

# Continental Resources, Inc.

Weld County, CO  
Sec. 2-T7N-R60W  
Buchner 1-2H

Plan A Rev 1

Survey: Sperry MWD Surveys (ST1)

## Sperry Drilling Services Standard Report

11 April, 2012

Well Coordinates: 1,468,669.19 N, 3,401,928.41 E (40° 36' 39.20" N, 104° 03' 08.27" W)  
Ground Level: 4,931.00 ft

Local Coordinate Origin:	Centered on Well Buchner 1-2H
Viewing Datum:	RKB 16' @ 4947.00ft (Unknown Well)
TVDs to System:	N
North Reference:	True
Unit System:	API - US Survey Feet - Custom
Geodetic Scale Factor Applied	
Version: 2003.16 Build: 43I	

**HALLIBURTON**

**Survey Report for Buchner 1-2H - Sperry MWD Surveys (ST1)**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5,624.00	0.74	68.13	5,622.01	-42.72	-72.22	43.67	0.00
<b>Tie on to Original Wellbore</b>							
5,699.00	0.84	93.85	5,697.00	-42.58	-71.22	43.51	0.49
<b>First MWD Survey (ST1)</b>							
5,730.00	1.13	111.22	5,728.00	-42.70	-70.71	43.63	1.33
5,761.00	1.87	123.67	5,758.99	-43.09	-70.00	44.01	2.59
5,792.00	3.84	130.34	5,789.95	-44.05	-68.79	44.95	6.43
5,824.00	6.57	138.07	5,821.81	-46.10	-66.75	46.98	8.79
5,856.00	10.19	145.35	5,853.47	-49.79	-63.92	50.63	11.77
5,887.00	13.99	147.69	5,883.77	-55.22	-60.35	56.01	12.36
5,918.00	18.28	150.58	5,913.55	-62.62	-55.96	63.36	14.07
5,950.00	22.55	153.53	5,943.53	-72.49	-50.76	73.16	13.72
5,980.00	26.44	158.22	5,970.83	-83.85	-45.71	84.44	14.49
6,012.00	30.18	163.08	5,999.00	-98.17	-40.73	98.70	13.72
6,042.00	32.92	168.64	6,024.57	-113.38	-36.93	113.86	13.31
6,073.00	36.05	174.66	6,050.12	-130.73	-34.42	131.17	14.92
6,105.00	39.73	178.74	6,075.38	-150.34	-33.31	150.77	13.91
6,136.00	43.95	180.73	6,098.47	-171.01	-33.23	171.43	14.27
6,167.00	47.72	180.74	6,120.06	-193.24	-33.52	193.67	12.16
6,198.00	52.08	180.20	6,140.03	-216.95	-33.71	217.37	14.13
