700.48
5	2818.29	26.38	155.96	2653.34	-704.62	314.37	0.00	0.00	771.57

Targets

Name	TVD	+N-S	+E-W	Northing	Easting
BHL (Mason & Tackett #519)	2670.00	-639.70	285.40	13887439.30	1363991.00

Formations		Casing	
TVDPath	MDPath	Formation	
494.00	494.00	Pittsburgh Coal	TVD 560.00 MD 560.00
1833.00	1902.61	Big Lime	Name 7" Size 7
2007.00	2096.83	Big Injun	
2077.00	2174.97	Poccono Shale	
2480.00	2624.80	Coffee Shale	
2500.00	2647.13	Berea Top	
2510.00	2658.29	Berea Mid target	
2520.00	2669.45	Berea Base	
2520.00	2669.45	Shale	



Final Svy: 2756.00' MD, 2617.04' TVD
PTB: 2811.00' MD
TD at 2818.29
Prelim D - Mason & Tackett #519

ProDirectional Survey Report

Company: HG Energy LLC
Project: Lincoln County, West Virginia UTM83
Site: Mason/Tackett/Fowler
Well: Mason & Tackett #519
Wellbore: OH - Mason & Tackett #519
Design: Surveys - Mason & Tackett #519

Local Co-ordinate Reference: Well Mason & Tackett #519
TVD Reference: 1006+8=KB @ 1014.00usft
MD Reference: 1006+8=KB @ 1014.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Project Lincoln County, West Virginia UTM83
Map System: Universal Transverse Mercator (US Survey Feet) **System Datum:** Mean Sea Level
Geo Datum: NAD83 West Virginia - HARN
Map Zone: Zone 17N (84 W to 78 W)

Site Mason/Tackett/Fowler
Site Position: **Northing:** 13,883,128.40 usft **Latitude:** 38.228441
From: Map **Easting:** 1,368,294.51 usft **Longitude:** -81.947647
Position Uncertainty: 0.00 usft **Slot Radius:** 13-3/16 " **Grid Convergence:** -0.59 °

Well Mason & Tackett #519
Well Position **+N/-S** 0.00 usft **Northing:** 13,888,079.00 usft **Latitude:** 38.241907
 +E/-W 0.00 usft **Easting:** 1,363,645.60 usft **Longitude:** -81.964014
Position Uncertainty 0.00 usft **Wellhead Elevation:** usft **Ground Level:** 1,006.00 usft

Wellbore OH - Mason & Tackett #519

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/25/2021	-8.58	65.32	51,216.10

Design Surveys - Mason & Tackett #519
Audit Notes:
Version: 1.0 **Phase:** ACTUAL **Tie On Depth:** 0.00
Vertical Section: **Depth From (TVD)** **+N/-S** **+E/-W** **Direction**
 (usft) (usft) (usft) (°)
 0.00 0.00 0.00 155.96

Survey Program **Date** 12/9/2021

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
596.00	2,811.00	Survey #1 - Mason & Tackett #519 (OH - M	ProMWD	MWD - Standard

ProDirectional Survey Report

Company: HG Energy LLC
Project: Lincoln County, West Virginia UTM83
Site: Mason/Tackett/Fowler
Well: Mason & Tackett #519
Wellbore: OH - Mason & Tackett #519
Design: Surveys - Mason & Tackett #519

