

MOUNTAINEER KEYSTONE, LLC

Location: Barbour County, WV
 Field: Barbour County
 Facility: Mackey Wolfe Pad

Slot: Slot #03
 Well: Mackey-Wolfe No. 203
 Wellbore: Mackey-Wolfe No. 203 PWB

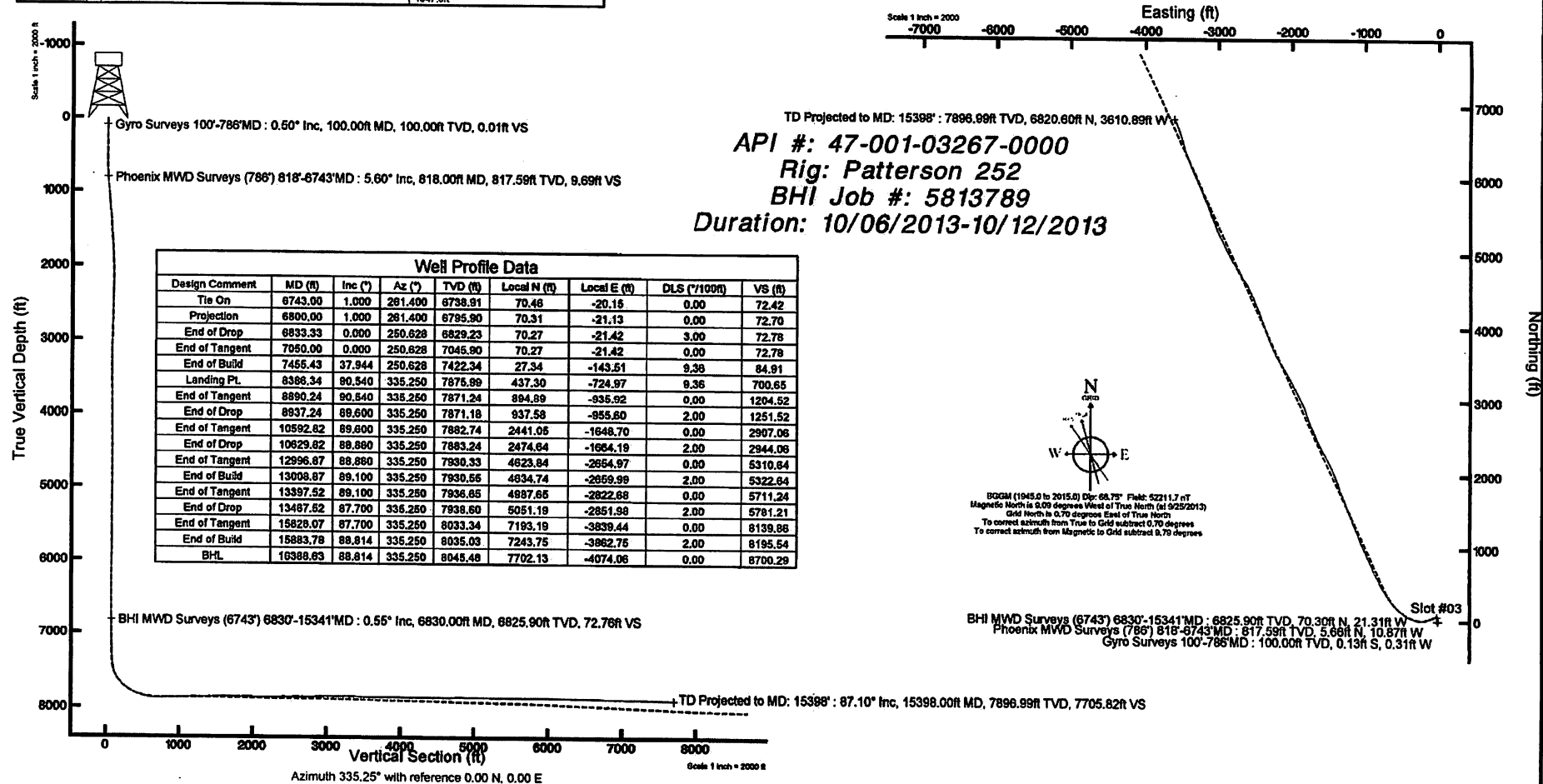


Plot reference wellpath is Mackey-Wolfe No. 203 PWP Rev-B.0	
True vertical depths are referenced to Patterson 252 (RT)	Grid System: NAD83 / UTM Zone 17 North, US feet
Measured depths are referenced to Patterson 252 (RT)	North Reference: Grid north
Patterson 252 (RT) to Mean Sea Level: 1647.6 feet	Scale: True distance
Mean Sea Level to Mud line (At Slot Slot #03): -1624 feet	Depths are in feet
Coordinates are in feet referenced to Slot	Created by: stawdenk on 10/16/2013

Targets								
Name	MD (ft)	TVD (ft)	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Mackey-Wolfe #203 LP Plat		785.90	437.30	-724.97	105489.44	1429209.41	39°15'24.041"N	79°53'20.649"W
Mackey-Wolfe #203 LP Row-1	8386.34	7876.99	437.30	-724.97	105489.44	1429209.41	39°15'24.041"N	79°53'20.649"W
Mackey-Wolfe #203 BHL Plat		8045.48	7702.13	-4074.06	1051931.31	1429209.15	39°16'36.242"W	79°54'02.299"W
Mackey-Wolfe #203 BHL Row-1	16388.63	8045.48	7702.13	-4074.06	1051931.31	1429209.15	39°16'36.242"W	79°54'02.299"W

Location Information						
Facility Name	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude		
Mackey Wolfe Pad	1955598.000	14257564.880	39°15'18.492"N	79°53'12.034"W		
Slot	Local N (ft)	Local E (ft)	Grid East (US ft)	Grid North (US ft)	Latitude	Longitude
Slot #03	14.36	26.21	1955594.199	14257560.236	39°15'19.831"N	79°53'11.699"W
Patterson 252 (RT) to Mud line (At Slot Slot #03)					23.6ft	
Mean Sea Level to Mud line (At Slot Slot #03)					-1624ft	
Patterson 252 (RT) to Mean Sea Level					1647.6ft	

