



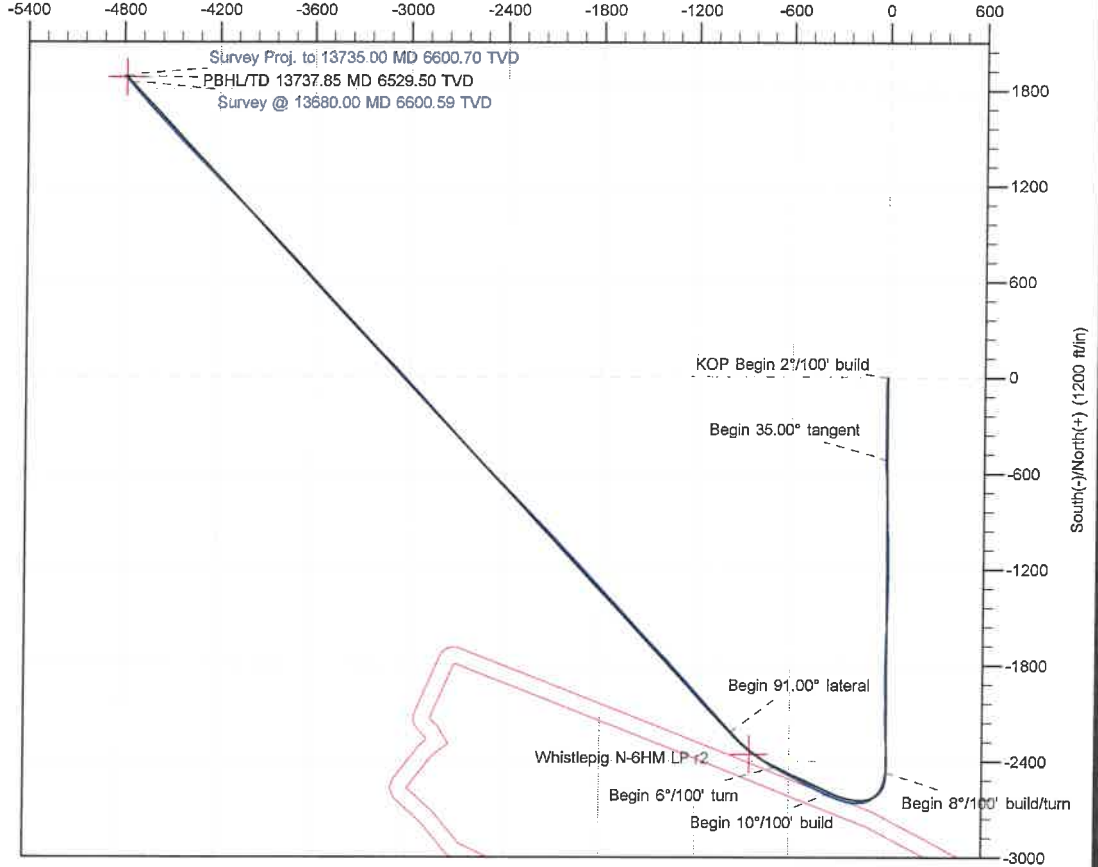
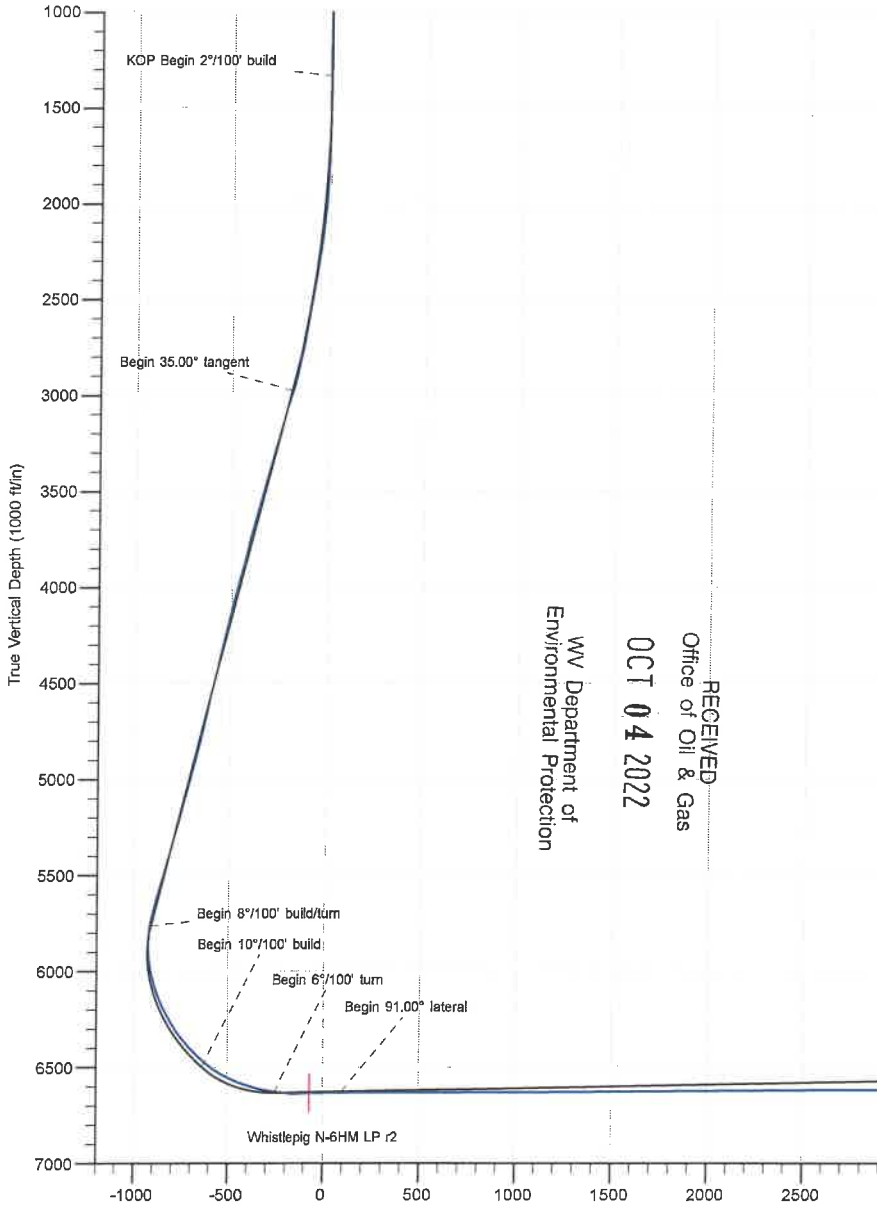
Well: Whistlepig N-06HM (slot A)
 Site: Whistlepig
 Project: Marshall County, West Virginia
 Design: rev2
 Rig: Nabors X14

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1333.50	0.00	0.00	1333.50	0.00	0.00	0.00	0.00	0.00	KOP Begin 2°/100' build
3	3083.50	35.00	179.75	2976.68	-518.09	2.26	2.00	179.750	-191.56	Begin 35.00° tangent
4	6486.78	35.00	179.75	5764.48	-2470.11	10.78	0.00	0.000	-913.32	Begin 8°/100' build/turn
5	7364.00	50.00	295.00	6500.04	-2595.81	-337.28	8.00	132.566	-635.34	Begin 10°/100' build
6	7774.00	91.00	295.00	6634.00	-2435.93	-680.12	10.00	0.000	-257.78	Begin 6°/100' turn
7	8142.66	91.00	317.12	6627.47	-2220.29	-976.26	6.00	89.796	96.70	Begin 91.00° lateral
8	13737.85	91.00	317.12	6529.50	1879.36	-4782.75	0.00	0.000	5138.74	PBHLTD 13737.85 MD 6529.50 TVD

ANNOTATIONS SURVEYS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Annotation
13680.00	89.89	319.10	6600.59	1847.07	-4759.05	5104.88	Survey @ 13680.00 MD 6600.59 TVD
13735.00	89.89	319.10	6600.70	1888.64	-4795.06	5153.60	Survey Proj. to 13735.00 MD 6600.70 TVD



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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: RKB=1368+32.5 @ 1400.50ft (Nabors X14)

Northing 14444965.96 Easting 1698572.65 Latitude 39.77526165 Longitude -80.79301490

