

ENSIGN

Drill Data Logging Inc.

Company: Noble  
Field: DJ Basin  
City/Blk/Par: weld county  
Well Name: EHRlich F36-32D  
Rig: Ensign 126

Job Number: 207-1162  
Magnetic Decl.: 8.85  
Total Survey Corr.: 8.85  
Target Info: N1374317.05 E3245653.77

Calculation Method  
Proposed Azimuth: 217.40  
Depth Reference: RKB  
Tie Into: WELL HEAD

Minimum Curvature

No.	Tool Type	Survey Depth (ft)	Incl (°)	Azimuth (°)	Course Lgth (ft)	TVD (ft)	VS (ft)	Coordinates		DLS (°/100')	Bid Rate (°/100')	Wlk Rate (°/100')	Remarks
								N/S (ft)	E/W (ft)				
0	Tie In	0	0.00	0.00		0.00	0.00	0.00	0.00				WELL HEAD
1	MWD	649	0.80	301.60	649	648.98	0.46	2.37 N	3.86 W	0.12	0.1	46.5	DIP=66.79
2	MWD	735	2.60	300.10	86	734.94	0.77	3.67 N	6.06 W	2.09	2.1	-1.7	DIP=67.8
3	MWD	820	3.80	293.90	85	819.80	1.67	5.78 N	10.30 W	1.47	1.4	-7.3	
4	MWD	906	6.50	286.40	86	905.45	4.08	8.30 N	17.58 W	3.23	3.1	-8.7	
5	MWD	991	7.20	277.80	85	989.84	8.43	10.39 N	27.47 W	1.46	0.8	-10.1	
6	MWD	1077	7.90	268.00	86	1075.10	14.85	10.91 N	38.72 W	1.70	0.8	-11.4	
7	MWD	1162	8.60	259.60	85	1159.22	23.26	9.56 N	50.81 W	1.64	0.8	-9.9	
8	MWD	1248	9.50	252.40	86	1244.16	33.84	6.25 N	63.90 W	1.68	1.0	-8.4	
9	MWD	1333	10.30	247.20	85	1327.89	46.18	1.19 N	77.59 W	1.41	0.9	-6.1	
10	MWD	1419	11.30	241.40	86	1412.37	60.55	5.83 S	92.07 W	1.72	1.2	-6.7	
11	MWD	1504	12.00	232.50	85	1495.62	76.69	15.19 S	106.40 W	2.27	0.8	-10.5	
12	MWD	1590	12.50	224.90	86	1579.67	94.55	27.23 S	120.06 W	1.96	0.6	-8.8	
13	MWD	1675	13.40	221.70	85	1662.51	113.50	41.10 S	133.11 W	1.35	1.1	-3.8	
14	MWD	1761	13.70	221.50	86	1746.12	133.59	56.17 S	146.48 W	0.35	0.3	-0.2	
15	MWD	1846	14.00	223.00	85	1828.65	153.86	71.22 S	160.17 W	0.55	0.4	1.8	
16	MWD	1931	14.20	220.80	85	1911.09	174.50	86.64 S	173.99 W	0.67	0.2	-2.6	
17	MWD	2017	15.20	226.40	86	1994.27	196.17	102.40 S	189.05 W	2.02	1.2	6.5	
18	MWD	2102	15.80	223.70	85	2076.18	218.68	118.45 S	205.11 W	1.10	0.7	-3.2	
19	MWD	2188	15.70	222.30	86	2158.95	241.91	135.52 S	221.03 W	0.46	-0.1	-1.6	
20	MWD	2273	15.50	221.90	85	2240.82	264.69	152.48 S	236.36 W	0.27	-0.2	-0.5	
21	MWD	2359	16.10	219.10	86	2323.57	288.07	170.29 S	251.55 W	1.13	0.7	-3.3	
22	MWD	2444	16.50	221.80	85	2405.16	311.88	188.43 S	267.03 W	1.01	0.5	3.2	