Well Data			
Slot	Well	Wellbore	Wellpath
Slot #03	Mackey-Wolfe No. 203	Mackey-Wolfe No. 203 PWB	Mackey-Wolfe No. 203 PWP Rev-B.0
Slot #03	Mackey-Wolfe No. 203	Mackey-Wolfe No. 203(AWB)	Mackey-Wolfe No. 203(AWP) Proj: 15398*



Actual Wellpath Report
 Mackey-Wolfe No. 203(AWP) Proj: 15398
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REFERENCE WELLPATH IDENTIFICATION			
Operator	MOUNTAINEER KEYSTONE, LLC	Slot	Slot #03
Area	Barbour County, WV	Well	Mackey-Wolfe No. 203
Field	Barbour County	Wellbore	Mackey-Wolfe No. 203(AWB)
Facility	Mackey Wolfe Pad		

REPORT SETUP INFORMATION			
Projection System	NAD83 / UTM Zone 17 North, US feet	Software System	WellArchitect@ 4.0.1
North Reference	Grid	User	Stewdenk
Scale	0.999714	Report Generated	10/15/2013 at 10:50:40 AM
Converge at slot	0.70° East	Database/Source file	Well Architect Eastern/Mackey-Wolfe No. 203_AWB.xml

WELLPATH LOCATION					
Local coordinates		Grid coordinates		Geographic coordinates	
North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
14.36	26.21	1955594.20	14257569.24	39°15'19.631"N	79°53'11.699"W
		1955568.00	14257554.88	39°15'19.492"N	79°53'12.034"W
Facility Reference Pt				0°00'00.000"	85°29'19.478"W
Field Reference Pt					
Slot Location					

WELLPATH DATUM			
Calculation method	Minimum curvature	Patterson 252 (RT) to Facility Vertical Datum	23.60ft
Horizontal Reference Pt	Slot	Patterson 252 (RT) to Mean Sea Level	1647.60ft
Vertical Reference Pt	Patterson 252 (RT)	Patterson 252 (RT) to Mud Line at Slot (Slot #03)	23.60ft
MD Reference Pt	Patterson 252 (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	335.25°

Actual Wellpath Report

Mackey-Wolfe No. 203(AWP) Proj: 15398'
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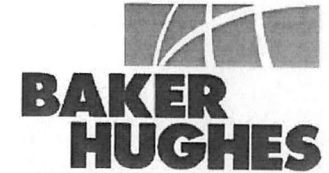


REFERENCE WELLPATH IDENTIFICATION			
Operator	MOUNTAINEER KEYSTONE, LLC	Slot	Slot #03
Area	Barbour County, WV	Well	Mackey-Wolfe No. 203
Field	Barbour County	Wellbore	Mackey-Wolfe No. 203(AWB)
Facility	Mackey Wolfe Pad		

WELLPATH DATA (194 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	247.200	0.00	0.00	0.00	0.00	1955594.20	14257569.24	39°15'19.631"N	79°53'11.699"W	0.00	0.000	0.00	0.00	0.00
23.60	0.000	247.200	23.60	0.00	0.00	0.00	1955594.20	14257569.24	39°15'19.631"N	79°53'11.699"W	0.00	0.000	0.00	0.00	0.00
100.00	0.500	247.200	100.00	0.01	-0.13	-0.31	1955593.89	14257569.11	39°15'19.630"N	79°53'11.703"W	0.33	247.200	0.65	0.65	0.00
200.00	0.500	255.900	200.00	0.11	-0.40	-1.13	1955593.07	14257568.83	39°15'19.627"N	79°53'11.713"W	1.20	250.345	0.08	0.00	8.70
300.00	0.700	256.000	299.99	0.30	-0.66	-2.15	1955592.05	14257568.58	39°15'19.625"N	79°53'11.726"W	2.25	252.958	0.20	0.20	0.10
400.00	0.900	250.100	399.98	0.48	-1.07	-3.48	1955590.72	14257568.16	39°15'19.621"N	79°53'11.743"W	3.64	252.852	0.22	0.20	-5.90
500.00	1.100	251.400	499.96	0.65	-1.65	-5.13	1955589.07	14257567.59	39°15'19.615"N	79°53'11.764"W	5.39	252.192	0.20	0.20	1.30
