

As Drilled Well Location Plat

Northeast Natural Energy, LLC Applicant / Well Operator Name	DEP ID#	Sullivan Pad Monongalia Co., WV GL 1476' & 28' KB @ 1504.0usft (Patt 277)	Well # Sullivan 13H
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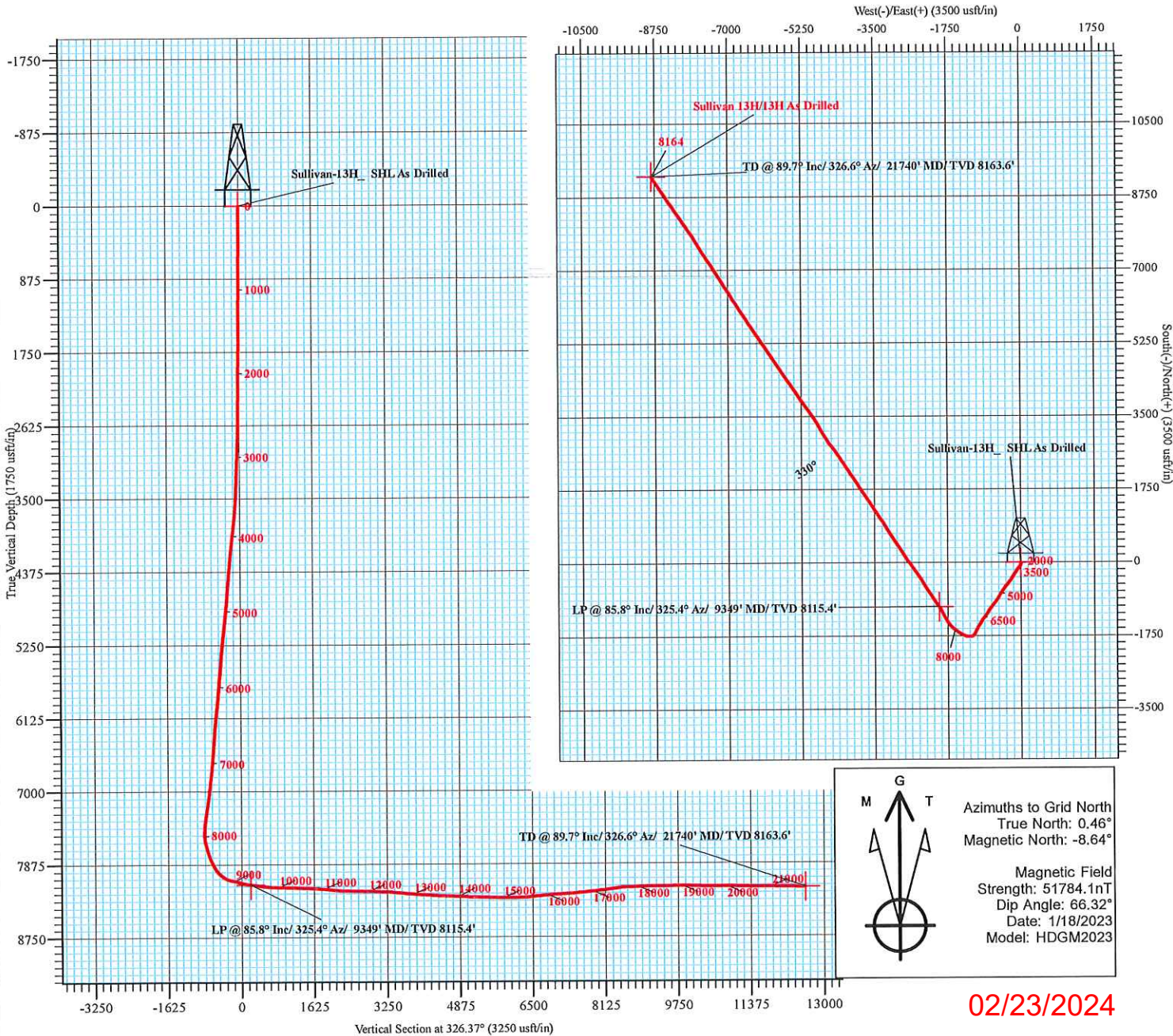


WELL PLAN
Operator Name: **Northeast Natural Energy**
Well/Farm Name: **Sullivan Pad**

DEP Use Only	Permit #
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NOTES:

Name	TVD	Latitude	Longitude	TMD
Sullivan-13H_SHL As Drilled	0.0	39.6147287	-80.2232604	0
Sullivan-13H_LP As Drilled	8115.4	39.6117867	-80.2301891	9349
Sullivan-13H_BHL As Drilled	8163.6	39.6399208	-80.2548566	21740



02/23/2024



Northeast Natural Energy

Monongalia Co., WV
Sullivan Pad
Sullivan 13H

Orig.

Design: 13H As Drilled

Survey Report - Geographic

13 February, 2023



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02/23/2024



SDI
Survey Report - Geographic



Company:	Northeast Natural Energy	Local Co-ordinate Reference:	Well Sullivan 13H
Project:	Monongalia Co., WV	TVD Reference:	GL 1476' & 28' KB @ 1504.0usft (Patt 277)
Site:	Sullivan Pad	MD Reference:	GL 1476' & 28' KB @ 1504.0usft (Patt 277)
Well:	Sullivan 13H	North Reference:	Grid
Wellbore:	Orig.	Survey Calculation Method:	Minimum Curvature
Design:	13H As Drilled	Database:	Northeast

Project	Monongalia Co., WV		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	West Virginia Northern Zone		

Site	Sullivan Pad				
Site Position:		Northing:	406,882.09 usft	Latitude:	39.6148554
From:	Map	Easting:	1,764,815.00 usft	Longitude:	-80.2230283
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.46 °