23	MWD	2530	16.80	222.80	86	2487.66	336.07	206.39 S	283.37 W	0.40	-0.2	1.2	
24	MWD	2615	18.30	223.30	85	2568.81	361.23	224.86 S	300.63 W	2.36	2.4	0.6	
25	MWD	2701	19.10	222.30	86	2650.22	388.82	245.20 S	319.46 W	1.22	1.2	-1.2	
26	MWD	2787	19.40	221.90	86	2731.36	417.22	266.34 S	338.56 W	0.19	0.1	-0.5	
27	MWD	2872	19.10	221.40	85	2811.61	445.16	287.28 S	357.18 W	0.40	-0.4	-0.6	
28	MWD	2957	17.10	220.60	85	2892.40	471.51	307.20 S	374.51 W	2.37	-2.4	-0.9	
29	MWD	3043	17.60	221.80	86	2974.49	497.10	326.49 S	391.41 W	0.71	0.6	1.4	
30	MWD	3128	16.10	222.20	85	3055.84	521.66	344.80 S	407.89 W	1.77	-1.8	0.5	
31	MWD	3218	14.00	217.90	90	3142.75	544.99	362.64 S	422.96 W	2.64	-2.3	-4.8	
32	MWD	3298	13.00	222.10	80	3220.54	563.63	376.95 S	434.94 W	1.75	-1.3	5.2	
33	MWD	3384	14.40	224.10	86	3304.09	583.89	391.81 S	448.87 W	1.72	1.6	2.3	
34	MWD	3469	14.30	224.40	85	3386.44	604.81	406.90 S	463.57 W	0.15	-0.1	0.4	
35	MWD	3555	13.60	226.90	86	3469.90	625.32	421.40 S	478.38 W	1.07	-0.8	2.9	
36	MWD	3640	12.70	226.30	85	3552.67	644.41	434.68 S	492.44 W	1.07	-1.1	-0.7	
37	MWD	3726	14.20	219.90	86	3636.32	664.29	449.31 S	506.04 W	2.45	1.7	-7.4	
38	MWD	3811	15.90	219.20	85	3718.40	686.35	466.33 S	520.09 W	2.01	2.0	-0.8	
39	MWD	3897	15.90	218.70	86	3801.11	709.90	484.65 S	534.90 W	0.16	0.0	-0.6	
40	MWD	3983	16.70	218.90	86	3883.65	734.03	503.46 S	550.02 W	0.93	0.9	0.2	
41	MWD	4068	15.40	219.70	85	3965.33	757.52	521.65 S	564.90 W	1.55	-1.5	0.9	
42	MWD	4153	13.50	223.50	85	4047.64	778.66	537.53 S	578.94 W	2.50	-2.2	4.5	
43	MWD	4239	14.20	230.40	86	4131.15	798.92	551.54 S	593.98 W	2.08	0.8	8.0	
44	MWD	4325	15.70	228.30	86	4214.24	820.63	566.01 S	610.80 W	1.85	1.7	-2.4	
45	MWD	4408	18.00	224.80	83	4294.12	842.86	581.49 S	627.14 W	1.15	0.1	-4.2	
46	MWD	4496	17.60	225.30	88	4378.41	867.92	599.35 S	645.04 W	2.05	2.0	0.6	
47	MWD	4581	18.30	224.30	85	4459.27	893.90	617.94 S	663.50 W	0.90	0.8	-1.2	
48	MWD	4667	16.90	224.00	86	4541.24	919.72	636.60 S	681.61 W	1.63	-1.6	-0.3	
49	MWD	4753	14.60	221.40	86	4624.01	942.95	653.73 S	697.47 W	2.80	-2.7	-3.0	
50	MWD	4838	14.10	222.30	85	4706.36	963.96	669.42 S	711.52 W	0.64	-0.6	1.1	
51	MWD	4924	13.80	221.60	86	4789.82	984.62	684.84 S	725.38 W	0.40	-0.3	-0.8	
52	MWD	5010	11.50	221.10	86	4873.73	1003.41	698.97 S	737.83 W	2.68	-2.7	-0.6	