Total Corr (M->G): To convert a Magnetic Direction to a Grid Direction, Subtract 8.73



Azimuths to Grid North
 True North: -0.13°
 Magnetic North: -8.73°
 Magnetic Field Strength: 51738.4nT
 Dip Angle: 66.53°
 Date: 7/26/2021
 Model: IGRF2020



Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Whistlepig N-06HM (slot A)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Site:	Whistlepig	MD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Well:	Whistlepig N-06HM (slot A)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

Project	Marshall County, West Virginia		
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	Whistlepig				
Site Position:		Northing:	14,444,965.96 usft	Latitude:	39.77526165
From:	Lat/Long	Easting:	1,698,572.65 usft	Longitude:	-80.79301490
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "		

Well	Whistlepig N-06HM (slot A)					
Well Position	+N/-S	0.00 ft	Northing:	14,444,965.96 usft	Latitude:	39.77526165
	+E/-W	0.00 ft	Easting:	1,698,572.65 usft	Longitude:	-80.79301490
Position Uncertainty	0.00 ft		Wellhead Elevation:	ft	Ground Level:	1,368.00 ft
Grid Convergence:	0.132 °					

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	7/26/2021	-8.603	66.530	51,738.38270665

Design	Surveys Original Hole				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00		291.45

Survey Program	Date	8/16/2021			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
189.00	1,117.00	MWD surf (Original Hole)	MWD	MWD - Standard	
1,170.00	2,850.00	MWD int (Original Hole)	MWD	MWD - Standard	
2,922.00	13,680.00	MWD (Original Hole)	MWD	MWD - Standard	
13,735.00	13,735.00	projection (Original Hole)	MWD	MWD - Standard	

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Survey										
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	0.00
189.00	0.35	156.77	189.00	-0.53	0.23	-0.41	0.19	0.19	0.00	0.00
236.00	0.22	167.05	236.00	-0.75	0.30	-0.56	0.30	-0.28	21.87	
279.00	0.26	180.50	279.00	-0.93	0.32	-0.64	0.16	0.09	31.28	
326.00	0.26	167.75	326.00	-1.14	0.34	-0.74	0.12	0.00	-27.13	
371.00	0.22	164.06	371.00	-1.32	0.39	-0.85	0.10	-0.09	-8.20	
418.00	0.35	212.75	418.00	-1.53	0.34	-0.87	0.56	0.28	103.60	

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Whistlepig N-06HM (slot A)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Site:	Whistlepig	MD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Well:	Whistlepig N-06HM (slot A)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

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)
462.00	0.26	195.79	462.00	-1.74	0.24	-0.86	0.29	-0.20	-38.55
509.00	0.22	172.50	509.00	-1.93	0.22	-0.91	0.22	-0.09	-49.55
552.00	0.13	182.17	552.00	-2.06	0.23	-0.97	0.22	-0.21	22.49
599.00	0.09	172.24	599.00	-2.15	0.23	-1.00	0.09	-0.09	-21.13
642.00	0.18	135.06	642.00	-2.23	0.28	-1.08	0.28	0.21	-86.47
689.00	0.22	169.86	688.99	-2.37	0.35	-1.20	0.27	0.09	74.04
732.00	0.09	143.76	731.99	-2.48	0.39	-1.27	0.34	-0.30	-60.70
779.00	0.18	146.05	778.99	-2.57	0.45	-1.36	0.19	0.19	4.87
826.00	0.13	169.93	825.99	-2.69	0.50	-1.45	0.17	-0.11	50.81
873.00	0.13	200.01	872.99	-2.79	0.49	-1.48	0.14	0.00	64.00
920.00	0.13	196.58	919.99	-2.89	0.46	-1.48	0.02	0.00	-7.30
967.00	0.04	258.55	966.99	-2.94	0.43	-1.47	0.25	-0.19	131.85
1,013.00	0.09	213.02	1,012.99	-2.98	0.39	-1.45	0.15	0.11	-98.98
1,060.00	0.09	81.00	1,059.99	-3.00	0.41	-1.48	0.35	0.00	-280.89
1,117.00	0.00	232.71	1,116.99	-3.00	0.45	-1.52	0.16	-0.16	0.00
1,170.00	0.31	54.90	1,169.99	-2.91	0.57	-1.59	0.58	0.58	0.00
1,217.00	0.22	64.84	1,216.99	-2.80	0.75	-1.73	0.21	-0.19	21.15
1,264.00	0.13	144.02	1,263.99	-2.81	0.87	-1.83	0.50	-0.19	168.47
1,311.00	0.26	183.26	1,310.99	-2.96	0.89	-1.91	0.38	0.28	83.49
1,358.00	0.97	192.98	1,357.99	-3.45	0.80	-2.00	1.52	1.51	20.68
1,405.00	1.76	189.90	1,404.98	-4.55	0.58	-2.21	1.69	1.68	-6.55
1,452.00	2.64	193.33	1,451.94	-6.31	0.21	-2.50	1.89	1.87	7.30
1,499.00	3.56	194.30	1,498.87	-8.78	-0.40	-2.84	1.96	1.96	2.06
1,547.00	4.61	191.75	1,546.75	-12.11	-1.16	-3.35	2.22	2.22	-5.31
1,594.00	5.62	189.90	1,593.56	-16.23	-1.94	-4.13	2.18	2.18	-3.94
1,641.00	6.20	186.56	1,640.31	-21.02	-2.63	-5.24	2.13	2.13	-7.11
1,688.00	6.85	187.18	1,687.01	-26.32	-3.27	-6.58	2.13	2.13	1.32
1,735.00	5.80	188.32	1,733.72	-31.45	-3.96	-7.81	2.13	2.13	2.43
1,782.00	5.98	187.18	1,780.47	-36.23	-4.61	-8.96	0.46	0.38	-2.43
1,829.00	6.81	187.68	1,827.18	-41.42	-5.29	-10.22	1.77	1.77	1.06
1,876.00	8.59	184.54	1,873.75	-47.68	-5.94	-11.91	3.89	3.79	-6.68
1,924.00	10.63	183.31	1,921.08	-55.68	-6.48	-14.33	4.27	4.25	-2.56
1,971.00	12.04	180.85	1,967.16	-64.91	-6.80	-17.40	3.17	3.00	-5.23
2,018.00	13.10	179.62	2,013.03	-75.13	-6.84	-21.11	2.33	2.26	-2.62
2,065.00	14.94	178.57	2,058.63	-86.52	-6.65	-25.45	3.95	3.91	-2.23
2,112.00	16.44	178.33	2,103.88	-99.22	-6.31	-30.41	3.19	3.19	-0.51
2,159.00	17.27	178.92	2,148.86	-112.85	-5.98	-35.70	1.80	1.77	1.26
2,206.00	18.41	179.09	2,193.60	-127.24	-5.73	-41.20	2.43	2.43	0.36
2,253.00	19.91	178.74	2,237.99	-142.67	-5.44	-47.11	3.20	3.19	-0.74
2,300.00	21.14	178.57	2,282.01	-159.14	-5.05	-53.49	2.62	2.62	-0.36
2,347.00	22.37	178.65	2,325.66	-176.55	-4.63	-60.26	2.62	2.62	0.17
2,395.00	22.94	178.21	2,369.96	-195.04	-4.12	-67.49	1.24	1.19	-0.92
2,442.00	22.72	177.33	2,413.28	-213.26	-3.41	-74.81	0.86	-0.47	-1.87

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Project:	Marshall County, West Virginia	TVD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Site:	Whistlepig	MD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Well:	Whistlepig N-06HM (slot A)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