Well	Sullivan 13H					
Well Position	+N/-S	0.0 usft	Northing:	406,836.50 usft	Latitude:	39.6147287
	+E/-W	0.0 usft	Easting:	1,764,749.27 usft	Longitude:	-80.2232603
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	1,476.0 usft

Wellbore	Orig.				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2023	1/18/2023	-9.10	66.32	51,784.10000000

Design	13H As Drilled				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0		326.37

Survey Program	Date	2/13/2023			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
50.0	2,350.0	Survey #1 (Orig.)	NS-GYRO-MS	North sensing gyrocompassing m/s	
2,521.0	9,385.0	Survey #2 SDI MWD (Orig.)	SDI MWD	SDI MWD - Standard ver 1.0.1	
9,471.0	21,740.0	Survey #3 SDI MWD (Orig.)	SDI MWD	SDI MWD - Standard ver 1.0.1	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.0	0.00	0.00	0.0	0.0	0.0	406,836.50	1,764,749.27	39.6147287	-80.2232603	
50.0	0.16	173.83	50.0	-0.1	0.0	406,836.43	1,764,749.28	39.6147286	-80.2232603	
100.0	0.28	200.31	100.0	-0.3	0.0	406,836.25	1,764,749.24	39.6147281	-80.2232604	
150.0	0.34	185.88	150.0	-0.5	-0.1	406,835.98	1,764,749.18	39.6147273	-80.2232606	
200.0	0.34	192.31	200.0	-0.8	-0.1	406,835.69	1,764,749.14	39.6147265	-80.2232608	
250.0	0.31	173.67	250.0	-1.1	-0.1	406,835.41	1,764,749.12	39.6147258	-80.2232608	
300.0	0.13	139.31	300.0	-1.3	-0.1	406,835.23	1,764,749.17	39.6147253	-80.2232607	
350.0	0.19	99.84	350.0	-1.3	0.0	406,835.18	1,764,749.29	39.6147251	-80.2232602	
400.0	0.22	111.93	400.0	-1.4	0.2	406,835.13	1,764,749.46	39.6147250	-80.2232596	
450.0	0.26	131.54	450.0	-1.5	0.4	406,835.02	1,764,749.64	39.6147247	-80.2232590	

Company:	Northeast Natural Energy	Local Co-ordinate Reference:	Well Sullivan 13H
Project:	Monongalia Co., WV	TVD Reference:	GL 1476' & 28' KB @ 1504.0usft (Patt 277)
Site:	Sullivan Pad	MD Reference:	GL 1476' & 28' KB @ 1504.0usft (Patt 277)
Well:	Sullivan 13H	North Reference:	Grid
Wellbore:	Orig.	Survey Calculation Method:	Minimum Curvature
Design:	13H As Drilled	Database:	Northeast

