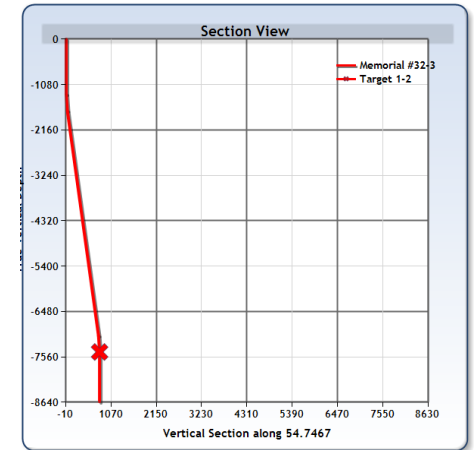
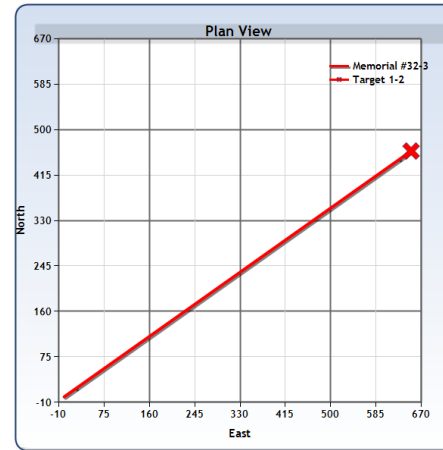


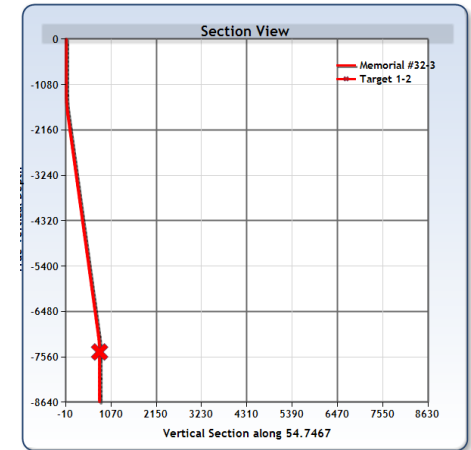
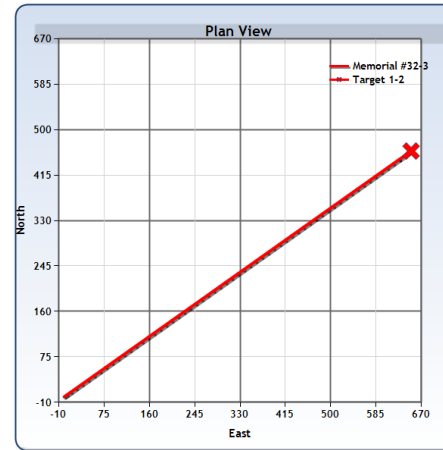
**Company:** Sovereign Operating Co., LLC  
**Well Name:** Memorial #32-3  
**Location:** SENW Sec. 3 T1S R68W  
**Info:** North Reference is True North  
**Info:**  
**Vertical Section Calculated on an Azimuth of:** 54.7467  
**Survey Calculation method:** Minimum Curvature  
**File Name:** Nordstrom #4C, Directional Surveys, 08-15-12.sr6



#	Depth Feet	Inc Degrees	Azimuth Degrees	TVD Feet	North Feet	East Feet	SubSea Feet	Section Feet	Dogleg /100 ft	BldRate /100 ft	Trnrate /100 ft	Comment
0	0.00	0.00	54.75	0.00	0.00	0.00	5209.00	0.00	0.00	0.00	0.00	
1	1305.00	0.00	54.75	1305.00	0.00	0.00	3904.00	0.00	0.00	0.00	0.00	
2	1700.00	7.90	54.75	1698.75	15.69	22.20	3510.25	27.19	2.00	2.00	0.00	
3	7102.80	7.90	54.75	7050.27	444.31	628.60	-1841.27	769.77	0.00	0.00	0.00	
4	7497.80	0.00	54.75	7444.02	460.00	650.81	-2235.02	796.96	2.00	2.00	0.00	
5	8679.78	0.00	54.75	8626.00	460.00	650.81	-3417.00	796.96	0.00	0.00	0.00	