600.00	1.600	256.800	599.94	1.03	-2.27	-7.40	1955586.80	14257566.96	39°15'19.609"N	79°53'11.793"W	7.74	252.924	0.52	0.50	5.40
660.00	2.100	260.500	659.91	1.49	-2.64	-9.30	1955584.90	14257566.59	39°15'19.606"N	79°53'11.818"W	9.67	254.119	0.86	0.83	6.17
692.00	2.000	313.000	691.89	2.16	-2.36	-10.28	1955583.92	14257566.88	39°15'19.609"N	79°53'11.830"W	10.55	257.070	5.67	-0.31	164.06
755.00	3.800	355.500	754.81	5.14	0.47	-11.25	1955582.95	14257569.71	39°15'19.637"N	79°53'11.842"W	11.26	272.395	4.27	2.86	67.46
786.00	4.800	4.200	785.72	7.24	2.79	-11.24	1955582.97	14257572.02	39°15'19.660"N	79°53'11.841"W	11.58	283.936	3.84	3.23	28.06
818.00	5.600	9.800	817.59	9.69	5.66	-10.87	1955583.33	14257574.90	39°15'19.688"N	79°53'11.836"W	12.26	297.508	2.96	2.50	17.50
912.00	6.500	1.300	911.07	18.25	15.50	-9.97	1955584.23	14257584.73	39°15'19.785"N	79°53'11.823"W	18.43	327.247	1.35	0.96	-9.04
1007.00	5.800	358.000	1005.52	27.51	25.67	-10.02	1955584.18	14257594.90	39°15'19.886"N	79°53'11.822"W	27.56	338.686	0.83	-0.74	-3.47
1102.00	5.100	352.100	1100.09	35.98	34.65	-10.77	1955583.44	14257603.88	39°15'19.975"N	79°53'11.830"W	36.29	342.743	0.94	-0.74	-6.21
1196.00	5.000	346.900	1193.73	43.99	42.78	-12.27	1955581.93	14257612.01	39°15'20.055"N	79°53'11.848"W	44.51	344.000	0.50	-0.11	-5.53
1290.00	5.600	339.800	1287.33	52.57	51.08	-14.78	1955579.42	14257620.30	39°15'20.138"N	79°53'11.879"W	53.17	343.861	0.94	0.64	-7.55
1385.00	4.400	336.500	1381.96	60.84	58.77	-17.83	1955576.37	14257627.99	39°15'20.214"N	79°53'11.917"W	61.42	343.119	1.30	-1.26	-3.47
1417.00	3.800	337.000	1413.88	63.12	60.87	-18.74	1955575.47	14257630.09	39°15'20.235"N	79°53'11.928"W	63.69	342.890	1.88	-1.88	1.56
1448.00	3.300	332.800	1444.82	65.04	62.61	-19.55	1955574.66	14257631.83	39°15'20.252"N	79°53'11.938"W	65.59	342.662	1.82	-1.61	-13.55
1480.00	3.400	334.200	1476.77	66.91	64.28	-20.38	1955573.82	14257633.50	39°15'20.269"N	79°53'11.948"W	67.44	342.409	0.40	0.31	4.38
1543.00	3.300	331.800	1539.66	70.59	67.56	-22.05	1955572.15	14257636.78	39°15'20.301"N	79°53'11.969"W	71.07	341.925	0.27	-0.16	-3.81
1575.00	3.200	330.400	1571.61	72.40	69.15	-22.93	1955571.28	14257638.37	39°15'20.317"N	79°53'11.980"W	72.85	341.657	0.40	-0.31	-4.38
1669.00	2.200	322.700	1665.50	76.77	72.87	-25.32	1955568.89	14257642.08	39°15'20.354"N	79°53'12.009"W	77.14	340.841	1.13	-1.06	-8.19
1764.00	1.900	332.200	1760.44	80.13	75.71	-27.16	1955567.05	14257644.93	39°15'20.383"N	79°53'12.032"W	80.43	340.268	0.48	-0.32	10.00
1854.00	1.700	321.900	1850.40	82.91	78.08	-28.68	1955565.53	14257647.30	39°15'20.406"N	79°53'12.051"W	83.18	339.834	0.42	-0.22	-11.44
1884.00	1.400	322.600	1880.39	83.71	78.72	-29.17	1955565.03	14257647.94	39°15'20.413"N	79°53'12.058"W	83.95	339.667	1.00	-1.00	2.33
2039.00	1.600	315.600	2035.33	87.59	81.77	-31.84	1955562.37	14257650.99	39°15'20.443"N	79°53'12.091"W	87.75	338.728	0.17	0.13	-4.52
2134.00	0.400	38.500	2130.32	88.99	82.98	-32.56	1955561.65	14257652.19	39°15'20.455"N	79°53'12.100"W	89.14	338.577	1.68	-1.26	87.26