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
500.0	0.34	133.63	500.0	-1.7	0.6	406,834.84	1,764,749.83	39.6147242	-80.2232583	
550.0	0.47	131.99	550.0	-1.9	0.8	406,834.60	1,764,750.09	39.6147235	-80.2232574	
600.0	0.44	117.93	600.0	-2.1	1.1	406,834.37	1,764,750.41	39.6147229	-80.2232562	
650.0	0.58	128.86	650.0	-2.4	1.5	406,834.12	1,764,750.78	39.6147223	-80.2232549	
700.0	0.57	135.20	700.0	-2.7	1.9	406,833.79	1,764,751.15	39.6147213	-80.2232536	
750.0	0.61	135.38	750.0	-3.1	2.2	406,833.42	1,764,751.51	39.6147203	-80.2232523	
800.0	0.74	140.33	800.0	-3.5	2.6	406,832.98	1,764,751.90	39.6147192	-80.2232509	
850.0	0.79	128.35	850.0	-4.0	3.1	406,832.52	1,764,752.38	39.6147179	-80.2232492	
900.0	0.79	134.19	900.0	-4.4	3.6	406,832.07	1,764,752.90	39.6147167	-80.2232473	
950.0	0.71	142.35	950.0	-4.9	4.1	406,831.58	1,764,753.33	39.6147153	-80.2232458	
1,000.0	0.82	145.38	1,000.0	-5.5	4.5	406,831.04	1,764,753.73	39.6147139	-80.2232444	
1,050.0	0.75	140.11	1,050.0	-6.0	4.9	406,830.50	1,764,754.14	39.6147124	-80.2232429	
1,100.0	0.72	141.63	1,100.0	-6.5	5.3	406,830.00	1,764,754.55	39.6147110	-80.2232414	
1,150.0	0.88	147.74	1,150.0	-7.1	5.7	406,829.43	1,764,754.95	39.6147095	-80.2232400	
1,200.0	0.93	150.47	1,199.9	-7.7	6.1	406,828.75	1,764,755.35	39.6147076	-80.2232385	
1,250.0	0.81	153.84	1,249.9	-8.4	6.4	406,828.08	1,764,755.71	39.6147058	-80.2232373	
1,300.0	0.88	153.12	1,299.9	-9.1	6.8	406,827.42	1,764,756.04	39.6147040	-80.2232361	
1,350.0	0.76	140.31	1,349.9	-9.7	7.2	406,826.82	1,764,756.42	39.6147023	-80.2232347	
1,400.0	0.59	136.33	1,399.9	-10.1	7.5	406,826.38	1,764,756.81	39.6147011	-80.2232333	
1,450.0	0.44	142.94	1,449.9	-10.5	7.8	406,826.04	1,764,757.10	39.6147002	-80.2232322	
1,500.0	0.42	168.25	1,499.9	-10.8	8.0	406,825.71	1,764,757.26	39.6146993	-80.2232317	
1,550.0	0.39	176.57	1,549.9	-11.1	8.0	406,825.36	1,764,757.30	39.6146983	-80.2232315	
1,600.0	0.48	169.44	1,599.9	-11.5	8.1	406,824.98	1,764,757.35	39.6146973	-80.2232313	
1,650.0	0.54	177.38	1,649.9	-12.0	8.1	406,824.54	1,764,757.40	39.6146961	-80.2232311	
1,700.0	0.70	161.39	1,699.9	-12.5	8.2	406,824.02	1,764,757.51	39.6146947	-80.2232307	
1,750.0	0.97	157.79	1,749.9	-13.2	8.5	406,823.34	1,764,757.77	39.6146928	-80.2232298	
1,800.0	0.95	160.24	1,799.9	-13.9	8.8	406,822.56	1,764,758.07	39.6146907	-80.2232287	
1,850.0	0.95	168.25	1,849.9	-14.7	9.0	406,821.76	1,764,758.29	39.6146885	-80.2232279	
1,900.0	0.83	149.85	1,899.9	-15.5	9.3	406,821.04	1,764,758.56	39.6146865	-80.2232269	
1,950.0	0.93	161.01	1,949.9	-16.2	9.6	406,820.34	1,764,758.87	39.6146846	-80.2232258	
2,000.0	0.83	163.92	1,999.9	-16.9	9.8	406,819.61	1,764,759.10	39.6146826	-80.2232250	
2,050.0	0.93	159.95	2,049.9	-17.6	10.1	406,818.88	1,764,759.34	39.6146806	-80.2232241	
2,100.0	0.87	146.94	2,099.9	-18.3	10.4	406,818.18	1,764,759.69	39.6146787	-80.2232228	
2,150.0	1.05	155.22	2,149.9	-19.0	10.8	406,817.45	1,764,760.09	39.6146767	-80.2232214	
2,200.0	0.96	139.75	2,199.8	-19.8	11.3	406,816.71	1,764,760.55	39.6146747	-80.2232197	
2,250.0	1.28	150.22	2,249.8	-20.6	11.8	406,815.91	1,764,761.10	39.6146725	-80.2232178	
2,300.0	0.97	145.50	2,299.8	-21.4	12.3	406,815.08	1,764,761.62	39.6146702	-80.2232159	
2,350.0	1.09	139.35	2,349.8	-22.1	12.9	406,814.37	1,764,762.17	39.6146683	-80.2232139	
2,521.0	1.12	158.59	2,520.8	-24.9	14.6	406,811.58	1,764,763.84	39.6146606	-80.2232079	
2,552.0	1.23	153.08	2,551.8	-25.5	14.8	406,811.00	1,764,764.10	39.6146591	-80.2232070	
2,648.0	2.48	193.46	2,647.7	-28.4	14.8	406,808.06	1,764,764.08	39.6146510	-80.2232070	
2,743.0	5.83	204.07	2,742.5	-34.8	12.4	406,801.65	1,764,761.63	39.6146334	-80.2232155	
2,838.0	6.88	206.29	2,836.9	-44.4	7.9	406,792.15	1,764,757.15	39.6146072	-80.2232311	
2,933.0	8.22	208.54	2,931.1	-55.4	2.1	406,781.08	1,764,751.38	39.6145766	-80.2232513	
3,031.0	9.04	205.69	3,028.0	-68.5	-4.6	406,767.98	1,764,744.70	39.6145406	-80.2232746	
3,126.0	9.39	205.01	3,121.7	-82.3	-11.1	406,754.24	1,764,738.18	39.6145027	-80.2232973	
3,221.0	10.62	214.27	3,215.3	-96.5	-19.3	406,739.98	1,764,729.98	39.6144633	-80.2233261	
3,315.0	12.24	215.37	3,307.4	-111.8	-29.9	406,724.69	1,764,719.33	39.6144211	-80.2233634	
3,410.0	14.42	219.37	3,399.9	-129.2	-43.3	406,707.33	1,764,706.00	39.6143732	-80.2234103	
3,505.0	16.62	216.85	3,491.4	-149.2	-58.9	406,687.31	1,764,690.34	39.6143179	-80.2234652	
3,600.0	19.47	215.13	3,581.7	-173.0	-76.2	406,663.49	1,764,673.08	39.6142521	-80.2235258	
3,695.0	22.15	213.11	3,670.5	-201.0	-95.1	406,635.53	1,764,654.18	39.6141749	-80.2235921	
3,790.0	25.11	213.49	3,757.5	-232.8	-116.0	406,603.72	1,764,633.27	39.6140871	-80.2236654	
3,885.0	25.81	210.36	3,843.3	-267.4	-137.6	406,569.06	1,764,611.70	39.6139915	-80.2237410	
3,980.0	26.92	209.33	3,928.4	-304.0	-158.6	406,532.46	1,764,590.71	39.6138906	-80.2238145	

Company:	Northeast Natural Energy	Local Co-ordinate Reference:	Well Sullivan 13H
Project:	Monongalia Co., WV	TVD Reference:	GL 1476' & 28' KB @ 1504.0usft (Patt 277)
Site:	Sullivan Pad	MD Reference:	GL 1476' & 28' KB @ 1504.0usft (Patt 277)
Well:	Sullivan 13H	North Reference:	Grid
Wellbore:	Orig.	Survey Calculation Method:	Minimum Curvature
Design:	13H As Drilled	Database:	Northeast