53	MWD	5095	11.80	220.40	85	4956.97	1020.54	711.97 S	749.03 W	0.39	0.4	-0.8	
54	MWD	5181	10.30	220.70	86	5041.38	1037.00	724.50 S	759.74 W	1.75	-1.7	0.3	
55	MWD	5261	8.60	221.00	80	5120.29	1050.11	734.44 S	768.33 W	2.13	-2.1	0.4	
56	MWD	5352	6.00	217.50	91	5210.54	1061.66	743.35 S	775.69 W	2.90	-2.9	-3.8	
57	MWD	5437	5.50	215.00	85	5295.12	1070.17	750.21 S	780.73 W	0.66	-0.6	-2.9	
58	MWD	5522	4.70	218.30	85	5379.78	1077.73	756.28 S	785.23 W	1.00	-0.9	3.9	
59	MWD	5608	2.40	218.20	86	5465.61	1083.05	760.46 S	788.52 W	2.67	-2.7	-0.1	
60	MWD	5694	1.20	184.70	86	5551.57	1085.61	762.77 S	789.71 W	1.80	-1.4	-39.0	
61	MWD	5779	2.10	187.90	85	5636.53	1087.71	765.20 S	790.00 W	1.06	1.1	3.8	
62	MWD	5865	1.20	153.90	86	5722.50	1089.49	767.57 S	789.82 W	1.50	-1.0	-39.5	
63	MWD	5951	1.14	120.40	86	5808.48	1089.78	768.81 S	788.69 W	0.79	-0.1	-39.0	
64	MWD	6036	1.80	88.00	85	5893.45	1088.83	769.19 S	786.62 W	1.22	0.8	-38.1	
65	MWD	6122	4.80	87.60	86	5979.30	1085.67	769.00 S	781.68 W	3.49	3.5	-0.5	
66	MWD	6207	6.94	93.93	85	6063.85	1080.56	769.20 S	773.00 W	2.63	2.5	7.4	
67	MWD	6293	8.44	91.64	86	6149.07	1074.01	769.74 S	761.51 W	1.78	1.7	-2.7	
68	MWD	6378	9.54	87.51	85	6233.03	1065.85	769.61 S	748.23 W	1.50	1.3	-4.9	
69	MWD	6463	9.36	89.10	85	6316.88	1057.04	769.19 S	734.28 W	0.37	-0.2	1.9	
70	MWD	6549	9.20	88.40	86	6401.75	1048.48	769.01 S	720.42 W	0.19	-0.2	0.3	
71	MWD	6634	8.80	88.30	85	6485.70	1040.19	768.75 S	707.12 W	0.51	-0.5	-1.3	
72	MWD	6720	8.20	90.20	86	6570.75	1032.29	768.57 S	694.34 W	0.67	-0.6	2.2	
73	MWD	6805	8.30	89.70	85	6654.87	1024.88	768.56 S	682.14 W	0.14	-0.1	-0.6	
74	MWD	6891	7.80	92.10	86	6740.03	1017.75	768.75 S	670.18 W	0.61	-0.5	2.8	
75	MWD	6977	6.40	96.40	86	6825.37	1011.91	769.49 S	659.58 W	1.74	-1.6	5.0	
76	MWD	7062	5.50	99.50	85	6909.91	1007.57	770.69 S	650.86 W	1.12	-1.1	3.6	
77	MWD	7148	5.10	92.70	86	6995.54	1003.46	771.55 S	642.97 W	0.87	-0.5	-7.9	
78	MWD	7233	4.60	91.80	85	7080.24	999.33	771.84 S	635.79 W	0.59	-0.6	-1.1	
79	MWD	7319	5.23	102.70	86	7165.93	995.68	772.81 S	628.52 W	1.31	0.7	12.7	
80	MWD	7404	5.80	112.04	85	7250.53	992.92	775.27 S	620.76 W	1.25	0.7	11.0	
81	MWD	7449	5.80	112.04	45	7295.30	991.72	776.98 S	616.55 W	0.00	0.0	0.0	plbhn