6,230.00	56.59	178.51	6,158.68	-242.94	-33.41	243.36	14.73
6,261.00	60.97	177.34	6,174.75	-269.42	-32.44	269.83	14.49
6,292.00	65.68	176.98	6,188.66	-297.08	-31.07	297.46	15.23
6,323.00	70.38	177.86	6,200.25	-325.79	-29.78	326.16	15.39
6,355.00	75.06	178.21	6,209.76	-356.32	-28.73	356.67	14.66
6,386.00	78.96	179.39	6,216.72	-386.52	-28.10	386.85	13.12
6,429.00	84.99	180.47	6,222.72	-429.07	-28.05	429.41	14.24
6,512.00	89.20	181.27	6,226.93	-511.94	-29.31	512.28	5.16
6,560.00	89.81	181.34	6,227.34	-559.92	-30.40	560.28	1.28
6,624.00	90.19	181.41	6,227.34	-623.91	-31.94	624.27	0.60
6,687.00	90.37	181.01	6,227.04	-686.89	-33.27	687.27	0.70
6,751.00	90.19	180.35	6,226.72	-750.88	-34.03	751.27	1.07
6,814.00	90.37	180.04	6,226.42	-813.88	-34.24	814.26	0.57
6,877.00	90.31	179.49	6,226.04	-876.88	-33.99	877.25	0.88
6,940.00	90.25	179.14	6,225.73	-939.88	-33.23	940.23	0.56
7,004.00	90.31	178.73	6,225.42	-1,003.86	-32.04	1,004.20	0.65
7,067.00	90.37	178.60	6,225.05	-1,066.85	-30.58	1,067.16	0.23
7,162.00	89.75	179.54	6,224.95	-1,161.83	-29.03	1,162.11	1.19
7,257.00	90.19	180.97	6,225.00	-1,256.83	-29.46	1,257.11	1.57
7,321.00	89.81	180.72	6,225.00	-1,320.82	-30.40	1,321.11	0.71
7,384.00	90.93	181.43	6,224.59	-1,383.81	-31.58	1,384.10	2.10
7,446.00	89.88	181.53	6,224.15	-1,445.78	-33.18	1,446.10	1.70
7,540.00	89.14	182.48	6,224.96	-1,539.72	-36.47	1,540.07	1.28
7,603.00	89.20	182.04	6,225.87	-1,602.67	-38.96	1,603.04	0.70
7,666.00	89.51	182.13	6,226.58	-1,665.62	-41.25	1,666.02	0.51
7,730.00	88.02	181.27	6,227.96	-1,729.57	-43.15	1,729.99	2.69
7,794.00	88.02	181.34	6,230.17	-1,793.52	-44.60	1,793.95	0.11
7,889.00	88.70	180.81	6,232.89	-1,888.46	-46.38	1,888.91	0.91
7,953.00	88.52	180.05	6,234.44	-1,952.44	-46.86	1,952.89	1.22
8,016.00	89.75	181.05	6,235.39	-2,015.43	-47.47	2,015.88	2.52