Local Co-ordinate Reference: Well Mason & Tackett #519
TVD Reference: 1006+8=KB @ 1014.00usft
MD Reference: 1006+8=KB @ 1014.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey													
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13,888,079.00	1,363,645.60			
596.00	2.05	100.11	595.87	5.99	-1.87	10.50	10.66	100.11	13,888,077.13	1,363,656.10			
Begin Pro MWD: 596.0' MD													
626.00	2.11	100.42	625.85	6.60	-2.07	11.57	11.75	100.12	13,888,076.93	1,363,657.17			
656.00	3.05	124.65	655.82	7.59	-2.62	12.77	13.03	101.59	13,888,076.38	1,363,658.37			
686.00	5.27	136.33	685.74	9.57	-4.07	14.37	14.94	105.81	13,888,074.93	1,363,659.97			
716.00	7.35	137.65	715.56	12.69	-6.48	16.62	17.84	111.32	13,888,072.52	1,363,662.22			
746.00	7.88	137.95	745.29	16.47	-9.43	19.29	21.47	116.05	13,888,069.57	1,363,664.89			
776.00	8.06	146.71	775.01	20.50	-12.72	21.82	25.26	120.23	13,888,066.28	1,363,667.42			
806.00	7.62	149.17	804.73	24.55	-16.18	23.99	28.94	123.99	13,888,062.82	1,363,669.59			
836.00	6.94	150.77	834.48	28.33	-19.47	25.90	32.40	126.94	13,888,059.53	1,363,671.50			
866.00	7.50	157.24	864.25	32.10	-22.86	27.54	35.79	129.69	13,888,056.14	1,363,673.14			
896.00	8.94	159.89	893.94	36.38	-26.85	29.10	39.60	132.70	13,888,052.15	1,363,674.70			
926.00	9.85	160.09	923.53	41.26	-31.45	30.78	44.01	135.62	13,888,047.55	1,363,676.38			
956.00	11.08	159.75	953.04	46.70	-36.57	32.65	49.02	138.24	13,888,042.43	1,363,678.25			
986.00	11.52	160.21	982.45	52.56	-42.09	34.66	54.53	140.53	13,888,036.91	1,363,680.26			
1,016.00	11.30	160.65	1,011.86	58.48	-47.69	36.65	60.14	142.46	13,888,031.31	1,363,682.25			
1,046.00	11.88	160.16	1,041.25	64.49	-53.36	38.67	65.90	144.07	13,888,025.64	1,363,684.27			
1,076.00	12.64	161.11	1,070.56	70.84	-59.38	40.78	72.03	145.52	13,888,019.62	1,363,686.38			
1,106.00	12.51	159.84	1,099.84	77.35	-65.53	42.96	78.36	146.75	13,888,013.47	1,363,688.56			
1,136.00	13.22	159.91	1,129.09	84.01	-71.80	45.26	84.88	147.77	13,888,007.20	1,363,690.86			
1,166.00	15.52	160.54	1,158.15	91.44	-78.81	47.78	92.16	148.77	13,888,000.19	1,363,693.38			
1,196.00	17.58	162.21	1,186.91	99.94	-86.91	50.50	100.51	149.84	13,887,992.09	1,363,696.10			
1,226.00	18.90	163.12	1,215.40	109.27	-95.87	53.29	109.69	150.93	13,887,983.13	1,363,698.89			
1,256.00	20.44	162.97	1,243.65	119.29	-105.53	56.24	119.58	151.95	13,887,973.47	1,363,701.84			
1,286.00	20.53	163.22	1,271.75	129.71	-115.58	59.29	129.90	152.84	13,887,963.42	1,363,704.89			
1,316.00	20.63	163.39	1,299.84	140.16	-125.68	62.32	140.28	153.62	13,887,953.32	1,363,707.92			

ProDirectional Survey Report

Company: HG Energy LLC
Project: Lincoln County, West Virginia UTM83
Site: Mason/Tackett/Fowler
Well: Mason & Tackett #519
Wellbore: OH - Mason & Tackett #519
Design: Surveys - Mason & Tackett #519