Survey

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)
2,489.00	23.47	178.48	2,456.51	-231.68	-2.74	-82.17	1.86	1.60	2.45
2,536.00	25.09	181.11	2,499.35	-251.00	-2.69	-89.29	4.14	3.45	5.60
2,583.00	26.15	182.70	2,541.73	-271.31	-3.37	-96.08	2.69	2.26	3.38
2,630.00	26.76	182.87	2,583.81	-292.22	-4.39	-102.78	1.31	1.30	0.36
2,676.00	26.54	182.08	2,624.92	-312.84	-5.28	-109.49	0.91	-0.48	-1.72
2,723.00	27.69	180.94	2,666.76	-334.25	-5.84	-116.80	2.68	2.45	-2.43
2,770.00	28.13	179.44	2,708.29	-356.25	-5.91	-124.78	1.76	0.94	-3.19
2,817.00	28.60	179.00	2,749.65	-378.58	-5.60	-133.23	1.09	1.00	-0.94
2,850.00	29.22	179.44	2,778.53	-394.53	-5.39	-139.26	1.99	1.88	1.33
2,922.00	30.98	180.59	2,840.82	-430.63	-5.41	-152.45	2.57	2.44	1.60
2,968.00	32.78	182.26	2,879.88	-454.92	-6.02	-160.76	4.36	3.91	3.63
3,063.00	37.40	178.39	2,957.60	-509.49	-6.22	-180.52	5.40	4.86	-4.07
3,157.00	37.18	174.79	3,032.40	-566.32	-2.84	-204.45	2.33	-0.23	-3.83
3,251.00	35.16	180.50	3,108.30	-621.69	-0.50	-226.88	4.18	-2.15	6.07
3,345.00	35.20	179.18	3,185.13	-675.84	-0.35	-246.83	0.81	0.04	-1.40
3,439.00	34.67	175.75	3,262.20	-729.60	2.02	-268.69	2.16	-0.56	-3.65
3,533.00	34.15	177.77	3,339.75	-782.63	5.03	-290.88	1.33	-0.55	2.15
3,627.00	34.76	180.85	3,417.27	-835.79	5.66	-310.91	1.96	0.65	3.28
3,721.00	34.72	179.27	3,494.51	-889.35	5.60	-330.44	0.96	-0.04	-1.68
3,815.00	34.28	174.79	3,571.99	-942.49	8.35	-352.43	2.74	-0.47	-4.77
3,909.00	32.82	176.10	3,650.33	-994.28	12.49	-375.22	1.73	-1.55	1.39
4,003.00	33.53	180.24	3,729.02	-1,045.66	14.11	-395.52	2.53	0.76	4.40
4,100.00	35.20	181.38	3,809.09	-1,100.40	13.32	-414.81	1.84	1.72	1.18
4,194.00	35.90	180.41	3,885.57	-1,155.05	12.48	-434.00	0.96	0.74	-1.03
4,289.00	34.37	176.54	3,963.27	-1,209.68	13.89	-455.30	2.84	-1.61	-4.07
4,383.00	34.45	180.59	4,040.83	-1,262.75	15.22	-475.94	2.44	0.09	4.31
4,478.00	35.20	182.17	4,118.82	-1,316.98	13.91	-494.55	1.23	0.79	1.66
4,570.00	36.04	182.70	4,193.60	-1,370.52	11.63	-512.01	0.97	0.91	0.58
4,664.00	34.63	180.76	4,270.29	-1,424.85	9.97	-530.33	1.92	-1.50	-2.06
4,758.00	34.76	181.55	4,347.57	-1,478.34	8.89	-548.89	0.50	0.14	0.84
4,853.00	35.77	181.82	4,425.14	-1,533.17	7.28	-567.44	1.08	1.06	0.28
4,946.00	35.38	178.83	4,500.79	-1,587.26	6.97	-586.93	1.92	-0.42	-3.22
5,040.00	33.27	181.73	4,578.42	-1,640.25	6.74	-606.10	2.84	-2.24	3.09
5,135.00	34.50	182.78	4,657.28	-1,693.17	4.65	-623.50	1.43	1.29	1.11
5,229.00	35.90	182.87	4,734.09	-1,747.28	1.98	-640.81	1.49	0.14	0.10
5,323.00	35.77	181.11	4,810.30	-1,802.28	0.07	-659.14	1.10	0.14	0.70
5,417.00	35.90	178.57	4,886.51	-1,857.30	0.22	-679.40	1.59	0.14	2.55
5,512.00	35.33	179.09	4,963.74	-1,912.61	1.35	-700.68	0.68	0.65	-1.12
5,606.00	35.33	178.04	5,040.43	-1,966.95	2.72	-721.82	0.65	0.65	0.84
5,700.00	35.07	178.83	5,117.24	-2,021.11	4.20	-743.01	0.56	-0.28	-0.10
5,794.00	35.20	178.74	5,194.11	-2,075.20	5.34	-763.85	0.15	0.14	-0.10
5,889.00	36.08	180.59	5,271.32	-2,130.55	5.66	-784.38	1.46	0.93	1.95
5,982.00	35.55	179.71	5,346.74	-2,184.97	5.51	-804.15	0.79	-0.57	-0.95
6,076.00	35.86	178.39	5,423.07	-2,239.81	6.43	-825.06	0.88	0.33	-1.40

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Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

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)
6,187.00	34.95	175.93	5,513.55	-2,304.03	9.60	-851.49	1.52	-0.82	-2.22
6,234.00	34.68	175.31	5,552.13	-2,330.79	11.64	-863.18	0.95	-0.57	-1.32
6,281.00	35.12	178.39	5,590.68	-2,357.63	13.12	-874.37	3.86	0.94	6.55
6,328.00	35.87	179.71	5,628.95	-2,384.91	13.57	-884.76	2.28	1.60	2.81
6,375.00	36.18	180.15	5,666.96	-2,412.56	13.60	-894.90	0.86	0.66	0.94
6,422.00	36.31	181.64	5,704.87	-2,440.34	13.17	-904.66	1.89	0.28	3.17
6,469.00	35.65	185.24	5,742.90	-2,467.89	11.52	-913.20	4.71	-1.40	7.66
6,516.00	33.76	190.43	5,781.55	-2,494.38	7.90	-919.52	7.46	-4.02	11.04
6,564.00	32.70	194.30	5,821.70	-2,520.07	2.28	-923.69	4.94	-2.21	8.06
6,611.00	31.38	200.36	5,861.55	-2,543.85	-5.11	-925.50	7.39	-2.81	12.89
6,658.00	29.36	207.39	5,902.12	-2,565.56	-14.68	-924.54	8.69	-4.30	14.96
6,705.00	28.26	213.90	5,943.31	-2,585.03	-26.18	-920.95	7.07	-2.34	13.85
6,751.00	27.74	221.28	5,983.94	-2,602.12	-39.33	-914.97	7.61	-1.13	16.04
6,798.00	27.96	227.26	6,025.50	-2,617.82	-54.64	-906.46	5.96	0.47	12.72
6,845.00	28.40	235.87	6,066.95	-2,631.58	-71.99	-895.34	8.70	0.94	18.32
6,892.00	29.01	244.13	6,108.19	-2,642.83	-91.50	-881.29	8.53	1.30	17.57
6,939.00	29.05	251.95	6,149.30	-2,651.34	-112.61	-864.75	8.07	0.09	16.64
6,986.00	29.54	260.39	6,190.30	-2,656.81	-134.90	-846.01	8.84	1.04	17.96
7,034.00	31.12	267.42	6,231.75	-2,659.34	-158.96	-824.54	8.09	3.29	14.65
7,081.00	32.92	273.93	6,271.61	-2,659.02	-183.85	-801.26	8.28	3.83	13.85
7,128.00	35.47	279.11	6,310.49	-2,655.98	-210.07	-775.75	8.23	5.43	11.02
7,175.00	38.46	283.42	6,348.04	-2,650.43	-237.76	-747.94	8.42	6.36	9.17
7,223.00	41.93	287.02	6,384.71	-2,642.26	-267.63	-717.16	8.70	7.23	7.50
7,270.00	45.58	290.80	6,418.65	-2,631.70	-298.35	-684.70	9.55	7.77	8.04
7,317.00	48.13	294.58	6,450.80	-2,618.46	-329.96	-650.43	7.99	5.43	8.04
7,364.00	51.60	296.34	6,481.09	-2,603.00	-362.39	-614.60	7.92	7.38	3.74
7,411.00	55.74	296.87	6,508.93	-2,586.04	-396.24	-576.90	8.86	8.81	1.13
7,458.00	60.26	297.22	6,533.83	-2,567.92	-431.73	-537.24	9.64	9.62	0.74
7,506.00	65.01	296.43	6,555.89	-2,548.70	-469.76	-494.81	10.00	9.90	-1.65
7,553.00	69.05	296.51	6,574.23	-2,529.41	-508.49	-451.71	8.60	8.60	0.17
7,601.00	71.60	296.78	6,590.38	-2,509.15	-548.88	-406.70	5.34	5.31	0.56
7,648.00	74.55	297.04	6,604.07	-2,488.80	-588.97	-361.95	6.30	6.28	0.55
7,696.00	76.53	297.31	6,616.05	-2,467.57	-630.32	-315.70	4.16	4.13	0.56
7,743.00	80.22	298.36	6,625.52	-2,446.08	-671.02	-269.96	8.15	7.85	2.23
7,790.00	84.13	298.98	6,631.92	-2,423.74	-711.86	-223.78	8.42	7.85	1.32
7,837.00	87.82	301.61	6,635.22	-2,400.09	-752.33	-177.46	9.63	7.85	0.60
7,884.00	91.21	304.95	6,635.62	-2,374.31	-791.61	-131.48	10.12	7.21	1.11
7,931.00	91.91	307.06	6,634.34	-2,346.69	-829.62	-86.00	4.73	7.49	4.49
7,978.00	91.16	309.35	6,633.08	-2,317.64	-866.54	-41.02	5.13	7.49	4.87
8,025.00	90.81	312.33	6,632.27	-2,286.91	-902.08	3.30	6.38	7.21	4.34
8,073.00	90.51	314.80	6,631.72	-2,253.83	-936.86	47.77	5.18	-0.74	5.19
8,120.00	89.98	317.61	6,631.51	-2,219.91	-969.38	90.44	6.08	-1.13	5.98
8,167.00	91.03	317.96	6,631.10	-2,185.11	-1,000.96	132.56	2.35	2.23	0.74