Closure is 796.9622 feet on an Azimuth of 54.7467

**Company:** Sovereign Operating Co., LLC  
**Well Name:** Memorial #32-3  
**Location:** SENW Sec. 3 T1S R68W  
**Info:** North Reference is True North  
**Info:**  
**Vertical Section Calculated on an Azimuth of:** 54.7467  
**Survey Calculation method:** Minimum Curvature  
**File Name:** Memorial #32-3 , Directional Surveys, 08-15-12.sr6



#	Depth Feet	Inc Degrees	Azimuth Degrees	TVD Feet	North Feet	East Feet	SubSea Feet	Section Feet	Dogleg /100 ft	BldRate /100 ft	Trnrate /100 ft	Comment
0	0.00	0.00	54.75	0.00	0.00	0.00	5209.00	0.00	0.00	0.00	0.00	
1	100.00	0.00	54.75	100.00	0.00	0.00	5109.00	0.00	0.00	0.00	0.00	
2	200.00	0.00	54.75	200.00	0.00	0.00	5009.00	0.00	0.00	0.00	0.00	
3	300.00	0.00	54.75	300.00	0.00	0.00	4909.00	0.00	0.00	0.00	0.00	
4	400.00	0.00	54.75	400.00	0.00	0.00	4809.00	0.00	0.00	0.00	0.00	
5	500.00	0.00	54.75	500.00	0.00	0.00	4709.00	0.00	0.00	0.00	0.00	
6	600.00	0.00	54.75	600.00	0.00	0.00	4609.00	0.00	0.00	0.00	0.00	
7	700.00	0.00	54.75	700.00	0.00	0.00	4509.00	0.00	0.00	0.00	0.00	
8	800.00	0.00	54.75	800.00	0.00	0.00	4409.00	0.00	0.00	0.00	0.00	
9	900.00	0.00	54.75	900.00	0.00	0.00	4309.00	0.00	0.00	0.00	0.00	
10	1000.00	0.00	54.75	1000.00	0.00	0.00	4209.00	0.00	0.00	0.00	0.00	
11	1100.00	0.00	54.75	1100.00	0.00	0.00	4109.00	0.00	0.00	0.00	0.00	
12	1200.00	0.00	54.75	1200.00	0.00	0.00	4009.00	0.00	0.00	0.00	0.00	
13	1300.00	0.00	54.75	1300.00	0.00	0.00	3909.00	0.00	0.00	0.00	0.00	
KOP, B.G.=2°/100'												
14	1305.00	0.00	54.75	1305.00	0.00	0.00	3904.00	0.00	0.00	0.00	0.00	
15	1400.00	1.90	54.75	1399.98	0.91	1.29	3809.02	1.58	2.00	2.00	0.00	