Surveys				Planned			
N/S	E/W	VS	TVD	VS	TVD	N/S	E/W
0	0	0.00	0.00	0.00	0.00	0	0
2.37	-3.86	0.46	648.98	0.46	648.98	2.37	-3.86
3.67	-6.06	0.77	734.94	0.77	734.94	3.67	-6.06
5.78	-10.30	1.67	819.80	1.67	819.80	5.78	-10.30
8.30	-17.58	4.08	905.45	4.08	905.45	8.30	-17.58
10.39	-27.47	8.43	989.84	8.43	989.84	10.39	-27.47
10.91	-38.72	14.85	1075.10	14.85	1075.10	10.91	-38.72
9.56	-50.81	23.26	1159.22	23.26	1159.22	9.56	-50.81
6.25	-63.90	33.84	1244.16	33.84	1244.16	6.25	-63.90
1.19	-77.59	46.18	1327.89	46.18	1327.89	1.19	-77.59
-5.83	-92.07	60.55	1412.37	60.55	1412.37	5.83	-92.07
-15.19	-106.40	76.69	1495.62	76.69	1495.62	-15.19	-106.40
-27.23	-120.06	94.55	1579.67	94.55	1579.67	-27.23	-120.06
-41.10	-133.11	113.50	1662.51	113.50	1662.51	-41.10	-133.11
-56.17	-146.48	133.59	1746.12	133.59	1746.12	-56.17	-146.48
-71.22	-160.17	153.86	1828.65	153.86	1828.65	-71.22	-160.17
-86.64	-173.99	174.50	1911.09	174.50	1911.09	-86.64	-173.99
-102.40	-189.05	196.17	1994.27	196.17	1994.27	-102.40	-189.05
-118.45	-205.11	218.68	2076.18	218.68	2076.18	-118.45	-205.11
-135.52	-221.03	241.91	2158.95	241.91	2158.95	-135.52	-221.03
-152.48	-236.36	264.69	2240.82	264.69	2240.82	-152.48	-236.36
-170.29	-251.55	288.07	2323.57	288.07	2323.57	-170.29	-251.55
-188.43	-267.03	311.88	2405.16	311.88	2405.16	-188.43	-267.03
-206.39	-283.37	336.07	2487.66	336.07	2487.66	-206.39	-283.37
-224.86	-300.63	361.23	2568.81	361.23	2568.81	-224.86	-300.63
-245.20	-319.46	388.82	2650.22	388.82	2650.22	-245.20	-319.46
-266.34	-338.56	417.22	2731.36	417.22	2731.36	-266.34	-338.56
-287.28	-357.18	445.16	2811.61	445.16	2811.61	-287.28	-357.18
-307.20	-374.51	471.51	2892.40	471.51	2892.40	-307.20	-374.51
-326.49	-391.41	497.10	2974.49	497.10	2974.49	-326.49	-391.41
-344.80	-407.89	521.66	3055.84	521.66	3055.84	-344.80	-407.89
-362.64	-422.96	544.99	3142.75	544.99	3142.75	-362.64	-422.96
-376.95	-434.94	563.63	3220.54	563.63	3220.54	-376.95	-434.94
-391.81	-448.87	583.89	3304.09	583.89	3304.09	-391.81	-448.87
-406.90	-463.57	604.81	3386.44	604.81	3386.44	-406.90	-463.57
-421.40	-478.38	625.32	3469.90	625.32	3469.90	-421.40	-478.38
-434.68	-492.44	644.41	3552.67	644.41	3552.67	-434.68	-492.44
-449.31	-506.04	664.29	3636.32	664.29	3636.32	-449.31	-506.04
-466.33	-520.09	686.35	3718.40	686.35	3718.40	-466.33	-520.09
-484.65	-534.90	709.90	3801.11	709.90	3801.11	-484.65	-534.90
-503.46	-550.02	734.03	3883.65	734.03	3883.65	-503.46	-550.02
-521.65	-564.90	757.52	3965.33	757.52	3965.33	-521.65	-564.90
-537.53	-578.94	778.66	4047.64	778.66	4047.64	-537.53	-578.94
-551.54	-593.98	798.92	4131.15	798.92	4131.15	-551.54	-593.98
-566.01	-610.80	820.63	4214.24	820.63	4214.24	-566.01	-610.80
-581.49	-627.14	842.86	4294.12	842.86	4294.12	-581.49	-627.14
-599.35	-645.04	867.92	4378.41	867.92	4378.41	-599.35	-645.04
-617.94	-663.50	893.90	4459.27	893.90	4459.27	-617.94	-663.50
-636.60	-681.61	919.72	4541.24	919.72	4541.24	-636.60	-681.61
-653.73	-697.47	942.95	4624.01	942.95	4624.01	-653.73	-697.47
-669.42	-711.52	963.96	4706.36	963.96	4706.36	-669.42	-711.52
-684.84	-725.38	984.62	4789.82	984.62	4789.82	-684.84	-725.38
-698.97	-737.83	1003.41	4873.73	1003.41	4873.73	-698.97	-737.83
-711.97	-749.03	1020.54	4956.97	1020.54	4956.97	-711.97	-749.03
-724.50	-759.74	1037.00	5041.38	1037.00	5041.38	-724.50	-759.74
-734.44	-768.33	1050.11	5120.29	1050.11	5120.29	-734.44	-768.33
-743.35	-776.69	1061.66	5210.54	1061.66	5210.54	-743.35	-776.69
-750.21	-780.73	1070.17	5295.12	1070.17	5295.12	-750.21	-780.73
-756.28	-785.23	1077.73	5379.78	1077.73	5379.78	-756.28	-785.23
-760.46	-788.52	1083.05	5465.61	1083.05	5465.61	-760.46	-788.52
-762.77	-789.71	1085.61	5551.57	1085.61	5551.57	-762.77	-789.71
-765.20	-790.00	1087.71	5636.53	1087.71	5636.53	-765.20	-790.00
-767.57	-789.82	1089.49	5722.50	1090.60	5722.50	-767.57	-789.819
-768.81	-788.69	1089.78	5808.48	1090.90	5808.47	-769.007	-788.581
-769.19	-786.62	1088.83	5893.45	1090.90	5853.50	-769.7	-787.7
-769.00	-781.68	1085.67	5979.30	1079.30	6134.70	-772.7	-764.8
-769.20	-773.00	1080.56	6063.85	987.00	7250.00	-780	-604.8
-769.74	-761.51	1074.01	6149.07				
-769.61	-748.23	1065.85	6233.03				
-769.19	-734.28	1057.04	6316.88				
-769.01	-720.42	1048.48	6401.75				
-768.75	-707.12	1040.19	6485.70				
-768.57	-694.34	1032.29	6570.75				
-768.56	-682.14	1024.88	6654.87				
-768.75	-670.18	1017.75	6740.03				
-769.49	-659.58	1011.91	6825.37				
-770.69	-650.86	1007.57	6909.91				
-771.55	-642.97	1003.46	6995.54				
-771.84	-635.79	999.33	7080.24				
-772.81	-628.52	995.68	7165.93				
-775.27	-620.76	992.92	7250.53				
-776.98	-616.55	991.72	7295.30				