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
4,075.0	27.62	210.32	4,012.9	-341.8	-180.2	406,494.70	1,764,569.06	39.6137864	-80.2238902
4,173.0	26.92	212.03	4,100.0	-380.2	-203.4	406,456.29	1,764,545.82	39.6136804	-80.2239716
4,268.0	26.57	214.20	4,184.8	-416.0	-226.8	406,420.48	1,764,522.48	39.6135816	-80.2240535
4,363.0	27.12	219.16	4,269.6	-450.4	-252.4	406,386.12	1,764,496.86	39.6134867	-80.2241434
4,458.0	26.73	217.45	4,354.3	-484.1	-279.1	406,352.36	1,764,470.19	39.6133935	-80.2242371
4,552.0	26.23	215.85	4,438.4	-517.8	-304.1	406,318.74	1,764,445.17	39.6133006	-80.2243250
4,647.0	25.25	218.81	4,524.0	-550.6	-329.1	406,285.94	1,764,420.17	39.6132100	-80.2244127
4,741.0	24.71	217.27	4,609.2	-581.8	-353.6	406,254.68	1,764,395.71	39.6131236	-80.2244987
4,834.0	24.68	217.07	4,693.7	-612.8	-377.0	406,223.72	1,764,372.23	39.6130381	-80.2245811
4,929.0	25.84	217.61	4,779.6	-645.0	-401.6	406,191.49	1,764,347.64	39.6129491	-80.2246675
5,025.0	26.11	214.04	4,865.9	-679.1	-426.2	406,157.41	1,764,323.05	39.6128550	-80.2247538
5,120.0	25.46	213.05	4,951.5	-713.5	-449.1	406,122.97	1,764,300.21	39.6127599	-80.2248339
5,215.0	24.64	210.08	5,037.5	-747.8	-470.1	406,088.72	1,764,279.15	39.6126654	-80.2249077
5,312.0	23.92	207.69	5,126.0	-782.7	-489.4	406,053.81	1,764,259.87	39.6125691	-80.2249751
5,406.0	24.21	210.56	5,211.8	-816.2	-508.1	406,020.33	1,764,241.22	39.6124768	-80.2250403
5,502.0	23.64	213.65	5,299.5	-849.1	-528.7	405,987.36	1,764,220.54	39.6123859	-80.2251128
5,597.0	23.59	216.69	5,386.6	-880.2	-550.6	405,956.26	1,764,198.63	39.6123000	-80.2251897
5,693.0	24.63	217.51	5,474.2	-911.5	-574.3	405,924.99	1,764,174.97	39.6122136	-80.2252727
5,787.0	25.85	218.16	5,559.2	-943.2	-598.9	405,893.34	1,764,150.38	39.6121262	-80.2253591
5,882.0	27.22	218.98	5,644.2	-976.3	-625.4	405,860.16	1,764,123.92	39.6120345	-80.2254521
5,976.0	27.00	217.95	5,727.9	-1,009.9	-652.0	405,826.62	1,764,097.27	39.6119418	-80.2255457
6,070.0	26.61	218.83	5,811.8	-1,043.1	-678.3	405,793.40	1,764,070.95	39.6118500	-80.2256382
6,165.0	26.71	217.73	5,896.7	-1,076.6	-704.7	405,759.94	1,764,044.55	39.6117576	-80.2257309
6,260.0	27.81	216.23	5,981.2	-1,111.3	-730.9	405,725.17	1,764,018.38	39.6116616	-80.2258228
6,355.0	25.98	210.63	6,065.9	-1,147.1	-754.6	405,689.38	1,763,994.68	39.6115628	-80.2259059
6,450.0	24.68	210.05	6,151.8	-1,182.2	-775.1	405,654.31	1,763,974.14	39.6114661	-80.2259778
6,544.0	23.05	214.86	6,237.7	-1,214.3	-795.5	405,622.22	1,763,953.79	39.6113775	-80.2260491
6,639.0	22.66	216.69	6,325.3	-1,244.2	-817.0	405,592.28	1,763,932.23	39.6112948	-80.2261248
6,734.0	22.12	216.46	6,413.1	-1,273.3	-838.6	405,563.22	1,763,910.67	39.6112146	-80.2262005
6,829.0	22.82	216.50	6,500.9	-1,302.5	-860.2	405,534.03	1,763,889.08	39.6111340	-80.2262763
6,924.0	24.49	216.10	6,587.9	-1,333.2	-882.8	405,503.31	1,763,866.52	39.6110491	-80.2263555
7,019.0	25.68	215.20	6,673.9	-1,365.9	-906.2	405,470.58	1,763,843.05	39.6109587	-80.2264378
7,113.0	26.95	213.45	6,758.2	-1,400.3	-929.7	405,436.16	1,763,819.57	39.6108637	-80.2265202
7,208.0	28.13	212.23	6,842.4	-1,437.2	-953.5	405,399.25	1,763,795.76	39.6107619	-80.2266036
7,303.0	28.26	211.33	6,926.2	-1,475.4	-977.2	405,361.09	1,763,772.12	39.6106566	-80.2266865
7,398.0	29.32	211.23	7,009.4	-1,514.5	-1,000.9	405,321.99	1,763,748.36	39.6105487	-80.2267696
7,493.0	29.73	207.91	7,092.1	-1,555.2	-1,024.0	405,281.28	1,763,725.28	39.6104364	-80.2268504
7,589.0	28.91	204.21	7,175.8	-1,597.4	-1,044.7	405,239.08	1,763,704.62	39.6103201	-80.2269225
7,683.0	30.40	205.71	7,257.5	-1,639.6	-1,064.3	405,196.93	1,763,684.98	39.6102040	-80.2269910
7,777.0	29.08	208.20	7,339.1	-1,681.1	-1,085.4	405,155.36	1,763,663.87	39.6100894	-80.2270648
7,871.0	29.99	220.25	7,421.0	-1,719.2	-1,111.4	405,117.26	1,763,637.87	39.6099842	-80.2271560
7,965.0	28.69	237.75	7,503.1	-1,749.3	-1,145.7	405,087.24	1,763,603.54	39.6099010	-80.2272769
8,060.0	33.42	263.72	7,584.8	-1,764.4	-1,191.2	405,072.13	1,763,558.02	39.6098585	-80.2274381
8,155.0	38.99	276.07	7,661.5	-1,764.1	-1,247.1	405,072.43	1,763,502.18	39.6098581	-80.2276363
8,249.0	40.77	281.12	7,733.7	-1,755.0	-1,306.6	405,081.48	1,763,442.64	39.6098816	-80.2278479
8,344.0	43.67	293.92	7,804.1	-1,735.7	-1,367.2	405,100.80	1,763,382.09	39.6099333	-80.2280633
8,439.0	46.48	301.53	7,871.3	-1,704.4	-1,426.6	405,132.14	1,763,322.70	39.6100180	-80.2282750
8,534.0	52.52	303.70	7,932.9	-1,665.4	-1,487.4	405,171.11	1,763,261.92	39.6101237	-80.2284919
8,628.0	62.90	304.76	7,983.1	-1,620.7	-1,552.9	405,215.78	1,763,196.33	39.6102448	-80.2287259
8,722.0	69.91	311.96	8,020.7	-1,567.2	-1,620.3	405,269.27	1,763,128.98	39.6103902	-80.2289666
8,816.0	76.13	318.28	8,048.2	-1,503.5	-1,683.6	405,332.96	1,763,065.67	39.6105637	-80.2291931
8,912.0	86.27	323.38	8,062.9	-1,430.1	-1,743.4	405,406.43	1,763,005.89	39.6107640	-80.2294074
9,006.0	83.30	329.94	8,071.4	-1,351.9	-1,794.8	405,484.58	1,762,954.46	39.6109774	-80.2295922
9,100.0	80.17	333.99	8,084.9	-1,269.8	-1,838.5	405,566.65	1,762,910.74	39.6112017	-80.2297497
9,195.0	81.92	334.46	8,099.7	-1,185.3	-1,879.3	405,651.15	1,762,869.94	39.6114328	-80.2298970