Actual Wellpath Report

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Operator	MOUNTAINEER KEYSTONE, LLC	Slot	Slot #03
Area	Barbour County, WV	Well	Mackey-Wolfe No. 203
Field	Barbour County	Wellbore	Mackey-Wolfe No. 203(AWB)
Facility	Mackey Wolfe Pad		

WELLPATH DATA (194 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]
2228.00	1.700	145.700	2224.31	87.76	82.09	-31.57	1955562.64	14257651.30	39°15'20.446"N	79°53'12.087"W	87.95	338.964	1.98	1.38	114.04
2323.00	1.600	141.400	2319.27	85.08	79.89	-29.95	1955564.26	14257649.10	39°15'20.424"N	79°53'12.067"W	85.31	339.450	0.17	-0.11	-4.53
2417.00	1.500	138.600	2413.23	82.63	77.94	-28.31	1955565.89	14257647.15	39°15'20.405"N	79°53'12.047"W	82.92	340.034	0.13	-0.11	-2.98
2511.00	1.000	165.800	2507.21	80.65	76.22	-27.30	1955566.91	14257645.43	39°15'20.388"N	79°53'12.034"W	80.96	340.294	0.81	-0.53	28.94
2606.00	0.900	144.200	2602.20	79.10	74.81	-26.66	1955567.55	14257644.02	39°15'20.374"N	79°53'12.026"W	79.42	340.386	0.39	-0.11	-22.74
2700.00	0.800	115.000	2696.19	77.87	73.93	-25.63	1955568.57	14257643.15	39°15'20.365"N	79°53'12.013"W	78.25	340.878	0.47	-0.11	-31.06
2795.00	1.800	123.100	2791.16	76.10	72.84	-23.78	1955570.42	14257642.05	39°15'20.354"N	79°53'11.990"W	76.62	341.918	1.07	1.05	8.53
2889.00	1.300	112.500	2885.13	74.07	71.62	-21.56	1955572.64	14257640.84	39°15'20.341"N	79°53'11.962"W	74.80	343.247	0.61	-0.53	-11.28
2983.00	1.100	105.200	2979.11	72.71	70.98	-19.70	1955574.50	14257640.20	39°15'20.335"N	79°53'11.938"W	73.66	344.485	0.27	-0.21	-7.77
3078.00	1.100	94.800	3074.09	71.67	70.66	-17.92	1955576.29	14257639.88	39°15'20.332"N	79°53'11.916"W	72.90	345.773	0.21	0.00	-10.95
3173.00	0.800	86.500	3169.08	70.98	70.63	-16.35	1955577.86	14257639.84	39°15'20.331"N	79°53'11.896"W	72.50	346.970	0.35	-0.32	-8.74
3268.00	0.800	66.200	3264.07	70.73	70.94	-15.08	1955579.13	14257640.15	39°15'20.334"N	79°53'11.880"W	72.52	348.001	0.30	0.00	-21.37
3362.00	0.800	46.600	3358.06	70.93	71.65	-14.00	1955580.20	14257640.87	39°15'20.341"N	79°53'11.866"W	73.01	348.945	0.29	0.00	-20.85
3457.00	0.600	45.400	3453.05	71.31	72.46	-13.16	1955581.04	14257641.67	39°15'20.349"N	79°53'11.855"W	73.64	349.704	0.21	-0.21	-1.26
3552.00	0.400	49.000	3548.05	71.57	73.02	-12.56	1955581.64	14257642.24	39°15'20.354"N	79°53'11.847"W	74.10	350.242	0.21	-0.21	3.79
3646.00	0.300	36.500	3642.05	71.78	73.44	-12.16	1955582.04	14257642.65	39°15'20.358"N	79°53'11.842"W	74.44	350.595	0.13	-0.11	-13.30
3741.00	0.400	328.100	3737.05	72.23	73.92	-12.19	1955582.01	14257643.13	39°15'20.363"N	79°53'11.842"W	74.92	350.634	0.42	0.11	-72.00
3836.00	0.600	296.900	3832.04	72.95	74.43	-12.81	1955581.39	14257643.64	39°15'20.368"N	79°53'11.850"W	75.52	350.233	0.35	0.21	-32.84
3931.00	0.700	299.900	3927.04	73.82	74.94	-13.76	1955580.45	14257644.15	39°15'20.373"N	79°53'11.862"W	76.19	349.597	0.11	0.11	3.16
4025.00	0.800	283.900	4021.03	74.69	75.38	-14.89	1955579.31	14257644.60	39°15'20.378"N	79°53'11.877"W	76.84	348.825	0.25	0.11	-17.02
4120.00	0.900	275.100	4116.02	75.48	75.61	-16.28	1955577.92	14257644.82	39°15'20.380"N	79°53'11.894"W	77.34	347.849	0.17	0.11	-9.26
4214.00	0.700	269.100	4210.01	76.08	75.67	-17.59	1955576.62	14257644.88	39°15'20.381"N	79°53'11.911"W	77.68	346.914	0.23	-0.21	-6.38
4309.00	0.900	268.200	4305.00	76.60	75.63	-18.91	1955575.29	14257644.85	39°15'20.381"N	79°53'11.928"W	77.96	345.959	0.21	0.21	-0.95
4403.00	0.000	255.200	4399.00	76.89	75.61	-19.65	1955574.55	14257644.82	39°15'20.381"N	79°53'11.937"W	78.12	345.430	0.96	-0.96	0.00
4497.00	0.300	248.100	4492.99	76.90	75.52	-19.88	1955574.32	14257644.73	39°15'20.380"N	79°53'11.940"W	78.09	345.251	0.32	0.32	0.00
4591.00	0.400	276.200	4586.99	77.09	75.46	-20.44	1955573.77	14257644.68	39°15'20.379"N	79°53'11.947"W	78.18	344.848	0.21	0.11	29.89
4686.00	0.700	267.100	4681.99	77.47	75.47	-21.34	1955572.86	14257644.68	39°15'20.379"N	79°53'11.959"W	78.43	344.208	0.33	0.32	-9.58
4781.00	0.100	125.300	4776.99	77.62	75.39	-21.86	1955572.35	14257644.61	39°15'20.379"N	79°53'11.965"W	78.50	343.833	0.82	-0.63	-149.26
4875.00	0.200	112.000	4870.99	77.43	75.28	-21.64	1955572.57	14257644.50	39°15'20.378"N	79°53'11.962"W	78.33	343.964	0.11	0.11	-14.15
4970.00	0.200	174.100	4965.99	77.15	75.05	-21.47	1955572.74	14257644.27	39°15'20.375"N	79°53'11.960"W	78.06	344.039	0.22	0.00	65.37



**BAKER
HUGHES**

Actual Wellpath Report

Mackey-Wolfe No. 203(AWP) Proj: 15398

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REFERENCE WELLPATH IDENTIFICATION

Operator	MOUNTAINEER KEYSTONE, LLC	Slot	Slot #03
Area	Barbour County, WV	Well	Mackey-Wolfe No. 203
Field	Barbour County	Wellbore	Mackey-Wolfe No. 203(AWB)
Facility	Mackey Wolfe Pad		

WELLPATH DATA (194 stations)