#	Depth	Inc	Azimuth	TVD	North	East	SubSea	Section	Dogleg	BldRate	Trnrate	Comment
16	1500.00	3.90	54.75	1499.85	3.83	5.42	3709.15	6.63	2.00	2.00	0.00	
17	1600.00	5.90	54.75	1599.48	8.76	12.39	3609.52	15.18	2.00	2.00	0.00	
EOB, HOLD 7.9°												
18	1700.00	7.90	54.75	1698.75	15.69	22.20	3510.25	27.19	2.00	2.00	0.00	
19	1800.00	7.90	54.75	1797.80	23.63	33.43	3411.20	40.93	0.00	0.00	0.00	
20	1900.00	7.90	54.75	1896.85	31.56	44.65	3312.15	54.68	0.00	0.00	0.00	
21	2000.00	7.90	54.75	1995.90	39.49	55.87	3213.10	68.42	0.00	0.00	0.00	
22	2100.00	7.90	54.75	2094.95	47.43	67.10	3114.05	82.17	0.00	0.00	0.00	
23	2200.00	7.90	54.75	2194.00	55.36	78.32	3015.00	95.91	0.00	0.00	0.00	
24	2300.00	7.90	54.75	2293.06	63.29	89.55	2915.94	109.66	0.00	0.00	0.00	
25	2400.00	7.90	54.75	2392.11	71.23	100.77	2816.89	123.40	0.00	0.00	0.00	
26	2500.00	7.90	54.75	2491.16	79.16	111.99	2717.84	137.14	0.00	0.00	0.00	
27	2600.00	7.90	54.75	2590.21	87.09	123.22	2618.79	150.89	0.00	0.00	0.00	
28	2700.00	7.90	54.75	2689.26	95.02	134.44	2519.74	164.63	0.00	0.00	0.00	
29	2800.00	7.90	54.75	2788.31	102.96	145.66	2420.69	178.38	0.00	0.00	0.00	
30	2900.00	7.90	54.75	2887.36	110.89	156.89	2321.64	192.12	0.00	0.00	0.00	
31	3000.00	7.90	54.75	2986.41	118.82	168.11	2222.59	205.87	0.00	0.00	0.00	
32	3100.00	7.90	54.75	3085.46	126.76	179.34	2123.54	219.61	0.00	0.00	0.00	
33	3200.00	7.90	54.75	3184.51	134.69	190.56	2024.49	233.36	0.00	0.00	0.00	
34	3300.00	7.90	54.75	3283.56	142.62	201.78	1925.44	247.10	0.00	0.00	0.00	
35	3400.00	7.90	54.75	3382.62	150.56	213.01	1826.38	260.84	0.00	0.00	0.00	
36	3500.00	7.90	54.75	3481.67	158.49	224.23	1727.33	274.59	0.00	0.00	0.00	
37	3600.00	7.90	54.75	3580.72	166.42	235.46	1628.28	288.33	0.00	0.00	0.00	
38	3700.00	7.90	54.75	3679.77	174.36	246.68	1529.23	302.08	0.00	0.00	0.00	
39	3800.00	7.90	54.75	3778.82	182.29	257.90	1430.18	315.82	0.00	0.00	0.00	
40	3900.00	7.90	54.75	3877.87	190.22	269.13	1331.13	329.57	0.00	0.00	0.00	
41	4000.00	7.90	54.75	3976.92	198.16	280.35	1232.08	343.31	0.00	0.00	0.00	
42	4100.00	7.90	54.75	4075.97	206.09	291.57	1133.03	357.06	0.00	0.00	0.00	
43	4200.00	7.90	54.75	4175.02	214.02	302.80	1033.98	370.80	0.00	0.00	0.00	
44	4300.00	7.90	54.75	4274.07	221.96	314.02	934.93	384.54	0.00	0.00	0.00	
45	4400.00	7.90	54.75	4373.13	229.89	325.25	835.87	398.29	0.00	0.00	0.00	
46	4500.00	7.90	54.75	4472.18	237.82	336.47	736.82	412.03	0.00	0.00	0.00	



#	Depth	Inc	Azimuth	TVD	North	East	SubSea	Section	Dogleg	BldRate	Trnrate	Comment
47	4600.00	7.90	54.75	4571.23	245.76	347.69	637.77	425.78	0.00	0.00	0.00	
48	4700.00	7.90	54.75	4670.28	253.69	358.92	538.72	439.52	0.00	0.00	0.00	
49	4800.00	7.90	54.75	4769.33	261.62	370.14	439.67	453.27	0.00	0.00	0.00	
50	4900.00	7.90	54.75	4868.38	269.56	381.37	340.62	467.01	0.00	0.00	0.00	
51	5000.00	7.90	54.75	4967.43	277.49	392.59	241.57	480.76	0.00	0.00	0.00	
52	5100.00	7.90	54.75	5066.48	285.42	403.81	142.52	494.50	0.00	0.00	0.00	
53	5200.00	7.90	54.75	5165.53	293.35	415.04	43.47	508.24	0.00	0.00	0.00	
54	5300.00	7.90	54.75	5264.58	301.29	426.26	-55.58	521.99	0.00	0.00	0.00	
55	5400.00	7.90	54.75	5363.63	309.22	437.48	-154.63	535.73	0.00	0.00	0.00	
56	5500.00	7.90	54.75	5462.69	317.15	448.71	-253.69	549.48	0.00	0.00	0.00	
57	5600.00	7.90	54.75	5561.74	325.09	459.93	-352.74	563.22	0.00	0.00	0.00	
58	5700.00	7.90	54.75	5660.79	333.02	471.16	-451.79	576.97	0.00	0.00	0.00	
59	5800.00	7.90	54.75	5759.84	340.95	482.38	-550.84	590.71	0.00	0.00	0.00	
60	5900.00	7.90	54.75	5858.89	348.89	493.60	-649.89	604.46	0.00	0.00	0.00	
61	6000.00	7.90	54.75	5957.94	356.82	504.83	-748.94	618.20	0.00	0.00	0.00	
62	6100.00	7.90	54.75	6056.99	364.75	516.05	-847.99	631.94	0.00	0.00	0.00	
63	6200.00	7.90	54.75	6156.04	372.69	527.27	-947.04	645.69	0.00	0.00	0.00	
64	6300.00	7.90	54.75	6255.09	380.62	538.50	-1046.09	659.43	0.00	0.00	0.00	
65	6400.00	7.90	54.75	6354.14	388.55	549.72	-1145.14	673.18	0.00	0.00	0.00	
66	6500.00	7.90	54.75	6453.20	396.49	560.95	-1244.20	686.92	0.00	0.00	0.00	
67	6600.00	7.90	54.75	6552.25	404.42	572.17	-1343.25	700.67	0.00	0.00	0.00	
68	6700.00	7.90	54.75	6651.30	412.35	583.39	-1442.30	714.41	0.00	0.00	0.00	
69	6800.00	7.90	54.75	6750.35	420.29	594.62	-1541.35	728.16	0.00	0.00	0.00	
70	6900.00	7.90	54.75	6849.40	428.22	605.84	-1640.40	741.90	0.00	0.00	0.00	
71	7000.00	7.90	54.75	6948.45	436.15	617.07	-1739.45	755.64	0.00	0.00	0.00	
72	7100.00	7.90	54.75	7047.50	444.09	628.29	-1838.50	769.39	0.00	0.00	0.00	
73	7102.80	7.90	54.75	7050.27	444.31	628.60	-1841.27	769.77	0.00	0.00	0.00	
TOD, D.G.=2°/100'												
74	7200.00	5.96	54.75	7146.76	451.07	638.18	-1937.76	781.50	2.00	2.00	0.00	
75	7300.00	3.96	54.75	7246.38	456.06	645.23	-2037.38	790.14	2.00	2.00	0.00	
76	7400.00	1.96	54.75	7346.24	459.04	649.44	-2137.24	795.29	2.00	2.00	0.00	
77	7497.80	0.00	54.75	7444.02	460.00	650.81	-2235.02	796.96	2.00	2.00	0.00	