Note : Change this table below for the  
EOB or EOH or EOD

Target Description	
TVD =	5800.00
North / South =	-855.00
East / West =	-849.7
Radius =	1

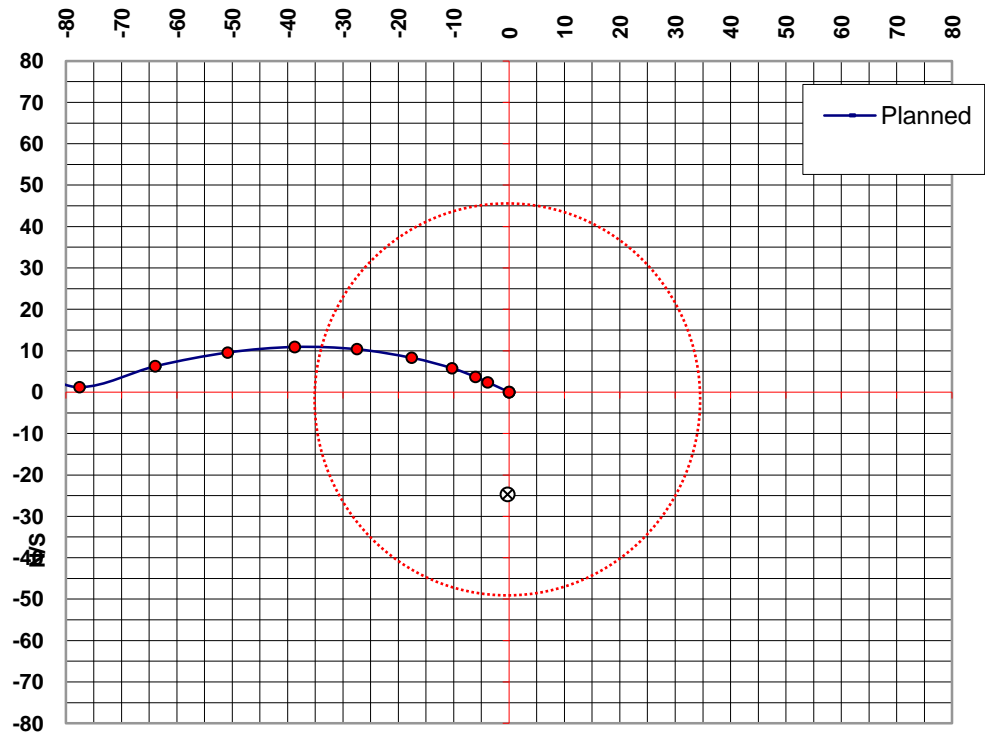
Selected Survey	
MD =	7449
TVD =	7295.30
Inc =	5.80
N / S =	-776.98
Azm =	112.04
E / W =	-616.55

Target Coordinates to Land	
N/S=	-746.80
E/W=	-604.8
PLAN BUILD/DROP =	2
TARGET ANGLE =	0
V-SECTION IN DROP =	14.67195
MD IN DROP =	290
MD TO START DROP =	7624
Target Center Coordinates	
N/S=	-746.80
E/W=	-604.8