MD	Inclination	Azimuth	TVD	Vert Sect	North	East	Grid East	Grid North	Latitude	Longitude	Closure Dist	Closure Dir	DLS	Build Rate	Turn Rate
[ft]	[°]	[°]	[ft]	[ft]	[ft]	[ft]	[US ft]	[US ft]			[ft]	[°]	[%/100ft]	[%/100ft]	[°/100ft]
5064.00	0.800	86.800	5059.98	76.75	74.93	-20.79	1955573.41	14257644.14	39°15'20.374"N	79°53'11.952"W	77.76	344.489	0.87	0.64	-92.87
5158.00	0.400	101.800	5153.98	76.32	74.90	-19.82	1955574.39	14257644.11	39°15'20.374"N	79°53'11.939"W	77.48	345.179	0.45	-0.43	15.96
5252.00	0.100	273.200	5247.98	76.16	74.84	-19.58	1955574.63	14257644.05	39°15'20.373"N	79°53'11.936"W	77.35	345.339	0.53	-0.32	182.34
5347.00	0.200	195.800	5342.98	76.07	74.68	-19.71	1955574.50	14257643.90	39°15'20.371"N	79°53'11.938"W	77.24	345.218	0.21	0.11	-81.47
5441.00	0.600	135.800	5436.97	75.48	74.17	-19.41	1955574.80	14257643.38	39°15'20.366"N	79°53'11.934"W	76.67	345.336	0.56	0.43	-63.83
5535.00	0.800	117.200	5530.97	74.50	73.52	-18.48	1955575.72	14257642.73	39°15'20.360"N	79°53'11.922"W	75.80	345.889	0.32	0.21	-19.79
5630.00	0.400	120.900	5625.96	73.71	73.04	-17.61	1955576.60	14257642.26	39°15'20.355"N	79°53'11.911"W	75.14	346.447	0.42	-0.42	3.89
5725.00	0.400	264.400	5720.96	73.54	72.84	-17.65	1955576.55	14257642.06	39°15'20.353"N	79°53'11.912"W	74.95	346.377	0.80	0.00	151.05
5820.00	0.800	84.200	5815.96	73.43	72.88	-17.32	1955576.88	14257642.09	39°15'20.353"N	79°53'11.908"W	74.91	346.629	1.26	0.42	189.26
5914.00	0.700	93.500	5909.95	72.95	72.91	-16.10	1955578.11	14257642.12	39°15'20.353"N	79°53'11.892"W	74.66	347.550	0.17	-0.11	9.89
6009.00	0.200	128.100	6004.95	72.53	72.77	-15.39	1955578.82	14257641.98	39°15'20.352"N	79°53'11.883"W	74.38	348.061	0.58	-0.53	36.42
6104.00	0.400	109.500	6099.95	72.15	72.56	-14.94	1955579.26	14257641.77	39°15'20.350"N	79°53'11.878"W	74.08	348.362	0.23	0.21	-19.58
6198.00	0.200	232.600	6193.95	71.88	72.35	-14.77	1955579.44	14257641.56	39°15'20.348"N	79°53'11.875"W	73.84	348.465	0.57	-0.21	130.96
6293.00	0.300	250.400	6288.94	71.87	72.16	-15.13	1955579.07	14257641.38	39°15'20.346"N	79°53'11.880"W	73.73	348.158	0.13	0.11	18.74
6388.00	0.600	260.900	6383.94	72.03	72.00	-15.86	1955578.35	14257641.22	39°15'20.344"N	79°53'11.889"W	73.73	347.580	0.33	0.32	11.05
6482.00	0.600	242.200	6477.94	72.13	71.69	-16.78	1955577.43	14257640.91	39°15'20.342"N	79°53'11.901"W	73.63	346.828	0.21	0.00	-19.89
6576.00	0.800	248.900	6571.93	72.14	71.22	-17.82	1955576.38	14257640.43	39°15'20.337"N	79°53'11.914"W	73.42	345.951	0.23	0.21	6.28
6671.00	0.800	248.900	6666.92	72.21	70.73	-19.06	1955575.15	14257639.95	39°15'20.332"N	79°53'11.930"W	73.25	344.922	0.01	0.00	0.84
6743.00	1.000	261.400	6738.91	72.42	70.46	-20.15	1955574.06	14257639.67	39°15'20.330"N	79°53'11.944"W	73.28	344.043	0.39	0.28	17.36
6830.00	0.550	263.660	6825.90	72.76	70.30	-21.31	1955572.89	14257639.51	39°15'20.328"N	79°53'11.959"W	73.46	343.134	0.52	-0.52	2.60
6924.00	0.130	258.430	6919.90	72.93	70.23	-21.86	1955572.34	14257639.44	39°15'20.328"N	79°53'11.966"W	73.55	342.706	0.45	-0.45	-5.56
7018.00	3.700	256.980	7013.83	73.57	69.52	-24.93	1955569.28	14257638.74	39°15'20.321"N	79°53'12.005"W	73.86	340.276	3.80	3.80	-1.54
7065.00	8.760	257.840	7060.54	74.66	68.43	-29.90	1955564.30	14257637.64	39°15'20.311"N	79°53'12.068"W	74.68	336.393	10.77	10.77	1.83
7113.00	13.910	256.690	7107.59	76.60	66.33	-39.10	1955555.11	14257635.54	39°15'20.291"N	79°53'12.186"W	76.99	329.481	10.74	10.73	-2.40
7161.00	15.840	256.940	7153.98	79.07	63.52	-51.10	1955543.12	14257632.74	39°15'20.265"N	79°53'12.339"W	81.52	321.186	4.02	4.02	0.52
7208.00	17.360	252.250	7199.02	81.23	59.93	-64.02	1955530.19	14257629.15	39°15'20.231"N	79°53'12.503"W	87.70	313.108	4.31	3.23	-9.98
7302.00	23.190	248.410	7287.16	83.96	48.83	-94.62	1955499.61	14257618.06	39°15'20.125"N	79°53'13.894"W	106.48	297.300	6.36	6.20	-4.09
7349.00	26.480	251.340	7329.81	85.58	42.07	-113.15	1955481.08	14257611.30	39°15'20.061"N	79°53'13.131"W	120.72	290.397	7.47	7.00	6.23
7396.00	30.090	248.340	7371.19	87.33	34.37	-134.04	1955460.20	14257603.60	39°15'19.987"N	79°53'13.398"W	138.38	284.382	8.25	7.68	-6.38
7444.00	34.560	251.650	7411.75	89.50	25.64	-158.16	1955436.09	14257594.87	39°15'19.904"N	79°53'13.705"W	160.22	279.208	10.01	9.31	6.90



**BAKER
HUGHES**

Actual Wellpath Report

Mackey-Wolfe No. 203(AWP) Proj: 15398

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REFERENCE WELLPATH IDENTIFICATION

Operator	MOUNTAINEER KEYSTONE, LLC	Slot	Slot #03
Area	Barbour County, WV	Well	Mackey-Wolfe No. 203
Field	Barbour County	Wellbore	Mackey-Wolfe No. 203(AWB)
Facility	Mackey Wolfe Pad		