Local Co-ordinate Reference: Well Mason & Tackett #519
TVD Reference: 1006+8=KB @ 1014.00usft
MD Reference: 1006+8=KB @ 1014.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)
1,346.00	21.40	162.10	1,327.84	150.85	-135.95	65.51	150.91	154.27	13,887,943.05	1,363,711.11
1,376.00	21.55	162.76	1,355.76	161.76	-146.42	68.83	161.79	154.82	13,887,932.58	1,363,714.43
1,406.00	21.73	160.98	1,383.64	172.76	-156.93	72.27	172.78	155.27	13,887,922.07	1,363,717.87
1,436.00	22.56	159.18	1,411.43	184.04	-167.56	76.13	184.05	155.57	13,887,911.44	1,363,721.73
1,466.00	22.97	158.23	1,439.09	195.64	-178.38	80.34	195.64	155.75	13,887,900.62	1,363,725.94
1,496.00	24.36	157.44	1,466.57	207.67	-189.53	84.89	207.67	155.87	13,887,889.47	1,363,730.49
1,526.00	25.96	156.27	1,493.72	220.42	-201.25	89.91	220.42	155.93	13,887,877.75	1,363,735.51
1,556.00	27.50	155.76	1,520.52	233.92	-213.58	95.39	233.92	155.93	13,887,865.42	1,363,740.99
1,586.00	27.98	156.36	1,547.07	247.88	-226.34	101.06	247.88	155.94	13,887,852.66	1,363,746.66
1,616.00	28.38	155.66	1,573.51	262.05	-239.29	106.82	262.05	155.94	13,887,839.71	1,363,752.42
1,646.00	28.99	155.77	1,599.83	276.45	-252.41	112.74	276.45	155.93	13,887,826.59	1,363,758.34
1,676.00	28.74	155.89	1,626.10	290.93	-265.63	118.67	290.93	155.93	13,887,813.37	1,363,764.27
1,706.00	28.60	156.19	1,652.43	305.32	-278.78	124.52	305.32	155.93	13,887,800.22	1,363,770.12
1,736.00	28.75	156.54	1,678.75	319.72	-291.97	130.29	319.72	155.95	13,887,787.03	1,363,775.89
1,766.00	28.07	157.42	1,705.13	333.99	-305.10	135.87	333.99	156.00	13,887,773.90	1,363,781.47
1,796.00	26.33	156.49	1,731.81	347.70	-317.72	141.23	347.70	156.03	13,887,761.28	1,363,786.83
1,826.00	24.94	155.38	1,758.86	360.67	-329.57	146.52	360.67	156.03	13,887,749.43	1,363,792.12
1,856.00	23.86	154.80	1,786.18	373.07	-340.81	151.74	373.07	156.00	13,887,738.19	1,363,797.34
1,886.00	23.57	154.24	1,813.65	385.13	-351.70	156.93	385.13	155.95	13,887,727.30	1,363,802.53
1,916.00	25.59	155.21	1,840.93	397.60	-362.99	162.26	397.60	155.92	13,887,716.01	1,363,807.86
1,946.00	27.15	156.98	1,867.81	410.93	-375.17	167.65	410.93	155.92	13,887,703.83	1,363,813.25
1,976.00	27.65	156.26	1,894.44	424.73	-387.84	173.13	424.73	155.94	13,887,691.16	1,363,818.73
2,006.00	28.13	155.96	1,920.96	438.76	-400.67	178.81	438.76	155.95	13,887,678.33	1,363,824.41
2,036.00	28.55	156.11	1,947.36	453.00	-413.69	184.60	453.00	155.95	13,887,665.31	1,363,830.20
2,066.00	27.56	156.49	1,973.83	467.11	-426.61	190.27	467.11	155.96	13,887,652.39	1,363,835.87
2,096.00	26.54	154.99	2,000.55	480.76	-439.05	195.87	480.76	155.96	13,887,639.95	1,363,841.47
2,126.00	25.83	155.08	2,027.47	493.99	-451.05	201.46	493.99	155.93	13,887,627.95	1,363,847.06

ProDirectional Survey Report

Company: HG Energy LLC	Local Co-ordinate Reference: Well Mason & Tackett #519
Project: Lincoln County, West Virginia UTM83	TVD Reference: 1006+8=KB @ 1014.00usft
Site: Mason/Tackett/Fowler	MD Reference: 1006+8=KB @ 1014.00usft
Well: Mason & Tackett #519	North Reference: Grid
Wellbore: OH - Mason & Tackett #519	Survey Calculation Method: Minimum Curvature
Design: Surveys - Mason & Tackett #519	Database: WellPlanner1