#	Depth	Inc	Azimuth	TVD	North	East	SubSea	Section	Dogleg	BldRate	Trnrate	Comment
<b>EOD, HOLD</b>												
<b>0°</b>												
78	7500.00	0.00	54.75	7446.22	460.00	650.81	-2237.22	796.96	0.00	0.00	0.00	
79	7600.00	0.00	54.75	7546.22	460.00	650.81	-2337.22	796.96	0.00	0.00	0.00	
<b>Int</b>	7647.78	0.00	54.75	7594.00	460.00	650.81	-2385.00	796.96	---	---	---	
<b>NBRR</b>												
81	7700.00	0.00	54.75	7646.22	460.00	650.81	-2437.22	796.96	0.00	0.00	0.00	
82	7800.00	0.00	54.75	7746.22	460.00	650.81	-2537.22	796.96	0.00	0.00	0.00	
83	7900.00	0.00	54.75	7846.22	460.00	650.81	-2637.22	796.96	0.00	0.00	0.00	
84	8000.00	0.00	54.75	7946.22	460.00	650.81	-2737.22	796.96	0.00	0.00	0.00	
85	8100.00	0.00	54.75	8046.22	460.00	650.81	-2837.22	796.96	0.00	0.00	0.00	
<b>Int</b>	8100.78	0.00	54.75	8047.00	460.00	650.81	-2838.00	796.96	---	---	---	
<b>CODL</b>												
87	8200.00	0.00	54.75	8146.22	460.00	650.81	-2937.22	796.96	0.00	0.00	0.00	
88	8300.00	0.00	54.75	8246.22	460.00	650.81	-3037.22	796.96	0.00	0.00	0.00	
89	8400.00	0.00	54.75	8346.22	460.00	650.81	-3137.22	796.96	0.00	0.00	0.00	
90	8500.00	0.00	54.75	8446.22	460.00	650.81	-3237.22	796.96	0.00	0.00	0.00	
<b>Int</b>	8529.78	0.00	54.75	8476.00	460.00	650.81	-3267.00	796.96	---	---	---	
<b>JSND</b>												
92	8600.00	0.00	54.75	8546.22	460.00	650.81	-3337.22	796.96	0.00	0.00	0.00	
93	8679.78	0.00	54.75	8626.00	460.00	650.81	-3417.00	796.96	0.00	0.00	0.00	

Closure is 796.9622 feet on an Azimuth of 54.7467