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Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Whistlepig N-06HM (slot A)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Site:	Whistlepig	MD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Well:	Whistlepig N-06HM (slot A)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

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)
8,261.00	90.37	318.31	6,629.95	-2,115.11	-1,063.69	216.54	0.79	-0.70	0.37
8,355.00	90.20	318.22	6,629.48	-2,044.96	-1,126.26	300.43	0.20	-0.18	-0.10
8,449.00	90.02	317.52	6,629.30	-1,975.25	-1,189.32	384.62	0.77	-0.19	-0.74
8,543.00	89.45	317.43	6,629.74	-1,905.98	-1,252.85	469.08	0.61	-0.61	-0.10
8,638.00	89.14	317.34	6,630.91	-1,836.07	-1,317.17	554.51	0.34	-0.33	-0.09
8,732.00	89.93	316.82	6,631.67	-1,767.23	-1,381.18	639.26	1.01	0.84	-0.55
8,825.00	91.82	317.17	6,630.25	-1,699.24	-1,444.60	723.15	2.07	2.03	0.38
8,919.00	89.67	316.64	6,629.03	-1,630.60	-1,508.81	808.01	2.36	-2.29	-0.56
9,013.00	88.97	316.73	6,630.14	-1,562.22	-1,573.29	893.04	0.75	-0.74	0.10
9,108.00	90.46	317.52	6,630.62	-1,492.60	-1,637.93	978.65	1.78	1.57	0.83
9,202.00	89.93	317.70	6,630.30	-1,423.17	-1,701.30	1,063.02	0.60	-0.56	0.19
9,296.00	91.65	318.22	6,629.00	-1,353.37	-1,764.24	1,147.13	1.91	1.83	0.55
9,390.00	90.29	317.78	6,627.41	-1,283.53	-1,827.13	1,231.20	1.52	-1.45	-0.47
9,484.00	90.51	316.82	6,626.75	-1,214.45	-1,890.87	1,315.79	1.05	0.23	-1.02
9,578.00	90.33	317.52	6,626.06	-1,145.51	-1,954.77	1,400.48	0.77	-0.19	0.74
9,672.00	89.23	316.29	6,626.42	-1,076.88	-2,018.99	1,485.35	1.76	-1.17	-1.31
9,767.00	90.68	316.64	6,626.50	-1,008.01	-2,084.43	1,571.43	1.57	1.53	0.37
9,861.00	90.24	315.85	6,625.74	-940.11	-2,149.43	1,656.77	0.96	-0.47	-0.84
9,955.00	91.78	316.38	6,624.09	-872.38	-2,214.58	1,742.17	1.73	1.64	0.56
10,049.00	90.77	315.94	6,622.00	-804.60	-2,279.67	1,827.54	1.17	-1.07	-0.47
10,143.00	90.24	316.20	6,621.17	-736.90	-2,344.88	1,912.99	0.63	-0.56	0.28
10,236.00	89.67	315.94	6,621.24	-669.92	-2,409.41	1,997.54	0.67	-0.61	-0.28
10,330.00	90.90	315.76	6,620.77	-602.48	-2,474.88	2,083.14	1.32	1.31	-0.19
10,424.00	90.42	316.47	6,619.69	-534.74	-2,540.04	2,168.56	0.91	-0.51	0.76
10,519.00	89.80	317.34	6,619.51	-465.37	-2,604.94	2,254.33	1.12	-0.65	0.92
10,613.00	91.56	318.14	6,618.39	-395.80	-2,668.15	2,338.60	2.06	1.87	0.85
10,707.00	89.85	317.34	6,617.24	-326.24	-2,731.35	2,422.87	2.01	-1.82	-0.85
10,801.00	89.49	317.70	6,617.78	-256.92	-2,794.83	2,507.30	0.54	-0.38	0.38
10,895.00	91.03	318.84	6,617.35	-186.77	-2,857.40	2,591.19	2.04	1.64	1.21
10,990.00	90.07	318.14	6,616.44	-115.64	-2,920.36	2,675.80	1.25	-1.01	-0.74
11,084.00	89.54	317.52	6,616.76	-45.97	-2,983.46	2,760.01	0.87	-0.56	-0.66
11,177.00	90.59	316.90	6,616.65	22.28	-3,046.64	2,843.76	1.31	1.13	-0.67
11,271.00	90.77	315.76	6,615.54	90.27	-3,111.54	2,929.03	1.23	0.19	-1.21
11,365.00	90.07	316.29	6,614.85	157.91	-3,176.80	3,014.51	0.93	-0.74	0.56
11,460.00	91.82	317.70	6,613.28	227.37	-3,241.59	3,100.21	2.37	1.84	1.48
11,553.00	90.86	317.43	6,611.11	295.99	-3,304.32	3,183.69	1.07	-1.03	-0.29
11,646.00	89.36	316.90	6,610.93	364.18	-3,367.55	3,267.48	1.71	1.61	-0.57
11,740.00	90.90	317.08	6,610.71	432.92	-3,431.67	3,352.29	1.66	1.61	0.19
11,835.00	89.36	317.43	6,610.50	502.68	-3,496.14	3,437.81	0.99	0.99	0.37
11,929.00	90.29	317.34	6,610.79	571.86	-3,559.79	3,522.35	0.99	0.99	-0.10
12,023.00	89.54	317.70	6,610.93	641.18	-3,623.27	3,606.78	1.07	-0.80	0.38
12,117.00	90.86	317.17	6,610.60	710.41	-3,686.85	3,691.28	1.40	1.40	-0.56
12,212.00	90.15	316.82	6,609.76	779.88	-3,751.64	3,776.99	0.83	-0.75	-0.37

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Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Whistlepig N-06HM (slot A)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Site:	Whistlepig	MD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Well:	Whistlepig N-06HM (slot A)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