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	Northing (usft)	Easting (usft)	
2,156.00	25.53	154.53	2,054.51	506.99	-462.81	206.99	506.99	155.90	13,887,616.19	1,363,852.59	
2,186.00	24.38	154.08	2,081.71	519.64	-474.22	212.48	519.64	155.86	13,887,604.78	1,363,858.08	
2,216.00	22.85	153.72	2,109.20	531.65	-485.01	217.76	531.65	155.82	13,887,593.99	1,363,863.36	
2,246.00	22.26	153.38	2,136.90	543.15	-495.31	222.89	543.15	155.77	13,887,583.69	1,363,868.49	
2,276.00	22.62	154.55	2,164.63	554.59	-505.60	227.91	554.60	155.74	13,887,573.40	1,363,873.51	
2,306.00	22.23	156.27	2,192.36	566.03	-516.01	232.68	566.04	155.73	13,887,562.99	1,363,878.28	
2,336.00	21.13	157.16	2,220.24	577.12	-526.18	237.06	577.12	155.75	13,887,552.82	1,363,882.66	
2,366.00	20.08	154.66	2,248.32	587.67	-535.82	241.36	587.67	155.75	13,887,543.18	1,363,886.96	
2,396.00	19.63	152.48	2,276.54	597.85	-544.95	245.90	597.85	155.71	13,887,534.05	1,363,891.50	
2,426.00	19.08	150.60	2,304.84	607.76	-553.69	250.63	607.77	155.65	13,887,525.31	1,363,896.23	
2,456.00	18.24	151.57	2,333.26	617.32	-562.09	255.27	617.34	155.57	13,887,516.91	1,363,900.87	
2,486.00	17.68	152.21	2,361.80	626.55	-570.25	259.63	626.57	155.52	13,887,508.75	1,363,905.23	
2,516.00	17.41	149.64	2,390.41	635.56	-578.15	264.03	635.58	155.46	13,887,500.85	1,363,909.63	
2,546.00	17.42	145.23	2,419.03	644.43	-585.71	268.85	644.47	155.34	13,887,493.29	1,363,914.45	
2,576.00	17.49	145.47	2,447.65	653.28	-593.11	273.97	653.33	155.21	13,887,485.89	1,363,919.57	
2,606.00	19.04	148.91	2,476.14	662.57	-601.02	279.05	662.64	155.09	13,887,477.98	1,363,924.65	
2,636.00	21.08	149.79	2,504.32	672.79	-609.87	284.30	672.88	155.01	13,887,469.13	1,363,929.90	
2,666.00	21.63	148.99	2,532.26	683.64	-619.27	289.86	683.75	154.92	13,887,459.73	1,363,935.46	
2,696.00	20.56	148.37	2,560.25	694.35	-628.50	295.47	694.49	154.82	13,887,450.50	1,363,941.07	
2,726.00	18.75	147.39	2,588.50	704.34	-637.05	300.83	704.51	154.72	13,887,441.95	1,363,946.43	
2,756.00	17.10	147.14	2,617.04	713.47	-644.81	305.82	713.66	154.63	13,887,434.19	1,363,951.42	
Final Svy: 2756.00' MD, 2617.04' TVD											
2,811.00	17.10	147.14	2,669.61	729.45	-658.40	314.60	729.70	154.46	13,887,420.60	1,363,960.20	
PTB: 2811.00' MD											

ProDirectional Survey Report

Company: HG Energy LLC	Local Co-ordinate Reference: Well Mason & Tackett #519
Project: Lincoln County, West Virginia UTM83	TVD Reference: 1006+8=KB @ 1014.00usft
Site: Mason/Tackett/Fowler	MD Reference: 1006+8=KB @ 1014.00usft
Well: Mason & Tackett #519	North Reference: Grid
Wellbore: OH - Mason & Tackett #519	Survey Calculation Method: Minimum Curvature
Design: Surveys - Mason & Tackett #519	Database: WellPlanner1

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
596.00	595.87	-1.87	10.50	Begin Pro MWD: 596.0' MD
2,756.00	2,617.04	-644.81	305.82	Final Svy: 2756.00' MD, 2617.04' TVD
2,811.00	2,669.61	-658.40	314.60	PTB: 2811.00' MD

ProDirectional Survey Report

Company: HG Energy LLC	Local Co-ordinate Reference: Well Mason & Tackett #519
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Wellbore: OH - Mason & Tackett #519	Survey Calculation Method: Minimum Curvature
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Project Lincoln County, West Virginia UTM83			
Map System: Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level	
Geo Datum: NAD83 West Virginia - HARN			
Map Zone: Zone 17N (84 W to 78 W)			

Site Mason/Tackett/Fowler				
Site Position:	Northing:	4,231,586.00 m	Latitude:	38° 13' 42.388 N
From: Map	Easting:	417,057.00 m	Longitude:	81° 56' 51.529 W
Position Uncertainty: 0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-0.59 °

Well Mason & Tackett #519				
Well Position	+N/-S	0.0 ft	Northing:	4,233,094.95 m
	+E/-W	0.0 ft	Easting:	415,640.01 m
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft
			Latitude:	38° 14' 30.865 N
			Longitude:	81° 57' 50.450 W
			Ground Level:	1,006.0 ft

Wellbore OH - Mason & Tackett #519					
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	HDGM	12/25/2021	(°) -8.58	(°) 65.32	(nT) 51,216.10000000