Company:	Northeast Natural Energy	Local Co-ordinate Reference:	Well Sullivan 13H
Project:	Monongalia Co., WV	TVD Reference:	GL 1476' & 28' KB @ 1504.0usft (Patt 277)
Site:	Sullivan Pad	MD Reference:	GL 1476' & 28' KB @ 1504.0usft (Patt 277)
Well:	Sullivan 13H	North Reference:	Grid
Wellbore:	Orig.	Survey Calculation Method:	Minimum Curvature
Design:	13H As Drilled	Database:	Northeast

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,291.0	84.99	324.79	8,110.7	-1,103.2	-1,927.5	405,733.31	1,762,821.76	39.6116573	-80.2300704
9,349.0	85.80	325.44	8,115.4	-1,055.8	-1,960.6	405,780.74	1,762,788.69	39.6117868	-80.2301891
LP @ 9349' MD/ TVD 8115.4'									
9,385.0	86.31	325.84	8,117.8	-1,026.1	-1,980.8	405,810.38	1,762,768.42	39.6118677	-80.2302619
9,471.0	87.35	326.06	8,122.6	-955.0	-2,028.9	405,881.53	1,762,720.34	39.6120620	-80.2304346
9,565.0	85.60	326.21	8,128.4	-877.1	-2,081.2	405,959.43	1,762,668.06	39.6122747	-80.2306224
9,660.0	84.96	325.66	8,136.2	-798.6	-2,134.2	406,037.86	1,762,615.03	39.6124888	-80.2308129
9,754.0	88.35	326.93	8,141.7	-720.6	-2,186.3	406,115.92	1,762,562.97	39.6127019	-80.2310000
9,849.0	89.06	327.59	8,143.8	-640.7	-2,237.7	406,195.80	1,762,511.60	39.6129201	-80.2311846
9,943.0	89.06	327.83	8,145.4	-561.2	-2,287.9	406,275.25	1,762,461.40	39.6131371	-80.2313651
10,038.0	89.06	327.79	8,146.9	-480.9	-2,338.5	406,355.64	1,762,410.79	39.6133566	-80.2315470
10,133.0	88.86	327.42	8,148.6	-400.7	-2,389.4	406,435.84	1,762,359.91	39.6135757	-80.2317300
10,228.0	88.93	324.96	8,150.5	-321.7	-2,442.2	406,514.76	1,762,307.06	39.6137911	-80.2319199
10,323.0	88.89	325.70	8,152.3	-243.6	-2,496.2	406,592.87	1,762,253.03	39.6140044	-80.2321139
10,417.0	89.40	325.25	8,153.7	-166.2	-2,549.5	406,670.31	1,762,199.76	39.6142158	-80.2323052
10,511.0	88.92	324.58	8,155.1	-89.3	-2,603.5	406,747.22	1,762,145.73	39.6144257	-80.2324992
10,607.0	88.49	321.62	8,157.2	-12.5	-2,661.2	406,823.96	1,762,088.11	39.6146351	-80.2327060
10,701.0	88.79	325.94	8,159.5	63.3	-2,716.7	406,899.76	1,762,032.60	39.6148420	-80.2329052
10,796.0	88.19	327.05	8,162.0	142.4	-2,769.1	406,978.94	1,761,980.18	39.6150582	-80.2330936
10,891.0	87.65	327.73	8,165.4	222.4	-2,820.3	407,058.91	1,761,929.02	39.6152766	-80.2332775
10,985.0	87.59	327.50	8,169.3	301.7	-2,870.6	407,138.23	1,761,878.71	39.6154932	-80.2334583
11,080.0	87.41	326.96	8,173.5	381.5	-2,921.9	407,218.03	1,761,827.34	39.6157111	-80.2336430
11,176.0	86.92	325.86	8,178.2	461.4	-2,975.0	407,297.90	1,761,774.30	39.6159292	-80.2338336
11,271.0	86.98	326.57	8,183.3	540.2	-3,027.7	407,376.75	1,761,721.54	39.6161445	-80.2340232
11,365.0	87.15	326.52	8,188.1	618.6	-3,079.5	407,455.07	1,761,669.79	39.6163584	-80.2342091
11,461.0	89.50	326.32	8,190.9	698.5	-3,132.6	407,535.01	1,761,616.72	39.6165766	-80.2343998
11,555.0	89.46	329.07	8,191.7	777.9	-3,182.8	407,614.45	1,761,566.49	39.6167936	-80.2345804
11,649.0	89.56	329.07	8,192.5	858.6	-3,231.1	407,695.08	1,761,518.18	39.6170139	-80.2347543