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)
12,306.00	91.47	316.29	6,608.43	848.12	-3,816.27	3,862.10	1.51	1.40	-0.56
12,400.00	90.59	316.11	6,606.74	915.95	-3,881.32	3,947.45	0.96	-0.94	-0.19
12,494.00	92.04	315.94	6,604.58	983.58	-3,946.57	4,032.91	1.55	1.54	-0.18
12,588.00	90.90	316.03	6,602.17	1,051.16	-4,011.87	4,118.39	1.22	-1.21	0.10
12,683.00	89.80	315.94	6,601.59	1,119.47	-4,077.87	4,204.81	1.16	-1.16	-0.09
12,777.00	88.62	315.76	6,602.89	1,186.91	-4,143.34	4,290.40	1.27	-1.26	-0.19
12,870.00	89.63	316.03	6,604.31	1,253.69	-4,208.06	4,375.06	1.12	1.09	0.29
12,965.00	89.36	316.03	6,605.15	1,322.05	-4,274.01	4,461.44	0.28	-0.28	0.00
13,059.00	90.64	315.67	6,605.15	1,389.50	-4,339.49	4,547.05	1.41	1.36	-0.38
13,153.00	90.24	316.47	6,604.42	1,457.19	-4,404.70	4,632.50	0.95	-0.43	0.85
13,247.00	91.60	315.85	6,602.92	1,524.98	-4,469.80	4,717.88	1.59	1.45	-0.66
13,341.00	90.51	317.26	6,601.18	1,593.22	-4,534.42	4,802.98	1.90	-1.16	1.50
13,435.00	89.45	317.96	6,601.22	1,662.64	-4,597.79	4,887.35	1.35	-1.13	0.74
13,530.00	91.30	319.19	6,600.60	1,733.87	-4,660.65	4,971.89	2.34	1.95	1.29
13,624.00	89.23	318.84	6,600.16	1,804.82	-4,722.29	5,055.22	2.23	-2.20	-0.37
13,680.00	89.89	319.10	6,600.59	1,847.07	-4,759.05	5,104.88	1.27	1.18	0.46
Survey @ 13680.00 MD 6600.59 TVD									
13,735.00	89.89	319.10	6,600.70	1,888.64	-4,795.06	5,153.60	0.00	0.00	0.00
Survey Proj. to 13735.00 MD 6600.70 TVD									

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
13,680.00	6,600.59	1,847.07	-4,759.05	Survey @ 13680.00 MD 6600.59 TVD

Checked By: _____ Approved By: _____ Date: _____

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Survey Report - Geographic



Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Whistlepig N-06HM (slot A)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Site:	Whistlepig	MD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Well:	Whistlepig N-06HM (slot A)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

Project	Marshall County, West Virginia		
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	Whistlepig				
Site Position:		Northing:	14,444,965.96 usft	Latitude:	39.77526165
From:	Lat/Long	Easting:	1,698,572.65 usft	Longitude:	-80.79301490
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.132 °

Well	Whistlepig N-06HM (slot A)					
Well Position	+N/-S	0.00 ft	Northing:	14,444,965.96 usft	Latitude:	39.77526165
	+E/-W	0.00 ft	Easting:	1,698,572.65 usft	Longitude:	-80.79301490
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	1,368.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	7/26/2021	-8.603	66.530	51,738.38270665

Design	Surveys Original Hole				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	291.45	

Survey Program	Date 8/16/2021				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
189.00	1,117.00	MWD surf (Original Hole)	MWD	MWD - Standard	<div style="text-align: right;"> RECEIVED Office of Oil & Gas OCT 04 2022 WV Department of Environmental Protection </div>
1,170.00	2,850.00	MWD int (Original Hole)	MWD	MWD - Standard	
2,922.00	13,680.00	MWD (Original Hole)	MWD	MWD - Standard	
13,735.00	13,735.00	projection (Original Hole)	MWD	MWD - Standard	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	14,444,965.96	1,698,572.65	39.77526165	-80.79301490	
189.00	0.35	156.77	189.00	-0.53	0.23	14,444,965.43	1,698,572.87	39.77526019	-80.79301410	
236.00	0.22	167.05	236.00	-0.75	0.30	14,444,965.21	1,698,572.95	39.77525959	-80.79301382	
279.00	0.26	180.50	279.00	-0.93	0.32	14,444,965.03	1,698,572.97	39.77525910	-80.79301376	
326.00	0.26	167.75	326.00	-1.14	0.34	14,444,964.82	1,698,572.99	39.77525852	-80.79301369	
371.00	0.22	164.06	371.00	-1.32	0.39	14,444,964.64	1,698,573.04	39.77525802	-80.79301353	
418.00	0.35	212.75	418.00	-1.53	0.34	14,444,964.43	1,698,572.98	39.77525745	-80.79301372	
462.00	0.26	195.79	462.00	-1.74	0.24	14,444,964.22	1,698,572.88	39.77525688	-80.79301407	
509.00	0.22	172.50	509.00	-1.93	0.22	14,444,964.03	1,698,572.87	39.77525635	-80.79301414	

Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Whistlepig N-06HM (slot A)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Site:	Whistlepig	MD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Well:	Whistlepig N-06HM (slot A)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
552.00	0.13	182.17	552.00	-2.06	0.23	14,444,963.90	1,698,572.87	39.77525599	-80.79301411
599.00	0.09	172.24	599.00	-2.15	0.23	14,444,963.81	1,698,572.88	39.77525574	-80.79301410
642.00	0.18	135.06	642.00	-2.23	0.28	14,444,963.73	1,698,572.93	39.77525552	-80.79301391
689.00	0.22	169.86	688.99	-2.37	0.35	14,444,963.59	1,698,573.00	39.77525513	-80.79301367
732.00	0.09	143.76	731.99	-2.48	0.39	14,444,963.48	1,698,573.03	39.77525483	-80.79301355
779.00	0.18	146.05	778.99	-2.57	0.45	14,444,963.39	1,698,573.10	39.77525458	-80.79301332
826.00	0.13	169.93	825.99	-2.69	0.50	14,444,963.27	1,698,573.15	39.77525427	-80.79301315
873.00	0.13	200.01	872.99	-2.79	0.49	14,444,963.17	1,698,573.14	39.77525399	-80.79301318
920.00	0.13	196.58	919.99	-2.89	0.46	14,444,963.07	1,698,573.10	39.77525371	-80.79301330
967.00	0.04	258.55	966.99	-2.94	0.43	14,444,963.02	1,698,573.07	39.77525356	-80.79301341
1,013.00	0.09	213.02	1,012.99	-2.98	0.39	14,444,962.98	1,698,573.04	39.77525347	-80.79301354
1,060.00	0.09	81.00	1,059.99	-3.00	0.41	14,444,962.96	1,698,573.05	39.77525340	-80.79301348
1,117.00	0.00	232.71	1,116.99	-3.00	0.45	14,444,962.96	1,698,573.10	39.77525342	-80.79301332
1,170.00	0.31	54.90	1,169.99	-2.91	0.57	14,444,963.05	1,698,573.21	39.77525365	-80.79301290
1,217.00	0.22	64.84	1,216.99	-2.80	0.75	14,444,963.16	1,698,573.40	39.77525395	-80.79301224
1,264.00	0.13	144.02	1,263.99	-2.81	0.87	14,444,963.15	1,698,573.51	39.77525394	-80.79301184
1,311.00	0.26	183.26	1,310.99	-2.96	0.89	14,444,963.00	1,698,573.54	39.77525353	-80.79301175
1,358.00	0.97	192.98	1,357.99	-3.45	0.80	14,444,962.51	1,698,573.44	39.77525217	-80.79301209
1,405.00	1.76	189.90	1,404.98	-4.55	0.58	14,444,961.41	1,698,573.23	39.77524915	-80.79301286
1,452.00	2.64	193.33	1,451.94	-6.31	0.21	14,444,959.65	1,698,572.86	39.77524431	-80.79301421
1,499.00	3.56	194.30	1,498.87	-8.78	-0.40	14,444,957.18	1,698,572.25	39.77523754	-80.79301640
1,547.00	4.61	191.75	1,546.75	-12.11	-1.16	14,444,953.85	1,698,571.49	39.77522839	-80.79301913
1,594.00	5.62	189.90	1,593.56	-16.23	-1.94	14,444,949.73	1,698,570.70	39.77521709	-80.79302194
1,641.00	6.20	186.56	1,640.31	-21.02	-2.63	14,444,944.94	1,698,570.02	39.77520394	-80.79302442
1,688.00	6.85	187.18	1,687.01	-26.32	-3.27	14,444,939.64	1,698,569.38	39.77518939	-80.79302675
1,735.00	5.80	188.32	1,733.72	-31.45	-3.96	14,444,934.51	1,698,568.68	39.77517530	-80.79302926
1,782.00	5.98	187.18	1,780.47	-36.23	-4.61	14,444,929.73	1,698,568.04	39.77516218	-80.79303161
1,829.00	6.81	187.68	1,827.18	-41.42	-5.29	14,444,924.54	1,698,567.36	39.77514793	-80.79303407
1,876.00	8.59	184.54	1,873.75	-47.68	-5.94	14,444,918.28	1,698,566.71	39.77513074	-80.79303643
1,924.00	10.63	183.31	1,921.08	-55.68	-6.48	14,444,910.28	1,698,566.17	39.77510879	-80.79303842
1,971.00	12.04	180.85	1,967.16	-64.91	-6.80	14,444,901.05	1,698,565.84	39.77508344	-80.79303964
2,018.00	13.10	179.62	2,013.03	-75.13	-6.84	14,444,890.83	1,698,565.81	39.77505535	-80.79303986
2,065.00	14.94	178.57	2,058.63	-86.52	-6.65	14,444,879.44	1,698,565.99	39.77502409	-80.79303929
2,112.00	16.44	178.33	2,103.88	-99.22	-6.31	14,444,866.74	1,698,566.34	39.77498920	-80.79303817
2,159.00	17.27	178.92	2,148.86	-112.85	-5.98	14,444,853.11	1,698,566.66	39.77495178	-80.79303712
2,206.00	18.41	179.09	2,193.60	-127.24	-5.73	14,444,838.72	1,698,566.91	39.77491224	-80.79303635
2,253.00	19.91	178.74	2,237.99	-142.67	-5.44	14,444,823.29	1,698,567.21	39.77486989	-80.79303543
2,300.00	21.14	178.57	2,282.01	-159.14	-5.05	14,444,806.82	1,698,567.59	39.77482464	-80.79303419
2,347.00	22.37	178.65	2,325.66	-176.55	-4.63	14,444,789.41	1,698,568.02	39.77477681	-80.79303283
2,395.00	22.94	178.21	2,369.96	-195.04	-4.12	14,444,770.92	1,698,568.52	39.77472605	-80.79303118
2,442.00	22.72	177.33	2,413.28	-213.26	-3.41	14,444,752.70	1,698,569.23	39.77467601	-80.79302880
2,489.00	23.47	178.48	2,456.51	-231.68	-2.74	14,444,734.28	1,698,569.90	39.77462541	-80.79302657
2,536.00	25.09	181.11	2,499.35	-251.00	-2.69	14,444,714.96	1,698,569.96	39.77457285	-80.79302653
2,583.00	26.15	182.70	2,541.73	-271.31	-3.37	14,444,694.65	1,698,569.28	39.77451658	-80.79302912
2,630.00	26.76	182.87	2,583.81	-292.22	-4.39	14,444,673.74	1,698,568.26	39.77445915	-80.79303291
2,676.00	26.54	182.08	2,624.92	-312.84	-5.28	14,444,653.12	1,698,567.37	39.77440286	-80.79303626
2,723.00	27.69	180.94	2,666.76	-334.25	-5.84	14,444,631.71	1,698,566.81	39.77434374	-80.79303443
2,770.00	28.13	179.44	2,708.29	-356.25	-5.91	14,444,609.71	1,698,566.74	39.77428333	-80.79303886
2,817.00	28.60	179.00	2,749.65	-378.58	-5.60	14,444,587.39	1,698,567.04	39.77422201	-80.79303796
2,850.00	29.22	179.44	2,778.53	-394.53	-5.39	14,444,571.43	1,698,567.26	39.77417820	-80.79303732
2,922.00	30.98	180.59	2,840.82	-430.63	-5.41	14,444,535.33	1,698,567.24	39.77407905	-80.79303768
2,968.00	32.78	182.26	2,879.88	-454.92	-6.02	14,444,511.04	1,698,566.63	39.77401236	-80.79304007
3,063.00	37.40	178.39	2,957.60	-509.49	-6.22	14,444,456.47	1,698,566.42	39.77386249	-80.79304124
3,157.00	37.18	174.79	3,032.40	-566.32	-2.84	14,444,399.64	1,698,569.80	39.77370640	-80.79302967
3,251.00	35.16	180.50	3,108.30	-621.69	-0.50	14,444,344.27	1,698,572.15	39.77355432	-80.79302178