Design Surveys - Mason & Tackett #519				
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	155.96

Survey Program Date 12/9/2021				
From	To	Survey (Wellbore)	Tool Name	Description
(ft)	(ft)			
596.0	2,811.0	Survey #1 - Mason & Tackett #519 (OH - M)	ProMWD	MWD - Standard

ProDirectional Survey Report

Company: HG Energy LLC
Project: Lincoln County, West Virginia UTM83
Site: Mason/Tackett/Fowler
Well: Mason & Tackett #519
Wellbore: OH - Mason & Tackett #519
Design: Surveys - Mason & Tackett #519

Local Co-ordinate Reference: Well Mason & Tackett #519
TVD Reference: 1006+8=KB @ 1014.0ft
MD Reference: 1006+8=KB @ 1014.0ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Survey													
MD (ft)	Inc (°)	Azi (azimuth) (°)		TVD (ft)	V. Sec (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)	Northing (m)	Easting (m)		
0.0	0.00	0.00	0.00	0.0	0.0	0.0	0.0	0.0	0.00	4,233,094.95	415,640.01		
596.0	2.05	100.11		595.9	6.0	-1.9	10.5	10.7	100.11	4,233,094.37	415,643.21		
Begin Pro MWD: 596.0' MD													
626.0	2.11	100.42		625.9	6.6	-2.1	11.6	11.7	100.12	4,233,094.32	415,643.54		
656.0	3.05	124.65		655.8	7.6	-2.6	12.8	13.0	101.59	4,233,094.15	415,643.90		
686.0	5.27	136.33		685.7	9.6	-4.1	14.4	14.9	105.81	4,233,093.70	415,644.39		
716.0	7.35	137.65		715.6	12.7	-6.5	16.6	17.8	111.32	4,233,092.97	415,645.08		
746.0	7.88	137.95		745.3	16.5	-9.4	19.3	21.5	116.05	4,233,092.07	415,645.89		
776.0	8.06	146.71		775.0	20.5	-12.7	21.8	25.3	120.23	4,233,091.07	415,646.66		
806.0	7.62	149.17		804.7	24.6	-16.2	24.0	28.9	123.99	4,233,090.01	415,647.32		
836.0	6.94	150.77		834.5	28.3	-19.5	25.9	32.4	126.94	4,233,089.01	415,647.90		
866.0	7.50	157.24		864.2	32.1	-22.9	27.5	35.8	129.69	4,233,087.98	415,648.40		
896.0	8.94	159.89		893.9	36.4	-26.9	29.1	39.6	132.70	4,233,086.76	415,648.88		
926.0	9.85	160.09		923.5	41.3	-31.5	30.8	44.0	135.62	4,233,085.36	415,649.39		
956.0	11.08	159.75		953.0	46.7	-36.6	32.6	49.0	138.24	4,233,083.80	415,649.96		
986.0	11.52	160.21		982.5	52.6	-42.1	34.7	54.5	140.53	4,233,082.11	415,650.57		
1,016.0	11.30	160.65		1,011.9	58.5	-47.7	36.6	60.1	142.46	4,233,080.41	415,651.18		
1,046.0	11.88	160.16		1,041.3	64.5	-53.4	38.7	65.9	144.07	4,233,078.68	415,651.80		
1,076.0	12.64	161.11		1,070.6	70.8	-59.4	40.8	72.0	145.52	4,233,076.85	415,652.44		
1,106.0	12.51	159.84		1,099.8	77.3	-65.5	43.0	78.4	146.75	4,233,074.97	415,653.11		
1,136.0	13.22	159.91		1,129.1	84.0	-71.8	45.3	84.9	147.77	4,233,073.06	415,653.81		
1,166.0	15.52	160.54		1,158.2	91.4	-78.8	47.8	92.2	148.77	4,233,070.92	415,654.57		
1,196.0	17.58	162.21		1,186.9	99.9	-86.9	50.5	100.5	149.84	4,233,068.46	415,655.40		
1,226.0	18.90	163.12		1,215.4	109.3	-95.9	53.3	109.7	150.93	4,233,065.72	415,656.25		
1,256.0	20.44	162.97		1,243.6	119.3	-105.5	56.2	119.6	151.95	4,233,062.78	415,657.15		
1,286.0	20.53	163.22		1,271.8	129.7	-115.6	59.3	129.9	152.84	4,233,059.72	415,658.08		
1,316.0	20.63	163.39		1,299.8	140.2	-125.7	62.3	140.3	153.62	4,233,056.64	415,659.01		