WELLPATH DATA (194 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]
7491.00	37.960	256.360	7449.65	93.77	18.03	-184.87	1955409.38	14257587.26	39°15'19.832"N	79°53'14.046"W	185.75	275.570	9.35	7.23	10.02
7537.00	38.210	262.460	7485.87	100.71	12.82	-212.74	1955381.53	14257582.06	39°15'19.784"N	79°53'14.401"W	213.12	273.450	8.20	0.54	13.26
7586.00	38.160	270.340	7524.41	111.62	10.92	-242.91	1955321.80	14257582.11	39°15'19.768"N	79°53'15.161"W	243.16	272.575	9.94	-0.10	16.08
7633.00	40.120	277.080	7560.87	125.77	12.88	-272.48	1955288.45	14257589.81	39°15'19.872"N	79°53'15.584"W	306.53	273.849	15.42	4.79	22.21
7685.00	42.610	288.630	7599.96	146.73	20.58	-305.84	1955288.45	14257589.81	39°15'19.872"N	79°53'15.584"W	306.53	273.849	15.42	4.79	22.21
7727.00	44.010	294.060	7630.53	167.48	31.07	-332.64	1955261.65	14257600.30	39°15'19.978"N	79°53'15.923"W	334.09	275.337	9.47	3.33	12.93
7776.00	47.350	295.190	7664.76	194.09	45.69	-364.50	1955229.80	14257614.91	39°15'20.127"N	79°53'16.325"W	367.35	277.144	7.01	6.82	2.31
7824.00	50.650	296.320	7696.24	222.05	61.43	-397.12	1955197.19	14257630.65	39°15'20.286"N	79°53'16.737"W	401.84	278.794	7.10	6.87	2.35
7871.00	53.290	301.890	7725.21	251.94	79.46	-429.43	1955164.90	14257648.67	39°15'20.468"N	79°53'17.145"W	436.72	280.483	10.89	5.62	11.85
7916.00	56.520	306.690	7751.09	283.51	100.21	-459.81	1955134.52	14257669.42	39°15'20.677"N	79°53'17.528"W	470.60	282.295	11.30	7.18	10.67
7967.00	61.310	310.920	7777.42	322.61	127.60	-493.80	1955100.54	14257696.80	39°15'20.952"N	79°53'17.956"W	510.02	284.488	11.77	9.39	8.29
8012.00	64.280	312.490	7797.99	359.30	154.22	-523.67	1955070.68	14257723.42	39°15'21.219"N	79°53'18.332"W	545.91	286.410	7.29	6.60	3.49
8061.00	67.980	314.490	7817.82	400.91	185.06	-556.16	1955038.20	14257754.25	39°15'21.527"N	79°53'18.740"W	586.14	288.405	8.42	7.55	4.08
8108.00	71.200	317.730	7834.21	442.51	216.81	-586.68	1955007.69	14257785.98	39°15'21.845"N	79°53'19.123"W	625.46	290.282	9.42	6.85	6.89
8155.00	73.590	322.450	7848.44	485.74	251.16	-615.40	1954978.97	14257820.33	39°15'22.188"N	79°53'19.483"W	664.68	292.202	10.84	5.09	10.04
8200.00	76.800	321.560	7859.93	528.08	285.44	-642.18	1954952.20	14257854.60	39°15'22.530"N	79°53'19.818"W	702.76	293.965	7.39	7.13	-1.98
8248.00	81.160	326.570	7869.11	574.28	323.58	-669.81	1954924.59	14257892.72	39°15'22.910"N	79°53'20.163"W	743.87	295.785	13.69	9.08	10.44
8295.00	83.830	328.440	7875.25	620.44	362.88	-694.83	1954899.57	14257932.01	39°15'23.302"N	79°53'20.475"W	783.88	297.576	6.92	5.68	3.98
8344.00	87.750	327.930	7878.85	668.93	404.39	-720.59	1954873.82	14257973.51	39°15'23.715"N	79°53'20.796"W	826.31	299.301	8.07	8.00	-1.04
8383.00	90.550	326.670	7879.43	707.55	437.20	-741.66	1954852.76	14258006.32	39°15'24.042"N	79°53'21.059"W	860.93	300.519	7.87	7.18	-3.23
8439.00	91.510	330.060	7878.42	763.12	484.87	-771.02	1954823.40	14258053.96	39°15'24.516"N	79°53'21.424"W	910.81	302.164	6.29	1.71	6.05
8483.00	91.320	333.390	7877.33	807.02	523.60	-791.85	1954802.58	14258092.69	39°15'24.902"N	79°53'21.683"W	949.31	303.474	7.58	-0.43	7.57
8533.00	91.420	335.100	7876.14	857.00	568.62	-813.57	1954780.86	14258137.69	39°15'25.349"N	79°53'21.952"W	992.59	304.950	3.42	0.20	3.42
8581.00	90.650	333.090	7875.27	904.98	611.79	-834.54	1954759.90	14258180.85	39°15'25.778"N	79°53'22.212"W	1034.76	306.245	4.48	-1.60	-4.19
8628.00	90.310	333.180	7874.88	951.94	653.71	-855.78	1954738.67	14258222.76	39°15'26.195"N	79°53'22.475"W	1076.89	307.376	0.75	-0.72	0.19
8671.00	91.820	335.970	7874.08	994.93	692.54	-874.23	1954720.22	14258261.57	39°15'26.581"N	79°53'22.704"W	1115.30	308.385	7.38	3.51	6.49
8722.00	91.820	336.660	7872.46	1045.89	739.22	-894.71	1954699.75	14258308.24	39°15'27.045"N	79°53'22.957"W	1160.58	309.564	1.35	0.00	1.35
8767.00	91.630	335.010	7871.10	1090.87	780.25	-913.12	1954681.34	14258349.26	39°15'27.453"N	79°53'23.185"W	1201.08	310.514	3.69	-0.42	-3.67
8818.00	91.020	336.650	7869.92	1141.85	826.77	-934.00	1954660.47	14258395.77	39°15'27.915"N	79°53'23.443"W	1247.35	311.515	3.43	-1.20	3.22
8865.00	90.520	334.750	7869.29	1188.84	869.60	-953.33	1954641.14	14258438.58	39°15'28.341"N	79°53'23.682"W	1290.37	312.370	4.18	-1.06	-4.04



Actual Wellpath Report

Mackey-Wolfe No. 203(AWP) Proj: 15398

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REFERENCE WELLPATH IDENTIFICATION

Operator	MOUNTAINEER KEYSTONE, LLC
Area	Barbour County, WV
Field	Barbour County
Facility	Mackey Wolfe Pad
Well	Mackey-Wolfe No. 203
Slot	Slot #03

WELLPATH DATA (194 stations)