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Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Whistlepig N-06HM (slot A)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Site:	Whistlepig	MD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Well:	Whistlepig N-06HM (slot A)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
3,345.00	35.20	179.18	3,185.13	-675.84	-0.35	14,444,290.12	1,698,572.30	39.77340560	-80.79302169
3,439.00	34.67	175.75	3,262.20	-729.60	2.02	14,444,236.36	1,698,574.67	39.77325795	-80.79301370
3,533.00	34.15	177.77	3,339.75	-782.63	5.03	14,444,183.33	1,698,577.68	39.77311230	-80.79300343
3,627.00	34.76	180.85	3,417.27	-835.79	5.66	14,444,130.17	1,698,578.31	39.77296630	-80.79300163
3,721.00	34.72	179.27	3,494.51	-889.35	5.60	14,444,076.61	1,698,578.25	39.77281920	-80.79300227
3,815.00	34.28	174.79	3,571.99	-942.49	8.35	14,444,023.47	1,698,581.00	39.77267325	-80.79299294
3,909.00	32.82	176.10	3,650.33	-994.28	12.49	14,443,971.69	1,698,585.13	39.77253102	-80.79297864
4,003.00	33.53	180.24	3,729.02	-1,045.66	14.11	14,443,920.30	1,698,586.76	39.77238989	-80.79297328
4,100.00	35.20	181.38	3,809.09	-1,100.40	13.32	14,443,865.56	1,698,585.97	39.77223956	-80.79297653
4,194.00	35.90	180.41	3,885.57	-1,155.05	12.48	14,443,810.92	1,698,585.12	39.77208949	-80.79298000
4,289.00	34.37	176.54	3,963.27	-1,209.68	13.89	14,443,756.29	1,698,586.54	39.77193946	-80.79297540
4,383.00	34.45	180.59	4,040.83	-1,262.75	15.22	14,443,703.21	1,698,587.87	39.77179368	-80.79297111
4,478.00	35.20	182.17	4,118.82	-1,316.98	13.91	14,443,648.98	1,698,586.55	39.77164476	-80.79297623
4,570.00	36.04	182.70	4,193.60	-1,370.52	11.63	14,443,595.45	1,698,584.28	39.77149776	-80.79298478
4,664.00	34.63	180.76	4,270.29	-1,424.85	9.97	14,443,541.11	1,698,582.62	39.77134856	-80.79299113
4,758.00	34.76	181.55	4,347.57	-1,478.34	8.89	14,443,487.62	1,698,581.54	39.77120166	-80.79299541
4,853.00	35.77	181.82	4,425.14	-1,533.17	7.28	14,443,432.80	1,698,579.93	39.77105110	-80.79300181
4,946.00	35.38	178.83	4,500.79	-1,587.26	6.97	14,443,378.71	1,698,579.61	39.77090256	-80.79300317
5,040.00	33.27	181.73	4,578.42	-1,640.25	6.74	14,443,325.72	1,698,579.39	39.77075704	-80.79300439
5,135.00	34.50	182.78	4,657.28	-1,693.17	4.65	14,443,272.80	1,698,577.30	39.77061172	-80.79301227
5,229.00	35.90	182.87	4,734.09	-1,747.28	1.98	14,443,218.68	1,698,574.63	39.77046311	-80.79302223
5,323.00	35.77	181.11	4,810.30	-1,802.28	0.07	14,443,163.69	1,698,572.71	39.77031210	-80.79302948
5,417.00	35.90	178.57	4,886.51	-1,857.30	0.22	14,443,108.66	1,698,572.87	39.77016099	-80.79302938
5,512.00	35.33	179.09	4,963.74	-1,912.61	1.35	14,443,053.35	1,698,574.00	39.77000909	-80.79302581
5,606.00	35.33	178.04	5,040.43	-1,966.95	2.72	14,442,999.01	1,698,575.36	39.76985984	-80.79302141
5,700.00	35.07	178.83	5,117.24	-2,021.11	4.20	14,442,944.85	1,698,576.84	39.76971109	-80.79301659
5,794.00	35.20	178.74	5,194.11	-2,075.20	5.34	14,442,890.77	1,698,577.99	39.76956255	-80.79301295
5,889.00	36.08	180.59	5,271.32	-2,130.55	5.66	14,442,835.42	1,698,578.30	39.76941054	-80.79301229
5,982.00	35.55	179.71	5,346.74	-2,184.97	5.51	14,442,781.00	1,698,578.16	39.76926109	-80.79301325
6,076.00	35.86	178.39	5,423.07	-2,239.81	6.43	14,442,726.15	1,698,579.07	39.76911046	-80.79301046
6,187.00	34.95	175.93	5,513.55	-2,304.03	9.60	14,442,661.93	1,698,582.24	39.76893408	-80.79299970
6,234.00	34.68	175.31	5,552.13	-2,330.79	11.64	14,442,635.18	1,698,584.29	39.76886059	-80.79299263
6,281.00	35.12	178.39	5,590.68	-2,357.63	13.12	14,442,608.33	1,698,585.76	39.76878686	-80.79298761
6,328.00	35.87	179.71	5,628.95	-2,384.91	13.57	14,442,581.05	1,698,586.21	39.76871193	-80.79298623
6,375.00	36.18	180.15	5,666.96	-2,412.56	13.60	14,442,553.41	1,698,586.25	39.76863601	-80.79298634
6,422.00	36.31	181.64	5,704.87	-2,440.34	13.17	14,442,525.62	1,698,585.81	39.76855972	-80.79298812
6,469.00	35.65	185.24	5,742.90	-2,467.89	11.52	14,442,498.07	1,698,584.16	39.76848406	-80.79299421
6,516.00	33.76	190.43	5,781.55	-2,494.38	7.90	14,442,471.58	1,698,580.55	39.76841133	-80.79300730
6,564.00	32.70	194.30	5,821.70	-2,520.07	2.28	14,442,445.90	1,698,574.93	39.76834083	-80.79302750
6,611.00	31.38	200.36	5,861.55	-2,543.85	-5.11	14,442,422.12	1,698,567.53	39.76827556	-80.79305402
6,658.00	29.36	207.39	5,902.12	-2,565.56	-14.68	14,442,400.40	1,698,557.97	39.76821600	-80.79308823
6,705.00	28.26	213.90	5,943.31	-2,585.03	-26.18	14,442,380.93	1,698,546.46	39.76816260	-80.79312935
6,751.00	27.74	221.28	5,983.94	-2,602.12	-39.33	14,442,363.84	1,698,533.32	39.76811919	-80.79317625
6,798.00	27.96	227.26	6,025.50	-2,617.82	-54.64	14,442,348.14	1,698,518.01	39.76807578	-80.79323087
6,845.00	28.40	235.87	6,066.95	-2,631.58	-71.99	14,442,334.39	1,698,500.66	39.76803206	-80.79329273
6,892.00	29.01	244.13	6,108.19	-2,642.83	-91.50	14,442,323.14	1,698,481.14	39.76798840	-80.79336227
6,939.00	29.05	251.95	6,149.30	-2,651.34	-112.61	14,442,314.63	1,698,460.03	39.76794105	-80.79343747
6,986.00	29.54	260.39	6,190.30	-2,656.81	-134.90	14,442,309.16	1,698,437.75	39.76789647	-80.79351682
7,034.00	31.12	267.42	6,231.75	-2,659.34	-158.96	14,442,306.62	1,698,413.68	39.76785189	-80.79359602
7,081.00	32.92	273.93	6,271.61	-2,659.02	-183.85	14,442,306.95	1,698,388.80	39.76780731	-80.79367529
7,128.00	35.47	279.11	6,310.49	-2,655.98	-210.07	14,442,309.99	1,698,362.58	39.76776282	-80.79375451
7,175.00	38.46	283.42	6,348.04	-2,650.43	-237.76	14,442,315.54	1,698,334.89	39.76771835	-80.79383381
7,223.00	41.93	287.02	6,384.71	-2,642.26	-267.63	14,442,323.70	1,698,305.02	39.76767388	-80.79391311
7,270.00	45.58	290.80	6,418.65	-2,631.70	-298.35	14,442,334.26	1,698,274.30	39.76762941	-80.79399241
7,317.00	48.13	294.58	6,450.80	-2,618.46	-329.96	14,442,347.51	1,698,242.68	39.76758494	-80.79407171