11,744.0	89.40	327.83	8,193.4	939.5	-3,280.8	407,776.03	1,761,468.47	39.6172350	-80.2349331
11,839.0	88.99	326.35	8,194.7	1,019.3	-3,332.4	407,855.77	1,761,416.86	39.6174528	-80.2351186
11,934.0	89.16	326.51	8,196.3	1,098.4	-3,384.9	407,934.92	1,761,364.34	39.6176689	-80.2353073
12,029.0	89.43	326.85	8,197.4	1,177.8	-3,437.1	408,014.30	1,761,312.16	39.6178856	-80.2354949
12,124.0	88.96	326.29	8,198.8	1,257.1	-3,489.4	408,093.57	1,761,259.83	39.6181021	-80.2356829
12,219.0	89.20	326.41	8,200.3	1,336.1	-3,542.1	408,172.64	1,761,207.19	39.6183180	-80.2358721
12,313.0	89.20	326.65	8,201.6	1,414.5	-3,593.9	408,251.05	1,761,155.36	39.6185320	-80.2360583
12,408.0	88.86	325.35	8,203.2	1,493.3	-3,647.0	408,329.79	1,761,102.24	39.6187470	-80.2362492
12,502.0	86.74	325.72	8,206.8	1,570.7	-3,700.2	408,407.23	1,761,049.09	39.6189584	-80.2364401
12,597.0	87.28	324.62	8,211.8	1,648.6	-3,754.4	408,485.10	1,760,994.91	39.6191710	-80.2366347
12,692.0	87.38	326.23	8,216.2	1,726.7	-3,808.2	408,563.24	1,760,941.05	39.6193843	-80.2368282
12,787.0	87.01	326.73	8,220.9	1,805.8	-3,860.6	408,642.34	1,760,888.66	39.6196003	-80.2370165
12,882.0	86.88	326.82	8,225.9	1,885.2	-3,912.6	408,721.70	1,760,836.68	39.6198170	-80.2372033
12,976.0	87.32	326.43	8,230.7	1,963.6	-3,964.2	408,800.10	1,760,785.03	39.6200310	-80.2373889
13,071.0	87.86	325.10	8,234.7	2,042.1	-4,017.6	408,878.57	1,760,731.63	39.6202453	-80.2375807
13,166.0	88.22	326.19	8,237.9	2,120.4	-4,071.2	408,956.95	1,760,678.06	39.6204592	-80.2377732
13,262.0	88.25	325.94	8,240.9	2,200.1	-4,124.8	409,036.56	1,760,624.49	39.6206766	-80.2379657
13,357.0	87.99	325.72	8,244.0	2,278.6	-4,178.1	409,115.12	1,760,571.16	39.6208910	-80.2381573
13,452.0	87.99	326.82	8,247.3	2,357.6	-4,230.8	409,194.07	1,760,518.44	39.6211066	-80.2383467
13,547.0	88.16	325.45	8,250.5	2,436.4	-4,283.7	409,272.91	1,760,465.54	39.6213219	-80.2385369
13,641.0	88.19	325.20	8,253.5	2,513.7	-4,337.2	409,350.18	1,760,412.09	39.6215328	-80.2387289
13,737.0	89.53	325.37	8,255.4	2,592.6	-4,391.8	409,429.07	1,760,357.43	39.6217481	-80.2389252
13,832.0	88.86	324.09	8,256.8	2,670.1	-4,446.7	409,506.62	1,760,302.58	39.6219598	-80.2391222
13,927.0	88.42	322.09	8,259.0	2,746.1	-4,503.7	409,582.56	1,760,245.54	39.6221670	-80.2393269
14,022.0	89.13	322.58	8,261.0	2,821.2	-4,561.8	409,657.74	1,760,187.51	39.6223721	-80.2395351
14,117.0	88.22	325.23	8,263.2	2,898.0	-4,617.7	409,734.48	1,760,131.56	39.6225815	-80.2397359
14,212.0	88.79	331.18	8,265.7	2,978.7	-4,667.7	409,815.16	1,760,081.55	39.6228018	-80.2399158



SDI
Survey Report - Geographic



Company:	Northeast Natural Energy	Local Co-ordinate Reference:	Well Sullivan 13H
Project:	Monongalia Co., WV	TVD Reference:	GL 1476' & 28' KB @ 1504.0usft (Patt 277)
Site:	Sullivan Pad	MD Reference:	GL 1476' & 28' KB @ 1504.0usft (Patt 277)
Well:	Sullivan 13H	North Reference:	Grid
Wellbore:	Orig.	Survey Calculation Method:	Minimum Curvature
Design:	13H As Drilled	Database:	Northeast