**Survey Report for Buchner 1-2H - Sperry MWD Surveys (ST1)**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
8,111.00	91.05	181.59	6,234.73	-2,110.40	-49.66	2,110.87	1.48
8,174.00	91.73	180.62	6,233.20	-2,173.37	-50.87	2,173.85	1.88
8,237.00	91.98	180.72	6,231.16	-2,236.33	-51.61	2,236.82	0.43
8,300.00	90.12	181.21	6,230.01	-2,299.31	-52.67	2,299.80	3.05
8,364.00	90.12	181.28	6,229.87	-2,363.29	-54.06	2,363.80	0.11
8,427.00	90.87	181.48	6,229.33	-2,426.27	-55.58	2,426.79	1.23
8,491.00	91.98	181.60	6,227.74	-2,490.23	-57.30	2,490.77	1.74
8,554.00	92.04	181.40	6,225.53	-2,553.17	-58.94	2,553.72	0.33
8,617.00	92.35	181.57	6,223.11	-2,616.10	-60.58	2,616.67	0.56
8,680.00	92.35	181.38	6,220.53	-2,679.03	-62.20	2,679.61	0.30
8,744.00	92.29	181.63	6,217.94	-2,742.95	-63.88	2,743.56	0.40
8,839.00	91.48	181.47	6,214.81	-2,837.87	-66.44	2,838.49	0.87
8,903.00	90.43	180.87	6,213.75	-2,901.84	-67.75	2,902.48	1.89
8,966.00	90.37	180.40	6,213.31	-2,964.84	-68.45	2,965.48	0.75
9,061.00	90.99	180.49	6,212.18	-3,059.83	-69.19	3,060.47	0.66
9,157.00	91.67	180.11	6,209.95	-3,155.80	-69.69	3,156.44	0.81
9,220.00	91.91	179.86	6,207.98	-3,218.77	-69.67	3,219.41	0.55
9,284.00	90.49	180.11	6,206.64	-3,282.75	-69.66	3,283.38	2.25
9,347.00	90.80	180.26	6,205.93	-3,345.75	-69.86	3,346.38	0.55
9,410.00	89.69	180.69	6,205.67	-3,408.74	-70.38	3,409.38	1.89
9,473.00	90.87	180.93	6,205.36	-3,471.74	-71.27	3,472.37	1.91
9,536.00	90.43	180.80	6,204.64	-3,534.72	-72.22	3,535.37	0.73
9,599.00	89.63	181.58	6,204.61	-3,597.71	-73.53	3,598.37	1.77
9,661.00	90.37	181.57	6,204.61	-3,659.69	-75.24	3,660.36	1.19
9,724.00	89.57	181.35	6,204.64	-3,722.66	-76.84	3,723.35	1.32
9,787.00	89.75	181.62	6,205.02	-3,785.64	-78.47	3,786.35	0.52
9,851.00	89.81	181.10	6,205.26	-3,849.62	-79.99	3,850.34	0.82
9,914.00	89.44	180.81	6,205.67	-3,912.61	-81.04	3,913.34	0.75
9,977.00	90.00	181.99	6,205.98	-3,975.59	-82.58	3,976.34	2.07
10,040.00	89.32	181.88	6,206.36	-4,038.56	-84.71	4,039.32	1.09
10,103.00	89.51	181.48	6,207.00	-4,101.52	-86.56	4,102.31	0.70
10,164.00	89.32	181.44	6,207.62	-4,162.50	-88.11	4,163.30	0.32
10,225.00	89.26	181.57	6,208.38	-4,223.48	-89.71	4,224.29	0.23
10,288.00	89.13	181.79	6,209.26	-4,286.44	-91.56	4,287.28	0.41
10,349.00	89.20	181.53	6,210.15	-4,347.41	-93.33	4,348.26	0.44
10,411.00	89.20	181.68	6,211.02	-4,409.38	-95.06	4,410.25	0.24
10,472.00	89.81	181.02	6,211.54	-4,470.36	-96.50	4,471.24	1.47
10,532.00	90.37	181.68	6,211.45	-4,530.34	-97.91	4,531.24	1.44
10,593.00	90.62	181.53	6,210.92	-4,591.32	-99.62	4,592.23	0.48
10,655.00	90.49	180.79	6,210.32	-4,653.30	-100.88	4,654.23	1.21
10,716.00	90.19	180.24	6,209.96	-4,714.30	-101.42	4,715.22	1.03
10,778.00	90.31	180.70	6,209.69	-4,776.29	-101.93	4,777.22	0.77
10,839.00	90.49	179.81	6,209.26	-4,837.29	-102.20	4,838.22	1.49
10,900.00	90.19	179.94	6,208.90	-4,898.29	-102.07	4,899.21	0.54
10,961.00	90.25	179.03	6,208.67	-4,959.29	-101.52	4,960.19	1.50
11,022.00	90.19	178.75	6,208.43	-5,020.27	-100.34	5,021.16	0.47
11,084.00	90.00	178.06	6,208.33	-5,082.25	-98.62	5,083.11	1.15
11,146.00	90.25	177.89	6,208.20	-5,144.21	-96.42	5,145.03	0.49
11,207.00	90.74	178.30	6,207.67	-5,205.17	-94.40	5,205.97	1.05
11,269.00	90.62	178.08	6,206.93	-5,267.14	-92.44	5,267.90	0.40
11,331.00	90.93	178.37	6,206.09	-5,329.10	-90.52	5,329.83	0.68