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Survey												
MD (ft)	Inc (°)	Azi (azimuth) (°)		TVD (ft)	V. Sec (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)	Northing (m)	Easting (m)	
1,346.0	21.40	162.10	162.10	1,327.8	150.8	-136.0	65.5	150.9	154.27	4,233,053.51	415,659.98	
1,376.0	21.55	162.76	162.76	1,355.8	161.8	-146.4	68.8	161.8	154.82	4,233,050.32	415,660.99	
1,406.0	21.73	160.98	160.98	1,383.6	172.8	-156.9	72.3	172.8	155.27	4,233,047.11	415,662.04	
1,436.0	22.56	159.18	159.18	1,411.4	184.0	-167.6	76.1	184.0	155.57	4,233,043.87	415,663.21	
1,466.0	22.97	158.23	158.23	1,439.1	195.6	-178.4	80.3	195.6	155.75	4,233,040.58	415,664.50	
1,496.0	24.36	157.44	157.44	1,466.6	207.7	-189.5	84.9	207.7	155.87	4,233,037.18	415,665.88	
1,526.0	25.96	156.27	156.27	1,493.7	220.4	-201.3	89.9	220.4	155.93	4,233,033.60	415,667.41	
1,556.0	27.50	155.76	155.76	1,520.5	233.9	-213.6	95.4	233.9	155.93	4,233,029.85	415,669.09	
1,586.0	27.98	156.36	156.36	1,547.1	247.9	-226.3	101.1	247.9	155.94	4,233,025.96	415,670.81	
1,616.0	28.38	155.66	155.66	1,573.5	262.0	-239.3	106.8	262.0	155.94	4,233,022.01	415,672.57	
1,646.0	28.99	155.77	155.77	1,599.8	276.4	-252.4	112.7	276.4	155.93	4,233,018.01	415,674.37	
1,676.0	28.74	155.89	155.89	1,626.1	290.9	-265.6	118.7	290.9	155.93	4,233,013.98	415,676.18	
1,706.0	28.60	156.19	156.19	1,652.4	305.3	-278.8	124.5	305.3	155.93	4,233,009.97	415,677.96	
1,736.0	28.75	156.54	156.54	1,678.7	319.7	-292.0	130.3	319.7	155.95	4,233,005.95	415,679.72	
1,766.0	28.07	157.42	157.42	1,705.1	334.0	-305.1	135.9	334.0	156.00	4,233,001.95	415,681.42	
1,796.0	26.33	156.49	156.49	1,731.8	347.7	-317.7	141.2	347.7	156.03	4,232,998.10	415,683.06	
1,826.0	24.94	155.38	155.38	1,758.9	360.7	-329.6	146.5	360.7	156.03	4,232,994.49	415,684.67	
1,856.0	23.86	154.80	154.80	1,786.2	373.1	-340.8	151.7	373.1	156.00	4,232,991.07	415,686.26	
1,886.0	23.57	154.24	154.24	1,813.7	385.1	-351.7	156.9	385.1	155.95	4,232,987.75	415,687.84	
1,916.0	25.59	155.21	155.21	1,840.9	397.6	-363.0	162.3	397.6	155.92	4,232,984.31	415,689.47	
1,946.0	27.15	156.98	156.98	1,867.8	410.9	-375.2	167.6	410.9	155.92	4,232,980.59	415,691.11	
1,976.0	27.65	156.26	156.26	1,894.4	424.7	-387.8	173.1	424.7	155.94	4,232,976.73	415,692.78	
2,006.0	28.13	155.96	155.96	1,921.0	438.8	-400.7	178.8	438.8	155.95	4,232,972.82	415,694.51	
2,036.0	28.55	156.11	156.11	1,947.4	453.0	-413.7	184.6	453.0	155.95	4,232,968.85	415,696.28	
2,066.0	27.56	156.49	156.49	1,973.8	467.1	-426.6	190.3	467.1	155.96	4,232,964.92	415,698.00	
2,096.0	26.54	154.99	154.99	2,000.6	480.8	-439.0	195.9	480.8	155.96	4,232,961.12	415,699.71	
2,126.0	25.83	155.08	155.08	2,027.5	494.0	-451.0	201.5	494.0	155.93	4,232,957.47	415,701.41	