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,307.0	88.86	329.84	8,267.7	3,061.3	-4,714.5	409,897.83	1,760,034.79	39.6230277	-80.2400842
14,403.0	88.69	328.86	8,269.7	3,143.9	-4,763.4	409,980.40	1,759,985.87	39.6232533	-80.2402604
14,497.0	88.53	328.25	8,272.0	3,224.1	-4,812.4	410,060.57	1,759,936.84	39.6234723	-80.2404367
14,593.0	89.63	331.79	8,273.5	3,307.2	-4,860.4	410,143.70	1,759,888.89	39.6236994	-80.2406094
14,689.0	89.19	328.03	8,274.5	3,390.2	-4,908.5	410,226.74	1,759,840.77	39.6239263	-80.2407827
14,783.0	88.39	324.81	8,276.5	3,468.5	-4,960.5	410,305.03	1,759,788.79	39.6241401	-80.2409695
14,878.0	89.33	325.01	8,278.4	3,546.2	-5,015.1	410,382.75	1,759,734.19	39.6243522	-80.2411656
14,973.0	89.87	324.84	8,279.1	3,624.0	-5,069.7	410,460.49	1,759,679.60	39.6245644	-80.2413616
15,068.0	89.93	323.72	8,279.2	3,701.1	-5,125.1	410,537.62	1,759,624.14	39.6247749	-80.2415608
15,163.0	90.44	324.59	8,278.9	3,778.1	-5,180.8	410,614.62	1,759,568.51	39.6249850	-80.2417606
15,258.0	90.64	324.26	8,278.0	3,855.4	-5,236.0	410,691.89	1,759,513.25	39.6251959	-80.2419590
15,353.0	90.84	327.66	8,276.8	3,934.1	-5,289.2	410,770.59	1,759,460.08	39.6254108	-80.2421501
15,448.0	91.34	327.48	8,275.0	4,014.3	-5,340.1	410,850.76	1,759,409.14	39.6256297	-80.2423332
15,543.0	93.02	327.56	8,271.4	4,094.3	-5,391.1	410,930.84	1,759,358.17	39.6258484	-80.2425166
15,638.0	93.18	325.21	8,266.2	4,173.3	-5,443.6	411,009.83	1,759,305.65	39.6260641	-80.2427053
15,733.0	92.99	324.91	8,261.1	4,251.1	-5,497.9	411,087.60	1,759,251.33	39.6262763	-80.2429005
15,829.0	93.05	325.02	8,256.1	4,329.6	-5,553.0	411,166.09	1,759,196.29	39.6264906	-80.2430982
15,923.0	92.65	326.20	8,251.4	4,407.1	-5,606.0	411,243.57	1,759,143.26	39.6267020	-80.2432887
16,018.0	92.11	326.08	8,247.5	4,485.9	-5,658.9	411,322.39	1,759,090.38	39.6269172	-80.2434788
16,112.0	92.08	325.48	8,244.0	4,563.6	-5,711.7	411,400.06	1,759,037.55	39.6271293	-80.2436686
16,207.0	92.11	325.53	8,240.5	4,641.8	-5,765.5	411,478.30	1,758,983.79	39.6273429	-80.2438618
16,302.0	92.38	326.53	8,236.8	4,720.5	-5,818.5	411,557.03	1,758,930.75	39.6275578	-80.2440524
16,397.0	92.38	325.70	8,232.9	4,799.3	-5,871.4	411,635.83	1,758,877.83	39.6277729	-80.2442426
16,491.0	92.35	326.29	8,229.0	4,877.2	-5,924.0	411,713.68	1,758,825.30	39.6279855	-80.2444314
16,587.0	92.01	326.33	8,225.3	4,957.0	-5,977.2	411,793.50	1,758,772.09	39.6282034	-80.2446226
16,682.0	92.45	326.92	8,221.7	5,036.3	-6,029.4	411,872.78	1,758,719.87	39.6284198	-80.2448104
16,777.0	93.15	325.91	8,217.0	5,115.3	-6,081.9	411,951.82	1,758,667.38	39.6286356	-80.2449990
16,873.0	93.02	325.68	8,211.8	5,194.6	-6,135.8	412,031.10	1,758,613.49	39.6288521	-80.2451927
16,968.0	93.09	325.71	8,206.8	5,273.0	-6,189.2	412,109.46	1,758,560.02	39.6290660	-80.2453848
17,063.0	93.22	326.24	8,201.6	5,351.6	-6,242.3	412,188.08	1,758,506.95	39.6292806	-80.2455756
17,159.0	94.09	325.68	8,195.4	5,431.0	-6,295.9	412,267.47	1,758,453.32	39.6294973	-80.2457683
17,254.0	94.16	325.78	8,188.6	5,509.3	-6,349.3	412,345.77	1,758,399.96	39.6297111	-80.2459600
17,350.0	94.19	325.79	8,181.6	5,588.4	-6,403.1	412,424.95	1,758,346.13	39.6299272	-80.2461535
17,445.0	94.33	326.40	8,174.6	5,667.1	-6,456.0	412,503.57	1,758,293.28	39.6301419	-80.2463435
17,540.0	94.16	325.97	8,167.5	5,745.8	-6,508.7	412,582.29	1,758,240.56	39.6303567	-80.2465330
17,635.0	93.02	325.96	8,161.6	5,824.4	-6,561.8	412,660.86	1,758,187.49	39.6305712	-80.2467237
17,731.0	91.07	325.66	8,158.1	5,903.7	-6,615.7	412,740.21	1,758,133.58	39.6307879	-80.2469174
17,827.0	91.27	327.00	8,156.2	5,983.6	-6,668.9	412,820.09	1,758,080.37	39.6310059	-80.2471087
17,922.0	91.17	326.47	8,154.2	6,063.0	-6,721.0	412,899.50	1,758,028.27	39.6312228	-80.2472960
18,018.0	91.31	326.52	8,152.1	6,143.0	-6,774.0	412,979.53	1,757,975.29	39.6314413	-80.2474865
18,113.0	90.54	326.92	8,150.6	6,222.4	-6,826.1	413,058.94	1,757,923.17	39.6316581	-80.2476739
18,208.0	90.27	326.77	8,149.9	6,302.0	-6,878.1	413,138.47	1,757,871.22	39.6318752	-80.2478607
18,304.0	90.40	327.15	8,149.3	6,382.4	-6,930.4	413,218.95	1,757,818.88	39.6320950	-80.2480489
18,399.0	90.44	327.40	8,148.6	6,462.4	-6,981.7	413,298.87	1,757,767.52	39.6323132	-80.2482336
18,494.0	90.34	326.97	8,148.0	6,542.2	-7,033.2	413,378.71	1,757,716.04	39.6325312	-80.2484188
18,590.0	90.34	327.41	8,147.4	6,622.9	-7,085.2	413,459.39	1,757,664.02	39.6327515	-80.2486058
18,684.0	90.40	327.20	8,146.8	6,702.0	-7,136.0	413,538.49	1,757,613.25	39.6329675	-80.2487884
18,780.0	90.70	328.22	8,145.9	6,783.1	-7,187.3	413,619.64	1,757,561.97	39.6331891	-80.2489729
18,875.0	90.37	327.41	8,145.0	6,863.5	-7,237.9	413,700.04	1,757,511.37	39.6334087	-80.2491550
18,970.0	90.54	327.94	8,144.2	6,943.8	-7,288.7	413,780.32	1,757,460.57	39.6336279	-80.2493377
19,065.0	89.63	326.98	8,144.1	7,023.9	-7,339.8	413,860.40	1,757,409.47	39.6338466	-80.2495215
19,161.0	89.06	326.40	8,145.2	7,104.1	-7,392.5	413,940.62	1,757,356.76	39.6340656	-80.2497110
19,256.0	88.99	325.99	8,146.8	7,183.1	-7,445.4	414,019.55	1,757,303.91	39.6342811	-80.2499010
19,351.0	88.76	325.11	8,148.7	7,261.4	-7,499.1	414,097.87	1,757,250.18	39.6344949	-80.2500941
19,446.0	89.40	326.22	8,150.2	7,339.8	-7,552.7	414,176.31	1,757,196.60	39.6347090	-80.2502866