**Survey Report for Buchner 1-2H - Sperry MWD Surveys (ST1)**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
11,392.00	90.68	177.91	6,205.24	-5,390.07	-88.54	5,390.76	0.86
11,453.00	90.62	178.19	6,204.55	-5,451.03	-86.46	5,451.69	0.47
11,546.00	90.62	179.17	6,203.54	-5,543.99	-84.32	5,544.62	1.05
11,607.00	90.43	179.87	6,202.98	-5,604.99	-83.81	5,605.61	1.19
11,668.00	89.94	179.25	6,202.78	-5,665.99	-83.34	5,666.59	1.30
11,729.00	89.94	179.45	6,202.85	-5,726.98	-82.65	5,727.57	0.33
11,822.00	90.06	180.05	6,202.85	-5,819.98	-82.24	5,820.56	0.66
11,884.00	89.57	179.95	6,203.05	-5,881.98	-82.24	5,882.55	0.81
11,946.00	89.57	179.78	6,203.51	-5,943.98	-82.10	5,944.54	0.27
12,006.00	89.63	179.78	6,203.93	-6,003.98	-81.87	6,004.53	0.10
12,068.00	89.51	180.01	6,204.40	-6,065.98	-81.75	6,066.53	0.42
12,129.00	89.63	179.35	6,204.85	-6,126.97	-81.41	6,127.51	1.10
12,191.00	89.51	179.62	6,205.32	-6,188.97	-80.86	6,189.50	0.48
12,252.00	89.51	179.92	6,205.84	-6,249.97	-80.61	6,250.48	0.49
12,313.00	89.63	179.28	6,206.30	-6,310.96	-80.19	6,311.47	1.07
12,375.00	89.26	179.38	6,206.90	-6,372.95	-79.46	6,373.45	0.62
12,437.00	89.32	179.90	6,207.67	-6,434.95	-79.07	6,435.43	0.84
12,500.00	89.69	180.09	6,208.21	-6,497.95	-79.07	6,498.42	0.66
12,563.00	89.07	180.27	6,208.89	-6,560.94	-79.26	6,561.42	1.02
12,627.00	88.58	180.48	6,210.21	-6,624.93	-79.68	6,625.40	0.83
12,691.00	88.95	181.17	6,211.59	-6,688.90	-80.60	6,689.39	1.22
12,755.00	89.26	182.05	6,212.59	-6,752.87	-82.40	6,753.37	1.46
12,818.00	90.25	182.12	6,212.86	-6,815.83	-84.69	6,816.35	1.58
12,881.00	90.74	181.54	6,212.31	-6,878.79	-86.70	6,879.34	1.21
12,977.00	90.56	181.33	6,211.22	-6,974.76	-89.11	6,975.32	0.29
13,063.00	90.19	181.28	6,210.66	-7,060.73	-91.07	7,061.32	0.43
13,127.00	92.35	182.24	6,209.24	-7,124.68	-93.03	7,125.29	3.69
13,222.00	92.66	182.22	6,205.09	-7,219.52	-96.73	7,220.17	0.33
13,285.00	93.34	181.87	6,201.79	-7,282.39	-98.97	7,283.06	1.21
13,348.00	92.23	181.77	6,198.73	-7,345.28	-100.97	7,345.98	1.77
13,412.00	90.86	181.92	6,197.00	-7,409.23	-103.03	7,409.94	2.15
13,475.00	91.18	181.99	6,195.88	-7,472.18	-105.18	7,472.92	0.52
13,569.00	90.56	182.70	6,194.46	-7,566.09	-109.02	7,566.87	1.00
13,664.00	89.81	182.37	6,194.15	-7,661.00	-113.22	7,661.82	0.86
13,728.00	89.81	181.95	6,194.36	-7,724.95	-115.64	7,725.80	0.66
13,792.00	89.57	182.50	6,194.71	-7,788.90	-118.12	7,789.78	0.94
13,887.00	87.59	181.32	6,197.06	-7,883.81	-121.29	7,884.72	2.43
13,950.00	88.03	180.98	6,199.47	-7,946.75	-122.55	7,947.68	0.88
14,014.00	88.46	181.13	6,201.43	-8,010.71	-123.73	8,011.65	0.71
14,077.00	88.89	181.19	6,202.89	-8,073.68	-125.00	8,074.63	0.69
14,140.00	89.13	181.12	6,203.97	-8,136.66	-126.27	8,137.62	0.40
14,203.00	89.69	181.34	6,204.62	-8,199.64	-127.63	8,200.61	0.96
14,266.00	90.25	181.51	6,204.66	-8,262.62	-129.19	8,263.61	0.93
14,330.00	90.68	181.64	6,204.14	-8,326.59	-130.95	8,327.60	0.70
14,392.00	90.87	181.15	6,203.30	-8,388.57	-132.46	8,389.59	0.85
14,486.00	90.43	182.14	6,202.23	-8,482.52	-135.16	8,483.57	1.15
14,549.00	90.56	181.77	6,201.69	-8,545.49	-137.31	8,546.55	0.62
14,612.00	89.63	181.44	6,201.58	-8,608.46	-139.07	8,609.54	1.57
14,675.00	90.00	181.64	6,201.79	-8,671.44	-140.77	8,672.54	0.67
14,770.00	90.80	181.79	6,201.12	-8,766.39	-143.61	8,767.52	0.86
14,865.00	90.56	181.21	6,200.00	-8,861.35	-146.10	8,862.51	0.66