MD [ft]	Inclination [°]	Azimuth [ft]	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]
8911.00	91.760	336.240	7868.38	1234.83	911.44	-972.41	1954622.07	14258480.42	39°15'28.75"N	79°53'23.91"W	1332.78	313.146	4.21	2.70	3.24
8959.00	91.110	334.440	7867.17	1282.81	955.05	-992.43	1954602.06	14258524.01	39°15'29.190"N	79°53'24.166"W	1377.33	313.900	3.99	-1.35	-3.75
9004.00	91.050	334.910	7866.32	1327.80	995.72	-1011.67	1954582.82	14258564.67	39°15'29.594"N	79°53'24.404"W	1419.49	314.545	1.05	-0.13	1.04
9050.00	90.310	335.000	7865.78	1373.80	1037.39	-1031.15	1954563.35	14258606.33	39°15'30.009"N	79°53'24.645"W	1462.68	315.173	1.62	-1.61	0.20
9098.00	90.090	334.930	7865.61	1421.80	1080.88	-1051.46	1954543.04	14258649.81	39°15'30.441"N	79°53'24.896"W	1507.93	315.791	0.48	-0.46	-0.15
9098.00	90.090	334.930	7865.61	1421.80	1080.88	-1051.46	1954543.04	14258649.81	39°15'30.441"N	79°53'24.896"W	1507.93	315.791	0.48	-0.46	-0.15
9194.00	92.220	341.220	7863.67	1517.61	1169.87	-1087.28	1954507.23	14258738.77	39°15'31.325"N	79°53'25.338"W	1597.11	317.096	6.92	2.22	6.55
9290.00	89.690	337.440	7862.07	1613.33	1259.65	-1121.15	1954473.37	14258828.53	39°15'32.216"N	79°53'25.755"W	1668.33	318.329	4.74	-2.64	-3.94
9385.00	89.570	337.770	7862.69	1708.24	1347.49	-1157.35	1954437.19	14258916.33	39°15'33.088"N	79°53'26.201"W	1776.28	319.341	0.37	-0.13	0.35
9478.00	90.340	341.200	7862.76	1800.98	1434.57	-1189.93	1954404.61	14259003.40	39°15'33.953"N	79°53'26.602"W	1863.85	320.325	3.78	0.83	3.69
9572.00	91.080	338.910	7861.60	1894.63	1610.96	-1221.99	1954372.56	14259091.72	39°15'34.830"N	79°53'26.995"W	1952.58	321.256	2.56	0.79	-2.44
9667.00	88.120	337.010	7862.26	1989.51	1512.92	-1257.63	1954336.93	14259179.74	39°15'35.704"N	79°53'27.435"W	2043.73	322.022	3.70	-3.12	-2.00
9761.00	89.940	338.290	7863.85	2083.41	1697.88	-1293.37	1954301.20	14259266.63	39°15'36.568"N	79°53'27.876"W	2134.39	322.701	2.37	1.94	1.36
9858.00	90.150	337.810	7863.77	2180.29	1787.85	-1329.63	1954264.95	14259356.57	39°15'37.461"N	79°53'28.323"W	2228.08	323.362	0.54	0.22	-0.49
9950.00	90.490	341.660	7863.26	2271.99	1874.14	-1361.49	1954233.10	14259442.84	39°15'38.318"N	79°53'28.714"W	2316.47	324.003	4.20	0.37	4.18
10045.00	90.430	339.740	7862.50	2366.55	1963.79	-1392.89	1954201.72	14259532.46	39°15'39.208"N	79°53'29.099"W	2407.62	324.653	2.02	-0.06	-2.02
10140.00	89.750	337.320	7862.35	2461.39	2052.20	-1427.65	1954166.96	14259620.84	39°15'40.086"N	79°53'29.527"W	2499.94	325.175	2.65	-0.72	-2.55
10235.00	90.370	334.530	7862.25	2556.37	2138.92	-1466.40	1954128.22	14259707.54	39°15'40.947"N	79°53'30.007"W	2593.32	325.566	3.01	0.65	-2.94
10328.00	89.940	331.250	7862.00	2649.28	2221.69	-1508.78	1954085.86	14259790.29	39°15'41.771"N	79°53'30.532"W	2685.58	325.819	3.56	-0.46	-3.53
10425.00	91.140	331.210	7861.08	2746.04	2306.71	-1555.46	1954039.19	14259875.29	39°15'42.617"N	79°53'31.113"W	2782.15	326.007	1.24	1.24	-0.04
10519.00	91.020	332.650	7859.31	2839.86	2389.64	-1599.68	1953994.98	14259958.19	39°15'43.441"N	79°53'31.662"W	2875.65	326.201	1.54	-0.13	1.53
10614.00	91.390	335.010	7857.31	2934.80	2474.88	-1641.57	1953953.10	14260043.40	39°15'44.289"N	79°53'32.181"W	2969.81	326.444	2.51	0.39	2.48
10710.00	90.090	337.700	7856.07	3030.76	2562.80	-1680.06	1953914.62	14260131.30	39°15'45.162"N	79°53'32.657"W	3064.40	326.753	3.11	-1.35	2.80
10804.00	89.780	335.260	7856.18	3124.74	2648.98	-1717.57	1953877.12	14260217.46	39°15'46.019"N	79°53'33.120"W	3157.08	327.041	2.62	-0.33	-2.60
10898.00	90.370	337.420	7856.06	3218.71	2735.08	-1755.29	1953839.41	14260303.52	39°15'46.874"N	79°53'33.586"W	3249.88	327.309	2.38	0.63	2.30
10993.00	90.490	341.120	7855.34	3313.46	2823.91	-1788.91	1953805.80	14260392.33	39°15'47.756"N	79°53'34.000"W	3342.85	327.646	3.90	0.13	3.89
11088.00	88.710	337.470	7856.01	3408.20	2912.75	-1822.49	1953772.23	14260481.15	39°15'48.638"N	79°53'34.413"W	3435.93	327.966	4.27	-1.87	-3.84
11131.00	88.650	333.790	7857.00	3451.18	2951.90	-1840.23	1953754.50	14260520.29	39°15'49.027"N	79°53'34.633"W	3478.53	328.060	8.56	-0.14	-8.56
11182.00	87.690	333.870	7858.63	3502.14	2997.65	-1862.71	1953732.03	14260566.02	39°15'49.482"N	79°53'34.911"W	3529.25	328.144	1.89	-1.88	0.16
11227.00	87.970	335.570	7860.33	3547.10	3038.31	-1881.91	1953712.83	14260606.67	39°15'49.886"N	79°53'35.149"W	3573.92	328.226	3.83	0.62	3.78
11277.00	89.850	333.440	7861.28	3597.08	3083.43	-1903.43	1953691.32	14260651.78	39°15'50.335"N	79°53'35.416"W	3623.61	328.313	5.68	3.76	-4.26