SDI
Survey Report - Geographic



Company:	Northeast Natural Energy	Local Co-ordinate Reference:	Well Sullivan 13H
Project:	Monongalia Co., WV	TVD Reference:	GL 1476' & 28' KB @ 1504.0usft (Patt 277)
Site:	Sullivan Pad	MD Reference:	GL 1476' & 28' KB @ 1504.0usft (Patt 277)
Well:	Sullivan 13H	North Reference:	Grid
Wellbore:	Orig.	Survey Calculation Method:	Minimum Curvature
Design:	13H As Drilled	Database:	Northeast

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
19,540.0	89.60	327.87	8,151.0	7,418.7	-7,603.8	414,255.18	1,757,145.47	39.6349243	-80.2504705
19,636.0	89.63	327.89	8,151.7	7,500.0	-7,654.8	414,336.48	1,757,094.43	39.6351464	-80.2506542
19,731.0	90.20	330.40	8,151.8	7,581.5	-7,703.6	414,418.03	1,757,045.71	39.6353691	-80.2508296
19,826.0	89.13	326.54	8,152.4	7,662.5	-7,753.2	414,498.99	1,756,996.05	39.6355902	-80.2510083
19,921.0	90.00	329.29	8,153.1	7,743.0	-7,803.7	414,579.47	1,756,945.59	39.6358100	-80.2511899
20,016.0	90.07	326.64	8,153.0	7,823.5	-7,854.1	414,659.99	1,756,895.20	39.6360299	-80.2513712
20,110.0	89.77	325.15	8,153.2	7,901.3	-7,906.8	414,737.82	1,756,842.50	39.6362424	-80.2515606
20,204.0	89.83	325.91	8,153.5	7,978.8	-7,960.0	414,815.32	1,756,789.30	39.6364539	-80.2517518
20,300.0	89.60	325.40	8,154.0	8,058.1	-8,014.1	414,894.58	1,756,735.14	39.6366703	-80.2519465
20,395.0	89.70	325.92	8,154.5	8,136.5	-8,067.7	414,973.02	1,756,681.55	39.6368844	-80.2521391
20,490.0	89.56	325.04	8,155.2	8,214.8	-8,121.6	415,051.29	1,756,627.71	39.6370980	-80.2523326
20,585.0	89.60	325.78	8,155.9	8,293.0	-8,175.5	415,129.49	1,756,573.78	39.6373115	-80.2525264
20,681.0	89.70	325.72	8,156.4	8,372.3	-8,229.5	415,208.85	1,756,519.76	39.6375281	-80.2527206
20,776.0	89.60	325.54	8,157.0	8,450.8	-8,283.1	415,287.26	1,756,466.13	39.6377421	-80.2529133
20,871.0	89.77	326.13	8,157.5	8,529.4	-8,336.5	415,365.86	1,756,412.78	39.6379567	-80.2531051
20,966.0	89.56	325.60	8,158.1	8,608.0	-8,389.8	415,444.49	1,756,359.47	39.6381713	-80.2532967
21,060.0	89.73	325.68	8,158.7	8,685.6	-8,442.9	415,522.09	1,756,306.42	39.6383832	-80.2534874
21,156.0	89.36	325.49	8,159.4	8,764.8	-8,497.1	415,601.28	1,756,252.16	39.6385993	-80.2536824
21,252.0	89.26	325.23	8,160.6	8,843.8	-8,551.7	415,680.26	1,756,197.60	39.6388149	-80.2538785
21,346.0	89.70	326.17	8,161.5	8,921.4	-8,604.6	415,757.91	1,756,144.63	39.6390268	-80.2540689
21,440.0	89.83	325.63	8,161.8	8,999.2	-8,657.3	415,835.75	1,756,091.93	39.6392393	-80.2542584
21,535.0	89.43	325.93	8,162.5	9,077.8	-8,710.8	415,914.30	1,756,038.51	39.6394537	-80.2544504
21,629.0	89.80	326.90	8,163.1	9,156.1	-8,762.8	415,992.60	1,755,986.51	39.6396675	-80.2546374
21,708.0	89.66	326.59	8,163.5	9,222.2	-8,806.1	416,058.67	1,755,943.19	39.6398479	-80.2547932
21,740.0	89.66	326.59	8,163.6	9,248.9	-8,823.7	416,085.38	1,755,925.57	39.6399208	-80.2548565

TD @ 21740' MD/ TVD 8163.6'

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
9,349.0	8,115.4	-1,055.8	-1,960.6	LP @ 9349' MD/ TVD 8115.4'
21,740.0	8,163.6	9,248.9	-8,823.7	TD @ 21740' MD/ TVD 8163.6'

Checked By: _____ Approved By: _____ Date: _____