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Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Whistlepig N-06HM (slot A)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Site:	Whistlepig	MD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Well:	Whistlepig N-06HM (slot A)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
7,364.00	51.60	296.34	6,481.09	-2,603.00	-362.39	14,442,362.96	1,698,210.25	39.76811538	-80.79432597
7,411.00	55.74	296.87	6,508.93	-2,586.04	-396.24	14,442,379.92	1,698,176.41	39.76816216	-80.79444628
7,458.00	60.26	297.22	6,533.83	-2,567.92	-431.73	14,442,398.04	1,698,140.92	39.76821215	-80.79457243
7,506.00	65.01	296.43	6,555.89	-2,548.70	-469.76	14,442,417.27	1,698,102.89	39.76826519	-80.79470762
7,553.00	69.05	296.51	6,574.23	-2,529.41	-508.49	14,442,436.55	1,698,064.16	39.76831839	-80.79484529
7,601.00	71.60	296.78	6,590.38	-2,509.15	-548.88	14,442,456.82	1,698,023.76	39.76837431	-80.79498887
7,648.00	74.55	297.04	6,604.07	-2,488.80	-588.97	14,442,477.17	1,697,983.67	39.76843044	-80.79513138
7,696.00	76.53	297.31	6,616.05	-2,467.57	-630.32	14,442,498.40	1,697,942.33	39.76848900	-80.79527835
7,743.00	80.22	298.36	6,625.52	-2,446.08	-671.02	14,442,519.89	1,697,901.63	39.76854828	-80.79542302
7,790.00	84.13	298.98	6,631.92	-2,423.74	-711.86	14,442,542.22	1,697,860.78	39.76860988	-80.79556820
7,837.00	87.82	301.61	6,635.22	-2,400.09	-752.33	14,442,565.87	1,697,820.31	39.76867507	-80.79571203
7,884.00	91.21	304.95	6,635.62	-2,374.31	-791.61	14,442,591.65	1,697,781.03	39.76874612	-80.79585160
7,931.00	91.91	307.06	6,634.34	-2,346.69	-829.62	14,442,619.27	1,697,743.03	39.76882220	-80.79598663
7,978.00	91.16	309.35	6,633.08	-2,317.64	-866.54	14,442,648.33	1,697,706.11	39.76889023	-80.79598663
8,025.00	90.81	312.33	6,632.27	-2,286.91	-902.08	14,442,679.05	1,697,670.56	39.76896684	-80.79624403
8,073.00	90.51	314.80	6,631.72	-2,253.83	-936.86	14,442,712.13	1,697,635.79	39.76907789	-80.79636752
8,120.00	89.98	317.61	6,631.51	-2,219.91	-969.38	14,442,746.05	1,697,603.27	39.76917125	-80.79648299
8,167.00	91.03	317.96	6,631.10	-2,185.11	-1,000.96	14,442,780.86	1,697,571.69	39.76926704	-80.79659509
8,261.00	90.37	318.31	6,629.95	-2,115.11	-1,063.69	14,442,850.86	1,697,508.96	39.76945967	-80.79681777
8,355.00	90.20	318.22	6,629.48	-2,044.96	-1,126.26	14,442,921.00	1,697,446.39	39.76965269	-80.79703989
8,449.00	90.02	317.52	6,629.30	-1,975.25	-1,189.32	14,442,990.71	1,697,383.33	39.76984454	-80.79726373
8,543.00	89.45	317.43	6,629.74	-1,905.98	-1,252.85	14,443,059.99	1,697,319.79	39.77003518	-80.79748928
8,638.00	89.14	317.34	6,630.91	-1,836.07	-1,317.17	14,443,129.90	1,697,255.48	39.77022756	-80.79771761
8,732.00	89.93	316.82	6,631.67	-1,767.23	-1,381.18	14,443,198.73	1,697,191.47	39.77041700	-80.79794486
8,825.00	91.82	317.17	6,630.25	-1,699.24	-1,444.60	14,443,266.73	1,697,128.05	39.77060413	-80.79817002
8,919.00	89.67	316.64	6,629.03	-1,630.60	-1,508.81	14,443,335.36	1,697,063.84	39.77079301	-80.79839800
9,013.00	88.97	316.73	6,630.14	-1,562.22	-1,573.29	14,443,403.75	1,696,999.36	39.77098122	-80.79862693
9,108.00	90.46	317.52	6,630.62	-1,492.60	-1,637.93	14,443,473.36	1,696,934.72	39.77117281	-80.79885640
9,202.00	89.93	317.70	6,630.30	-1,423.17	-1,701.30	14,443,542.79	1,696,871.35	39.77136386	-80.79908136
9,296.00	91.65	318.22	6,629.00	-1,353.37	-1,764.24	14,443,612.59	1,696,808.41	39.77155594	-80.79930481
9,390.00	90.29	317.78	6,627.41	-1,283.53	-1,827.13	14,443,682.43	1,696,745.52	39.77174814	-80.79952807
9,484.00	90.51	316.82	6,626.75	-1,214.45	-1,890.87	14,443,751.51	1,696,681.78	39.77193824	-80.79975438
9,578.00	90.33	317.52	6,626.06	-1,145.51	-1,954.77	14,443,820.45	1,696,617.88	39.77212795	-80.79998125
9,672.00	89.23	316.29	6,626.42	-1,076.88	-2,018.99	14,443,889.09	1,696,553.66	39.77231684	-80.80020926
9,767.00	90.68	316.64	6,626.50	-1,008.01	-2,084.43	14,443,957.95	1,696,488.23	39.77250638	-80.80044159
9,861.00	90.24	315.85	6,625.74	-940.11	-2,149.43	14,444,025.85	1,696,423.22	39.77269323	-80.80067241
9,955.00	91.78	316.38	6,624.09	-872.38	-2,214.58	14,444,093.58	1,696,358.07	39.77287965	-80.80090374
10,049.00	90.77	315.94	6,622.00	-804.60	-2,279.67	14,444,161.37	1,696,292.98	39.77306619	-80.80113486
10,143.00	90.24	316.20	6,621.17	-736.90	-2,344.88	14,444,229.06	1,696,227.77	39.77325250	-80.80136642
10,236.00	89.67	315.94	6,621.24	-669.92	-2,409.41	14,444,296.04	1,696,163.25	39.77343683	-80.80159552
10,330.00	90.90	315.76	6,620.77	-602.48	-2,474.88	14,444,363.48	1,696,097.77	39.77362245	-80.80182801
10,424.00	90.42	316.47	6,619.69	-534.74	-2,540.04	14,444,431.23	1,696,032.62	39.77380889	-80.80205937
10,519.00	89.80	317.34	6,619.51	-465.37	-2,604.94	14,444,500.60	1,695,967.71	39.77399979	-80.80228982
10,613.00	91.56	318.14	6,618.39	-395.80	-2,668.15	14,444,570.16	1,695,904.51	39.77419121	-80.80251423
10,707.00	89.85	317.34	6,617.24	-326.24	-2,731.35	14,444,639.72	1,695,841.30	39.77438283	-80.80273864
10,801.00	89.49	317.70	6,617.78	-256.92	-2,794.83	14,444,709.04	1,695,777.82	39.77457340	-80.80296403
10,895.00	91.03	318.84	6,617.35	-186.77	-2,857.40	14,444,779.19	1,695,715.25	39.77476402	-80.80318616
10,990.00	90.07	318.14	6,616.44	-115.64	-2,920.36	14,444,850.32	1,695,652.30	39.77495462	-80.80340967
11,084.00	89.54	317.52	6,616.76	-45.97	-2,983.46	14,444,919.99	1,695,589.19	39.77514521	-80.80363372
11,177.00	90.59	316.90	6,616.65	22.28	-3,046.64	14,444,988.24	1,695,526.02	39.77533580	-80.80385804
11,271.00	90.77	315.76	6,615.54	90.27	-3,111.54	14,445,056.23	1,695,461.12	39.77552637	-80.80408266
11,365.00	90.07	316.29	6,614.85	157.91	-3,176.80	14,445,123.87	1,695,395.85	39.77571693	-80.80430728
11,460.00	91.82	317.70	6,613.28	227.37	-3,241.59	14,445,193.33	1,695,331.07	39.77590750	-80.80453190
11,553.00	90.86	317.43	6,611.11	295.99	-3,304.32	14,445,261.95	1,695,268.33	39.77609807	-80.80475652
11,646.00	89.36	316.90	6,610.93	364.18	-3,367.55	14,445,330.14	1,695,205.11	39.77628855	-80.80498114