**Survey Report for Buchner 1-2H - Sperry MWD Surveys (ST1)**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
14,927.00	90.93	180.97	6,199.19	-8,923.33	-147.27	8,924.50	0.71
15,022.00	90.49	182.07	6,198.01	-9,018.29	-149.79	9,019.48	1.25
15,085.00	89.32	182.58	6,198.12	-9,081.24	-152.35	9,082.46	2.03
15,149.00	89.57	182.27	6,198.74	-9,145.18	-155.06	9,146.43	0.62
15,244.00	89.94	182.37	6,199.14	-9,240.10	-158.90	9,241.39	0.40
15,339.00	90.31	182.19	6,198.94	-9,335.02	-162.68	9,336.36	0.43
15,435.00	90.74	182.39	6,198.06	-9,430.94	-166.52	9,432.32	0.49
15,529.00	91.79	182.09	6,195.98	-9,524.85	-170.19	9,526.26	1.16
15,592.00	90.37	179.07	6,194.79	-9,587.82	-170.83	9,589.24	5.30
15,649.00	90.68	179.63	6,194.27	-9,644.82	-170.18	9,646.22	1.12
<b>Final MWD Survey (ST1)</b>							
15,680.00	90.68	179.63	6,193.90	-9,675.81	-169.98	9,677.21	0.00
<b>Straight Line Projection to Bit (ST1)</b>							