Actual Wellpath Report

Mackey-Wolfe No. 203(AWP) Proj: 15398'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	MOUNTAINEER KEYSTONE, LLC	Slot	Slot #03
Area	Barbour County, WV	Well	Mackey-Wolfe No. 203
Field	Barbour County	Wellbore	Mackey-Wolfe No. 203(AWB)
Facility	Mackey Wolfe Pad		

WELLPATH DATA (194 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]
14206.00	88.890	335.190	7872.93	6517.65	5714.85	-3171.42	1952423.69	14263282.44	39°16'16.494"N	79°53'51.128"W	6535.86	330.972	5.48	-0.85	-5.41
14301.00	89.140	338.550	7874.57	6612.58	5802.19	-3208.73	1952386.39	14263369.75	39°16'17.361"N	79°53'51.589"W	6630.33	331.056	3.55	0.26	3.54
14395.00	88.120	335.060	7876.82	6706.50	5888.55	-3245.74	1952349.40	14263456.09	39°16'18.219"N	79°53'52.046"W	6723.82	331.137	3.87	-1.09	-3.71
14490.00	89.200	335.040	7879.04	6801.48	5974.66	-3285.80	1952309.35	14263542.17	39°16'19.075"N	79°53'52.542"W	6818.58	331.191	1.14	1.14	-0.02
14584.00	88.610	335.090	7880.83	6895.46	6059.88	-3325.42	1952269.74	14263627.37	39°16'19.922"N	79°53'53.033"W	6912.35	331.244	0.63	-0.63	0.05
14678.00	89.510	336.820	7882.38	6989.43	6145.71	-3363.71	1952231.45	14263713.17	39°16'20.775"N	79°53'53.507"W	7006.02	331.307	2.07	0.96	1.84
14773.00	88.680	338.640	7883.88	7084.33	6233.61	-3399.71	1952195.47	14263801.05	39°16'21.648"N	79°53'53.951"W	7100.41	331.393	2.11	-0.87	1.92
14867.00	91.750	340.100	7883.52	7178.07	6321.57	-3432.82	1952162.36	14263888.98	39°16'22.521"N	79°53'54.358"W	7193.50	331.497	3.62	3.27	1.55
14962.00	87.600	343.490	7884.06	7272.42	6411.78	-3462.49	1952132.70	14263979.16	39°16'23.416"N	79°53'54.721"W	7286.96	331.630	5.64	-4.37	3.57
15057.00	88.550	342.470	7887.25	7366.50	6502.56	-3490.28	1952104.92	14264069.92	39°16'24.317"N	79°53'55.061"W	7380.07	331.775	1.47	1.00	-1.07
15151.00	89.230	342.940	7889.07	7459.69	6592.29	-3518.22	1952076.99	14264159.63	39°16'25.207"N	79°53'55.402"W	7472.36	331.912	0.88	0.72	0.50
15246.00	88.800	340.290	7890.71	7554.08	6682.42	-3548.18	1952047.04	14264249.73	39°16'26.101"N	79°53'55.769"W	7566.00	332.033	2.83	-0.45	-2.79
15341.00	87.100	333.450	7894.11	7648.92	6769.68	-3585.45	1952009.79	14264336.96	39°16'26.968"N	79°53'56.229"W	7660.55	332.093	7.41	-1.79	-7.20
15398.00	87.100	333.450	7896.99	7705.82	6820.60	-3610.89	1951984.35	14264387.87	39°16'27.474"N	79°53'56.545"W	7717.46	332.103	0.00	0.00	0.00

Actual Wellpath Report

Mackey-Wolfe No. 203(AWP) Proj: 15398'
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REFERENCE WELLPATH IDENTIFICATION			
Operator	MOUNTAINEER KEYSTONE, LLC	Slot	Slot #03
Area	Barbour County, WV	Well	Mackey-Wolfe No. 203
Field	Barbour County	Wellbore	Mackey-Wolfe No. 203(AWB)
Facility	Mackey Wolfe Pad		

TARGETS									
Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
Mackey-Wolfe #203 LP Plat		7855.80	437.30	-724.97	1954869.44	14258006.41	39°15'24.041"N	79°53'20.846"W	point
Mackey-Wolfe #203 LP Rev-1		7875.99	437.30	-724.97	1954869.44	14258006.41	39°15'24.041"N	79°53'20.846"W	point
Mackey-Wolfe #203 BHL Plat		8024.70	7702.13	-4074.06	1951521.31	14265269.15	39°16'36.242"N	79°54'02.298"W	point
Mackey-Wolfe #203 BHL Rev-1		8045.48	7702.13	-4074.06	1951521.31	14265269.15	39°16'36.242"N	79°54'02.298"W	point

WELLPATH COMPOSITION - Ref Wellbore: Mackey-Wolfe No. 203(AWB) Ref Wellpath: Mackey-Wolfe No. 203(AWP) Proj: 15398'				
Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
23.60	786.00	Generic gyro - northseeking (Standard)	Gyro Surveys (100'-786')	Mackey-Wolfe No. 203(AWB)
786.00	6743.00	ISCWSA MWD, Rev. 2 (Standard)	Phoenix Surveys (818'-6743')	Mackey-Wolfe No. 203(AWB)
6743.00	15341.00	NaviTrak (AT Curve Short Spaced)	BHI MWD Surveys (6743')(6830'-15341')	Mackey-Wolfe No. 203(AWB)
15341.00	15398.00	Blind Drilling (std)	Projection to bit	Mackey-Wolfe No. 203(AWB)