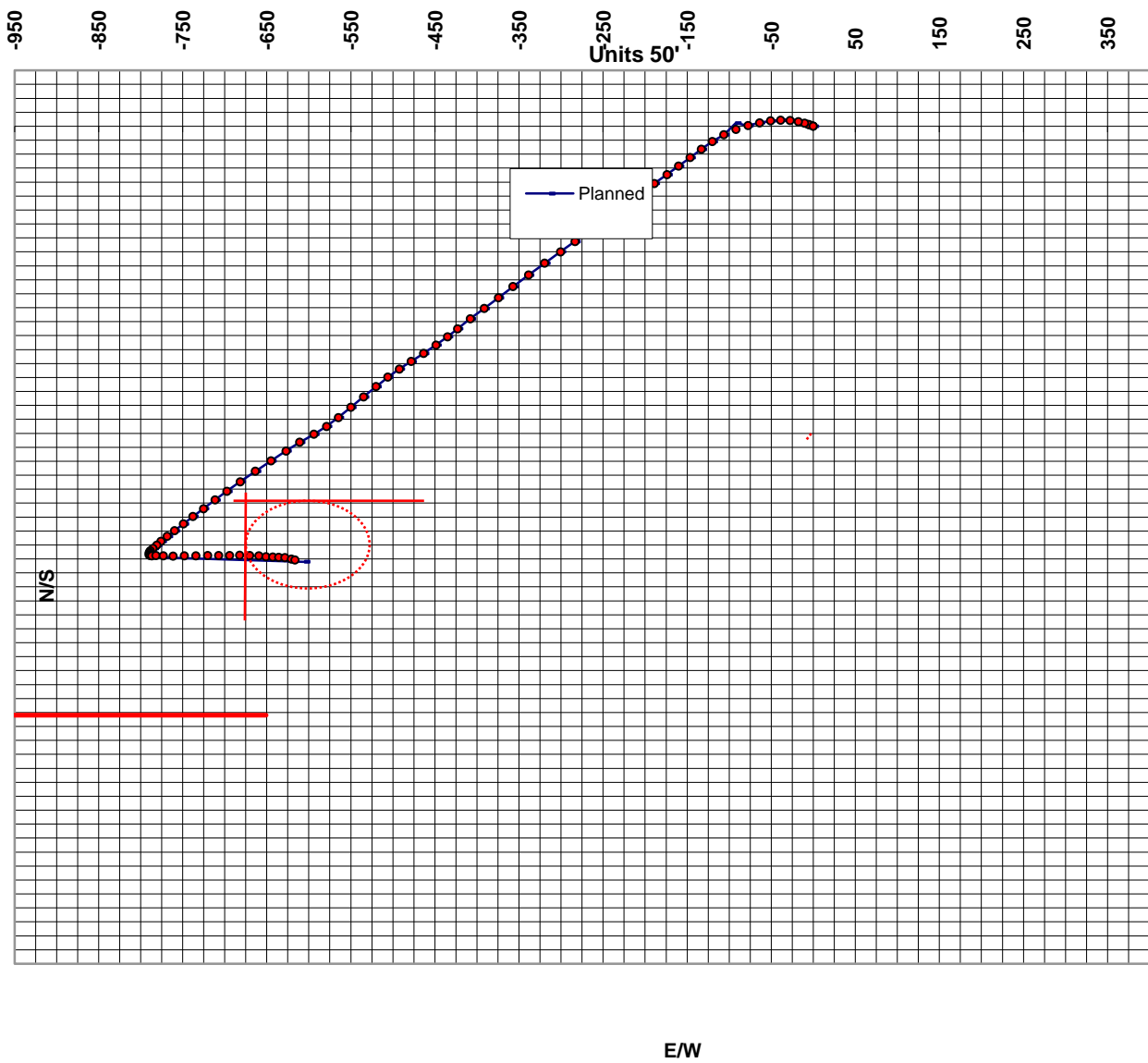
Target Solution	
Inc to target Center =	-9.34
Azm to Target Center =	251.50
Inc to Leading Edge =	-9.30
Inc to Trailing Edge =	-9.37
Azm To Left Edge =	251.26
Azm To Right Edge =	251.73

Closure to Target from Survey Station	
Closure Distance =	32.4 FT
Closure Direction =	21.3 AZ
Build Needed to Land @ VS Target	
Total Amount of Vertical Section =	1205.4
VS @ last Survey Station =	991.72
Build/Drop to Target =	-0.1

Closure from Target Center to Last Survey	
Distance from Target Center =	32.4 FT
Direction from Target Center =	201.3 AZ



**E/W**



TVD