**Survey Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
5,624.00	5,622.01	-42.72	-72.22	Tie on to Original Wellbore
5,699.00	5,697.00	-42.58	-71.22	First MWD Survey (ST1)
15,649.00	6,194.27	-9,644.82	-170.18	Final MWD Survey (ST1)
15,680.00	6,193.90	-9,675.81	-169.98	Straight Line Projection to Bit (ST1)

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Buchner 1-2H PAR1 BHL	180.75	Slot	0.00	0.00	0.00

**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
647.00	5,624.00	Sperry MWD Surveys (original wellbore)	MWD
5,699.00	15,680.00	Sperry MWD Surveys (ST1)	MWD

**Survey Report for Buchner 1-2H - Sperry MWD Surveys (ST1)****Targets**

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Buchner 1-2H Plan / - survey misses target center by 5622.64ft at 5624.00ft MD (5622.01 TVD, -42.72 N, -72.22 E) - Polygon	0.00	0.00	0.00	0.00	0.00	1,468,669.19	3,401,928.41	40° 36' 39.197 N	104° 3' 8.266 W
Buchner 1-2H Cente - survey misses target center by 5622.64ft at 5624.00ft MD (5622.01 TVD, -42.72 N, -72.22 E) - Polygon	0.00	0.00	0.00	0.00	0.00	1,468,669.19	3,401,928.41	40° 36' 39.197 N	104° 3' 8.266 W
Buchner 1-2H PAR1 - survey misses target center by 56.45ft at 15680.00ft MD (6193.90 TVD, -9675.81 N, -169.98 E) - Point	0.00	0.00	6,231.00	-9,678.00	-127.49	1,458,990.63	3,401,958.93	40° 35' 3.565 N	104° 3' 9.918 W
Buchner 1-2H Plan / - survey misses target center by 5622.64ft at 5624.00ft MD (5622.01 TVD, -42.72 N, -72.22 E) - Polygon	0.00	0.00	0.00	0.00	0.00	1,468,669.19	3,401,928.41	40° 36' 39.197 N	104° 3' 8.266 W

**North Reference Sheet for Sec. 2-T7N-R60W - Buchner 1-2H - Plan A Rev 1**

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.

Vertical Depths are relative to RKB 16' @ 4947.00ft (Unknown Well). Northing and Easting are relative to Buchner 1-2H

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is 105° 30' 0.000 W°, Longitude Origin: 0° 0' 0.000 E°, Latitude Origin: 40° 47' 0.000 N°

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99997656

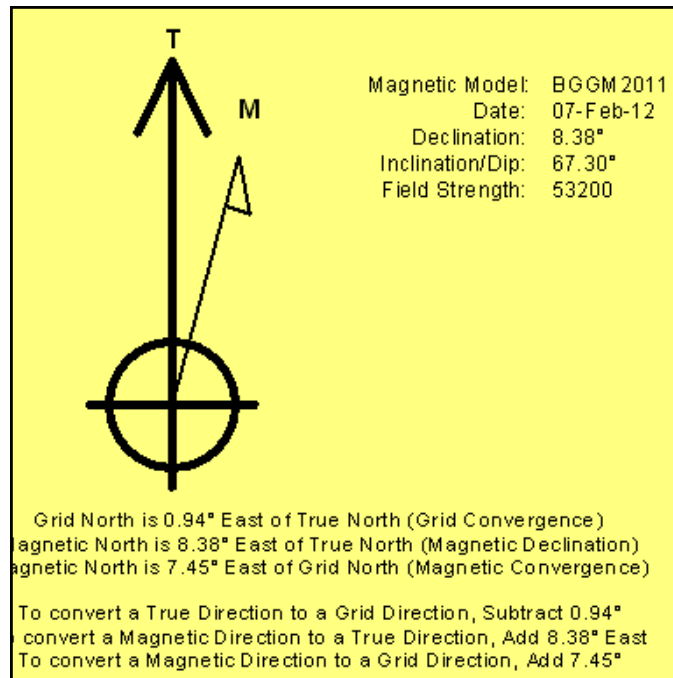
Grid Coordinates of Well: 1,468,669.19 ft N, 3,401,928.41 ft E