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Company:	Tug Hill Operating LLC	Local Co-ordinate Reference:	Well Whistlepig N-06HM (slot A)
Project:	Marshall County, West Virginia	TVD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Site:	Whistlepig	MD Reference:	RKB=1368+32.5 @ 1400.50ft (Nabors X14)
Well:	Whistlepig N-06HM (slot A)	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Surveys Original Hole	Database:	DB_Dec2220_v16

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
11,740.00	90.90	317.08	6,610.71	432.92	-3,431.67	14,445,398.88	1,695,140.99	39.77647170	-80.80522522
11,835.00	89.36	317.43	6,610.50	502.68	-3,496.14	14,445,468.64	1,695,076.51	39.77666368	-80.80545417
11,929.00	90.29	317.34	6,610.79	571.86	-3,559.79	14,445,537.81	1,695,012.87	39.77685403	-80.80568016
12,023.00	89.54	317.70	6,610.93	641.18	-3,623.27	14,445,607.14	1,694,949.39	39.77704479	-80.80590556
12,117.00	90.86	317.17	6,610.60	710.41	-3,686.85	14,445,676.37	1,694,885.80	39.77723530	-80.80613133
12,212.00	90.15	316.82	6,609.76	779.88	-3,751.64	14,445,745.84	1,694,821.01	39.77742647	-80.80636141
12,306.00	91.47	316.29	6,608.43	848.12	-3,816.27	14,445,814.08	1,694,756.38	39.77761425	-80.80659092
12,400.00	90.59	316.11	6,606.74	915.95	-3,881.32	14,445,881.91	1,694,691.33	39.77780093	-80.80682193
12,494.00	92.04	315.94	6,604.58	983.58	-3,946.57	14,445,949.54	1,694,626.08	39.77798704	-80.80705365
12,588.00	90.90	316.03	6,602.17	1,051.16	-4,011.87	14,446,017.12	1,694,560.79	39.77817301	-80.80728552
12,683.00	89.80	315.94	6,601.59	1,119.47	-4,077.87	14,446,085.43	1,694,494.78	39.77836102	-80.80751994
12,777.00	88.62	315.76	6,602.89	1,186.91	-4,143.34	14,446,152.87	1,694,429.31	39.77854661	-80.80775244
12,870.00	89.63	316.03	6,604.31	1,253.69	-4,208.06	14,446,219.64	1,694,364.60	39.77873036	-80.80798228
12,965.00	89.36	316.03	6,605.15	1,322.05	-4,274.01	14,446,288.01	1,694,298.64	39.77891851	-80.80821651
13,059.00	90.64	315.67	6,605.15	1,389.50	-4,339.49	14,446,355.46	1,694,233.17	39.77910412	-80.80844903
13,153.00	90.24	316.47	6,604.42	1,457.19	-4,404.70	14,446,423.15	1,694,167.96	39.77929041	-80.80868063
13,247.00	91.60	315.85	6,602.92	1,524.98	-4,469.80	14,446,490.94	1,694,102.86	39.77947696	-80.80891182
13,341.00	90.51	317.26	6,601.18	1,593.22	-4,534.42	14,446,559.17	1,694,038.23	39.77966473	-80.80914133
13,435.00	89.45	317.96	6,601.22	1,662.64	-4,597.79	14,446,628.60	1,693,974.86	39.77985256	-80.80936636
13,530.00	91.30	319.19	6,600.60	1,733.87	-4,660.65	14,446,699.83	1,693,912.01	39.78005174	-80.80958953
13,624.00	89.23	318.84	6,600.16	1,804.82	-4,722.29	14,446,770.78	1,693,850.36	39.78024695	-80.80980842
13,680.00	89.89	319.10	6,600.59	1,847.07	-4,759.05	14,446,813.02	1,693,813.60	39.78036318	-80.80993894
Survey @ 13680.00 MD 6600.59 TVD									
13,735.00	89.89	319.10	6,600.70	1,888.64	-4,795.06	14,446,854.59	1,693,777.59	39.78047756	-80.81006680
Survey Proj. to 13735.00 MD 6600.70 TVD									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
13,680.00	6,600.59	1,847.07	-4,759.05	Survey @ 13680.00 MD 6600.59 TVD
13,735.00	6,600.70	1,888.64	-4,795.06	Survey Proj. to 13735.00 MD 6600.70 TVD

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