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Survey												
MD (ft)	Inc (°)	Azi (azimuth) (°)		TVD (ft)	V. Sec (ft)	N/S (ft)	E/W (ft)	Closure Distance (ft)	Closure Azimuth (°)	Northing (m)	Easting (m)	
2,156.0	25.53	154.53	154.53	2,054.5	507.0	-462.8	207.0	507.0	155.90	4,232,953.88	415,703.10	
2,186.0	24.38	154.08	154.08	2,081.7	519.6	-474.2	212.5	519.6	155.86	4,232,950.40	415,704.77	
2,216.0	22.85	153.72	153.72	2,109.2	531.7	-485.0	217.8	531.7	155.82	4,232,947.11	415,706.38	
2,246.0	22.26	153.38	153.38	2,136.9	543.1	-495.3	222.9	543.2	155.77	4,232,943.97	415,707.95	
2,276.0	22.62	154.55	154.55	2,164.6	554.6	-505.6	227.9	554.6	155.74	4,232,940.84	415,709.48	
2,306.0	22.23	156.27	156.27	2,192.4	566.0	-516.0	232.7	566.0	155.73	4,232,937.67	415,710.93	
2,336.0	21.13	157.16	157.16	2,220.2	577.1	-526.2	237.1	577.1	155.75	4,232,934.56	415,712.27	
2,366.0	20.08	154.66	154.66	2,248.3	587.7	-535.8	241.4	587.7	155.75	4,232,931.63	415,713.58	
2,396.0	19.63	152.48	152.48	2,276.5	597.9	-544.9	245.9	597.9	155.71	4,232,928.85	415,714.96	
2,426.0	19.08	150.60	150.60	2,304.8	607.8	-553.7	250.6	607.8	155.65	4,232,926.18	415,716.40	
2,456.0	18.24	151.57	151.57	2,333.3	617.3	-562.1	255.3	617.3	155.57	4,232,923.62	415,717.82	
2,486.0	17.68	152.21	152.21	2,361.8	626.6	-570.2	259.6	626.6	155.52	4,232,921.13	415,719.15	
2,516.0	17.41	149.64	149.64	2,390.4	635.6	-578.2	264.0	635.6	155.46	4,232,918.73	415,720.49	
2,546.0	17.42	145.23	145.23	2,419.0	644.4	-585.7	268.9	644.5	155.34	4,232,916.42	415,721.96	
2,576.0	17.49	145.47	145.47	2,447.7	653.3	-593.1	274.0	653.3	155.21	4,232,914.16	415,723.52	
2,606.0	19.04	148.91	148.91	2,476.1	662.6	-601.0	279.1	662.6	155.09	4,232,911.75	415,725.07	
2,636.0	21.08	149.79	149.79	2,504.3	672.8	-609.9	284.3	672.9	155.01	4,232,909.06	415,726.66	
2,666.0	21.63	148.99	148.99	2,532.3	683.6	-619.3	289.9	683.8	154.92	4,232,906.19	415,728.36	
2,696.0	20.56	148.37	148.37	2,560.3	694.4	-628.5	295.5	694.5	154.82	4,232,903.38	415,730.07	
2,726.0	18.75	147.39	147.39	2,588.5	704.3	-637.0	300.8	704.5	154.72	4,232,900.77	415,731.70	
2,756.0	17.10	147.14	147.14	2,617.0	713.5	-644.8	305.8	713.7	154.63	4,232,898.41	415,733.23	
Final Svy: 2756.00' MD, 2617.04' TVD												
2,811.0	17.10	147.14	147.14	2,669.6	729.5	-658.4	314.6	729.7	154.46	4,232,894.27	415,735.90	
PTB: 2811.00' MD												

ProDirectional Survey Report

Company: HG Energy LLC	Local Co-ordinate Reference: Well Mason & Tackett #519
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Well: Mason & Tackett #519	North Reference: Grid
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Design: Surveys - Mason & Tackett #519	Database: WellPlanner1

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
596.0	595.9	-1.9	10.5	Begin Pro MWD: 596.0' MD
2,756.0	2,617.0	-644.8	305.8	Final Svy: 2756.00' MD, 2617.04' TVD
2,811.0	2,669.6	-658.4	314.6	PTB: 2811.00' MD