Geographical Coordinates of Well: 40° 36' 39.20" N, 104° 03' 08.27" W

Grid Convergence at Surface is: 0.94°

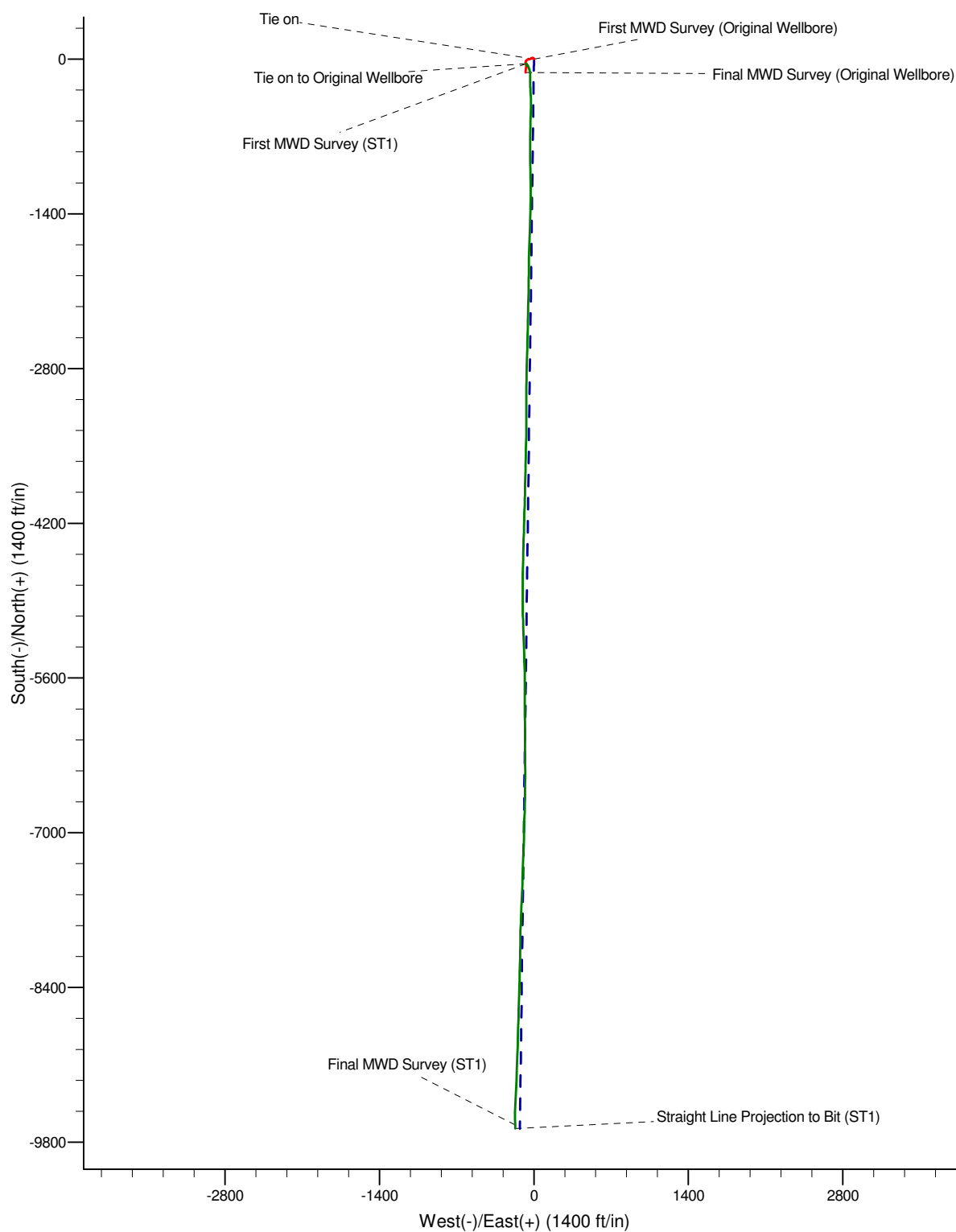
Based upon Minimum Curvature type calculations, at a Measured Depth of 15,680.00ft  
the Bottom Hole Displacement is 9,677.31ft in the Direction of 181.01° (True).

Magnetic Convergence at surface is: -7.45° ( 7 February 2012, , BGGM2011)



## LEGEND

- Buchner 1-2H, Plan A Rev 1, Plan A Rev 1 V0
- Buchner 1-2H, Plan A Rev 1, Sperry MWD Surveys (original wellbore)
- Buchner 1-2H, Plan A Rev 1, Sperry MWD Surveys (ST1)





LEGEND

- Buchner 1-2H, Plan A Rev 1, Plan A Rev 1 V0
- Buchner 1-2H, Plan A Rev 1, Sperry MWD Surveys (original wellbore)
- Buchner 1-2H, Plan A Rev 1, Sperry MWD Surveys (ST1)

